

In Situ Stabilization Pre-Final Design Report

Arkema Inc. Facility Portland, Oregon

PREPARED FOR

Legacy Site Services LLC, agent for Arkema Inc.

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In Situ Stabilization Pre-Final Design Report

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ACRONYMS AND ABBREVIATIONS

Acronym	Description
μg/kg	micrograms per kilogram
1200-C	1200-C Construction Stormwater General Permit
AC	activated carbon
Arkema	Arkema Inc.
ASTM	ASTM International
ВС	biochar



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Acronym	Description
bgs	below ground surface
cm/s	centimeters per second
СММР	Contaminated Material Management Plan
COC	contaminant of concern
CRBG	Columbia River Basalt Group
CSM	Conceptual Site Model
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DDx	DDT, DDD, and DDE
DEQ	Oregon Department of Environmental Quality
DNAPL	dense nonaqueous-phase liquid
ERM	Environmental Resources Management, Inc.
Eurofins	Eurofins Laboratory
Facility	the former Arkema Facility
FDR	Final Design Report
FS	Feasibility Study
GGBFS	Ground grandulated blast-furnace slag
GWBW	groundwater barrier wall
GWET	groundwater extraction and treatment
HASP	health and safety plan
I1TA	IRAM 1 Treatment Area
IRAM	Interim Remedial Action Measure
ISCO	in situ chemical oxidation
ISS	in situ stabilization/solidification
LEAF	Leaching Environmental Assessment Framework
LSS	Legacy Site Services LLC
МСВ	monochlorobenzene
MPR	Manufacturing Process Residue
NAPL	nonaqueous-phase liquid
NAVD	North American Vertical Datum
NAVD88	North American Vertical Datum of 1988



Acronym	Description
PDI	Pre-Design Investigation
PDI Report	GWET Wellfield Enhancement – Preliminary Design Investigation
PDI WP	Pre-Design Investigation Work Plan
PFDR	Pre-Final Design Report
PMP	Performance Monitoring Plan
QA/QC	quality assurance/quality control
RAO	remedial action objective
RI Report	Upland Remedial Investigation Report
ROD	record of decision
SCM	Source Control Measure
Site	the former Arkema Facility
SPLP	Synthetic Precipitation Leaching Procedure, USEPA Method 1312
TCLP	Toxicity Characteristic Leaching Procedure
TS	Treatability Study
UCS	unconfined compressive strength
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
w/w	weight per weight

PROFESSIONAL ENGINEER'S CERTIFICATION

I, Brendan Robinson, Licensed Professional Engineer in the State of Oregon, hereby certify to the best of my knowledge and belief that this document is true and correct and has been prepared in accordance with general industry standards and applicable federal, state, and local requirements, and hereunto set out hand and affix my seal this June 13, 2025.



Brendan Robinson, OR 78496PE

Partner in Charge

DATE: 6 June 2025 VERSION: 01

PROFESSIONAL GEOLOGIST CERTIFICATION

I, Avery Soplata, Licensed Professional Geologist in the State of Oregon, hereby certify to the best of my knowledge and belief that this document is true and correct and has been prepared in accordance with general industry standards and applicable federal, state, and local requirements, and hereunto set out hand and affix my seal this June 13, 2025.

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EXP. 10/1/2025

Avery Soplata, RG G2883

Geologist

DATE: 6 June 2025 VERSION: 01

RESPONSE TO AGENCY COMMENTS

Legacy Site Services LLC (LSS), agent for Arkema Inc. (Arkema), received the Oregon Department of Environmental Quality's (DEQ's) and United States Environmental Protection Agency's (USEPA's) comments on the *In Situ Stabilization* (ISS) *Pre-Design Investigation* (PDI) (Environmental Resources Management, Inc. [ERM] 2024b) report on 16 January 2025. ERM prepared comment responses on behalf of LSS; these responses are presented them below.

DEPARTMENT OF ENVIRONMENTAL QUALITY GENERAL COMMENTS

1. **Section 2.2.1, Delineation Soil Samples.** This section states that unknown substances were identified in four soil cores collected as part of the PDI, and that samples of soil containing these unknown substances were submitted for laboratory analysis. DEQ requests that this section be expanded to provide a brief description of the nature of these unknown substances, and the key field observations that identified the substances as unique.

LSS/ERM Response:

Section 3.2.2 provides descriptions of the unknown substances including their location, defining physical characteristics, and analytical results.

2. **Section 3.1, Field Results.** The first sentence states that field observations and measurements collected in the field are presented in boring logs. DEQ requests that the ISS PDI report also include representative photographs of field observations. To the extent possible, representative photographs should include examples of each hydrogeologic unit, examples of each category of contamination, examples of unknown substances, examples of petroleum-based non-aqueous phase liquid (NAPL), and examples of pesticide- and petroleum-related contamination.

LSS/ERM Response:

ERM has compiled a Phase 1 investigation Photo Log, included as Appendix B, which includes representative photographs of hydrogeologic units encountered, contamination categories, and unknown substances.

3. **Section 4.1, DNAPL Conceptual Site Model.** Section 4.1 indicates that "...DNAPL is presented on Figure 11." The report should clarify whether the "DNAPL Plume" in Figure 11 includes "Some contamination soil" or just "Contaminated soils" as defined in Section 1.

LSS/ERM Response:

Figure 11, Boring and Transect Locations, shows soil that displayed a positive oil and soil dye test result. This includes "Contaminated" and certain "Some DNAPL Contamination" soil as discussed further in Section 3.1.

4. **Section 5.2, Preliminary Design Considerations.** This section discusses a summary of design criteria that will be considered during the 30 percent design. DEQ understands that the ISS PDI report was intended to represent the preliminary design and that the next design deliverable will be the Pre-Final Design Report. In addition to the design criteria listed in this section, DEQ requests that the next design deliverable includes information related to the following:



- a. Continue identifying likely equipment and construction approaches. DEQ understands that the selected construction contractor will determine some of the means and methods for achieving the design criteria. However, the next design deliverable should refine the discussion of likely construction approaches and identify key considerations for these approaches.
- b. Identify construction specifications and quality assurance metrics and methods for ISS based on likely construction approaches. These should include requirements for ISS column overlaps, mast verticality, amendment dosing, mixing, and sampling.
- c. Discuss any potential geotechnical considerations during and following ISS treatment (e.g., settlement or fill consolidation).
- d. Discuss considerations for ISS treatment near groundwater extraction trenches, including cure time and the potential need to pause pumping during ISS cure to avoid drawing grout towards the trenches. Discuss any potential changes to the groundwater treatment system influent characteristics during application and cure (e.g., changes in pH, increases in chlorobenzene concentrations resulting from ISCO [in situ chemical oxidation]).
- e. Estimate production rates.
- f. Discuss batch plant configurations and layouts and material delivery logistics and staging.
- g. Identify material testing requirements and environmental monitoring and control (e.g., dust) during construction.

LSS/ERM Response:

- a. Key considerations for design are included in Section 4.4. These considerations informed the creation of the Specifications and Draft Design Drawings (Appendices G and H respectively).
- b. A conceptual column layout is included in the drawings and will be updated in the Final Design Report (FDR) depending on input from the contractor, final results of the Treatability Study, and any revisions from the Geotechnical Engineer. Quality control and quality assurance metrics and methods are included in Specification 01 43 00 and 01 45 00, as well as in Appendix I.
- c. Geotechnical considerations during design include design of the working pad, slope stability, and the necessary laybacks during the excavation of the overburden soil. These are discussed in Sections 4 and 6. Following completion of the remedy, the site will be restored to the grade shown in Appendix H, Sheet 10 and in accordance with Specification 31 22 10.
- d. As discussed in biweekly coordination meetings with the DEQ, the groundwater extraction and treatment (GWET) system well field is not currently planned to be active during the construction of the ISS remedy due to health and safety concerns. Extraction trenches will be protected during the construction of the Interim Remedial Action Measure (IRAM) 1 remedy.



- e. Production rate will be dependent on rig size, amendment use, ground obstructions, and performance specifications, and will be updated to the extent known in the FDR.
- f. Batch plant layout, material logistics, and configurations will be dependent upon the selection of a contractor, and an update will be provided in the FDR. Appendix H, Sheet 11 shows a simplified ISS construction process flow diagram.
- g. Material testing requirements are discussed in Specifications 01 43 00, 01 45 00, 02 52 20, as well as in Appendix I.

5. Section 5.3, I1TA Treatment Area and Volume. DEQ has the following comments:

- a. The principal dense non-aqueous phase liquid (DNAPL) impact area descriptions do not always clearly match the depiction of the DNAPL areas shown on cross sections. For example, the shallow vadose zone DNAPL between PDI-01 and PDI-13 is described as occurring between elevation 24 to 30 feet NAVD88 [North American Vertical Datum of 1988], with the shallow zone DNAPL extending between 12 and -4 feet NAVD88 (an approximately 12-foot separation between vadose zone and shallow zone DNAPL). However, Figure 14 depicts vadose zone DNAPL extending below 24 feet NAVD88, with only a short separation between the vadose zone DNAPL and shallow zone DNAPL. DEQ recommends that future deliverables clarify descriptions of various DNAPL impact areas.
- b. This section describes the overburden above DNAPL impact areas as 'clean soil.' Please clarify whether 'clean' indicates that contaminant of concern (COC) concentrations in these soils are below clean fill screening level values.
- c. Section 5.3 makes reference to Appendix E, Sheet 7 as a conceptual layout for the area to be treated using in situ stabilization (ISS). The ISS treatment area should be shown in a figure in the main body of report superimposed on the plumes depicted in Figure 11. This will allow the reader to evaluate the extent of treatment relative to the mapped plume.

LSS/ERM Response:

Descriptions of DNAPL impact areas have been revised and are included in Section 3.1. All excavated soil will be managed in accordance with the Contaminated Material Management Plan for In Situ Stabilization.

6. **Section 5.4, Excavation of Overburden Soil.** DEQ has the following comments:

- a. This section states that waste characterization and soil handling approaches will be presented in a forthcoming Contaminated Material Management Plan (CMMP). Please clarify when the CMMP submittal will be sequenced with forthcoming design deliverables. The next design deliverable should discuss material handling approaches and disposal options.
- b. The next design deliverable should identify overburden soil exceeding direct contact hot spot thresholds.

LSS/ERM Response:



The CMMP will be issued prior to the Pre-Final Design Report (PFDR). The PFDR will not discuss handling approaches and disposal options directly, as this is discussed in the CMMP. This approach reduces the risk of conflicting language.

The pre-design investigation, described in Section 2, did not indicate any overburden soil (i.e., samples between 0 and 15 feet below ground surface) that exceeded direct contact hotspot thresholds for Outdoor Workers, Construction Workers, or Excavation Workers.

7. **Section 7, Conclusions.** The first paragraph of this section states the horizontal extent of DNAPL does not extend into the Willamette River sediments. This statement is not supported by the data submitted to DEQ and is premature. Revise or delete this statement.

LSS/ERM Response:

The description of the extent of DNAPL has been updated and is included in Section 3.

8. **Consistent Use of Identifiers.** Identification of the various areas of contamination varies throughout the report, which creates confusion. Section 3.2.2 provides relatively clear identification based on soil boring locations PDI-15, PDI-20, and PDI-24. These definitions are also used in Section 4.2. However, Section 5.3 makes reference to the area around PDI-20 but not to the areas around PDI-15 and PDI-24. Further, Section 7 refers to "a petroleum hydrocarbon source...Southeast of the DNAPL [dense non-aqueous phase liquid]"—it is unclear to which area this refers. A consistent set of identifiers should be developed and used throughout the report. Section 5.3 should also discuss all identified areas of soil contamination, even if only to indicate that plans for treatment for some areas will be developed in the future.

LSS/ERM Response:

Identification of the various areas of contamination has been updated in Section 6.5.

USEPA PRIMARY COMMENTS

9. The Arkema upland remedy design group should evaluate, parallel with the design and construction of this ISS remedy, the potential influence the proposed ISS remedy will have to the current groundwater flow regime. This evaluation would focus on understanding potential effects of the displacement of groundwater storage replaced by the remedy feature, resulting changes to groundwater level conditions (if any) and changes in groundwater flow and flow paths that may require adjustments in the existing hydraulic containment control system upgradient of the barrier wall.

LSS/ERM Response:

An updated groundwater flow model that includes elements such as Shallow, Intermediate, and Deep Zone water levels; the groundwater barrier wall (GWBW); and the area of ISS; will be included in the forthcoming FDR, including potentiometric surface maps that estimate how groundwater flow may change as a result of ISS.

10. The conclusion in Section 7, first paragraph, second sentence stating that "The horizontal extent of DNAPL is well constrained, and DNAPL does not extend into Willamette River sediments." should be removed as it is premature to make this conclusion until PDI Phase 2



data, which are intended to refine the lateral extent of the DNAPL, are presented and evaluated. For example, Cross-Section 1-1' (Figure 12) shows the NAPL [nonaqueous-phase liquid] extent abruptly ending at PDI-08 where it is present, yet there is no additional subsurface data towards the river to confirm the absence of NAPL.

LSS/ERM Response:

The description of the extent of DNAPL has been updated and is included in Section 3.

USEPA TO-BE-CONSIDERED COMMENTS

11. EPA recommends providing an explanation on how the offshore borings, presented in the transect location map and cross-sections (transects) extending into the river, were used in evaluating and delineating the horizontal extent of the DNAPL.

LSS/ERM Response:

Offshore boring data, including soil lithology, visual indications of evidence of contamination, and MCB concentrations, were incorporated into the geological model and reviewed alongside the In-Situ Stabilization Pre-Design Investigation data.

12. It is apparent the approved PDI Work Plan used sonic boring drilling methods with no split spoon sampling noted. Performing traditional geotechnical soil sampling to obtain additional soil parameters could be used with correlations for soil parameters. Since the treatment area is contained to the upland area and the final product will be stronger than the existing soils, strength data for constructability may be needed for the design. Presenting historical borings showing blow counts or any other lab testing may be useful to inform this topic.

LSS/ERM Response:

Geotechnical soil samples were collected during Phases 1 and 2 of the PDI, as described in the In-Situ Stabilization Pre-Design Investigation Report as well as Sections 2.2.1.2 and 2.2.2.3 below. A third-party engineering firm is reviewing site geology and historical boring logs to provide geotechnical engineering support for the ISS design. Geotechnical data from historical borings in the Acid Plant area, including split spoon sampling blow counts, was reviewed and incorporated into the geotechnical engineering review.

13. The proposed use of sodium persulfate ISCO in combination with stabilization/solidification may have some synergies. For example, the high pH of the Portland cement environment can favor the formation of highly reactive sulfate and hydroxide free radicals, particularly under the higher temperatures due to the heat of formation generated during curing of the cement. Persulfate reacts slowly with natural soil organic matter preserving reactant for chlorobenzene. However, high concentrations of chloride can act as scavengers for sulfate free radicals, resulting in a reduction in the effectiveness of persulfate. The former salt pads are adjacent to the NAPL plume suggesting that chloride concentrations may be high in some areas. Consider addressing chloride in the bench-scale study.

LSS/ERM Response:

Treatability soil samples are representative of the Acid Plant Area. Groundwater monitoring data indicate that chloride concentrations in the Acid Plant Area are lower than those near the former salt pads.



CLIENT: PROJECT NO: 0773710 14. Residual or mobile DNAPL which cannot be destroyed by ISCO may require stabilization/solidification additives such as organoclay or lime/fly ash. Consider these additives in the bench-scale study.

LSS/ERM Response:

The Phase 2 treatability study consists of the USEPA Leaching Environmental Assessment Framework (LEAF) method, and compares soil monoliths mixed with Portland cement (PC) and ground blast furnace slag, granular activated carbon (AC), biochar (BC), and sodium persulfate in various concentrations. The results of the Phase 2 treatability study will be included in the FDR.

15. Section 5 (Interim Remedial Action Measure #1 Conceptual Design), discusses, but does not fully explain the difference between this conceptual design option and others considered. It is confusing in Section 5.3 Paragraph 2 Bullet Points 1 and 3 which state that clean soil from 0 – 10 feet below ground surface (bgs) will be excavated and stockpiled but Section 5.4 states that approximately 5.0 to 15.0 feet bgs will be excavated. This is further exacerbated in Appendix E which provides figures showing 3 different options of excavation depths (5, 10, and 15 feet bgs) but the Conceptual Mixing Plan in Sheets 7 and 8 only indicate 5 feet bgs excavation depth. Please add clarification on the extent of the proposed conceptual design.

LSS/ERM Response:

Sections 5.3 and 5.4 provide conceptual excavation depths, which will be finalized in the FDR. The conceptual drawings in the PDI report illustrated the different excavation depth options and presented the mixing plan with a 5 feet bgs excavation depth for demonstrative purposes only. Additionally, the sequence and depth of excavation presented in the FDR may vary from those presented in the PFDR based on selected contractor input.



1. INTRODUCTION

On behalf of Legacy Site Services LLC (LSS), agent for Arkema Inc. (Arkema), Environmental Resources Management, Inc. (ERM) has prepared this *In Situ Stabilization Pre-Final Design Report* (PFDR) for the former Arkema Facility (the "Site" or the "Facility") located at 6400 NW Front Avenue in Portland, Oregon. The Site location is shown on Figure 1. The PFDR presents the design for Site remediation and restoration to execute Interim Remedial Action Measure (IRAM) 1.

The goal of IRAM 1 is to address the monochlorobenzene (MCB) source area in the former Acid Plant Area of the Facility (referred to as IRAM 1 Treatment Area, or I1TA). IRAM 1 uses a combination of excavation, in situ stabilization/solidification (ISS) and/or in situ chemical oxidation (ISCO) technologies. The I1TA includes MCB dense nonaqueous-phase liquid (DNAPL) present in unsaturated and saturated soil, as well as some dissolved-phase MCB between the groundwater barrier wall and the top of bank in order to address to the extent practicable the stranded wedge.

The I1TA was investigated in accordance with the *In Situ Stabilization Pre-Design Investigation (PDI) Work Plan* (PDI WP; ERM 2024a). Implementation of the PDI WP was in accordance with the Oregon Department of Environmental Quality (DEQ) 19 January 2024 letter (DEQ 2024) proposing an alternative to the September 2023 *Draft Feasibility Study* (FS; ERM 2023), and as discussed in a meeting with DEQ, LSS, and ERM on 4 March 2024. As described in the PDI WP, the investigation consists of multiple field phases to characterize and delineate DNAPL within the I1TA. Two phases of investigation have been completed to date. Results from the PDI Phase 1 investigation are presented in the *In Situ Stabilization Pre-Design Investigation* (PDI; ERM 2024b), and the results of PDI Phase 2 are presented in this PFDR.

The objective of Phase 2 of the PDI was to refine the lateral extent of DNAPL and thereby the extents of I1TA. Phase 2 investigation field activities were completed between September and October 2024. Based on the results of the MCB DNAPL source area investigation, this PFDR presents an update to the I1TA Conceptual Site Model (CSM) as well as a pre-final design of IRAM 1.

1.1 SITE LOCATION AND SETTING

The Site is described in detail in the *Upland Remedial Investigation Report* (RI Report; ERM 2005), the *GWET Wellfield Enhancement – Preliminary Design Investigation* (PDI Report; ERM 2021a), and the FS (ERM 2023). This section summarizes the information contained in these reports.

The Site is located at 6400 NW Front Avenue in the northwest industrial area of Portland, Oregon. The Site is located at approximately river-mile 7.5 of the river in the Guild's Lake Industrial Sanctuary (formerly the Northwest Portland Industrial Sanctuary), zoned and designated "IH" for heavy industrial use. The Site is bordered on the east by the Willamette River, on the south by CertainTeed Roofing Products Company, and on the north and west by NW Front Avenue. The Site is divided into Lots 1 through 4 and Tract A along the river. Historically, the facility was a chloralkali plant until the plant shut down in 2001, and decommissioned and dismantled in 2004. A Site Layout Map is included as Figure 2. Figures 3 and 4 show the historical layout of the Site prior to the Facility being decommissioned.



The Site is generally flat with surface elevations ranging from approximately 25 to 38 feet North American Vertical Datum of 1988 (NAVD88). Most of the Site is surrounded by security fencing. The northern portion of the Site includes Lots 1 and 2 and is relatively undeveloped. No manufacturing has occurred on Lots 1 and 2 (ERM 2005). The southern portion of the Site includes Lots 3 and 4, which comprise approximately two-thirds of the Site (39 acres). The Facility historically conducted manufacturing in the southern portion of the Site, and developed Lots 3 and 4 with buildings, paved roads, rail spurs, and associated tanks and piping to support manufacturing processes. Tract A is a narrow strip of property between the top of the bank and the mean high-water line along the entire riverbank of the Site.

The Facility ceased operations in 2001, and all manufacturing buildings and above ground equipment were demolished between 2002 and 2004. The remaining Facility features consist of the former administration building, and former building foundations and paved areas. Source Control Measures (SCM) implemented since 2006 have altered the Site features, including abandonment of in-place subsurface stormwater conveyance lines; construction of stormwater channels, detention basin, and sand filter basin; and installation of a soil bentonite groundwater barrier wall (GWBW) and groundwater extraction and treatment (GWET) system. Details of the SCMs have been provided in previous submittals (e.g., FS [ERM 2023]).

1.1.1 GEOLOGY AND STRATIGRAPHY

The surficial geology in the Site area is characterized by fill and alluvial deposits of the Willamette River. Alluvial deposits are underlain by bedrock of the Columbia River Basalt Group (CRBG). The stratigraphic units of the Site are described in further detail in the RI Report (ERM 2005), the PDI Report (ERM 2021a), and the FS (ERM 2023). Stratigraphic units underlying the I1TA are described below.

The subsurface of the I1TA is characterized by six informal stratigraphic units based on historical subsurface investigations (ERM 2005, 2021a), listed below in stratigraphic order:

- Artificial fill material;
- Sandy silt;
- Fine-to-medium sand with silt and clay;
- Interbedded sand and silt;
- Fine sand with clay;
- Silt with clay; and
- CRBG.

Each of the alluvial units are generally poorly sorted, with the exception of the fine sand with clay unit which exhibits a higher degree of grain size sorting than the other units. Each of the alluvial units are present throughout the I1TA with the exception of the sandy silt. The sandy silt has been historically delineated in the southwestern end of the I1TA, under the Manufacturing Process Residue (MPR) pond (MPR Pond) and extending southwest. The vadose zone sandy silt is not present northwest of the MPR Pond toward the riverbank in the I1TA.



The surface of the CRBG has been delineated in the northeastern portion of the I1TA, near the riverbank of the Willamette River, at a depth between 49 and 53 feet below ground surface (bgs). The surface of the CRBG is deeper in the southern portion of the I1TA, near the former dichlorodiphenyltrichloroethane (DDT) manufacturing area, observed at 88.3 feet bgs. These stratigraphic units generally correspond with distinct hydrostratigraphic units (with the exception of the Vadose Zone) at the Site and are described in detail below. Figure 5 presents a cross section depicting the stratigraphic and hydrostratigraphic units in the subsurface of the I1TA. Figures 6 through 10 present elevation contours of the top of each of the stratigraphic units.

1.1.2 HYDROSTRATIGRAPHY

As previously detailed in the RI Report, PDI Report, and FS, the hydrogeological zones beneath the Site have been designated as the Vadose Zone, Shallow Zone, Shallow-Intermediate Silt Zone, Intermediate Zone, Deep Zone, and Basalt Zone (ERM 2005, 2021b, 2023)¹. Each of these hydrogeological zones occur in the I1TA. The hydrogeological zones and their correlation with stratigraphy are described in further detail below.

1.1.2.1 VADOSE ZONE

The Vadose Zone is the unsaturated soil above the uppermost groundwater-bearing zone (i.e., the Shallow Zone). It extends from the ground surface to the top of the Shallow Zone. In the I1TA, the Vadose Zone consists of the artificial fill material, sandy silt, and fine-to-medium sand with silt and clay. The Vadose Zone can produce confining conditions in the Shallow Zone in the southwestern end of the I1TA where the sandy silt has been delineated.

1.1.2.2 SHALLOW ZONE

The Shallow Zone is the uppermost water-bearing zone. In the I1TA, the Shallow Zone consists of the artificial fill material and fine-to-medium sand with silt and clay. The Shallow Zone may be semi-confined in the southwestern end of the I1TA where overlain by the sandy silt.

While the regional groundwater flow in the Shallow Zone is from southwest to northeast to the Willamette River, groundwater flow in the I1TA is more complex where impacted locally by the historical river channel, the GWBW, and extraction trench system. The vertical gradient in the Shallow Zone is generally downward, although occasionally upward near the river depending on the river stage.

1.1.2.3 SHALLOW-INTERMEDIATE SILT ZONE

The Shallow-Intermediate Silt Zone is an aquitard consisting of interbedded silt and sand. It is generally continuous in the I1TA and ranges in thickness from approximately 0.5 to 5.0 feet. The Shallow-Intermediate Silt Zone generally acts as an aquitard between the overlying Shallow Zone and underlying Intermediate Zone.

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¹ In other reports, the Basalt Zone is referred to as the Gravel and Basalt Zone. However, the Gravel is not present in I1TA.

1.1.2.4 INTERMEDIATE ZONE

The Intermediate Zone is a semi-confined water-bearing zone comprised of fine sand with clay. It is generally overlain by the Shallow-Intermediate Silt Zone aquitard, where present, and underlain by the Deep Zone. The Intermediate Zone can be semi-confined depending on the thickness of the overlying Shallow-Intermediate Silt Zone. The Intermediate Zone is continuous and extends laterally through the I1TA.

While the regional groundwater flow in the Intermediate Zone is toward the northeast where it discharges to the river, groundwater flow in the I1TA is more complex where impacted locally by the historical river channel, the GWBW, and extraction trench system. The vertical gradient in the Intermediate Zone is generally downward, although occasionally upward near the river when the river stage is high.

1.1.2.5 DEEP ZONE

The Deep Zone is an aquitard consisting of silt with clay, and it lies below the Intermediate Zone and above the Basalt Zone. The Deep Zone generally thins to the northeast, toward the river where the underlying CRBG rises. In the I1TA, groundwater flow in the Deep Zone is generally northeast toward the river, but the groundwater source control operations influence gradients and flow locally. The vertical gradient in the Deep Zone is generally downward; however, it is occasionally upward near the river depending on the river stage.

1.1.2.6 BASALT ZONE

The Basalt Zone in the I1TA consists of the upper portion of the CRBG. In this portion of the Site, the Basalt Zone contact generally slopes upwards to the northeast from the upland towards the river.

1.2 SITE HISTORY AND DESCRIPTION

Starting in 1941, various chemicals were produced at the Facility, including: sodium chlorate, potassium chlorate, chlorine, sodium hydroxide, DDT, sodium orthosilicate, magnesium chloride hexahydrate, ammonia, ammonium perchlorate, sodium perchlorate, and hydrochloric acid. The Facility was a chlor-alkali plant until the plant shut down in 2001 and the plant was decommissioned and dismantled in 2004. The RI Report (ERM 2005) described historical Site operation and manufacturing processes.

Currently, most of the Site is paved, gravel-covered/capped, or covered with building foundations. The only structures currently present are the building constructed to house the GWET system, three small motor-control buildings, a temporary trailer used as the Site office, and the original plant administration building. The only current activities at the Site are general maintenance and those associated with the operations of the ongoing SCMs.

1.3 NATURE AND EXTENT OF I1TA

The extent of I1TA is defined by the area and depth in which DNAPL was observed during the Phase 1 and Phase 2 PDI, and includes the former MPR Pond, and a small portion of the Overflow Trench (i.e., DDT Trench). These are the two areas where disposal of spent MCB (i.e., DNAPL)



occurred historically. Portions of the Overflow Trench and MPR Pond were both excavated to approximate depths between 8 and 12 feet, respectively, in 2000 (ERM 2001). Section 3.1 presents the DNAPL CSM. Historical operation areas are depicted in Figures 3 and 4.

1.4 INTERIM REMEDIAL ACTION MEASURE - REGULATORY BASIS

The DEQ-approved *Final Modification Revised Upland Feasibility Study Work Plan* (ERM 2022) lists the Site-specific remedial action objectives (RAO), as follows.

- RAO 1 Reduce upland human health risks to acceptable risk-based levels from incidental ingestion, inhalation, and direct contact with soil under trespasser, outdoor worker, outdoor worker after redevelopment, and construction worker scenarios.
- RAO 2 Reduce riverbank terrestrial ecological risks to acceptable risk-based levels from ingestion and direct contact with soil.
- RAO 3 Prevent or reduce the potential for migration of contaminants of concern (COC) in surface soil and riverbank soil to accumulate in river sediment above acceptable risk-based levels.
- RAO 4 Treat or remove soil hot spots to the extent feasible based on remedy selection factors.
- RAO 5 Prevent or reduce the migration of groundwater COCs to the river above acceptable risk-based levels for surface water receptors.
- RAO 6 Treat or remove groundwater hot spots to the extent feasible based on remedy selection balancing factors.
- RAO 7 Reduce the potential for DNAPL to act as a continuing source of COCs in groundwater.
- RAO 8 Treat or remove DNAPL hot spots to the extent feasible based on remedy selection balancing factors.
- RAO 9 Reduce the migration of COCs in stormwater to the river that are at or above acceptable risk-based concentrations for surface water receptors.
- RAO 10 Reduce the migration of COCs in stormwater to the river to prevent accumulation of COCs in river sediment above risk-based levels.

The DEQ prepared a memorandum (DEQ 2024) that summarized its findings on the FS (ERM 2023) for LSS. In the memorandum, DEQ proposed an alternative path forward focused on IRAMs to achieve the following objectives:

- 1. Expedite the necessary remediation to address high-risk and/or well-defined contamination.
- Decrease potential uncertainty in the FS by resolving data gaps and conducting additional performance monitoring.

The DEQ proposed the implementation of IRAM 1 (detailed above in Section 1) as an alternative path forward for the following advantages:

To accelerate cleanup of highest risks (i.e., DNAPL);



- To reduce pesticide (i.e., DDx) co-solvency with MCB and potentially improve GWET influent characteristics;
- To improve near-term source control status in the contamination outside of the GWBW(i.e., "stranded wedge");
- Reduce the likelihood of a post-record of decision (ROD) administrative change (i.e., Explanation of Significant Differences or ROD Amendment);
- Reduce the scope/magnitude/uncertainty of post-ROD cleanup actions; and
- Provide a clearer path to Site closure.

1.5 HISTORICAL DNAPL INVESTIGATION

In 2006, ERM conducted a DNAPL investigation on behalf of LSS (ERM 2006). This study consisted of advancing direct-push borings throughout the Acid Plant Area of the Site between the suspected source of DNAPL contamination (i.e., the MPR Pond and Overflow Trench) and the top of bank. Boring locations drilled included GP-01 through GP-65. The results of this investigation were used to delineate DNAPL in the *Revised Hot Spot Evaluation* (ERM 2021b) and design the scope of the current pre-design investigations.



PRE-DESIGN INVESTIGATIONS

2.1 PHASE 1 INVESTIGATION SUMMARY

The Phase 1 investigation was performed to define the vertical extent of DNAPL within the I1TA, confirm the general lateral extent identified in the 2006 DNAPL Investigation, gather sufficient and usable data to evaluate the feasibility of the proposed remediation technology, and obtain necessary data for the design. Results from the Phase 1 investigation were presented in the PDI (ERM 2024b). A summary of this investigation is summarized in this section.

Phase 1 field activities, conducted between 8 July and 30 August 2024, included sonic drilling advancements and soil sampling at 34 boring locations. The collected samples fall into one of the following categories:

- Delineation Soil Samples: Collected to determine volatile organic compound (VOC) concentrations and correlate concentrations with field observations;
- Treatability Study Soil Samples: Collected for use in bench-scale treatability studies;
- Geotechnical Soil Samples: Collected for geotechnical analyses; or
- DyeLIF[™] Samples: Collected for compatibility evaluation with the DyeLIF[™] system.

A total of 134 soil samples were collected, visually inspected, and submitted to Eurofins Laboratory (Eurofins) for VOC analysis. Unknown substances were identified in four boring locations, and five additional samples were submitted for testing of VOCs, semivolatile organic compounds, total petroleum hydrocarbons, pesticides, polychlorinated biphenyls, herbicides, dioxins/furans, and per- and polyfluoroalkyl substances.

Soil samples for the treatability study were collected from select boring locations and depth intervals corresponding to soil that had been field screened as "Contaminated," "Some DNAPL Contamination," and "No Evidence of DNAPL Contamination."

Shelby tube samples of the Shallow Zone and Deep Zone were collected from two boring locations during Phase 1.

Data generated during Phase 1, including lithology, MCB concentrations, field screening results, visual indications of DNAPL, staining, odor, sheen, and Oil-in-SoilTM test results were integrated into the geological model. These data were used to update the geological and DNAPL CSMs. Key findings from the Phase 1 investigation include:

- DNAPL Extent: DNAPL was observed predominantly in the bottom of the Shallow Zone and within the Shallow-Intermediate Silt Zone, with limited presence in the Intermediate and Deep Zones. The DNAPL plume is approximately 350 feet long and 170 feet wide.
- Delineation Soil Sampling Results: The highest MCB concentration was 41,000,000 micrograms per kilogram (μ g/kg) at location PDI-19 at a depth of 39 feet bgs.
- Unknown Substances: Additional contaminants were observed southeast of the MCB DNAPL and were described as the PDI-15 Unknown Substance, Petroleum-based nonaqueous-phase liquid (NAPL) (PDI-20, PDI-21, PDI-32, and PDI-33), and the Pesticide- and Petroleum-related Contamination (PDI-24).



 Geotechnical Soil Sampling Results: The soil in the Shallow and Deep Zones were generally non-cohesive, with permeability values lower than previous estimates derived from grain size analysis in the 2021 Preliminary Design Investigation (ERM 2021a). This indicates that the Shallow and Deep Zones have lower permeability than previously understood.

2.2 PHASE 2 INVESTIGATION ACTIVITIES AND RESULTS

Phase 2 Field activities discussed in this PFDR were conducted between 30 September and 31 October 2024 and are described in detail below. Activities included subsurface clearance, advancement of soil borings using direct push drilling technology, and soil sampling. The boring locations are shown on Figure 11.

2.2.1 PHASE 2 INVESTIGATION ACTIVITIES

2.2.1.1 SUBSURFACE CLEARANCE

Prior to any subsurface investigative activities, ERM implemented subsurface clearance procedures. ERM reviewed subsurface utility records, as-built drawings, and historical information to select boring locations sufficiently far from known existing surface and subsurface utilities. A public utility mark-out was performed to identify subsurface utilities (Oregon Ticket No. 24167748) and then a private utility locating firm was subcontracted to clear areas where subsurface work was performed. Boring locations were cleared if known active utilities were present within approximately 10 feet of the drilling location (e.g., active pumping infrastructure) using an air-knife and vacuum truck operated by Cascade Drilling®, per ERM subsurface clearance procedures, before powered drilling equipment was used.

At boring locations PDI-35, PDI-36, PDI-37, PDI-38, and PDI-48, air-knife and vacuum truck were employed to a depth of 8 feet bgs, refusal, or to a depth of 2 feet greater than the depth of known utilities within 10 feet of the proposed drilling location. All remaining boring locations were completed without physical preclearance.

2.2.1.2 SOIL SAMPLING

Between 30 September and 31 October 2024, ERM personnel oversaw the advancement of 41 proposed soil boring locations (PDI-35 through PDI-60) using a direct push drilling rig operated by Cascade Drilling[®]. The soil borings were advanced one additional rod length (5 feet) after the Deep Zone was first encountered or until either refusal or the CRBG was encountered. During the Phase 2 drilling, step down casing seals through the interfaces of the Shallow Intermediate Silt Zone and Intermediate Zone were used to reduce the potential for additional vertical COC migration. Using the dual tube direct push drilling method, setting seals was technically infeasible due to refusal encountered when advancing the outer casing to place the seals. ERM, on behalf of LSS, proposed a modification to the PDI WP to remove the requirement to set seals when completing direct push borings during Phase 2. The DEQ agreed, and starting on 14 October 2024, borings were advanced directly to the target depth described above and then abandoned by injecting grout in 5-foot increments from the bottom of the boring to the ground surface.

Based on the Phase 1 results, soil boring locations during Phase 2 were logged beginning at different depths. Borings in the vicinity of former MPR Pond or the Petroleum-based NAPL were



CLIENT: PROJECT NO: 0773710 logged beginning at the ground surface. Borings outside of these areas were logged beginning at 15 or 20 feet bgs. Depths at which boring locations were logged are as follows:

- From ground surface: PDI-36, PDI-50, PDI-50a, PDI-50b, PDI-51, PDI-52, PDI-53, PDI-54, PDI-55, PDI-55a, PDI-55b, and PDI-55c
- From 15 feet bgs: PDI-49a, PDI-59, and PDI-60
- From 20 feet bgs: PDI-35, PDI-37, PDI-37a, PDI-38, PDI-39, PDI-40, PDI-40a, PDI-41, PDI-42, PDI-43, PDI-43a, PDI-44, PDI-44a, PDI-45, PDI-45a, PDI-45b, PDI-46, PDI-46a, PDI-47, PDI-48, PDI-48a, PDI-48b, PDI-49, PDI-56, PDI-57, and PDI-58

From the abovementioned logging start depths, continuous soil cores were recovered from each boring using standard direct push drilling methods. Soil were logged and photo-documented by a qualified ERM staff geologist and reviewed by an Oregon-Registered Geologist. Soil lithology was logged and classified according to the Unified Soil Classification System (USCS). Boring logs are provided as Appendix A and a photo log is provided as Appendix B. Boring lithology was incorporated into the CSM and described below in Section 3. Each soil core was visually inspected for indications of DNAPL with the assistance of an oil-soluble dye (Oil-in-SoilTM) field screening test kit. Oil-in-SoilTM field screening test kits are used by adding soil from the boring where oil (i.e., DNAPL) is suspected, adding water, and then shaking to release colorimetric indicators. If color changes are observed, then DNAPL and/or petroleum hydrocarbons are suspected to be present.

Delineation Soil Samples

During Phase 2, ERM collected a total of 64 soil samples from 33 boring locations within the study area. Soil samples were collected from depth intervals selected in the field based on visual indications of DNAPL presence (free product, ganglia, blebs) and the oil soluble dye test (i.e., Oil-in-SoilTM) results. Two samples were collected from each boring, one sample from the section of the core with the most visual indications of DNAPL presence, and one sample from the bottom of the boring, with the exception of PDI-43a due to lack of recovery.

Soil samples were collected using Terra Core® samplers to evaluate VOC concentrations and correlate concentrations with field observations. Soil samples were submitted to Eurofins for analysis by United States Environmental Protection Agency (USEPA) Method 5035/8260D for high concentration VOCs in soil. Soil samples and VOC results are presented in Table 1 and select results are shown on the cross sections in Figures 12 through 21.

Geotechnical Soil Samples

Soil samples were collected for geotechnical analyses to inform the ISS design. During Phase 1, geotechnical soil samples were collected from the Shallow and Deep Hydrogeological Zones, but were not able to be collected from the Intermediate Zone due to lack of cohesion. During Phase 2, soil samples were successfully collected by advancing Shelby tubes in the Intermediate Zone. The soil samples were picked up from the Site and tested by Northwest Geotech, Inc., for the following methods:

- ASTM International (ASTM) D2166 compressive strength of cohesive soil;
- ASTM D5084-Method C flexible wall permeability; and



CLIENT: PROJECT NO: 0773710 ASTM D3080 direct shear test of soil under consolidated drained conditions.

Results of the geotechnical analyses are described in further detail below in Sections 2.2.2.3 and 4.6.

2.2.1.3 QUALITY ASSURANCE/QUALITY CONTROL AND DATA VALIDATION

Field Sample quality assurance/quality control

Field quality assurance/quality control (QA/QC) samples were collected in accordance with the PDI WP (ERM 2024a) and associated addenda. Trip blanks were included in each cooler containing VOC samples. For every 20 samples collected and submitted for analysis, the following QA/QC samples were collected:

- One field duplicate sample;
- One equipment rinsate sample to verify efficacy of decontamination procedures, collected for every 20 samples; and
- One matrix spike/matrix spike duplicate.

Field notes taken during sampling activities were recorded in the field logbook. Samples were immediately labeled following collection, with the required data. Sample data were entered into the Chain-of-Custody record to ensure proper tracking and control. Analytical samples were shipped to the laboratory in sealed containers and accompanied by the Chain-of-Custody record. QA/QC samples were collected, controlled, and shipped in the same manner as normal field samples.

Data Validation

ERM completed data validation after receiving the laboratory analytical reports. Appendix C includes laboratory analytical reports and Appendix D includes the data validation memo. QA/QC sample results were reviewed during data validation and additional details are included in the data validation memos (Appendix D). Based on the results of the data validation, qualifiers were assigned to the data, and select analytes were rejected. The following select VOC results were rejected due to holding time exceedances:

- All results for bromodichloromethane, bromomethane, and chloroethane in the following samples: PDI-38-SO-32.9-20241008, PDI-37-SO-31.2-20241008, PDI-51-SO-39.9-20241011, PDI-45a-SO-53.9-20241011, TB-01-SO-20241011, PDI-53-SO-28.3-20241018;
- All non-detect results for bromomethane, chloroethane, and dichlorodifluoromethane in sample PDI-48a-SO-34.2-20241018; and
- All non-detect results for all VOCs in samples PDI-54-SO-33.5-20241018 and PDI-52-SO-39.9-20241018.

No MCB concentration data were rejected. As such, excluding rejected data, the qualified data are acceptable for decision making and meet the overall objectives of the investigation.



2.2.1.4 INVESTIGATION-DERIVED WASTE

Investigation-derived soil and sampling supplies waste from preclearance and drilling was containerized in lined and covered roll-off bins. Bins were categorized as waste containing soil with evidence of DNAPL or waste containing soil with no evidence of DNAPL. Composite soil samples were collected from the roll-off bins and submitted for analysis by the following analytical methods at Eurofins:

- Toxicity Characteristic Leaching Procedure (TCLP) and total VOCs by USEPA Method 8260D;
- TCLP and total semivolatile organic compounds by USEPA Method 8270E;
- Total petroleum hydrocarbons and diesel-range organics;
- TCLP and total Organochlorine pesticides by USEPA Method 8081;
- Polychlorinated biphenyls by USEPA Method 8082A;
- TCLP and total Chlorinated herbicides by USEPA Method 8151;
- Dioxins/furans by USEPA Method 1613B;
- Per- and polyfluoroalkyl substances by USEPA Method 1633;
- TCLP Resource Conservation and Recovery Act eight metals and mercury by USEPA Methods 6010D and 7074;
- pH by USEPA Method 9045D;
- Paint filter liquids by USEPA Method 9095B;
- Corrosivity by USEPA Method 1110;
- Flash/Ignitability by USEPA Method 1020A; and
- Reactivity by USEPA Method 9014/9034.

Two roll-offs were profiled under the Oregon "State-Only" Hazardous Waste Code X001 for Waste Pesticide residue and hauled from the Site to the Roosevelt Regional landfill in Roosevelt, Washington. The other two roll-offs were profiled under the Resource and Recovery Act Waste Code D008 due to the lead concentration and hauled from the Site to the Chemical Waste Management hazardous waste facility in Arlington, Oregon. Decontamination water was containerized in totes within secondary containments during fieldwork, and then treated at the Site by the groundwater treatment plant.

2.2.2 PHASE 2 RESULTS

2.2.2.1 FIELD RESULTS

Field observations and measurements including lithology, visual observations of DNAPL or staining, odor, sheen, and Oil-in-Soil[™] test results were collected from soil cores during Phase 2 and are presented in the boring logs included in Appendix A. Representative photos from Phase 1 and Phase 2 are included as a photo log in Appendix B. For each boring location, descriptions of lithology, visual indications of DNAPL or staining, odor, sheen, and Oil-in-Soil[™] test results were integrated into a 3-dimensional geologic model to update the DNAPL CSM and generate cross sections. The results of these CSM updates are described in further detail below in Section 3.1.



2.2.2.2 ANALYTICAL RESULTS

VOC Results for MCB Delineation

The results of the laboratory analyses of soil samples collected from the 33 boring locations are presented in Table 1. Appendix C presents laboratory analytical reports. The highest detected concentration of MCB in soil samples impacted by visible DNAPL was $13,000,000\,\mu g/kg$ at location PDI-45a at a depth of 38.6 feet bgs. PDI-45a is located downgradient from the source area and exterior to the GWBW. A 0.65-foot thick zone of DNAPL was observed at the sample depth in a lens of fine-to-medium sand with silt and clay in the Shallow-Intermediate Silt Zone. Analytical results indicate the highest concentrations of MCB were observed in Shallow and Shallow-Intermediate Silt Zone soil.

MCB concentrations in samples where no evidence of DNAPL was observed ranged from not detected to maximum of $4,900,000 \mu g/kg$, at location PDI-60 at a depth of 32.7 feet bgs.

Results for Other Contaminants

During Phase 2, no soil was observed to have characteristics similar to the contamination identified in the PDI-15 Unknown Substance nor the Pesticide- and Petroleum-related Contamination observed during Phase 1 at location PDI-24. During Phase 2, two boring locations, PDI-37 and PDI-37a, had similar field observations to those noted in the Petroleum-based NAPL contamination identified during Phase 1 at locations PDI-20, PDI-21, PDI-32, and PDI-33.

At boring location PDI-37a, from 27.75 to 30 feet bgs, heavy sheen and an inconclusive dark brown Oil-in-Soil™ test result were observed. Analytical results detected 3,800,000 µg/kg of MCB. Sheen was similarly observed in PDI-37 from 27.3 to 31.2 feet bgs and analytical results detected 2,500 µg/kg of MCB. The material at these locations is included in the Petroleum-based NAPL, however, due to the high concentration of MCB, the material at PDI-37a may contain DNAPL as well. The cross sections depicted on Figures 13, 17, 18, and 21 have been updated to illustrate this additional plume and these findings are discussed further below in Section 3.

2.2.2.3 GEOTECHNICAL RESULTS

Following collection of geotechnical soil samples from the Shallow and Deep Zones during Phase 1, Shelby tube samples of the Intermediate Zone were successfully collected from two boring locations during Phase 2. These samples were collected from PDI-40a at a depth of 40 to 42 feet bgs and PDI-55c at a depth of 35 to 37.5 feet bgs. Shelby tube samples were analyzed by Northwest Geotech, Inc., in Wilsonville, Oregon, for hydraulic conductivity by ASTM Method D5084C, unconfined compressive strength (UCS) of soil by ASTM Method D2166, and direct shear by ASTM Method D3080. The geotechnical laboratory report is included in Appendix E and results of these analyses are presented in Table 2. Difficulty in obtaining Shelby tube samples from the Intermediate Zone due to soil falling out during Phase 1 as well as the geotechnical results from Phase 2 indicate that soil from the Intermediate Zone are generally non-cohesive. Intermediate Zone (USCS types SP and SW) geotechnical results are typical of their representative soil. Hydraulic conductivity results for these Intermediate Zone samples are lower than estimates derived from grain size analysis in the 2021 PDI (ERM 2021a).



3. CONCEPTUAL SITE MODEL

3.1 DNAPL CONCEPTUAL SITE MODEL

Data generated during PDI Phase 1 and PDI Phase 2, including lithology, MCB concentrations, field screening results, visual indications of DNAPL, staining, odor, sheen, and Oil-in-Soil™ test results, were integrated into the three dimensional geological model generated using LeapFrog software. This software generates a three dimensional representation of soil types and contaminant distribution that can be viewed from any angle within the program, and can generate screen shots and cross sections for use in reports such as this. Using the updated three dimensional geochemical model, the DNAPL CSM was updated as discussed here. Cross sections include riverbank and in-water data provided by Integral Consulting Inc. and Dalton, Olmsted, and Fuglevand (2025), including borings these firms completed in Willamette River sediment. Sediment boring results, including boring log lithology and the concentration of COCs, were integrated into the three dimensional model and included in the DNAPL CSM presented here. A plan view map of the boring locations, cross-section transects, and DNAPL is presented on Figure 11. The cross sections are displayed on Figures 12 through 21.

Soil was collected during this investigation for the purposes of the bench-scale treatability studies, which was classified as "Contaminated", "Some Contamination", or "No evidence of Contamination" based on the following criteria:

- Soil with visible DNAPL or a combination of staining and a positive oil soluble dye test result was categorized as "Contaminated."
- Soil with no visible DNAPL, but a positive oil soluble dye test or sheen/staining, was categorized as "Some DNAPL Contamination."
- Soil with no visual indications of DNAPL, a negative oil soluble dye test, and no staining was categorized as "No Evidence of DNAPL Contamination."

For the purposes of this document, soil within I1TA that will be addressed by IRAM 1 is referred to as DNAPL, meaning that soil was identified in the field as being "Contaminated", or having "Some Contamination."

The results of PDI investigation indicate that:

- The DNAPL is oriented generally northeast-southwest and is approximately 350 feet long and 170 feet wide. The lateral extent of the DNAPL is well defined by borings showing no observable DNAPL (PDI-09, PDI-20, PDI-23, PDI-24, PDI-25, PDI-26, PDI-30, PDI-35, PDI-42, PDI-43, PDI-43a, PDI-44a, PDI-45b, PDI-46a, PDI-47, PDI-48b, PDI-49, PDI-49a, PDI-50b, PDI-51, PDI-52, PDI-53, PDI-54, PDI-55c, PDI-56, PDI-57, PDI-58, and PDI-60). The lateral extent of the DNAPL is illustrated in Figure 11.
- The DNAPL was observed predominantly in the bottom of the Shallow Zone and within the Shallow-Intermediate Silt Zone. The largest zone of DNAPL observations was at location PDI-03 with positive Oil-in-Soil™ results, staining, and visible blebs and globules of DNAPL between 27 and 39 ft bgs. PDI-03 is located under the former MPR Pond, where disposal of spent MCB historically occurred. Downgradient of the MPR Pond, results indicate that DNAPL



migrated into the Shallow-Intermediate Silt Zone through discontinuous silt beds where DNAPL was often observed in sand lenses between silt beds. At the terminal downgradient edge (e.g., PDI-45a) and lateral edges (e.g., PDI-48a), DNAPL was observed at thicknesses ranging from a few inches to less than 1 inch, suggesting limited DNAPL mass at the extent of the DNAPL area, consistent with the properties of DNAPL migration.

- DNAPL was observed in the top of the Intermediate Zone in only four boring locations, PDI-05, PDI-07, PDI-19, and PDI-34, and was not observed in the Intermediate Zone otherwise. DNAPL observations in the Intermediate Zone ranged from thicknesses of approximately 2 feet to less than 1 inch. The limited areal extent and thickness of DNAPL in the Intermediate Zone suggests limited DNAPL mass migrated downward through the Shallow Intermediate Silt Zone, and most DNAPL is in the Shallow Zone and Shallow Intermediate Silt Zone. The extent of DNAPL in the Intermediate Zone is presented in Figures 12 through 20.
- DNAPL was only observed in the Deep Zone in a single location, PDI-05, and reached less than 1 foot into the Deep Zone. There is no evidence of DNAPL moving into, through, or beyond the Deep Zone (i.e., no evidence of DNAPL in the Basalt Zone). A positive Oil-N-Soil result was observed in a sand lens within the top of the Deep Zone at PDI-05, at a depth of 44 feet bgs. The concentration of MCB at this location was 9,700 μg/kg, which is lower than what is typically associated with DNAPL (e.g., greater than 500,000 μg/kg). No evidence of DNAPL was observed below 44 feet bgs at PDI-05. PDI-05 is presented on Figures 12 and 17.
- Dissolved phase MCB is found throughout the site in all hydrogeological zones.
- The DNAPL is discontinuous. Observations of discontinuities include the following:
- In the southwest portion of the DNAPL, in the vicinity of PDI-01, PDI-13, PDI-55, PDI-55a, and PDI-55b, DNAPL occurs within and above the sandy silt unit from 6.0 to 20 feet bgs (i.e., in the Vadose Zone). This shallow DNAPL does not connect with the main DNAPL plume based on existing Site data. The primary mechanism of DNAPL entering the subsurface in this area is likely infiltration due to the monochlorobenzene (MCB) recovery unit (Figure 4). Migration of DNAPL in this vicinity of the site is most likely constrained due to the lower permeability of the sandy silt compared to surrounding stratigraphic units, including the artificial fill material and the fine-to-medium sand with silt and clay. The cross sections in Figures 12 and 14 illustrate DNAPL within and above the sandy Silt unit.
- As described in Section 1.3, DNAPL was released into the Overflow Trench at times. The Overflow Trench was subsequently was excavated to a minimum depth of approximately 8 feet in 2000 (ERM 2001) to remove DNAPL contamination. Borings placed in the Overflow Trench area during the PDI (PDI-10, PDI-11, PDI-12, PDI-49, PDI-49a, and PDI-60) had no indications of DNAPL except at PDI-10 from 20 to 25 feet bgs (Figure 15). The DNAPL at PDI-10 is separate and discrete from the deeper DNAPL that originated from the MPR Pond (e.g., PDI-02 and PDI-03). These results suggest that the previous excavation successfully removed most of the DNAPL that entered the subsurface through the Overflow Trench. Additionally, these results suggest that the mass of DNAPL that entered the subsurface through the Overflow Trench is small compared to the mass of DNAPL that entered the subsurface through the MPR Pond.



The Phase 1 and Phase 2 results indicate that the primary mechanism of DNAPL entering the subsurface is believed to have been infiltration through the bottom of the MPR Pond. This infiltration resulted in the thickest zone of DNAPL occurring under the vicinity of the MPR Pond in the Shallow Zone (e.g., PDI-02 and PDI-03) where it pooled on top of the lower permeability Shallow Intermediate Silt Zone. The remaining mass of DNAPL is located between PDI-03 and PDI-45a, where DNAPL migrated predominantly toward the riverbank on top of and into the Shallow-Intermediate Silt Zone. Limited DNAPL was observed in the Intermediate and Deep Zones and DNAPL was not observed on top of the Basalt Zone. There were no observations of DNAPL extending beyond the top of the riverbank nor into river sediments based on historical and PDI boring logs reviewed for inclusion in the CSM (PDI-16, PDI-17, PDI-44a, PZ-2, RBS-3, RBS-9, RBS-10, SC-51, SC-56, SC-59, SC-63, and WB-42). These locations are included in Figures 12, 13, 19, and 20

3.1.1 DISSOLVED-PHASE CONTAMINATION

The maximum concentration of MCB in soil detected at each PDI boring location is depicted in Figure 22. As illustrated in Figure 22, elevated concentrations of MCB in soil were detected in borings with no observations of DNAPL. MCB concentrations observed in soil and/or groundwater outside of DNAPL are believed to be dissolved-phase contamination that has sorbed to soil.

3.2 UNKNOWN SUBSTANCES CONCEPTUAL SITE MODEL

As described above in Sections 2.1 and 2.2.2.2, additional contaminants were observed during the Phase 1 investigation. In the PDI (ERM 2024b), these additional contaminants were described as the PDI-15 Unknown Substance, Petroleum-based NAPL (PDI-20, PDI-21, PDI-32, and PDI-33), and the Pesticide- and Petroleum-related Contamination (PDI-24). The origin of these additional contaminants is not known, but they are included in the I1TA to stabilize the contamination irrespective of the source.

3.2.1 PETROLEUM-BASED NAPL

The Petroleum-based NAPL was identified east of the DNAPL, in an area that historically received miscellaneous fill from various sources, as described in the RI Report (ERM 2005). Sources of this fill material include, but are not limited to, the City of Portland, private excavation contractors, and Elf Atochem. Fill materials included, but are not limited to, clean soil, asphalt, concrete, metal piping, and miscellaneous materials from spent chlorine cells. Additional possible fill material included DDT-impacted soil from construction activities in the Acid Plant Area, which may have been excavated and incorporated in fill materials (ERM 2005). The sources of the Petroleum-based NAPL are not clear, but the contamination likely was emplaced with the miscellaneous fill.

Two Phase 2 boring locations, PDI-37 and PDI-37a, had similar field observations to those noted in the Petroleum-based NAPL contamination identified during Phase 1 at locations PDI-20, PDI-21, PDI-32, and PDI-33. The Petroleum-based NAPL is depicted on Figure 11, as well as cross sections on Figures 13, 17, 18, and 21. It was observed in the Fill and Shallow Zone soil. The Phase 2 results indicate the Petroleum-based NAPL plume is discontinuous at location PDI-36, and the southern extent is limited to location PDI-37. The Petroleum-based NAPL is also included in I1TA for stabilization of the contamination.



3.2.2 PDI-15 UNKNOWN SUBSTANCE

The PDI-15 Unknown Substance was identified northeast of the DNAPL near the top of bank, also in the area that historically received miscellaneous fill from various sources, as described in the RI Report (ERM 2005). The sources of the PDI-15 Unknown Substance are not clear, but the contamination likely was emplaced with the miscellaneous fill. The location of PDI-15 is depicted on Figure 11.

During the Phase 2 investigation, no additional soil was observed to have characteristics similar to the contamination identified in the PDI-15 Unknown Substance, indicating that this is an isolated area of impact. During Phase 1, the PDI-15 Unknown Substance was observed at the bottom of the Shallow Zone. The PDI-15 Unknown Substance is also included in I1TA for stabilization of the contamination.

3.2.3 PDI-24 PESTICIDE- AND PETROLEUM-RELATED CONTAMINATION

The Pesticide- and Petroleum-related Contamination at location PDI-24 was observed east of the DNAPL and directly north of the former Warehouse No. 3 and loading dock of the historical Acid Plant Area (Figures 3 and 11). This area also received fill to expand the property riverward. The source of the pesticide-related impacts is not clear, but the contamination may have been emplaced with the miscellaneous fill discussed above.

During the Phase 2 investigation, no additional soil was observed to have characteristics similar to the contamination identified in the PDI-24 Pesticide- and Petroleum-related Contamination, indicating that this is an isolated area of impact. During Phase 1, the PDI-24 Pesticide- and Petroleum-related Contamination was observed at the bottom of the Fill. The Pesticide- and Petroleum-related Contamination is also included in I1TA for stabilization of the contamination.

4. TREATABILITY STUDY

The following section is a summary of the treatability study that is ongoing as of the writing of this PFDR. Details of the treatability study design were included in the PDI WP (ERM 2024a) and the PDI (ERM 2024b). The results of the treatability study will be included in the Final Design Report (FDR), and will be used to select the combination of amendment(s) injected during ISS.

4.1 TREATABILITY STUDY PHASE 1 RESULTS

The Treatability Study (TS) Phase 1 testing measured UCS; permeability; leachable MCB; and leachable 4,4'-DDT, 4,4'-dichlorodiphenyldichloroethane (4,4'-DDD), and 4,4'-dichlorodiphenyldichloroethylene (4,4'-DDE), collectively DDx. The goal was to develop an economical amendment mix that will reduce permeability to a maximum of 1×10^{-6} centimeters per second (cm/s), increase UCS to a minimum of 60 pounds per square inch to meet geotechnical requirements, and reduce the leachability of MCB and DDx.

TS Phase 1 consisted of two parts, a screening test using Synthetic Precipitation Leaching Procedure (SPLP), and a leachate test using a lab derived method equivalent to a shortened 28-day Leaching Environmental Assessment Framework (LEAF) test referred to as a "Tank" test. During TS Phase 1, some test amendments were only subjected to SPLP testing, some were only



included in Tank testing, and some were included in both. In all cases, the subject soil being tested was molded into a 2-inch diameter by 4-inch high cylinder. The cylinders were formed using contaminated soil from the Site that had been homogenized to be representative of in situ ISS conditions. For each test condition, an aliquot of the homogenized soil was mixed with the specified amendment ratios, molded into the cylinder, then allowed to cure for 28 days prior to SPLP and/or Tank testing. All amendments were measured by weight as a percentage of the weight of the homogenized soil (% weight per weight [w/w]), for example, 4% Portland Cement (PC) indicates 4 grams of PC for every 100 grams of soil. As a control, homogenized soil with no amendment was molded in a permeable support the same size as the cylinders and was also tested. The TS Phase 1 report is included as Appendix F.

The results of the Phase 1 TS showed that adding PC reduced soil permeability, and the UCS increased in proportion with the amount of PC added. Activated carbon (AC) tended to slightly further decrease permeability, and showed the best performance for reducing the leachable concentration of MCB and DDx. Biochar (BC) had similar performance to AC but this initial test was performed using bulk BC which adversely increased the permeability. Sodium persulfate had a negative effect on 28-day UCS and generally increased the permeability of the monolith, resulting in inconsistent effects on the leachable concentration of MCB and DDx in various trials.

4.2 TREATABILITY STUDY PHASE 2 SAMPLE PREPARATION AND SCOPE

After the TS Phase 1 results were received and analyzed, the test conditions were refined for TS Phase 2 (Table 3). The TS Phase 2 cylinders were be prepared using the same method as the TS Phase 1 cylinders described above. After curing, the cylinders were tested for UCS, hydraulic conductivity, and contaminant leachability via the USEPA LEAF method. The amendments used in TS Phase 2 testing are the same amendments used in Phase 1, except that powdered BC was used in place of the bulk BC. Powdered BC is expected to demonstrate similar performance to bulk BC for reducing the leachability of MCB and DDx but without the adverse impact to permeability, potentially further reducing the leachable concentration of MCB and DDx.

4.2.1 TREATABILITY STUDY PHASE 2

The LEAF method reports the release rates of COCs from a monolithic sample in which the predominant water flow is around, not through, the sample. The LEAF method is recommended by the Interstate Technology Regulatory Council (2011) for estimating ISS performance.

The LEAF method estimates the mass-transfer release rate over a series of nine time points for each test condition as the monolith cures over an 8-week time period. As shown in Table 3, VOCs and pesticides will be measured for each test condition at each time point. Semi-volatile organic compounds, metals, pH and oxidation-reduction potential, total organic carbon, and dissolved organic carbon will be measured for each test condition at the beginning, middle, and end of the study. At the completion of the 63-day study, each of the treatment options will be evaluated for performance compared to the control.

As shown in Table 3, the UCS and permeability of each TS Phase 2 amendment mix will be measured as described above after a 28-day cure time and again after a 56-day cure time. If a mix shows results are within the required range after 28 days, the 56-day test may be omitted.



The UCS of selected amendment mixes will also be measured at 6, 9, 12, 15, and 18 days to evaluate early strength and ability to meet geotechnical requirements for purposes of construction staging.

4.3 FINAL MIX DESIGN

The results of the various permutations of amendments analyzed in TS Phase 2 will be evaluated to select a mixture or mixtures of amendments that achieve or exceed targets for permeability and UCS and reduces leachability. The cost of each alternative will be considered prior to selection of an amendment mix.



5. PRE-REMEDIAL ACTION ELEMENTS

Activities planned to commence and/or be conducted prior to implementation of the ISS are described below.

5.1 UTILITY DECOMISSIONING

The current groundwater SCM has many active utilities in I1TA, including:

- Active piezometers (e.g., MWA-2, MWA-8i, PA-19d, RW-8, and RW-9i)
- Groundwater extraction Trench 3
- The GWBW
- A utility corridor, containing 480-volt power for extraction well pumps, 120-volt power for totalizers, 24-volt power for transducers and communications, and a fiber optic cable. This utility corridor also contains two groundwater conveyance lines and associated cleanouts.
- A remote motor control center with associated controls equipment.

As part of the implementation of this remedy, the following components will need to be abandoned or temporarily capped and removed to not hinder excavation or mixing:

- The motor control center is planned to be moved outside of I1TA
- The high-voltage, low-voltage, power, communications, and fiber optic lines are planned to be decommissioned
- The shallow and intermediate conveyance lines are planned to be decommissioned
- Existing wells in the footprint of the I1TA are planned to be abandoned. These wells are included in Table 4.

5.2 WELL INSTALLATION

Prior to mobilization, some Performance Monitoring Plan (PMP) wells will be installed in accordance with the forthcoming IRAM 1 PMP. Some of the planned PMP wells may be within the I1TA work area and may need to be installed after the ISS work is completed.

5.3 SUBSURFACE CLEARENCE

Prior to excavation or other subsurface work, LSS will perform subsurface utility location activities for clearance of I1TA according to State of Oregon requirements and LSS's subsurface clearance policy. LSS's subsurface clearance procedures will include notification to Oregon 811 Utility Notification Center, analysis of available historical data (e.g., as-builts, site maps, engineering plans, etc.) to better understand potential utility conflicts, and will also include performing a private utility locate by a private utility subcontractor. The results will be compiled in a subsurface utility figure. ERM will also develop a health and safety plan (HASP) that will be used in the field by field scientists/engineers during oversight of ISS activities. A preliminary figure of the subsurface utilities is presented in the PFDR Drawings (Appendix H, Sheet 3).



5.4 SITE PREPARATION

The I1TA has several surface obstructions including former Facility foundations, railroad tracks, asphalt, and abandoned-in-place underground utilities, that will all be removed during site preparation work. Removal of these surface obstructions will occur concurrently with the GWET utility decommissioning, and will occur before ISS work begins. Site preparation work will also include establishing the Limit of Disturbance identified in the 1200-C construction stormwater permit, stormwater Best Management Practices, construction contractor lay down yards, building the tire wash station, and other activities required in accordance with CMMP, Specifications, and 1200-C permit.



BASIS OF DESIGN

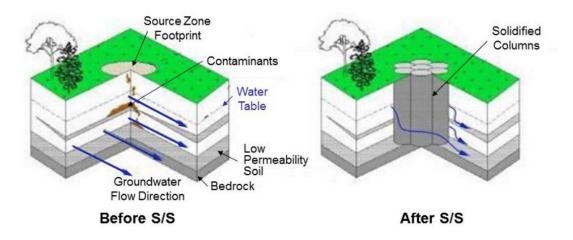
This PFDR has been developed to achieve RAOs 7 and 8 presented in Section 2. A summary of the major remedial construction elements is presented below. The remedy elements are also depicted on the PFDR Drawings (Appendix H).

6.1 TECHNOLOGY DESCRIPTION

ISS generally refers to mixing soil in place with amendments like Portland cement (PC) to reduce the hydraulic conductivity of the soil, resulting in less contaminant flux from the soil to surrounding groundwater. In this design, ISS will be accomplished using deep soil mixing, where a machine-powered auger is rotated in the subsurface while the amendments are injected. Mixing the soil breaks up native stratigraphy, brings the soil into direct contact with amendments, and reduces the leachability and potential mobility of contamination. Potential amendments included PC, ground blast furnace slag, AC, BC, sodium persulfate, and other compounds. PC is almost always featured in ISS to some extent, while other amendments may or may not be present.

Prior to injection, PC is combined with water and other amendments (if applicable) in a batch plant that produces a consistent slurry with the target concentration of amendments. The finished slurry is pumped from the batch plant to the head of the auger where it is injected through the auger head, into the soil as it is being mixed. Over a period of approximately 30 days, the PC mixed with water and contaminated soil (and possible other amendments) will cure into a relatively low strength concrete monolith that has lower permeability than the native soil. The lower permeability of the monolith forces upgradient groundwater to primarily flow around the monolith as opposed to through, which overall reduces mass flux from the source area. This concept is illustrated in Figure A below. The strength of this solidified monolith is typically stronger than native soil, but can still be dug using heavy machinery like an excavator.

FIGURE A CONCEPTUAL GROUNDWATER FLOW BEFORE AND AFTER ISS COMPLETION



Prior to beginning the ISS work, all existing subsurface features, to the extent practicable will be removed including: monitoring wells, piezometers, concrete foundations, underground utilities, and debris. In addition to abandoning features that would interfere with the auger, the site will be excavated to create a working surface for the ISS work. As the in-place soil is mixed with the



CLIENT: PROJECT NO: 0773710 amendment(s), the resulting soil-amendment mix will swell (increase in volume) due to the expansion of soil caused by mixing and the volume of the added amendment(s). The excavated pit / working surface provides a physical space for swell containment, and the lower elevation work platform reduces the required vertical extent for deep soil mixing.

6.2 I1TA ISS DESIGN CONSTRAINTS

There are several constraints upon the design of the IRAM 1 due to the Site setting, resources, and ultimate goals for future reuse.

Active GWET utilities and other SCM components throughout the I1TA will need to be abandoned or temporarily capped to facilitate ISS. Other surface and subsurface obstructions present at the I1TA, including underground historical utilities, concrete pads, monitoring wells, and railroad tracks, and subsurface debris will need to be abandoned and/or removed. Debris is potentially present within I1TA below the water table that cannot be removed and may impede implementation of deep soil mixing in the area of the debris.

DNAPL extends from the upland area of the Site to the riverbank as shown in Figure 11. To treat the full area targeted for ISS, it will be necessary to improve the soil strength via ISS to reduce the risk of soil failure resulting in equipment becoming stuck, or subsidence of the riverbank. The Geotechnical Engineer Report will be provided as a forthcoming submittal and will address the soil strength requirements that need to be considered when conducting ISS.

6.3 DESIGN CONSIDERATIONS

As discussed in Section 1, the goal of IRAM 1 is to address the I1TA DNAPL using a combination of ISS, and/or ISCO technologies. The I1TA focuses on DNAPL present in soil in the saturated and unsaturated zone as described above in Section 2. Design variables to be considered during the preparation of this PFDR include:

- 1. The vertical and lateral extent of DNAPL and soil with elevated concentrations of MCB.
- 2. The design depth, side slope, and extent of the excavation of overburden materials
- 3. Identifying feasible ISS amendments and conceptual mix design ratios capable of achieving post-mix objectives as described in Section 4.2.1.
 - a. The PFDR presented here proposes a 4 % w/w PC and 4% w/w ground granulated blast-furnace slag (GGBFS) as the amendment design. Details of all Treatability Study Phase 2 test conditions are included in Table 3. Final mix design will be presented in the FDR.
- 4. IRAM 1 will reduce the mobility of DNAPL present within I1TA primarily by reducing the hydraulic conductivity of the soil matrix that the DNAPL is present in. In addition, if shown to be effective; ISCO, GAC, or BC may be used. ISCO can also oxidize MCB, reducing the DNAPL mass, whereas AC and BC reduce contaminant mobility via adsorption.
- 5. The geotechnical samples collected during PDI Phase 1 indicate in-place soil permeability values of 10^{-4} cm/s in the Shallow and Shallow Intermediate Silt Zones and 10^{-6} cm/s in the Deep Zone. The design target permeability of the stabilized matrix is less than or equal to 10^{-6} cm/s in the treated area, or a reduction of more than two orders of magnitude. TS Phase 1

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results indicate that this permeability target can be reached in the treatment area using the 4% PC and 4% GGBFS amendment mix described above, subject to confirmation during the TS Phase 2 study.

- 6. The design target UCS of the solidified matrix near the top of the riverbank is 60 pounds per square inch based on preliminary discussions with the geotechnical engineering contractor. The Geotechnical Engineering Report will be provided as a forthcoming submittal and will identify the specific UCS target and the rationale for this target. TS Phase 1 results indicate that this UCS target can be reached in the treatment area using the 4% PC and 4% GGBFS amendment mix described above, subject to confirmation during the TS Phase 2 study.
- 7. Identifying existing monitoring wells and other existing infrastructure within I1TA that will be abandoned or destroyed.
- 8. Abandonment active GWET utilities within I1TA.
- 9. Permitting requirements and schedule.
- 10. Stormwater management and compliance.

6.4 EXCAVATION OF OVERBURDEN SOIL

Excavation of the overburden soil will be conducted to depths of approximately 3.0 to 15 feet bgs. The goals of the excavation are to:

- Remove the overburden, concrete foundations, and debris that could impede the deep soil mixing auger;
- Remove subsurface obstructions and abandoned utilities;
- Provide a work platform for the deep soil mixing auger equipment; and
- Provide space to contain the resulting soil swell volume.

Geotechnical analysis results from the PDI indicate that soil throughout Site are non-cohesive. Occupational Safety and Health Administration standards (29 Code of Federal Regulations 1926(P)(B)(4)) require a maximum slope of 1.5 horizontal:1 vertical for granular soil including sand. All excavations will have a minimum layback for this slope, i.e., for every 1 foot of depth the top of slope will be 1.5 feet away compared to the bottom of slope. The design slope of excavations used in this PFDR is 2:1. The preliminary grade assumed for haul roads into and out of the excavation will be no greater than 8 percent.

Excavated overburden soil will be hauled to onsite management areas. Visibly clean or non-impacted soil will be segregated from each other in accordance with the Contaminated Materials Management Plan (CMMP). Soil stockpiles will be covered to prevent generating dust and contact with stormwater in accordance with a 1200-C permit as discussed in 4.7. Initial staging locations include the area on Lot 4 used for the Groundwater Extraction Enhancement Project, a second area on Lot 3, and a third area on Lot 2 as shown in Sheet 2 Appendix H. Soil will be reused as backfill. Contaminated soil will be characterized and managed in accordance with the CMMP.



6.5 TREATMENT AREA AND VOLUMES

The general scope of IRAM 1 is to address the DNAPL and the Unknown Substance at PDI-15, Petroleum-based NAPL, and Pesticide- and Petroleum-related Contamination (PDI-24) in I1TA identified during the PDI by in situ mixing, as well as soil impacted by dissolved phase MCB, collectively referred to as I1TA, using the amendment mix identified as part of the treatability study. I1TA is further subdivided into Areas A, B1-B3, and C1 and C2 as shown in Appendix H, Sheet 4.

Soil identified in I1TA (Appendix H, Sheet 9) is targeted for treatment with the possible exception of a small amount near the riverbank that may not be safe to treat by auger mixing due to slope stability based on preliminary discussions with the Geotechnical Engineer. The safe proximity of the ISS machine to the slope of the riverbank will be detailed in the forthcoming Geotechnical Engineering Report. The FDR will discuss the forthcoming Geotechnical Engineering Report and contractor input to identify how close to the riverbank ISS will be planned. DNAPL potentially left in place will be addressed during subsequent remediation work conducted by LSS to address the uplands, riverbank and/or sediment at the Site.

As discussed in Section 3, contamination was generally not observed in the Deep Zone. The depth of ISS mixing generally planned to extend from the ground surface to a minimum of 5.0 feet into the Deep Zone to address the known contamination and to extend the volume of stabilized soil into the lower permeability Deep Zone as shown in Appendix H, Sheet 4.

Excavated overburden soil will include a layback (Appendix H, Sheet 7) for slope stability as described in Section 6.4.

6.5.1 ISS TREATMENT AREA A (RIVERBANK AREA)

Area A represents the portion of I1TA near the riverbank. This area is approximately 12,905 square feet and located between the top of the riverbank and the existing GWBW. The lateral extents of Area A are defined by the limits of remedial work on the northern, eastern, western, and southern boundaries as evaluated by the PDI work described in Section 3.1. The extents also include soil with elevated MCB concentrations. Clean soil from 0 - 3 feet bgs will be excavated to create the ISS work platform and stockpiled for backfill. A 3-foot surficial excavation allows for containing the swell from ISS treatment and stormwater containment. The excavation will have a layback as described in Section 6.4. Swell from this area will be moved into the larger excavation in Area C as needed. Soil will be mixed via ISS from approximately 33 to -14 feet NAVD88. Based on preliminary discussions with the Geotechnical Engineer, ERM expects that there is the potential for riverbank slope instability. To prevent this, the ISS mixing will be sequenced in accordance with the geotechnical constraints discussed in the Geotechnical Engineering Report, which will be provided as a forthcoming submittal, and based on contractor input. The ISS treatment depth in Area A is approximately 47 feet bgs. The total ISS treatment volume in Area A is approximately 22,464 cubic yards. Plan and profile drawings of the mixing extent are shown in Appendix H, Sheet 4.



6.5.2 ISS TREATMENT AREA B (SOURCE AREA)

Area B represents the portion of I1TA in which Shallow Vadose Zone DNAPL is present, as well as a small overlap between that area and the main MCB DNAPL plume area (Area C). Contamination here is somewhat shallow and discontinuous due to remedial excavation work in 2001, and the presence of the Silty Sand unit, as discussed in Section 3. This area is approximately 11,718 square feet and located between PDI-01 and PDI-13. The lateral extents of Area B are defined by the limits of remedial work on the northern, eastern, western, and southern boundaries evaluated by the PDI work described in Section 3.1. The PDI results indicated that DNAPL was not present from 0 – 5 feet bgs. Unimpacted soil from 0 – 5 feet bgs will be excavated, screened, and stockpiled for backfill as described in the CMMP. The excavation will have a layback as described in Section 6.4. DNAPL will be mixed via ISS from approximately 31 feet North American Vertical Datum 1988 (NAVD88) to a varying elevation between 7 and –2 feet NAVD88, depending on the depth of the DNAPL. The ISS treatment depth in Area B varies from approximately 24 to 33 feet below the elevation of the work platform. The total ISS treatment volume in Area B is 7,297 cubic yards. Plan and profile of the mixing strategy are shown in Appendix H, Sheet 4.

6.5.3 ISS TREATMENT AREA C (MAIN AREA)

Area C represents the remaining portion of I1TA. This area is approximately 77,278 square feet and located between PDI-02 and PDI-06. The lateral extents of Area C are defined by the limits of remedial work on the northern, eastern, western, and southern boundaries evaluated by the PDI work described in Section 3.1. The PDI results did not indicate DNAPL was present from 0-15 feet bgs. Overburden soil from 0-15 feet bgs will be excavated, screened, and stockpiled for backfill as described in the CMMP. The excavation will have a layback as described in Section 6.4. DNAPL will be mixed via ISS from approximately 21 feet NAVD88 to a varying elevation between -12 and -14 feet NAVD88 depending on the depth of the DNAPL. The ISS treatment depth in Area C varies from approximately 33 to 35 feet below the elevation of the work platform. The total ISS treatment volume in Area C is 52,667 cubic yards. Plan and profile of the mixing strategy are shown in Appendix H, Sheet 4.

6.6 PERMITTING CONSIDERATIONS

As shown in Appendix H, Sheet 4, the excavation will disturb an area of approximately 11 acres of the Site. A stormwater construction permit (1200C) will be required.

Typically a Greenway Review is required for any development that occurs within the Greenway Setback (25 feet landward from top of bank) and/or up to 50 feet landward of the Greenway Setback (i.e., up to 75 feet from top of bank). A grading permit and a general excavation permit is also required for a project of this size.

IRAM 1 is being conducted under the Agreed Order with ODEQ and is thus exempt for obtaining local permits. However, the substantive requirements of any applicable permit must be met. LSS will submit an Exempt Review with City of Portland to review the proposed design for applicable substantive requirements.



6.7 SCHEDULE

Treatment implementation is expected to begin in September 2025 and is expected to take 6 to 9 months to complete. The implementation schedule is dependent on means and methods, and an updated schedule will be provided in the FDR that reflects contractor input. Site preparation work including abandoning existing monitoring wells and establishing laydown areas and stormwater controls is anticipated to occur between July and August 2025.

6.8 CONSTRUCTION SEQUENCE

Establishing a logical and manageable sequence of construction is critical to achieving the performance standards, limiting effects of weather during construction, and providing for construction of the restoration elements. The general construction sequence includes the following:

- Preparation work including monitoring well abandonment and installation of some of the new monitoring wells;
- Equipment and labor force mobilization;
- Preparation work including building laydown areas and stockpiles, deploying stormwater Best Management Practices, and other features required by the specifications, CMMP, and 1200C;
- Assembly of temporary equipment for ISS implementation and distribution of mixing reagents ("batch plant");
- Excavation of the overburden soil;
- Conducting ISS and associated quality control including strength and permeability testing of solidified soil;
- Swell management throughout ISS implementation;
- Backfill and compaction and establishment of final grades;
- Restoration activities including caps and or covers on graded overburden soil s left on site;
 and
- Final site cleanup and demobilization.

6.9 CONSTRUCTION-PHASE SOIL EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT

Temporary erosion and sediment controls will be constructed prior to general disturbance and ISS. Protection will be installed to prevent migration of sediment-laden runoff outside of the construction area. Fiber rolls or silt fencing will be installed downgradient from the remediation area, around stockpiles, and on work-side of swales as detailed in Appendix H, Sheets 11 and 12.

6.10 SWELL MANAGEMENT

Generated swell will be managed within the ISS area and will remain in place. If the generated swell exceeds the capacity of the excavated ISS area, excess swell will be handled according to the CMMP.



6.11 BACKFILL AND GRADING

Following the excavation and ISS activities within the I1TA, backfilling and grading of the ISS area will be required to restore the Site and allow for positive drainage. Excavated overburden soil will be reused as backfill. Excavated contaminated soil will be managed in accordance with the CMMP. The PFDR backfill and grading are depicted in the PFDR Drawings (Appendix H, Sheet 10). Upon excavation completion, the remaining stockpile material will be graded, compacted, and capped.

6.12 WATER TREATMENT

During construction, stormwater will be managed according to the Erosion and Sediment Control Plan in the CMMP. The Contractor will prevent stormwater run-on into the excavation. Stormwater which falls directly into the excavation and does not infiltrate into the soil will be managed in the excavation by Contractor. If the water cannot be managed in the excavation, it will be removed from the excavation, treated, and discharged through the existing stormwater source control measure (SCM) under the requirements of the Mutual Agreement and Order No. WQ/I-NWR-10-175. Stormwater removed from the excavation will be pre-treated in the field to remove sediment to a total suspended solids (TSS) concentration of 150 mg/L or less and adjust the pH to between 7.0 and 7.5 (Figure 2B, detail 5). This pre-treated water will then be transferred to the existing groundwater extraction and treatment (GWET) GWET system for additional treatment to reduce TSS, metals, MCB, and DDx (Figure 2C) as needed. The treated water will be discharged into the existing stormwater swale for polishing through the SW SCM. Discharge from the SW SCM will be subject to the monitoring requirements and limits of the Mutual Agreement and Order.

Water generated from the cleaning of construction and excavation equipment (e.g., tire wash station) and/or from the cleaning of debris that may be encountered during soil excavation will be containerized and treated as described in the CMMP.

6.13 SITE RESTORATION

After ISS has been implemented, excavated areas will be backfilled with excavated overburden soil. The Site surface within the Limit of Disturbance will be restored with previously excavated fill as detailed above. Excess overburden soil will be graded and compacted.



REMEDIAL ACTION PLAN

This section presents the implementation plan and approach for IRAM 1. The plan and approach will be updated with input from the contractor once they have been selected and their input has been incorporated into the FDR and Specifications.

7.1 PROJECT TEAM ORGANIZATION

An experienced project team is necessary to provide proper direction of the remedy implementation presented in this PFDR. The project team includes the following:

- Site Owner: The current site owner is Arkema, Inc. LSS, agent for Arkema, Inc., oversees all aspects (technical and administrative) of the remediation work to be completed at the Site.
- Engineer: ERM has been selected as the engineer and construction manager at the Site. ERM will be responsible for the implementation and management of IRAM 1. ERM will also be responsible for overseeing all remedial contractors/subcontractors working at the Site. ERM is supported by LSS and reports directly to LSS project coordinators.
- Contractor: To be determined.
- Regulatory Agencies: The DEQ is the lead regulatory agency for the remedial work at the Site.

7.2 REMEDIAL DESIGN DRAWINGS

The PFDR drawings (Appendix H) include plans, details, and specifications of the proposed remedial construction. The PFDR drawings include the following drawing sheets:

- Cover Sheet;
- Location Maps, General Notes, List of Drawings, Abbreviations, and Legend;
- Existing Site Plan;
- Existing Utility Plan;
- In Situ Stabilization Plan and Profile;
- Area A In Situ Stabilization Plan;
- Area B Excavation Plan;
- Area C Excavation Plan;
- ISS Process Flow;
- Erosion and Sediment Control Plan;
- Soil Cover and Final Grading Plan and Profile; and
- Details: Erosion and Sediment Control Plan.

7.3 CONSTRUCTION SPECIFICATIONS

The PFDR Construction Specifications provided in Appendix G describe the remedial construction requirements with respect to construction procedures (as appropriate), performance and engineering standards, materials, tolerances, and quality control. The Construction Specifications conform to the Spectext® User's Manual, The Construction Sciences Research Foundation



Construction Specification Institute (January 2000) format and have been developed in parallel with LSS-approved specifications in conjunction with the PFDR Drawings.

7.4 REMEDIAL ACTION IMPLEMENTATION PLANNING

7.4.1 CONSTRUCTION QUALITY ASSURANCE PLAN

The Construction Quality Assurance Plan (Appendix I) defines the scope of quality assurance to be implemented during the IRAM 1. The Construction Quality Assurance Plan includes information on general requirements, materials and equipment, meetings, responsibilities, and a description of the work to be tested to demonstrate that remedial actions meet performance criteria.

7.4.2 REMEDIAL ACTION HEALTH AND SAFETY PLAN

The Site-specific ISS HASP for Remedial Activities conducted by ERM and by ERM subcontractors (individually, an "ERM subcontractor" and collectively, "ERM subcontractors") will be provided with the FDR. This HASP addresses project personnel and responsibilities, employee training, field activities, hazard identification and control, personnel protective equipment, site work zones, decontamination procedures, spill containment and confined space procedures, emergency response plan, management and investigation of incidents, site safety briefings, and auditing and HASP revisions. The contractor will also develop a separate HASP for implementation of ISS. LSS, ERM, and the contractor will review the two HASPs to facilitate compliance with the plans.

7.4.3 1200-C PERMIT

Sheet 12 in Appendix H includes an Erosion and sediment control plan showing the anticipated stormwater management activities to be conducted during the implementation of ISS at the Site.

The contractor will be required to complete the 1200-C application, obtain the permit, and comply with its requirements including placement of Temporary Erosion Control Systems for compliance under the National Pollutant Discharge Elimination System requirements within the Clean Water Act Section 402, and management, treatment, and discharge of stormwater.

The purpose of the 1200-C is to reduce erosion within the construction site during and after land disturbance and to limit sediments from leaving the construction site by utilizing proper Temporary Erosion Control Systems and providing ground cover or capping within a reasonable amount of time.



8. POST-REMEDIATION ACTIVITIES

This section describes the post-remediation activities that will occur following the IRAM 1 work.

8.1 CONSTRUCTION COMPLETION REPORT

ERM will prepare a Construction Completion Report that documents the implementation of IRAM 1 for submittal to DEQ. The IRAM 1 Construction Completion Report will include a description of the ISS implementation activities, results of Construction Quality Control and Construction Quality Assurance activities, final construction surveying information, and any deviations from the approved FDR.

8.2 POST-REMEDIATION GROUNDWATER MONITORING PLAN

The post-remediation groundwater monitoring network will consist of the wells to be detailed in the upcoming IRAM 1 PMP. The results of the PMP will be used to assess the effectiveness of the IRAM and also in part to gather Preliminary Design information for the possible construction of IRAM 4, for residual dissolved phase MCB contamination.

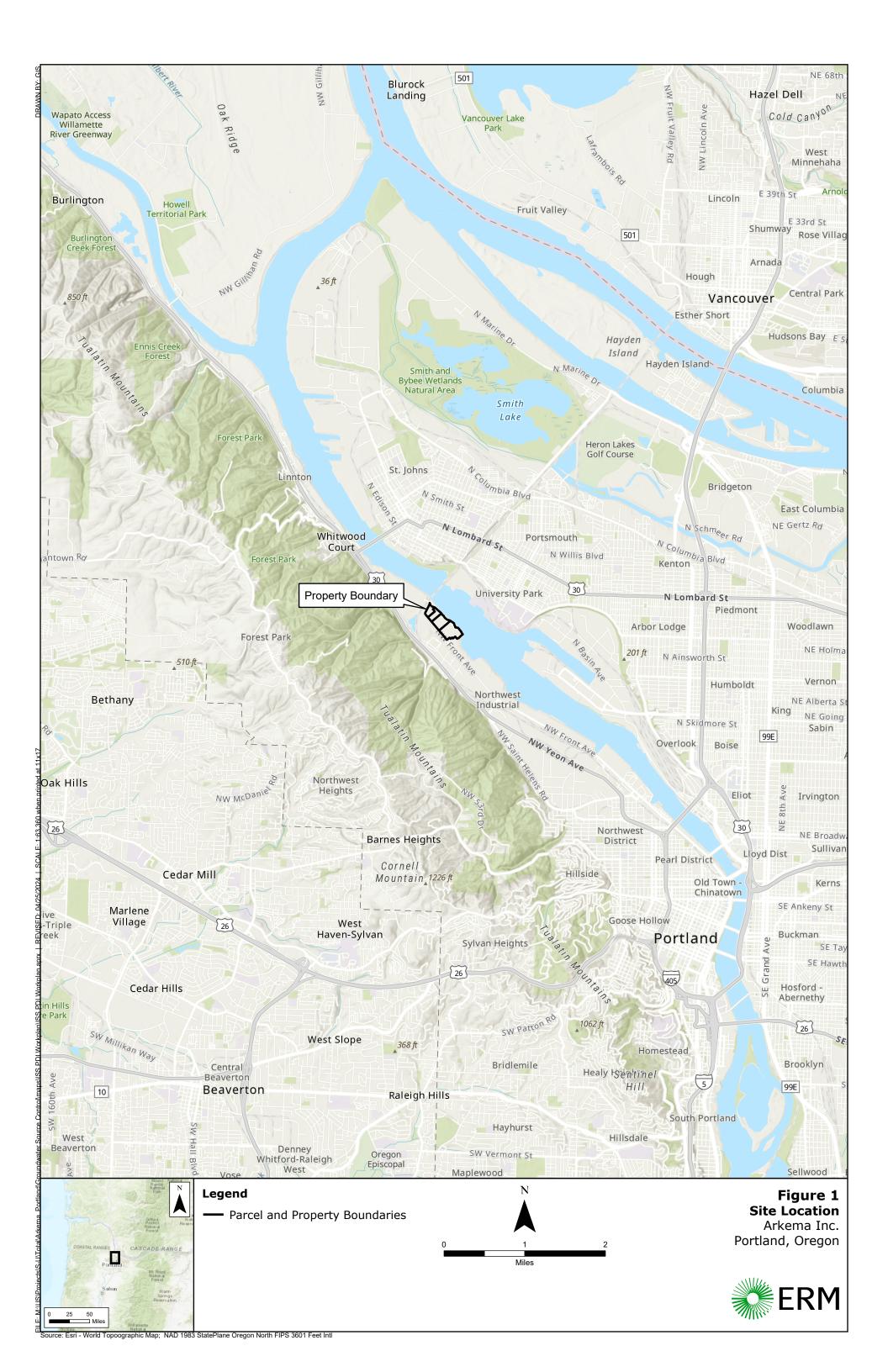


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FIGURES



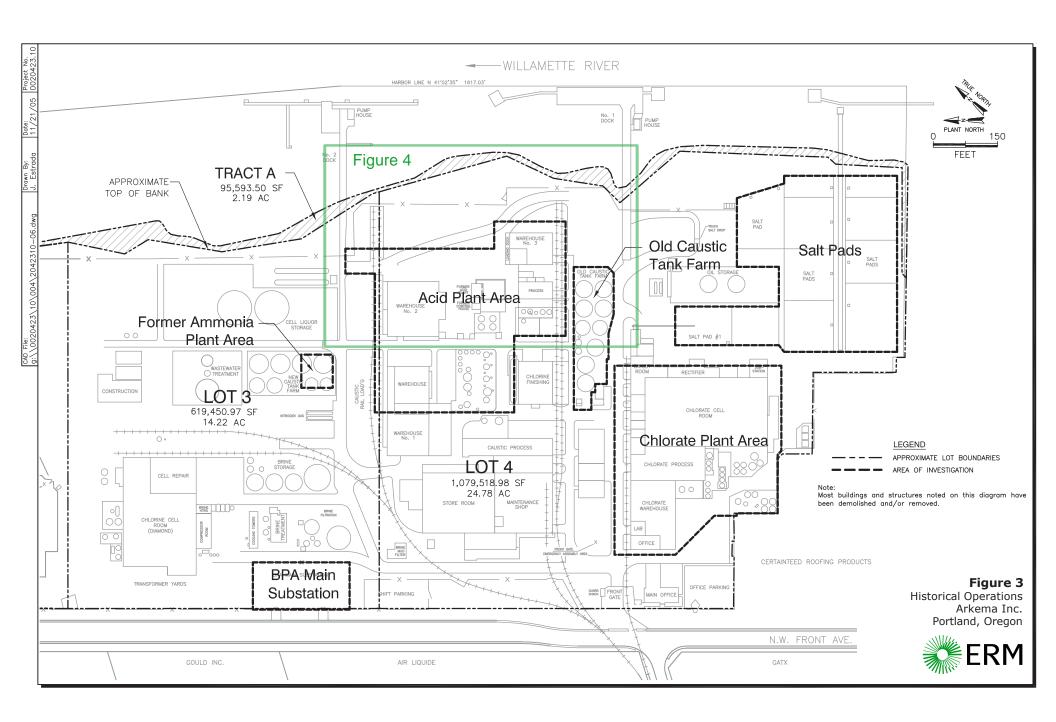


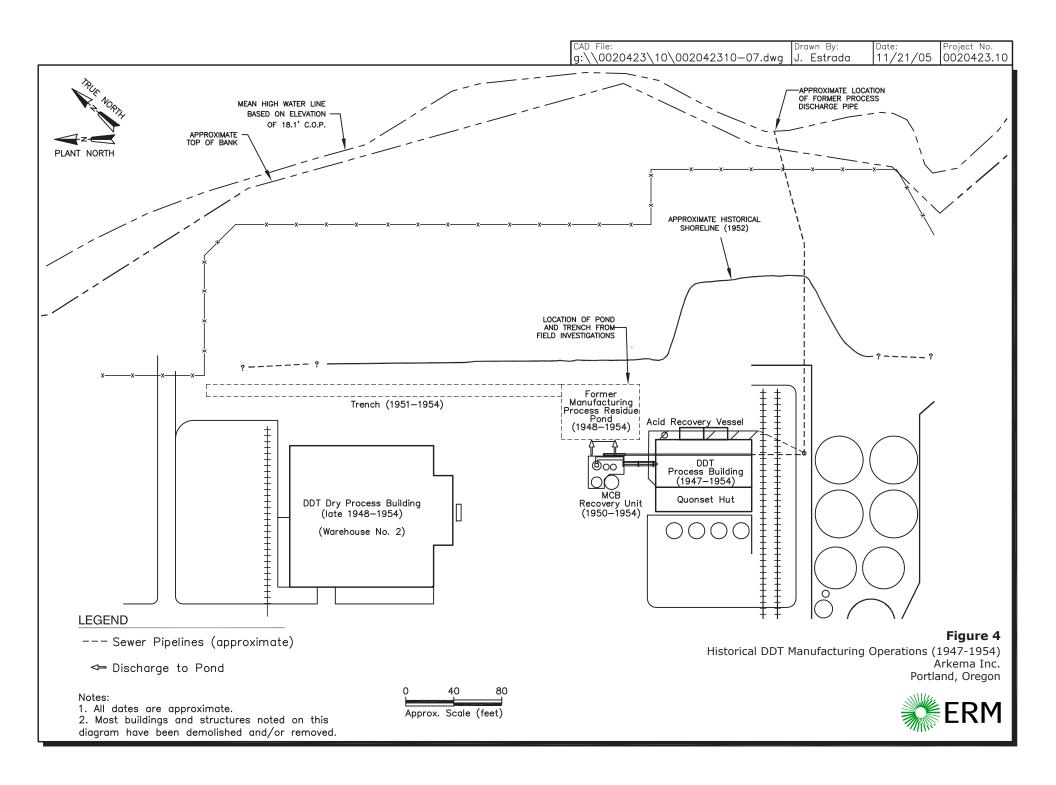
— Parcel and Property Boundaries

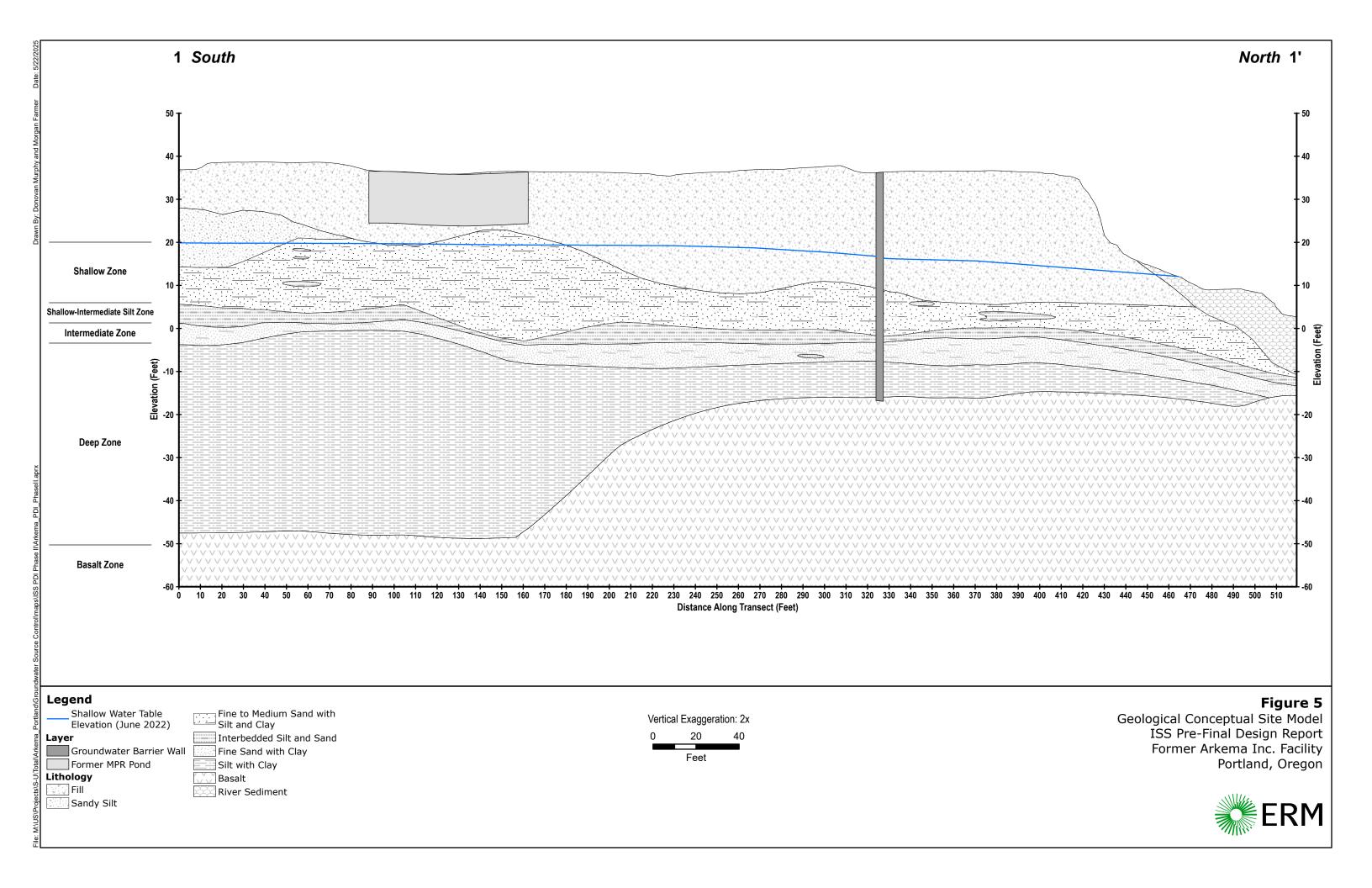
Tract A

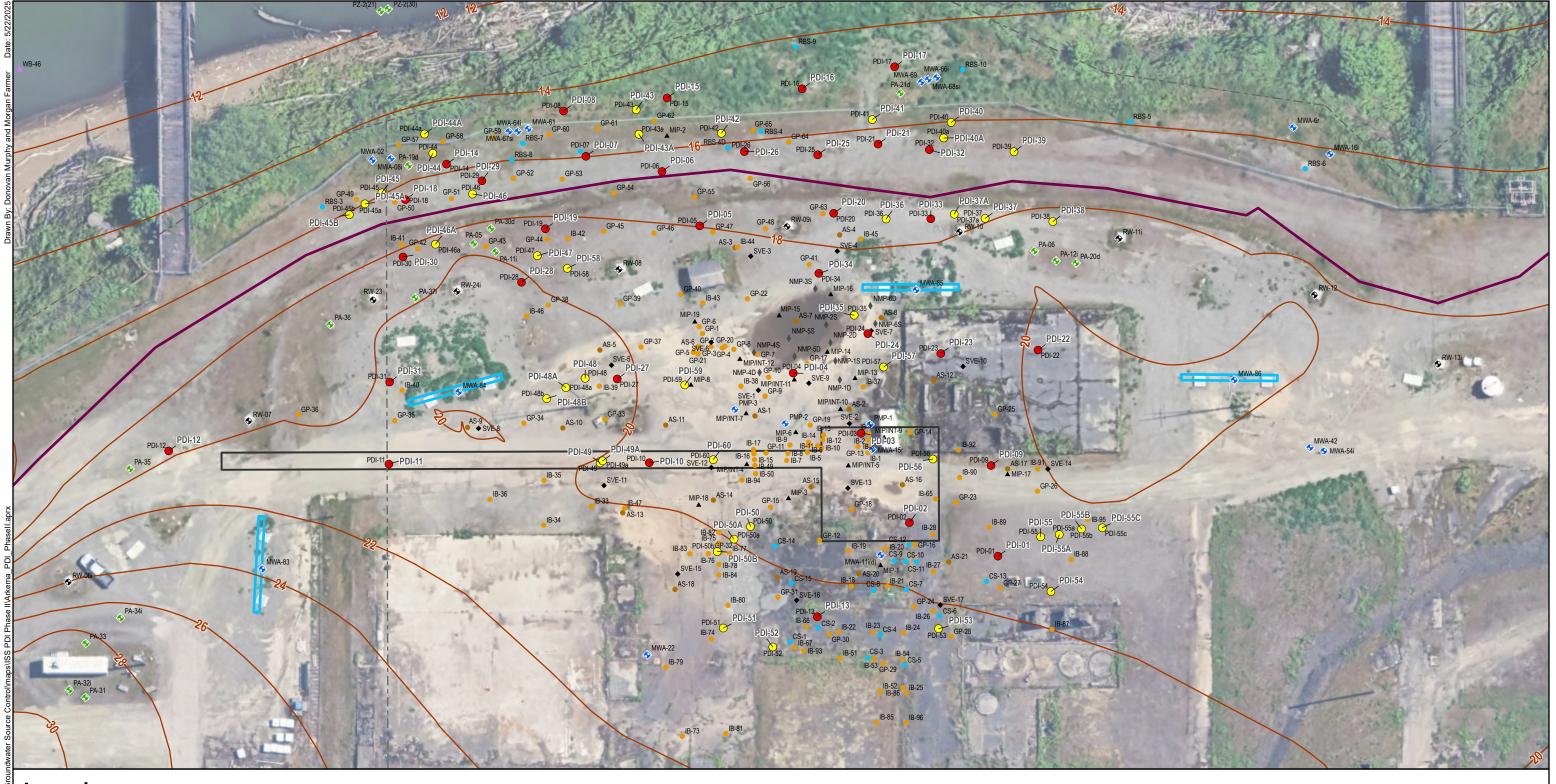
Figure 2 Historical Site Boundaries Arkema Inc. Portland, Oregon











- Phase 1 PDI Boring Location
- Phase 2 PDI Boring Location
- Air Sparge Well (2003-2004)
- GeoProbe (2000-2002, 2006)
- Injection Well (2001)
- ▲ MIP (2002)
- Monitoring Well (1996-2022)
- Piezometer (2012-2019)
- Recovery Well (2012-2013)
- Sediment Core (2002-2003, 2009)
- Soil Boring (2003, 2022)
- Soil Vapor Extract (2004)
- ___ Top of Shallow Zone (2 ft Contours)
- ___ Parcel and Property
 Boundaries
- Barrier Wall Alignment
- Extraction Trench
- Former MPR Pond and Overflow Trench

Notes: Elevation contours in feet NAVD88.

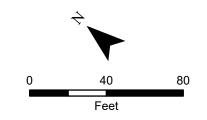
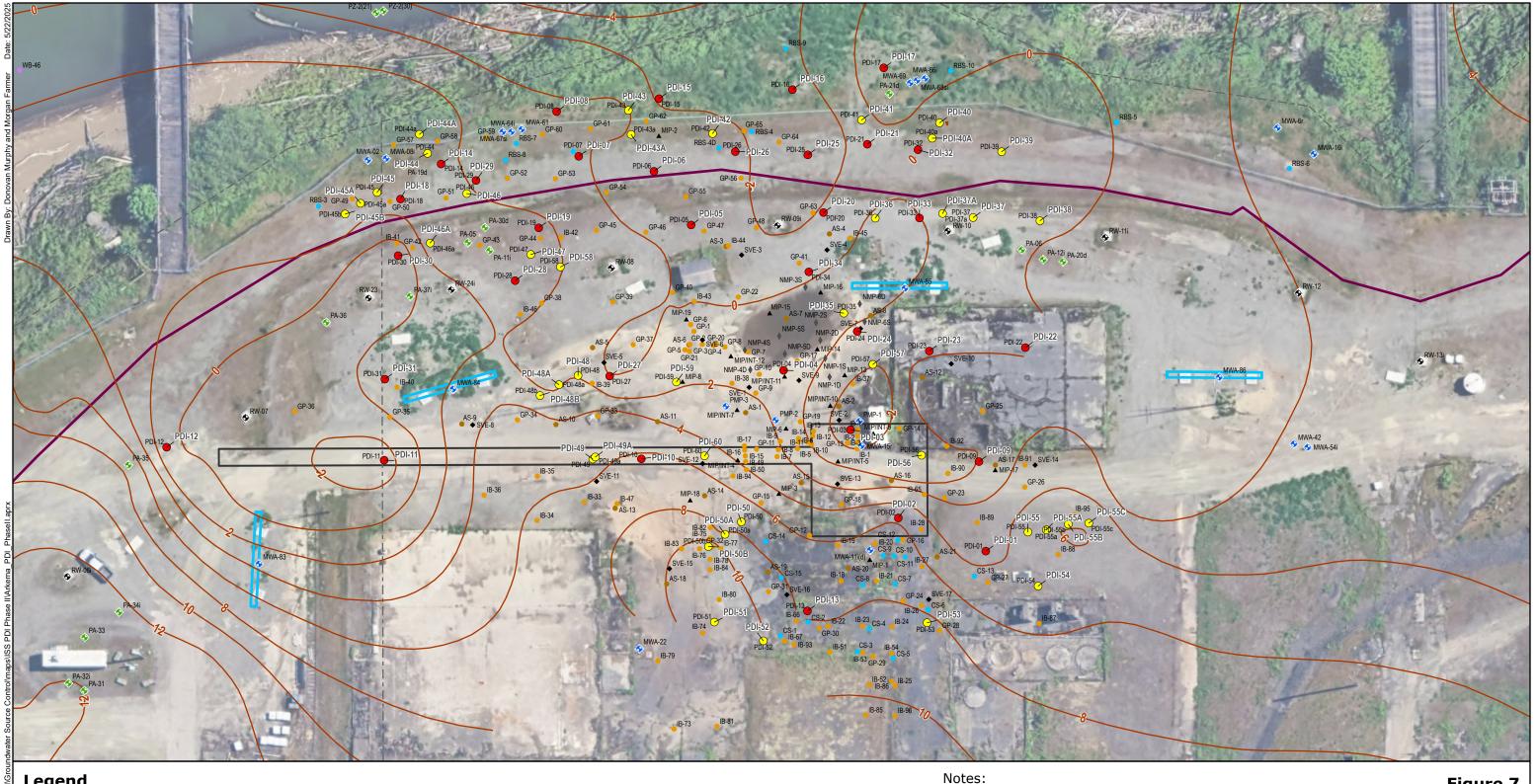


Figure 6

Shallow Zone Top Contact Elevation Map ISS Pre-Final Design Report Former Arkema Inc. Facility Portland, Oregon





- Phase 1 PDI Boring Location
- Phase 2 PDI Boring Location
- Air Sparge Well (2003-2004)
- GeoProbe (2000-2002, 2006)
- Injection Well (2001)
- ▲ MIP (2002)
- Monitoring Well (1996-2022)
- Piezometer (2012-2019)
- Recovery Well (2012-2013)
- Sediment Core (2002-2003, 2009)
- Soil Boring (2003, 2022)
- Soil Vapor Extract (2004)
- Top of Shallow-Intermediate Silt Zone (2 ft Contours)
- Parcel and Property Boundaries
- Barrier Wall Alignment
- Former MPR Pond and **Overflow Trench**

Extraction Trench

Elevation contours in feet NAVD88. Elevation contours are not present in areas of stratigraphic unit discontinuity.

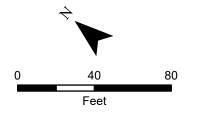
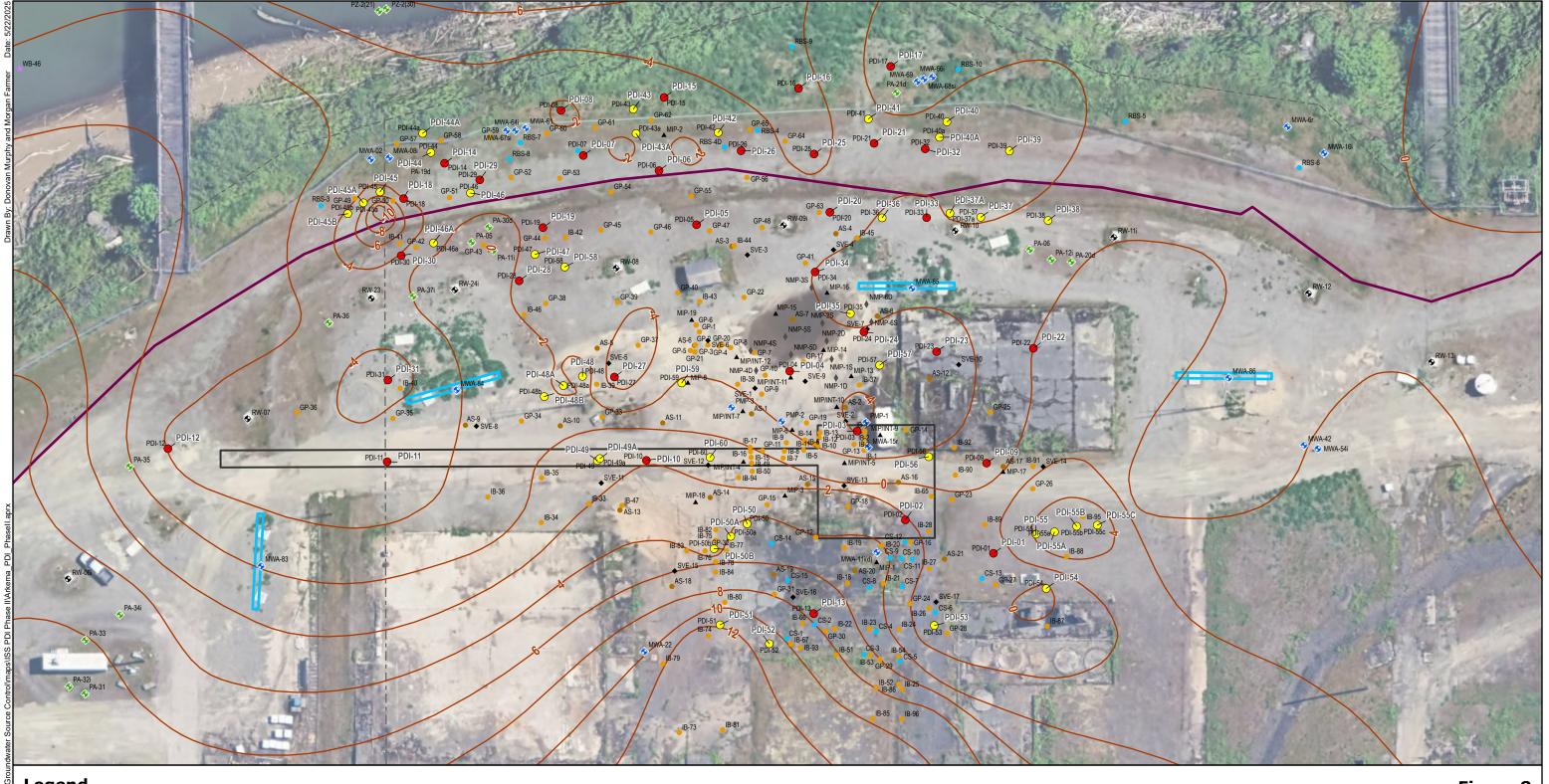


Figure 7

Shallow-Intermediate Silt Zone Top Contact Elevation Map ISS Pre-Final Design Report Former Arkema Inc. Facility Portland, Oregon





- Phase 1 PDI Boring Location
- Phase 2 PDI Boring Location
- Air Sparge Well (2003-2004)
- GeoProbe (2000-2002, 2006)
- Injection Well (2001)
- ▲ MIP (2002)
- Monitoring Well (1996-2022)
- Piezometer (2012-2019)
- Recovery Well (2012-2013)
- Sediment Core (2002-2003, 2009)
- Soil Boring (2003, 2022)
- Soil Vapor Extract (2004)
- Top of Intermediate Zone (2 ft Contours)
- Parcel and Property Boundaries
- Barrier Wall Alignment
- Extraction Trench
- Former MPR Pond and Overflow Trench

Notes: Elevation contours in feet NAVD88.

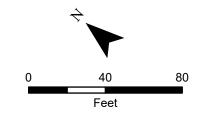
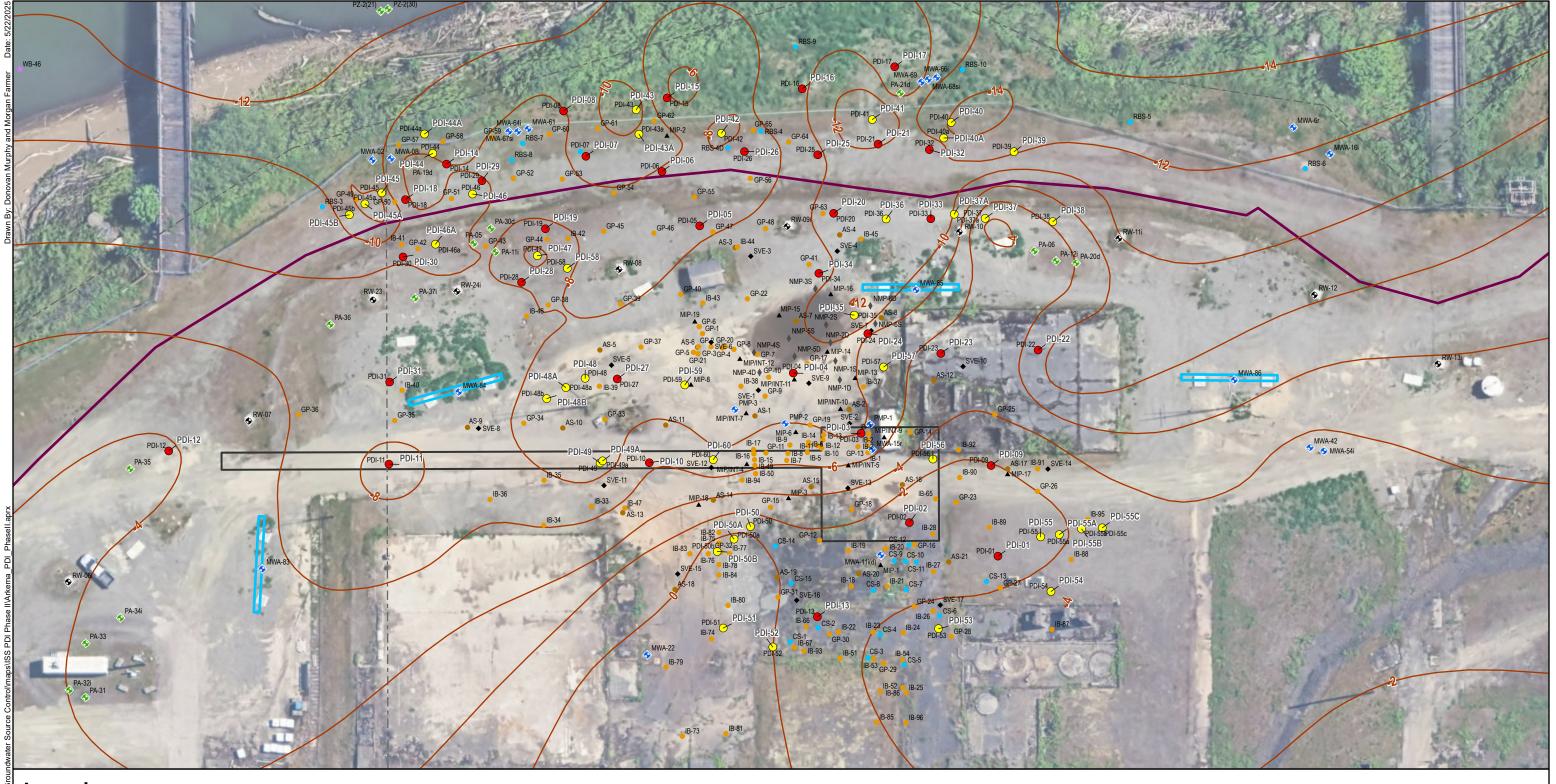


Figure 8

Intermediate Zone Top Contact Elevation Map ISS Pre-Final Design Report Former Arkema Inc. Facility Portland, Oregon





- Phase 1 PDI Boring Location
- Phase 2 PDI Boring Location
- Air Sparge Well (2003-2004)
- GeoProbe (2000-2002, 2006)
- Injection Well (2001)
- ▲ MIP (2002)
- Monitoring Well (1996-2022)
- Piezometer (2012-2019)
- Recovery Well (2012-2013)
- Sediment Core (2002-2003, 2009)
- Soil Boring (2003, 2022)
- Soil Vapor Extract (2004)
- __ Top of Deep Zone (2 ft Contours)
- ___ Parcel and Property
 Boundaries
- Barrier Wall Alignment
- Extraction Trench
- Former MPR Pond and Overflow Trench

Notes: Elevation contours in feet NAVD88.

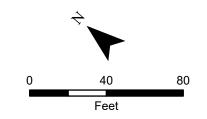
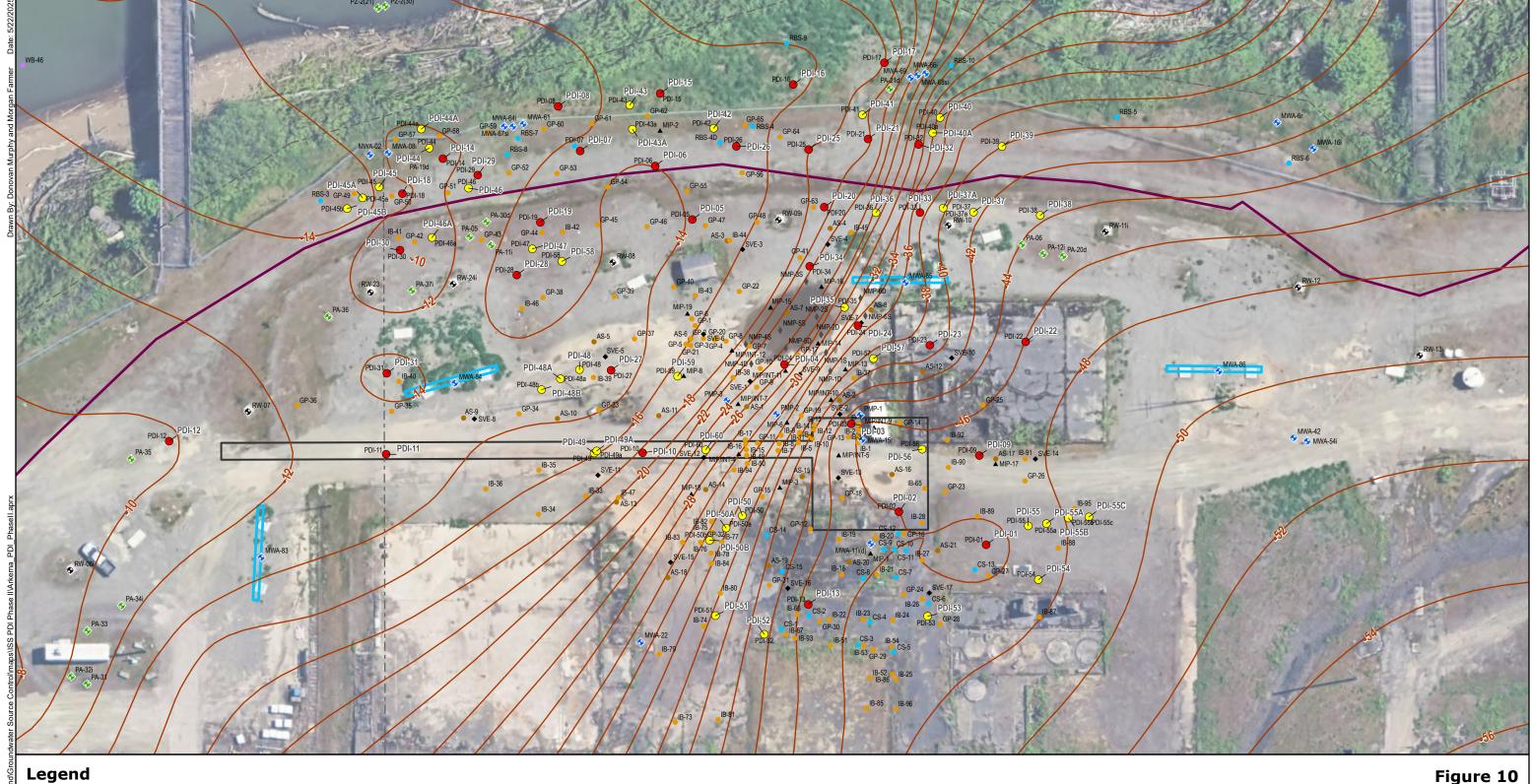


Figure 9

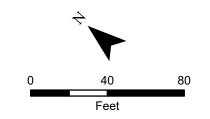
Deep Zone Top Contact Elevation Map ISS Pre-Final Design Report Former Arkema Inc. Facility Portland, Oregon





- Phase 1 PDI Boring Location
- Phase 2 PDI Boring Location
- Air Sparge Well (2003-2004)
- GeoProbe (2000-2002, 2006)
- Injection Well (2001)
- ▲ MIP (2002)
- Monitoring Well (1996-2022)
- Piezometer (2012-2019)
- Recovery Well (2012-2013)
- Sediment Core (2002-2003, 2009)
- Soil Boring (2003, 2022)
- Soil Vapor Extract (2004)
- Top of Basalt Zone (2 ft Contours)
- Parcel and Property Boundaries
- Barrier Wall Alignment
- Extraction Trench
- Former MPR Pond and Overflow Trench

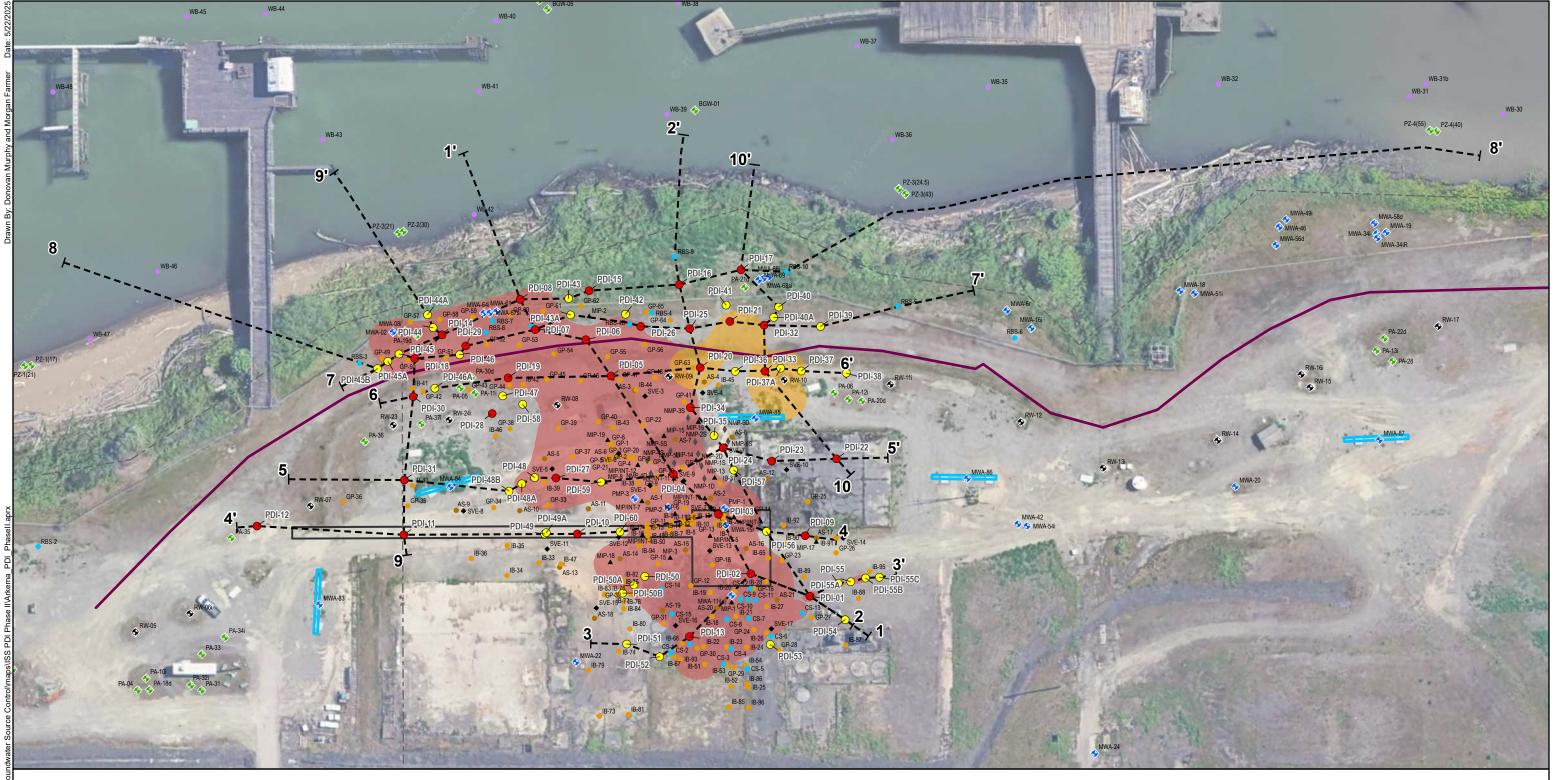
Notes: Elevation contours in feet NAVD88.



Basalt Zone Top Contact Elevation Map

ISS Pre-Final Design Report Former Arkema Inc. Facility Portland, Oregon





- Phase 1 PDI Boring Location
- Phase 2 PDI Boring Location
- Air Sparge Well (2003-2004)
- GeoProbe (2000-2002, 2006)
- Injection Well (2001)

- ▲ MIP (2002)
- Monitoring Well (1996-2022)
- Piezometer (2012-2019)
- Recovery Well (2012-2013)
- Sediment Core (2002-2003, 2009)
- Soil Boring (2003, 2022)
- Soil Vapor Extract (2004)
- ⊢ –I Cross Section Transect
- ___ Parcel and Property
- Boundaries
- Barrier Wall Alignment
- Extraction Trench
- Former MPR Pond and Overflow Trench
- DNAPL Plume
- Petroleum-based NAPL Plume

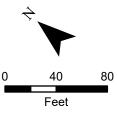
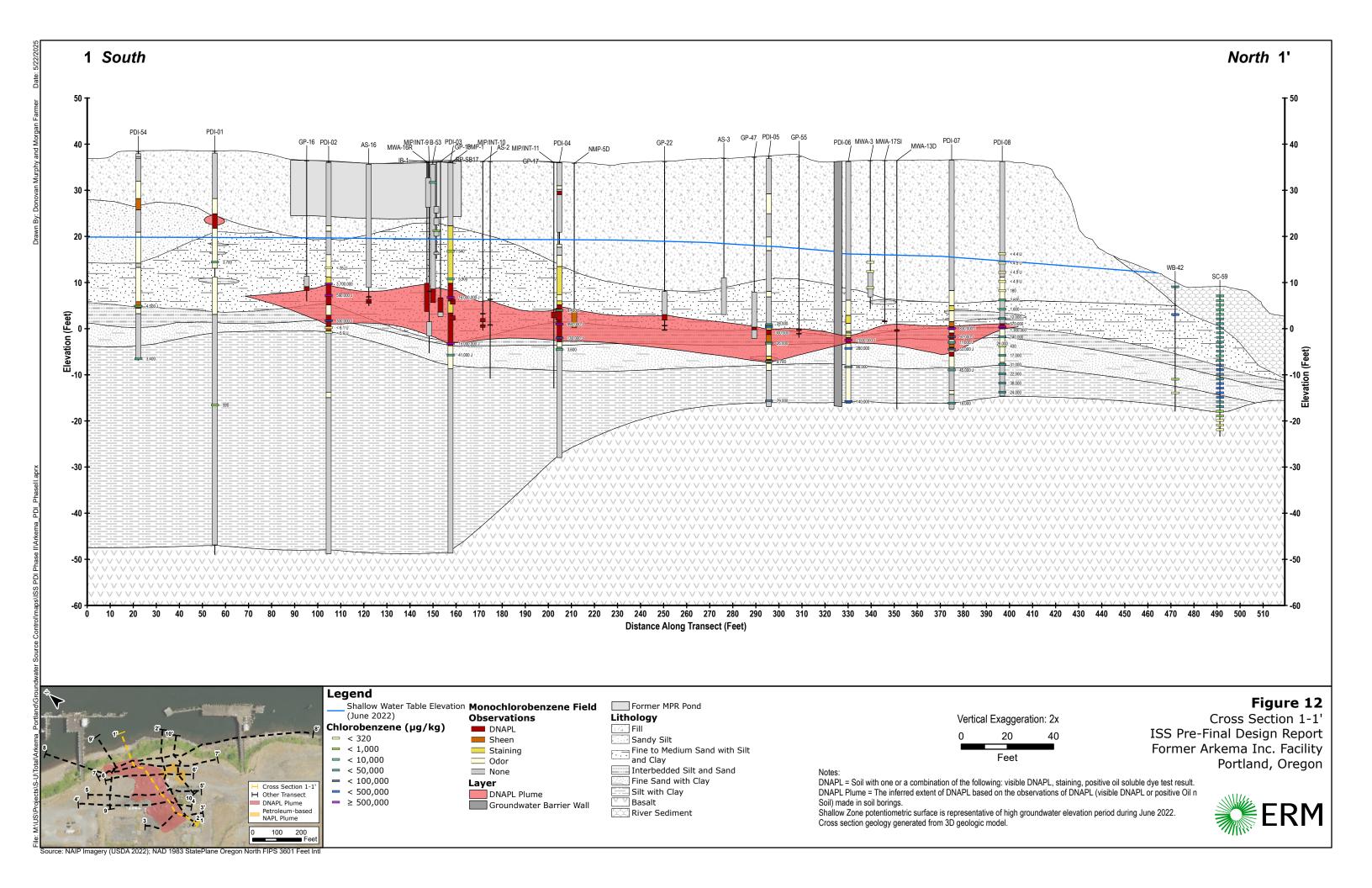
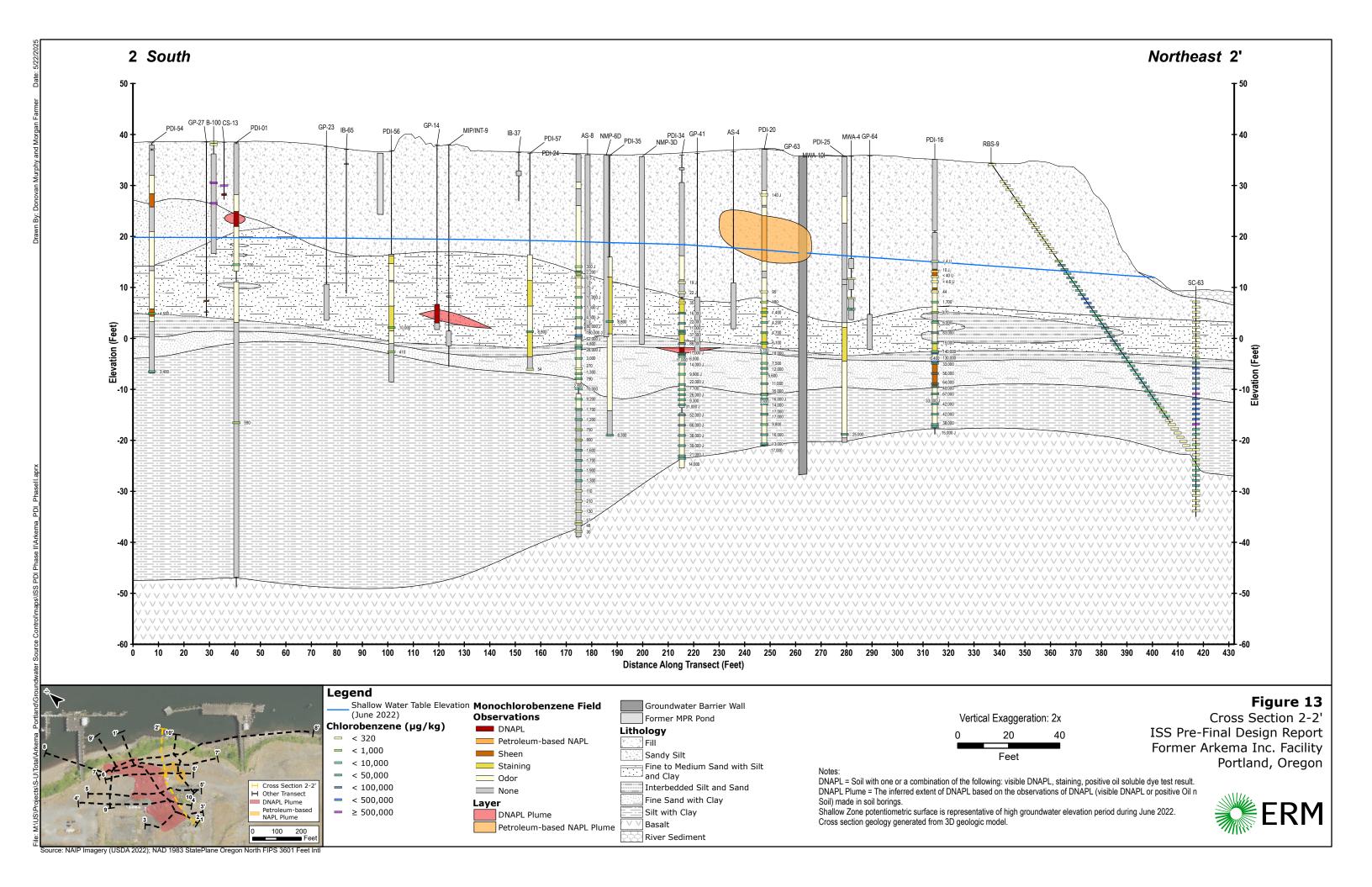


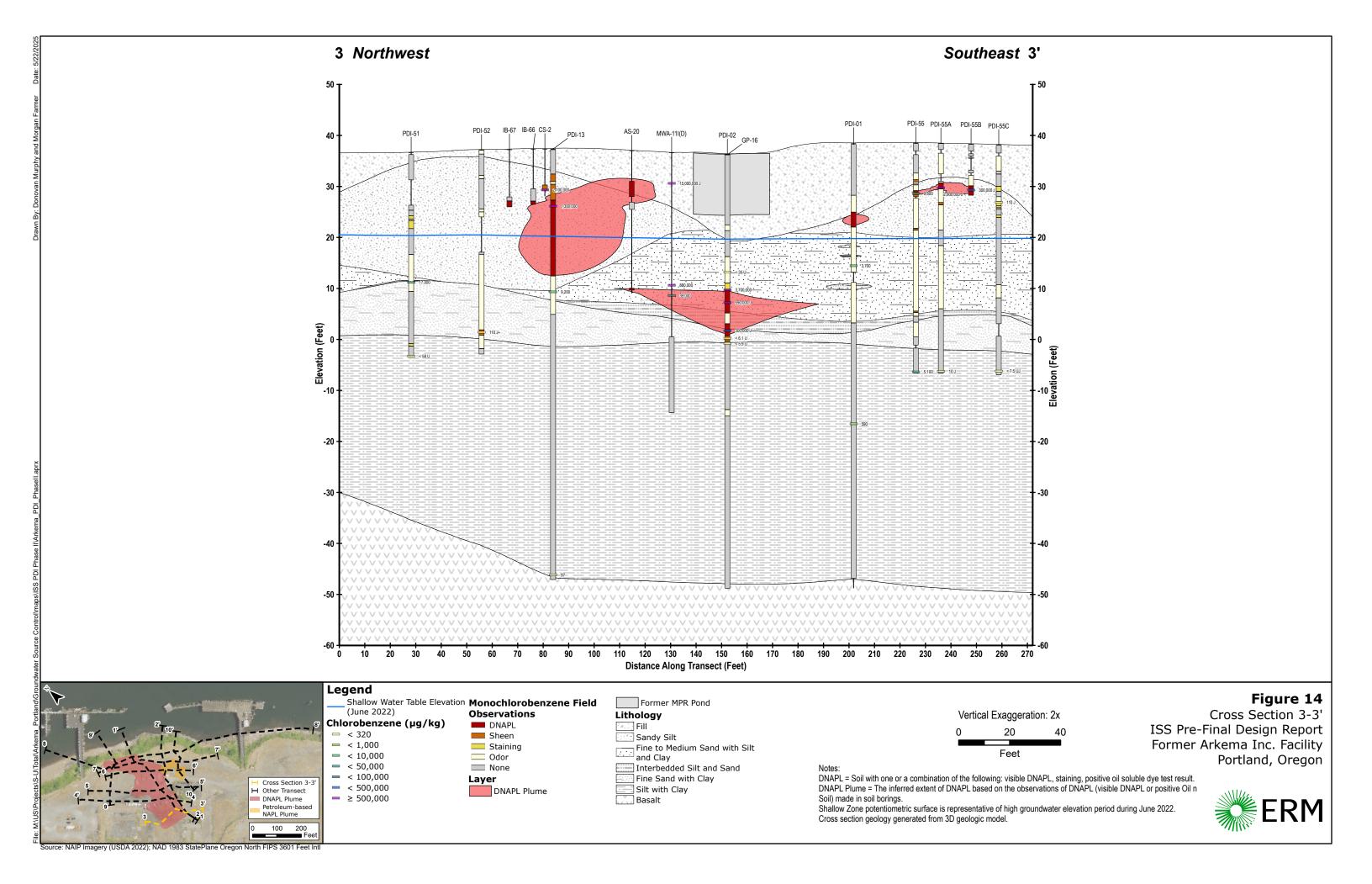
Figure 11

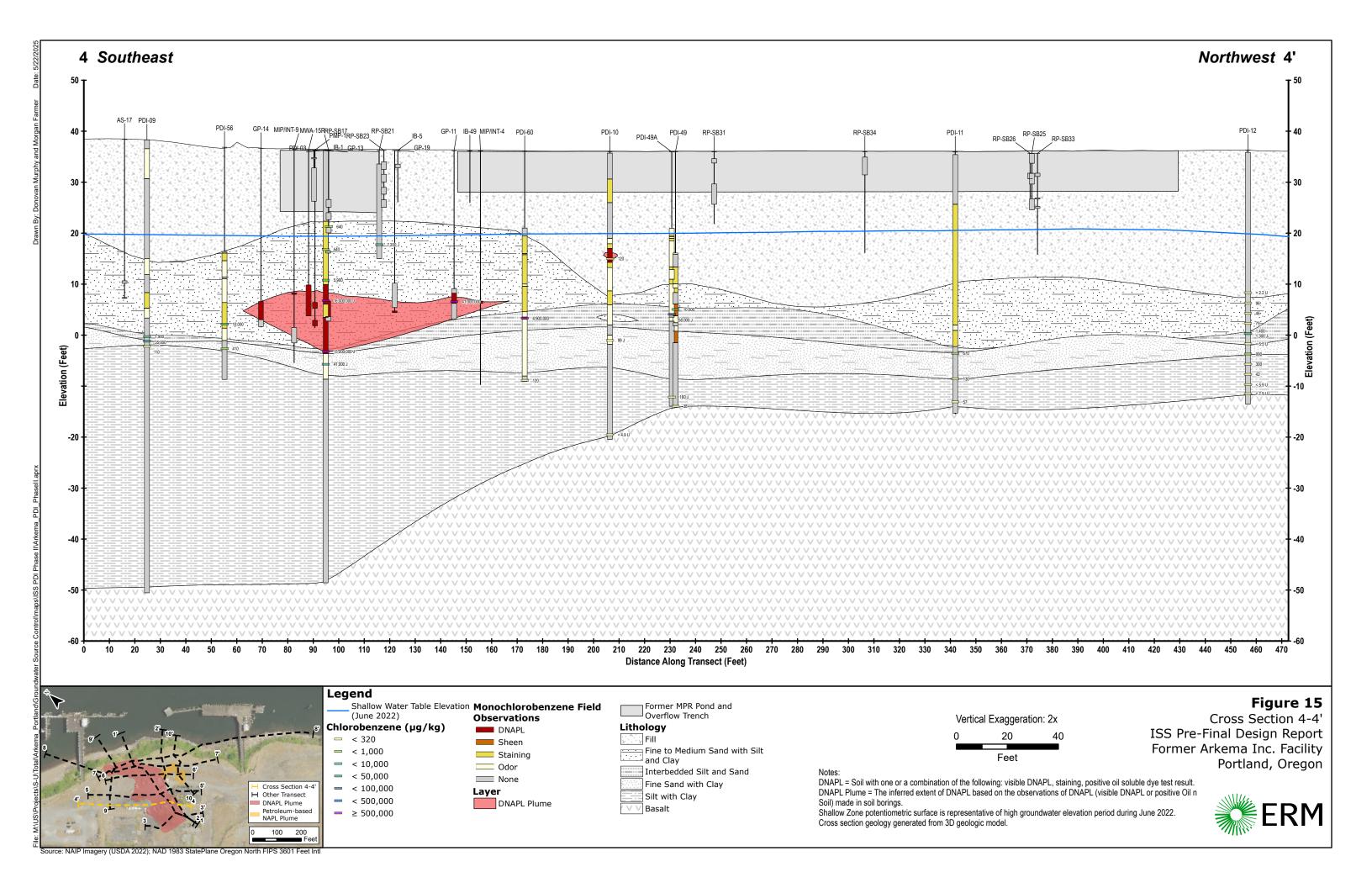
Boring and Transect Locations ISS Pre-Final Design Report Former Arkema Inc. Facility Portland, Oregon

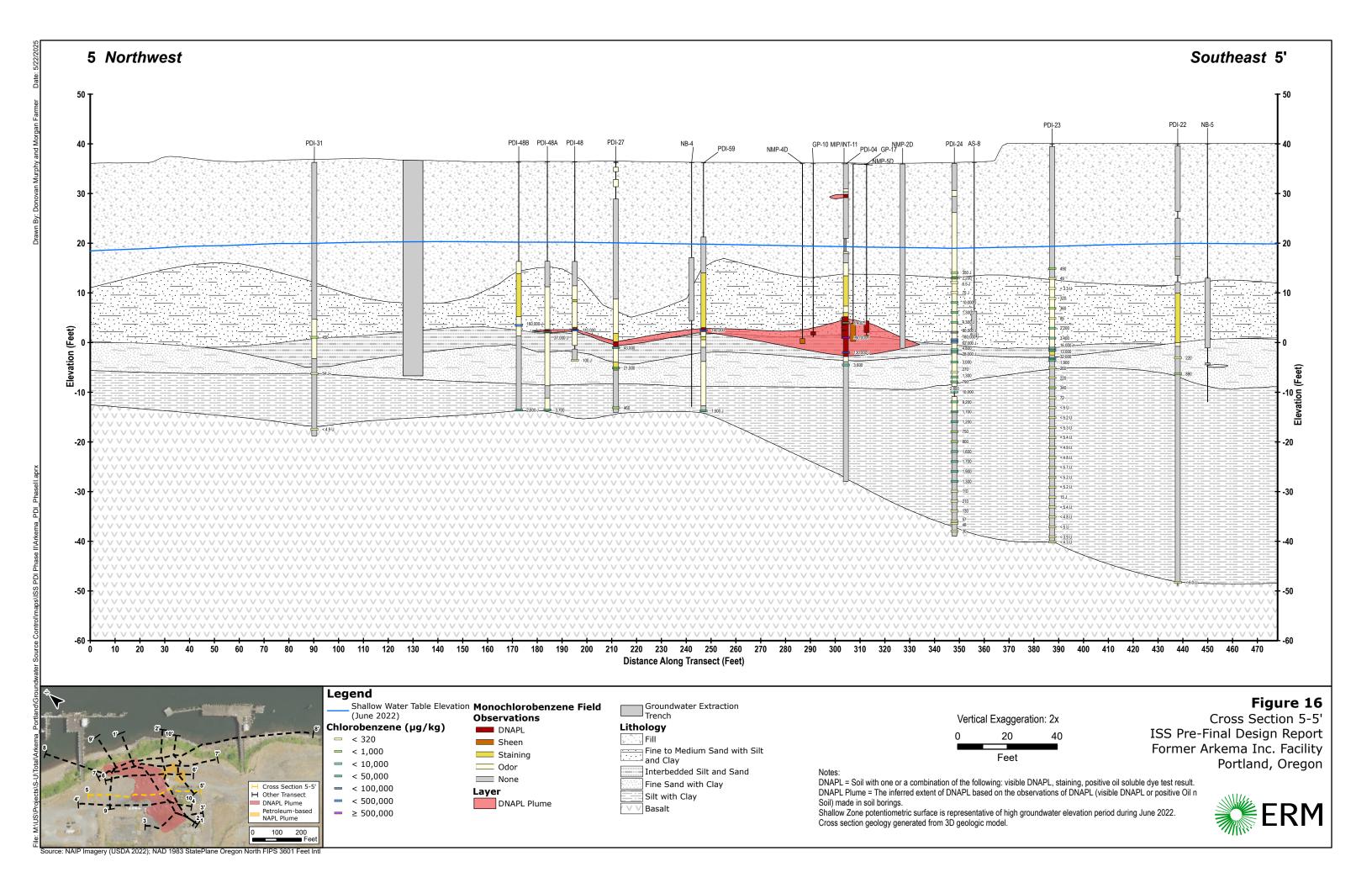


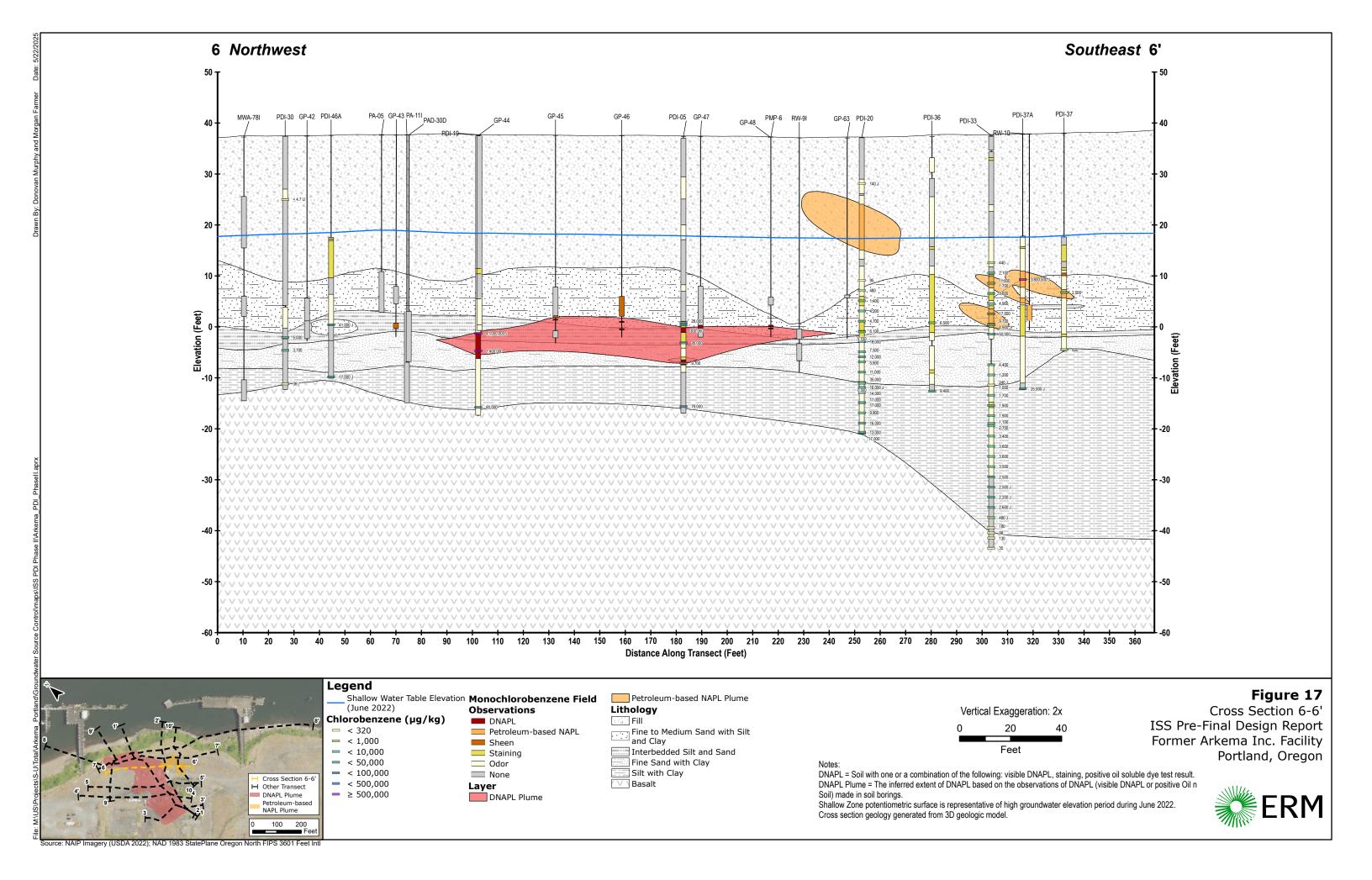


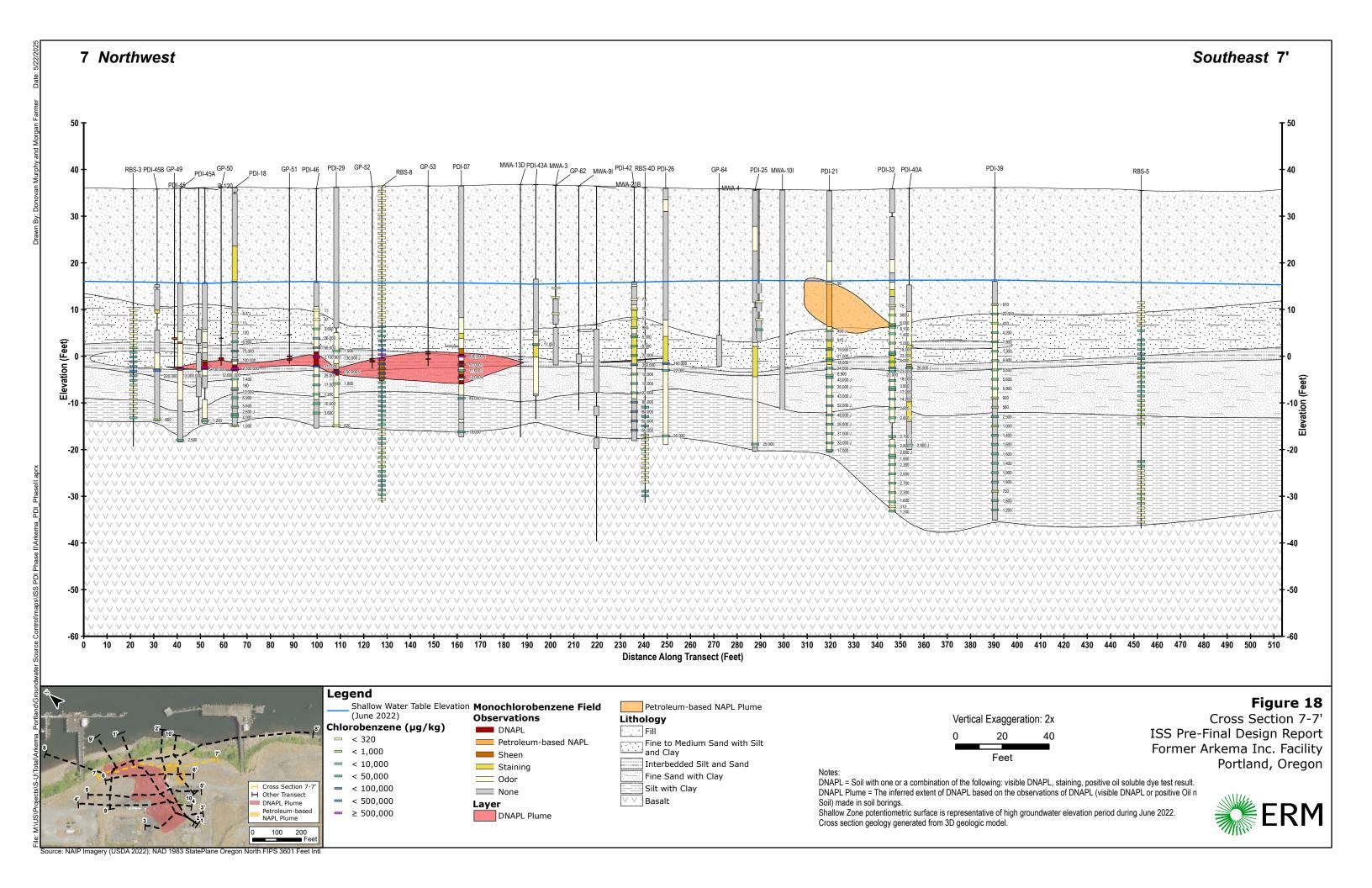


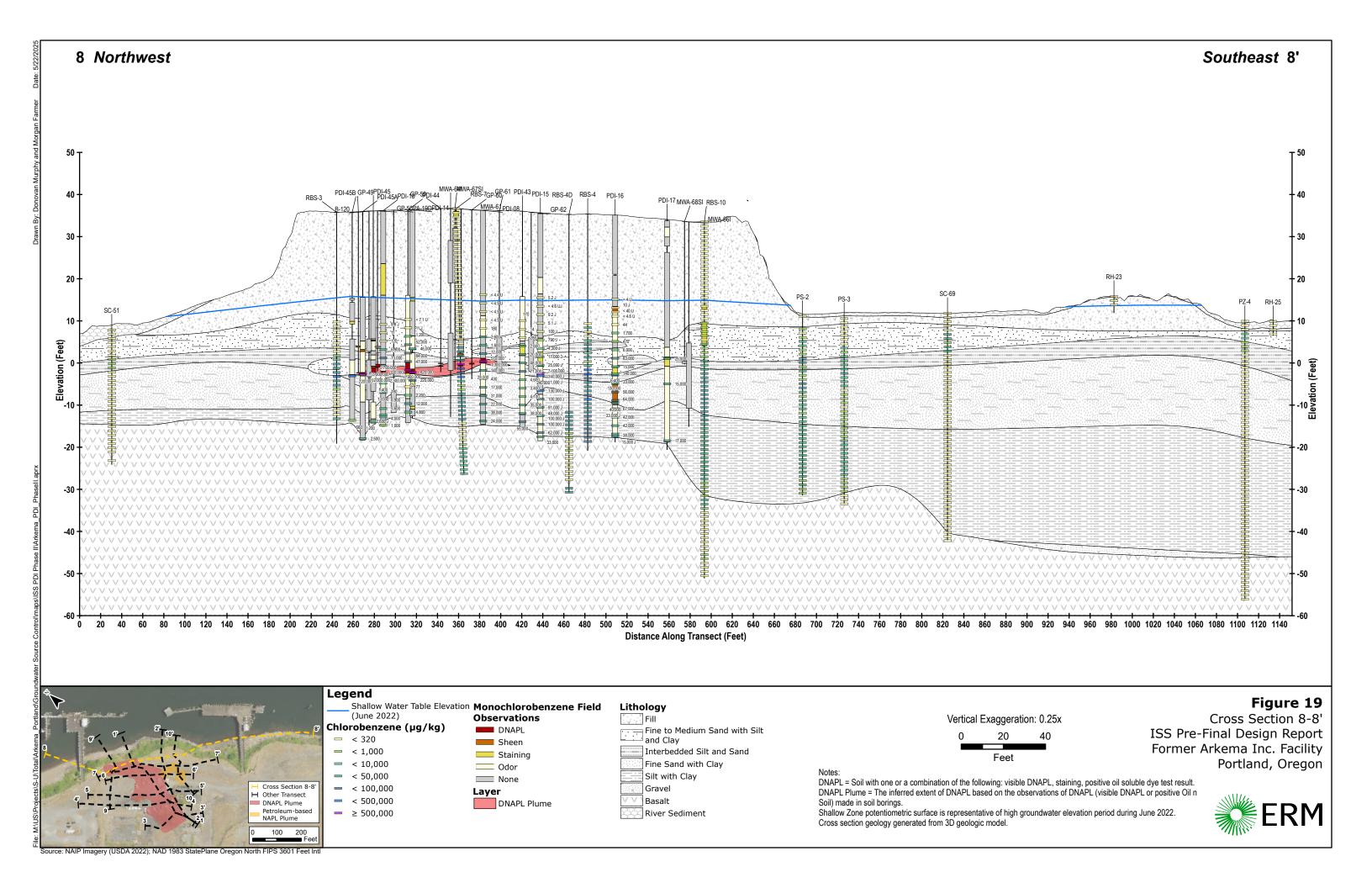


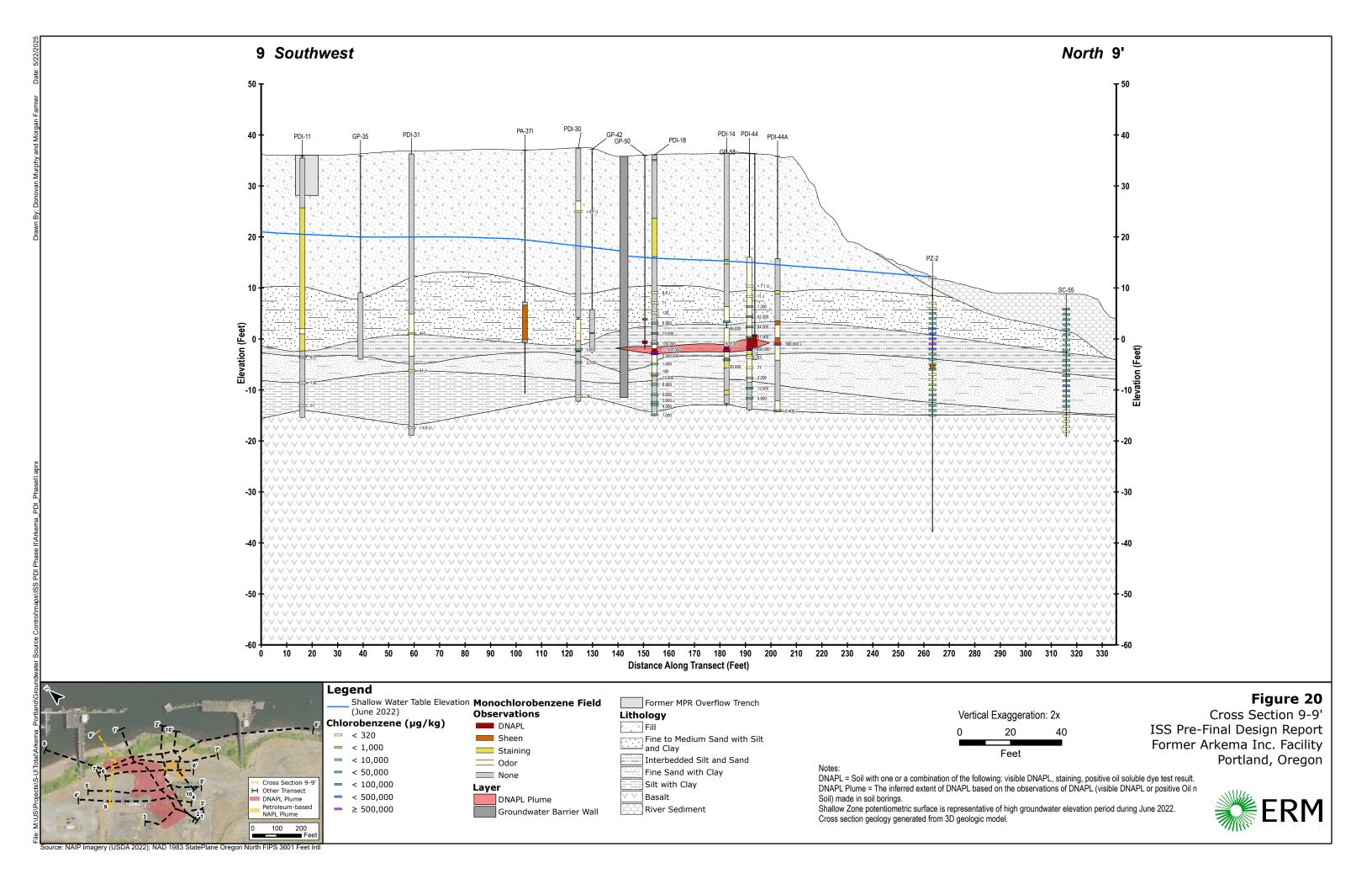


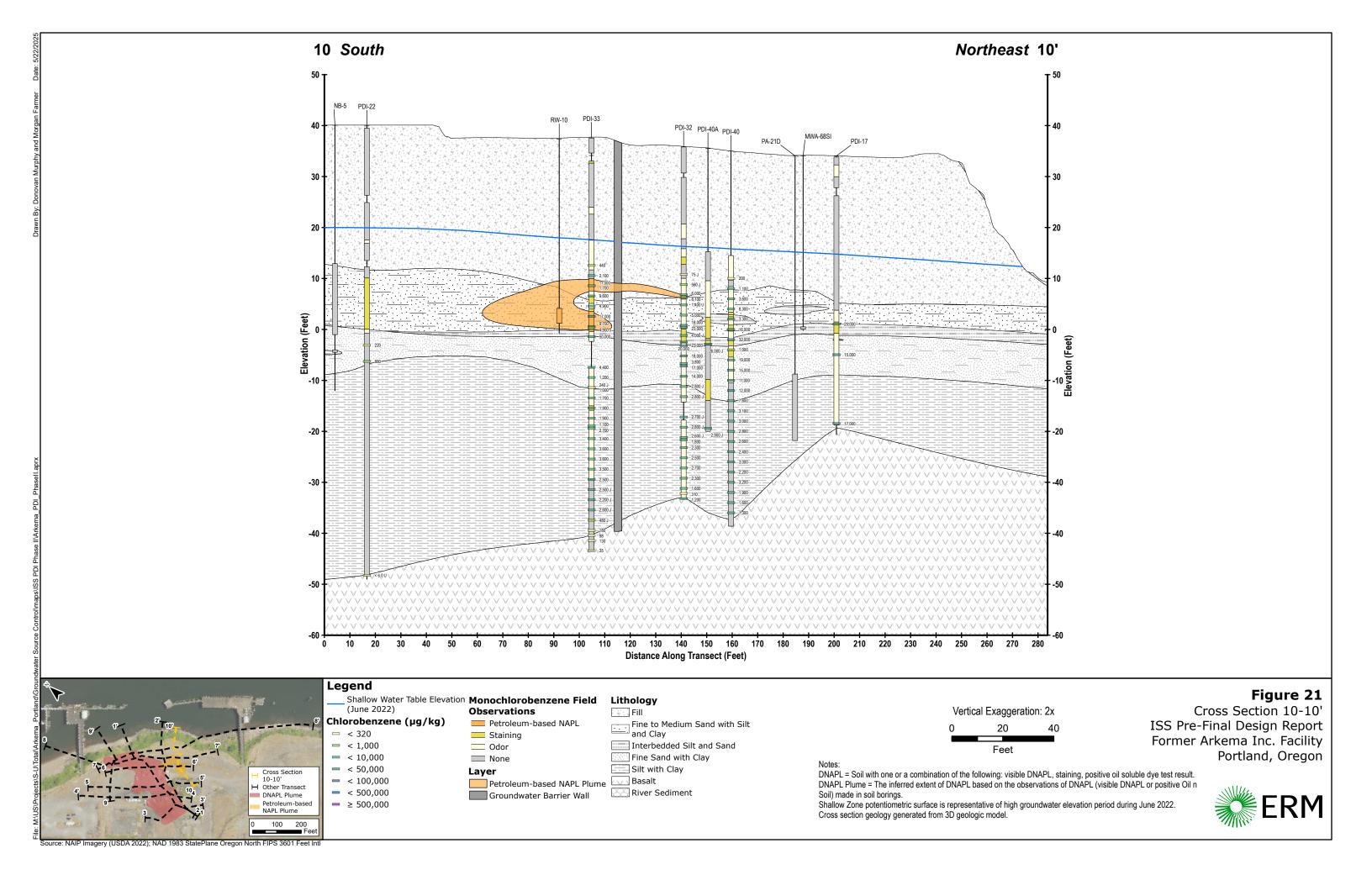


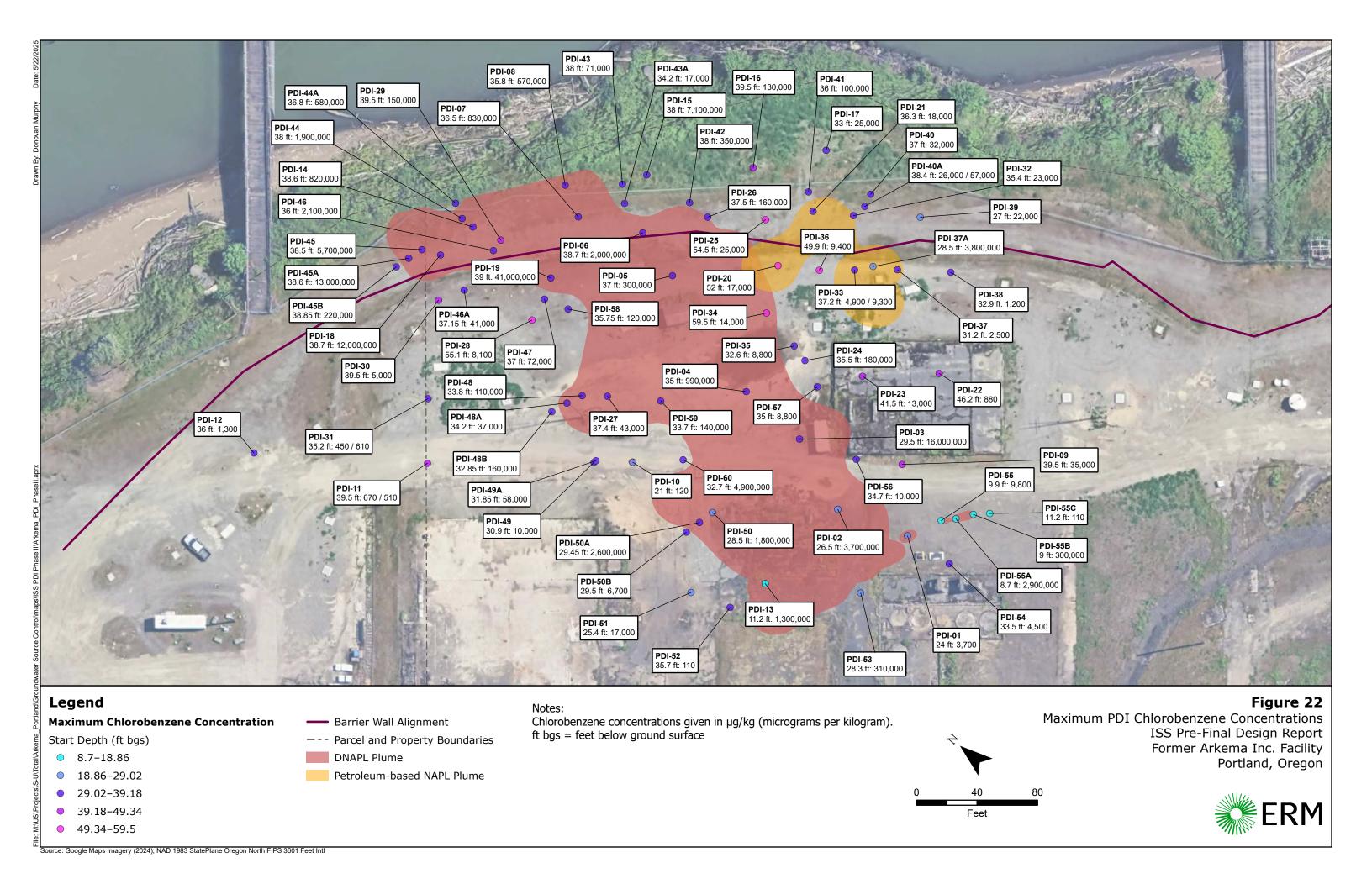














TABLES

Table 1
PDI Phase II Analytical Data Summary
Former Arkema, Inc. Facility
Portland, Oregon

	Location	PDI-35	PDI-35	PDI-36	PDI-36	PDI-37	PDI-37	PDI-37A	PDI-37A	PDI-38	PDI-38	PDI-40A	PDI-40A
		10/07/2024	10/07/2024	10/07/2024	10/07/2024	10/08/2024	10/08/2024	10/28/2024	10/28/2024	10/08/2024	10/08/2024	10/30/2024	10/30/2024
	nple Type	N	N	N	N	N	N	N	N	N	N	N	FD
Depth Below Groun	d Surface	32.6 - 32.7 ft	54.9 - 55 ft	36.5 - 36.6 ft	49.9 - 50 ft	31.2 - 31.3 ft	42.4 - 42.5 ft	28.5 - 28.6 ft	49.9 - 50 ft	32.9 - 33 ft	44.9 - 45 ft	38.4 - 38.5 ft	38.4 - 38.5 ft
Analyte	Unit												
SW8260D	, J				!		!	<u> </u>		!	ļ.		
1,1,1,2-Tetrachloroethane	μg/kg	< 7.8	< 6.9	< 6.4	< 7.6	< 4	< 3.7	< 73 J	< 6.4 J	< 4	< 3.8	< 8.5	< 91 J
1,1,1-Trichloroethane	μg/kg	< 7.2	< 6.4	< 5.9	< 7	< 3.6	< 3.4	< 67 J	< 5.9 J	< 3.7	< 3.5	< 7.8	< 84 J
1,1,2,2-Tetrachloroethane	μg/kg	< 12	< 11	< 9.7	< 12	< 6	< 5.6	< 110 J	< 9.7 J	< 6.1	< 5.7	< 13	< 140 J
1,1,2-Trichloroethane	μg/kg	< 12	< 10	< 9.5	< 11	< 5.9	< 5.4	< 110 J	< 9.5 J	< 6	< 5.6	< 13	< 130 J
1,1-Dichloroethane	μg/kg	< 14	< 13	< 12	< 14	< 7.3	< 6.7	< 130 J	< 12 J	< 7.4	< 6.9	< 16	< 170 J
1,1-Dichloroethene	μg/kg	< 19	< 17	< 16	< 19	< 9.7	< 9	< 180 J	< 16 J	< 9.9	< 9.3	< 21	< 220 J
1,1-Dichloropropene	μg/kg	< 8.3	< 7.3	< 6.8	< 8	< 4.2	< 3.9	< 77 J	< 6.8 J	< 4.3	< 4	< 9	< 96 J
1,2,3-Trichlorobenzene	μg/kg	< 62	< 55	< 51	< 60	< 31	< 29	< 580 J	< 51 J	< 32	< 30	< 68	< 720 J
1,2,3-Trichloropropane	μg/kg	< 18	< 16	< 15	< 17	< 9.1	< 8.4	< 170 J	< 15 J	< 9.3	< 8.7	< 20	< 210 J
1,2,4-Trichlorobenzene	μg/kg	< 66	< 59	< 55	< 65	< 34	< 31	< 620 J	< 55 J	< 34	< 32	< 73	< 780 J
1,2,4-Trimethylbenzene	μg/kg	< 21	< 19	< 17	< 20	< 11	< 9.9	< 200 J	< 17 J	< 11	< 10	< 23	< 250 J
1,2-Dibromo-3-chloropropane	μg/kg	< 24	< 21	< 19	< 23	< 12	< 11	< 220 J	< 19 J	< 12	< 11	< 26	< 280 J
1,2-Dichlorobenzene	μg/kg	< 14	< 12	25 j	< 13	20 j	< 6.4	1,200 J	< 11 J	< 7	< 6.5	< 15	< 160 J
1,2-Dichloroethane	μg/kg	< 8.6	< 7.6	< 7	< 8.3	< 4.4	< 4	< 80 J	< 7.1 J	< 4.4	< 4.1	< 9.4	< 100 J
1,2-Dichloropropane	μg/kg	< 10	< 9.1	< 8.5 < 9.7	< 10	< 5.2	< 4.8 < 5.6	< 96 J	< 8.5 J	< 5.3	< 5 < 5.7	< 11	< 120 J
1,3,5-Trimethylbenzene	μg/kg	< 12 < 21	< 11 < 18	< 9.7 < 17	< 12 < 20	< 6 < 11	< 5.6	< 110 J 400 J	< 9.7 J < 17 J	< 6.1 < 11	< 10	< 13 < 23	< 140 J < 240 J
1,3-Dichlorobenzene 1,3-Dichloropropane	μg/kg	< 8.7	< 7.7	< 7.2	< 8.5	< 4.4	< 4.1	< 81 J	< 17 J	< 4.5	< 4.2	< 9.6	< 240 J < 100 J
1,4-Dichlorobenzene	μg/kg	18 j	< 15	150	< 16	110	< 7.9	11,000 J	< 14 J	83	< 8.1	< 200	< 200 J
2,2-Dichloropropane	μg/kg μg/kg	< 19	< 17	< 15	< 18	< 9.6	< 8.9	< 180 J	< 14 J	< 9.8	< 9.1	< 21	< 220 J
4-Chlorotoluene	μg/kg	< 15	< 14	< 13	< 15	< 7.8	< 7.2	< 140 J	< 13 J	< 7.9	< 7.4	< 17	< 180 J
4-Isopropyltoluene	μg/kg	< 16	< 14	< 13	< 15	< 8.1	< 7.5	< 150 J	< 13 J	< 8.2	< 7.7	< 17	< 190 J
Benzene	μg/kg	< 5.9	< 5.3	< 4.9	< 5.8	< 3	< 2.8	< 55 J	< 4.9 J	< 3.1	< 2.9	< 6.5	< 69 J
Bromobenzene	μg/kg	< 6.5	< 5.8	< 5.4	< 6.4	< 3.3	< 3.1	< 61 J	< 5.4 J	< 3.4	< 3.2	< 7.2	< 76 J
Bromodichloromethane	μg/kg	< 8.6	< 7.6	< 7	< 8.3	R	< 4	< 80 J	< 7.1 J	R	< 4.1	< 9.4	< 100 J
Bromoform	μg/kg	< 7	< 6.2	< 5.8	< 6.8	< 3.6	< 3.3	< 65 J	< 5.8 J	< 3.6	< 3.4	< 7.7 J	< 82 J
Bromomethane	μg/kg	< 59	< 52	< 48	< 57	R	< 38 J	< 550 J	< 48 J	R	< 38 J	< 65	< 690 J
Carbon tetrachloride	μg/kg	< 6.9	< 6.1	< 5.6	< 6.7	< 3.5	< 3.2	< 64 J	< 5.6 J	< 3.5	< 3.3	< 7.5	< 80 J
Chlorobenzene	μg/kg	8,800	8,300	6,500	9,400	2,500	600	3,800,000 J	25,000 J	1,200	130	26,000 J	57,000 J
Chlorobromomethane	μg/kg	< 9.7	< 8.6	< 7.9	< 9.4	< 4.9	< 4.5	< 90 J	< 7.9 J	< 5	< 4.7	< 11	< 110 J
Chloroethane	μg/kg	< 33	< 29	< 27	< 32	R	< 21 J	< 300 J	< 27 J	R	< 21 J	< 36	< 380 J
Chloroform	μg/kg	< 6.5	< 5.8	35	7.7 j	< 3.3	< 3.1	< 61 J	< 5.4 J	6.8 j	< 3.2	< 7.2	< 76 J
Chloromethane	μg/kg	< 16	< 14	< 13	< 15	< 8	< 7.4	< 150 J	< 13 J	< 8.1	< 7.6	< 17	< 180 J
cis-1,2-Dichloroethene	μg/kg	< 20	< 17	< 16	< 19	16 j	< 9.2	< 180 J	< 16 J	35 j	< 9.5	< 22	< 230 J
cis-1,3-Dichloropropene	μg/kg	< 6.2	< 5.5	< 5.1	< 6.1	< 3.2	< 2.9	< 58 J	< 5.1 J	< 3.2	< 3	< 6.8	< 73 J
Dibromochloromethane	μg/kg	< 7.6	< 6.8	< 6.3	< 7.4	< 3.9	< 3.6	< 71 J	< 6.3 J	< 4	< 3.7	< 8.4	< 89 J
Dibromomethane	μg/kg	< 12	< 10	< 9.5	< 11	< 5.9	< 5.4	< 110 J	< 9.5 J	< 6	< 5.6	< 13	< 130 J
Dichlorodifluoromethane (Freon 12)	μg/kg	< 72	< 63	< 59	< 70	< 36	< 34	< 670 J	< 59 J	< 37	< 35	< 78	< 840 J
Ethylpen dibromide	μg/kg	< 14	< 13	< 12	< 14	< 7.2	< 6.7	< 130 J	< 12 J	< 7.3	< 6.8	< 16	< 170 J
Ethylene dibromide	μg/kg	< 5.9	< 5.3 < 33	< 4.9 < 31	< 5.8 < 36	< 3	< 2.8	< 55 J	< 4.9 J	< 3.1	< 2.9	< 6.5	< 69 J
Hexachlorobutadiene Isopropylbenzene (Cumene)	μg/kg	< 37 < 13	< 12	< 11	< 36	30 j < 6.8	< 18 < 6.3	< 350 J < 120 J	< 31 J < 11 J	47 j < 6.9	< 18 < 6.5	< 41 < 15	< 440 J < 160 J
m,p-Xylenes	μg/kg μg/kg	< 11	< 9.8	< 9.1	< 13	< 5.6	< 5.2	< 120 J < 100 J	< 9.1 J	< 5.7	< 5.3	< 12	< 130 J
Methyl tert-butyl ether	μg/kg μg/kg	< 9.4	< 8.3	< 7.7	< 9.1	< 4.7	< 4.4	< 87 J	< 7.7 J	< 4.8	< 4.5	< 10	< 110 J
Methylene chloride	μg/kg	290 j	250 j	230 j	280 j	< 200 J	< 180	< 380 J	< 33 J	< 200 J	< 190	< 44 J	< 470 J
Naphthalene	μg/kg	< 61	< 54	< 50	< 59	< 31	< 29	3,400 J	< 50 J	< 32	< 29	< 67	< 710 J
n-Butylbenzene	μg/kg	< 29	< 26	< 24	< 28	< 15	< 14	< 270 J	< 24 J	< 15	< 14	< 32	< 340 J
n-Propylbenzene	μg/kg	< 23	< 21	< 19	< 23	< 12	< 11	< 220 J	< 19 J	< 12	< 11	< 26	< 270 J
o-Chlorotoluene (2-chlorotoluene)	μg/kg	< 14	< 12	< 11	< 13	< 7	< 6.4	< 130 J	< 11 J	< 7.1	< 6.6	< 15	< 160 J
o-Xylene	μg/kg	< 7.8	< 6.9	< 6.4	< 7.6	< 4	< 3.7	< 73 J	< 6.4 J	< 4	< 3.8	< 8.5	< 91 J
sec-Butylbenzene	μg/kg	< 13	< 12	< 11	< 13	< 6.8	< 6.3	< 120 J	< 11 J	< 6.9	< 6.5	< 15	< 160 J
Styrene	μg/kg	< 20	< 18	< 16	< 19	< 10	< 9.3	< 180 J	< 16 J	< 10	< 9.6	< 22	< 230 J

Table 1
PDI Phase II Analytical Data Summary
Former Arkema, Inc. Facility
Portland, Oregon

Location		PDI-35	PDI-35	PDI-36	PDI-36	PDI-37	PDI-37	PDI-37A	PDI-37A	PDI-38	PDI-38	PDI-40A	PDI-40A
Sample Date		10/07/2024	10/07/2024	10/07/2024	10/07/2024	10/08/2024	10/08/2024	10/28/2024	10/28/2024	10/08/2024	10/08/2024	10/30/2024	10/30/2024
Sample Type		N	N	N	N	N	N	N	N	N	N	N	FD
Depth Below Ground Surface		32.6 - 32.7 ft	54.9 - 55 ft	36.5 - 36.6 ft	49.9 - 50 ft	31.2 - 31.3 ft	42.4 - 42.5 ft	28.5 - 28.6 ft	49.9 - 50 ft	32.9 - 33 ft	44.9 - 45 ft	38.4 - 38.5 ft	38.4 - 38.5 ft
Analyte	Unit												
tert-Butylbenzene	μg/kg	< 12	< 11	< 9.9	< 12	< 6.1	< 5.6	< 110 J	< 9.9 J	< 6.2	< 5.8	< 13	< 140 J
Tetrachloroethene	μg/kg	11 j	< 7.3	30 j	9.3 j	10 j	< 3.9	2,900 J	< 6.8 J	45	< 4	< 9	< 96 J
Toluene	μg/kg	< 21	< 19	< 17	< 20	< 11	< 9.9	< 200 J	< 17 J	< 11	< 10	< 23	< 250 J
trans-1,2-Dichloroethene	μg/kg	< 23	< 20	< 19	< 22	< 12	< 11	< 210 J	< 19 J	< 12	< 11	< 25	< 270 J
trans-1,3-Dichloropropene	μg/kg	< 11	< 9.7	< 9	< 11	< 5.5	< 5.1	< 100 J	< 9 J	< 5.6	< 5.3	< 12	< 130 J
Trichloroethene	μg/kg	< 16	< 14	< 13	< 16	19 j	< 7.5	160 J	< 13 J	53	< 7.8	< 18	< 190 J
Trichlorofluoromethane (Freon 11)	μg/kg	< 41	< 36	< 33	< 39	< 21	< 19	< 380 J	< 33 J	< 21	< 20	< 44	< 470 J
Vinyl chloride	μg/kg	< 29	< 26	< 24	< 28	< 15	< 14	< 270 J	< 24 J	< 15	< 14	< 32	< 340 J

Notes:

Bolded values indicate concentrations above the Method Detection Limit.

< = Compound not detected. Method Detection Limit shown.

VOCs = Volatile organic compounds

FD = Field Duplicate Sample

N = Normal Environmental Sample ug/kg = micrograms per kilogram SW8260D analyses performed by Eurofins -Seattle, WA.

Validation Level = EPA-STAGE2A

Validated Qualifier Definition(s)

j = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J- = The result is an estimated quantity, but the result may be biased low.

J+ = The result is an estimated quantity, but the result may be biased high.

R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

UJ = The analyte was analyzed for, but was not detected. The reported limit is approximate and may be inaccurate or imprecise.

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Table 1
PDI Phase II Analytical Data Summary
Former Arkema, Inc. Facility
Portland, Oregon

	Location		PDI-43A	PDI-44A	PDI-44A	PDI-45	PDI-45	PDI-45	PDI-45A	PDI-45A	PDI-45B	PDI-45B	PDI-46A
	<u> </u>	10/30/2024	10/24/2024	10/28/2024	10/29/2024	10/10/2024	10/10/2024	10/10/2024	10/11/2024	10/11/2024	10/17/2024	10/18/2024	10/24/2024
	Sample Type	N	N	N	N	N	N	FD	N	N	N	N	N
Depth Below Gr	ound Surface	54.9 - 55 ft	34.2 - 34.3 ft	36.8 - 36.9 ft	49.9 - 50 ft	38.5 - 38.6 ft	49.9 - 50 ft	49.9 - 50 ft	38.6 - 38.7 ft	53.9 - 54 ft	38.85 - 38.95 ft	49.4 - 49.5 ft	37.15 - 37.25 ft
Analyte	Unit												
SW8260D	Onic				!		!						
1,1,1,2-Tetrachloroethane	μg/kg	< 7.6 J	< 7 J	190 J	< 7.1 J	650	< 3.7	< 3.8	2,300	< 8.5	< 6.9	< 7.7	< 8.1 J
1,1,1-Trichloroethane	μg/kg	< 7 J	< 6.4 J	< 81 J	< 6.5 J	< 78	< 3.4	< 3.5	< 60	< 7.9	< 6.4	< 7.1	< 7.4 J
1,1,2,2-Tetrachloroethane	μg/kg	< 11 J	< 11 J	280 J	< 11 J	< 130	< 5.6	< 5.7	430	< 13	< 11	< 12	< 12 J
1,1,2-Trichloroethane	μg/kg	< 11 J	< 10 J	< 130 J	< 10 J	< 130	< 5.5	< 5.6	< 96	< 13	< 10	< 11	< 12 J
1,1-Dichloroethane	μg/kg	< 14 J	< 13 J	< 160 J	< 13 J	< 160	< 6.8	< 7	< 120	< 16	< 13	< 14	< 15 J
1,1-Dichloroethene	μg/kg	< 19 J	< 17 J	< 220 J	< 17 J	< 210	< 9.1	< 9.3	< 160	< 21	< 17	< 19	< 20 J
1,1-Dichloropropene	μg/kg	< 8 J	< 7.4 J	< 94 J	< 7.5 J	< 90	< 3.9	< 4	< 69	< 9	< 7.3	< 8.1	< 8.6 J
1,2,3-Trichlorobenzene	μg/kg	< 60 J	< 56 J	< 700 J	< 56 J	< 670	< 29	< 30	< 520	< 68	< 55	< 61	< 64 J
1,2,3-Trichloropropane	μg/kg	< 17 J	< 16 J	< 200 J	< 16 J	< 200	< 8.5	< 8.7	< 150	< 20	< 16	< 18	< 19 J
1,2,4-Trichlorobenzene	μg/kg	< 64 J	< 60 J	< 750 J	< 60 J	< 720	< 32	< 32	< 550	< 73	< 59	< 65	< 69 J
1,2,4-Trimethylbenzene	μg/kg	< 20 J	< 19 J	< 240 J	< 19 J	< 230	< 10	< 10	< 180	< 23	< 19 < 21	< 21	< 22 J < 25 J
1,2-Dibromo-3-chloropropane 1,2-Dichlorobenzene	μg/kg	< 23 J < 13 J	< 21 J < 12 J	< 270 J 530 J	< 21 J < 12 J	< 260 6,500	< 11 < 6.4	< 11 < 6.6	< 200 13,000	< 26 < 15	120	< 23 < 13	64 J
1,2-Dichloroethane	μg/kg μg/kg	< 8.3 J	< 7.7 J	< 97 J	< 7.8 J	< 93	< 4.1	< 4.2	< 72	< 9.4	< 7.6	< 8.4	< 8.9 J
1,2-Dichloropropane	μg/kg	< 10 J	< 9.3 J	< 120 J	< 9.3 J	< 110	< 4.1	< 5	< 86	< 11	< 9.2	< 10	< 11 J
1,3,5-Trimethylbenzene	μg/kg	< 11 J	< 11 J	< 130 J	< 11 J	< 130	< 5.6	< 5.7	< 99	< 13	< 11	< 12	< 12 J
1,3-Dichlorobenzene	μg/kg	< 20 J	< 19 J	< 240 J	< 19 J	580 j	< 9.9	< 10	1,400	< 23	< 18	< 20	< 21 J
1,3-Dichloropropane	μg/kg	< 8.5 J	< 7.9 J	< 99 J	< 7.9 J	< 95	< 4.2	< 4.2	< 73	< 9.6	< 7.8	< 8.6	< 9 J
1,4-Dichlorobenzene	μg/kg	< 16 J	53 J	850 J	< 15 J	20,000	< 8	< 8.2	41,000	< 18	430	< 17	< 190 J
2,2-Dichloropropane	μg/kg	< 18 J	< 17 J	< 210 J	< 17 J	< 210	< 9	< 9.1	< 160	< 21	< 17	< 19	< 210 J
4-Chlorotoluene	μg/kg	< 15 J	< 14 J	< 170 J	< 14 J	< 170	< 7.3	< 7.4	< 130	< 17	< 14	< 15	< 16 J
4-Isopropyltoluene	μg/kg	< 15 J	< 14 J	< 180 J	< 14 J	< 170	< 7.6	< 7.7	230 ј	< 17	31 j	< 16	< 16 J
Benzene	μg/kg	< 5.7 J	< 5.3 J	< 67 J	35 J	< 64	< 2.8	< 2.9	< 49	< 6.5	< 5.3	< 5.8	< 6.1 J
Bromobenzene	μg/kg	< 6.4 J	< 5.9 J	< 74 J	< 5.9 J	320 j	< 3.1	< 3.2	620	< 7.2	< 5.8	< 6.4	< 6.8 J
Bromodichloromethane	μg/kg	< 8.3 J	< 7.7 J	< 97 J	< 7.8 J	< 93	< 4.1	< 4.2	< 72	R	< 7.6	< 8.4	< 8.9 J
Bromoform	μg/kg	< 6.8 J	< 6.3 J	< 80 J	< 6.3 J	< 76	< 3.3	< 3.4	< 59	< 7.7	< 6.2	< 6.9	< 7.3 J
Bromomethane	μg/kg	< 57 J	< 53 J	< 670 J	< 53 J	< 640	< 43 J	< 44 J	< 490	R	< 52	< 58	< 61 J
Carbon tetrachloride	μg/kg	< 6.7 J	< 6.2 J	5,300 J	< 6.2 J	11,000	< 3.3	< 3.3	48,000	< 7.5	< 6.1	< 6.8	< 7.1 J
Chlorobenzene	μg/kg	2,900 J	17,000 J	580,000 J	9,400 J	5,700,000	1,200	1,300	13,000,000	2,500	220,000	660	41,000 J
Chlorobromomethane	μg/kg	< 9.4 J	< 8.7 J	< 110 J	< 8.7 J	< 110	< 4.6	< 4.7	< 81	< 11	< 8.6	< 9.5	< 10 J
Chloroethane	μg/kg	< 32 J	< 29 J	< 370 J	< 29 J	< 350	< 24 J	< 25 J	< 270	R	530	220	< 34 J
Chloroform	μg/kg	< 6.4 J	55 J	1,500 J	< 5.9 J	740	< 3.1	< 3.2	2,000	< 7.2	130	< 6.4	18 J
Chloromethane	μg/kg	< 15 J	< 14 J	< 180 J	< 14 J	< 170	< 7.5	< 7.6	< 130	< 17	< 14	< 16	< 16 J
cis-1,2-Dichloroethene	μg/kg	< 19 J	< 18 J	< 220 J	< 18 J	< 210	< 9.3 < 3	< 9.5 < 3	330 j	< 22	43 j	< 19	< 20 J
cis-1,3-Dichloropropene Dibromochloromethane	μg/kg	< 6 J < 7.4 J	< 5.6 J < 6.9 J	< 71 J < 87 J	< 5.6 J < 6.9 J	< 68 < 83	< 3.6	< 3.7	< 52 < 64	< 6.8 < 8.4	< 5.5 < 6.8	< 6.1 < 7.5	< 6.5 J < 7.9 J
Dibromomethane	μg/kg μg/kg		< 10 J	< 87 J	< 10 J	< 130	< 5.5	< 5.6	< 96	< 13	< 10	< 11	< 7.9 J
Dichlorodifluoromethane (Freon			< 64 J	< 810 J	< 65 J	< 780	< 34	< 35	< 600	< 78	< 64	< 70	< 74 J
Ethylbenzene	μg/kg	< 14 J	< 13 J	< 160 J	< 13 J	< 150	< 6.7	< 6.9	< 120	< 16	< 13	< 14	< 15 J
Ethylene dibromide	μg/kg	< 5.7 J	< 5.3 J	< 67 J	< 5.4 J	< 64	< 2.8	< 2.9	< 49	< 6.5	< 5.3	< 5.8	< 6.1 J
Hexachlorobutadiene	µg/kg	< 36 J	< 34 J	110,000 J	< 34 J	18,000	< 18	< 18	24,000	< 41	< 33	< 37	< 39 J
Isopropylbenzene (Cumene)	μg/kg	< 13 J	< 12 J	< 150 J	< 12 J	< 150	< 6.4	< 6.5	< 110	< 15	< 12	< 13	< 14 J
m,p-Xylenes	µg/kg	< 11 J	< 10 J	< 130 J	< 10 J	< 120	< 5.3	< 5.4	< 92	< 12	< 9.8	< 11	< 11 J
Methyl tert-butyl ether	μg/kg	< 9.1 J	< 8.4 J	< 110 J	< 8.5 J	< 100	< 4.4	< 4.5	< 78	< 10	< 8.3	< 9.2	< 9.7 J
Methylene chloride	μg/kg	< 39 J	< 36 J	< 460 J	< 37 J	< 440	< 190	< 190	< 340	< 44	< 36	< 40	< 42 J
Naphthalene	μg/kg	< 59 J	< 55 J	900 J	< 55 J	< 660	< 29	< 30	900 j	< 67	97 j	< 60	< 63 J
n-Butylbenzene	μg/kg	< 28 J	< 26 J	< 330 J	< 26 J	< 310	< 14	< 14	< 240	< 32	< 26	< 28	< 30 J
n-Propylbenzene	μg/kg		< 21 J	< 270 J	< 21 J	< 250	< 11	< 11	< 200	< 26	< 21	< 23	< 24 J
o-Chlorotoluene (2-chlorotoluene		< 13 J	< 12 J	< 160 J	< 12 J	< 150	< 6.5	< 6.6	< 110	< 15	< 12	< 14	< 14 J
o-Xylene	μg/kg	< 7.6 J	< 7 J	< 88 J	< 7.1 J	< 85	< 3.7	< 3.8	< 65	< 8.5	< 6.9	< 7.7	< 8.1 J
sec-Butylbenzene	μg/kg	< 13 J	< 12 J	< 150 J	< 12 J	< 150	< 6.4	< 6.5	< 110	< 15	< 12	< 13	< 14 J
Styrene	μg/kg	< 19 J	< 18 J	< 220 J	< 18 J	< 220	< 9.4	< 9.6	< 170	< 22	< 18	< 19	< 21 J

Table 1
PDI Phase II Analytical Data Summary
Former Arkema, Inc. Facility
Portland, Oregon

	Location	PDI-40A	PDI-43A	PDI-44A	PDI-44A	PDI-45	PDI-45	PDI-45	PDI-45A	PDI-45A	PDI-45B	PDI-45B	PDI-46A
	Sample Date	10/30/2024	10/24/2024	10/28/2024	10/29/2024	10/10/2024	10/10/2024	10/10/2024	10/11/2024	10/11/2024	10/17/2024	10/18/2024	10/24/2024
	Sample Type	N	N	N	N	N	N	FD	N	N	N	N	N
Depth Below Gro	ound Surface	54.9 - 55 ft	34.2 - 34.3 ft	36.8 - 36.9 ft	49.9 - 50 ft	38.5 - 38.6 ft	49.9 - 50 ft	49.9 - 50 ft	38.6 - 38.7 ft	53.9 - 54 ft	38.85 - 38.95 ft	49.4 - 49.5 ft	37.15 - 37.25 ft
Analyte	Unit												
tert-Butylbenzene	μg/kg	< 12 J	< 11 J	< 140 J	< 11 J	< 130	< 5.7	< 5.8	< 100	< 13	< 11	< 12	< 12 J
Tetrachloroethene	μg/kg	< 8 J	24 J	170,000 J	23 J	63,000	< 3.9	< 4	200,000	< 9	2,000	< 8.1	88 J
Toluene	μg/kg	< 20 J	< 19 J	< 240 J	< 19 J	270 j	< 10	< 10	810	< 23	< 19	< 21	< 22 J
trans-1,2-Dichloroethene	μg/kg	< 22 J	< 20 J	< 260 J	< 21 J	< 250	< 11	< 11	< 190	< 25	< 20	< 22	< 24 J
trans-1,3-Dichloropropene	μg/kg	< 11 J	< 9.8 J	< 120 J	< 9.9 J	< 120	< 5.2	< 5.3	< 91	< 12	< 9.7	< 11	< 11 J
Trichloroethene	μg/kg	< 16 J	< 14 J	2,800 J	< 15 J	< 170	< 7.6	< 7.8	1,700	< 18	85	< 16	< 17 J
Trichlorofluoromethane (Freon 1	1) µg/kg	< 39 J	< 36 J	< 460 J	< 37 J	< 440	< 19	< 20	< 340	< 44	< 36	< 40	< 42 J
Vinyl chloride	μg/kg	< 28 J	< 26 J	< 330 J	< 26 J	< 320	< 14	< 14	< 240	< 32	< 26	< 29	< 30 J

Bolded values indicate concentrations above the Method Detection Limit.

< = Compound not detected. Method Detection Limit shown.

VOCs = Volatile organic compounds

FD = Field Duplicate Sample

N = Normal Environmental Sample ug/kg = micrograms per kilogram SW8260D analyses performed by Eurofins -Seattle, WA.

Validation Level = EPA-STAGE2A

Validated Qualifier Definition(s)

- j = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- J- = The result is an estimated quantity, but the result may be biased low.
- J+ = The result is an estimated quantity, but the result may be biased high.
- R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
- UJ = The analyte was analyzed for, but was not detected. The reported limit is approximate and may be inaccurate or imprecise.

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Table 1
PDI Phase II Analytical Data Summary
Former Arkema, Inc. Facility
Portland, Oregon

Sample Pol-48A Pol-4											2024 Pre-De	esign Investigati	on Phase II	
Page	ı	ocation	PDI-46A	PDI-48	PDI-48	PDI-48A	PDI-48A	PDI-48B	PDI-48B	PDI-49				PDI-49A
Page				10/08/2024	10/08/2024	10/18/2024		10/23/2024	10/24/2024	10/09/2024	10/09/2024	10/23/2024	10/23/2024	10/23/2024
Depth below Ground Surface 74. + 47.5 ft 33.6 - 33.9 ft 93.9 - 40 ft 94.9 - 50 ft 24.85 - 12.95 ft 24.95 - 50 ft 30.9 - 50 ft 14.95 - 50 ft			N				N	N						
Name	•		47.4 - 47.5 ft	33.8 - 33.9 ft		34.2 - 34.3 ft	49.9 - 50 ft	32.85 - 32.95 ft	49.9 - 50 ft	30.9 - 31 ft	49.9 - 50 ft		48.1 - 48.2 ft	48.1 - 48.2 ft
National	Analyto	Unit										ft		
Li, L. 2 Freinforderbare \(\mu \) \(\mu \) \(\sigma		Oilit												
1,1,1-Trinformerhame		ua/ka	< 2.7.1	~ 3.5	< 3.6	< 631	~ 5 3	< 751	< 6.8.1	< 15	< 3.7	< 8.5.1	<pre></pre>	< 9.2.1
Li, L. Territomore throne	_ , , ,													
1,1,2-Trinsformathen														
Li-Delinorechame														
Li Delinopremente spring c 21 c 8.6 c 8.8 c 16 c 13 c 18 c 17 c 11 c 9.1 c 21 c 18 c 22 c 18 c 27 c 1.4 c 18 c														
1.4-Dichloropropene 19/14 2.9 2.9 2.8 2.8 2.6 2.7 2.5 2.8														
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1,24 Trinstlythemzene														
1,2-Discorposement 19/18 < 2.6 < 11 < 11 < 19 < 16 < 2.3 < 2.1 < 14 < 11 < 2.6 < 2.3 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8 < 2.8														
2,2 Dichrobemene	1,2-Dibromo-3-chloropropane													
	1,2-Dichlorobenzene													
1,2 Dichforopropene 19/kg 11	1,2-Dichloroethane		< 9.6 J		< 3.9	< 6.9 J	< 5.8	< 8.3 J	< 7.4 J	< 5	< 4.1	< 9.3 J	< 8.3 J	< 10 J
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1,2-Dichloropropane		< 11 J	< 4.6	< 4.7	< 8.3 J	< 7	< 9.9 J	< 8.9 J	< 6	< 4.9	< 11 J	< 9.9 J	< 12 J
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1,3,5-Trimethylbenzene		< 13 J	< 5.3	< 5.4	< 9.6 J	< 8	< 11 J	< 10 J	< 6.9	< 5.6	< 13 J	< 11 J	< 14 J
L4-Dichlorobenzene	1,3-Dichlorobenzene		< 23 J	< 9.3	< 9.5	< 17 J	< 14	< 20 J	< 18 J	< 12	< 9.8	< 23 J	< 20 J	< 24 J
	1,3-Dichloropropane	μg/kg	< 9.7 J	< 3.9	< 4	< 7.1 J	< 5.9	< 8.4 J	< 7.6 J	< 5.1	< 4.1	< 9.5 J	< 8.4 J	< 10 J
Chlorotouluene $\mu g/kg $	1,4-Dichlorobenzene	μg/kg	63 J	94	< 7.7	57 J	< 11	450 J	< 15 J	11 j	< 8	< 18 J	< 16 J	< 20 J
February 19/kg 18 47.1 47.3 413 41 415 414 49.2 47.5 47	2,2-Dichloropropane	μg/kg	< 21 J	< 8.5	< 8.7		< 13	< 200 J		< 11			< 18 J	< 22 J
Perzene yg/kg < 6,6 < 2,7 < 2,7 < 4,8 < 4 < 5,7 < 5,1 < 3,4 < 2,8 < 6,5 < 5,7 < 7,1 < 7,1 < 7,2 < 7,2 < 4,8 < 4 < 5,7 < 5,1 < 3,4 < 2,8 < 6,5 < 5,7 < 7,1 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2 < 7,2	4-Chlorotoluene	μg/kg		< 6.9		< 12 J	< 10	< 15 J	< 13 J	< 8.9	< 7.2	< 17 J	< 15 J	< 18 J
Standard Marked	4-Isopropyltoluene	μg/kg		< 7.1		< 13 J	< 11	< 15 J		< 9.2	< 7.5		< 15 J	< 19 J
	Benzene	μg/kg												
Standard	Bromobenzene									< 3.8				
Commerthane Mark Commert	Bromodichloromethane									-				
Carbon tetrachloride Mg/Kq 17,000 110,000 100 37,000 100,000 37,000 100,000 2,600 10,000 38 58,000 160,000 2,600 10,000 38 58,000 160,000 100,000 38 58,000 160,000 100,000 38 58,000 160,000 100,000														
Thereberage μg/kg 17,000 110,000 100 37,000 37,000 37,000 160,000 2,600 10,000 38 58,000 160 77 Thereberage μg/kg < 36 3 < 21 < 4.4 < 7.8 3 < 2.5 < 3.1 < 2.8 < 2.2 < 21 < 21 < 35 < 31 < 3.8 < 3.1 < 3.1 < 3.8 Thereberage μg/kg < 36 3 < 21 < 21 < 21 110 < 22 < 31 < 2.8 < 2.2 < 21 < 21 < 35 < 3.1 < 3.1 < 3.8 Thereberage μg/kg < 3.8 3.1 < 7.1 < 7.2 < 3.8 3.1 < 7.1 < 7.2 < 1.3 < 1.1 < 1.5 < 1.4 < 9.1 < 7.5 < 1.7 < 1.5 < 1.8 Thereberage μg/kg < 2.2 < 3.8 < 3.1 < 7.1 < 7.2 < 3.8 < 3.1 < 7.1 < 1.5 < 1.8 Thereberage μg/kg < 2.2 < 8.8 < 9 < 1.6 < 1.3 < 5.3 < 7.7 < 1.8 < 1.8 Thereberage μg/kg < 2.2 < 8.8 < 9 < 1.6 < 1.3 < 5.3 < 7.7 < 1.1 < 9.3 < 1.70 < 1.9 Thereberage μg/kg < 8.5 < 3.8 < 3.8 < 3.8 < 3.1 < 7.1 < 1.8 Thereberage μg/kg < 8.5 < 3.8 < 9 < 1.6 < 1.3 < 5.3 < 7.7 < 1.8 Thereberage μg/kg < 8.5 < 3.8 < 3.8 < 9 < 1.6 < 1.3 < 3.5 < 3.1 < 7.1 < 1.1 < 9.3 < 1.70 Thereberage μg/kg < 8.5 < 3.3 < 3.1 < 7.1 < 1.1 < 9.3 < 7.7 Thereberage μg/kg < 8.5 < 3.3 < 3.8 < 3.1 < 7.1 < 1.1 < 9.3 < 7.7 Thereberage μg/kg < 8.5 < 3.3 < 3.8 < 3.1 < 7.1 < 1.1 < 1.1 < 1.1 < 1.1 < 1.1 Thereberage μg/kg < 8.5 < 3.3 < 3.8 < 3.1 < 7.1 < 1.1 < 1.1 < 1.1 < 1.1 Thereberage μg/kg < 1.0 < 4.2 < 4.3 < 4.8 < 9 < 6.0 < 5.5 < 7.4 < 6.0 < 4.4 < 4.8 < 9 < 6.0 < 7.8 Thereberage μg/kg < 1.0 < 6.6 < 4.8 < 9 < 6.0 < 4.4 < 4.8 < 9 < 6.0 < 4.4 < 4.8 < 9 < 6.0 < 4.4 < 4.8 < 9 < 6.0 < 4.4 < 4.8 < 9 < 6.0 < 4.4 < 4.8 < 4.8 < 9 < 6.0 < 4.4 < 4.8 < 4.8 < 9 < 6.0 < 4.4 < 4.8 < 4.8 < 4.8 < 4.8 < 4.8 < 4.8 < 4.8 < 4.8 < 4.8 < 4.8 < 4.8 < 4.8 < 4.8 < 4.8 < 4.8 < 4.8 < 4.8 < 4.8														
Chlorobromomethane														
Chloroethane µg/kg <36.1 <21.1 <11.0 <22 <31.1 <28.1 <28.1 <28.1 <28.1 <28.1 <28.1 <35.1 <38.1 <38.1 <38.1 <38.1 <38.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <48.1 <				· · · · · · · · · · · · · · · · · · ·		·	·			·				
Chloroform Ug/kg < 7.3 42 < 3 52 < 4.4 91 < 5.7 < 3.8 < 3.1 < 7.1 < 6.3 < 7.7 < 7.5 < 7.8														
Chloromethane yg/kg < 18 < 7.1 < 7.2 < 13 < 11 < 15 < 14 < 9.1 < 7.5 < 17 < 15 < 18 < 18 < 15 < 18 < 15 < 14 < 9.1 < 7.5 < 17 < 15 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18 < 18														
15-1,2-Dichloroethene 19/kg < 22 < 8.8 < 9 < 16 < 13 53 < 17 < 11 < 9.3 170 < 19 < 23 < 23 < 23 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.5 < 3.														
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$														
Dibromochloromethane yg/kg < 8.5														
Dibromomethane Ug/kg Color Vg/kg Color Color Color Vg/kg Color Col														
Cichlorodifluoromethane (Freon 12) $\mu g/kg$ < 80 J < 32 < 33 \mathbf{R} < 48 < 69 J < 62 J < 42 < 34 < 78 J < 69 J < 84 J < 84 J < 78 J < 69 J < 84 J														
Ethylbenzene														
Ethylene dibromide														
Hexachlorobutadiene														
Sopropylbenzene (Cumene) μg/kg < 15														
m,p-Xylenes														
Methyl tert-butyl ether µg/kg < 10 J < 4.2 < 4.3 < 7.6 J < 6.3 < 9 J < 8.1 J < 5.4 < 4.4 < 10 J < 9 J < 11 J Methylene chloride µg/kg < 45 J														
Methylene chloride														
Naphthalene	Methylene chloride													
n-Butylbenzene	Naphthalene													
n-Propylbenzene	n-Butylbenzene													
o-Chlorotoluene (2-chlorotoluene) μg/kg < 15 J < 6.2 < 6.3 < 11 J < 9.3 < 13 J < 12 J < 8 < 6.5 < 15 J < 13 J < 16 J ο-Xylene μg/kg < 8.7 J < 3.5 < 3.6 < 6.3 J < 5.3 < 7.5 J < 6.8 J < 4.5 < 3.7 < 8.5 J < 7.5 J < 9.2 J sec-Butylbenzene μg/kg < 15 J < 6 < 6.2 < 11 J < 9.1 < 13 J < 12 J < 7.8 < 6.4 < 15 J < 13 J < 16 J	n-Propylbenzene													
o-Xylene μg/kg < 8.7 J < 3.5 < 3.6 < 6.3 J < 5.3 < 7.5 J < 6.8 J < 4.5 < 3.7 < 8.5 J < 7.5 J < 9.2 J sec-Butylbenzene μg/kg < 15 J < 6 < 6.2 < 11 J < 9.1 < 13 J < 12 J < 7.8 < 6.4 < 15 J < 13 J < 16 J	o-Chlorotoluene (2-chlorotoluene)													
sec-Butylbenzene µg/kg < 15 J < 6 < 6.2 < 11 J < 9.1 < 13 J < 12 J < 7.8 < 6.4 < 15 J < 13 J < 16 J	o-Xylene													
	sec-Butylbenzene			< 6		< 11 J			< 12 J					< 16 J
	Styrene		< 22 J	< 8.9	< 9.1	< 16 J	< 13	< 19 J	< 17 J	< 12	< 9.4	< 22 J	< 19 J	< 23 J

Table 1
PDI Phase II Analytical Data Summary
Former Arkema, Inc. Facility
Portland, Oregon

										2024 Pre-De	esign Investigati	on Phase II	
	Location	PDI-46A	PDI-48	PDI-48	PDI-48A	PDI-48A	PDI-48B	PDI-48B	PDI-49	PDI-49	PDI-49A	PDI-49A	PDI-49A
Sam	ple Date	10/24/2024	10/08/2024	10/08/2024	10/18/2024	10/18/2024	10/23/2024	10/24/2024	10/09/2024	10/09/2024	10/23/2024	10/23/2024	10/23/2024
Sam	ple Type	N	N	N	N	N	N	N	N	N	N	N	FD
Depth Below Ground	Surface	47.4 - 47.5 ft	33.8 - 33.9 ft	39.9 - 40 ft	34.2 - 34.3 ft	49.9 - 50 ft	32.85 - 32.95 ft	49.9 - 50 ft	30.9 - 31 ft	49.9 - 50 ft	31.85 - 31.95	48.1 - 48.2 ft	48.1 - 48.2 ft
											ft		
Analyte	Unit												
tert-Butylbenzene	μg/kg	< 13 J	< 5.4	< 5.5	< 9.7 J	< 8.1	< 12 J	< 10 J	< 7	< 5.7	< 13 J	< 12 J	< 14 J
Tetrachloroethene	μg/kg	< 9.2 J	38	< 3.8	19 J	< 5.6	99 J	< 7.2 J	9.7 j	< 3.9	< 9 J	< 8 J	< 9.7 J
Toluene	μg/kg	< 23 J	< 9.5	< 9.7	< 17 J	< 14	< 20 J	< 18 J	< 12	< 10	< 23 J	< 20 J	< 25 J
trans-1,2-Dichloroethene	μg/kg	< 25 J	< 10	< 10	< 18 J	< 15	< 22 J	< 20 J	< 13	< 11	< 25 J	< 22 J	< 27 J
trans-1,3-Dichloropropene	μg/kg	< 12 J	< 4.9	< 5	< 8.8 J	< 7.4	< 11 J	< 9.5 J	< 6.3	< 5.2	< 12 J	< 11 J	< 13 J
Trichloroethene	μg/kg	< 18 J	< 7.2	< 7.4	< 13 J	< 11	25 J	< 14 J	< 9.3	< 7.6	< 17 J	< 15 J	< 19 J
Trichlorofluoromethane (Freon 11)	μg/kg	< 45 J	< 18	< 19	< 33 J	< 27	< 39 J	< 35 J	< 24	< 19	< 44 J	< 39 J	< 48 J
Vinyl chloride	μg/kg	< 32 J	< 13	< 13	< 24 J	< 20	< 28 J	< 25 J	< 17	< 14	< 32 J	< 28 J	< 34 J

Bolded values indicate concentrations above the Method Detection Limit.

< = Compound not detected. Method Detection Limit shown.

VOCs = Volatile organic compounds

FD = Field Duplicate Sample

N = Normal Environmental Sample ug/kg = micrograms per kilogram SW8260D analyses performed by Eurofins -Seattle, WA.

Validation Level = EPA-STAGE2A

Validated Qualifier Definition(s)

- j = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- J- = The result is an estimated quantity, but the result may be biased low.
- J+ = The result is an estimated quantity, but the result may be biased high.
- R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
- UJ = The analyte was analyzed for, but was not detected. The reported limit is approximate and may be inaccurate or imprecise.

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Table 1
PDI Phase II Analytical Data Summary
Former Arkema, Inc. Facility
Portland, Oregon

	Location	PDI-50	PDI-50	PDI-50A	PDI-50A	PDI-50B	PDI-50B	PDI-51	PDI-51	PDI-52	PDI-52	PDI-53	PDI-53
		10/09/2024	10/09/2024	10/10/2024	10/10/2024	10/10/2024	10/10/2024	10/11/2024	10/11/2024	10/18/2024	10/18/2024	10/18/2024	10/21/2024
	mple Type	N	N	N	N	N	N	N	N	N	N	N	N
Depth Below Groun	nd Surface	28.5 - 28.6 ft	34.9 - 35 ft	29.45 - 29.55 ft	39.9 - 40 ft	29.5 - 29.6 ft	44.9 - 45 ft	25.4 - 25.5 ft	39.9 - 40 ft	35.7 - 35.8 ft	39.9 - 40 ft	28.3 - 28.4 ft	44.9 - 45 ft
Analyte	Unit												
SW8260D				-							!		
1,1,1,2-Tetrachloroethane	μg/kg	< 42	< 3.7	< 93	< 40	< 3.9	< 3.7	< 6.3	< 7.3	< 6.3	R	< 6.5 J	< 7.5
1,1,1-Trichloroethane	μg/kg	65 j	< 3.4	< 86	< 37	< 3.6	< 3.4	< 5.8	< 6.7	< 5.8	R	< 6 J	< 6.9
1,1,2,2-Tetrachloroethane	μg/kg	< 65	< 5.6	< 140	< 61	< 6	< 5.6	< 9.6	< 11	< 9.6	R	< 9.9 J	< 11
1,1,2-Trichloroethane	μg/kg	< 63	< 5.5	< 140	< 60	< 5.8	< 5.4	< 9.4	< 11	< 9.4	R	< 9.7 J	< 11
1,1-Dichloroethane	μg/kg	< 78	< 6.8	< 170	< 74	< 7.2	< 6.7	< 12	< 13	< 12	R	< 12 J	< 14
1,1-Dichloroethene	μg/kg	< 100	< 9.1	< 230	< 99	< 9.7	< 9	< 16	< 18	< 16	R	< 16 J	< 19
1,1-Dichloropropene	μg/kg	< 45	< 3.9	< 99	< 43	< 4.2	< 3.9	< 6.7	< 7.7	< 6.7	R	< 6.9 J	< 8
1,2,3-Trichlorobenzene	μg/kg	< 340	< 29	< 740	< 320	< 31	< 29	< 50	< 58	< 50	R	< 52 J	< 60
1,2,3-Trichloropropane	μg/kg	< 98	< 8.5	< 210	< 93	< 9.1	< 8.4	< 15	< 17	< 15	R	< 15 J	< 17
1,2,4-Trichlorobenzene	µg/kg	< 360	< 32	< 790	< 340	< 34	< 31	< 54	< 62	< 54	R	< 56 J	< 64
1,2,4-Trimethylbenzene	μg/kg	< 110	< 10	< 250	< 110	< 11	< 9.9	< 17	< 20	< 17	R	< 190 J	< 20
1,2-Dibromo-3-chloropropane	μg/kg	< 130	< 11	< 280	< 120	< 12	< 11	< 19	< 22	< 19	R	< 20 J	< 23
1,2-Dichlorobenzene	μg/kg	7,100	< 6.4	6,200	< 70	< 6.9	< 6.4	< 11	< 13	< 11	R	< 120 J	< 13
1,2-Dichloroethane	μg/kg	< 47	< 4.1	< 100	< 44	< 4.3	< 4	< 7	< 8	< 7	R	< 7.2 J	< 8.3
1,2-Dichloropropane	μg/kg	< 56	< 4.9	< 120	< 53	< 5.2	< 4.8	< 8.4	< 9.6	< 8.4	R	< 8.6 J	< 9.9
1,3,5-Trimethylbenzene	μg/kg	< 65	< 5.6	< 140	< 61	< 6	< 5.6	< 9.6	< 11	< 9.6	R	< 9.9 J	< 11
1,3-Dichlorobenzene	μg/kg	440 j	< 9.8	360 j	< 110	< 10	< 9.7	< 17	< 19	< 17	R	< 190 J	< 20
1,3-Dichloropropane	μg/kg	< 48	< 4.1	< 100	< 45	< 4.4	< 4.1	< 7.1	< 8.2	< 7.1	R	< 7.3 J	< 8.4
1,4-Dichlorobenzene	μg/kg	20,000	< 8	16,000	< 87	< 8.5	< 7.9	< 14	< 16	< 14	R	320 J	< 16
2,2-Dichloropropane	μg/kg	< 100	< 9	< 230	< 98	< 9.5	< 8.9	< 15	< 18	< 15	R	< 16 J	< 18
4-Chlorotoluene	μg/kg	< 83	< 7.2	< 180	< 79	< 7.7	< 7.2	< 12	< 14	< 12	R	< 13 J	< 15
4-Isopropyltoluene	μg/kg	< 87	< 7.5	240 j	< 82	< 8	< 7.5	< 13	< 15	37 j	R	< 140 J	< 15
Benzene	μg/kg	< 32 < 36	< 2.8	< 71 < 78	< 31	< 3 < 3.3	< 2.8	< 4.8 < 5.3	< 5.5	< 4.8	R R	< 5 J	< 5.7
Bromobenzene Bromodichleremethane	μg/kg	< 36 < 47	< 3.1	< 100	< 34 < 44	< 3.3 < 4.3	< 3.1	< 5.3 < 75	< 6.1	< 5.3 < 7	R	< 5.5 J < 7.2 J	< 6.3 < 8.3
Bromodichloromethane Bromoform	μg/kg	< 47	< 4.1 < 3.3	< 84	< 36	< 4.3 < 3.5	< 4	< 5.7	R < 6.6	< 5.7	R	< 7.2 J < 5.9 J	< 6.8
Bromomethane	µg/kg	< 410 J	< 3.3 < 29 J	< 700	< 400 J	< 3.5 < 41 J	< 3.3	< 5.7 < 510	< 6.6	< 48	R	< 5.9 J	< 5.8
Carbon tetrachloride	μg/kg	< 37	< 3.3	< 82	< 35	< 3.5	< 3.2	< 5.6	< 6.4	< 5.6	R	< 5.7 J	< 6.6
Chlorobenzene	μg/kg	1,800,000	5,000	2,600,000 J	< 39	6,700	< 3.5	17,000	< 58	110 J+	R	310,000 J	110 J+
Chlorobromomethane	μg/kg μg/kg	< 53	< 4.6	< 120	< 50	< 4.9	< 4.5	< 7.9	< 9	< 7.9	R	< 8.1 J	< 9.3
Chloroethane	μg/kg μg/kg	< 220 J	< 16 J	< 390	< 220 J	< 23 J	< 15	< 280	R	< 27	R	R	< 31
Chloroform	μg/kg	< 36	3.6 j	< 78	< 34	< 3.3	< 3.1	< 5.3	< 6.1	< 5.3	R	< 59 J	< 6.3
Chloromethane	μg/kg	< 86	< 7.5	< 190	< 81	< 8	< 7.4	< 13	< 15	< 13	R	< 13 J	< 15
cis-1,2-Dichloroethene	μg/kg	< 110	51	< 230	< 100	< 9.9	< 9.2	< 16	< 18	170	R	< 16 J	< 19
cis-1,3-Dichloropropene	μg/kg	< 34	< 3	< 75	< 32	< 3.1	< 2.9	< 5.1	< 5.8	< 5.1	R	< 5.2 J	< 6
Dibromochloromethane	μg/kg	< 42	< 3.6	< 91	< 39	< 3.9	< 3.6	< 6.2	< 7.1	< 6.2	R	< 6.4 J	< 7.4
Dibromomethane	μg/kg	< 63	< 5.5	< 140	< 60	< 5.8	< 5.4	< 9.4	< 11	< 9.4	R	< 9.7 J	< 11
Dichlorodifluoromethane (Freon 12)		< 390	< 34	< 860	< 370	< 36	< 34	< 58	< 67	< 58	R	R	< 69
Ethylbenzene	μg/kg	83 j	< 6.7	< 170	< 73	< 7.2	< 6.7	< 12	< 13	< 12	R	< 130 J	< 14
Ethylene dibromide	μg/kg	< 32	< 2.8	< 71	< 31	< 3	< 2.8	< 4.8	< 5.5	< 4.8	R	< 5 J	< 5.7
Hexachlorobutadiene	μg/kg	< 200	< 74	< 450	< 190	< 19	< 17	< 30	< 35	< 30	R	< 31 J	< 36
Isopropylbenzene (Cumene)	μg/kg	< 73	< 6.4	< 160	< 69	< 6.8	< 6.3	< 11	< 13	< 11	R	< 11 J	< 13
m,p-Xylenes	μg/kg	< 60	< 5.3	< 130	< 57	< 5.6	< 5.2	< 9	< 10	< 9	R	< 9.3 J	< 11
Methyl tert-butyl ether	μg/kg	< 51	< 4.4	< 110	< 48	< 4.7	< 4.4	< 7.6	< 8.7	< 7.6	R	< 7.8 J	< 9
Methylene chloride	μg/kg	< 220	< 180	< 480	< 210	< 200	< 180 J	< 33	< 38	< 33	R	< 34 J	< 39
Naphthalene	μg/kg	< 330	< 29	< 730	< 320	< 31	< 29	< 50	< 57	< 50	R	< 550 J	< 59
n-Butylbenzene	µg/kg	< 160	< 14	< 340	< 150	< 15	< 14	< 23	< 27	< 23	R	< 24 J	< 28
n-Propylbenzene	μg/kg	< 130	< 11	< 280	< 120	< 12	< 11	< 19	< 22	< 19	R	< 20 J	< 23
o-Chlorotoluene (2-chlorotoluene)	μg/kg	< 75	< 6.5	< 160	< 71	< 6.9	< 6.4	< 11	< 13	< 11	R	< 11 J	< 13
o-Xylene	µg/kg	< 42	< 3.7	< 93	< 40	< 3.9	< 3.7	< 6.3	< 7.3	< 6.3	R	< 70 J	< 7.5
sec-Butylbenzene	µg/kg	< 73	< 6.4	< 160	< 69	< 6.8	< 6.3	< 11	< 13	< 11	R	< 11 J	< 13
Styrene	μg/kg	< 110	< 9.4	< 240	< 100	< 10	< 9.3	< 16	< 19	< 16	R	< 17 J	< 19

Table 1
PDI Phase II Analytical Data Summary
Former Arkema, Inc. Facility
Portland, Oregon

	Location	PDI-50	PDI-50	PDI-50A	PDI-50A	PDI-50B	PDI-50B	PDI-51	PDI-51	PDI-52	PDI-52	PDI-53	PDI-53
S	Sample Date	10/09/2024	10/09/2024	10/10/2024	10/10/2024	10/10/2024	10/10/2024	10/11/2024	10/11/2024	10/18/2024	10/18/2024	10/18/2024	10/21/2024
S	ample Type	N	N	N	N	N	N	N	N	N	N	N	N
Depth Below Gro	und Surface	28.5 - 28.6 ft	34.9 - 35 ft	29.45 - 29.55 ft	39.9 - 40 ft	29.5 - 29.6 ft	44.9 - 45 ft	25.4 - 25.5 ft	39.9 - 40 ft	35.7 - 35.8 ft	39.9 - 40 ft	28.3 - 28.4 ft	44.9 - 45 ft
Analyte	Unit												
tert-Butylbenzene	μg/kg	< 65	< 5.7	< 140	< 62	< 6.1	< 5.6	< 9.8	< 11	< 9.8	R	< 10 J	< 12
Tetrachloroethene	μg/kg	2,900	6.7 j	2,900	< 43	6.1 j	< 3.9	< 6.7	< 7.7	< 6.7	< 47 J	320 J	< 8
Toluene	μg/kg	< 110	< 10	< 250	< 110	< 11	< 9.9	< 17	< 20	30 j	R	< 18 J	< 20
trans-1,2-Dichloroethene	μg/kg	< 120	14 j	< 270	< 120	< 11	< 11	< 19	< 21	< 19	R	< 19 J	< 22
trans-1,3-Dichloropropene	μg/kg	< 59	< 5.2	< 130	< 56	< 5.5	< 5.1	< 8.9	< 10	< 8.9	R	< 9.1 J	< 11
Trichloroethene	μg/kg	< 87	12 j	< 190	< 83	< 8.1	< 7.5	< 13	< 15	< 13	R	< 140 J	< 16
Trichlorofluoromethane (Freon 11) μg/kg	< 220	< 19	< 480	< 210	< 20	< 19	< 33	< 38	< 33	R	< 34 J	< 39
Vinyl chloride	μg/kg	< 160	< 14	< 350	< 150	< 15	< 14	< 24	< 27	< 24	R	< 24 J	< 28

Bolded values indicate concentrations above the Method Detection Limit.

< = Compound not detected. Method Detection Limit shown.

VOCs = Volatile organic compounds

FD = Field Duplicate Sample

N = Normal Environmental Sample ug/kg = micrograms per kilogram SW8260D analyses performed by Eurofins -Seattle, WA.

Validation Level = EPA-STAGE2A

Validated Qualifier Definition(s)

- j = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- J- = The result is an estimated quantity, but the result may be biased low.
- J+ = The result is an estimated quantity, but the result may be biased high.
- R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
- UJ = The analyte was analyzed for, but was not detected. The reported limit is approximate and may be inaccurate or imprecise.

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Table 1
PDI Phase II Analytical Data Summary
Former Arkema, Inc. Facility
Portland, Oregon

	Location	PDI-54	PDI-54	PDI-55	PDI-55	PDI-55A	PDI-55A	PDI-55B	PDI-55C	PDI-55C	PDI-56	PDI-56	PDI-57
	ple Date	10/18/2024 N	10/21/2024 N	10/21/2024 N	10/21/2024 N	10/22/2024 N	10/22/2024 N	10/22/2024 N	10/22/2024 N	10/23/2024	10/09/2024	10/09/2024 N	10/08/2024 N
Depth Below Ground			44.9 - 45 ft	9.9 - 10 ft	44.9 - 45 ft	8.7 - 8.8 ft	44.7 - 44.8 ft	9 - 9.1 ft	11.2 - 11.3 ft	44.3 - 44.4 ft	34.7 - 34.8 ft	39.5 - 39.6 ft	35 - 35.1 ft
Amplicha	Unit												
Analyte SW8260D	Oiiit												
1,1,1,2-Tetrachloroethane	μg/kg	R	< 6.2	< 6.8	< 5.4	< 79 J	< 7.1 J	< 95 J	< 7.5 J	< 7.8 J	< 3.6	< 3.9	< 4.2
1,1,1-Trichloroethane	μg/kg	R	< 5.7	< 6.2	< 4.9	< 73 J	< 6.5 J	< 88 J	< 6.9 J	< 7.2 J	< 3.3	< 3.6	< 3.9
1,1,2,2-Tetrachloroethane	µg/kg	R	< 9.3	< 10	< 8.2	< 120 J	< 11 J	< 140 J	< 11 J	< 12 J	< 5.5	< 6	< 6.4
1,1,2-Trichloroethane	μg/kg	R	< 9.1	< 10	< 7.9	< 120 J	< 10 J	< 140 J	< 11 J	< 12 J	< 5.3	< 5.8	< 6.2
1,1-Dichloroethane	μg/kg	R	< 11	< 12	< 9.9	< 150 J	< 13 J	< 180 J	< 14 J	< 14 J	< 6.6	< 7.2	< 7.7
1,1-Dichloroethene	μg/kg	R	< 15	< 17	< 13	< 190 J	< 17 J	< 230 J	< 18 J	< 19 J	< 8.8	< 9.7	< 10
1,1-Dichloropropene	μg/kg	R	< 6.5	< 7.2	< 5.7	< 84 J	< 7.5 J	< 100 J	< 8 J	< 8.3 J	< 3.8	< 4.2	< 4.5
1,2,3-Trichlorobenzene	μg/kg	R	< 49	< 54	< 43	< 630 J	< 56 J	< 760 J	< 60 J	< 62 J	< 29	< 31	< 33
1,2,3-Trichloropropane	μg/kg	R	< 14	< 16	< 12	< 180 J	< 16 J	< 220 J	< 17 J	< 18 J	< 8.3	< 9	< 9.7
1,2,4-Trichlorobenzene	μg/kg	R	< 52	< 58	< 46	< 670 J	< 60 J	< 810 J	< 64 J	< 67 J	< 31	< 33	< 36
1,2,4-Trimethylbenzene	μg/kg	R	< 17	< 18	< 14	< 210 J	< 19 J	< 260 J	< 20 J	< 21 J	< 9.7	< 11	< 11
1,2-Dibromo-3-chloropropane	μg/kg	R	< 19	< 21	< 16	< 240 J	< 22 J	< 290 J	< 23 J	< 24 J	< 11	< 12	< 13
1,2-Dichlorobenzene	μg/kg	R	< 11	< 12	< 9.3	10,000 J	< 12 J	34,000 J	< 13 J	< 14 J	14 j	< 6.8	68
1,2-Dichloroethane	μg/kg	R	< 6.8	< 7.4	8.9 j	< 87 J	< 7.8 J	< 2,100 J	< 8.3 J	< 8.6 J	< 4	< 4.3	< 4.6
1,2-Dichloropropane	μg/kg	R	< 8.1	< 8.9	< 7.1	< 100 J	< 9.4 J	< 130 J	< 9.9 J	< 10 J	< 4.7	< 5.2	< 5.6
1,3,5-Trimethylbenzene	μg/kg	R	< 9.3	< 10	< 8.2	< 120 J	< 11 J	< 2,900 J	< 11 J	< 12 J	< 5.5	< 6	< 6.4
1,3-Dichlorobenzene	μg/kg	R	< 16	< 18	< 14	2,200 J	< 19 J	8,100 J	< 20 J	< 21 J	< 9.6	< 10	< 11
1,3-Dichloropropane	μg/kg	R	< 6.9	< 7.6	< 6	< 88 J	< 7.9 J	< 110 J	< 8.4 J	< 8.8 J	< 4	< 4.4	< 4.7
1,4-Dichlorobenzene	μg/kg	R	< 13	53 j	< 12	63,000 J	< 15 J	190,000 J	< 16 J	< 17 J	35 j	< 8.5	< 98
2,2-Dichloropropane	μg/kg	R	< 15	< 16	< 13	< 3,800 J	< 17 J	< 4,600 J	< 18 J	< 19 J	< 8.7	< 9.5	< 10
4-Chlorotoluene	μg/kg	R	< 12	< 13	< 11	310 J	< 14 J	< 3,700 J	< 15 J	< 15 J	< 7	< 7.7	< 8.3
4-Isopropyltoluene	μg/kg	R	< 13	< 14	< 11	360 J	16 J	< 3,900 J	< 15 J	< 16 J	< 7.3	< 8	< 8.6
Benzene	μg/kg	R	< 4.7	< 5.1	24	< 60 J	< 5.4 J	< 72 J	< 5.7 J	< 6 J	< 2.7	< 3	< 3.2
Bromobenzene	μg/kg	R	< 5.2	< 5.7	< 4.5	620 J	< 6 J	< 1,600 J	< 6.3 J	< 6.6 J	< 3	< 3.3	< 3.5
Bromodichloromethane	μg/kg	R	< 6.8	< 7.4	< 5.9	< 87 J	< 7.8 J	< 100 J	< 8.3 J	< 8.6 J	< 4	< 4.3	< 50
Bromoform	μg/kg	R	< 5.5	< 6.1	< 4.8	< 71 J	< 6.4 J	< 86 J	< 6.8 J	< 7.1 J	< 3.2	< 3.5	< 3.8
Bromomethane	μg/kg	R	< 46	< 51	< 41	< 600 J	< 54 J	< 720 J	< 57 J	< 59 J	< 27 J	< 32 J	< 340
Carbon tetrachloride	μg/kg	R	< 5.4	< 6	< 4.7	< 69 J	< 6.2 J	< 84 J	< 6.6 J	< 6.9 J	< 3.2	< 3.5	< 3.7
Chlorobenzene	μg/kg	4,500 J	3,400	9,800	5,100	2,900,000 J	10 J	300,000 J	110 J	< 7.5 J	10,000	410	8,800
Chlorobromomethane	μg/kg	R	< 7.6	< 8.4	< 6.7	< 98 J	< 8.8 J	< 120 J	< 9.3 J	< 9.7 J	< 4.5	< 4.9	< 5.2
Chloroethane	μg/kg	R	< 26	< 28	< 22	< 330 J	< 30 J	< 400 J	< 31 J	< 33 J	< 15 J	< 18 J	< 190
Chloroform	μg/kg	R	< 5.2	< 5.7	< 4.5	< 66 J	< 6 J	< 80 J	< 6.3 J	< 6.6 J	35	< 3.3	30
Chloromethane	μg/kg	R	< 12	< 14	< 11	< 160 J	< 14 J	< 190 J	< 15 J	< 16 J	< 7.3	< 7.9	< 8.5
cis-1,2-Dichloroethene	μg/kg	R R	< 15	< 17	< 14	< 200 J	< 18 J	< 240 J	< 19 J	< 20 J	< 9.1	< 9.9	< 11
cis-1,3-Dichloropropene	µg/kg	R R	< 4.9	< 5.4	< 4.3	< 63 J	< 5.7 J	< 76 J	< 6 J	< 6.3 J	< 2.9	< 3.1	< 3.4
Dibromochloromethane	μg/kg	R	< 6	< 6.6	< 5.3	< 77 J	< 6.9 J	< 93 J	< 7.4 J	< 7.7 J	< 3.5	< 3.9	< 4.1
Dibromomethane	μg/kg μg/kg	R	< 9.1	< 10	< 7.9	< 120 J	< 10 J	< 140 J	< 11 J	< 12 J	< 5.3	< 5.8	< 6.2
Dichlorodifluoromethane (Freon 12)	μg/kg μg/kg	R	< 56	< 62	< 49	< 720 J	< 65 J	< 870 J	< 69 J	< 72 J	< 33	< 36	< 39
Ethylbenzene	μg/kg μg/kg	R R	< 11	< 12	< 9.8	< 140 J	< 13 J	< 170 J	< 14 J	< 14 J	< 6.5	< 7.2	< 7.7
Ethylene dibromide	μg/kg μg/kg	R R	< 4.7	< 5.1	< 4.1	< 60 J	< 5.4 J	< 72 J	< 5.7 J	< 6 J	< 2.7	< 3	< 3.2
Hexachlorobutadiene	μg/kg μg/kg	< 100 J	< 29	< 32	< 26	< 380 J	< 34 J	< 460 J	< 36 J	< 37 J	< 17	< 19	< 20
Isopropylbenzene (Cumene)		R	< 11	< 12	< 9.2	< 140 J	< 12 J	< 160 J	< 13 J	< 13 J	< 6.2	< 6.8	< 7.2
m,p-Xylenes	μg/kg	R R	< 8.7	< 9.6	< 7.6	< 110 J	< 10 J	< 140 J	< 11 J	< 11 J	< 5.1	< 5.6	< 6
Methyl tert-butyl ether	μg/kg	R	< 7.4	< 8.1	< 6.4	< 95 J	< 8.5 J	< 140 J	< 9 J	< 9.4 J	< 4.3	< 4.7	< 5.1
Methylene chloride	μg/kg	K 46 J	< 32	< 35	< 28	< 410 J	< 37 J	< 110 J	< 39 J	< 41 J	< 4.3	< 4.7	< 5.1 < 210 J
	μg/kg												
Naphthalene	μg/kg	R	< 48	< 53	< 42	< 620 J	< 55 J	< 15,000 J	< 59 J	< 61 J	< 28	< 31	< 33
n-Butylbenzene	μg/kg	R	< 23	< 25	< 20	< 290 J	< 26 J	< 350 J	< 28 J	< 29 J	< 13	< 15	< 16
n-Propylbenzene	μg/kg	R	< 18	< 20	< 16	< 240 J	< 21 J	< 290 J	< 23 J	< 24 J	< 11	< 12	< 13
o-Chlorotoluene (2-chlorotoluene)	μg/kg	R	< 11	< 12	< 9.4	< 140 J	< 12 J	< 3,400 J	< 13 J	< 14 J	< 6.3	< 6.9	< 7.4
o-Xylene	μg/kg	R	< 6.2	< 6.8	< 5.4	< 79 J	< 7.1 J	< 95 J	< 7.5 J	< 7.8 J	< 3.6	< 3.9	< 4.2
sec-Butylbenzene	μg/kg	R	< 11	< 12	< 9.2	< 140 J	< 12 J	< 160 J	< 13 J	< 13 J	< 6.2	< 6.8	< 7.2
Styrene	μg/kg	R	< 16	< 17	< 14	< 200 J	< 18 J	< 240 J	< 19 J	< 20 J	< 9.1	< 10	< 11

Table 1
PDI Phase II Analytical Data Summary
Former Arkema, Inc. Facility
Portland, Oregon

L	Location	PDI-54	PDI-54	PDI-55	PDI-55	PDI-55A	PDI-55A	PDI-55B	PDI-55C	PDI-55C	PDI-56	PDI-56	PDI-57
Samı	ple Date	10/18/2024	10/21/2024	10/21/2024	10/21/2024	10/22/2024	10/22/2024	10/22/2024	10/22/2024	10/23/2024	10/09/2024	10/09/2024	10/08/2024
Samp	ple Type	N	N	N	N	N	N	N	N	N	N	N	N
Depth Below Ground	Surface	33.5 - 33.6 ft	44.9 - 45 ft	9.9 - 10 ft	44.9 - 45 ft	8.7 - 8.8 ft	44.7 - 44.8 ft	9 - 9.1 ft	11.2 - 11.3 ft	44.3 - 44.4 ft	34.7 - 34.8 ft	39.5 - 39.6 ft	35 - 35.1 ft
	ow Ground Surface 33.5 - 33.6 ft 44.												
Analyte	Unit												
tert-Butylbenzene	μg/kg	R	< 9.5	< 10	< 8.3	< 120 J	< 11 J	< 150 J	< 12 J	< 12 J	< 5.5	< 6.1	< 6.5
Tetrachloroethene	µg/kg	< 42 J	< 6.5	24 j	< 5.7	12,000 J	< 7.5 J	37,000 J	< 8 J	< 8.3 J	12 j	< 4.2	20 j
Toluene	μg/kg	R	< 17	< 18	26 j	< 210 J	< 19 J	< 260 J	< 20 J	< 21 J	< 9.7	< 11	< 11
trans-1,2-Dichloroethene	µg/kg	R	< 18	< 20	< 16	< 230 J	< 21 J	< 280 J	< 22 J	< 23 J	< 10	< 11	< 12
trans-1,3-Dichloropropene	μg/kg	R	< 8.6	< 9.5	< 7.5	< 110 J	< 9.9 J	< 130 J	< 11 J	< 11 J	< 5	< 5.5	< 5.9
Trichloroethene	μg/kg	R	< 13	< 14	< 11	< 160 J	< 15 J	< 200 J	< 15 J	< 16 J	< 7.4	< 8.1	< 8.7
Trichlorofluoromethane (Freon 11)	μg/kg	R	< 32	< 35	< 28	< 410 J	< 37 J	< 500 J	< 39 J	< 41 J	< 19	< 20	< 22
Vinyl chloride	µg/kg	R	< 23	< 25	< 20	< 300 J	< 27 J	< 360 J	< 28 J	< 29 J	< 13	< 15	< 16

Bolded values indicate concentrations above the Method Detection Limit.

< = Compound not detected. Method Detection Limit shown.

VOCs = Volatile organic compounds

FD = Field Duplicate Sample

N = Normal Environmental Sample ug/kg = micrograms per kilogram SW8260D analyses performed by Eurofins -Seattle, WA.

Validation Level = EPA-STAGE2A

Validated Qualifier Definition(s)

- j = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- J- = The result is an estimated quantity, but the result may be biased low.
- J+ = The result is an estimated quantity, but the result may be biased high.
- R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
- UJ = The analyte was analyzed for, but was not detected. The reported limit is approximate and may be inaccurate or imprecise.

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Table 1
PDI Phase II Analytical Data Summary
Former Arkema, Inc. Facility
Portland, Oregon

Cocation PDI-50 PDI-59 PDI-59 PDI-59 PDI-59 PDI-60 PDI-60									
Name		Location	PDI-57	PDI-58	PDI-58	PDI-59	PDI-59	PDI-60	PDI-60
Depth Below Ground Surface 42.4 - 42.5 ft 35.75 - 35.85 ft 49.9 - 50 ft 33.7 - 33.8 ft 49.9 - 50 ft 32.7 - 32.8 ft 44.9 - 45	Sar	mple Date	10/09/2024	10/25/2024	10/25/2024	10/29/2024	10/29/2024	10/29/2024	10/29/2024
Analyte					N	N	N		N
Swe2600	Depth Below Groun	d Surface	42.4 - 42.5 ft	35.75 - 35.85 ft	49.9 - 50 ft	33.7 - 33.8 ft	49.9 - 50 ft	32.7 - 32.8 ft	44.9 - 45 ft
Swe2600	Analyte	Unit							
1,1,1-richloroethane		-							
1,1,1-richloroethane	1,1,1,2-Tetrachloroethane	µg/kg	< 4.1	< 8.4 J	< 7.5 J	< 7.8	< 7.9 J	< 88	< 7.6
1,1,2-Pichloroethane			< 3.8	< 7.7 J	< 6.9 J	< 7.2	< 7.3 J	< 81	< 7
1,1-Dichloroethene	1,1,2,2-Tetrachloroethane	μg/kg							< 12
1,1-Dichloropenee µg/kg < 10 < 21 < 18 < 19 < 20 < 220 < 19 1,1-Dichloropenee µg/kg < 34 < 4.4 < 8.9 < 7.9 < 8.2 < 8.4 < 94 < 8.1 1,2,3-Trichloropenee µg/kg < 33 < 67 < 59 < 6.2 < 63 < 700 < 60 1,2,3-Trichloropenee µg/kg < 35 < 72 < 64 < 60 < 68 < 750 < 62 1,2,4-Trinchloropenee µg/kg < 35 < 72 < 64 < 66 < 68 < 750 < 65 1,2,4-Trinchloropenee µg/kg < 31 < 22 < 20 < 21 < 21 < 21 < 24 < 22 1,2-Dichloropenee µg/kg < 13 < 26 < 23 < 22 < 21 < 21 < 22 < 22 < 22 1,2-Dichloropenee µg/kg < 13 < 26 < 23 < 22 < 24 < 24 < 270 < 23 1,2-Dichloropenee µg/kg < 7.2		μg/kg							< 11
1,1-Dichloropropene μg/kg < 4.4 < 8.9 J < 7.9 J < 8.2 < 8.4 J < 94 < 8,1 1,2,3-Trichloropropane μg/kg < 9.5		µg/kg				< 14			
1,2,3-Trichlorobenzene	1,1-Dichloroethene								
1,2,3-Trichtorpropane									
1,2,4-Trinchtyberzene									
1,2,4-frimethybenzene									
1,2-Dichromo-3-chioropropane									
1,2-Dichloroethane									
1,2-Dichloropropane µg/kq < 4.5									
1,2-Dichloropropane									
1,3,5-Trimethylbenzene									
1,3-Dichloropropane									
1,3-Dichloropropane µg/kg < 4.6									
1,4-Dichlorobenzene µg/kg < 8.9 440 J < 16 J < 360 < 17 J < 19,000 < 16 J 2,2-Dichloropropane µg/kg < 8.1									
2,2-Dichloropropane									
4-Chlorotoluene μg/kg < 8.1 < 17 J < 15 J < 16 J < 170 < 15 D 4-Isopropyltoluene μg/kg < 8.4 40 J < 15 J < 16 C < 16 J < 570 J < 16 C Benzene μg/kg < 3.1 < 6.4 J < 5.7 J < 5.9 < 6 J < 67 C < 5.8 Bromodichloromethane μg/kg < 3.5 < 7.1 J < 6.3 J < 6.5 J < 6.7 J < 74 C < 6.4 Bromoform μg/kg < 3.5 < 7.1 J < 6.3 J < 9.3 J < 8.2 J < 8.6 < 8.7 J < 77 C < 8.4 Bromoform μg/kg < 3.8 J < 64 J < 56 J < 59 J < 60 J < 670 J < 58 Carbon tetrachloride Carbon tetrachloride μg/kg 54 120,000 J 1,200 J 140,000 J 1,500 J < 407 C < 8.8 J Chlorobenzene μg/kg 54 120,000 J 1,200 J 140,000 J 1,500 J 4,900,000 J 120 J < 9.6 J < 9.8 J <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>									
4-Isopropyltoluene μg/kg < 8.4 40 J < 15 J < 16 < 16 J \$40 j < 16 Septembers Benzene μg/kg < 3.1	2,2-Dichloropropane	μg/kg							
Benzene									
Bromobenzene μg/kg < 3.5 < 7.1 J < 6.3 J < 6.5 < 6.7 J < 74 < 6.4 Bromodichloromethane μg/kg < 4.5	4-Isopropyltoluene	μg/kg		40 J				540 j	
Bromodichloromethane μg/kg < 4.5 < 9.3 J < 8.2 J < 8.6 < 8.7 J < 97 < 8.4 Bromoform μg/kg < 3.3 7		μg/kg		< 6.4 J				< 67	< 5.8
Bromoform µg/kg < 3.7 < 7.6 < 6.7 < 7.1 < 80.0 < 6.8.1 Bromomethane µg/kg < 38.1	Bromobenzene								
Bromomethane μg/kg < 38 J < 64 J < 56 J < 59 < 60 J < 670 < 58 Carbon tetrachloride μg/kg 4 3.6 < 7.4 J	Bromodichloromethane								
Carbon tetrachloride	Bromoform								< 6.8 J
Chlorobenzene μg/kg 54 120,000 J 1,200 J 140,000 1,500 J 4,900,000 120 Chlorobromomethane μg/kg < 5.1	Bromomethane	μg/kg	< 38 J						
Chlorobromomethane	Carbon tetrachloride	μg/kg		< 7.4 J	< 6.6 J	< 6.8		< 78	
Chloroethane	Chlorobenzene	μg/kg	54	120,000 J	1,200 J	140,000	1,500 J	4,900,000	120
Chloroform	Chlorobromomethane	μg/kg	< 5.1	< 10 J	< 9.2 J	< 9.6	< 9.8 J	< 110	< 9.4
Chloromethane μg/kg < 8.3 < 17 J < 15 J < 16 < 16 J < 180 < 15 cis-1,2-Dichloroethene μg/kg < 10	Chloroethane	μg/kg	< 21 J	< 35 J	< 31 J	< 33	< 33 J	< 370	< 32
cis-1,2-Dichloroethene µg/kg < 10 < 21 J < 19 J 32 j < 20 J < 220 < 19 C cis-1,3-Dichloropropene µg/kg < 3.3	Chloroform	μg/kg	< 3.5	45 J	< 6.3 J	19 j	< 6.7 J	500	< 6.4
cis-1,2-Dichloroethene µg/kg < 10 < 21 J < 19 J 32 j < 20 J < 220 < 19 C cis-1,3-Dichloropropene µg/kg < 3.3	Chloromethane		< 8.3	< 17 J	< 15 J	< 16	< 16 J	< 180	< 15
Dibromochloromethane μg/kg < 4 < 8.3 J < 7.3 J < 7.6 < 7.8 J < 87 < 7.5 Dibromomethane μg/kg < 6.1	cis-1,2-Dichloroethene		< 10	< 21 J	< 19 J	32 j	< 20 J	< 220	< 19
Dibromomethane μg/kg < 6.1 < 12 J < 11 J < 12 J < 12 J < 130 J < 11 J Dichlorodifluoromethane (Freon 12) μg/kg < 38	cis-1,3-Dichloropropene	μg/kg	< 3.3	< 6.7 J	< 6 J	< 6.2	< 6.3 J	< 71	< 6.1
Dichlorodifluoromethane (Freon 12) μg/kg < 38 < 77 J < 68 J < 71 < 73 J < 810 < 70 Ethylbenzene μg/kg < 7.5	Dibromochloromethane		< 4	< 8.3 J	< 7.3 J	< 7.6	< 7.8 J	< 87	< 7.5
Dichlorodifluoromethane (Freon 12) μg/kg < 38 < 77 J < 68 J < 71 < 73 J < 810 < 70 Ethylbenzene μg/kg < 7.5	Dibromomethane		< 6.1	< 12 J	< 11 J	< 12	< 12 J	< 130	< 11
Ethylbenzene μg/kg < 7.5 < 15 J < 14 J < 14 J < 14 J < 160 < 14 Ethylene dibromide Ethylene dibromide μg/kg < 3.1	Dichlorodifluoromethane (Freon 12)		< 38	< 77 J	< 68 J	< 71	< 73 J	< 810	< 70
Ethylene dibromide μg/kg < 3.1 < 6.4 J < 5.7 J < 5.9 < 6 J < 67 < 5.8 Hexachlorobutadiene μg/kg < 20	Ethylbenzene		< 7.5	< 15 J	< 14 J	< 14	< 14 J	< 160	< 14
Hexachlorobutadiene μg/kg < 20 < 40 J < 36 J < 37 < 38 J < 420 < 36 Isopropylbenzene (Cumene) Isopropylbenzene (Cumene) μg/kg < 7.1	Ethylene dibromide		< 3.1		< 5.7 J	< 5.9	< 6 J	< 67	< 5.8
Isopropylbenzene (Cumene) μg/kg < 7.1 < 14 J < 13 J < 13 J < 14 J < 150 < 13 m,p-Xylenes m,p-Xylenes μg/kg < 5.9									
m,p-Xylenes μg/kg < 5.9 < 12 J < 11 J < 11 J < 130 < 11 Methyl tert-butyl ether μg/kg < 5	Isopropylbenzene (Cumene)		< 7.1	< 14 J	< 13 J	< 13	< 14 J	< 150	< 13
Methyl tert-butyl ether $\mu g/kg$ < 5 $< 10 \mathrm{J}$ $< 8.9 \mathrm{J}$ < 9.3 $< 9.5 \mathrm{J}$ < 110 < 9.1 Methylene chloride $\mu g/kg$ < 210 $< 44 \mathrm{J}$ $< 39 \mathrm{J}$ $< 40 \mathrm{J}$ $< 460 \mathrm{J}$ $< 40 \mathrm{J}$ Naphthalene $\mu g/kg$ < 32 $< 240 \mathrm{J}$ $< 58 \mathrm{J}$ $< 180 \mathrm{j}$ $< 62 \mathrm{J}$ < 690 < 60 n-Butylbenzene $\mu g/kg$ < 15 $< 31 \mathrm{J}$ $< 28 \mathrm{J}$ $< 29 \mathrm{J}$ < 330 $< 28 \mathrm{J}$ n-Propylbenzene $\mu g/kg$ < 12 $< 25 \mathrm{J}$ $< 22 \mathrm{J}$ < 23 $< 24 \mathrm{J}$ < 270 < 23 o-Chlorotoluene (2-chlorotoluene) $\mu g/kg$ < 7.3 $< 15 \mathrm{J}$ $< 13 \mathrm{J}$ $< 14 \mathrm{J}$ $< 140 \mathrm{J}$ $< 160 \mathrm{J}$ $< 13 \mathrm{J}$ o-Xylene $\mu g/kg$ $< 4.1 \mathrm{J}$ $< 8.4 \mathrm{J}$ $< 7.5 \mathrm{J}$ $< 7.8 \mathrm{J}$ $< 7.9 \mathrm{J}$ $< 88 \mathrm{J}$ $< 7.6 \mathrm{J}$ sec-Butylbenzene $\mu g/kg$ $< 7.1 \mathrm{J}$									
Methylene chloride μg/kg < 210 < 44 J < 39 J < 40 J < 41 J < 460 J < 40 J Naphthalene μg/kg < 32									
Naphthalene μg/kg < 32 240 J < 58 J 180 j < 62 J < 690 < 60 n-Butylbenzene μg/kg < 15									
$\begin{array}{cccccccccccccccccccccccccccccccccccc$									
n-Propylbenzene μg/kg < 12 < 25 J < 22 J < 23 < 24 J < 270 < 23 o-Chlorotoluene (2-chlorotoluene) μg/kg < 7.3									
o-Chlorotoluene (2-chlorotoluene) μg/kg < 7.3									
o-Xylene $\mu g/kg$ < 4.1 < 8.4 J < 7.5 J < 7.8 < 7.9 J < 88 < 7.6 sec-Butylbenzene $\mu g/kg$ < 7.1 < 14 J < 13 J < 14 J < 150 < 13									
sec-Butylbenzene µg/kg < 7.1 < 14 J < 13 J < 13 < 14 J < 150 < 13									
	Styrene	μg/kg	< 10	< 21 J	< 19 J	< 20	< 20 J	< 220	< 19

Table 1
PDI Phase II Analytical Data Summary
Former Arkema, Inc. Facility
Portland, Oregon

L	ocation	PDI-57	PDI-58	PDI-58	PDI-59	PDI-59	PDI-60	PDI-60
Samp	le Date	10/09/2024	10/25/2024	10/25/2024	10/29/2024	10/29/2024	10/29/2024	10/29/2024
Samp	le Type	N	N	N	N	N	N	N
Depth Below Ground	Surface	42.4 - 42.5 ft	35.75 - 35.85 ft	49.9 - 50 ft	33.7 - 33.8 ft	49.9 - 50 ft	32.7 - 32.8 ft	44.9 - 45 ft
Analyte	Unit							
tert-Butylbenzene	μg/kg	< 6.4	< 13 J	< 11 J	< 12	< 12 J	< 140	< 12
Tetrachloroethene	μg/kg	< 4.4	130 J	< 7.9 J	49 j	< 8.4 J	3,100	< 8.1
Toluene	μg/kg	< 11	< 23 J	< 20 J	< 21	< 21 J	< 240	< 21
trans-1,2-Dichloroethene	μg/kg	< 12	< 25 J	< 22 J	< 23	< 23 J	< 260	< 22
trans-1,3-Dichloropropene	μg/kg	< 5.8	< 12 J	< 10 J	< 11	< 11 J	< 120	< 11
Trichloroethene	μg/kg	< 8.5	< 17 J	< 15 J	< 16	< 16 J	< 180	< 16
Trichlorofluoromethane (Freon 11)	μg/kg	< 21	< 44 J	< 39 J	< 40	< 41 J	< 460	< 40
Vinyl chloride	μg/kg	< 15	< 32 J	< 28 J	< 29	< 30 J	< 330	< 28

Bolded values indicate concentrations above the Method Detection Limit.

< = Compound not detected. Method Detection Limit shown.

VOCs = Volatile organic compounds

FD = Field Duplicate Sample

N = Normal Environmental Sample ug/kg = micrograms per kilogram SW8260D analyses performed by Eurofins -Seattle, WA.

Validation Level = EPA-STAGE2A

Validated Qualifier Definition(s)

- j = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- J- = The result is an estimated quantity, but the result may be biased low.
- J+ = The result is an estimated quantity, but the result may be biased high.
- R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
- UJ = The analyte was analyzed for, but was not detected. The reported limit is approximate and may be inaccurate or imprecise.

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Table 2 Phase 2 Geotechnical Results In Situ Stabilization Preliminary Design Investigation Report Former Arkema, Inc. Facility Portland, Oregon

				Average K (cm/sec)	Strength (psi)	Direc	ct Shear	(psf)	USCS
Location	Sample Date	Depth (feet bgs)	ASTM Method Aquifer	D5084C	D2166	500	D3080 1500	2500	(ERM Field Log)
PDI-40a	10/30/2024	40-42	Intermediate	8.96E-05	>1	361	1502	2380	SP
PDI-55c	10/23/2024	35-37.5	Intermediate	1.51E-06	>1	454	1310	2023	SW

Notes:

K = permeability

cm/sec = centimeter per second

psi = pounds per square inch

psf = peak shear strength

ASTM = American Society for Testing and Materials

ASTM D2166 = Compressive Strength of Cohesive Soil Specimens

ASTM D5084C = Flexible Wall Permeability

ASTM D3080 = Direct Shear Test of Soils Under Consolidated Drained Conditions

bgs = below ground surface

USCS = Unified Soil Classification System

Table 3
Phase 2 In Situ Stabilization Test Conditions and Analyses
Portland, Oregon

									PHASE 2	Test Con	ditions												
	Treatability th leachability) testing	т		Mix Ratios ight of dr ermined b	ry soil)	1				ucs				Pern	neability				LEAF 13	15 ^{[1][2]}			
		PC	GGBFS	AC powdered	BC powdered	SP	6 Day	9 Day	12 Day	15 Day	18 Day	28 Day	56 Day ^[3]	28 Day	56 Day ^[3]	VOCs	SVOCs ^[4]	DDx	Metals ^[4]	рН	ORP	тос	DOC
	Control															9	3	9	3	3	3	3	3
	Condition #1	4.0%	4.0%									1	1	1	1	9	3	9	3	3	3	3	3
	Condition #2	6.0%	6.0%					1	1	1		1	1	1	1	9	3	9	3	3	3	3	3
	Condition #3	4.0%	4.0%	1.0%								1	1	1	1	9	3	9	3	3	3	3	3
Contaminated	Condition #4	4.0%	4.0%	2.0%			1	1	1	1	1	1	1	1	1	9	3	9	3	3	3	3	3
	Condition #5	4.0%	4.0%	3.0%								1	1	1	1	9	3	9	3	3	3	3	3
	Condition #6	4.0%	4.0%		2.0%							1	1	1	1	9	3	9	3	3	3	3	3
	Condition #7	6.0%	2.0%			2.0%						1	1	1	1	9	3	9	3	3	3	3	3
	Condition #8	3.0%	3.0%					1	1	1													
	Control															9	3	9	3	3	3	3	3
C DNIADI	Condition #1	3.0%	3.0%									1	1	1	1	9	3	9	3	3	3	3	3
Some DNAPL Contamination	Condition #2	5.0%	5.0%									1	1	1	1	9	3	9	3	3	3	3	3
Contamilation	Condition #3	3.0%	3.0%	1.0%								1	1	1	1	9	3	9	3	3	3	3	3
	Condition #4	3.0%	3.0%	2.0%								1	1	1	1	9	3	9	3	3	3	3	3
Phase 2:							1	3	3	3	1	11	11	11	11	120	42	120	42	42	42	42	42

[1] The LEAF 1315 testing consists of 9 discrete eluate changes at 9 time points of 0.08, 1, 2, 7, 14, 28, 42, 49, and 63 days.

[2] If analytes are not observed in testing of control sample, leachability testing for these analytes likely to be eliminated

[3] If the 28-day test results are within required range, the 56-day test may be omitted at ERM's discretion

[4] Analytes with three time points of analysis would be sampled at start, middle, and end of LEAF test, i.e., at 1, 28, and 63 days

μg/L = micrograms per liter

COC = contaminants of concern

C = carbon

DOC = Dissolved Organic Content

PC = Portland cement

TOC = Total Organic Content

SP = sodium persulfate

UCS = unconfined compressive strength

 $\label{eq:VOCs} \mbox{VOCs = volatile organic compounds, target analyte list}$

SVOCs = semi-volatile organic compounds, target analyte list

DDx = 4,4'-DDT, -DDE, -DDD

Metals = dissolved metal, target analyte list

 $Condition = results \ of \ Phase \ 1 \ will \ inform \ the \ type \ and \ quantity \ of \ amendments \ tried \ in \ Phase \ 2$

ORP = Oxidation/Reduction Potential of the eluate

Test Name Method Reference
Unconfined Compressive Strength ASTM D1633
Permeability Testing ASTM D5084
LEAF EPA Method 1315

Table 4
Wells To Be Abandoned Prior to IRAM 1 Execution
Portland, Oregon

Name	Туре
AS-01	Air Sparge Well
AS-02	Air Sparge Well
AS-11	Air Sparge Well
AS-12	Air Sparge Well
AS-13	Air Sparge Well
AS-14	Air Sparge Well
AS-15	Air Sparge Well
AS-16	Air Sparge Well
AS-17	Air Sparge Well
AS-18	Air Sparge Well
AS-19	Air Sparge Well
AS-20	Air Sparge Well
AS-21	Air Sparge Well
MWA-11I(D)	Monitoring Well
MWA-11I(D)	Monitoring Well
MWA-15R	Monitoring Well
MWA-15R	Monitoring Well
MWA-2	Monitoring Well
MWA-2	Monitoring Well
MWA-61	Monitoring Well
MWA-64I	Monitoring Well
MWA-66I	Monitoring Well
MWA-67SI	Monitoring Well
MWA-68SI	Monitoring Well
MWA-69	Monitoring Well
MWA-69	Monitoring Well
MWA-85	Monitoring Well
MWA-8I	Monitoring Well
NMP-1D	Monitoring Well
NMP-1S	Monitoring Well
NMP-1S	Monitoring Well
NMP-2D	Monitoring Well
NMP-2S	Monitoring Well
NMP-3S	Monitoring Well
NMP-4D	Monitoring Well
NMP-4D	Monitoring Well
NMP-4D	Monitoring Well
NMP-4S	Monitoring Well
NMP-5D	Monitoring Well

Table 4
Wells To Be Abandoned Prior to IRAM 1 Execution
Portland, Oregon

Name	Туре
NMP-5S	Monitoring Well
NMP-6D	Monitoring Well
NMP-6S	Monitoring Well
PA-05	Monitoring Well
PA-06	Monitoring Well
PA-11I	Monitoring Well
PA-12I	Monitoring Well
PA-19D	Monitoring Well
PA-20D	Monitoring Well
PA-21D	Monitoring Well
PA-30D	Monitoring Well
PMP-1	Monitoring Well
PMP-2	Monitoring Well
PMP-2	Monitoring Well
PMP-3	Monitoring Well
RW-10	Former GWET System Recovery Well
RW-24I	Former GWET System Recovery Well
RW-8	Former GWET System Recovery Well
RW-9I	Former GWET System Recovery Well
SVE-1	Soil Vapor Extraction Well
SVE-10	Soil Vapor Extraction Well
SVE-11	Soil Vapor Extraction Well
SVE-12	Soil Vapor Extraction Well
SVE-13	Soil Vapor Extraction Well
SVE-15	Soil Vapor Extraction Well
SVE-16	Soil Vapor Extraction Well
SVE-17	Soil Vapor Extraction Well
SVE-2	Soil Vapor Extraction Well
SVE-9	Soil Vapor Extraction Well
VP-1	Soil Vapor Monitoring Well
VP-2	Soil Vapor Monitoring Well
VP-3	Soil Vapor Monitoring Well
VP-4	Soil Vapor Monitoring Well
VP-5	Soil Vapor Monitoring Well
VP-6	Soil Vapor Monitoring Well
VP-7	Soil Vapor Monitoring Well
VP-8	Soil Vapor Monitoring Well
VP-9	Soil Vapor Monitoring Well
VP-10	Soil Vapor Monitoring Well

Table 4
Wells To Be Abandoned Prior to IRAM 1 Execution
Portland, Oregon

Name	Туре
VP-11	Soil Vapor Monitoring Well
VP-12	Soil Vapor Monitoring Well
VP-13	Soil Vapor Monitoring Well
VP-15	Soil Vapor Monitoring Well
VP-16	Soil Vapor Monitoring Well
VP-17	Soil Vapor Monitoring Well
VP-18	Soil Vapor Monitoring Well
VP-19	Soil Vapor Monitoring Well
VP-20	Soil Vapor Monitoring Well
VP-21	Soil Vapor Monitoring Well
VP-22	Soil Vapor Monitoring Well
VP-23	Soil Vapor Monitoring Well
VP-24	Soil Vapor Monitoring Well
VP-25	Soil Vapor Monitoring Well
VP-26	Soil Vapor Monitoring Well
VP-27	Soil Vapor Monitoring Well
VP-28	Soil Vapor Monitoring Well
VP-29	Soil Vapor Monitoring Well
VP-30	Soil Vapor Monitoring Well
VP-31	Soil Vapor Monitoring Well
VP-35	Soil Vapor Monitoring Well
VP-36	Soil Vapor Monitoring Well



APPENDIX A SOIL BORING LOGS

Boring ID: PDI-01

Drilling Start Date: 08-Jul-2024 **Drilling End Date:** 09-Jul-2024

Drilling Contractor: Cascade Drilling **Drilling Method:** Sonic Rig Make/Model: TSI

Driller: Chris Baker **GPRS SSC Contractor:**

SSC Method: Private Locate Not Applicable SSC Diam./Depth:

Northing: 702125.170 Easting: 7627672.820 Surface Elevation: 38.2 ft amsl Borehole Diameter: 10 in **Borehole Depth:** 87.0 ft bgs Water Encountered: 27.0 ft bgs

Logged By: David Stone **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		sosn	Lithology	Boring Backfill Details
			CROUND CURFACE				
0-			GROUND SURFACE Gravel, angular, geotextile at 0.6, dry, no odor	0.6	GW	8080	
			Dark Greyish Brown (10YR 4/2) Fine Sand with Gravel/cobble (~20%), angular, moist, no odor	0.6		7.00 (7.00 (V V V
		40	Dark Greyish Brown (10YR 4/2) Fine Sand with silt (20%), minor gravel (<10%), moist, no odor	0.9			
				5.0			V . V . V . V . V . V . V . V . V . V .
5-			Dark Greyish Brown (10YR 4/2), Fine Sand, minor gravel (<10%), 0.25"-1", angular, moist, no odor	3.0	SW		V V V V V V V V V V V V V V V V V V V
-		100					
10-			Dark Grey (5Y 4/1), Silt and Clay, medium plasticity, minor fine sand (5%), wet, strong initial solvent odor	10.0	ML		V V V V V V V V V V V V V V V V V V V
			Dark Greyish Brown (10YR 4/2), Fine sand, gravel and debris (brick, roots) present, gravel size 0.25-1.5" and angular, moist, solvent odor	1017			\$\partial \partial \part
-		100			SW		P
				14.5			A. A
15-			Dark Grey (5Y 4/1), Silt and Clay, medium plasticity, wet, mild solvent odor, Dark Grey (5Y 4/1), Silt and Clay, medium plasticity, <5% fine sand, wet, slight solvent odor	15.0,	ML		P
		7.	Very Dark Grey (10YR 3/1), Fine to medium sand, moist, slight solvent odor	17.2			V V 10-in
		76	13. , Ball C.S., (1911 3, 1), time to interior sure, moist, signt solvent odd		SM		Grout Grout backfill
				19.5	ML		



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

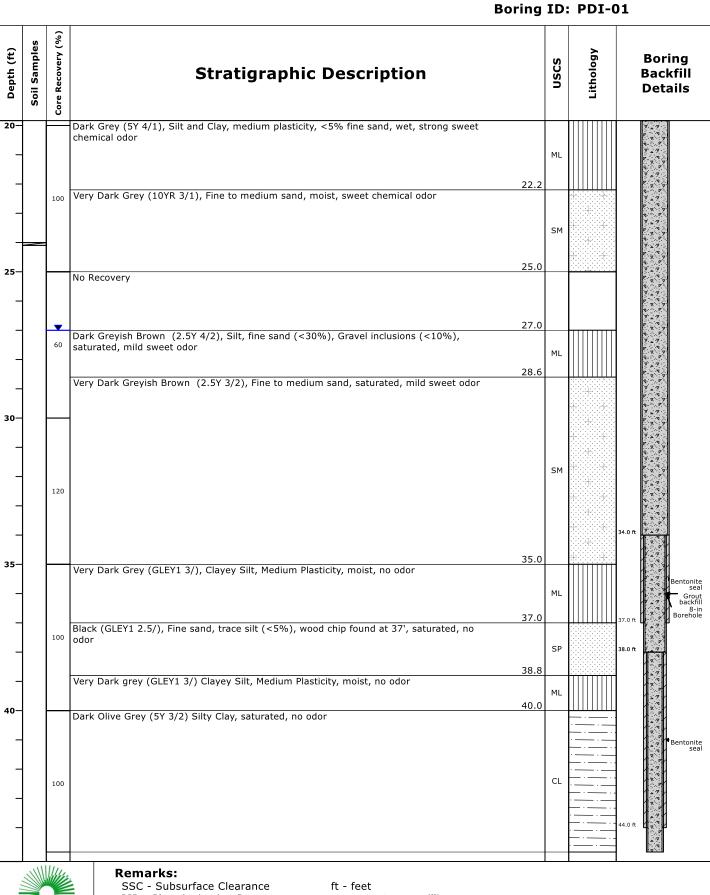
in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

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PID - Photoionization Detector

NA - not available or not applicable

in - inches

ppm - parts per million

amsl - above mean sea level

ft bgs - feet below ground surface

			Boring	ID:	PDI-0	1
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	USCS	Lithology	Boring Backfill Details
45-			Dark Olive Grey (5Y 3/2) Silty Clay, saturated, no odor			d
_ _ _ 50—		100				
_		100	Very Dark Greenish Grey (GLEY1 3/10GY) Clay, some silt, saturated, no odor	CL		
55-			55.9			▼ ▼
-		80	Dark Olive Grey (5Y 3/2) Silty Clay, saturated, no odor			
60-		50	Dark Olive Grey (5Y 3/2) Clayey Silt, some fine sand (10%), saturated, no odor	M		Borehole Grout backfill
65—		90	Remarks:	ML		



PID - Photoionization Detector

NA - not available or not applicable in - inches

ppm - parts per million

amsl - above mean sea level

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			Bor	ing ID	PDI-0	1
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
70- - -		80	Dark Olive Grey (5Y 3/2) Clayey Silt, some fine sand (10%), saturated, no odor			
75-		80		ML 80.0		
		80	Very Dark Greenish Grey (GLEY 3/10Y) Very Fine sand with silt, saturated, no odor	85.0		
85-		25	Fractured Basalt, rounded, 0.2 - 0.3 in subrounded basalt pebbles, angular basalt gravel Boring terminated at 87 feet	87.0	+ + + + + + + + + + + + + + + + + + +	87.0 ft
90-						
			Remarks: SSC - Subsurface Clearance ft - feet PID - Photoionization Detector num - parts per million			

ppm - parts per million

amsl - above mean sea level in - inches

ft bgs - feet below ground surface

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet
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PID - Photoionization Detector NA - not available or not applicable in - inches **Drilling Start Date:** 10-Jul-2024 **Drilling End Date:** 11-Jul-2024

Drilling Contractor: Cascade Drilling

Drilling Method: Sonic
Rig Make/Model: TSI
Driller: Chris Baker
SSC Contractor: GPRS

SSC Method: Private Locate
SSC Diam./Depth: Not Applicable

 Northing:
 702171.740

 Easting:
 7627656.600

 Surface Elevation:
 36.2 ft amsl

Borehole Diameter: 10 in
Borehole Depth: 85.0 ft bgs
Water Encountered: 30.0 ft bgs
Logged By: David Stone

Avery Soplata, RG

Reviewed By:

Client:

Consolidated Total

Boring ID: PDI-02

Site Name:

Arkema Portland

Location:

Portland, US-OR

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Deptn (1t)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
			GROUND SURFACE			
7			Asphalt, dry 0.2		0000	<i>P</i> · · · · · · · · · · · · · · · · · · ·
		100	Grey Gravel, <.25 in to 1 in, 25% pea gravel, silt matrix, moist, no odor			
;-						
_		80	Grey Gravel, <.25 in to 1 in, 25% pea gravel, silt matrix, wet, no odor	GM		
		110	13.8			
\dashv			Dark Greyish Brown (2.5Y 4/2) Clayey Silt, moderate plasticity, moist, mild sweet odor 14.3	ML		A . A
			Dark Olive Brown (2.5Y 3/3) Fine to Medium Sand, trace silt, moist, mild sweet odor	sw		V . V
		56	Grey Gravel, <.25 in to 1 in, 25% pea gravel, silt matrix, moist, no odor	GM		y v v v v v v v v v v v v v v v v v v v

ft - feet

ppm - parts per million

amsl - above mean sea level

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet
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ft bgs - feet below ground surface

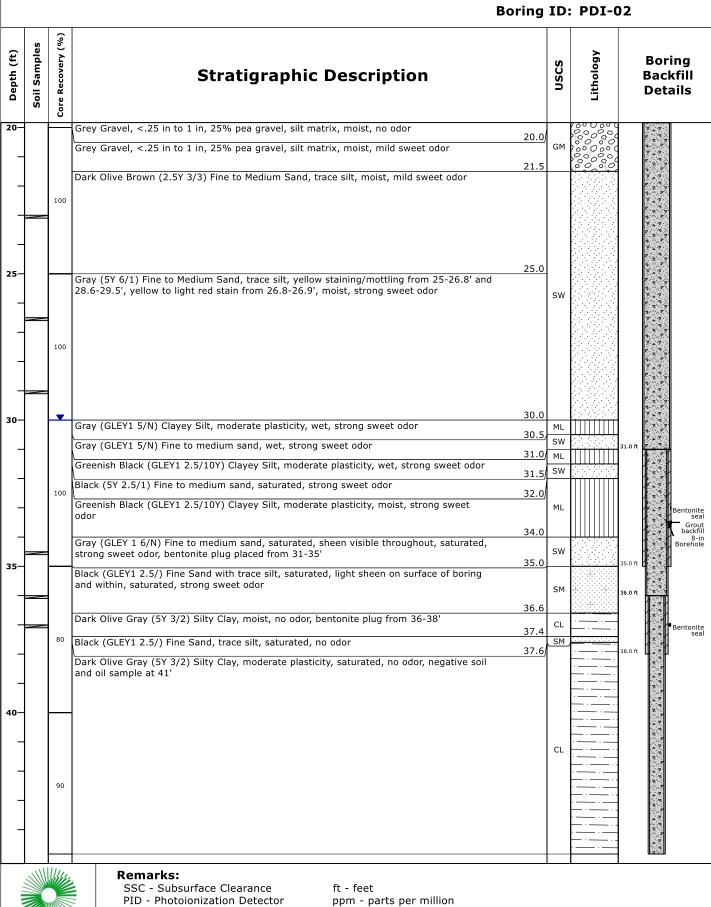
SSC - Subsurface Clearance

in - inches

ERM

PID - Photoionization Detector

NA - not available or not applicable





NA - not available or not applicable

in - inches

amsl - above mean sea level

ft bgs - feet below ground surface

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			Boring	ID	: PDI-02	2
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
45— — —		60	Dark Olive Gray (5Y 3/2) Silty Clay, moderate plasticity, saturated, no odor, negative soil and oil sample at 41'	CL		
50-		80	Very Dark Gray (GLEY1 3/N) Silty Clay, moderate plasticity, saturated, mild sweet odor 51.2 Dark Olive Grey (5Y 3/2) Clayey Silt, trace fine sand (<10%), moderate plasticity, saturated, no odor			
55-		86				
60-		80		ML		aorenole Grout Backfill
65— — —		80				



SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable in - inches

ft - feet

ppm - parts per million amsl - above mean sea level

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				Boring	ID:	PDI-0)2
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
70-		80	Dark Olive Grey (5Y 3/2) Clayey Silt, trace fine sand (<10%), moderate plasticity, saturated, no odor Dark olive Grey (5Y 3/2), Silty fine sand, low plasticity, saturated, no odor	75.0			
80-		70	Dark Olive Grey (5Y 3/2), Silty fine sand, low plasticity, saturated, no odor Dark Olive Gray (5Y 3/2) Clayey Silt, trace fine sand (<10%), moderate plasticity,	80.0	ML		
-		100	Saturated, no odor Very Dark Greenish Gray (GLEY2 3/10G) Fine Sand with silt and trace clay (10%), Clay silt chunks present, saturated, no odor Basalt/competent layer, rounded/subrounded pieces ranging from, 3.5-0.25 inches, vesicular basalt	80.9 _/		+ + + +	
85-			Boring terminated at 85 feet	85.0		+ + + -	85.0 ft 🏻 🗓 🐧
90-							
		Wife	Remarks: SSC - Subsurface Clearance ft - feet				



SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

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Boring ID: PDI-03

Drilling Start Date: 12-Jul-2024 **Drilling End Date:** 15-Jul-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker **SSC Contractor: GPRS**

SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702220.950 Easting: 7627675.970 Surface Elevation: 36.3 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 85.0 ft bgs Water Encountered: 28.0 ft bgs Logged By: David Stone **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Deptin (11)	Soil Samples	Core Recovery (%)	Stratigraphic Description	NSCS	Lithology	Boring Backfill Details
			GROUND SURFACE			
			Asphalt 0.	3/	700000	A A
			Gravel, <.25 in to 1.5 in, fine sand/silt matrix, subangular gravel and pea gravel, moist from 3" to 4', more moist from 4'-5', increase in sand silt matrix at 5'-6', no odor			
		100				
_		80	Gravel, <.25 in to 1.5 in, fine sand/silt matrix, subangular gravel and pea gravel, wet	O GM	30 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
		100	14. Pinkish Gray (7.5YR 6/2) Fine to Medium sand, light yellow staining from 15'-17', Light	0		
		80	brown staining from 17.5'-18', dark gray/brown staining/mottling from 19'-20', mild sweet odor	SW		10-in v v arrende Grout backfil



SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

ft bgs - feet below ground surface

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	Soil Samples	e Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfil Details
	s	Core	Pinkish Gray (7.5YR 6/2) Fine to Medium sand, light yellow staining from 15'-17', Light			/5/18/5/5/18/18/	▼
			brown staining from 17.5'-18', dark gray/brown staining/mottling from 19'-20', mild sweet odor	20.0			♥
			Pinkish Gray (7.5YR 6/2) Fine to Medium sand, dark gray/brown staining/mottling from 20'-23', mild sweet odor				V V V V V V V V V V V V V V V V V V V
		100		23.0			V . V
			Pinkish Gray (7.5YR 6/2) Fine to Medium sand, no staining, silt inclusions, mild sweet odor	23.5			V V V
			Pinkish Gray (7.5YR 6/2) Fine to Medium sand, yellow/brown staining that appears in small patches, you can pick patches up as discrete silt inclusion, mild sweet odor	23.3			A . A . A .
-			Pinkish Gray (7.5YR 6/2) Fine to Medium sand, yellow/brown staining that appears in small patches, you can pick patches up as discrete silt inclusion, strong sweet odor, 1-2" DNAPL globule at 28.5, 2-3" DNAPL globule at 29.7'	24.5			
_		100					A A A A A A A A A A A A A A A A A A A
							V V V V V V V V V V V V V V V V V V V
]				20.0			♥
			Pinkish Gray (7.5YR 6/2) Fine to medium sand with silt, 70% sand, 30% silt, 2-3" dark gray silt inclusions throughout, dark brown-grey staining throughout, strong odor	30.0	SW		4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
				32.0			V V
		100	Pinkish Gray (7.5YR 6/2) Fine to medium sand, yellow staining from 32.5'-33.2', trace organics, 1" black inclusion at 34.4', yellow staining at 34.4-35', strong sweet odor, trace DNAPL blebs from 35'-37.5				
		100	Pinkish Gray (7.5YR 6/2) Fine to medium sand, Silt inclusions and organic fragments	37.5			7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
			(wood chips) from 37.5-38', strong sweet odor, Gradational DNAPL 20-100% pore space from 38'-40', bentonite plug from 38-42'				V V
ſ			Dark Olive Gray (5Y 3/2) Clayey Silt, saturated, strong odor	40.0	ML		Bento
$\frac{1}{2}$			Black (5Y 2.5/1) Fine to medium sand with trace silt, saturated, strong sweet odor	40.6	SW		V V
			Light Gray (2.5Y 7/1) silty clay, moderate plasticity, saturated, strong sweet odor	41.8	CL		42.0 ft
Ī		100	Black (5Y 2.5/1) Fine to medium sand, trace silt, saturated, strong sweet odor	42.0			V V
			, , , , , , , , , , , , , , , , , , ,		SW		44.0 ft
1		11.	Remarks:				11-A



NA - not available or not applicable in - inches

amsl - above mean sea level

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				Boring	ID:	PDI-0)3
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
45-		80	Black (5Y 2.5/1) Fine to medium sand, trace silt, saturated, strong sweet odor Dark Olive Gray (5Y 3/2) clayey silt with fine sand (10%), low plasticity, saturated, increase in sand from 51.4' to 53.3', no odor	45.0	(SW)		Bentonite seal
50-		100			ML		
55— — —		80	Dark Olive Gray (5Y 3/2) silty fine sand with clay, low plasticity, saturated, no odor	55.0	SM	+ + + + + + + + + + + + + + + + + + +	
60-		100	Dark Olive Gray (5Y 3/2) Clayey silt with fine sand (10%), low plasticity, saturated, no odor	63.0	ML		v G-in Borehole
65-		90	Dark Olive Gray (5Y 3/2) Fine sand with silt, minor clay, saturated, no odor Olive Gray (5Y 4/2) Clayey silt, with fine sand, low plasticity, saturated, no odor	67.2	SM ML		A S-in Borehole Grout backfill
		W	Remarks: SSC - Subsurface Clearance ft - feet				1



PID - Photoionization Detector

NA - not available or not applicable in - inches

ppm - parts per million

amsl - above mean sea level

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				Boring	ID:	PDI-0	3
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
70-			Olive Gray (5Y 4/2) Clayey silt, with fine sand, low plasticity, saturated, no odor	71.0	ML		√ V √ V √ V
			Very Dark Greenish Gray (5GY 3/1) Fine sand with silt and silty clay interbeds, saturated, no odor	71.0		+ +	V V
		100	Olive Gray (5Y 4/2) Fine sand with silt, trace clay, saturated, no odor	72.4	SM	+ +	. V
_			Olive Gray (5Y 4/2) silty clay, moist, no odor	73.5	CL		▼ ▼ • ▼
75-			Olive Gray (5Y 4/2) fine sand with silt, trace clay, saturated, no odor	75.0			-
-			Dark Olive Gray (5Y 3/2) Silty clay with fine sand, low plasticity	76.2	SM	± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ±	\(\rightarrow\) \(\rightarrow
		100			CL		V
			Very Dark Greenish Gray (10GY 3/1) clayey silt with fine sand, saturated, no odor	78.3			
80-					ML		
_		100					
			Very Dark Greenish Gray (10GY 3/1) fine to medium sand with silt, saturated, no odor	83.6	SM		
85-			Very Dark Greenish Gray (10GY 3/1) clayey silt with fine sand, saturated, no odor, hit refusal at 85'	84.0/	ML		\$5.0 ft
-			Boring terminated at 85 feet	<u>85.0</u> /			
-							
-							
90-							
-							
-							
			Remarks: SSC - Subsurface Clearance ft - feet PID - Photoionization Detector ppm - parts per million NA - not available or not applicable amsl - above mean sea level				

ERM

NA - not available or not applicable in - inches

amsl - above mean sea level

Drilling Start Date: 16-Jul-2024 **Drilling End Date:** 16-Jul-2024

Drilling Contractor: Cascade Drilling Sonic

Drilling Method: Rig Make/Model: TSI **Driller:** Chris Baker **SSC Contractor: GPRS**

SSC Method: Private Locate

Not Applicable SSC Diam./Depth:

Northing: 702268.140 Easting: 7627677.340

Surface Elevation: 36.0 ft amsl Borehole Diameter: 10 in **Borehole Depth:** 64.0 ft bgs

Water Encountered: 27.5 ft bgs Logged By: David Stone **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Boring ID: PDI-04

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft) Soil Samples	Core Recovery (%)	Stratigraphic Description		sosn	Lithology	Boring Backfil Details
		GROUND SURFACE				
0		Asphalt Gravel, pea gravel, poorly sorted, angular, silty fine sand matrix (30%)	0.2/		00000	V V V
1		Gravel, pea gravel, poorly sorted, angular, silty fine sand matrix (30%) Gravel, pea gravel, poorly sorted, angular, silty fine sand matrix (10%), cobble-gravel	1.1/	GM	00000	
4		Graver, pea graver, poorly sorted, angular, sirty fine sand matrix (10 %), cobble-graver	2.0/			P
	60	Very Dark Grayish Brown (2.5Y 3/2) silty fine sand, poorly sorted, cobble-gravel inclusions, carbon debris and asbestos present	,		+ + +	
5-			5.0			A . A .
		Olive Brown (2.5Y 4/3) Fine to medium sand, poorly sorted, moist, slight sweet odor	5.6			▼ ▼ ▼ ▼
1		Black (2.5Y 2.5/1) Fine sand to silt size particles, material appears as discrete masses/inclusions, moist	6.1			☆
4		Pinkish White (7.5YR 7/2) Fine to medium sand, poorly sorted, slight sweet odor	6.4			V V V
	80	Olive Brown (2.5Y 4/3) Fine to medium sand, poorly sorted, silt inclusions (~.25"), wood chips present, moist, no odor	0.1	SM	+ + +	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
o- - - -	75	Brown (10YR 4/3) Fine to medium sand, poorly sorted, silt inclusions (\sim .25"), moist, no odor	12.2			
_			15.0			□ · · · · · · · · · · · · · · · · · · ·
5-		No Recovery				A 7 A
+						V V
4	48					V V
		Dark Yellowish Brown (10YR 3/4) Fine to medium sand, poorly sorted, moist, black fine	17.6			V V V
7		sand to silt inclusions/globules that are wet, mild sweet odor	18.3/	CM		ν ν ν ν ν ν ν ν ν μ 1
1		Brown (10YR 4/3) Fine to medium sand, poorly sorted, silt inclusions ranging from 0.25" - 1.5", moist, no odor		SM		ore ore ore ore ore ore ore ore
	1666	Remarks:				(*************************************



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

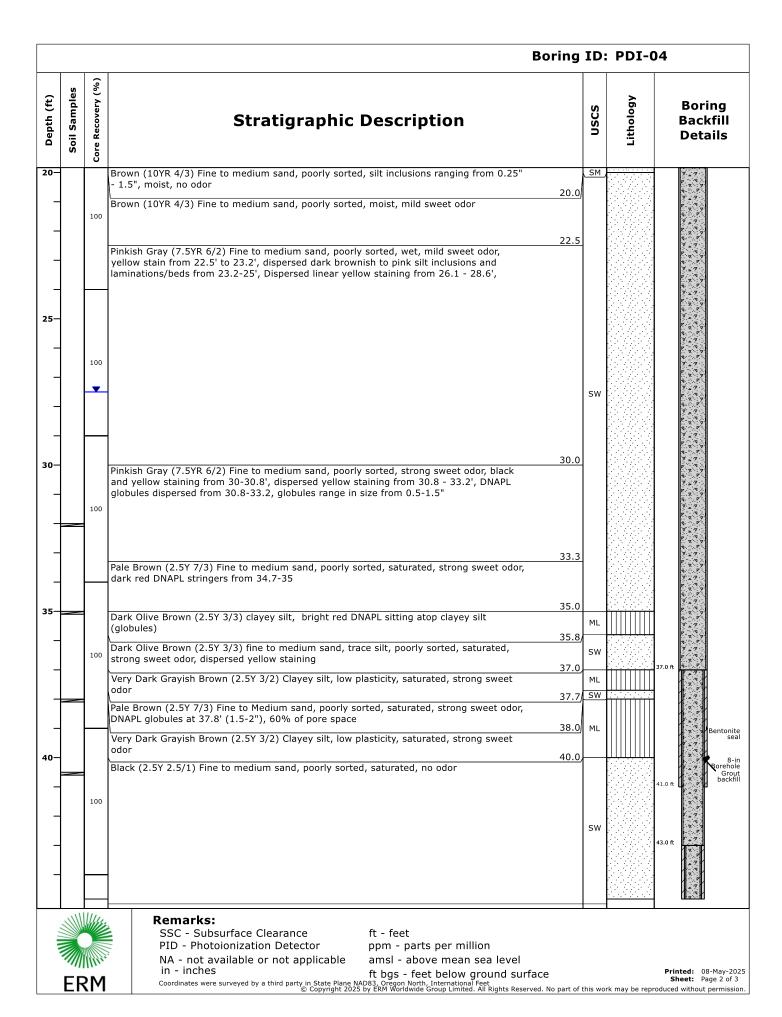
NA - not available or not applicable in - inches

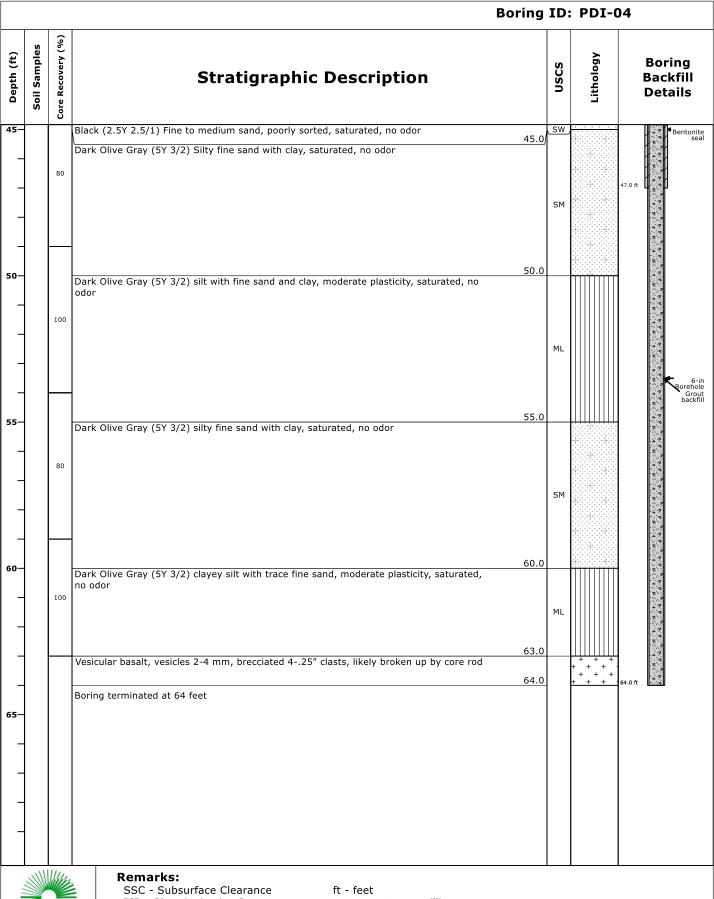
ft - feet

ppm - parts per million amsl - above mean sea level

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ERM







PID - Photoionization Detector

NA - not available or not applicable

in - inches

ppm - parts per million

amsl - above mean sea level

Boring ID: PDI-05

Drilling Start Date: 17-Jul-2024 **Drilling End Date:** 17-Jul-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker

GPRS SSC Contractor: SSC Method: Private Locate

Not Applicable SSC Diam./Depth:

Northing: 702354.750 7627704.740 Easting: Surface Elevation: 37.0 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 54.0 ft bgs Water Encountered: 28.0 ft bgs Logged By: David Stone

Reviewed By: Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
			GROUND SURFACE				
0-			Gray (2.5Y 6/1) Gravel (0.25"-1.5"), silty fine sand matrix, subangular, poorly sorted, dry, no odor, 5 layers of geotextile liner at 1'	1.0	GM	0000	A
			Very Dark Grayish Brown (2.5Y 3/2) Clayey silt, gravel to cobble sized clasts present, bricks, carbon, non-fibrous ACM present, moist, no odor	2.0,	ML		V V V V V V V V V V V V V V V V V V V
			Dark Gray (2.5Y 4/1) pea gravel and gravel, subangular to subrounded, poorly sorted, moist, no odor		GM	00000	(*) (*) (*) (*) (*) (*) (*) (*) (*) (*)
		80	Dark Yellowish Brown (10YR 4/4) silty clay, very low plasticity, moist, no odor	2.6	CL		φ . φ . φ . φ . φ . φ . φ . φ . φ . φ .
_				5.0			7 . V . V . V . V . V . V . V . V . V .
5-			Gray (2.5Y 6/1) Gravel (0.25"-1.5"), silty fine sand matrix, subangular, poorly sorted, no odor		GM	0000 0000 0000	V V V
				7.0	GM		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
		80	Very Dark Grayish Brown (2.5Y 3/2) clayey silt, rounded gravel size clasts interbedded with chunks of carbon and ACM	7.6/	ML		マ マ ア マ : マ : マ : マ : ア
			Pale Brown (2.5Y 8/4) Fine to medium grained 1"-1.5" clast in silty fine grained sand matrix, poorly sorted, no odor	7.7		+ + + + + + + + + + + + + + + + + + +	A
			Dark Yellowish Brown (10YR 4/4) silty fine sand, gravel to cobble sized clasts (0.25"-3"), poorly sorted, ACM present along with bricks, moist, mild sweet odor		SM	+ + +	▼
10-						+ + + + + + + + + + + + + + + + + + +	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~
			Very Dark Gray (10YR 4/3) silt with fine sand, subrounded debris, carbon debris, moist, mild sweet odor	11.3			A A
		100	Brown (10YR 4/3) clayey silt, minor fine sand, medium plasticity, saturated, no odor	12.0/			
							V V V
					ML		
15-							· · · · · · · · · · · · · · · · · ·
				17.0			V V V V V V V V V V V V V V V V V V V
		100	Dark Yellowish Brown (10YR 4/4) silty fine sand with gravel to cobble size clasts (0.25"-5"), poorly sorted, angular to rounded, moist, mild sweet odor. Metal, carbon debris, ACM, brick debris present.			+	P
			debits, Acir, blick debits present.		SM		v v v v v v 10-in p v Sorehole
						††	Grout backfill
	1111	1/1/4	Remarks:			1	



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

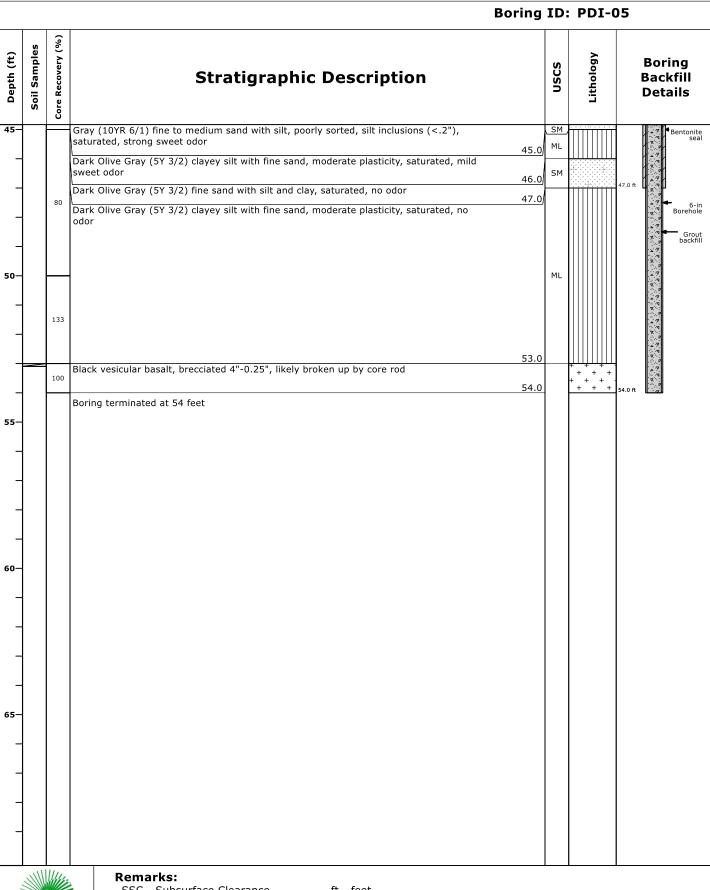
amsl - above mean sea level

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				Boring	ID:	: PDI-0)5
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-		30	Dark Yellowish Brown (10YR 4/4) silty fine sand with gravel to cobble size clasts (0.25"-5"), poorly sorted, angular to rounded, moist, mild sweet odor. Metal, carbon debris, ACM, brick debris present. Very Dark Grayish Brown (2.5Y 3/2) clayey silt with subangular gravel, poorly sorted, moist, no odor, brick and concrete inclusions present	20.0	(SM)		
25- -			Very Dark Grayish Brown (2.5Y 3/2) Fine to medium sand, poorly sorted, small clayey silt inclusion (<0.25"), moist, no odor	25.0	sw		
1		100	Dark Yellowish Brown (10YR 3/4) fine to medium sand, silt (30%), poorly sorted, saturated at 28', no odor	27.7 28.6,	SM		
30-			Very Dark Gray (10YR 3/1) silt with fine sand, very low plasticity, moist, no odor Very Dark Gray (10YR 3/1) fine to medium sand with silt, poorly sorted, saturated, moderate sweet odor	28.8	ML_ SM	+ +	\$\frac{1}{2} \cdot \frac{1}{2}
		40	Very Dark Grayish Brown (10YR 3/2) fine to medium sand, minor silt, gravel to cobble size clasts ranging from 0.25" - 3.5", poorly sorted, saturated, no odor		sw		
			Pinkish Gray (7.5YR 7/2) fine to medium sand, silt inclusions (<.25"), poorly sorted, dispersed DNAPL globules at 37' and likely dragdown to 37.7', saturated, moderate sweet odor	36.0			\$
1 1		60	Light Olive Brown (2.5Y 5/3) Clayey silt, black mottling throughout, saturated, mild sweet odor	37.0	ML		v W Bentonite seal
40 -			Light Yellowish Brown (2.5Y 6/3), Black (2.5Y 2.5/1) fine to medium sand, poorly sorted, saturated, mild sweet odor Black (2.5Y 2.5/1) fine to medium sand, poorly sorted, saturated, mild sweet odor, red wood chips observed	40.0	SW		Borehole Grout backfill
		100	Dark Olive Gray (5Y 3/2) clayey silt, minor fine sand, black mottling, saturated, mild sweet odor Gray (10YR 6/1) fine to medium sand with silt, poorly sorted, silt inclusions (<.2"), saturated, strong sweet odor.	43.0	ML SM		43.0 ft
77117			Remarks: SSC - Subsurface Clearance ft - feet PID - Photoionization Detector ppm - parts per million NA - not available or not applicable amsl - above mean sea level				OUSTA .

ERM

NA - not available or not applicable in - inches





SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

Printed: 08-May-2025 Sheet: Page 3 of 3

Boring ID: PDI-06

Drilling Start Date: 18-Jul-2024 **Drilling End Date:** 19-Jul-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker

GPRS SSC Contractor: SSC Method: Private Locate

Not Applicable SSC Diam./Depth:

Northing: 702387.980 Easting: 7627713.830 Surface Elevation: 36.2 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 52.5 ft bgs Water Encountered: 30.0 ft bgs Logged By: David Stone

Reviewed By: Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
o-		80	GROUND SURFACE Light Grey (GLEY 1 7/) fine sand with silt, angular gravel, poorly sorted, dry, no odor 1.9 Dark Olive Brown (2.5Y 3/3) clayey silt, minor fine sand, subrounded gravel inclusions throughout, geotextile at 1.9', 3.5"-4" cobble at top of interval, slough from upper formation from 5-7.6', moist, no odor	SM		
5-		100	7.6 Dark Olive Brown (2.5Y 3/3) clayey silt, minor fine sand, subrounded gravel inclusions throughout, moist, no odor			
10-		100	Very Dark Brown (10YR 2/2) clayey silt, gravel to cobble sized clast inclusions, saturated, no odor 15.0 Dark Brown (10YR 3/3) clayey silt, gravel to cobble sized clast inclusions, black mottling	ML		
-		100	from 16'-20', saturated, no odor			10-in Sorehole Grout backfiil



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable in - inches

ft - feet

ppm - parts per million amsl - above mean sea level

in - inches

ft bgs - feet below ground surface

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				Boring	ID:	PDI-0)6
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		USCS	Lithology	Boring Backfill Details
		60	Dark Brown (10YR 3/3) clayey silt, gravel to cobble sized clast inclusions, black mottling from 16'-20', saturated, no odor	25.0	ML		
25— — —		80	Dark Brown (10YR 3/3) clayey silt, gravel to cobble size clasts inclusions, ACM, tiles with fibers, carbon debris, rubber present, glistening fluid with strong sweet odor on carbon piece at 26', saturated, no odor from soil Dark Brown (10YR 3/3) fine to medium sand, poorly sorted, wet, yellow-red stain (2-3") at 28.1', wet, no odor	26.5		######################################	
30-			Very Dark Grayish Brown (2.5Y 3/2) fine to medium sand with silt, poorly sorted, saturated, mild sweet odor	30.0	SM	+ + + + + + + +	
-		80	Very Dark Grayish Brown (2.5Y 3/2) silt with fine sand, low plasticity, saturated, mild sweet odor Very Dark Grayish Brown (2.5Y 3/2) medium sand with silt (10%), moderately sorted, saturated, mild sweet odor, yellow staining from 33.3-35' increasing with depth, strong	32.8 33.1	ML		
35— —		90	Gray (2.5Y 6/1) clayey silt, moderate plasticity, transecting yellow staining, saturated, strong sweet odor	36.7 37.1	SM	+ + + + + + + +	37.0 ft
40-			Very Dark Grayish Brown (2.5Y 3/2) fine to medium sand, silt (10%), poorly sorted, yellow staining from 37.6-38.6', DNAPL from 38.4'-38.6', saturated, strong sweet odor Very Dark Grayish Brown (2.5Y 3/2) clayey silt, moderate plasticity, yellow staining from 38.6-38.9', saturated, mild sweet odor Black (2.5Y 2.5/1) fine to medium sand, silt (10-20%), poorly sorted, saturated, mild	38.6	SM ML		8-in Borehole
 - -		90	sweet odor		SM	+ + + + + + + + + + + + + + + + + + +	Bentonite seal
_			Dark Gray (5Y 4/1) clayey silt, moderate plasticity, saturated, mild sweet odor	43.8	ML		Grout backfill
			Remarks: SSC - Subsurface Clearance ft - feet				

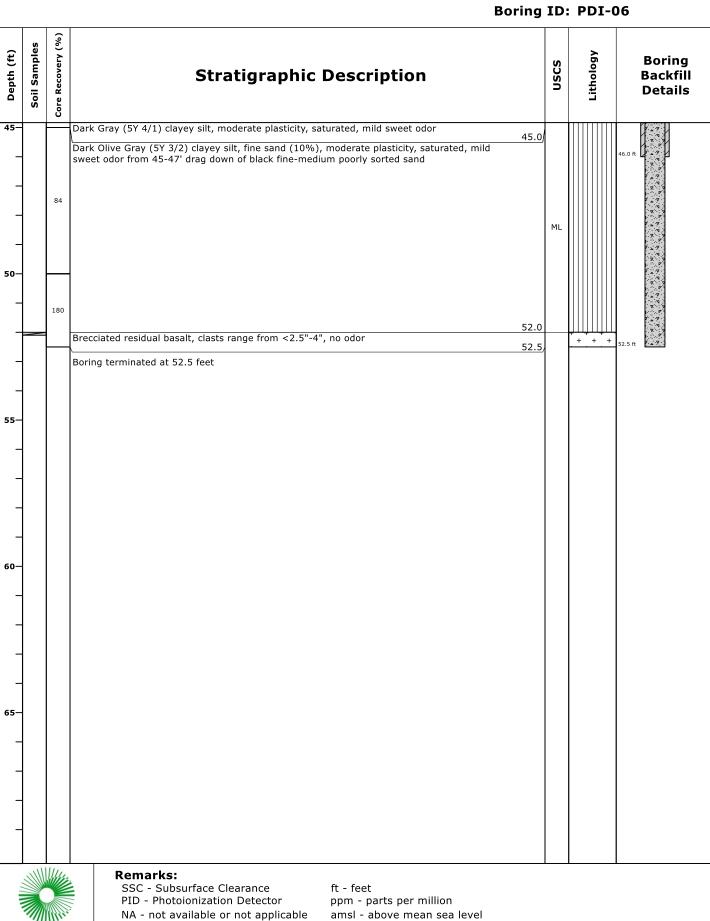


PID - Photoionization Detector

ppm - parts per million

NA - not available or not applicable in - inches

amsl - above mean sea level



amsl - above mean sea level

in - inches

ft bgs - feet below ground surface

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in - inches

Boring ID: PDI-07

Drilling Start Date: 22-Jul-2024 **Drilling End Date:** 23-Jul-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker **GPRS SSC Contractor: SSC Method:** Private Locate

Not Applicable SSC Diam./Depth:

Northing: 702427.368 Easting: 7627694.484 Surface Elevation: 36.6 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 54.0 ft bgs Water Encountered: 28.0 ft bgs Logged By: David Stone **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
o- - -		120	GROUND SURFACE Brown (10YR 4/3) silty fine sand, poorly sorted gravel to cobble sized clasts that are angular/subangular, dry, no odor	SM 2.5	* *	
- - 5-		120	Dark Brown (10YR 3/3) clayey silt, minor fine sand, characterized by discrete fragmented chunks, dispersed subrounded to subangular gravel to cobble sized clasts from (.75" to 5"), moist, no odor Dark Brown (10YR 3/3) clayey silt, minor fine sand, more massive less fragmented,	5.0		
-		100	dispersed subrounded to subangular gravel to cobble sized clasts from (.75" to 5"), moist, no odor, glass shards at 6' and 9', rubble present at 8.5'			
10-		100	Dark Brown (10YR 3/3) clayey silt, minor fine sand, more massive less fragmented, dispersed subrounded to subangular gravel to cobble sized clasts from (.75" to 5"), wet, no odor, non-friable ACM present at 18.3').0 ML		
15- - -		110				
_	.,,,,,	11665	Dark Olive Gray (5Y 3/2) clay silt, moderate plasticity, poorly sorted gravel to cobble sized inclusions (<.25 to 6.5"), clasts are subrounded to subangular, moist, no odor	9.0		10-in Grehole Grout backfill



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

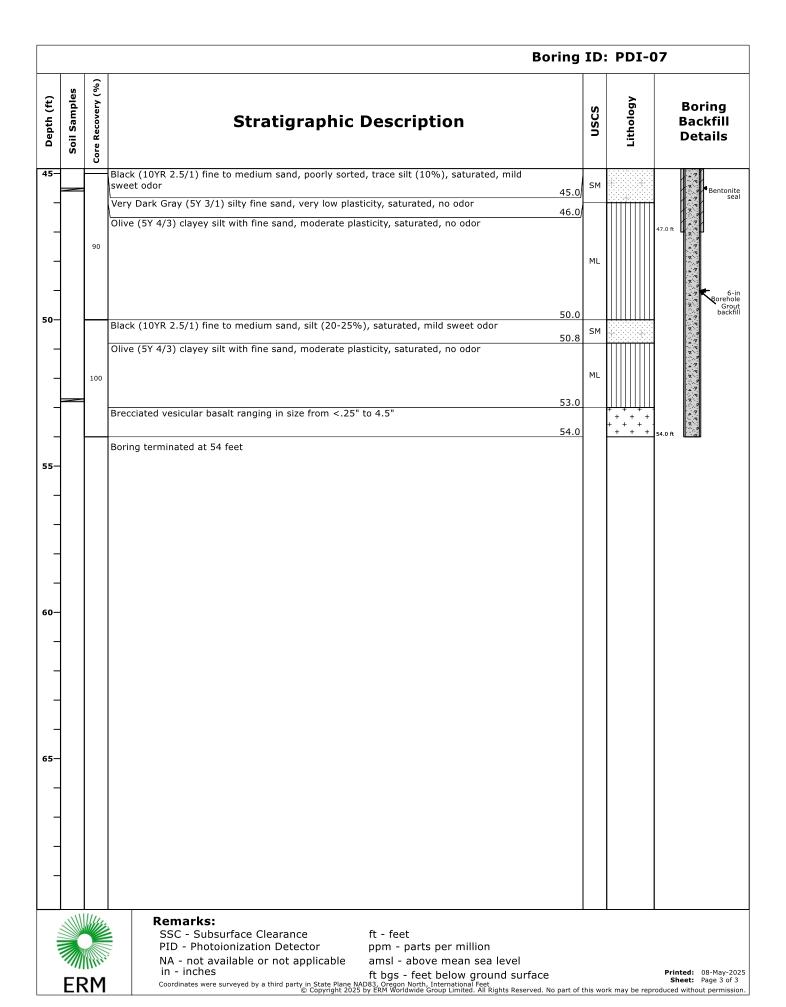
amsl - above mean sea level

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				Boring	ID:	PDI-0	07
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-			Dark Olive Gray (5Y 3/2) clay silt, moderate plasticity, poorly sorted gravel to cobble sized inclusions (<.25 to 6.5"), clasts are subrounded to subangular, moist, no odor	20.0			▼
- _			Dark Brown (10YR 3/3) clayey silt, minor fine sand, subrounded to subangular gravel to cobble sized inclusions, brick debris present, wet, no odor	20.0	ML		7 . 7 . 7 . 7 . 7 . 7 . 7 . 7 . 7 . 7 .
_		120	Dark Brown (10YR 3/3) medium sand, moderately sorted, clayey silt inclusions ranging from 0.25" to 3" evenly dispersed, wet, no odor	23.0	SW		
25-			Dark Brown (10YR 3/3) clayey silt with fine sand, subrounded to subangular gravel to cobble sized rock inclusion, wet, no odor	25.0			9
_		100	Dark Brown (10YR 3/3), medium sand, moderately sorted, clayey silt inclusions ranging from 0.25"-3" evenly dispersed, dispersed reddish-brown staining at 29.5'-30', no odor, saturated at 28', mild sweet odor at 30'	28.3	ML		
30-		100	Very Dark Brown (10YR 2/2) medium sand, moderately sorted, dispersed yellow brown staining throughout, saturated, mild sweet odor	31.6 32.6	SW		
_			Very Dark Gray (2.5Y 2/1) silt with fine sand, minor clay, very low plasticity, saturated, mild sweet odor	25.0	ML		
35— —			Dark Gray (10YR 4/1) fine to medium sand, poorly sorted, gray/yellow staining present, 20% silt and clay, sheen observed throughout yellow band of staining from 35.5-35.6, saturated, strong sweet odor	35.0 36.6	SM	+ + + +	36.0 ft
_ 		100	Very Dark Gray (10YR 3/1) clayey silt, moderate plasticity, 0.5" organic wood material at 37.7', saturated, mild sweet odor		ML		W V V Bentonite
_			Black (10YR 2.5/1) fine to medium sand, poorly sorted, trace silt, saturated, strong sweet odor	38.4	SW ML		v. v seal
40-			Very Dark Gray (10YR 3/1) clayey silt, moderate plasticity, saturated, mild sweet odor Black (10YR 2.5/1) fine to medium sand, trace silt, poorly sorted, saturated, mild sweet	39.2	SW		40.0 ft v v v 8-in v v v 8orehole
_			odor Black (10YR 2.5/1) fine to medium sand, 20% silt, poorly sorted, sheen observed on	40.0	SM		Grout backfill
_			surface of entire unit, dark gray staining, saturated, strong sweet odor	41.0	ML		
_		80	Very Dark Gray (10YR 3/1) clayey silt, moderate plasticity, saturated, mild sweet odor Black (10YR 2.5/1) fine to medium sand, poorly sorted, trace silt (10%), saturated, mild sweet odor	41.5	SM	+ + + + + + + + + + + + + + + + + + +	44.0 ft
71118			Remarks: SSC - Subsurface Clearance ft - feet PID - Photoionization Detector ppm - parts per million NA - not available or not applicable amsl - above mean sea level				1

ERM

NA - not available or not applicable in - inches



Boring ID: PDI-08

Drilling Start Date: 24-Jul-2024 **Drilling End Date:** 24-Jul-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker

GPRS SSC Contractor: SSC Method: Private Locate Not Applicable SSC Diam./Depth:

Northing: 702447.520 Easting: 7627704.990 Surface Elevation: 36.3 ft amsl Borehole Diameter: 10 in

Borehole Depth: 51.0 ft bgs Water Encountered: 28.0 ft bgs Logged By: David Stone

Reviewed By: Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
			GROUND SURFACE				
0-			Clayey Silt, gravel to pebble sized clasts ranging from <0,25" to 6", poorly sorted, subangular to subrounded, dry from 0-1', moist from 1-2', no odor				
				2.0			\(\varphi \)
_		120	Dark Olive Brown (2.5Y 3/3) clayey silt, silt is fragmented with gravel to cobble sized clasts ranging from <.25" to 6", poorly sorted, wet, no odor, brick debris, carbon debris, ACM at 2.5'				V V V V V V V V V V V V V V V V V V V
4			Dark Olive Brown (2.5Y 3/3) clayey silt, moderate plasticity, more competent and less	4.0			V V
5-			friable than silt from 2-4', minor gravel inclusions, wet, no odor Dark Olive Brown (2.5Y 3/3) clayey silt, moderate plasticity, dispersed subrounded gravel	5.0			V V V
_			inclusions, 5" subrounded cobble at 7.5', saturated, no odor				V V V V V V V V V V V V V V V V V V V
-							V V V
_		12					
-							V V V
10-			Dark Olive Brown (2.5Y 3/3) clayey silt, moderate plasticity, dispersed subrounded gravel inclusions, 9" subrounded cobble at 11.5', dark brown to black beds with woody organics at 11' and 14.5' (1-2" thick), saturated, no odor	10.0	ML		
_		110					V V V V V V V V V V V V V V V V V V V
15-				15.0			\$. P . P . P . P . P . P . P . P . P .
-			Dark Olive Brown (2.5Y 3/3) clayey silt, fragmented, subrounded gravel to cobble sized clasts, poorly sorted, moderate plasticity, moist, no odor, likely slough				A . A . A . A . A . A . A . A . A . A .
-		100	Dark Olive Brown (2.5Y 3/3) loose clayey silt, pea gravel to pebble sized clasts, subangular to subrounded, moist, no odor, (likely slough)	17.0			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
-			Dark Olive Brown (2.5Y 3/3) clayey silt, gravel to cobble sized inclusions, subrounded to subangular, moderate plasticity, moist, no odor	18.0			TO-in Rorehole P V V V Backfill V V V V V V V V V V V V V V V V V V
	,,,,,	1460	Remarks:				



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector NA - not available or not applicable ft - feet

ppm - parts per million amsl - above mean sea level

in - inches

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				Boring	ID:	PDI-	08
Deptn (rt)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
- -		100	Dark Olive Brown (2.5Y 3/3) clayey silt, gravel to cobble sized inclusions, subrounded to subangular, moderate plasticity, moist, no odor Dark Olive Brown (2.5Y 3/3) clayey silt, gravel to cobble sized inclusions, subrounded to subangular, moderate plasticity, 6.5" subangular vesicular basalt cobble at 24', dark brown to black 4" organic bed with woody debris from 22.6'-22.9', saturated, no odor	20.0	ML		
;- -			Dark Olive Brown (2.5Y 3/3) clayey silt, gravel to cobble sized inclusions, subrounded to subangular, moderate plasticity, saturated, mild sweet odor	25.0			
_		100	Black (2.5Y 2.5/1) fine to medium sand, trace silt (<10%), clayey silt inclusions throughout ranging from .25"-4", 6" subrounded cobble at 29', saturated, mild sweet odor	28.0	SW		
_		100	Dark Brown (10YR 3/3) silt with fine to medium sand, very low plasticity, loose, saturated, no odor Dark Brown (10YR 3/3) fine to medium sand, trace silt (<10%), moderately sorted, saturated, no odor Black (2.5Y 2.5/1) fine to medium sand,trace silt (<10%), clayey silt with minor fine sand inclusions throughout, woody debris at 32.5', saturated, no odor Very Dark Gray (5Y 3/1) clayey silt, rhythmic laminations visible throughout,low	30.0 30.2 31.9 32.9	SW		
			plasticity, saturated, no odor Black (2.5Y 2.5/1) fine to medium sand, trace silt (<10%), poorly sorted, saturated, no odor	34.2 35.0	ML SW		35.0 ft P
		100	Black (2.5Y 2.5/1) fine to medium sand, trace silt (<10%), poorly sorted, gray/yellow staining throughout, sheen observed on top of the silt, saturated, strong sweet odor Very Dark Gray (5Y 3/1) clayey silt, minor fine sand, low plasticity, light green bed from 36.7'-36.8', saturated, mild sweet odor Black (2.5YR 2.5/1) fine to medium sand, trace silt (<10%), poorly sorted, saturated,	36.0, 37.9	ML		Bento
			Very Dark Gray (5Y 3/1) clayey silt, minor fine sand, low plasticity, saturated, strong sweet odor Very Dark Gray (2.5Y 3/1) fine to medium sand, silt (20-30%), poorly sorted, clayey silt	39.4 39.7	SM ML SM		39.0 ft
		90	inclusions ranging from <.25"-1.5", saturated, strong sweet odor Black (2.5Y 2.5/1) fine to medium sand, trace silt (<10%), poorly sorted, saturated, mild sweet odor	40.0	sw		43.0 ft
			Olive (5Y 3/3) clayey silt with fine sand, moderate plasticity, orange band .5" thick at 44.3' (likely rust/oxidation), saturated, no odor	43.7	ML		v V V V V V V V V V V V V V V V V V V V

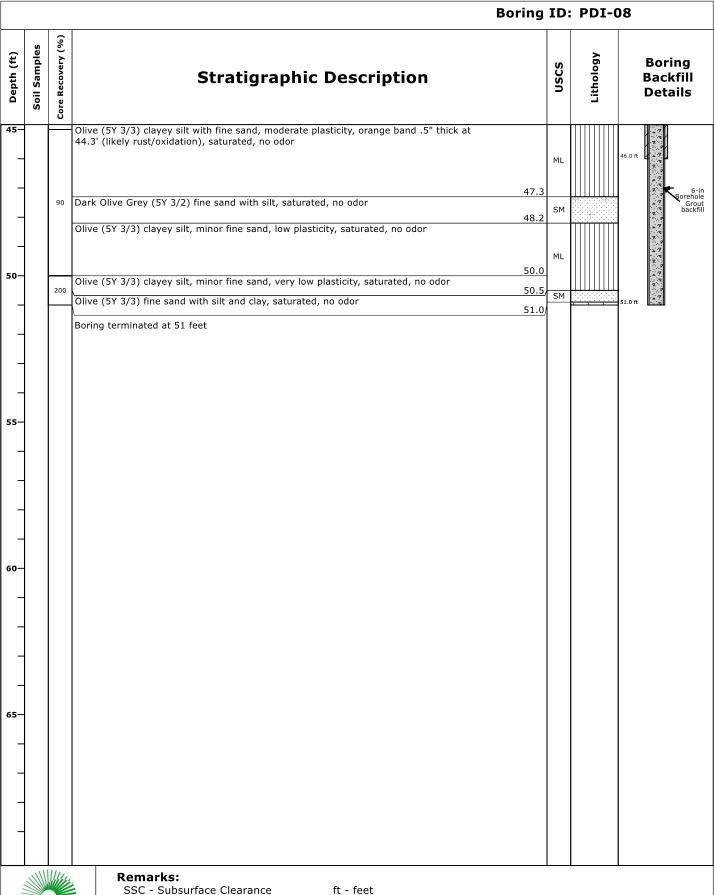


ppm - parts per million

NA - not available or not applicable in - inches

amsl - above mean sea level

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NA - not available or not applicable

in - inches

ppm - parts per million

amsl - above mean sea level

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Boring ID: PDI-09

Drilling Start Date: 19-Jul-2024 **Drilling End Date:** 22-Jul-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker

GPRS SSC Contractor: SSC Method: Private Locate Not Applicable SSC Diam./Depth:

Northing: 702158.280 7627706.670 Easting: Surface Elevation: 38.3 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 89.0 ft bgs Water Encountered: 25.0 ft bgs Logged By: David Stone

Reviewed By: Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
			CROUND CUREACE				
0-			GROUND SURFACE Gravel, poorly sorted, angular, clasts from .25-1.5", geotech liner at 0.6', dry, no odor	0.6	GW	18088	
_			Very Dark Grayish Brown (10YR 3/2) fine to medium sand, moderately sorted, angular gravel inclusions, asphalt pieces from 1.6'-1.7', moist, no odor	0.6 1.7	SW	7,8,7,48,0	V . V . V . V . V . V . V . V . V . V .
_		72	Light Brownish Gray (2.5Y 6/2) silty fine sand, poorly sorted, subrounded gravel $\sim\!15\%,$ red staining at 2.5', moist, mild sweet odor	1.7		+ +	
					SM		7 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
5-			Very Dark Grayish Brown (10YR 3/2) fine to medium sand, clayey silt inclusions, poorly	5.0		+ +	P. v.
_			sorted, moist, mild to sweet odor, Olive Brown (2.5YR 4/3) clayey silt with fine sand, low plasticity, saturated, mild sweet odor	5.7/	ML		V
_		80	Dark Yellowish Brown (10YR 4/4), fine to medium sand, poorly sorted, moist, no odor	7.6			4
_					SW		F v V v V F v V
10-			Gray (10YR 6/1) clayey silt with fine sand, low plasticity, yellow staining from 10.4'-10.8', gravel from 10.8'-11.1', moist, no odor	10.0	ML		*
			Dark Yellowish Brown (10YR 4/4), fine to medium sand, poorly sorted, clayey silt inclusions (<.25") from 15'-15.5', moist, no odor	11.1			V
_		80			sw		
_							
15-				15.5			V V
-			Grayish Brown (10YR 5/2) clayey silt with fine sand, low plasticity, moist, no odor Dark Yellowish Brown (10YR 4/4) fine to medium sand, poorly sorted, well rounded gravel (~.25"-1"), clayey silt inclusions (<.25-3") from 20-23.3', moist, no odor	15.9/	ML		
-		40			SW		10-in Gorehole Grout backfill
	.,,,,,	11/1	Parasitas				ार्थ backfill backfill



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable in - inches

ft - feet

ppm - parts per million amsl - above mean sea level

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			E	Boring	ID:	PDI-0)9
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20- - -		100	Dark Yellowish Brown (10YR 4/4) fine to medium sand, poorly sorted, well rounded gravel (~.25"-1"), clayey silt inclusions (<.25-3") from 20-23.3', moist, no odor Light Olive Brown (2.5Y 5/3) medium sand, moderately sorted, yellow staining, wet, mild sweet odor	23.3	SW		
25-		•	Brown (7.5YR 5/2) medium sand, moderately sorted, wet, mild sweet odor Dark Brown (10YR 3/3) fine to medium sand, silt (30%), poorly sorted, saturated, mild sweet odor	23.7 25.0	SM	+ +	
-		60	Dark Yellowish Brown (10YR 4/4) fine to medium sand, trace silt (10%), poorly sorted, moist, no odor	26.5	SW		
30- - -		60	Brown (7.5YR 5/2) fine to medium sand, silt (30-40%), poorly sorted, yellow staining throughout, moist, mild sweet odor Very Dark Gray (10YR 3/1) fine to medium sand, silt (30%), yellow staining from 32.2-32.7', light brown red staining from 32.7-33', saturated, mild sweet odor	32.2	SM	+ + + + + + + + + + + +	
35- - -		100	Grayish Brown (10YR 5/2) fine to medium sand, silt (30%), poorly sorted, saturated, no odor	35.0 37.8		+ + + + + + + + +	9
40-			Dark Yellowish Brown (10YR 4/4) fine to medium sand, trace silt (<10%), poorly sorted, black mottling, saturated, no odor Very Dark Gray (5Y 3/1) clayey silt, medium plasticity, Black fine sand found in shoe at 40', saturated, no odor Black fine to medium sand, inferred contact	38.8	SW ML		38.0 tr
-		100	Olive (5Y 4/3) clayey silt, fine sand (15%), moderate plasticity, saturated, no odor	40.0	ML		41.0 ft Grout backfill 8-in Borehole
	E	M	Remarks: SSC - Subsurface Clearance ft - feet PID - Photoionization Detector ppm - parts per million NA - not available or not applicable amsl - above mean sea level in - inches ft bgs - feet below ground surfa Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet	ce		I	Printed: 08-May-2025 Sheet: Page 2 of 4

amsl - above mean sea level in - inches

ft bgs - feet below ground surface

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet
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			E	Boring	ID:	PDI-09)
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
45-			Olive (5Y 4/3) clayey silt, fine sand (15%), moderate plasticity, saturated, no odor				
-				47.5	ML		
_		100	Olive (5Y 4/3) fine sand, silt and clay inclusions (<.25"), saturated, no odor	48.2	SM		. v
50-			Olive (5Y 4/3) clayey silt, fine sand (15%), moderate plasticity, saturated, no odor	50.0	ML		* P Q * P Q
		80	Olive (5Y 4/3) fine sand with silt, clayey silt inclusions (0.25"-1.5"), incompetent, saturated, no odor, competent from 56-61.6'				
		80			SM		
60-		70	Olive (5Y 4/3) clayey silt with fine sand, low plasticity, saturated, no odor Olive (5Y 4/3) fine sand with silt and clay, saturated, no odor	61.6 62.0,	ML		
65— — —		80	Olive (5Y 4/3) silt with fine sand and clay, low plasticity, saturated, no odor	67. <u>9</u>	SM		8 orehole Grout backfill
			Remarks: SSC - Subsurface Clearance ft - feet		ML		



PID - Photoionization Detector

NA - not available or not applicable in - inches

ppm - parts per million

amsl - above mean sea level

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			Bori	ng I	D:	PDI-0)9
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
70-		80	Olive (5Y 4/3) silt with fine sand and clay, low plasticity, saturated, no odor	1	ML		
80-		80	Olive (5Y 4/3) fine sand with silt and clay, saturated, no odor	80.0			
-		80	Olive (5Y 4/3) fine sand with silt and clay, incompetent, saturated, no odor Olive (5Y 4/3) fine sand with silt and clay, competent, saturated, no odor	82.7	SM		
90-		100	Dark Grayish Green (10Y-5GY 4/2) clayey silt with olive mottling, moderate plasticity, pebble sized inclusions from 86.7-87.2', saturated, no odor Brecciated basalt gravel, subrounded, pebble to cobble sized clasts (0.25"-3.5"), saturated, no odor	86.2 87.8 89.0	ML	**************************************	v v v v v v v v v v v v v v v v v v v
_		Wiji	Remarks: SSC - Subsurface Clearance ft - feet				



SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

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Boring ID: PDI-10 Drilling Start Date: 30-Jul-2024 Northing: 702295.560

Drilling End Date: 30-Jul-2024 Easting: 7627593.360 **Drilling Contractor:** Cascade Drilling Surface Elevation: 36.0 ft amsl **Drilling Method:** Sonic Borehole Diameter: 10 in

Rig Make/Model: TSI **Borehole Depth:** 56.5 ft bgs **Driller:** Chris Baker Water Encountered: 25.0 ft bgs **GPRS SSC Contractor:** Logged By: David Stone

Reviewed By: Avery Soplata, RG **SSC Method:** Private Locate Not Applicable SSC Diam./Depth:

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
			GROUND SURFACE				
0-			Asphalt GROONS SORTAGE	0.2		00.00	. v. v.
_			Gravel, poorly sorted, angular, 0.25"-2" in diameter, Gray-Brown silty fine sand matrix, dry, no odor		GW		V 2 V
_			Brown (10YR 5/3) silt with fine sand, gravel to cobble inclusions (<.25"-5"), poorly sorted, angular, loose, moist, no odor	1.1	ML	Association of the	V V V
		90	Yellowish Brown (10YR 5/4) fine sand, with silt, poorly sorted, loose, moist, no odor	2.2		Taranta (P ∵ ¬ ∴ ∴ ¬ ∵ ∶ ¬ ∵ ¬ · · · P ∵
			Yellowish Brown (10YR 5/4) silt with clay, minor fine sand, low plasticity, moist, no odor	2.9	ML		P
_				3.2			Ø
5-			Pale Brown (10YR 6/3) fine sand with silt, minor clay, loose, competent fragments ranging in size from 0.25"-2", moist, no odor	5.0,	SM	+ +	P
			Pale Brown (10YR 6/3) fine sand with silt, minor clay, competent, wet, no odor	5.4			∇ ∇ ∇ . ∇
-		100	Light Olive Brown (2.5Y 5/3) fine to medium sand with silt, yellow staining from 5.4-6', diffused yellow staining from 6-6.7', yellow grains from 6.7-10', moist, no odor	10.0			Ÿ
		100	Dark Yellowish Brown (10YR 3/4) fine to medium sand with silt, poorly sorted, subrounded gravel inclusions from 10-11.5', moist, no odor Dark Grayish Brown (2.5Y 4/2) fine to medium sand with silt, poorly sorted, moist, no odor	12.9	SW		
15-			Very Dark Grayish Brown (10YR 3/2) fine sand with silt, gravel to cobble sized clasts,	15.0			P ∵ ∵ ∵ ∵ ∵ ∵ ∵ ∵ · · · · · · · · · · ·
_			poorly sorted, moist, no odor		SM		7 - 7 :
				17.0			V. V.
_		80	Dark Yellowish Brown (10YR 3/4) fine to medium sand with silt, poorly sorted, moist, mild sweet odor Brown (7.5YR 4/2) fine to medium sand with silt, silty clay fragments throughout	18.0	S.W		10-in Forehole Grout backfill
_		Ille.	(0.25"-5"), yellow staining from 18-18.2', yellow grains from 18.2-20', moist, mild sweet odor		SW		V V V V V V V V V V V V V V V V V V V



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector ppm - parts per million NA - not available or not applicable amsl - above mean sea level

in - inches

ft - feet

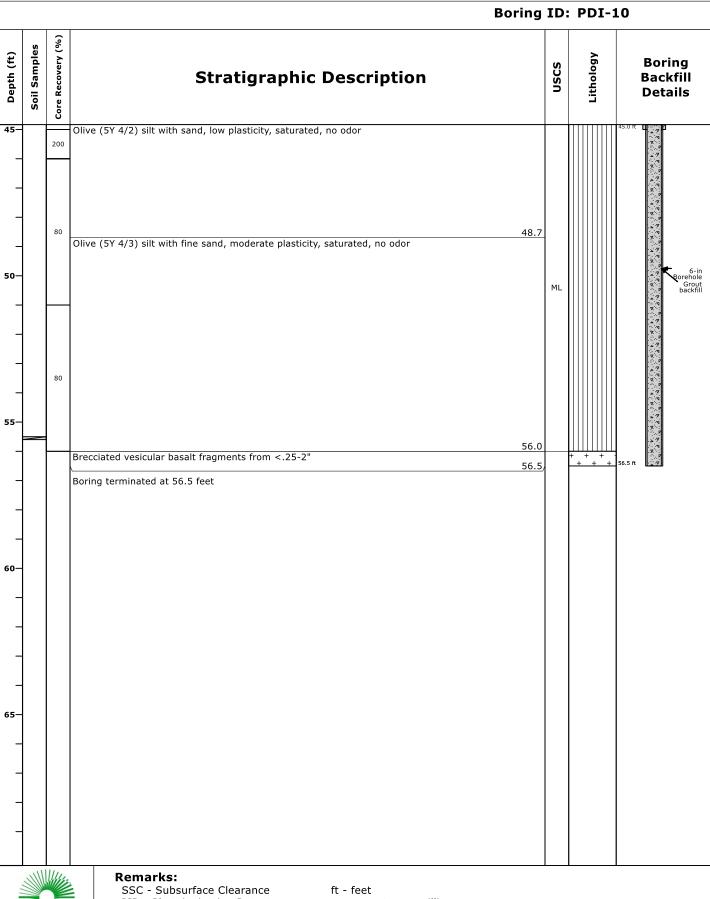
		l _		og		PDI-1	
(iii) iiidad	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
7		-	Brown (7.5YR 4/2) fine to medium sand with silt, silty clay fragments throughout (0.25"-5"), yellow staining from 18-18.2', yellow grains from 18.2-20', moist, mild sweet		SW		∇ . ∇ . ∇ . ∇ . ∇ . ∇
†			odor Reddish Gray (5YR 5/2) fine to medium sand with silt, Grayish White staining, moist, mild sweet odor	20.0	SM		▼
1		100	Reddish Gray (5YR 5/2) fine to medium sand, silt (50%), poorly sorted, grading down of light yellow staining to bright yellow staining from 20.5-21.2', moist, mild sweet odor	20.5			P
			Reddish Gray (5YR 5/2) fine to medium sand, silt (10-20%), poorly sorted, clayey silt inclusions (.25"-3"), yellow staining from 21.2-22.7', wet, mild sweet odor	21.2			▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼
;- -		•	Dark Grayish Brown (2.5Y 4/2) fine to medium sand with silt (10-20%), poorly sorted, clayey silt inclusions (.25"-3"), diffuse yellow staining from 27.3'-28.9', saturated, sweet odor	25.0	SW		
		100		20.0			
1			Reddish Gray (5YR 5/2) fine to medium sand, silt (20-30%), poorly sorted, diffuse yellow staining, saturated, sweet odor	28.9	SM	†	V 4 V
			Dark Brown (10YR 3/2) silt with fine sand, poorly sorted, low plasticity, yellow staining throughout that appears stratified, saturated, mild sweet odor	29.5 30.0	ML		▼ * ▼ * ▼ * ▼ * ▼ * ▼ * ▼ * ▼ * ▼ * ▼ *
			Gray (5Y 5/1) Silt with fine to medium sand, poorly sorted, very low plasticity, loose, clayey silt inclusions (0.25"-2"), saturated, sweet odor	31.8			V V V
		100	Gray (5Y 5/1) fine to medium sand, silt (40-50%), poorly sorted, saturated, sweet odor	32.9	SM	* * * * * * * * * * * * * * * * * * *	V V
			Very Dark Gray (5Y 3/1) fine to medium sand, silt (10-20%), poorly sorted, saturated, sweet odor	33.2	ML		7
			Very Dark Gray (5Y 3/1) silt with fine sand and clay, low plasticity, saturated, mild sweet odor	34.0	SM	+ + + +	V V
		100	Very Dark Gray (5Y 3/1) fine to medium sand, silt (30-40%), poorly sorted, saturated, no odor	35.0	sw		Bento
			Black (5Y 2.5/1) fine to medium sand, silt (10%), poorly sorted, saturated, no odor Very Dark Gray (5Y 3/1) fine to medium sand, silt (40-50%), saturated, mild sweet odor	36.0	SM	4	7 . V
Ī				37.7	511	4	7
		100	Black (5Y 2.5/1) fine to medium sand, silt (10%), poorly sorted, saturated, no odor				Gri baci
					SW		Boreh
1				41.9			7
_		80	Very Dark Greenish Gray (GLEY1 3/1) silt with fine sand, (<.25") silty clay nodules, low plasticity, fractured pebble at 42.3', saturated, no odor Olive (5Y 4/2) silt with sand, low plasticity, saturated, no odor	43.0	ML		43.0 ft
$\frac{1}{2}$							V P Bentor
///			Remarks: SSC - Subsurface Clearance ft - feet		I	<u> </u>	

ERM

NA - not available or not applicable in - inches

amsl - above mean sea level

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NA - not available or not applicable

in - inches

ppm - parts per million

amsl - above mean sea level

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Drilling Start Date: 05-Aug-2024 **Drilling End Date:** 05-Aug-2024

Drilling Contractor: Cascade Drilling Drilling Method: Sonic

Rig Make/Model: TSI **Driller:** Chris Baker **SSC Contractor:** Cascade/GPRS **SSC Method:** Air-knife/Private Locate SSC Diam./Depth: 12.5-in / 8-ft

Northing: 702398.990 Easting: 7627505.640 Surface Elevation: 36.0 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 51.5 ft bgs Water Encountered: 29.0 ft bgs Logged By: David Stone

Reviewed By: Avery Soplata, RG **Client:**

Consolidated Total

Boring ID: PDI-11

Site Name:

Arkema Portland

Location:

Portland, US-OR

Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfi Detail
		GROUND SURFACE				
		Asphalt	0.6			♥
		Very Dark Gray (5YR 3/1) fine sand with silt, trace angular gravel (.25"-1'), dry, no odor	1.0/	SM		ν
		Gray (GLEY1 6/) silt, very fine sand (20%) silt/clay chunks present, low plasticity, dry, no odor	2.0			A A
	100	Gray (GLEY1 6/) silt, very fine sand (20%) silt/clay chunks present, low plasticity, moist,	2.0/			A . A .
		no odor		ML		▼ ▼ ▼
				1712		A A
						A A A
ĺ						V V V
		Dark Gray (GLEY1 4/) fine to medium sand, minor silt/clay clasts, moist, no odor	6.0			<i>p</i> · · · · · · · · · · · · · · · · · · ·
	100			sw		P
			0.0			A . A .
ł		Gray (10YR 6/1) silt with fine sand, minor clay, competent, low plasticity, moist, no odor	8.0			∇ ∇ ∇
				ML		A ~ A
		Gray(10YR 6/1) silt with fine sand, loose, moist, no odor	9.5			V V
		Brown (10YR 5/3) fine to medium sand, minor silt, trace gravel, poorly sorted, dark	10.3			A A A
		brown silt fragments, yellow grained staining, moist, no odor				▼ ▼ ▼
	71					V V
						₽
						P 7
						A ~ A .
			15.0			V V
		Pinkish Gray (7.5YR 6/2) fine to medium sand, trace silt, silt inclusions, yellow staining from 16.8'-18.5', moist, no odor from 15'-18, mild sweet odor from 18'-20'		SW		A A.
						∀
						A A A
	100					* × ×
						V V V V V V V V V V V V V V V V V V V
						N N N
						\$ 0 P



ERM

SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

ft bgs - feet below ground surface

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ipies	(%)					
son samples	Core Recovery (Stratigraphic Description		nscs	Lithology	Boring Backfill Details
		from 16.8'-18.5', moist, no odor from 15'-18, mild sweet odor from 18'-20' Pinkish Gray (7.5YR 6/2) fine to medium sand, trace silt, yellow silt fragments (.25"-1")	20.0	SW		
_			25.0	SM	+ +	
_	•	mild sweet odor Pinkish Gray (7.5YR 6/2) fine to medium sand, silt (20-30%), silt increases to (30-50%)	27.9 28.2	ML	+ + + + + +	
	100			SM	+ + + +	
			34.0	SW		A A A
_	100		35.0	SM	+ + + + + +	
		saturated, no odor	38.3 39.5	MI	+ + + + + + + + + + + + + + + + + + + +	39.0 ft
	80	,	40.0	SW		Benton
		100	Pinkish Gray (7.5YR 6/2) fine to medium sand, silt (10-30%), poorly sorted, yellow mottling/staining, wet, mild sweet odor Pinkish Gray (7.5YR 6/2) silt, fine to medium sand (50%), poorly sorted, competent, wet, mild sweet odor Pinkish Gray (7.5YR 6/2) fine to medium sand, silt (20-30%), silt increases to (30-50%) at 30', poorly sorted, yellow mottling/staining from 28.2'-30' and 31.8'-34', saturated, mild sweet odor Dark Grayish Brown (10YR 4/2) fine to medium sand, minor silt, poorly sorted, saturated, mild sweet odor Pinkish Gray (7.5YR 6/2) fine to medium sand, silt (30-50%), poorly sorted, yellow mottling/staining, saturated, no odor Very Dark Grayish Brown (2.5Y 3/2) fine to medium sand, silt (30-50%), poorly sorted, saturated, no odor Grayish Black silt fragments, saturated, no odor Black (2.5Y 2.5/1) fine to medium sand, silt, saturated, no odor	Finkish Gray (7.5YR 6/2) fine to medium sand, trace silt, yellow silt fragments (.25*-1*) Pinkish Gray (7.5YR 6/2) fine to medium sand, silt (10-30%), poorly sorted, yellow mottling/staining, wet, mild sweet odor Pinkish Gray (7.5YR 6/2) silt, fine to medium sand (50%), poorly sorted, competent, wet, mild sweet odor Pinkish Gray (7.5YR 6/2) silt, fine to medium sand (50%), poorly sorted, competent, wet, mild sweet odor Pinkish Gray (7.5YR 6/2) silt, fine to medium sand (50%), poorly sorted, competent, wet, mild sweet odor Pinkish Gray (7.5YR 6/2) fine to medium sand, silt (20-30%), silt increases to (30-50%) at 30', poorly sorted, yellow mottling/staining from 28.2'-30' and 31.8'-34', saturated, mild sweet odor Dark Grayish Brown (10YR 4/2) fine to medium sand, minor silt, poorly sorted, saturated, mild sweet odor Pinkish Gray (7.5YR 6/2) fine to medium sand, silt (30-50%), poorly sorted, yellow mottling/staining, saturated, no odor Pinkish Gray (7.5YR 6/2) fine to medium sand, silt (30-50%), poorly sorted, yellow mottling/staining, saturated, no odor Very Dark Grayish Brown (2.5Y 3/2) fine to medium sand, silt (30-50%), poorly sorted, saturated, no odor Remarks: Remarks:	Finkish Gray (7.5YR 6/2) fine to medium sand, trace silt, yellow silt fragments (.25"-1") Finkish Gray (7.5YR 6/2) fine to medium sand, trace silt, yellow silt fragments (.25"-1") Finkish Gray (7.5YR 6/2) fine to medium sand, silt (10-30%), poorly sorted, yellow mottling/staining, wet, mild sweet odor Finkish Gray (7.5YR 6/2) silt, fine to medium sand (50%), poorly sorted, competent, wet, mild sweet odor Finkish Gray (7.5YR 6/2) silt, fine to medium sand (50%), poorly sorted, competent, wet, mild sweet odor Finkish Gray (7.5YR 6/2) fine to medium sand, silt (20-30%), silt increases to (30-50%) at 30', poorly sorted, yellow mottling/staining from 28.2"-30' and 31.8"-34", saturated, mild sweet odor Finkish Gray (7.5YR 6/2) fine to medium sand, minor silt, poorly sorted, saturated, mild sweet odor Finkish Gray (7.5YR 6/2) fine to medium sand, silt (30-50%), poorly sorted, saturated, mild sweet odor Finkish Gray (7.5YR 6/2) fine to medium sand, silt (30-50%), poorly sorted, saturated, mottling/staining, saturated, no odor Finkish Gray (7.5YR 6/2) fine to medium sand, silt (30-50%), poorly sorted, yellow mottling/staining, saturated, no odor Finkish Gray (7.5YR 6/2) fine to medium sand, silt (30-50%), poorly sorted, saturated, mottling/staining, saturated, no odor Finkish Gray (7.5YR 6/2) fine to medium sand, silt (30-50%), poorly sorted, saturated, mottling/staining, saturated, no odor Finkish Gray (7.5YR 6/2) fine to medium sand, silt (30-50%), poorly sorted, saturated, mottling/staining, saturated, no odor Finkish Gray (7.5YR 6/2) fine to medium sand, silt (30-50%), poorly sorted, saturated, mottling/staining, saturated, no odor Finkish Gray (7.5YR 6/2) fine to medium sand, silt (30-50%), poorly sorted, saturated, mottling/staining, saturated, no odor	From 16.8"-18.5", moist, no odor from 15"-13, mild sweet odor from 18"-20" Pinkish Gray (7.5YR 6/2) fine to medium sand, trace silt, yellow silt fragments (.25"-1") SW Pinkish Gray (7.5YR 6/2) fine to medium sand, silt (10-30%), poorly sorted, yellow mottling/staining, wet, mild sweet odor Pinkish Gray (7.5YR 6/2) silt, fine to medium sand (50%), poorly sorted, competent, wet, mild sweet odor Pinkish Gray (7.5YR 6/2) silt, fine to medium sand (50%), poorly sorted, competent, wet, mild sweet odor Pinkish Gray (7.5YR 6/2) fine to medium sand, silt (20-30%), silt increases to (30-50%) at 30", poorly sorted, yellow mottling/staining from 28.2"-30" and 31.8"-34", saturated, mild sweet odor Dark Grayish Brown (10YR 4/2) fine to medium sand, minor silt, poorly sorted, saturated, mild sweet odor Pinkish Gray (7.5YR 6/2) fine to medium sand, minor silt, poorly sorted, yellow mottling/staining, saturated, no odor Very Dark Grayish Brown (2.5Y 3/2) fine to medium sand, silt (30-50%), poorly sorted, saturated, no odor Wery Dark Grayish Brown (2.5Y 3/2) fine to medium sand, silt (30-50%), poorly sorted, saturated, no odor Black (2.5Y 2.5/1) fine to medium sand, silt, saturated, no odor Repair (2.5Y 2.5/1) fine to medium sand, silt, saturated, no odor Repair (2.5Y 2.5/1) fine to medium sand, silt, saturated, no odor Repair (2.5Y 2.5/1) fine to medium sand, silt, saturated, no odor Repair (2.5Y 2.5/1) fine to medium sand, silt, saturated, no odor Repair (2.5Y 2.5/1) fine to medium sand, silt, saturated, no odor Repair (2.5Y 2.5/1) fine to medium sand, silt, saturated, no odor



NA - not available or not applicable

in - inches

amsl - above mean sea level

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				Boring	ID:	PDI-1	11
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		USCS	Lithology	Boring Backfill Details
45-			Black (2.5Y 2.5/1) fine to medium sand, silt, saturated, no odor	45.0	_SW_		45.0 ft Grout backfill
_		66	Olive Gray (5Y 4/2) silt with fine sand and clay, loose, saturated, no odor				backfill 6-in Borehole
_			Olive Gray (5Y 4/2) silt with clay, minor fine sand, moderate plasticity, saturated, no odor	46.5	ML		V V V V V V V V V V V V V V V V V V V
-				48.5			
-		80	Dark Olive Gray (5Y 3/2) fine sand with silt, poorly sorted, saturated, no odor		SM		. ♥ . ♥
_			Brown (7.5YR 4/3) Brecciated vesicular basalt ranging from 0.25-3", matrix of clayey silt,	49.8			7 · V
50-			saturated, no odor			+ . + . + . +	▼ . ▼ ▼ . ▼
-				51.5		+ + + +	51.5 ft
_			Boring terminated at 51.5 feet				31.510 (22.5)
-							
-							
55-							
33							
-							
_							
-							
-							
60-							
-							
_							
-							
65-							
-							
-							
-							
			Remarks: SSC - Subsurface Clearance ft - feet				



SSC - Subsurface Clearance PID - Photoionization Detector

NA - not available or not applicable in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

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				Boring	ID:	PDI-1	12
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		USCS	Lithology	Boring Backfill Details
45-			Very Dark Greenish Gray (GLEY1 3/10Y) Fine sand with silt, saturated, no odor	45.0	SM.		Δ. Δ. Δ. Δ.
-			Olive (5Y 4/3) silt with clay, trace fine sand ($<10\%$), low plasticity, orange staining from 45'-46.8', saturated, no odor				A A
_		80			ML		V V
				48.0			v _ v v _ v
-]	Brecciated vesicular basalt (<.25"-4"), tannish red silt with fine sand matrix	+0.0		+ + + +	7 7 7 7
-						+ + + +	V V
50-		100		50.0		+ + +	50.0 ft \overrightarrow{v} \overrightarrow{v}
_			Boring terminated at 50 feet				
-							
-							
-							
55-							
-							
-							
-							
_							
60-							
"							
-							
-							
_							
65-							
-							
-							
_							
			Remarks: SSC - Subsurface Clearance ft - feet				



SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable in - inches

ft - feet

ppm - parts per million amsl - above mean sea level

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Boring ID: PDI-12

Drilling Start Date: 06-Aug-2024
Drilling End Date: 06-Aug-2024
Drilling Contractor: Cascade Drilling
Drilling Method: Sonic

Prilling Method: Sonic
Rig Make/Model: TSI

Driller: Chris Baker

SSC Contractor: Cascade/GPRS

SSC Method: Air-knife/Private Locate

SSC Diam./Depth: 12.5-in / 8.92-ft

Northing: 702491.250
Easting: 7627437.150
Surface Elevation: 36.4 ft amsl
Borehole Diameter: 10 in

Borehole Depth: 50.0 ft bgs
Water Encountered: 29.8 ft bgs
Logged By: David Stone

Reviewed By: Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
			GROUND SURFACE			
0-			Asphalt 0.6			P
_			Cobble (2"-4"), rounded, sand matrix (<10%)	GW		V V
			Dark Grayish Brown (10YR 4/2) fine sand with silt, silt/clay clasts presents, dry, no odor			v
-				SM		V V
		100	3.0			р
			Dark Grayish Brown (10YR 4/2) clay/silt with minor fine to medium sand (<10%), medium plasticity, sand has white flecks, moist, no odor	CL		▼ . ▼ . □ . ▼
			4.5 Very Dark Gray (2.5Y 3/1) medium sand, trace silt (<10%) as clasts, moist, no odor			7 7 V
5 —		100	8.0			
- 10-		100	Dark Brown (10YR 3/3) medium sand, trace sand and silt (<10%), moderately sorted, low plasticity silt fragments (0.5-3"), moist, no odor			
1 1		100		sw		
15— —		50				\$\$\text{\$\tex{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\texititt{\$\text{\$\text{\$\text{\$\text{\$\texitt{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\te
_	,,,,	11/1.	Pomarke			10-in Gorenole Grout backfill



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

ft bgs - feet below ground surface

Printed: 08-May-2025 Sheet: Page 1 of 3

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
-			Dark Brown (10YR 3/3) medium sand, trace sand and silt (<10%), moderately sorted, low plasticity silt fragments (0.5-3"), moist, no odor				
-		100		20.8	SW		
.0-			Gray (10YR 5/1) fine to medium sand, silt (25-40%), poorly sorted, wet, mild sweet odor	29.8			▼ . ▼
-		80	Very Dark Grayish Brown (10YR 3/2) fine to medium sand, silt (40-50%), poorly sorted, saturated, no odor Very Dark Grayish Brown (10YR 3/2) fine to medium sand, silt (25%), 33-35' becomes Dark Grayish Brown, silt increases to 30-40%, saturated, no odor	30.0	SM	+ + + + + + + + + + + + + + + + + + + +	
35-			Very Dark Gray (10YR 3/1) fine to medium sand, silt (30-40%), poorly sorted, saturated,	35.0			
			no odor				36 0 ft
		90	Very Dark Gray (2.5Y 3/1) silt with clay, trace fine sand, moderated plasticity, saturated, no odor Black (2.5Y 2.5/1) Fine to medium sand, trace silt (<10%), saturated, no odor	36.2	ML		35.0 ft
7			Diack (2.31 2.3/1) Time to inequality Salia, trace Silt (<1070), Saturated, 110 0001		SW		, ∀ . ∀ 7 . ∀
-0			Dark Greenish Gray (GLEY1 4/5GY) silt with clay and fine sand, low plasticity, saturated, no odor	40.0	ML		40.0 ft 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
		80		40.0			V V
_			Very Dark Greenish Gray (GLEY1 3/10Y) Fine sand with silt, saturated, no odor	43.0	SM	+ +	Group backf 8- Boreho



ERM

PID - Photoionization Detector

NA - not available or not applicable in - inches

ppm - parts per million

amsl - above mean sea level

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Boring ID: PDI-13 Drilling Start Date: 31-Jul-2024

Drilling End Date: 31-Jul-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker

GPRS **SSC Contractor: SSC Method:** Private Locate

SSC Diam./Depth: Not Applicable

Northing: 702176.920 Easting: 7627588.190 Surface Elevation: 37.4 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 84.5 ft bgs Water Encountered: 5.0 ft bgs Logged By: David Stone

Reviewed By: Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Soil Samples	Core Recovery (%)	Stratigraphic Description		NSCS	Lithology	Boring Backfill Details
		GROUND SURFACE				
"		Asphalt	0.2	GW	00000	\[\text{\range of } \r
4		Grayish Brown gravel, angular, fine sand and silt matrix, dry, no odor	0.7			7 . V
		Dark Brown (10YR 3/3) silty fine sand, gravel present (<.5"), dry, no odor	1.4			V . V
-	90	Dark Brown (10YR 3/3) fine to medium sand, silt (10-20%), poorly sorted, silt inclusions (0.25"-3"), moist, no odor		SM		\$\bar{\chi}{\phi}\\ \varphi_{\chi}\varphi_{\chi}\\ \varphi_{\chi}\varphi_{\chi}\\\ \varphi_{\chi}\varphi_{\chi}\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
			4.0			A A A
5—	•	Dark Yellowish Brown (10YR 3/4) silt with fine sand, low plasticity, Grayish Brown Mottling, wet, no odor	5.0	ML		V V V
		Dark Grayish Brown (10YR 4/2), silt (60%), fine sand, loose, low plasticity, sheen in pooled water, saturated, mild sweet odor				A . A
-		Dark Grayish Brown (10YR 4/2) fine to medium sand, silt (40-50%), poorly sorted, sheen	5.7	SM		ν ν ν ν ν ν
		in pooled water, saturated, mild sweet odor	6.2			V . V
	60	Dark Grayish Brown (10YR 4/2) silt with fine sand, trace clay, sheen on pooled water, blackish-gray stringers, reddish brown blebs from 6.5-7', saturated, mild sweet odor				7 4 7 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1
						ν . Υ
)- - -		Dark Grayish Brown (10YR 4/2), silt with clay, trace fine sand, low plasticity,Free flowing	11.0			
)- - - -		DNAPL, saturated with DNAPL, sheen on pooled water, Brownish Tan mottling, Grayish Brown shiny staining from 11-11.5', saturated, strong sweet odor	11.0	ML		
-	80	DNAPL, saturated with DNAPL, sheen on pooled water, Brownish Tan mottling, Grayish		ML		
)- - - - -	80	DNAPL, saturated with DNAPL, sheen on pooled water, Brownish Tan mottling, Grayish Brown shiny staining from 11-11.5', saturated, strong sweet odor Very Dark Gray (10YR 3/1) silt with clay, trace fine sand, moderate plasticity, light tan laminations, Gray staining from 13-15', pooled DNAPL from 13'-15', 20% DNAPL saturated from 13-13.5', 50-60% DNAPL saturated from 13.5'-15', saturated, strong		ML		10 Goreh Goreh Sack
 - - - -	80	DNAPL, saturated with DNAPL, sheen on pooled water, Brownish Tan mottling, Grayish Brown shiny staining from 11-11.5', saturated, strong sweet odor Very Dark Gray (10YR 3/1) silt with clay, trace fine sand, moderate plasticity, light tan laminations, Gray staining from 13-15', pooled DNAPL from 13'-15', 20% DNAPL saturated from 13-13.5', 50-60% DNAPL saturated from 13.5'-15', saturated, strong sweet odor Very Dark Gray (10YR 3/1) silt with fine sand and clay, low plasticity, sheen present in	12.0	ML		y y y



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

ft bgs - feet below ground surface

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(au) madaa	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
-		80	Very Dark Grayish Brown (2.5Y 3/2) fine sand, silt (50%), diffused staining from 17.3'-19', concentrated gray staining from 19'-20',wet, strong sweet odor Very Dark Grayish Brown (2.5Y 3/2) silt with fine sand and clay, low plasticity, loose, sheen on pooled liquid, Tan clayey silt inclusion at 22', light shiny gray staining at 24', saturated, strong sweet odor	20.0	SM,		
5-			Very Dark Grayish Brown (2.5Y 3/2) silt with fine sand, trace clay, low plasticity, reddish tan fluid in solution, saturated, strong sweet odor	25.0	ML		
-		100	Very Dark Gray (2.5Y 3/1) fine to medium sand with silt, poorly sorted, saturated, mild sweet odor	27.8	SM	+ + +	29.0 ft
				30.0		## <u>.</u>	V V
		90	Black (2.5Y 2.5/1) medium to coarse sand with subrounded gravel, poorly sorted, ceramic fragment at 31', saturated, mild sweet odor Black (2.5Y 2.5/1) fine to medium sand with minor subrounded gravel, poorly sorted, woody debris (~6") at 32.8', saturated, no odor	32.5			Bento Gr
			Black (2.5Y 2.5/1) medium to coarse sand with subrounded gravel, poorly sorted, saturated, no odor	35.0 37.0	SW		Borel
		100	Black (2.5Y 3/1) fine to medium sand with minor silt, poorly sorted, woody debris at 37.4', Very Dark Gray (2.5Y 3/1 clayey silt bed (2.5") from 38.1-38.3', saturated, no odor Dark Olive Gray (5Y 3/2) clayey silt, trace fine sand, low plasticity, gravel to cobble	39.1			38.0 ft 7
			inclusions (<.25"-4"), saturated, no odor Olive (5Y 4/3) silt with fine sand and clay, moderate plasticity, saturated, no odor	40.0	ML		
		80					

ERM

NA - not available or not applicable in - inches

amsl - above mean sea level

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Depth (ft)	Soil Samples	(%)					
45-	Soil	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
\dashv	-		Olive (5Y 4/3) silt with fine sand and clay, moderate plasticity, saturated, no odor				
		80	Dark Greenish Gray (GLEY1 4/1) silt with fine sand and clay, very low plasticity/friable, saturated, no odor	48.0			
- - -	_	70	Dark Greenish Gray (GLEY1 4/1) silt with fine sand and clay, moderate plasticity, loose silty clay fragments/nodules (<.25") from 51.2'-52.4', saturated, no odor	50.0	ML		
55-	-						
- - - -		80		60.0			**************************************
-		100	Dark Greenish Gray (GLEY1 4/1) clay with silt, trace fine sand, low plasticity, Brownish mottling, saturated, no odor Dark Greenish Gray (GLEY1 4/1) silt with fine sand and clay, low plasticity, Brown mottling from 64'-65', saturated, no odor	60.7/	CL		6-ir 8 orehole Grou backfil
- 55- -	-		Olive (5Y 4/3) silt with fine sand, trace clay, low plasticity, Light Gray Brown mottling from 65'-66.2', Mottling from 71'-72', saturated, no odor	65.0	ML		
-		80					



NA - not available or not applicable in - inches

ppm - parts per million

amsl - above mean sea level

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ERM

			Воі	ring	ID:	PDI-	13
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
70- - -		70	Olive (5Y 4/3) silt with fine sand, trace clay, low plasticity, Light Gray Brown mottling from 65'-66.2', Mottling from 71'-72', saturated, no odor				
75- - - -		80	Olive (5Y 4/3) silt and clay, trace fine sand, moderate plasticity, saturated, no odor Olive (5Y 4/3) silt with fine sand, trace clay, low plasticity, saturated, no odor	75.7	ML		
80-		111	Very Dark Greenish Gray (GLEY1 3/1) fine sand, silt (50%), basalt chips in shoe (<.25"), Light Gray mottling from 82'-83', saturated, no odor	83.0	SM		94.5 ft p
85-			Boring terminated at 84.5 feet				
90-							
	FF	M	Remarks: SSC - Subsurface Clearance ft - feet PID - Photoionization Detector ppm - parts per million NA - not available or not applicable amsl - above mean sea level in - inches ft bgs - feet below ground surface Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet.				Printed: 08-May-2025 Sheet: Page 4 of 4

in - inches

ft bgs - feet below ground surface

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet
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ERM

Drilling Start Date: 02-Aug-2024 **Drilling End Date:** 02-Aug-2024

Drilling Contractor: Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker **SSC Contractor: GPRS**

SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702476.430 Easting: 7627644.620 Surface Elevation: 36.4 ft amsl Borehole Diameter: 10 in

Borehole Depth: 49.5 ft bgs Water Encountered: 29.3 ft bgs Logged By: David Stone

Avery Soplata, RG

Reviewed By:

Client:

Consolidated Total

Boring ID: PDI-14

Site Name:

Arkema Portland

Location:

Portland, US-OR

Deptn (rt)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
			GROUND SURFACE				
٦			Gravel (<.25"-1.5"), angular, poorly sorted, gray sand matrix, dry, no odor	0.0	GW	10000	
\exists			Dark Brown (10YR 3/3) fine sand with silt, poorly sorted, subrounded gravel inclusions, debris (brick), dry, no odor	0.8	SM		V V V
1		110	Light Brownish Gray (10YR 6/2) silt with fine sand, poorly sorted, angular gravel, dry, no odor	1.3/ 2.5/			P
			Dark Brown (10YR 3/3) silt with fine sand and clay, gravel to cobble sized inclusions (<.25"-7"), moist and loose from 2.5'-4.8', wet and competent from 4.8'-5', moderate plasticity, no odor	2.3			V P V V V V V V V V V V V V V V V V V V
_			Light Brownish Gray (10YR 6/2) silt with fine sand, poorly sorted, angular gravel, dry, no odor, likely slough	5.0			V V V
_ _ _		50	Dark Brown (10YR 3/3) silt with fine sand and clay, gravel to cobble sized inclusions (<.25"-7"), competent, moderate plasticity, wet, no odor	6.4			
		120			ML		
		110	Dark Brown (10YR 3/3) silt with fine sand and clay, gravel to cobble sized inclusions (<.25"-7"), competent, moderate plasticity, 8" cobble at 19', brick debris at 20', saturated, no odor	14.5			y 11 Soret Gr bac



SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

ft bgs - feet below ground surface

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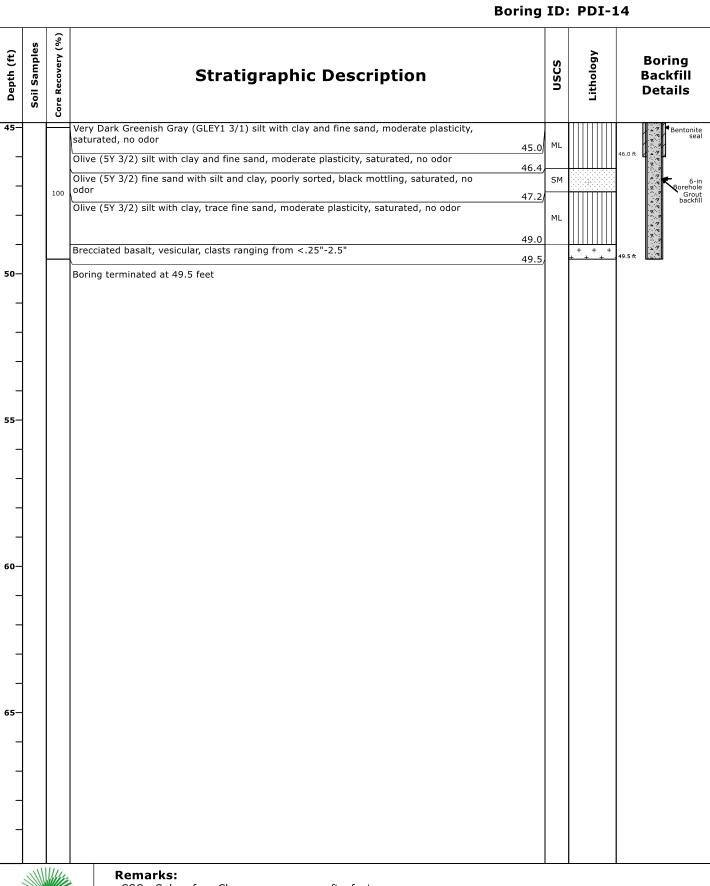
(an) madaa	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfil Details
-		90	Dark Brown (10YR 3/3) silt with fine sand and clay, gravel to cobble sized inclusions (<.25"-7"), competent, moderate plasticity, 8" cobble at 19', brick debris at 20', saturated, no odor Dark Brown (10YR 3/3) silt with clay and fine sand, trace rounded gravel (less than above), moderate plasticity, gray mottling from 20.8'-21.6', saturated, no odor	20.0	ML		
			Fractured rock debris (basalt clasts (.25"-5"), poorly sorted, silt with fine to medium sand matrix, saturated, no odor	23.5	GM		V V V V V V V V V V V V V V V V V V V
			Very Dark Grayish Brown (10YR 3/2) silt with clay and fine sand, moderate plasticity, rounded gravel inclusions (.25"-2"), saturated, no odor	25.0	ML	000000	V V V V V V V V V V V V V V V V V V V
-		100	Dark Brown (10YR 3/3) fine to medium sand, poorly sorted, trace silt, clayey silt inclusions throughout (.25"-2"), moist from 27'-29.3', saturated from 29.3'-30', no odor	27.0		+ + + + +	D D D D D D D D D D D D D D D D D D D
		_	Very Dark Grayish Brown (10YR 3/2) fine to medium sand, silt (20-30%), poorly sorted, saturated, sweet odor	30.0	SM	+ + + + + + + +	V . V . V . V . V . V . V . V . V . V .
		100	Very Dark Gray (10YR 3/1) fine to medium sand, silt (30-50%), poorly sorted, saturated, sweet odor	32.4 33.2 <i>)</i>		+ +	0
			No Recovery Very Dark Gray (10YR 3/1) silt with fine sand and clay, low plasticity, Brownish Gray laminations, saturated, mild sweet odor	34.0	ML		34.0 ft
		100	Grayish Green (GLEY 1 4/2) clay with silt, moderate plasticity, saturated, mild sweet odor Very Dark Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, saturated, sweet odor	36.3 36.3 37.5	CL SM	+ +	Bent
			Grayish Green (GLEY1 4/2) clay with silt and fine sand, moderate plasticity, Red DNAPL staining/fluid on bottom boundary, saturated, strong sweet odor Very Dark Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, shiny silver staining, Red DNAPL (30-50%), saturated, strong sweet odor	37.8 38.8	SM ML		V V P Rore
			Very Dark Gray (10YR 3/1) silt with clay and fine sand, low plasticity, Black fine sand bed at 39.5', Grayish Green clay bed at 38.9', Red DNAPL staining from 38.8'-39', saturated, strong sweet odor Black (2.5Y 2.5/1) fine to medium sand, silt (30-50%), poorly sorted, shiny gray staining saturated, sweet odor	40.0		+ + + +	40.0 ft 2 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
		100	Black (2.5Y 2.5/1) fine to medium sand, silt (10-20%), poorly sorted, saturated, no odor	42.0	SM	+ + + + + +	7
1				44.2	ML		V

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NA - not available or not applicable in - inches

amsl - above mean sea level

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SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million amsl - above mean sea level

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Boring ID: PDI-15

Drilling Start Date: 25-Jul-2024 **Drilling End Date:** 25-Jul-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI

Driller: Chris Baker **GPRS SSC Contractor: SSC Method:** Private Locate

Not Applicable SSC Diam./Depth:

Northing: 702410.600 Easting: 7627744.880 Surface Elevation: 35.5 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 54.0 ft bgs Water Encountered: 22.0 ft bgs Logged By: Avery Soplata

Avery Soplata, RG

Reviewed By:

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		SOSN	Lithology	Boring Backfill Details
0-			GROUND SURFACE Dark Brown (2.5Y 4/2) Gravelly silt, pebbles and gravel (.25"-1"), subrounded to		ML		P.
_			Subangular, loose, moist, no odor Dark Grayish Brown (2.5Y 4/2) silty fine sand, pebbles and cobble (.5"-4"), loose, poorly sorted, dry, no odor	1.0	1412		Ψ Ψ
_		100			SM	+ + + + + + + + + + + + + + + + + + + +	V 4 V V V V V V V V V V V V V V V V V V
5-			Dark Yellowish Brown (10YR 3/4) silt, dense, low plasticity, debris (brick, carbon, ACM, glass), dry, no odor Dark Yellowish Brown (10YR 4/4) clayey silt, moderate plasticity, debris (carbon,	5.0			▼
_			graphite), moist, no odor	6.9			V V V V V V V V V V V V V V V V V V V
_		100	Dark Grayish Brown (2.5Y 4/2) clayey silt, moderate plasticity, moist, no odor Dark Yellowish Brown (10YR 4/4) clayey silt, pebbles (.25"-1"), moderate plasticity, Dark Brown to Black organics at 10.5' and 11.5', moist, no odor	7.8			\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
10-							\$\frac{1}{2} \cdot \cd
_					ML		
-		100					V P V V P V V V V V V V V V V V V V V V
_			Dark Grayish Brown (2.5Y 4/2) clayey silt, dispersed cobbles (1"-2"), moderate plasticity,	14.4			\$\partial \partial \part
15-			moist, no odor Dark Brown (10YR 3/3) clayey silt, abundant debris (graphite, ACM, glass, brick), black metallic viscous material at 15', reddish purple sand at 15.5', moist, mild odor	15.0/			\$\partial \partial \part
-		100					
_			Brown (10YR 4/3) fine sand, cobble (0.25"-4"), debris (brick, glass), moist, no odor	19.0	SM		10-in W Rorehole Grout backfill
	.,,,,	11//	Remarks:				lr v v v backfill



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

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Black (2.5Y 2.5/1) fine to medium sand, trace silt, clayey silt inclusions (.25"-4"), poorly sorted, saturated, no odor roads fragments, trace ACM, metal fragments (5") at 29.1', wet, no odor 29.6' Dark Gray (2.5Y 4/1) clayey silt, low plasticity, yellow staining, from 33"-33.3', saturated, mild sweet odor Dark Gray (2.5Y 4/1) clayey silt, low plasticity, yellow staining, saturated, no odor 33.8, stainated, mild sweet odor Dark Gray (2.5Y 4/1) clayey silt, low plasticity, yellow staining, saturated, no odor 33.8, stainated, mild sweet odor 34.0 Dark Gray (2.5Y 4/1) clayey silt, low plasticity, yellow staining, saturated, no odor 33.8, stainated, mild sweet odor 34.0 Dark Gray (2.5Y 4/1) clayey silt, low plasticity, saturated, mild sweet odor 34.0 Dark Gray (2.5Y 4/1) clayey silt, low plasticity, saturated, mild sweet odor 34.0 Dark Gray (2.5Y 4/1) clayey silt, low plasticity, saturated, mild sweet odor 34.0 Dark Gray (2.5Y 4/1) clayey silt, low plasticity, saturated, mild sweet odor 34.0 Dark Gray (2.5Y 4/1) clayey silt, low plasticity, saturated, mild sweet odor 34.0 Dark Gray (2.5Y 4/1) clayey silt, low plasticity, saturated, mild sweet odor 34.0 Dark Gray (2.5Y 4/1) clayey silt, low plasticity, saturated, mild sweet odor 35.0 Dark Gray (2.5Y 4/1) clayey silt, low plasticity, saturated, mild sweet odor 36.0 Dark Gray (2.5Y 4/1) clayey silt, moderate plasticity, saturated, mild sweet odor 37.7 Dark Gray (2.5Y 4/1) clayey silt, sweet odor 38.0 SW Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, yellow staining, silt lens from 34.8 "35', saturated, mild sweet odor 39.0 Mild Sweet odor 39.0 Sweet			В	oring	ID	: PDI-1	.5
Brown (10YR 4/3) fine sand, cobble (0.25"-4"), debris (brick, glass), moist, no odor Olive Brown (2.5Y 4/4) clayey silt, cobbles, debris (brick, glass, ACM, graphite, roots), moderate plasticity, small inclusions of reddish purple sand, wet, no odor Olive Brown (2.5Y 4/4) clayey silt, cobbles (0.5"-4"), debris, moderate plasticity, wet, no odor Brown (10YR 4/3) clayey silt, cobbles (2.5"-4"), moderate plasticity, wet, no odor Olive Brown (2.5Y 4/4) the Brown (10YR 4/3) clayey silt, cobbles (2.5"-4"), angular basalt fragments, trace ACM, metal fragments (5") at 29.1", wet, no odor Dark Brown (10YR 3/3) fine to medium sand, trace silt, view of the standard o	Soil Samples	re Recovery	Stratigraphic Description		nscs	Lithology	Boring Backfi Detail
Dark Gray (2.5Y 4/4) clayer silt, cobbles, debris (brick, glass, ACM, graphite, roots), moderate plasticity, small inclusions of reddish purple sand, wet, no odor 22.3 100 Olive Brown (2.5Y 4/4) clayer silt, cobbles (0.5"-4"), debris, moderate plasticity, wet, no odor Brown (10YR 4/3) clayer silt, cobbles (.25"-4"), moderate plasticity, wet, no odor Clive Brown (2.5Y 4/4) to Brown (10YR 4/3) clayer silt, cobbles (.25"-4"), angular basalt fragments, trace ACM, metal fragments (5") at 29.1', wet, no odor Dark Gray (2.5Y 4/4) to Brown (10YR 4/3) clayer silt, clayer silt inclusions (.25"-4"), angular basalt fragments, trace ACM, metal fragments (5") at 29.1', wet, no odor Dark Brown (10YR 3/3) fine to medium sand, trace silt, moderately sorted, loose, saturated, no odor from 29.6'-30', mild sweet odor from 30'-32.5' Dark Gray (2.5Y 4/1) clayer silt, low plasticity, yellow staining from 33'-33.3', saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, saturated, mild sweet odor Dark Gray (2.5Y 4/1) clayer silt, low plasticity, saturated, mild sweet odor Dark Gray (2.5Y 4/1) clayer silt, low plasticity, saturated, mild sweet odor Dark Gray (2.5Y 4/1) clayer silt, low plasticity, saturated, mild sweet odor Dark Gray (2.5Y 4/1) clayer silt, low plasticity, saturated, mild sweet odor Dark Gray (2.5Y 4/1) clayer silt, now plasticity, saturated, mild sweet odor Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, dark brown/black staining/liquid from 37.7-38', sheen from 37.7-38' (~75% saturated), strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor			Brown (10YR 4/3) fine sand, cobble (0.25"-4"), debris (brick, glass), moist, no odor		SM		▽ . ▽ . ▽ . ▽ . ▽ .
moderate plasticity, small inclusions of reddish purple sand, wet, no odor Diive Brown (2.5Y 4/4) clayey silt, cobbles (0.5"-4"), debris, moderate plasticity, wet, no odor Brown (10YR 4/3) clayey silt, cobbles (.25"-4"), moderate plasticity, wet, no odor Olive Brown (2.5Y 4/4) to Brown (10YR 4/3) clayey silt, cobbles (.25"-4"), angular basalt fragments, trace ACM, metal fragments (5") at 29.1', wet, no odor Dark Brown (10YR 3/3) fine to medium sand, trace silt, moderately sorted, loose, saturated, no odor room 29.6'-30', mild sweet odor from 30'-32.5' Dark Gray (2.5Y 4/1) clayey silt, low plasticity, yellow staining from 33'-33.3', saturated, mild sweet odor Dark Gray (2.5Y 4/1) clayey silt, low plasticity, yellow staining, saturated, mild sweet odor Dark Gray (2.5Y 4/1) clayey silt, low plasticity, sellow staining, saturated, mild sweet odor Dark Gray (2.5Y 4/1) clayey silt, low plasticity, sellow staining, saturated, mild sweet odor Dark Gray (2.5Y 4/1) clayey silt, low plasticity, sellow staining, saturated, mild sweet odor Dark Gray (2.5Y 4/1) clayey silt, low plasticity, sellow staining, saturated, mild sweet odor Dark Gray (2.5Y 4/1) clayey silt, low plasticity, sellow staining, saturated, mild sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, dark brown/black staining/liquid from 37.7'-38' (~75% saturation), strong sweet odor Very Dark Gray (5Y 3/1) clayey silt, moderate plasticity, sheen at top, saturated, strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor	1			21.3	31.1	+ + + + + + + + + + + + + + + + + + + +	A A A
Olive Brown (2.5Y 4/4) clayey silt, cobbles (0.5"-4"), debris, moderate plasticity, wet, no odor Brown (10YR 4/3) clayey silt, cobbles (.25"-4"), moderate plasticity, wet, no odor 25.0 Olive Brown (2.5Y 4/4) to Brown (10YR 4/3) clayey silt, cobbles (.25"-4"), angular basalt fragments, trace ACM, metal fragments (5") at 29.1', wet, no odor Black (2.5Y 2.5/1) fine to medium sand, trace silt, clayey silt inclusions (.25"-4"), poorty sorted, saturated, no odor Dark Brown (10YR 3/3) fine to medium sand, trace silt, moderately sorted, loose, saturated, no odor from 29.6'-30', mild sweet odor from 30"-32.5' Sw Dark Gray (2.5Y 4/1) clayey silt, low plasticity, yellow staining from 33"-33.3', saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, saturated, staining/liquid from 37.7"-38', sheen from 37.7"-38' (~75% saturation), strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, dark brown/black staining/liquid from 37.7"-38', sheen from 37.7"-38' (~75% saturation), strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39-39.1', saturated, strong sweet odor Olive (5Y 5/3) silty fine sand, saturated, no odor	↓ 	•		22.3			V V
Brown (107R, 4/3) clayey silt, cobbles (.25"-4"), moderate plasticity, wet, no odor Olive Brown (2.5Y 4/4) to Brown (10YR 4/3) clayey silt, cobbles (.25"-4"), angular basalt fragments, trace ACM, metal fragments (5") at 29.1", wet, no odor Black (2.5Y 2.5/1) fine to medium sand, trace silt, clayey silt inclusions (.25"-4"), poorly sorted, saturated, no odor Dark Brown (10YR 3/3) fine to medium sand, trace silt, moderately sorted, loose, saturated, no odor from 29.6"-30", mild sweet odor from 30"-32.5" Dark Gray (2.5Y 4/1) clayey silt, low plasticity, yellow staining from 33"-33.3", saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, saturated, mild sweet odor Dark Gray (2.5Y 4/1) clayey silt, low plasticity, saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, silt lens from 34.8"-35", saturated, mild sweet odor Very Dark Gray (SY 3/1) fine to medium sand, trace silt, poorly sorted, dark brown/black staining/liquid from 37.7"-38", sheen from 37.7"-38" (~75% saturation), strong sweet odor Very Dark Gray (SY 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39"-39.1", saturated, strong sweet odor Very Dark Gray (SY 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39"-39.1", saturated, strong sweet odor Very Dark Gray (SY 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39"-39.1", saturated, strong sweet odor Very Dark Gray (SY 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39"-39.1", saturated, strong sweet odor	-	100					▼
Olive Brown (2.5Y 4/4) to Brown (10YR 4/3) clayey silt, cobbles (.25"-4"), angular basalt Fragments, trace ACM, metal fragments (5") at 29.1', wet, no odor Dark Gray (2.5Y 2.5/1) fine to medium sand, trace silt, clayey silt inclusions (.25"-4"), poorly sorted, saturated, no odor Dark Brown (10YR 3/3) fine to medium sand, trace silt, moderately sorted, loose, saturated, no odor from 29.6'-30", mild sweet odor from 30'-32.5' Dark Gray (2.5Y 4/1) clayey silt, low plasticity, yellow staining from 33"-33.3', saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, silt lens from 34.8'-35', saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, silt lens from 34.8'-35', saturated, mild sweet odor Very Dark Gray (5" 3/1) fine to medium sand, trace silt, poorly sorted, dark brown/black staining/liquid from 37.7'-38', sheen from 37.7'-38' (~75% saturation), strong sweet odor Very Dark Gray (5" 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Very Dark Gray (5" 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Very Dark Gray (5" 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Very Dark Gray (5" 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Very Dark Gray (5" 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor	-			24.2			Ø
Dark Gray (2.5Y 4/1) clayey silt, low plasticity, yellow staining from 33'-33.3', saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, saturated, mild sweet odor Dark Gray (2.5Y 4/1) clayey silt, low plasticity, saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, silt lens from 34.8'-35', saturated, mild sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, dark brown/black staining/liquid from 37.7'-38', sheen from 37.7'-38' (~75% saturation), strong sweet odor Very Dark Gray (5Y 3/1) clayey silt, moderate plasticity, sheen at top, saturated, strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor				25.0			Ø ∵ Ø ∵ Ø ∵ Ø ∵
Black (2.5Y 2.5/1) fine to medium sand, trace silt, clayey silt inclusions (.25"-4"), poorly sorted, saturated, no odor Dark Brown (10YR 3/3) fine to medium sand, trace silt, moderately sorted, loose, saturated, no odor from 29.6'-30', mild sweet odor from 30'-32.5' Dark Gray (2.5Y 4/1) clayey silt, low plasticity, yellow staining from 33'-33.3', saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, saturated, mild sweet odor Dark Gray (2.5Y 4/1) clayey silt, low plasticity, saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, silt lens from 34.8'-35", saturated, mild sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, dark brown/black staining/liquid from 37.7'-38', sheen from 37.7'-38' (~75% saturation), strong sweet odor Very Dark Gray (5Y 3/1) clayey silt, moderate plasticity, sheen at top, saturated, strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Olive (5Y 5/3) silty fine sand, saturated, no odor Olive (5Y 5/3) silty fine sand, saturated, no odor		60			ML		
Dark Brown (10YR 3/3) fine to medium sand, trace silt, moderately sorted, loose, saturated, no odor from 29.6'-30', mild sweet odor from 30'-32.5' Dark Gray (2.5Y 4/1) clayey silt, low plasticity, yellow staining from 33'-33.3', saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, saturated, mild sweet odor Dark Gray (2.5Y 4/1) clayey silt, low plasticity, saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, silt lens from 34.8'-35', saturated, mild sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, yellow staining, silt lens from 37.7'-38', sheen from 37.7'-38' (~75% saturation), strong sweet odor Very Dark Gray (5Y 3/1) clayey silt, moderate plasticity, sheen at top, saturated, strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Olive (5Y 5/3) silty fine sand, saturated, no odor 40.0 40.0 40.0 43.0	- -	60		29.2			7 V V V V V V V V V V V V V V V V V V V
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Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, saturated, mild sweet odor Dark Gray (2.5Y 4/1) clayey silt, low plasticity, saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, silt lens from 34.8'-35', saturated, mild sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, dark brown/black staining/liquid from 37.7'-38', sheen from 37.7'-38' (~75% saturation), strong sweet odor Very Dark Gray (5Y 3/1) clayey silt, moderate plasticity, sheen at top, saturated, strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Olive (5Y 5/3) silty fine sand, saturated, no odor 40.0 ft		100		32.5	ML		7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
Dark Gray (2.5Y 4/1) clayey silt, low plasticity, saturated, mild sweet odor Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, silt lens from 34.8'-35', saturated, mild sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, dark brown/black staining/liquid from 37.7'-38', sheen from 37.7'-38' (~75% saturation), strong sweet odor Very Dark Gray (5Y 3/1) clayey silt, moderate plasticity, sheen at top, saturated, strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Olive (5Y 5/3) silty fine sand, saturated, no odor 40.0 the staining from 39'-39.1' saturated from 39'-39.1' saturated, no odor	-		Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining,		SW		P
Dark Yellowish Brown (10YR 3/2) fine to medium sand, trace silt, yellow staining, silt lens from 34.8'-35', saturated, mild sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, dark brown/black staining/liquid from 37.7'-38', sheen from 37.7'-38' (~75% saturation), strong sweet odor Very Dark Gray (5Y 3/1) clayey silt, moderate plasticity, sheen at top, saturated, strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Olive (5Y 5/3) silty fine sand, saturated, no odor 40.0 ft			Dark Gray (2.5Y 4/1) clayey silt, low plasticity, saturated, mild sweet odor				Δ
Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, dark brown/black staining/liquid from 37.7'-38', sheen from 37.7'-38' (~75% saturation), strong sweet odor Very Dark Gray (5Y 3/1) clayey silt, moderate plasticity, sheen at top, saturated, strong sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Olive (5Y 5/3) silty fine sand, saturated, no odor SM 40.0 ft 42.0 ft					SW		\(\frac{1}{2}\) \(\frac{1}\) \(\frac{1}{2}\) \(\frac{1}2\) \(\frac{1}2\) \(\frac{1}2\) \(\frac{1}2\) \(
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sweet odor Very Dark Gray (5Y 3/1) fine to medium sand, trace silt, poorly sorted, brown staining from 39'-39.1', saturated, strong sweet odor Olive (5Y 5/3) silty fine sand, saturated, no odor SM 40.0 ft 43.0		100	Very Dark Gray (5Y 3/1) clavey silt, moderate plasticity, sheen at top, saturated, strong	38.0			38.0 ft ♥ ♥ .
from 39'-39.1', saturated, strong sweet odor Olive (5Y 5/3) silty fine sand, saturated, no odor SW 40.0 ft 40.0 ft 42.0 ft			sweet odor	39.0	ML		v v Weben
Olive (5Y 5/3) silty fine sand, saturated, no odor SM + 42.0 ft				40.0	sw		
100 43.0 t]		Olive (5Y 5/3) silty fine sand, saturated, no odor			+ +	Bor
43.0 [注意意意]					SM	+ +	42.0 ft 8eni
I I I Nive (5V 5/3) clavey silt moderate placticity orange hand (25") at 43.2' caturated no]	100		43.0			∇ .
odor from 43'-45', mild sweet odor from 45'-47.5'	-	_	Olive (5Y 5/3) clayey silt, moderate plasticity, orange band (.25") at 43.2', saturated, no odor from 43'-45', mild sweet odor from 45'-47.5'		ML		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$

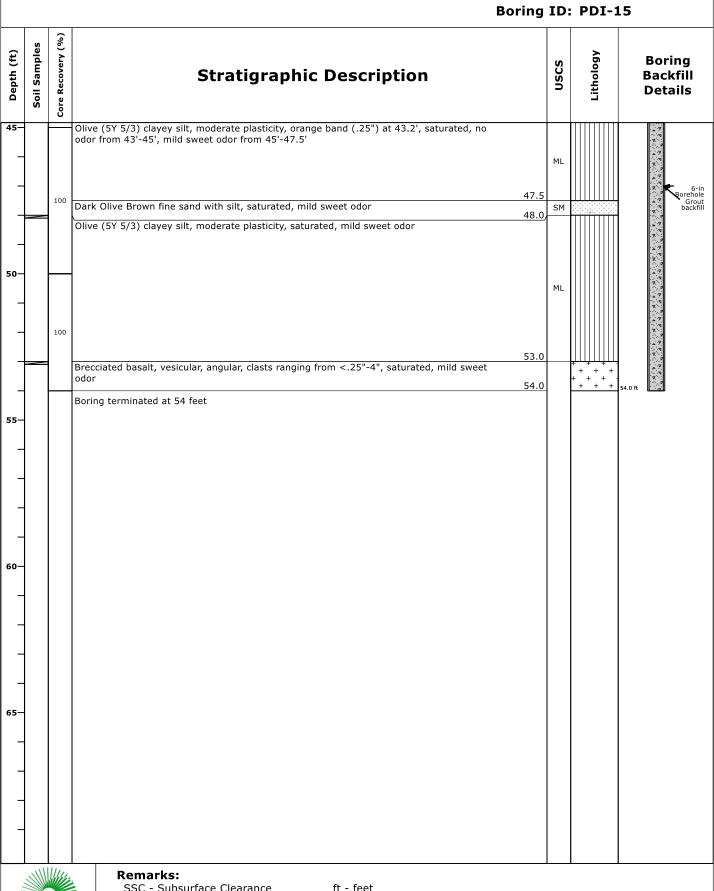


NA - not available or not applicable in - inches

ppm - parts per million

amsl - above mean sea level

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SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

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Boring ID: PDI-16 Drilling Start Date: 26-Jul-2024

Drilling End Date: 26-Jul-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI

Driller: Chris Baker **GPRS SSC Contractor: SSC Method:** Private Locate

Not Applicable SSC Diam./Depth:

Northing: 702359.750 Easting: 7627793.770 Surface Elevation: 35.1 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 54.0 ft bgs Water Encountered: 21.7 ft bgs

Logged By: Avery Soplata **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE Light Brownish Gray (2.5Y 6/2) gravelly fine sand, trace silt, loose, pebbles and cobbles (.25"-2"), subangular, dry, no odor	1.2	SM	+ + +	
_			Light Olive Brown (2.5Y 5/3) gravelly fine to medium sand, trace silt, loose, pebbles and cobbles (.25"-2"), black staining from 2.3'-2.6', dry, no odor	2.6			\$\ \text{\$\pi_{\text{\text{\$\pi_{\text{\text{\$\pi_{\text{\text{\$\pi_{\text{\$\endownbet{\$\pi_{\text{\$\pi_{\text{\$\pi_{\text{\$\pi_{\text{\$\pi_{\text{\$\pi_{\text{\$\pi_{\text{\$\pi_{\text{\$\pi_{\text{\$\pi_{\text{\$\pi_{\text{\$\pi_{\text{\$\pi_{\text{\$\pi_{\text{\$\pi_{\text{\$\endownbet{\$\pi_{\text{\$\pi_{\text{\$\pi_{\text{\$\nonedyinintert{\$\noneduzet{\endownbet{\$\pi_{\text{\$\pi_{\text{\$\pi_{\text{\$\pi_{\text{\$\pi_{\text{\$\linicetinintert{\$\endownbet{\$\pi_{\text{\$\eniequii}{\endownbet{\$\pi_{\text{\$\eniequii}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}
-		100	Dark Yellowish Brown (10YR 3/4) fine to medium sand, trace silt, loose, pebbles and cobbles (.25"-3"), subrounded to subangular, debris (brick, glass), moist, no odor	2.0	SW		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$
5-				6.3			4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
-		100	Dark Yellowish Brown (10YR 4/4) clayey silt, moderate plasticity, cobbles (.5"-2"), subrounded to subangular, debris (brick, glass, nails), moist, no odor Very Dark Grayish Brown (10YR 3/2) clayey silt, mostly debris (rubber, graphite, ACM,	8.2			
10-			brick, glass, rubble), moderate plasticity, loose, moist, no odor		ML		V P V P V P V P V P V P V P V P V P V P
-		100	Dark Yellowish Brown (10YR 4/4) clayey silt, pebbles (.25"-1"), moderate plasticity, ~30% cobbles/debris (.5"-2"), moist, no odor	12.0			P
_			Brown (10YR 4/3) clayey silt, pebbles (.25"-1"), moderate plasticity, ~30% cobbles/debris (.5"-2"), moist, no odor	13.3			7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
15-			Debris (ACM, gravel, glass) Dark Grey (2.5Y 4/1) clayey silt, moderate plasticity, moist, no odor Dark Greyish Brown (2.5Y 4/2) clayey silt, moderate plasticity, 15-20% cobbles (.5"-2"), debris (glass, brick, roots), moist, no odor	14.4 15.0			
-		100			ML		
	,,,,,	1111	Remarks:				10-in Rorehole Grout backfill



ERM

Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

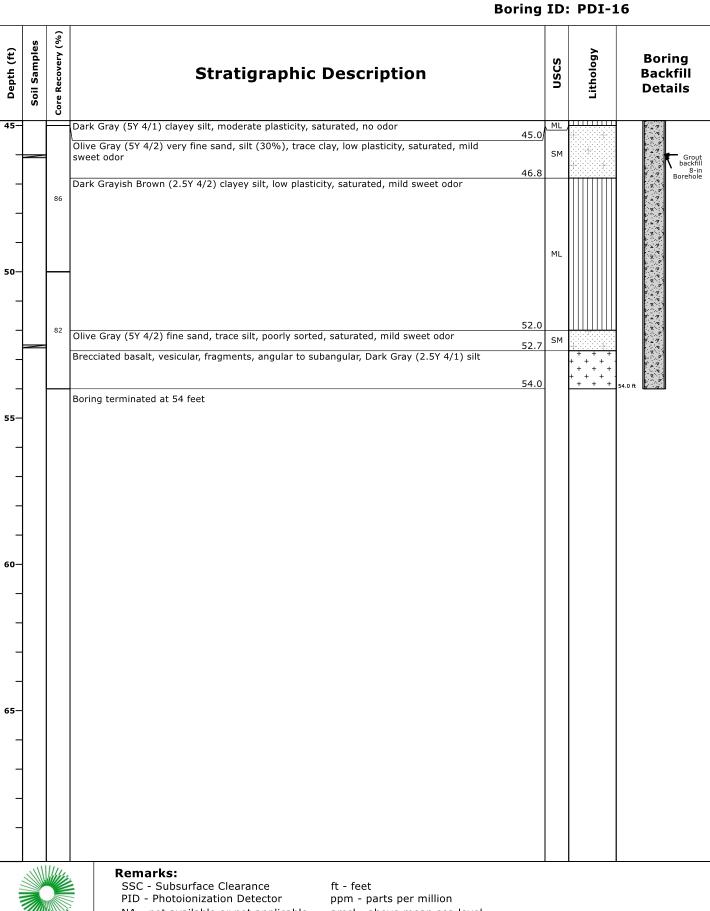
ft - feet

ppm - parts per million

amsl - above mean sea level

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				Boring	ID	: PDI-1	16
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-			Dark Greyish Brown (2.5Y 4/2) clayey silt, moderate plasticity, 15-20% cobbles (.5"-2"), debris (glass, brick, roots), moist, no odor		ML		▼ . ▼ . ▼ . ▼ . ▼ . ▼ . ▼ . ▼ . ▼ . ▼ .
_		100	Black (2.5Y 2.5/1) fine to medium sand, silt (20%), 1" silt lens at 22', sheen, reddish staining at 23', saturated, mild sweet odor	23.0	SM		
_			Dark Greyish Brown clayey silt, moderate plasticity, cobbles (.25"-2"), roots, pink staining from 23'-23.1', saturated, mild sweet odor	25.0	ML		
25-			Mottled Dark Grayish Brown and Dark Yellowish Brown clayey silt, cobbles, moderate plasticity, moist, mild odor	25.0 25.3	SW		
_		100	Black (2.5Y 2.5/1) fine to medium sand, silt (20%), sheen, saturated, mild sweet odor Light Olive Brown (2.5Y 5/1) clayey silt, cobbles, moderate plasticity, moist, mild sweet odor	25.6 26.4	ML		
-			Olive Brown (2.5Y 4/3) clayey silt, cobbles, moderate plasticity, saturated, mild odor Very Dark Gray (2.5Y 3/1) fine to medium sand, silt (20%), large cobbles (2"-4"), graphite, saturated, mild sweet odor	27.9 28.6	SM SW		
30-			Dark Yellowish Brown fine to medium sand, trace silt, poorly sorted, saturated, mild sweet odor Light Olive Brown clayey silt, moderate plasticity, wood chips, saturated, mild sweet odor	29.6	ML		. v . v v . v p . v p . v v . p v . p
-			Very Dark Gray (2.5Y 3/1) sandy silt, pebbles (.25"5"), low plasticity, saturated, no odor	30.0			P. V.
-		90	Very Dark Gray, fine to medium sand with silt, poorly sorted, pebbles and cobbles (.5"-3"), wood chips, saturated, mild sweet odor	33.7	SM	+ +	P. 7 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
35-			Very Dark Gray, clayey silt, moderate plasticity, saturated, mild sweet odor Olive Gray (5Y 4/2) silt with some clay, low plasticity, Pale Yellow laminations near	35.0	ML		
_			bottom (1mm-0.5"), saturated, mild sweet odor Very Dark Gray, fine to medium sand, trace silt, heavy pale yellow staining from 36.2'-37.8', saturated, mild sweet odor	35.7/	sw		
_		90	Very Dark Grayish Brown (2.5Y 3/2) clayey silt, yellow staining from 37.8-38.1', low	37.8			38.0 ft V V V V V V V V V
-			plasticity, moist, mild sweet odor	40.0	ML		39.0 ft
40-			Black (2.5Y 2.5/1) fine to medium sand, trace silt, dark brown staining, 2" silt lens at 43.2', brown staining from 43.9-44.7', sheen, saturated, mild sweet odor	10.0			7 . V
_		100			sw		▼ 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
-				44.7			8 P
	,,,,,,,	1111	Remarks:				[· • · · •]
			SSC - Subsurface Clearance ft - feet PID - Photoionization Detector ppm - parts per million NA - not available or not applicable amsl - above mean sea level				
	ER	RM	in - inches ft bgs - feet below ground surfa Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet © Copyright 2025 by ERM Worldwide Group Limited. All Rights Reserv	ace ed. No part of	this wo	ork may be repr	Printed: 08-May-2025 Sheet: Page 2 of 3 oduced without permission.



NA - not available or not applicable

in - inches

amsl - above mean sea level

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Drilling Start Date: 29-Jul-2024 **Drilling End Date:** 29-Jul-2024

Drilling Contractor: Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker **GPRS SSC Contractor:**

SSC Method: Private Locate Not Applicable SSC Diam./Depth:

Northing: 702330.240 Easting: 7627833.500 Surface Elevation: 33.8 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 54.5 ft bgs Water Encountered: 20.0 ft bgs Logged By: David Stone

Reviewed By: Avery Soplata, RG **Client:**

Consolidated Total

Boring ID: PDI-17

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
			CDOUND CURFACE				
0-			GROUND SURFACE Light Yellowish Brown (10YR 6/4) fine sand with silt, angular gravel (<.25"-1.5"), poorly sorted, dry, no odor	1.5		+ +	
- _		90	Dark Brown (10YR 3/3) fine sand with silt, gravel to cobble sized clasts, angular to subrounded, poorly sorted, debris (carbon, ACM), 7" Asphalt cobble at 3', 4" Asphalt cobble at 3.5', moist, mild sweet odor	1.3	SM	+ + + + + +	Y
				3.8			V V
_			Dark Brown (10YR 3/3) silt with fine sand, low plasticity, debris (carbon, ACM), moist, no odor	5.0	ML		∀
5-			Light Yellowish Brown (10YR 6/4) fine sand with silt, angular gravel (<.25"-1.5"), poorly sorted,dry, no odor, slough from 0'-1.5'	6.0	SM	+ + + + + + + + + + + + + + + + + + +	P
_			Debris (tile, carbon, wire, asphalt, brick) ranging in size from 0.25"-6", silty matrix				\$\frac{1}{2} \cdot \frac{1}{2}
_		80	Dark Yellowish Brown (10YR 3/4) silt with fine sand and clay, moderate plasticity, dispersed gravel, debris (carbon, ACM), moist, no odor	7.5	ML		V
10-			Dark Yellowish Brown (10YR 3/4) silt with clay, high plasticity, Gray banding throughout, increases in concentration from 12.4'-12.9', saturated, no odor	11.8	мн		, , , , , , , , , , , , , , , , , , ,
		100		12.9	MILL	× ×	∇ ∇ ∇ ∇
_			Very Dark Grayish Brown (2.5YR 3/2) fine to medium sand, silt (25%), poorly sorted, 5" cobble at 14', dispersed clayey silt and gravel, wet, no odor	14.3	SM	+ + +	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
15-			Dark Yellowish Brown (10YR 3/4) silt with clay, high plasticity, Gray banding, saturated, no odor	15.0/	МН	× ×	V V V
-			Dark Yellowish Brown (10YR 3/4) fragmented silty clay, fine sand, gravel, subrounded to subangular, debris (carbon, brick, ACM), moist, no odor	15.7	CL	·	P
-		100	Dark Yellowish Brown (10YR 3/4) clayey silt with fine sand, moderate plasticity, debris (carbon, brick, gravel), 10" piece of wood at 18', wet, no odor	18.0	ML		10-in v v orehole Grout backfill
			Dark Yellowish Brown (10YR 3/4) fragmented silt with fine sand, poorly sorted, gravel to cobble sized clasts (<.25"-3"), subrounded, debris (wood, carbon), moist, no odor	18.8/			7
			Very Dark Grayish Brown (2.5YR 3/2) silt with fine sand, dispersed gravel, debris (carbon, wood), wet, no odor				A . A



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

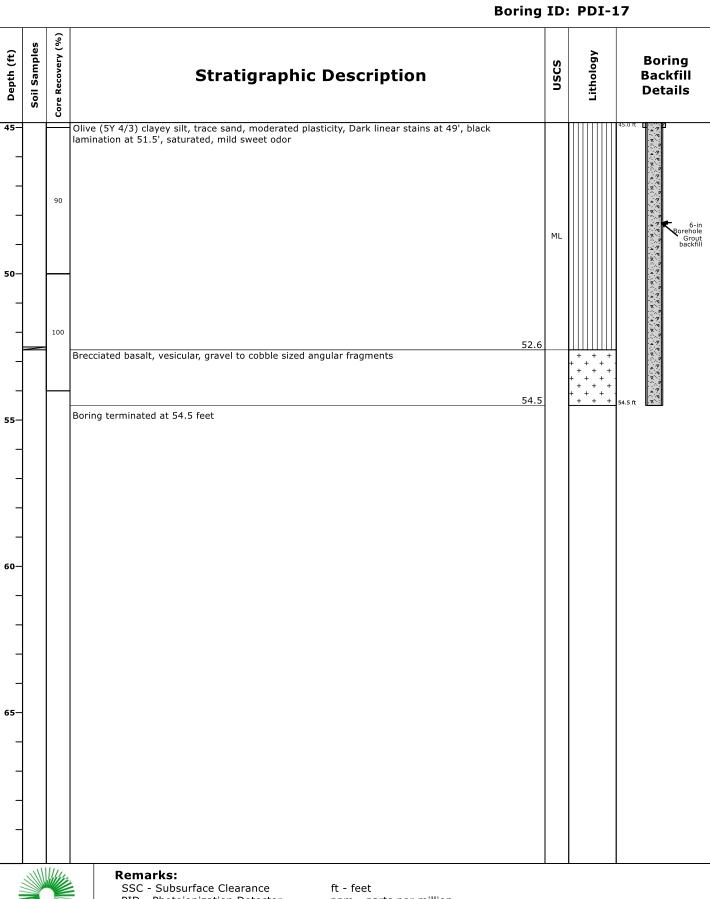
NA - not available or not applicable

ft - feet ppm - parts per million amsl - above mean sea level

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			Во	ring	ID:	PDI-1	17
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-		100	Very Dark Grayish Brown (2.5YR 3/2) silt with fine sand, dispersed gravel, debris (carbon, wood), wet, no odor Dark Yellowish Brown (10YR 3/4) silt with fine sand, dispersed gravel, debris (carbon, wood), dark yellowish brown (10YR 4/4) mottling, wet, no odor	20.0	ML		
25-			Dark Yellowish Brown (10YR 4/4) silty clay, gravel, subrounded, moderate plasticity, brick debris, Very Dark Grayish Brown (2.5YR 3/2) mottling from 27'-28', 7" piece of wood at 28', 6" cobble at 29' saturated, no odor	23.9			
- - -		90			CL		
30-		100	Dark Grayish Brown (10YR 4/2) fine to medium sand, silt (~10%), poorly sorted, clayey silt fragments (.25"-2"), yellow staining from 32.4'-32.8', saturated, mild sweet odor	30.0	sw		
_			Very Dark Gray (10YR 3/1) silt with fine sand, low plasticity, yellow staining increasing from 33'-34.6, yellow lamination at 34', yellow staining appears depositional/stratified, saturated, mild sweet odor	32.8	ML		33.0 ft Bentonite seal
35-			Dark Grayish Brown (10YR 4/2) fine to medium sand, silt (~10%), poorly sorted, clayey silt (.25"-2"), saturated, mild sweet odor Black (10YR 2/1) fine to medium sand, silt (~10%), poorly sorted, saturated, moderate sweet odor	35.0 35.6	SW		35.0 ft
40-		100	Dark Olive Brown (2.5Y 3/3) clayey silt, minor fine sand, low plasticity, Black mottling throughout, saturated, moderate sweet odor Black (10YR 2/1) fine to medium sand, silt (~10%), poorly sorted, saturated, moderate sweet odor, mild sweet odor from 40-42.6'	36.0	SW		Grout backfill 8-in Borehole
_		90	Very Dark Gray (5Y 3/1) clayey silt, trace fine sand, low plasticity, saturated, mild sweet odor Olive (5Y 4/3) clayey silt, trace sand, moderated plasticity, Dark linear stains at 49', black lamination at 51.5', saturated, mild sweet odor	42.6 43.4 <i>)</i>	ML		42.0 ft
			Remarks: SSC - Subsurface Clearance ft - feet PID - Photoionization Detector ppm - parts per million NA - not available or not applicable in - inches ft bas - feet below ground surface				Printed: 08-May-2025
	ER	RM	In - Inches ft bgs - feet below ground surface Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet © Copyright 2025 by ERM Worldwide Group Limited. All Rights Reserved. N	No part of t	this wo	rk may be repr	Sheet: Page 2 of 3 roduced without permission.







NA - not available or not applicable

in - inches

ppm - parts per million

amsl - above mean sea level

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Boring ID: PDI-18

Drilling Start Date: 06-Aug-2024 **Drilling End Date:** 07-Aug-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker

GPRS SSC Contractor: SSC Method: Private Locate Not Applicable SSC Diam./Depth:

Northing: 702480.950 7627616.700 Easting: Surface Elevation: 36.1 ft amsl Borehole Diameter: 10 in

Borehole Depth: 51.3 ft bgs Water Encountered: 29.0 ft bgs Logged By: David Stone

Reviewed By: Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE Angular gravel (<.25"-1.5"), Pale Gray silt with fine sand matrix, dry, no odor	1.0	GM		
		60	Asphalt Dark Brown (10YR 3/3) silt with fine sand, low plasticity, loose/fragmented, subrounded gravel to cobble inclusions (.25"-3"), moist, no odor	1.0	ML		
5-			Angular gravel (<.25"-1.5"), Pale Gray silt with fine sand matrix, dry, no odor, slough	5.0	GM	0000 0000 0000 0000	
		40	Dark Brown (10YR 3/3) silt with fine sand and clay, moderate plasticity, subrounded cobble to gravel inclusions (0.25"-4"), Gray mottling 12.5'-20', wet, no odor				
.0-							
_ _		100			ML		
		40					Grobacki
-		11665	Remarks:				9 Posco



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Remarks:

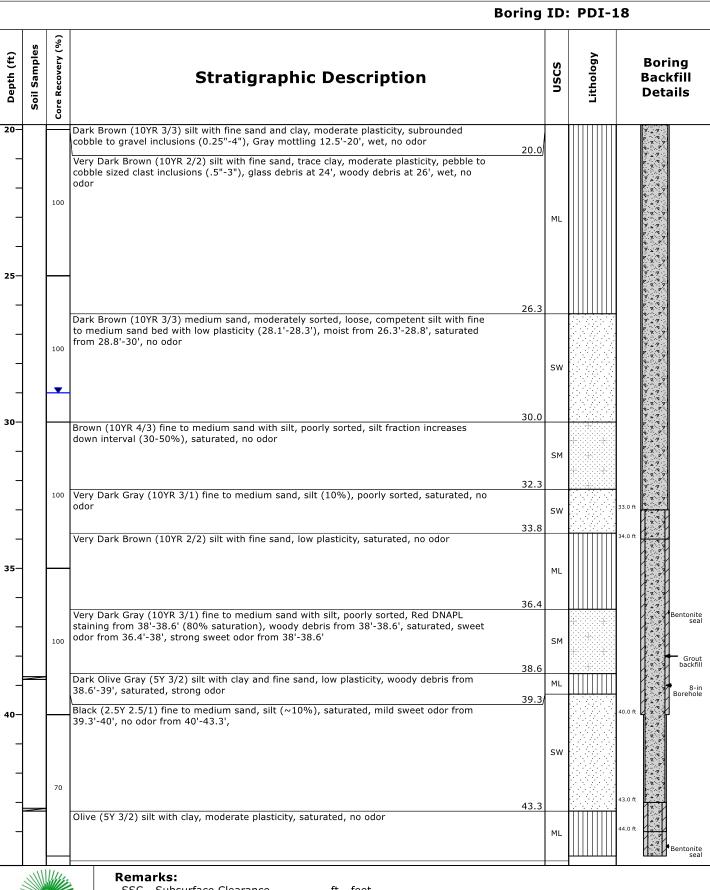
SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable in - inches

ft - feet

ppm - parts per million amsl - above mean sea level





SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

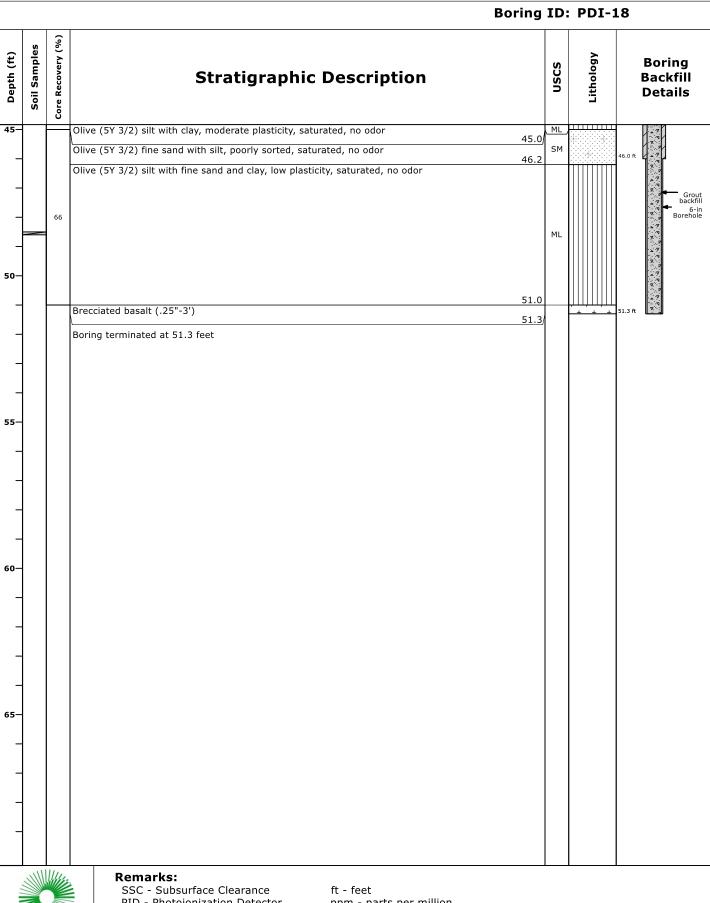
ft - feet

ppm - parts per million

amsl - above mean sea level

ft bgs - feet below ground surface

Printed: 08-May-2025 Sheet: Page 2 of 3





NA - not available or not applicable

in - inches

ppm - parts per million

amsl - above mean sea level

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Drilling Start Date: 01-Aug-2024 **Drilling End Date:** 01-Aug-2024

Drilling Contractor: Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker **GPRS SSC Contractor:**

SSC Method: Private Locate Not Applicable SSC Diam./Depth:

Northing: 702415.340 Easting: 7627651.920 Surface Elevation: 37.5 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 55.0 ft bgs Water Encountered: 32.0 ft bgs Logged By: David Stone

Reviewed By: Avery Soplata, RG **Client:**

Consolidated Total

Boring ID: PDI-19

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
o-			GROUND SURFACE Gray gravel, poorly sorted, subangular-angular, 0.25"-1", dry, no odor		GM	8080	ν · · · · · · · · · · · · · · · · · · ·
			Dark Brown (10YR 3/3) silt with clay, trace fine sand, gravel to cobble inclusions	0.5	ML		A . A
			(.25"-4"), very low plasticity, moist, no odor	1.0			∵ ∇ ∵ ∇ ¬ · · · · ∇ · · · · · · · · · · · · · ·
_			Gray gravel, subangular, silty fine sand matrix, 0.25"-1", moist, no odor				▼ . ¬
		110	Dark Brown (10YR 3/3) silt with clay, trace fine sand, gravel to cobble inclusions	2.2/			A A A
-			(.25"-4"), very low plasticity, moist, no odor		GM		V
							V V
_							V V
5-				5.0		00000	A * A
			Dark Brown (10YR 3/3) silt with clay and fine sand, very low plasticity, gravel to cobble sized inclusions (<.25"-5"), poorly sorted, subrounded, debris (carbon, ACM), moist, no				♥ ♥ ♥ ♥
-			odor				ν · · · · · · · · · · · · · · · · · · ·
			Dark Vellanish Davar (10VD 4/4) silvarish alan and financial language his in	6.6			Ø ∵ Ø ∴ Ø ∵ Ø
-			Dark Yellowish Brown (10YR 4/4) silt with clay and fine sand, low plasticity, competent, gravel to cobble sized inclusions (.5"-4"), debris (graphite, ACM) from 8-9', debris				V V
- -		80	(carbon, ACM) from 10'-10.8', moist, no odor		ML		
				10.8			Ø ▲ Ø
-			Gravel to cobble sized rock debris (Asphalt, carbon, ACM) in Dark Gray-Brown silty fine	10.6			7 v v
			sand matrix, Orangish to Reddish staining/rust markings, Turquoise powder on graphite at 11.5'				V V V
-							A A
		100		13.0			∵ ∇ · ∇ · ∇ · ∇ · ∇ · ∇ · ∇ · ∇ · ∇ · ∇
			Very Dark Grayish Brown (2.5Y 3/2) silt with fine sand and clay, low plasticity, wet, no				P .
			odor				A ~ A .
							▼
.5-			Very Dark Grayish Brown (2.5Y 3/2) silt with fine sand and clay, moderate plasticity,	15.0			V V
			loose, debris (carbon, brick, ACM, asphalt, rubble), Yellow mottling, wet, no odor				A . A .
-							v
					ML		V V V
٦		_					P V V
		5		18.0			V V Borehol
			Very Dark Grayish Brown (2.5Y 3/2) silt with fine sand and clay, low plasticity, competent, Gray laminations of clay from 19.7'-20', Light yellow mottling, glass tubing fragment at 18.5', wet, no odor.				Groupackfi
							P. D. Y.



ERM

Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

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				Boring	ID	PDI-1	.9
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
		100	Very Dark Grayish Brown (2.5Y 3/2) silt with fine sand and clay, low plasticity, competent, Gray laminations of clay from 19.7'-20', Light yellow mottling, glass tubing fragment at 18.5', wet, no odor. Very Dark Grayish Brown (2.5Y 3/2) silt with clay and fine sand, moderate plasticity, inclusions of gravel to cobble sized clasts (.5"-5"), debris (graphite, ACM, glass, asphalt, brick), wet, no odor Gravel, rounded, poorly sorted, (<.25"-1"), wet, no odor	20.0	ML GW SM	0000	
25- -		150	Dark Yellowish Brown (10YR 3/4) fine to medium sand with silt, poorly sorted, silty clay inclusions (.25"-3"), debris (ACM), moist, no odor Very Dark Grayish Brown (10YR 3/2) silt with fine sand and clay, moderate plasticity, debris (glass, carbon rods, asphalt, carbon, ACM), Yellow mottling from 23'-24', Orange/rust staining from 26'-27', wet, no odor	23.0	ML		
- - -		100	Dark Yellowish Brown (10YR 3/4) fine to medium sand with trace silt, poorly sorted, subrounded gravel inclusions, moist, no odor Very Dark Grayish Brown (10YR 3/2) silt with fine sand, low plasticity, subrounded gravel inclusions, wood debris at 28', moist, no odor Dark Yellowish Brown (10YR 3/4) fine to medium sand, trace silt, poorly sorted, silt	27.0 27.5 28.5	SW		
30-		90	Very Dark Gray (2.5Y 3/1) fine to medium sand, silt (20-30%), poorly sorted, Gray silty clay inclusions (33.3'-35'), wood debris at 33.2', Yellow mottling, saturated, mild sweet	32.0	SW	+ + +	
35-			Very Dark Gray (2.5Y 3/1) silt with clay and fine sand, low plasticity, laminations, .5" Black bed at 37', saturated, sweet odor	35.0	SM	+ +	35.0 ft
-		100	Very Dark Greenish Gray (10YR 3/1) clay with silt, low plasticity, saturated, mild sweet odor Very Dark Gray (10YR 3/1) fine to medium sand with silt, poorly sorted, DNAPL (Red) staining 50-70% saturation (38.6'-39.3'), saturated, strong sweet odor Very Dark Olive Gray (5Y 3/2) silt and clay with fine sand, saturated, mild sweet odor	37.5 38.0/ 39.3/	CL SM		
40		100	Black (2.5Y 2.5/1) fine to medium sand with silt, poorly sorted, clayey silt inclusions (40'-42.6'), shiny gray staining 30-50% saturation (40'-42'), DNAPL globule (2") at 41.3', DNAPL globule (1") at 41.7', DNAPL globule (3") at 42.4', dispersed DNAPL (<.5") from 42-43.5', 6" metal tie at 41', saturated, strong sweet odor	40.0	SM	+ + + + +	Bentonite seal
	EF	RM	Remarks: SSC - Subsurface Clearance ft - feet PID - Photoionization Detector ppm - parts per million NA - not available or not applicable amsl - above mean sea level in - inches ft bgs - feet below ground surf Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet © Copyright 2025 by ERM Worldwide Group Limited. All Rights Reserv	ace ved. No part of	this wo	rk may be repr	Printed: 08-May-2025 Sheet: Page 2 of 3 oduced without permission.

			Borin	g II): F	PDI-1	.9
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	USCS	}	Lithology	Boring Backfill Details
45-		70	Black (2.5Y 2.5/1) fine to medium sand with silt, poorly sorted, clayey silt inclusions (40'-42.6'), shiny gray staining 30-50% saturation (40'-42'), DNAPL globule (2") at 41.3', DNAPL globule (1") at 41.7', DNAPL globule (3") at 42.4', dispersed DNAPL (<.5") from 42-43.5', 6" metal tie at 41', saturated, strong sweet odor Olive (5Y 5/3) silt with clay, trace fine sand, moderate plasticity, saturated, mild sweet odor	MI			45.0 ft Grouffl Borehole
50-		80	Dark Olive Gray (5Y 3/1) fine sand, silt (20-30%), poorly sorted, saturated, mild sweet odor Olive (5Y 5/3) silt with fine sand, trace clay, low plasticity, Reddish-Brown laminations (53.5'), saturated, mild sweet odor	SN 2.0		# # # # # # # # # # # # # # # # # # #	
55-				5.0	++++++	+ + + + + + + + + + + + + + + + + + + +	55.0 ft
65-			Remarks: SSC - Subsurface Clearance ft - feet PID - Photoionization Detector ppm - parts per million				



NA - not available or not applicable in - inches

amsl - above mean sea level

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Drilling Start Date: 07-Aug-2024 **Drilling End Date:** 08-Aug-2024

Drilling Contractor: Cascade Drilling **Drilling Method:** Sonic Rig Make/Model: TSI

Driller: Chris Baker **GPRS SSC Contractor: SSC Method:** Private Locate

Not Applicable SSC Diam./Depth:

Northing: 702305.530 Easting: 7627754.590 **Surface Elevation:** 36.9 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 58.0 ft bgs Water Encountered: 29.0 ft bgs

Logged By: David Stone **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Boring ID: PDI-20

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-		100	Very Dark Grayish Brown (10YR 3/2) silt with fine sand, trace clay, gravel to cobble inclusions (.25"-4"), debris (brick), loose, moist, no odor	GM .6		
5-		100	Very dark Gray (10YR 3/1) silt with fine sand, trace clay, semi-competent, gravel to cobbles (.5"-5"), moist, no odor Very Dark Gray (5Y 3/1) silt with fine sand, trace clay, low plasticity, competent, subrounded concrete with pebbles (5" average), black and grey mottling (6.3-6.9'), loose angular gravel and brick fragments (7.3-8'), moist, no odor	.0 ML		
10-			Very Dark Greenish Gray (GLEY1 3/5GY) silt with fine sand, trace clay, low plasticity, moist, no odor Black (10YR 2/1) fine to medium sand, silt, poorly sorted, gravel to cobbles (.25"-4"),	ML	+ + + + + + + + + + + + + + + + + + + +	
15-		100	debris (ACM, glass, brick, metal, scraps, rubber band) moist, tar-like odor 14 Very Dark Gray (5Y 3/1) silt with fine sand and clay, moderate plasticity, subrounded, gravel to cobbles (.5"-4"), shiny gray staining (14.3'-14.8'), wet, tar-like odor Black (10YR 2/1) fine to medium sand with silt, poorly sorted, rounded masses of sand	ML	+ + + + + + + + + + + + + + + + + + + +	
		110	with tar-like substance, subrounded gravel (likely slough from 11.1-14.3'), moist, tar like odor Very Dark Grey (10YR 3/1) silt with fine sand and clay, low plasticity, gravel to cobbles (.5"-3"), debris (metal scraps, nails, glass, brick), moist, tar-like odor 17 Black (10YR 2/1) fine to medium sand with silt, poorly sorted, gravels to cobbles (.25"-3"), debris (metal scraps, nails, glass, brick), moist, tar-like odor	.7 ML .5/	# # +	10-in Grehole Grout backfill
	1111	1111	Remarks:		1	



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

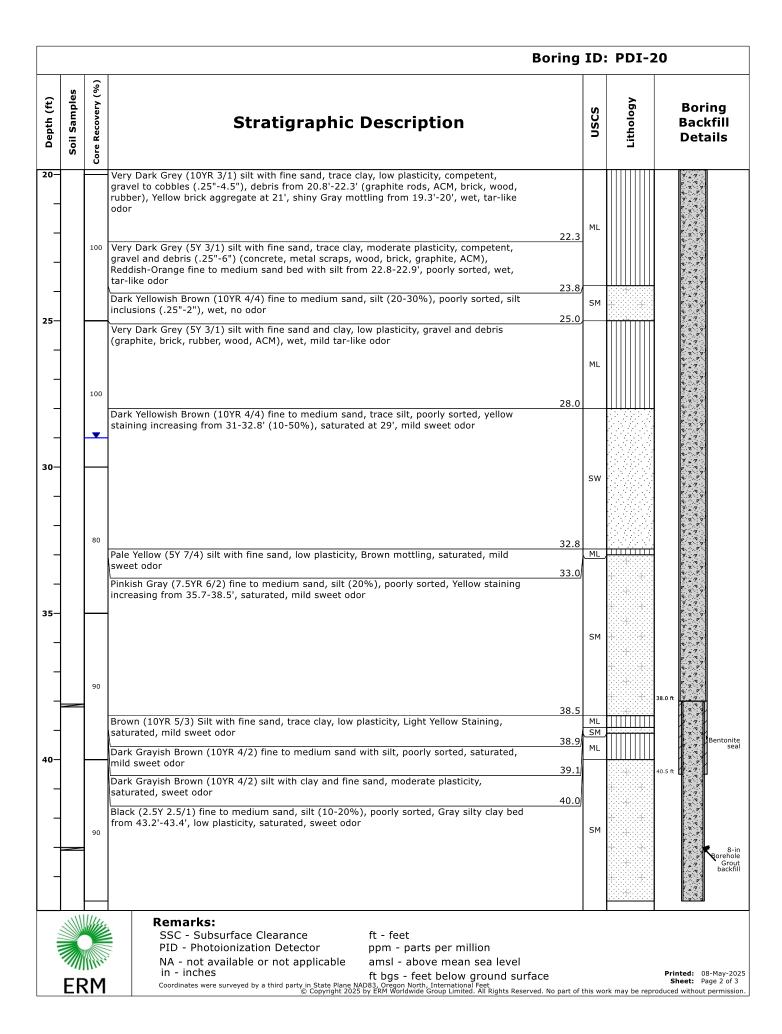
in - inches

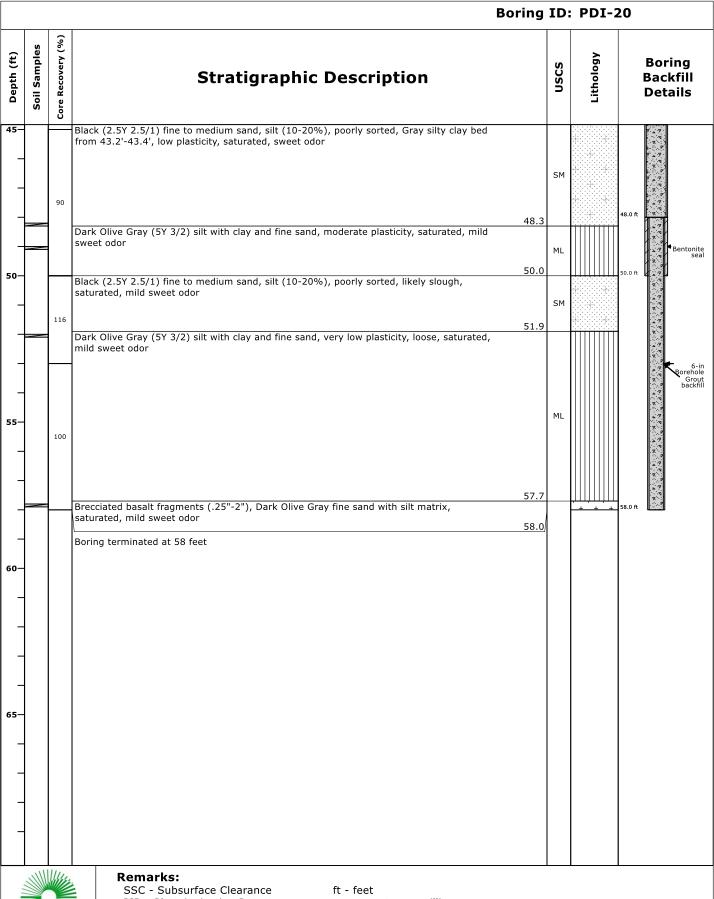
ft - feet

ppm - parts per million

amsl - above mean sea level

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NA - not available or not applicable

in - inches

ppm - parts per million

amsl - above mean sea level

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Boring ID: PDI-21

Drilling Start Date: 08-Aug-2024 **Drilling End Date:** 09-Aug-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker

SSC Contractor: GPRS SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702310.970 Easting: 7627797.070 Surface Elevation: 35.3 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 56.0 ft bgs Water Encountered: 25.0 ft bgs Logged By: David Stone

Reviewed By: Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Cabrill (11)	Soil Samples	Core Recovery (%)	Stratigraphic Description		SOSO	Lithology	Boring Backfill Details
			GROUND SURFACE				
'			Gray-Brown gravel to cobble sized clasts (.25"-3"), subangular to angular, loose, poorly sorted, silty fine sand matrix, dry, no odor		GM		P
4				2.1		0000	P
		100	Dark Brown (10YR 3/3) silt with fine sand and clay, subrounded gravel inclusions (.25"-1.5"), loose from 2.1'-4.5', competent from 4.5'-5',wood debris at 4.5', brick debris at 3', moist, no odor				V V V V V V V V V V V V V V V V V V V
				. .			V V V
			Very Dark Greenish Gray (GLEY1 3/5GY) silt with fine sand and clay, moderate plasticity, rounded cobble to gravel sized inclusions (.25"-5"), 8" cobble at 13', woody debris, debris (metal and ACM) at 14.9', Dark Brown silt with fine sand and gravel at 11.1'-11.4', likely slough from 2.1'-5', wet, no odor	5.0			
		100			ML		
			Very Dark Greenish Gray (GLEY1 3/5GY) silt with fine sand and clay, moderate plasticity, rounded cobble to gravel sized inclusions (.25"-5"), Debris (graphite at 15.5', wood at 16.5' and 17.7' and 18', metal wire at 19.7'), shiny/ sheen staining appears on fine to medium sand bands within silt from 19.6'-20', wet, tar like odor	15.0			a 16 Goreh Graci



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SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

ft bgs - feet below ground surface

Printed: 08-May-2025 Sheet: Page 1 of 3

				Boring	ID:	PDI-	21
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
		100	Very Dark Greenish Gray (GLEY1 3/5GY) silt with fine sand and clay, moderate plasticity, rounded cobble to gravel sized inclusions (.25"-5"), Debris (graphite at 15.5', wood at 16.5' and 17.7' and 18', metal wire at 19.7'), shiny/ sheen staining appears on fine to medium sand bands within silt from 19.6'-20', wet, tar like odor Very Dark Greenish Gray (GLEY1 3/5GY) silt with fine sand and clay, moderate plasticity, rounded cobble to gravel sized inclusions (.25"-5"), wet, tar-like odor	20.0			
_ 25—		•	Brown (10YR 4/3) silt and clay with fine sand, gravel to cobble sized clasts inclusions (.25"-6"), subrounded, Dark Gray to Green mottling, wet, mild tar like odor Very Dark Greenish Gray (GLEY1 3/5GY) silt with clay, trace fine sand, gravel to cobble sized inclusions (.25"-5"), Blackish Gray mottling, shiny/sheen silver staining in fine to medium sand from 26-27.8, saturated, mild tar-like odor	24.0 25.0	ML		
1 1 1		100	Brown (10YR 4/3) silt with clay, trace fine sand, Dark Gray mottling, gravel to cobble inclusions (.25"-6"), shiny/sheen silver staining in fine to medium sand from 27.8-28.2, graphite at 29.6', saturated, no odor	27.8			
30— —		100	Very Dark Gray (10YR 3/1) fine to medium sand, silt (30-40%), poorly sorted, silt fragments, debris (gravel, brick), saturated, no odor Dark Yellowish Brown (10YR 3/4) fine to medium sand with silt, poorly sorted, silt inclusions, saturated, no odor Pinkish Gray (7.5YR 6/2) fine to medium sand, silt (30-40%), poorly sorted, dispersed yellow staining, saturated, mild sweet odor	31.2	SM	+ + + + + + + + + + + + + + + + + + + +	
35-			Brown (10YR 4/3) silt and clay, trace fine sand, competent, low plasticity, saturated, sweet odor Pinkish Gray (7.5YR 6/2) fine to medium sand, silt (30-40%), poorly sorted, Yellow staining (30-50% saturation from 33.9'-35', 50-100% saturation from 35'-36.4'), Light	33.5 33.9	ML	+ 	V
_		:	yellow paste from 35.8'-36.4', saturated, mild sweet odor Very Dark Gray (10YR 3/1) silt with clay and fine sand, moderate plasticity, Yellow staining from 36.4'-37.2', saturated, mild sweet odor	36.4	SM	+ + + + + + + + + + + + + + + + + + +	36.0 ft
-		100	Black (2.5Y 2.5/1) fine to medium sand with silt, poorly sorted, saturated, mild sweet odor	38.1		# + +	Bentonite sea
40 —		80		SM	+ + + + + + + + + + + + + + + + + + +	40.0 ft 8-in Sorehold Group backfil	
			Remarks: SSC - Subsurface Clearance ft - feet PID - Photoionization Detector ppm - parts per million		l		I

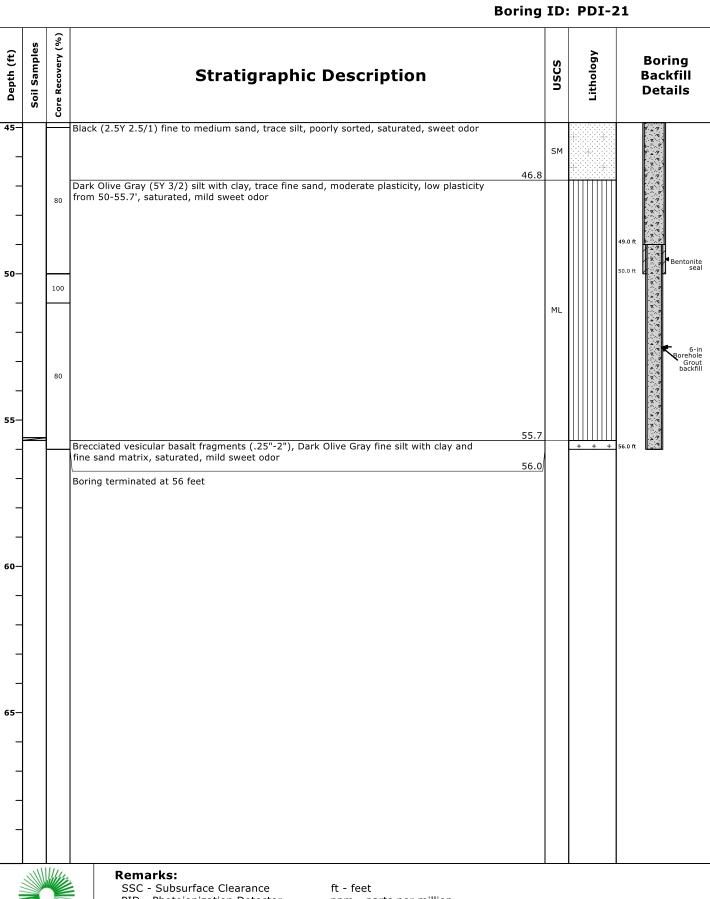


NA - not available or not applicable

in - inches

amsl - above mean sea level

Printed: 08-May-2025 Sheet: Page 2 of 3





NA - not available or not applicable

in - inches

ppm - parts per million

amsl - above mean sea level

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Boring ID: PDI-22

Drilling Start Date: 14-Aug-2024 **Drilling End Date:** 16-Aug-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker

GPRS **SSC Contractor: SSC Method:** Private Locate SSC Diam./Depth: Not Applicable Northing: 702178.190 Easting: 7627768.470 Surface Elevation: 40.0 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 89.0 ft bgs Water Encountered: 24.0 ft bgs Logged By: David Stone

Reviewed By: Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Deptn (rt)		Stratigraphic Description		SOSN	Lithology	Boring Backfill Details
		GROUND SURFACE				
7		Concrete	0.4/		V V V	Ø Ø
-	10	Very Dark Grayish Brown (10YR 3/2) fine to course grained sand, trace silt, poorly s rounded gravel inclusions (.25"-2"), subangular cobbles from 5'-13', loose from 5'-1 moist, no odor	orted,			
5- - - -	10	0		SW		
0- - - -	10	Very Dark Grayish Brown (10YR 3/2) sandy silt, moist, no odor Debris (brick, metal scraps, soft white material, orange-yellow powder, gravel)	13.0 13.6	ML		
1		Debits (blick, metal scraps, soft white material, orange-yellow powder, graver)				♥
5- - - -	g	Very Dark Grayish Brown (10YR 3/2) fine to coarse sand, poorly sorted, loose, meta at 18', dispersed rounded gravel (.25"-1.5"), moist, no odor	15.0 Il wire	SW		



Remarks:

in - inches

SSC - Subsurface Clearance

PID - Photoionization Detector NA - not available or not applicable ft - feet

ppm - parts per million amsl - above mean sea level

ft bgs - feet below ground surface Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet
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				Boring	ID:	PDI-22	2
Deptn (rt)	Soil Samples	Core Recovery (%)	Stratigraphic Description		uscs	Lithology	Boring Backfill Details
)-			Very Dark Grayish Brown (10YR 3/2) fine to coarse sand, poorly sorted, loose, metal wire at 18', dispersed rounded gravel (.25"-1.5"), moist, no odor	20.8	sw		V V V
			Very Dark Grayish Brown (10YR 3/2) fine to medium sand, silt (~30%), poorly sorted, competent, loose from 21.4'-22', gravel (.25"-1.5") from 21.4'-22.6', debris (graphite, brick) from 21.4'-22.6', moist, no odor		SM		
-		110	Dark Brown (10YR 3/3) fine to medium sand, silt (10-20%), poorly sorted, loose, gravel to cobble inclusions (.25"-5"), Yellow granular material, debris (brick, graphite), moist, slight sweet odor	22.6		+ +	y v v v 10 y v v Soreho Gro y v v v
		_	Debris (graphite, concrete aggregate, brick) gravel to cobble clasts (.25"-6"), fine sand with silt matrix, saturated, no odor	23.2 24.3			¬
;			Dark Gray (10YR 4/1) fine to medium sand with silt, poorly sorted, gravel to cobble inclusions (.25"-5"), debris (wood, concrete aggregate, brick, graphite), saturated, no odor	25.0			
_		100	Very Dark Grayish Brown (10YR 3/2) fine to medium sand, silt, poorly sorted, silt inclusions (.25"-2.5"), Yellow brick debris, debris (brick, graphite, wood, sub-rounded gravel (.5")) from 26.4'-27.7', saturated, no odor	26.4			▼
			Very Dark Grayish Brown (10YR 3/2) fine to medium sand, silt, Yellow brick debris, debris (brick, graphite, wood, sub-rounded gravel (.5")) from 26.4'-27.7', saturated, no odor	27.7			
_			Very Dark Grayish Brown (10YR 3/2) fine sand and silt with gravel (~.5"), poorly sorted, competent, wood debris, saturated, no odor	29.0			
			Pinkish Gray (7.5YR 6/2) fine to medium sand with silt, poorly sorted, saturated, no odor	30.0			A ~ A
		100	Pinkish Gray (7.5YR 6/2) fine to medium sand with silt, poorly sorted, Dark Brown fine sand with silt from 30.8'-32.2' likely slough, sub-rounded gravel (.5"-1.5") from 36'-37', wood (1") at 34', saturated, slight sweet odor			+ +	* * * * * * * * * * * * * * * * * * *
					SM		V V
							V P
		100					V A V A A A A A A A A A A A A A A A A A
							V V V V V V V V V V V V V V V V V V V
		100	Black (2.5YR 2.5/1) fine to medium sand with silt, poorly sorted, gravel (.5"-1.5") from 41'-42.5', 1" Very Dark Gray (5Y 3/1) silt with clay and trace fine sand bed at 43.4', low plasticity, wood debris from 41.5'-42', saturated, no odor	40.7			
-				44.6			▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼



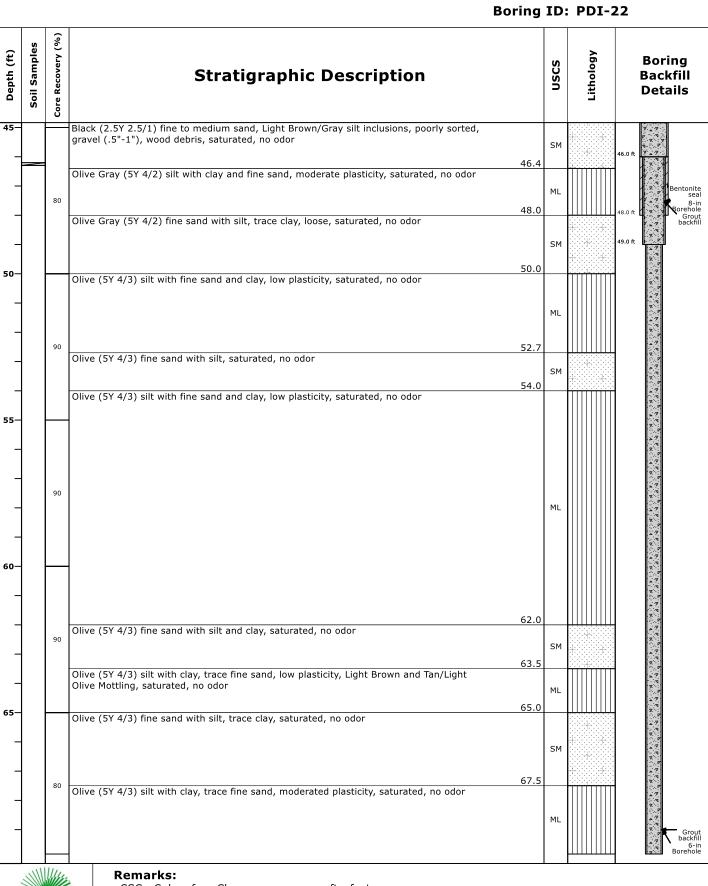
PID - Photoionization Detector

NA - not available or not applicable in - inches

ppm - parts per million

amsl - above mean sea level

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SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

ft bgs - feet below ground surface

				Boring	ID:	PDI-2	22
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
70-			Olive (5Y 4/3) silt with clay, trace fine sand, moderated plasticity, saturated, no odor	74.0	ML		
			Olive (5Y 4/3) fine sand with silt, trace clay, saturated, no odor	71.0		+ + +	**************************************
		100	Dark Olive Gray (5Y 3/2) fine sand with silt, trace clay, saturated, no odor	73.0	SM	+ + + + + + + + + + + + + + + + + + + +	,
75-			Dark Olive Gray (5Y 3/2) silt with clay, trace fine sand, low plasticity, saturated, no odor	75.0			
_				76.2	ML		p
_		100	Dark Olive Gray (5Y 3/2) fine sand with silt (50%) and clay, competent, saturated, no odor	80.0			
80-		80	Dark Olive Gray (5Y 3/2) fine sand with silt and clay, loose, Light Olive Gray silt inclusions (2"-3") from 82.4'-83', saturated, no odor	80.0	SM		
85-				85.0		+ + + + + + + + + + + + + + + + + + + +	
_			Very Dark Gray (GLEY1 3/N) clay with silt and fine sand, competent, loose fine sand with silt bed (2") at 85.3', saturated, no odor	86.2	CL		V
_		100	Very Dark Gray (GLEY1 3/N) fine sand with silt and clay, competent, saturated, no odor	80.2	SM		* V V V V V V V V V V V V V V V V V V V
_			Brecciated vesicular basalt (.25"-2"), fine sand with silt and clay matrix, several rounded basalt fragments.	88.3		+ + + +	89.0 ft - 3
90-			Boring terminated at 89 feet	89.0/			
90-	,,,,,	1111	Domesiales:				
1			Remarks: SSC - Subsurface Clearance ft - feet				



NA - not available or not applicable in - inches

ppm - parts per million

amsl - above mean sea level

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Drilling Start Date: 16-Aug-2024 Northing: 702215.820

Drilling End Date: 19-Aug-2024 Easting: 7627734.560 **Drilling Contractor:** Cascade Drilling Surface Elevation: 40.0 ft amsl **Drilling Method:** Sonic Borehole Diameter: 10 in

Rig Make/Model: TSI **Borehole Depth:** 80.0 ft bgs **Driller:** Chris Baker Water Encountered: 26.0 ft bgs **GPRS SSC Contractor:** Logged By: David Stone

Reviewed By: Avery Soplata, RG **SSC Method:** Private Locate Not Applicable SSC Diam./Depth:

Client:

Consolidated Total

Boring ID: PDI-23

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft) Soil Samples	Core Recovery (%)	Stratigraphic Description		SOSN	Lithology	Boring Backfill Details
0-		GROUND SURFACE Concrete	0.5,			. A . A . A . A . A . A . A . A . A . A
	100	Very Dark Grayish Brown (10YR 3/2) fine to medium grained sand, trace silt, poorly sorted, silty fine to medium sand fragments from 2-13' (likely from drilling process), metal wire debris at 2', moist, no odor	0.3/			V . V . V . V . V . V . V . V . V . V .
_ _ _ 5_	100					
10-	66			SW		
_	100	Very Dark Grayish Brown (10YR 3/2) fine to medium grained sand, trace silt, poorly sorted, silty fine to medium sand fragments (likely from drilling process), wet, no odor Debris (asphalt (2-6"), ACM) subrounded gravel (2"), Very Dark Grayish Brown (10YR	13.0			
15-		John to medium sand matrix, no odor Debris (graphite, ACM, metal wire at 15'), no odor Dark Brown (10YR 3/3) fine to medium sand with silt, poorly sorted, loose, debris (concrete, asphalt (2-5") at 15.5'-17'), moist, no odor	14.9 <i>)</i> 15.0		+ +	
+	100		18.5	SM		\$ 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector NA - not available or not applicable ppm - parts per million amsl - above mean sea level

ft - feet

in - inches

Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfil Details
)	ŏ	Dark Brown (10YR 3/3) fine to medium sand with silt (30-50%), poorly sorted, debris (asphalt, graphite, wood, metal wire, concrete (.25-8", ACM), wet, no odor Dark Brown (10YR 3/3) fine to medium sand with silt, poorly sorted, gravel to cobble size	20.0		100000000000000000000000000000000000000	y y 1 y y 1 y y Gore
	30	inclusions (.25"-7"), debris (ACM, wood), concrete with pebble aggregate (5"-7") likely blocked entry of material into flapper, moist, no odor			# # # # # # # # # # # # # # # # # # #	balling ballin
	_	Dark Brown (10YR 3/3) fine to medium sand with silt (30-50%), poorly sorted, gravel to pebble size inclusions (.5"-3"), debris (wood, rubber pipe piece, white granular cream colored material (.25"-1.5"), silt inclusions (1"-3") at 26.6', saturated at 26', no odor	25.0			V V
	120	Dark Brown (10YR 3/3) fine to medium sand with silt, poorly sorted, Yellow Brown staining at 29', saturated, slight sweet odor	27.0	SM		Ÿ
		Dark Brown (10YR 3/3) fine to medium sand, silt (30-50%), poorly sorted, gravel to	30.0			V V V V V V V V V V V V V V V V V V V
		pebble sized clasts (.25"-2"), debris (glass, wood, graphite), likely slough from 25'-28', saturated, mild sweet odor				
	90	Dark Brown (10YR 3/3) fine to medium sand with silt, poorly sorted, Orange fine-grained (likely clay) (1.5") inclusion at 33', wood debris at 33', saturated, mild sweet odor	32.8			A A A A A A A A A A A A A A A A A A A
		Pinkish Gray (5YR 6/2) fine to medium sand, trace silt, poorly sorted, saturated, mild	35.0			V V
		sweet odor		SW		\$\frac{1}{2}\$\frac
	110	Light Brownish Gray (10YR 6/2) clay with silt, trace fine sand, moderate plasticity, saturated, sweet odor	37.4 37.7	CL		7
		Pinkish Gray (5YR 6/2) fine to medium sand, trace silt, poorly sorted, dispersed Yellow staining at 39.6'-40' (40-80% saturation) and 41'-41.7' (20-50% saturation), saturated, mild sweet odor from 37.7'-40', sweet odor from 40'-41.7'.		SW	4	
	110	Very Dark Gray (10YR 3/1) silt with clay and fine sand, moderate plasticity, competent, Light Yellow staining at 41.7'-42.4', saturated, slight sweet odor	41.7	ML		
		Black (2.5YR 2.5/1) fine to medium sand, poorly sorted, saturated, no odor	43.2	SW		Bento V G bai
		Black (2.5YR 2.5/1) fine to medium sand, poorly sorted, saturated, no odor Remarks: SSC - Subsurface Clearance ft - feet PID - Photoionization Detector ppm - parts per million	43.2			



NA - not available or not applicable in - inches

amsl - above mean sea level

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		ı	t	soring	ID:	PDI-2	23
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
45-			Black (2.5YR 2.5/1) fine to medium sand, poorly sorted, saturated, no odor	45.0	SW ,		45.0 ft /
-			Olive Gray (5Y 4/2) silt with clay and fine sand, low plasticity, three pebble inclusions (1.5"-3"), metal wire and tape inclusions (likely from shelby tube), saturated, no odor	46.4	ML		46.0 ft
-		70	Olive Gray (5Y 4/2) fine sand with silt and clay, silt percentage increase from 48'-50', more competent, saturated, no odor	46.4	SM	+ + + + + + + + + + + + + + + + + + + +	
- -			Olive Gray (5Y 4/2) silt with clay, trace fine sand, moderate plasticity, saturated, no odor	52.0	ML	+ + +	Bentonite
		100	Olive Gray (5Y 4/2) fine sand with silt and clay, loose from 52.6'-53.8', competent from	52.6	INIC		
_ 55— _			53.8'-55', silt with clay and fine sand bed from 58-58.6', saturated, no odor		SM	+ + + + + + + + + + + + + + + + + + +	55.0 ft
- 50-		80	Olive Gray (5Y 4/2) silt with fine sand and clay, low plasticity, saturated, no odor	60.0		+ + + + + + + + + + + + + + + + + + + +	
-		90		65.0	ML		8-f-i Borehol Governou Backfi
- - - -		90	Olive Gray (5Y 4/2) fine sand with silt and clay, saturated, no odor	5513	SM	+ + + + + +	



NA - not available or not applicable in - inches

amsl - above mean sea level

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			Boring	ID:	PDI-2	23
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
70-			Olive Gray (5Y 4/2) fine sand with silt and clay, saturated, no odor	SM	+ + +	4 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 -
			Olive Gray (5Y 4/2) silt with clay, trace fine sand, moderate plasticity, saturated, no odor	ML		V V
-		90	Olive Gray (5Y 4/2) fine sand with silt and clay, saturated, no odor		+ + + + +	
		100		SM	# # + + + + + +	
4			79.0 Very Dark Brown (10YR 2/2) fine to medium sand with silt, poorly sorted, saturated, no			A A A A A A A A A A A A A A A A A A A
•			odor 79.: Olive Gray (5Y 4/2) silt with fine sand, trace clay, low plasticity, competent, saturated, no	ML		80.0 ft
-			odor 79.5 Rounded basalt fragments (.25"-1.5"), angular basalt fragments (<.25") 80.0			
1			Boring terminated at 80 feet			
1						
5-						
$\frac{1}{2}$						
00-						
+						
-						
+						
1		1///	Remarks: SSC - Subsurface Clearance ft - feet	1		



SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable in - inches

ft - feet

ppm - parts per million amsl - above mean sea level

Printed: 08-May-2025 **Sheet:** Page 4 of 4

Drilling Start Date: 09-Aug-2024 **Drilling End Date:** 12-Aug-2024

Drilling Contractor: Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker **GPRS SSC Contractor:**

SSC Method: Private Locate

Not Applicable SSC Diam./Depth:

Northing: 702251.590 Easting: 7627718.020 Surface Elevation: 36.1 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 75.0 ft bgs Water Encountered: 26.0 ft bgs

Logged By: David Stone **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Boring ID: PDI-24

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
0-			Asphalt GROUND SURFACE	0.3/		0000	∴ A ∵ A ∵
		100	Gravel to cobbles sized clasts (.25"-6"), poorly sorted, Dark Brown-Gray silty fine sand matrix, dry, no odor	0.2	GW		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$
			Dark Grayish Brown (10YR 4/2) medium sand with silt, gravel (.25"-1") and silt inclusions, moist, no odor	2.0	SM	+ +	(v · ∇ · ∇ · ∇ · ∇ · ∇ · ∇ · ∇ · ∇ · ∇ ·
		133		3.7			A A
			Black (10YR 2/1) silt with fine sand, poorly sorted, gravel to cobble inclusions (.25"-4"), debris (wood, carbon), moist, no odor	4.5/	ML	717.00.00.00.00	V V V V V V V V V V V V V V V V V V V
5-			Dark Grayish brown (10YR 4/2) fine to medium sand, silt (\sim 20%), poorly sorted, gravel to cobble inclusions (.25"-4"), debris (wood, plastic, graphite), moist, no odor	5.0	SM	+ +	7
			Black (10YR 2/1) fine sand with silt, rounded gravel and cobble sized inclusions (.25"-3"), debris (brick, graphite), moist, no odor	5.5		+ +	∵ v · v · v · · · · · · · · · · · · · ·
		70	Brown (10YR 4/3) fine to medium sand with silt and gravel (.25"-1"), poorly sorted, moist, faint sweet odor	6.8		+ +	V 2 V V V V V V V V V V V V P P
			6 inch cobble, woody debris	7.2			P
			Brown (10YR 4/3) fine to medium sand with silt and gravel (.25"-1.5"), brick debris, moist, no odor $\frac{1}{2} \left(\frac{1}{2} - 1$.0.0		† † ; † ; † ;	A A A A A A A A A A A A A A A A A A A
10-			Dark Brown (10YR 3/3) fine to medium sand, silt, poorly sorted, silt inclusions (.25"-3"), gravel to cobble inclusions (.25"-3.5") wood debris at 10.7', Dark Yellow-Brown staining at 12', moist, faint sweet odor	.0.0	SM	+ +	7. v . v . v . v . v . v . v . v . v . v
-		60				† ; † ; † ; † ;	\$\frac{1}{2} \cdot \frac{1}{2}
				.5.0		+ +	V V V V V V V V V V V V V V V V V V V
15-			Dark Grayish Brown (10YR 4/2) silt with fine sand and clay, low plasticity, loose, fragmented, angular gravel to cobble inclusions (.25"-4"), moist, faint sweet odor	6.0	ML		\(\frac{\pi}{\pi}\) \(\frac{\pi}{\pi}\pi\) \(\frac{\pi}{\pi}\) \(\frac{\pi}{\pi}\) \(\frac{\pi}{\pi}\) \(\frac{\pi}{\pi}\) \(
$[\]$			Black (10YR 2/1) gravel (.25"-1"), sub-angular, poorly sorted, fine sand with silt matrix, wet, faint sweet odor	_	GW	0000	V . V . V . V . V . V . V . V . V . V .
		90	Very Dark Grayish Brown (10YR 3/2) fine to medium sand, trace silt, poorly sorted, subrounded gravel inclusions (<.5"), building debris at 17.5', rubber at 17.8', brick at 17.5', wet, mild sweet odor		SM	+ + + + + + + + + + + + + + + + + + + +	V 10-in Gorehole Grout backfill
	1111	11/2.	Remarks:				· · · v · · · v



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

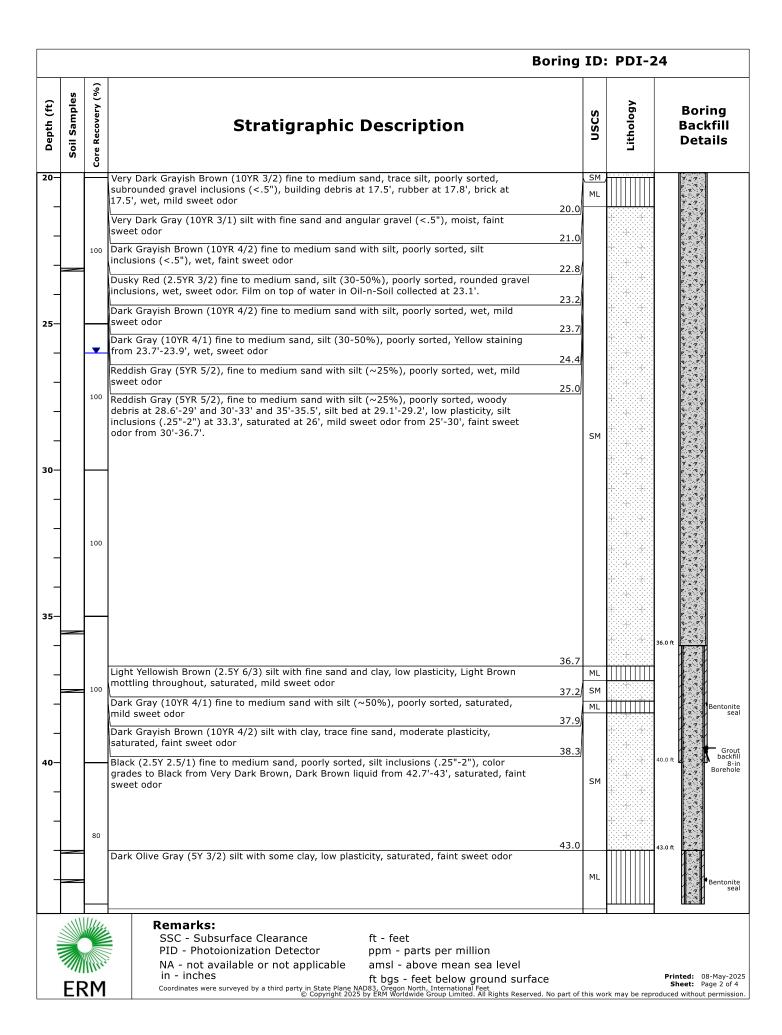
in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

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				Boring	ID:	PDI-24	ļ
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
45-			Dark Olive Gray (5Y 3/2) silt with some clay, low plasticity, saturated, faint sweet odor Slough, contains Black sand from above and Dark Brown liquid as above, bentonite chips	45.0	ML	45.	Oft Control of the Co
-			Slough, contains black sails from above and bark brown iiquis as above, bentomic emps	47.0			\(\bullet \bullet \) \(\bullet \bullet \) \(\bullet \bull
-		70	Dark Olive Gray (5Y 3/2) silt with some clay and fine sand, low plasticity, saturated, mild sweet odor	47.0	ML		
50- -			Dark Olive Gray (5Y 3/2) sandy silt, saturated, no odor	50.0	SM		P & C P P
_			Olive Gray (5Y 5/2) clayey silt, moderate plasticity, wet, no odor	52.0	ML		, v
		80	Dark Olive Gray (5Y 3/2) sandy silt, saturated, no odor	52.5	SM		Δ · Δ · Δ
-			Dark Olive Gray (5Y 3/2) silt with some fine sand, trace clay, low plasticity, saturated, no odor	53.0,			
55— — —		80	Olive Gray (5Y 5/2) clayey silt, moderate plasticity, wet, no odor Dark Olive Gray (5Y 3/2) silt with some sand, trace clay, low plasticity, saturated, no odor	57.0 57.5			V 6-in Borehole Grout backfil
60- -			Olive Gray (5Y 5/2) clayey silt, moderate plasticity, wet, no odor Dark Olive Gray (5Y 3/2) silt with some fine sand, trace clay, low plasticity, saturated, no odor	60.0	ML		TO POST OF THE POS
-		80					
65-							P
-		80					
-							
771			Remarks: SSC - Subsurface Clearance ft - feet PID - Photoionization Detector ppm - parts per million				



NA - not available or not applicable

in - inches

amsl - above mean sea level

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			Boring	ID:	PDI-2	24
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
70- -		90	Dark Olive Gray (5Y 3/2) silt with some fine sand, trace clay, low plasticity, saturated, no odor	ML		
75-			73.5 Brecciated basalt, vesicular 75.0 Boring terminated at 75 feet		+ + + + + + + + + + + + + + + + + + + +	75.0 ft
- -						
80-						
- - -						
85-						
90-						
-						
5,			Remarks:			



SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

Printed: 08-May-2025 Sheet: Page 4 of 4

Drilling Start Date: 12-Aug-2024 **Drilling End Date:** 13-Aug-2024

TSI

Drilling Contractor: Cascade Drilling **Drilling Method:** Sonic

Driller: Chris Baker **GPRS SSC Contractor: SSC Method:** Private Locate

Rig Make/Model:

Not Applicable SSC Diam./Depth:

Northing: 702331.410 Easting: 7627772.620 Surface Elevation: 35.5 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 56.0 ft bgs Water Encountered: 35.0 ft bgs

Logged By: Avery Soplata **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Boring ID: PDI-25

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		NSCS	Lithology	Boring Backfill Details
0-			GROUND SURFACE				
_			Very Dark Grey gravely sand, gravel ranges from .25"-2", poorly sorted, loose, moist, no odor		SW		P
$\frac{1}{2}$		100	Very Dark Brown (7.5YR 2.5/3) cobbles (.25"-4"), silt inclusions, dry, no odor	2.8	GW	0000 0000 0000 0000	P
			Dark Grayish Brown (10YR 4/2) silt with gravel and cobbles (.5"-4"), low plasticity, dry, no odor ${}^{\circ}$	4.2			\(\bar{\pi} \) \(\pi
;- 			Dark Grayish Brown (10YR 4/2) silt with trace cobbles (.5"-1"), dry, no odor		ML		P
			Very Dark Gray silt with trace clay, rare cobbles (.5"-6"), low plasticity, moist, no odor	6.0			V V V V V V V V V
		100	Black fine to medium sand, semi-solid rubber material, tar-like odor	7.7 8.2,	SW		▼
$\frac{1}{2}$			Very Dark Gray silt, trace clay, rare cobbles (.5"-6"), low plasticity, moist, faint tar like odor	9.0/	ML		P
,-			Debris (white brick, metals scraps, rubber (solid and semi-solid), gravelly black sand matrix, loose, moist, tar-like odor Very Dark Gray silt, low plasticity, gravel and cobbles (.25"-1"), burnt wood chips at 12',	10.0/			∇
		100	roots and plant matter (12'-13'), moist, faint odor	13.0			
_ ;_			Very Dark Gray silt with some clay, moderate plasticity, gravel and cobbles (.25"-2"), plant matter, moist, no odor		ML		
							V V V V V V V V V V V V V V V V V V V
		100	Dark Gray, clayey silt, moderate plasticity, gravel and cobbles (.25"-4"), plant matter, moist, no odor	18.0			



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SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

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			E	Boring	ID:	PDI-2	25
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-			Dark Gray, clayey silt, moderate plasticity, gravel and cobbles (.25"-4"), plant matter, moist, no odor		ML,	+	
1			Black fine to medium sand, large silt inclusions (2"-4"), gravel and cobbles (.25"-2"), moist, no odor	20.0	SM	+ + + + + + + + + + + + + + + + + + + +	
_		100		24.0		+ +	V
25-			Debris (glass, metal scraps), cobbles (2"-4"), Dark Grayish Brown silt matrix Mottled Very Dark Gray to Dark Olive Gray silt with some clay, moderate plasticity, gravel	25.0			V V
		70	and cobbles (.5"-2"), glass debris, moist, no odor		ML		
30— —							
-		100	Dark Olive Gray (5Y 3/2) sandy silt, gravel and cobbles (.5"-2"), low plasticity, moist, mild sweet odor Dark Yellowish Brown fine to medium sand with some silt, poorly sorted, contains cobbles	32.5			~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~
35-			(1"-2"), silt inclusions, moist, mild sweet odor Gray (5Y 5/1) fine to medium sand with some silt, poorly sorted, Yellow staining, woody debris at 34.5',	33.5 35.0		+ + +	V V V V V V V V V V V V V V V V V V V
-			Light Olive Gray (5Y 6/2) fine to medium sand with some silt, poorly sorted, Yellow Staining, saturated, mild sweet odor		SM	+ + + + + + + + + + + + + + + + + + + +	
		100				+ + +	P
40_			Light Yellowish Brown (2.5Y 6/3) clayey silt, moderate plasticity, saturated, mild sweet	39.5	ML	+ + + + + + + + + + + + + + + + + + +	Bentonit
40— —			odor Black sand and Light Olive to Yellowish Brow silt, interbedded, saturated, mild sweet odor Black fine to medium sand, trace silt, poorly sorted, saturated, mild sweet odor	39.7 40.0	(SM)		
		100			SW		8-i eorehol Grou backf
				44.7			7 . 7

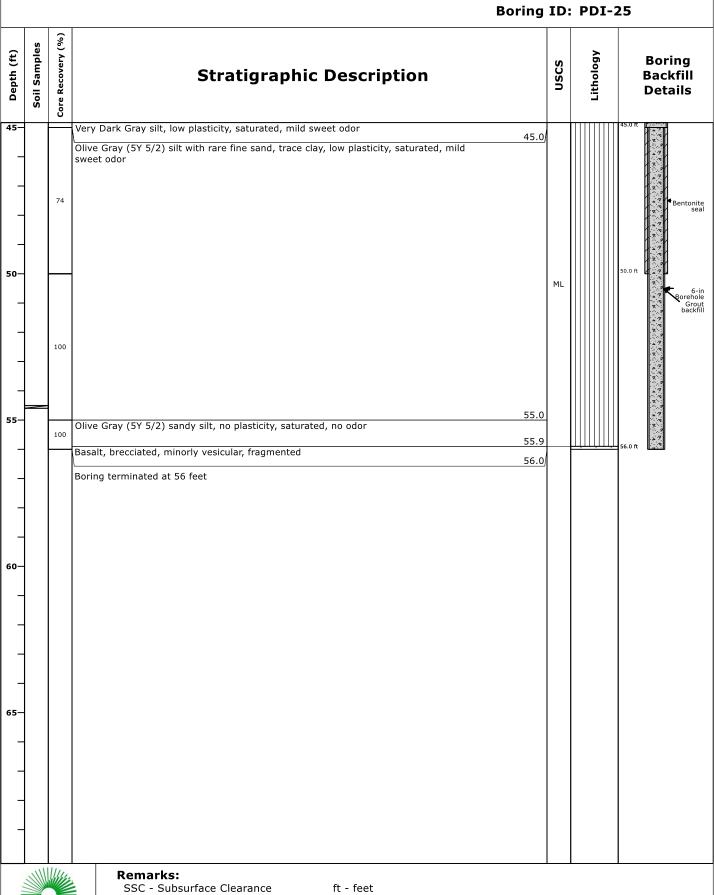


NA - not available or not applicable in - inches

ppm - parts per million

amsl - above mean sea level

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NA - not available or not applicable

in - inches

ppm - parts per million

amsl - above mean sea level

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Boring ID: PDI-26

Drilling Start Date: 13-Aug-2024 **Drilling End Date:** 14-Aug-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker **GPRS SSC Contractor: SSC Method:** Private Locate

SSC Diam./Depth:

Not Applicable

Northing: 702361.790 7627749.350 Easting: Surface Elevation: 36.0 ft amsl Borehole Diameter: 10 in

Borehole Depth: 55.0 ft bgs Water Encountered: 29.5 ft bgs Logged By: David Stone **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Deptn (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		sosn	Lithology	Boring Backfill Details
			GROUND SURFACE				
D —			Very Dark Gray (10YR 3/1) gravelly sand, debris (brick, graphite), poorly sorted, loose, dry, no odor	2.5	GW		
_			Very Dark Gray (10YR 3/1) gravelly silt, debris, gravel ranging from .5"-2", fragmented, loose, dry, mild odor				
5— — —		100	Very Dark Gray (10YR 3/1) gravelly silt, debris (ACM), gravel ranging from .5"-2", fragmented, loose, Dark Brown Mottling, moist, no odor	5.0			
-		100	Very Dark Gray (10YR 3/1) silt with some clay, moderate plasticity, .5" beds of plant matter at 12.3' and 12.8', moist, no odor	11.5	ML		
5- - -			Very Dark Gray (10YR 3/1) silt with fine sand and some clay, subrounded gravel, moderate plasticity, Light Yellow Mottling (14.8'-15'), moist, no odor	15.0			1 orel G bac



SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable in - inches

ft - feet

ppm - parts per million amsl - above mean sea level

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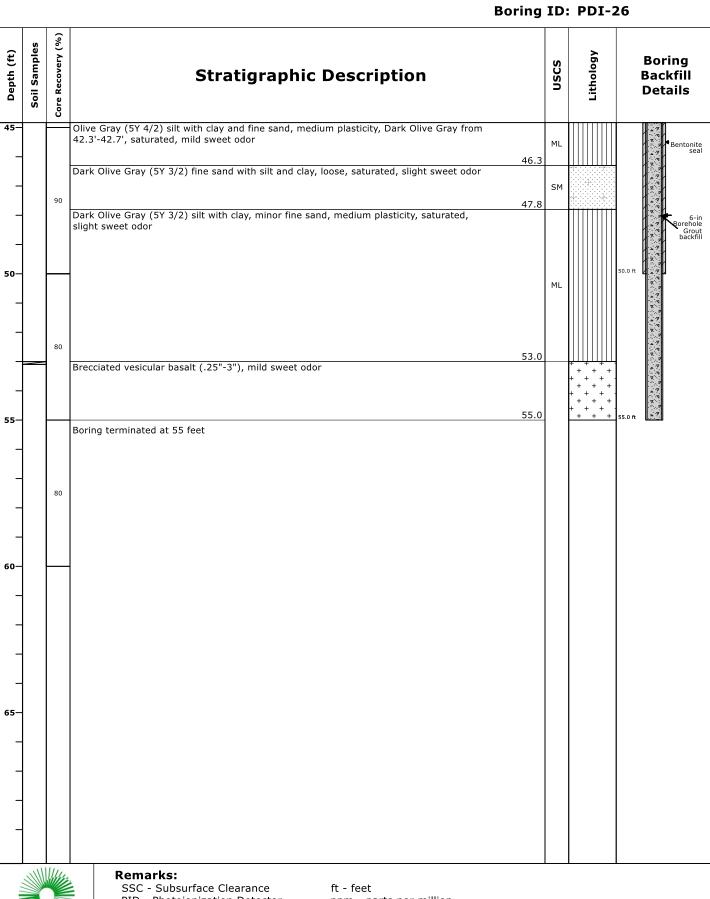
			E	Boring	ID:	PDI-2	6
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
2 0 -		100	Very Dark Gray (10YR 3/1) silt with fine sand and some clay, subrounded gravel, moderate plasticity, Light Yellow Mottling (14.8'-15'), moist, no odor Dark Grayish Brown (10YR 4/2) silt with fine sand and some clay, subrounded gravel, moderate plasticity, gravel increases from 23.1'-23.6', cobbles (2.5") from 23.6'-24', moist, no odor	20.0	ML		
_ 25—			Very Dark Gray (10YR 3/1) fine to medium sand, silt fragments (.25"-2"), poorly sorted, moist, no odor Dark Gray Brown (10YR 4/2) silt with fine sand and clay, moderate plasticity, subangular gravel to cobbles sized inclusions (.25"-4"), metal wire in concrete debris at 27.2', wet,	24.0 25.0	SM		
_		110	no odor	28.2	ML		
30-			Very Dark Gray (10YR 3/1) fine to medium sand with silt, poorly sorted, silty clay fragments (.25"-4"), shift to Dark Grey from 29.2'-29.5', wet, slight sweet odor Dark Brown (10YR 3/3) fine to medium sand, minor silt, poorly sorted, woody debris at 32', increase in silt from 31-32.7' (10%-30%), Yellow staining from 31.5'-32.7' saturated, slight sweet odor	29.5	SM	# # # # # # # # # # # # # # # # # # #	
-		80	Dark Gray (10YR 4/1) silt with fine sand, low plasticity, Yellow Mottling, Yellow staining, saturated, mild sweet odor Grayish Brown (10YR 5/2) fine to medium sand with silt, poorly sorted, course Yellow grains, Yellow staining, saturated, mild sweet odor	32.7 33.3	ML	#	
-		100	Very Dark Gray (10YR 3/1) silt with fine sand and clay, low plasticity, Yellow staining	37.3	SM	# # 3 # # # 3	5.0 ft V V
10-			from 37.3'-37.8', poorly sorted fine to medium sand lens (37.8'-37.9'), saturated, sweet odor Black (2.5Y 2.5/1) fine to medium sand, poorly sorted, saturated, mild sweet odor	38.5	ML		Bentonite seal Seal Ground Bentonite Seal Ground Backfill
		80	Olive Gray (5Y 4/2) silt with clay and fine sand, medium plasticity, Dark Olive Gray from 42.3'-42.7', saturated, mild sweet odor	42.3	ML		1.0 ft
M////			Remarks: SSC - Subsurface Clearance ft - feet PID - Photoionization Detector ppm - parts per million			<u> </u>	



NA - not available or not applicable in - inches

amsl - above mean sea level

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NA - not available or not applicable

in - inches

ppm - parts per million

amsl - above mean sea level

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Boring ID: PDI-27

Drilling Start Date: 27-Aug-2024 **Drilling End Date:** 27-Aug-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Sonic

Rig Make/Model: TSI **Driller:** Chris Baker **SSC Contractor:** Cascade/GPRS **SSC Method:** Air-knife/Private Locate SSC Diam./Depth: 10-in / 5-ft

Northing: 702336.410 Easting: 7627616.050 **Surface Elevation:** 36.9 ft amsl Borehole Diameter: 10 in **Borehole Depth:** 51.0 ft bgs Water Encountered: 34.0 ft bgs

Logged By: David Stone **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft) Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfil Details
		GROUND SURFACE				
°		Asphalt	0.3/	SW		A . A .
-		Very Dark Gray (10YR 3/1) fine to medium sand with gravel (.25"-1") and silt (<10%), moist, no odor	0.5			A A A
4		No recovery	1.5			A A A
		Gravel (.25"-1') with fine sand, silt (25%) matrix, angular, moist, slight sweet chemical odor	2.0	SM		V . V . V . V . V . V . V . V . V . V .
		Very Dark Grayish Brown (10YR 3/2) fine to medium grain sand, silt clumps, moist, slight sweet chemical odor				
		No recovery	2.5	SM		A
5-		Very Dark Grayish Brown (10YR 3/2) fine to medium grain sand, silt clumps, moist, slight sweet chemical odor	4.0	SM		V V
		No recovery	5.5/			P
		Name Dayle Cravitab Braum (40VB 2/2) fine to good was and ailt (20,400), pagety ageted	8.0			V V V V V V V V V V V V V V V V V V V
_	50	Very Dark Grayish Brown (10YR 3/2) fine to medium sand, silt (30-40%), poorly sorted, wet, no odor	10.0			P V V
- - - -	100	Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, moist, no odor	10.0	SM	+ + + + + + + + + + + + + + + + + + +	
-	100				+ + + + + + + + + + + + + + + + + + + +	v v v v v v v v v v v v v v v v v v v



Remarks:

in - inches

SSC - Subsurface Clearance

PID - Photoionization Detector NA - not available or not applicable ft - feet

ppm - parts per million amsl - above mean sea level

Printed: 08-May-2025 Sheet: Page 1 of 3

ERM

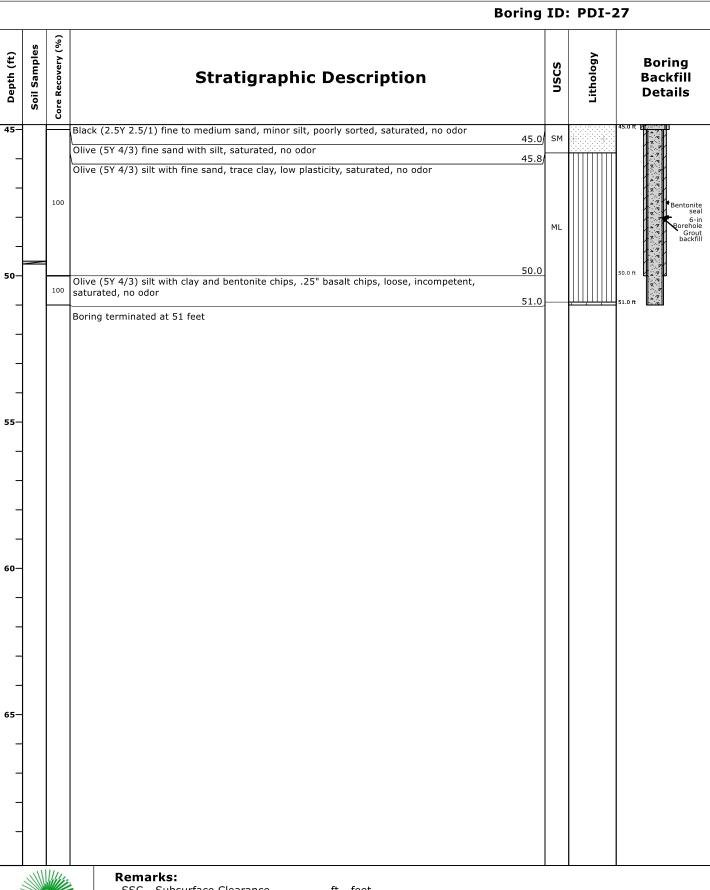
Deptil (1t)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
- -			Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, moist, no odor Very Dark Grayish Brown (10YR 3/2) silt with fine sand, moist, no odor Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, silt	21.0 22.0	SM ML	+ +	5 P P P P P P P P P P P P P P P P P P P
	-	100	Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, silt inclusions (.25"-3"), moist, slight sweet odor, mild sweet odor from 30'-34'	28.0	SM		
- ;- -		V	Very Dark Grayish Brown (10YR 3/2) fine to medium sand, silt (30-40%), poorly sorted, Yellow staining from 35'-36.5', Reddish Orange mottling silt inclusions from 35'-36.5', saturated, mild sweet odor Very Dark Gray (10YR 3/1) fine to medium sand, silt (30-40%), poorly sorted, Yellow	34.0		+ ; + + ; + + ; + + ; +	36.0 ft
		90	Staining, woody debris at 36.8', saturated, sweet odor Dark Gray (10YR 4/1) silt with clay, minor fine sand, moderate plasticity, Very Dark Gray fine to medium sand with silt bed (38.6'-38.9'), saturated, sweet odor	37.5 40.0	ML	+	
			Black (2.5Y 2.5/1) fine to medium sand, minor silt, poorly sorted, saturated, sweet odor Gray (10YR 5/1) fine to medium sand, silt (40-50%), poorly sorted, lighter color is staining, Orange/Tan silt inclusions from (41.4'-41.9'), saturated, sweet odor Black (2.5Y 2.5/1) fine to medium sand, minor silt, poorly sorted, saturated, no odor	40.8	SM	+ + + + + + + + + + + + + + + + + + +	Bento Forel bac



NA - not available or not applicable in - inches

amsl - above mean sea level

Printed: 08-May-2025 Sheet: Page 2 of 3





SSC - Subsurface Clearance

in - inches

PID - Photoionization Detector

NA - not available or not applicable

ft - feet

ppm - parts per million

amsl - above mean sea level

Printed: 08-May-2025 Sheet: Page 3 of 3

Drilling Start Date: 26-Aug-2024 **Drilling End Date:** 26-Aug-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI

Driller: Chris Baker **GPRS SSC Contractor: SSC Method:** Private Locate

Not Applicable SSC Diam./Depth:

Northing: 702406.980 Easting: 7627622.580 Surface Elevation: 37.3 ft amsl Borehole Diameter: 10 in

Borehole Depth: 56.0 ft bgs Water Encountered: 35.0 ft bgs Logged By: David Stone

Reviewed By: Avery Soplata, RG **Client:**

Consolidated Total

Boring ID: PDI-28

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		sosn	Lithology	Boring Backfill Details
0-			GROUND SURFACE				
			Very Dark Gray (10YR 3/1) gravel (.25"-1.5"), subangular, poorly sorted, silty fine sand matrix, geotextile liner at .8', moist, no odor	1.1	GW	0000	P
			Very Dark Gray (10YR 3/1) clayey silt, low plasticity, gravel to cobble inclusions (.25"-5"), moist, no odor	2.3	ML		\(\frac{1}{2}\)\(\frac{1}\)\(\frac{1}{2}\)\(\frac{1}{2}\)\(\frac{1}{2}\)\(\frac{1}{2}\)\(\frac{1}{2}\)\(\frac{1}{2}\)\(\frac{1}\)\(\frac{1}\)\(\frac{1}\)\(\frac{1}2\)\(\frac{1}\)\(\frac{1}\2\)\(\frac{1}\2\)\(\frac{1}
		100	Gravel and pea gravel, subrounded, poorly sorted, moist, no odor	3.0	GW	0000	V V V V V
5-			Very Dark Gray (10YR 3/1) clayey silt, low plasticity, gravel to cobble inclusions (.25"-6"), moist, no odor				Ÿ
		100	Very Dark Greenish Gray (GLEY1 3/1) clayey silt with fine sand, gravel to cobble sized inclusions (.25"-6"), graphite at 9', ACM from 9-10', tile debris at 9.5', larger debris (graphite, concrete, metal wire, tile, ACM) from 10'-12.8' (.25"-8"), moist, no odor	6.0	ML		V V
10-		120		12.8			
			Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, gravel to cobble inclusions (.25"-5"), moist, no odor		SM	+ + + + + + + + + + + + + + + + + + +	▼
15-			Gravel (.25"-1.5"), poorly sorted, subrounded, cobble inclusions (3"-4"), Gray to Brown silty fine sand matrix, wet, no odor	14.5	GW	,0000	A
-		100	Very Dark Greenish Gray (GLEY1 3/1) clayey silt, trace sand, gravel to pebble inclusions (.25"-3"), debris (graphite, ACM, glass, tubing, tile fragments), asphalt inclusion (5") at 18', wet, no odor	15.0	ML		V V
_			Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, silty fine sand inclusions (0.25"-3") from 20'-25', metal wire at 20', moist, slight sweet odor	18.2	SM	+ + + + + + + + + + + + + + + + + + + +	10-in Forehole Grout backfill
	1111	11/11	Remarks				



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

Printed: 08-May-2025 Sheet: Page 1 of 3

				Boring	ID:	PDI-2	28
Deptn (1t)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
o- - -		70	Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, silty fine sand inclusions (0.25"-3") from 20'-25', metal wire at 20', moist, slight sweet odor		SM	+ + + + + + + + + + + + + + + + + + +	
- 5-			Very Dark Greenish Gray (GLEY1 3/1) silt with fine sand, low plasticity, gravel to cobble inclusions (.25"-4"), debris (wood, graphite, ACM, brick) moist, no odor	25.0			\$\partial \chi \chi \chi \chi \chi \chi \chi \chi
_		120	Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, gravel inclusions (.25"-4"), moist, slight sweet odor	27.0	ML SM		
- -			Very Dark Greenish Gray (GLEY1 3/1) silt with fine sand, gravel (40%, subrounded, .25"-3"), poorly sorted, moist, no odor	28.4	ML	+	
		120	Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, gravel inclusions (.25"-4"), moist, slight sweet odor	32.0	SM	# + +	
_		•	Dark Gray (10YR 4/1) silt, low plasticity, wet, no odor Dark Gray (10YR 4/1) fine to medium sand, poorly sorted, wet, mild sweet odor	34.6 34.9	ML SM /	+	V A V
- -		100	Dark Gray (10YR 4/1) sandy silt, no plasticity, saturated, faint sweet odor Dark Gray (10YR 4/1) fine to medium silty sand, saturated, faint sweet odor Very Dark Grayish Brown (10YR 3/2) silty sand with clay, saturated, faint sweet odor	35.0 35.8 37.3		+ + +	37.0 ft 8 7
			Dark Gray (10YR 4/1) silty sand, silt lens at 39.5', saturated, faint sweet odor	38.5	SM	#	
		90	Black (10YR 2/1) fine to medium sand, trace silt, poorly sorted, silt inclusions (.5"-3"), saturated, faint sweet odor	40.0	sw		Bento orei G bac

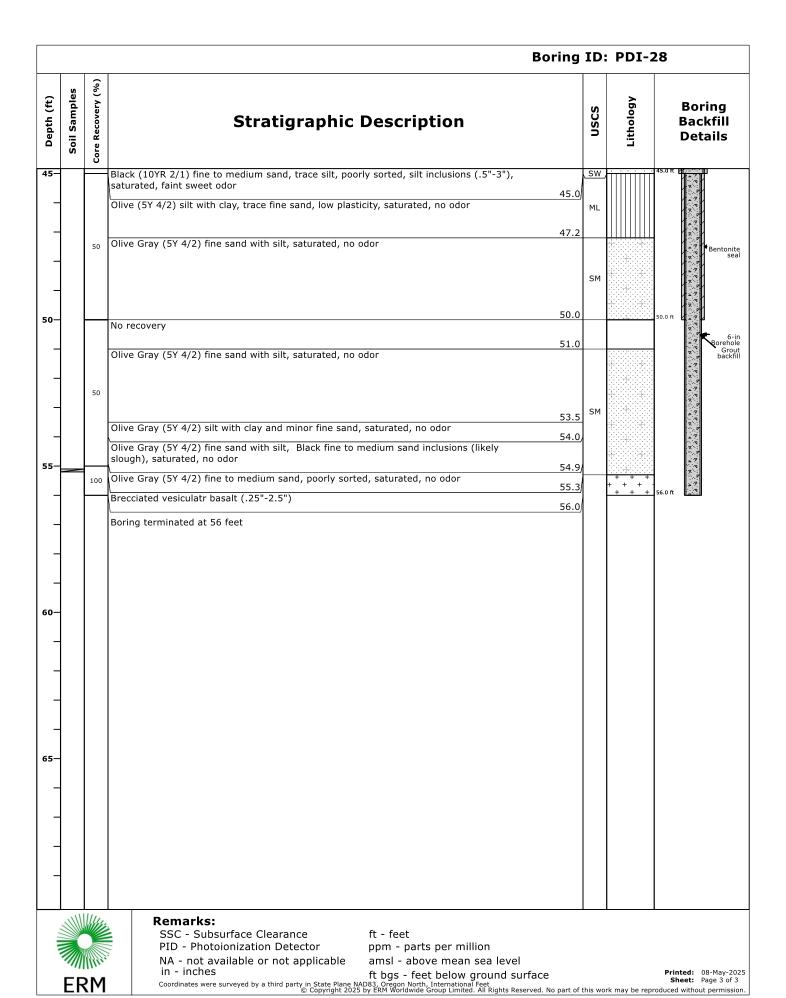


NA - not available or not applicable in - inches

ppm - parts per million

amsl - above mean sea level

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Drilling Start Date: 23-Aug-2024 **Drilling End Date:** 23-Aug-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker GPRS **SSC Contractor: SSC Method:** Private Locate

Northing: 702456.740 7627649.820 Easting: Surface Elevation: 36.2 ft amsl Borehole Diameter: 10 in **Borehole Depth:** 51.5 ft bgs Water Encountered: 30.0 ft bgs Logged By: Avery Soplata **Reviewed By:** Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

	Soil Samples	Core Recovery (%)	Stratigraphic Description	000	nscs	Lithology	Boring Backfill Details
-	-		Dark Brown (10YR 3/3) fine to coarse sand, poorly sorted, loose, asphalt at 1.5', dry, no odor	0.8 G	w :	0000	, , , , , , , , , , , , , , , , , , ,
	_	80	Brown (10YR 4/3) silt, trace fine sand and clay, moderate plasticity, gravel and cobble inclusions (.5"-6"), brick debris, Gray mottling from 10'-11.5' and 12.5'-15', moist, no odor	5.0			
	-	100		М	1L		
	_	100	Brown (10YR 4/3) silt, trace fine sand and clay, moderate plasticity, gravel and cobble inclusions (.5"-6"), brick debris, Gray mottling from 15'-22.3', wet, no odor	5.0			
		100					11 Gref Grebac



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Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector NA - not available or not applicable ft - feet

ppm - parts per million amsl - above mean sea level

in - inches ft bgs - feet below ground surface Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet
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		В	oring	ID:	PDI-2	29
Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfil Details
) - -		Brown (10YR 4/3) silt, trace fine sand and clay, moderate plasticity, gravel and cobble inclusions (.5"-6"), brick debris, Gray mottling from 15'-22.3', wet, no odor		ML		
_ _ _	100	Dark Yellowish Brown (10YR 3/4) fine to medium sand, trace silt, poorly sorted, silt inclusions (.5"-1.5"), wood chips, moist, no odor	22.3	SW		
		Dark Grayish Brown (10YR 4/2) silt with trace clay, moderate plasticity, gravel and cobble inclusions (.5"-4"), debris (brick, wood), Dark Yellowish Brown sand lens at 27.4', wet, no odor	25.0			
	100	Dark Grayish Brown (10YR 4/2) sandy silt, fine to medium sand, gravel inclusions (.25"), wood chips, wet from, no odor	28.0	ML		
	_	Dark Grayish Brown (10YR 4/2) sandy silt, fine to medium sand, gravel inclusions (.25"), wood chips, saturated from, no odor Dark Yellowish Brown (10YR 3/4) fine to medium sand with some silt, poorly sorted,	30.0		nesatives:	
	100	slight sweet odor	33.5	SM	+ + + + + + + + + + + + + + + + + + +	* 7 D V V V V V V V V V V V V V V V V V V
		Very Dark Gray (10YR 3/1) fine to medium sand with some silt, poorly sorted, wet, mild sweet odor Dark Gray (10YR 4/1) silt with some clay, moderate plasticity, Black laminations from 36'-37', color change to Gray from 37'-37.3', wet, mild sweet odor	35.0	ML		4
	100	Very Dark Grayish Brown (10YR 3/2) fine to medium sand with some silt, poorly sorted,	37.7			Sent t
		some Black staining, saturated, mild sweet odor Grey silt, low plasticity, wet, mild sweet odor Reddish Black fine to medium sand, 100% saturation with Red DNAPL, strong sweet odor	39.0 39.3	ML SM ML		W Ba
		Gray silt, low plasticity, Red DNAPL smeared on sides and Red staining, wet, strong sweet odor Black (5Y 2.5/1) fine to medium sand, poorly sorted, saturated, faint sweet odor	39.7 40.0 41.3	SM ML	+ +	Bore
	80	Very Dark Gray (5Y 3/1) sandy silt, low plasticity, saturated, mild sweet odor Black (5Y 2.5/1) fine to medium sand, poorly sorted, saturated, faint sweet odor Very Dark Greenish Gray (Grey1 3/1) silt, low plasticity, saturated, faint sweet odor	42.0	SM ML	+ + +	43.0 ft



SSC - Subsurface Clearance

PID - Photoionization Detector

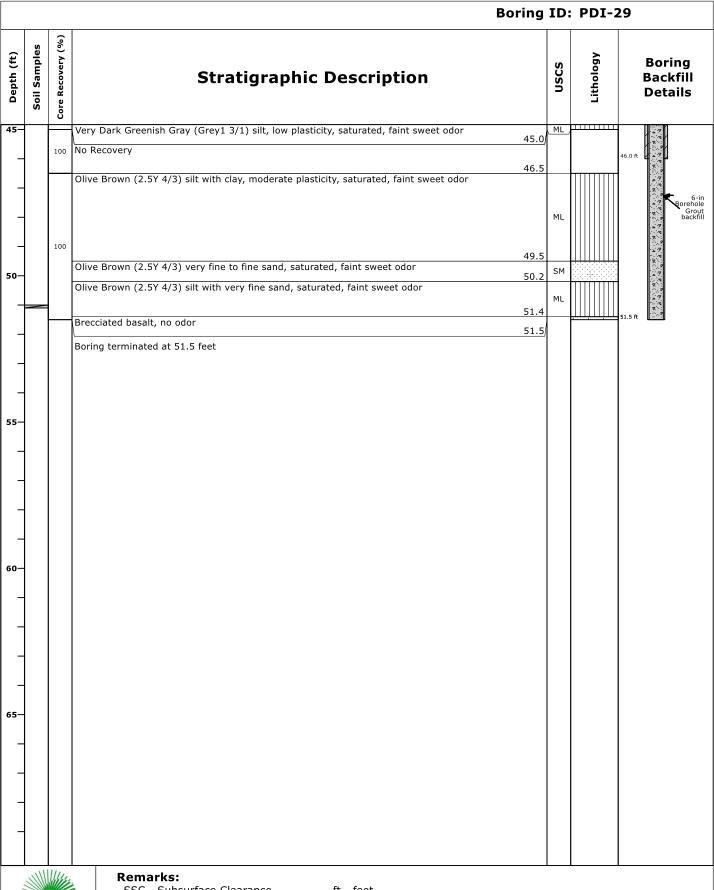
NA - not available or not applicable in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

Printed: 08-May-2025 Sheet: Page 2 of 3





SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

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Drilling Start Date: 21-Aug-2024 **Drilling End Date:** 22-Aug-2024 **Drilling Contractor:** Cascade Drilling

Chris Baker

Drilling Method: Sonic Rig Make/Model: TSI

GPRS SSC Contractor: SSC Method: Private Locate Not Applicable SSC Diam./Depth:

Driller:

Northing: 702462.710 7627593.020 Easting: Surface Elevation: 37.7 ft amsl Borehole Diameter: 10 in

Borehole Depth: 50.0 ft bgs Water Encountered: 33.5 ft bgs Logged By: David Stone

Reviewed By: Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		sosn	Lithology	Boring Backfill Details
			GROUND SURFACE				
0-			Gravel and pea gravel (<.25"-5"), angular, silty fine sand (30% matrix), geotextile line at 1.5', moist, no odor	2.4	GW		
_		110	Gray pea gravel and gravel, subangular, poorly sorted, silty fine sand matrix (20% matrix), wet, no odor	4.2			*
5- - - -		60	Dark Yellowish Brown (10YR 3/4) fine to medium sand with silt, poorly sorted, silt inclusion (.5"-6") from 6.1-7', woody debris with gravel from 5'-6', moist, no odor	10.6	SM		
_		100	Black (2.5Y 2.5/1) fine to medium sand with silt, poorly sorted, gravel inclusions (.25"-1"), silver staining/sheen from 12.4'-12.5', wet, mild sweet odor	12.5			
			Brown (10YR 4/3) silt with clay, trace fine sand, moderate plasticity, gravel to cobble inclusions (.25"-4"), wet, no odor	15.0	ML		
		90	Black (2.5Y 2.5/1) fine to medium sand with silt, poorly sorted, gravel inclusions (.25"-3"), silver sheen from 17.6'-17.9', asphalt at 17.5', wet, no odor	17.9	SW		
			Brown (10YR 4/3) silt with clay, trace fine sand, moderate plasticity, gravel to cobble inclusions (.25"-6"), Gray mottling at 12.2'-13.3', Brown fine to medium sand inclusion at 25', wet, no odor		ML		V V 10



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

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	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
_		110	Brown (10YR 4/3) silt with clay, trace fine sand, moderate plasticity, gravel to cobble inclusions (.25"-6"), Gray mottling at 12.2'-13.3', Brown fine to medium sand inclusion at 25', wet, no odor		ML		
		100	Brown (10YR 4/3) fine to medium sand with silt, poorly sorted, silt inclusions likely from drilling process, wet, no odor	25.7	SM	# + + + + + + + + + +	
4			Very Dark Grayish Brown (10YR 3/2) silt with fine to medium sand and gravel (.25"-1"),	30.0			▼ ▼ ▼ · · · · · · · · · · · · · · · · ·
			angular, low plasticity, wet, no odor	24.2	ML		Ø Ø . Ø Ø .
		80	Brown (10YR 4/3) fine to medium sand with silt, poorly sorted, moist, no odor	31.2		+ + + + + + + + + + + + + + + + + + +	
		_	Brown (10YR 4/3) fine to medium sand with silt, poorly sorted, saturated, no odor	33.5			P
1			Very Dark Brown (10YR 2/2) fine to medium sand with silt, poorly sorted, low plasticity,	33.8			Ø ∴ Ø ∴ Ø ∴ Ø ∴
1			Greenish Gray silt and clay inclusions, saturated, slight sweet odor	35.0/		++	▼
		100	Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, Brown silty fine to medium sand inclusions, Gray silt with fine sand inclusions, saturated, faint sweet odor	33.3	SM	+ + + +	\$ 1. P
4		100	Now David Carried Durant (10VD 2/2) fine to gradient and grade partial ribits during	38.0		+	38.0 ft 7 7 3
			Very Dark Grayish Brown (10YR 3/2) fine to medium sand, poorly sorted, silt inclusions from 38'-38.5', woody debris (0.5"), saturated, no odor	40.0		+ + + + + + + + + + + + + + + + + + +	V V
			Very Dark Brown (10YR 2/2) silt with clay, trace fine sand, low plasticity, saturated,	40.0	ML ,	+ +	
4			slight sweet odor	40.1			V V
		100	Black (2.5YR 2.5/1) fine to medium sand, trace silt, poorly sorted, woody debris, saturated, no odor		SM	+ + + + + + + + +	Bento
						ne t renik	Borel
_	1111	1111	Remarks:	ı		•	



NA - not available or not applicable in - inches

amsl - above mean sea level

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				Boring	ID:	PDI-3	30
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
45-			Black (2.5YR 2.5/1) fine to medium sand, trace silt, poorly sorted, woody debris, saturated, no odor		SM	+ + + + + + + + + + + + + + + + + + + +	45.0 ft 7 . v .
_			Very Dark Gray (5Y 3/1) silt with clay, trace fine sand, low plasticity, saturated, no odor	45.6/			7 V
_			Olive Gray (5Y 4/2) silt with clay, moderate plasticity, saturated, no odor	46.2/	ML		7
_		90					
_			Brecciated vesicular basalt (<.25"-3"), no odor	48.7		+ + + + + + + + + + + + + + + + + + +	
50-			Boring terminated at 50 feet	50.0		+ + + -	50.0 ft
-							
-							
-							
_							
55-							
-							
-							
-							
60-							
-							
_							
_							
65-							
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_							
			Remarks: SSC - Subsurface Clearance ft - feet PID - Photoionization Detector ppm - parts per million				



NA - not available or not applicable in - inches

ppm - parts per million amsl - above mean sea level

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Drilling Start Date: 20-Aug-2024 **Drilling End Date:** 21-Aug-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker **GPRS SSC Contractor: SSC Method:** Private Locate Not Applicable

SSC Diam./Depth:

Northing: 702426.190 Easting: 7627538.630 Surface Elevation: 36.6 ft amsl Borehole Diameter: 10 in

Borehole Depth: 55.5 ft bgs Water Encountered: 31.5 ft bgs Logged By: David Stone **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

一 L	Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
Dark Brown (10YR 3/3) fragmented silt (.25"-3"), silty fine sand matrix, subrounded gravel inclusions (<.25"-2"), brick at 7.8', Dark Brown mottling from 11'-12', moist, no odor Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, moist, no odor Very Dark Grayish Brown (10YR 3/2) silt with fine sand and clay, low plasticity, subrounded gravel inclusions (.25"-3"), moist, no odor Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, moist, no odor Very Dark Grayish Brown (10YR 3/2) silt with fine sand and clay, low plasticity, subrounded gravel inclusions (.25"-3"), moist, no odor Very Dark Grayish Brown (10YR 3/2) silt with fine sand and clay, low plasticity, subrounded gravel inclusions (.25"-3"), moist, no odor Very Dark Grayish Brown (10YR 3/2) silt with fine sand and clay, low plasticity, subrounded gravel inclusions (.25"-3"), moist, no odor 16.8 Very Dark Grayish Brown (10YR 3/2) silt with fine sand and clay, low plasticity, subrounded gravel inclusions (.25"-3"), moist, no odor 18.0 Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, silt with fine sand inclusions (.25"-3"), moist, no odor	-		120	Gravel (.25"-1"), poorly sorted, sub-angular, Gray Brown silty fine sand matrix, moist, no odor Very Dark Grayish Brown (10YR 3/2), silt and fine sand with gravel (.25"-1"), angular, competent, geotextile debris, moist, no odor Gravel and pea gravel (<.25"-3"), subangular, Gray Brown silty fine sand matrix, moist, no odor Dark Brown (10YR 3/3) silt with fine sand, gravel to cobble inclusions (.25"-5"), loose,	1.9	ML		
Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, moist, no odor 14.3 Gray (10YR 6/1) fine to medium sand with silt, poorly sorted, moist, no odor 15.0 Very Dark Grayish Brown (10YR 3/2) silt with fine sand and clay, low plasticity, subrounded gravel inclusions (.25"-3"), moist, no odor Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, moist, no odor Very Dark Grayish Brown (10YR 3/2) silt with fine sand and clay, low plasticity, subrounded gravel inclusions (.25"-3"), moist, no odor Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, silt with fine sand inclusions (.25"-3"), moist, no odor Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, silt with fine sand inclusions (.25"-4") 3" cobble at 19' moist, no odor	-		60	gravel inclusions (<.25"-2"), brick at 7.8', Dark Brown mottling from 11'-12', moist, no	7.5	ML		
Very Dark Grayish Brown (10YR 3/2) silt with fine sand and clay, low plasticity, subrounded gravel inclusions (.25"-3"), moist, no odor Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, moist, no odor Very Dark Grayish Brown (10YR 3/2) silt with fine sand and clay, low plasticity, subrounded gravel inclusions (.25"-3"), moist, no odor Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, silt with fine sand inclusions (.25"-4") 3" cohble at 19' moist, no odor	-		110	Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, moist, no odor		SM		
	15 - - -		100	Very Dark Grayish Brown (10YR 3/2) silt with fine sand and clay, low plasticity, subrounded gravel inclusions (.25"-3"), moist, no odor Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, moist, no odor Very Dark Grayish Brown (10YR 3/2) silt with fine sand and clay, low plasticity, subrounded gravel inclusions (.25"-3"), moist, no odor Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, silt	16.0 16.8/	SM ML		10-ine Gorehole Grout backfill



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector NA - not available or not applicable

ft - feet

ppm - parts per million amsl - above mean sea level

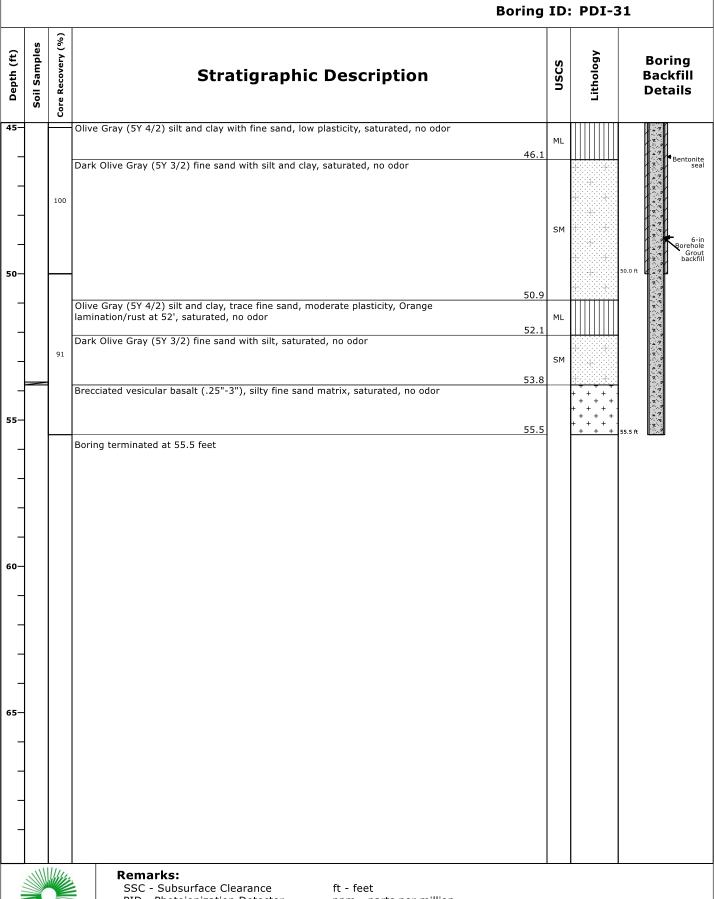
Printed: 08-May-2025 Sheet: Page 1 of 3

			E	Boring	ID:	PDI-3	31	
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details	ı
20— 25—		110	Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, silt with fine sand inclusions (.25"-4"), 3" cobble at 19', moist, no odor Brown (2.5YR 4/3) fine to medium sand with silt, poorly sorted, silt inclusions (.25"-4") from 20'-20.6', gravel (.25"-1"), moist, no odor Gray (10YR 6/1) fine to medium sand with silt, poorly sorted, moist, no odor Brown (7.5YR 4/3) fine to medium sand with silt, poorly sorted, moist, no odor Gray (10YR 6/1) fine to medium sand with silt, poorly sorted, moist, no odor Gray (10YR 6/1) fine to medium sand with silt, poorly sorted, moist, no odor Brown (7.5YR 4/3) fine to medium sand with silt, poorly sorted, moist, no odor Brown (7.5YR 4/3) fine to medium sand with silt, poorly sorted, moist, no odor Brown (7.5YR 4/3) fine to medium sand with silt, poorly sorted, saturated, no odor Very Dark Gray (10YR 3/1) fine to medium sand, silt (40-50%), competent from 32.8-33.4', Light Brown mottling, saturated, mild sweet odor	20.0 21.4 24.0 25.0 26.1 28.3	SM			
- 35- - - 40- -		100	Very Dark Gray (10YR 3/1) silt with fine sand and minor clay, low plasticity, bed of poorly sorted fine to medium sand with silt (40-50%) from 36'-36.4', Light Brown mottling, Olive and Brown mottling, saturated, mild sweet odor Black (2.5YR 2.5/1) fine to medium sand, trace silt, poorly sorted, wood debris at 39', saturated, faint sweet odor Black (2.5YR 2.5/1) fine to medium sand, trace silt, poorly sorted', saturated, no odor Very Dark Greenish Gray (GLEY1 3/5GY) silt and clay, trace fine sand, low plasticity, saturated, no odor Olive Gray (5Y 4/2) silt and clay with fine sand, low plasticity, saturated, no odor	35.4 39.0 40.0 42.6 43.5	ML SW		V Nore	onite seal 8-in 8-in 6-in 6-in 7-in 8-in 8-in 8-in 8-in 8-in 8-in 8-in 8
7/11			Remarks: SSC - Subsurface Clearance ft - feet PID - Photoionization Detector ppm - parts per million					



NA - not available or not applicable in - inches

amsl - above mean sea level

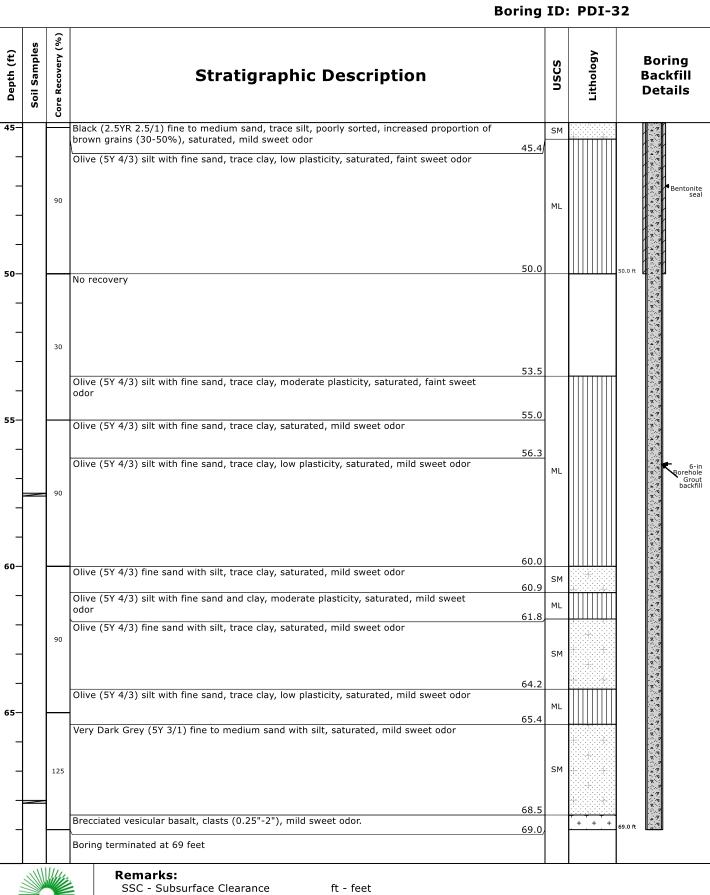


NA - not available or not applicable

in - inches

ppm - parts per million amsl - above mean sea level

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NA - not available or not applicable in - inches

ppm - parts per million

amsl - above mean sea level

ft bgs - feet below ground surface

Printed: 08-May-2025 Sheet: Page 3 of 3

Drilling Start Date: 28-Aug-2024 **Drilling End Date:** 28-Aug-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker **GPRS SSC Contractor: SSC Method:** Private Locate

SSC Diam./Depth: Not Applicable Northing: 702288.640 7627812.030 Easting: Surface Elevation: 35.8 ft amsl Borehole Diameter: 10 in **Borehole Depth:** 69.0 ft bgs Water Encountered: 28.5 ft bgs Logged By:

Reviewed By:

David Stone Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		SOSU	Lithology	Boring Backfill Details
			GROUND SURFACE				
0-			Brown (10YR 4/3) fine sand with silt and subangular gravel (0.25"-1.5"), poorly sorted,				P . v . v
_			dry, no odor	1.5	SM		4 b.
$ \ $		120	Gravel and cobble clasts (0.25"-4"), subangular, Brown silty fine sand matrix, dry, no odor	2.7	GW	0000	P
-			Dark Brown (10YR 3/3) silt with fine sand, cobble inclusions (3"-7"), low plasticity, debris (ACM and graphite), tan mottling from 3'-4', moist, no odor	2.7	ML		
				5.0			V . V
5-			Gravel (0.25"-2.5"), subangular	6.0	GW	0000	V V V
-		120	Dark Brown (10YR 3/3) silt with fine sand, trace clay, gravel inclusions (0.25"-2"), moderate plasticity, color change to (10YR 3/3) Very Dark Brown at 8.2', moist, no odor	8.4			
10- - -		120	Very Dark Brown (10YR 2/2) silt with fine sand, trace clay, gravel inclusions (0.25"-2"), cobble inclusions (3"-4") at 10.5' and 15', wet, no odor		ML		
15-			Brown (10YR 2/2) silt with fine sand, debris (concrete aggregate, brick, rebar), wet, faint asphalt-like odor	15.0			
- - -		120	Very Dark Brown (10YR 2/2) silt with fine sand, trace clay, moderate plasticity, gravel to cobble inclusions (0.25"-8"), glass at 19.5', wet, no odor	18.0			10-in P V V Greenble S V V Backfill
		11//	Pamarke:				7 7



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

ft - feet

ppm - parts per million amsl - above mean sea level

NA - not available or not applicable in - inches

Printed: 08-May-2025 Sheet: Page 1 of 3 ft bgs - feet below ground surface Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet
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ERM

				Boring	ID:	PDI-	32
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-			Very Dark Brown (10YR 2/2) silt with fine sand, trace clay, moderate plasticity, gravel to cobble inclusions (0.25"-8"), glass at 19.5', wet, no odor				▼ ▼ ▼ · · · · · · · · · · · · · · · · ·
_			Very Dark Brown (10YR 2/2) silt with fine sand, trace clay, gravel to cobble inclusions (0.5"-5"), graphite at 23', shiny silver staining (21.5'-23'), wet, tar-like odor	20.0			4
_		110	Dark Yellowish Brown (10YR 3/4) silt with fine sand, trace clay, moderate plasticity, gravel to pebble inclusions (0.25"-4"), wet, no odor	23.0	ML		
25—				25.8			P. 12 V
_			Grayish Brown (10YR 5/2) fine to medium sand, trace silt, poorly sorted, moist, sweet odor			+ + + + + + :	- 7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
_		100		28.5	SM	+ +	\$\times_P^*\\ \forall \times_P^*\\ \forall P^*\times_P^*\\ \forall P^*\tim
_			Grayish Brown (10YR 5/2) fine to medium sand, trace silt, poorly sorted, saturated, sweet odor	29.7		# # # # # # # # # # # # # # # # # # #	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
30-			Dark Grayish Brown (10YR 4/2) silt with fine sand, low plasticity, dark brown laminations, saturated, sweet odor	30.0	ML		7
-			Very Dark Brown (10YR 2/2) silt with fine sand, trace clay, moderate plasticity, gravel inclusions (0.25"-1"), brick debris at 30.4', saturated, tar-like odor	30.9		4	P
_		80	Gray (10YR 5/1) fine to medium sand, trace silt, poorly sorted, cobble at 33.5' (11"), saturated, sweet odor	33.5		+ + +	
_					SM	+ +	34.0 ft
35-				35.5		+ +	
_			Dark Grayish Brown (10YR 4/2) silt, low plasticity, brown laminations from 35.5'-35.8', yellow laminations from 35.8'-36.9', saturated, mild sweet odor		ML		- V V V V V V V V V V V V V V V V V V V
_		100	Dark Gray (10YR 4/1) fine to medium sand, trace silt, poorly sorted, coarse yellow grains, light yellow staining, saturated, mild sweet odor	36.9	SM	+ +	Bentonite seal
_			Dark Greyish Brown (10YR 4/2) silt with fine sand and clay, moderate plasticity, saturated, mild sweet odor	39.2	ML		7 V
40-			Black (2.5YR 2.5/1) fine to medium sand, trace silt, poorly sorted, saturated, mild sweet odor			+ +	8-in Borehole Grout backfill
_			Black (2.5YR 2.5/1) fine to medium sand, trace silt, poorly sorted, 5"x2" piece of metal at 43', saturated, faint sweet odor	40.0		+ +	7
_		90	Black (2.5YR 2.5/1) fine to medium sand, trace silt, poorly sorted, increased proportion of brown grains (30-50%), saturated, mild sweet odor	42.5	SM	+ + + + + + +	44.0 ft
10.0			Remarks: SSC - Subsurface Clearance ft - feet				
			PID - Photoionization Detector ppm - parts per million NA - not available or not applicable amsl - above mean sea level				

ERM

NA - not available or not applicable in - inches

Drilling Start Date: 29-Aug-2024 **Drilling End Date:** 29-Aug-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Sonic Rig Make/Model: TSI **Driller:** Chris Baker

SSC Contractor: Cascade/GPRS **SSC Method:** Air-knife/Private Locate SSC Diam./Depth: 10-in / 3-ft

Northing: 702264.910 Easting: 7627784.940 Surface Elevation: 37.6 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 81.0 ft bgs Water Encountered: 27.0 ft bgs Logged By: David Stone

Reviewed By: Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

חפאווו (ווי)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
) —			GROUND SURFACE Asphalt				7 ∴ N Å
			Grayish Brown fine to medium sand with gravel and cobbles (0.5"-1.5"), subangular, dry, no odor	0.2	SW		V V V V V V V V V V V V V V V V V V V
			Acabalt	3.0			Ø Ø Ø </td
		200	Asphalt Very Dark Grayish Brown (10YR 3/2) silt with fine sand, trace clay, gravel to cobble inclusions (0.25"-3.5"), loose from 3.3'-4.5', competent from 4.5'-5', gray mottling from	3.3/			P V V
	,		4.5'-5', moist, no odor	5.0			Ø
		80	Dark Gray (10YR 4/1) silt with fine sand and gravel (<0.25"-1.5"), poorly sorted, wet, no odor Dark Brown (10YR 3/3) silt with fine sand, trace clay, subrounded gravel inclusions (0.25"-1.5"), 4" basalt clast at 12.3', concrete aggregate at 13.3', competent, moist, no odor	6.7			
		120		13.7	ML		
			Dark Gray (10YR 4/1) silt with fine sand and subrounded gravel to cobble clasts (<0.25"-3"), poorly sorted, debris (tile, graphite, brick, and ACM), moist, faint sweet odor Dark Brown (10YR 3/3) silt with fine sand, trace clay, competent, subrounded gravel to cobble inclusions (0.25"-3"), rubber and glass debris at 19.5', moist, no odor	15.0			
		110					P V V III



ERM

SSC - Subsurface Clearance

PID - Photoionization Detector NA - not available or not applicable

ppm - parts per million amsl - above mean sea level

ft - feet

in - inches ft bgs - feet below ground surface Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet
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			I	Boring	ID:	PDI-	33
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
		100	Dark Brown (10YR 3/3) silt with fine sand, trace clay, competent, subrounded gravel to cobble inclusions (0.25"-3"), rubber and glass debris at 19.5', moist, no odor Very Dark Grayish Brown (10YR 3/2) silt with fine sand, trace clay and debris (ACM, graphite, rubber, glass, concrete, and tile), metal wire debris from 25'-25.9', gravel to pebble inclusions (0.25"-1.5"), 10" concrete gravel aggregate at 24', wet, tar-like odor from 20'-25', mild tar-like odor from 25'-25.9',	20.0	ML		
_		90	Very Dark Grayish Brown (10YR 3/2) fine to medium sand, trace silt, poorly sorted, wet, sweet odor Very Dark Grayish Brown (10YR 3/2) fine to medium sand, trace silt, poorly sorted, tile debris at 28', dark gray to black mottling from 27.5'-28', saturated, sweet odor Very Dark Grayish Brown (10YR 3/2) fine to medium sand, trace silt, poorly sorted, dark gray to black mottling, saturated, sweet odor	25.9 27.0 28.0	SM	# # # # # # # # # #	
-		100	Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt (30-40%), gravel inclusions (1"-2"), yellow-orange mottling from 31'-32.5', saturated, faint sweet odor Dark Gray (10YR 4/1) silt with fine to medium sand, loose, ACM and graphite at 33', light	30.0		+ + + + + + + + + + + + + + + + + + +	
_			yellow-tan staining from 33.5'-35', saturated, mild sweet odor	35.0	ML		
5- - -			Dark Gray (10YR 4/1) fine to coarse sand with silt, poorly sorted, 2.5' long chain at 35', wood debris at 36.5', coarse yellow grains, yellow staining, saturated, sweet odor	37.3	SM	+ + + + + +	36.0 ft
-		80	Very Dark Gray (10YR 3/1) silt with clay, trace fine sand, moderate plasticity, yellow staining 37.3'-37.9', saturated, sweet odor Black (2.5Y 2.5/1) fine to medium sand, trace silt, poorly sorted, dark red/brown 1" wide linear stain at 38.7', saturated, mild sweet odor	38.3	ML SM		Bentonit sea
o- -			No recovery, core was accidently disposed of	40.0			40.0 ft
		100					V Sorehol Grou backf
11//			Remarks: SSC - Subsurface Clearance ft - feet PID - Photoionization Detector ppm - parts per million				

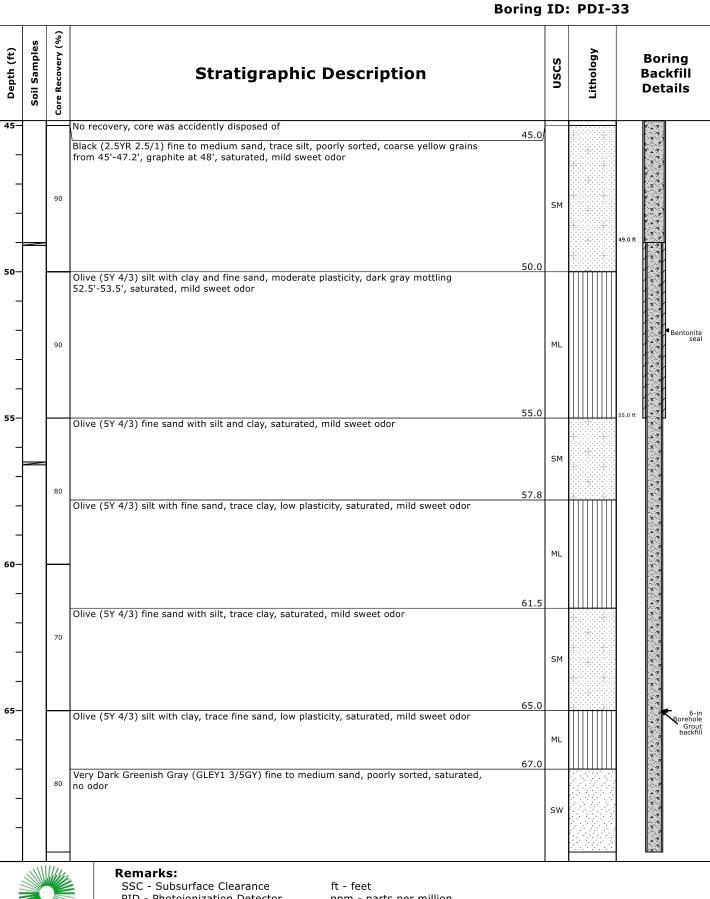


NA - not available or not applicable

in - inches

amsl - above mean sea level

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NA - not available or not applicable

in - inches

ppm - parts per million

amsl - above mean sea level

ft bgs - feet below ground surface

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				Boring	ID:	PDI-3	33
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
70- -			Very Dark Greenish Gray (GLEY1 3/5GY) fine to medium sand, poorly sorted, saturated, no odor		SW		\$ P. P. B. P
-		80	Olive (5Y 4/3) silt with clay, trace fine sand, moderate plasticity, orange mottling, saturated, faint sweet odor	72.2 73.6	ML		
- '5-			Olive (5Y 4/3) fine sand with silt, saturated, no odor Very Dark Greenish Gray (GLEY1 3/5GY) fine sand with silt, trace clay, saturated, no odor	75.0		+ +	V 7
-					SM	T + T + T + T + T + T + T + T + T + T +	P P P P P P
-		100	Brecciated vesicular basalt, clasts (0.25"-2"), 8" shiny metal piece at 78.6, no odor	78.5		+ + + + + +	
o-		100	Brecciated vesicular basalt, clasts (0.25"-2"), no odor	80.0 81.0		+ + + + + + + + + + + + + + + + + + +	. v . p . v . v . v . v . v . v . v . v
_			Boring terminated at 81 feet				
5-							
-00							
_							
11.			Remarks: SSC - Subsurface Clearance ft - feet PID - Photoionization Detector ppm - parts per million				

ERM

NA - not available or not applicable

in - inches

amsl - above mean sea level

Printed: 08-May-2025 Sheet: Page 4 of 4

Drilling Start Date: 29-Aug-2024 **Drilling End Date:** 30-Aug-2024

Drilling Contractor: Cascade Drilling **Drilling Method:** Sonic

Rig Make/Model: TSI **Driller:** Chris Baker **SSC Contractor:** Cascade/GPRS **SSC Method:** Air-knife/Private Locate SSC Diam./Depth: 10-in / 3-ft

Northing: 702291.310 Easting: 7627725.690 Surface Elevation: 36.4 ft amsl

Borehole Diameter: 10 in **Borehole Depth:** 62.0 ft bgs Water Encountered: 28.3 ft bgs Logged By: Avery Soplata

Avery Soplata, RG

Reviewed By:

Client:

Consolidated Total

Boring ID: PDI-34

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		SOSO	Lithology	Boring Backfill Details
			GROUND SURFACE				
0-			Gravel and concrete	0.5	GW	18088	<i>P</i> ∴ ∇ ∴ ∇ ∴ ∇ ∴ <i>P</i> ∴
1 4			Asphalt	0.8		P - Q : P - Q	V . V
1			Concrete			A A A A	V . V
1 1						A . A . A . A . A . A . A . A . A . A .	. ♥ . ♥ . ♥ . ♥
				3.0		P	A A
1 7			Grayish Brown silty sand, gravels and cobbles (.5"-1.5"), subangular to subrounded, ACM, dry, no odor		SM		7 V
				3.5			∀ ▼
			Asphalt and gravel	г о			
5-			Concrete aggregate	5.0		4 P 4 P	V V
				5.9		. Δ · Δ · Δ · Δ · Δ · Δ · Δ · Δ · Δ · Δ	V
			Very Dark Grayish Brown (10YR 3/2) fine sand with silt, gravel inclusions (.25"-2"), debris (graphite, concrete aggregate, ACM), moist, no odor				¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬
			Dark Grayish Brown (10YR 4/2) fine to medium sand with silt, poorly sorted, silt	7.0	SM		7
		110	inclusions (.25"-3"), moist, no odor				V V
ı 🚽			Dark Gravish Brown (10YR 4/2) silt with fine sand, subrounded gravel (<.25"-4"), poorly	8.1			Ø 7 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
			sorted, debris (concrete, graphite, ACM) from 9'-9.5', moist, no odor		MI		₹
			(40)(0.20)	9.5	ML		♥
10-			Very Dark Grayish Brown (10YR 3/2) silt with fine sand, gravel (.25"-2"), 50% debris (metal wire, graphite, ACM, Brick, concrete) moist, no odor				P
			Dark Grayish Brown (10YR 4/2) fine sand with silt, gravel (.25"-1.5"), silt inclusions,	10.0			∀
			debris (concrete, brick, ACM, graphite), 8" concrete block at 13', moist, no odor				▼
							~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~
		60			SM		A A
-						tiiiti	V
							V V
ı 🕇							V V
15-				15.0		44	V V
			Dark Grayish Brown (10YR 4/2) silt with fine sand, gravel (.25"-3"), debris (ACM, graphite, metal, rubber tubing, concrete aggregate (2"-6")), moist, no odor		ML	$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	A . A .
-			Debris (concrete aggregate coated with white powder from 16'-17.5'), debris (Gravel,	16.0			∵ ∇ ∇ ∇ ∇ ∇
			ACM, and white substance that is plastic to the touch and easily friable from 17.5'-18.4'),				7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 -
		110	debris (ACM from 18.4'-19.2'), debris (graphite, ACM coated with sparkly purple substance from 19.2'-20.2) with silty fine sand matrix and pea gravel, wet, no odor				ν
		110					10-in ∇ . ∇ . Borehole F . ∇ . Grout
							backfill
-							ν · · · · · · · · · · · · · · · · · · ·
							Ø □ □ □
$oldsymbol{oldsymbol{\sqcup}}$		11/66	Remarks:				



Remarks:

SSC - Subsurface Clearance

PID - Photoionization Detector

NA - not available or not applicable

in - inches

ft - feet

ppm - parts per million

amsl - above mean sea level

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				, i iiig	ID.	PDI-3)+ 1
Coil Complete	Soil Samples		Stratigraphic Description		NSCS	Lithology	Boring Backfill Details
) -	10	[(()	Debris (concrete aggregate coated with white powder from 16'-17.5'), debris (Gravel, ACM, and white substance that is plastic to the touch and easily friable from 17.5'-18.4'), debris (ACM from 18.4'-19.2'), debris (graphite, ACM coated with sparkly purple substance from 19.2'-20.2) with silty fine sand matrix and pea gravel, wet, no odor Dark Yellowish Brown (10YR 4/2) fine to medium sand, trace silt, poorly sorted, moist, faint sweet odor	20.2	SM	+ + + + + + + + + + + + + + + + + + +	
;- - -	9	0	Very Dark Gray (10YR 3/1) silt with clay and fine sand, interbedded gravel (.25"-3") and debris (graphite, concrete aggregate, glass, rubber, tile), competent from 25'-26.3', loose from 26.3'-28.3', moist, no odor	25.0	ML		
-) -	_	5	Very Dark Grayish Brown (10YR 3/2) fine to medium sand with silt, poorly sorted, Yellow staining from 28.7'-30' (30-70%), saturated, mild sweet odor Gray (5Y 6/1) fine to medium sand with silt, poorly sorted, Yellow staining from 30'-31.5' (100-50%), saturated, mild sweet odor	30.0		*	
_	9	(Gray (5Y 6/1) fine to medium sand, silt (20-40%), poorly sorted, Yellow staining (100-80%), saturated, sweet odor	35.0	SM		35.0 ft
	1:	.0 S	Very Dark Grayish Brown (10YR 3/2) silt with clay, moderate plasticity, Light Yellow/Tan staining from 36.8'-37.3', saturated, mild sweet odor Black (2.5Y 2.5/1) fine to medium sand with silt, poorly sorted, Dark Brown/Crimson globular stains from 38.3'-39.5', saturated, mild sweet odor	36.8	ML		Bentor
	9	0			SM		40.0 ft Great House

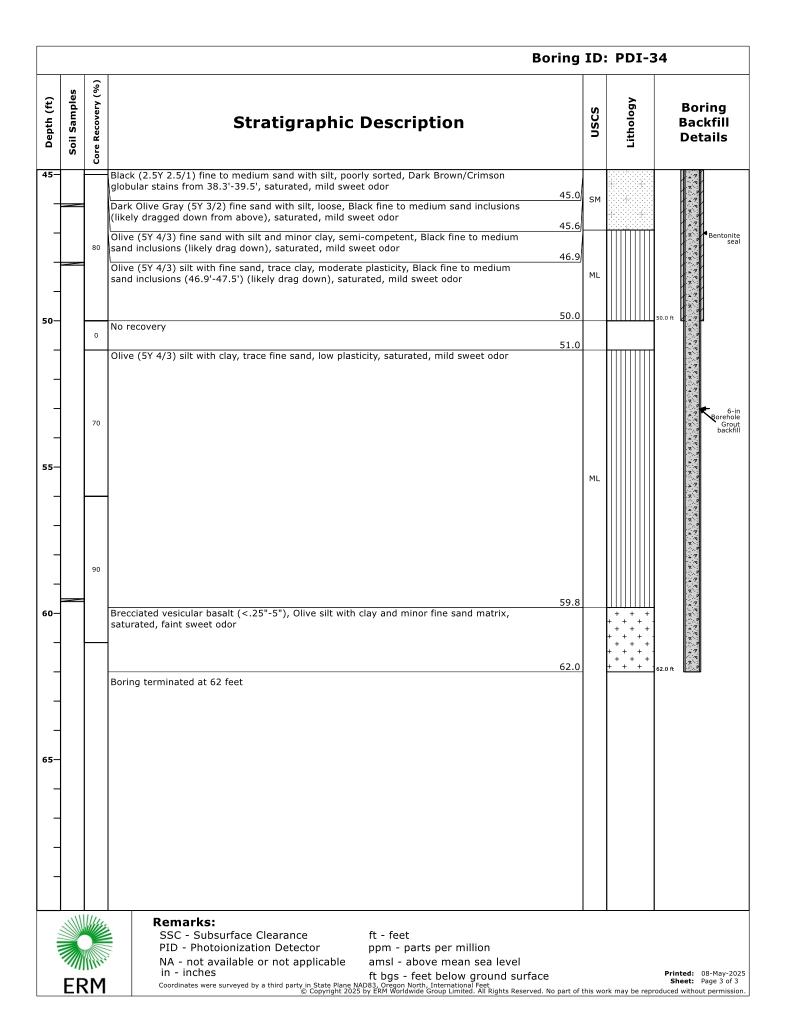


NA - not available or not applicable in - inches

ppm - parts per million

amsl - above mean sea level

Printed: 08-May-2025 Sheet: Page 2 of 3



Drilling Start Date: 07-Oct-2024
Drilling End Date: 07-Oct-2024
Drilling Contractor: Cascade Drilling
Drilling Method: Direct Push
Rig Make/Model: GeoProbe
Driller: Jake McKee
SSC Contractor: Cascade/GPRS
SSC Method: Air-knife/Private Locate

SSC Diam./Depth: 6-in / 2.5-ft

Northing: 702263.200
Easting: 7627720.850
Surface Elevation: 35.9 ft amsl
Borehole Diameter: 3.75 in
Borehole Depth: 55.0 ft bgs
Water Encountered: 35.0 ft bgs
Logged By: David Stone
Reviewed By: Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

330		u	У Берин. 0-ш / 2.5-и			
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
o- - -			GROUND SURFACE Not logged from 0-20' bgs			
5-						
10-						
- - -						
						Grout backfill
	1111	Uss.	Remarks:			3.75-in Borehole



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface Printed: 09-May-2025 Sheet: Page 1 of 3

			Bor	ing	ID:	PDI-3	35
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-			Not logged from 0-20' bgs	20.0		91.501.5	(- 4
-		60	Dark brown (10YR 3/3) sand, poorly sorted, moist, mild sweet odor, yellow staining (23.9'-25') grades from 20% to 60%	20.01			
25		90	Reddish gray (2.5YR 5/1) poorly sorted fine to medium sand, wet, mild sweet odor, silt inclusion (2.5") laminated silt with fine, low plasticity sand at 25.8 (gray-brown), at 29.4' (1") dark brown silt with fine sand, low plasticity, mild tar-like odor (likely slough). 32.5'-32.7' dark brown with sweeter odor.	25.0	SW		
35-		100		35.0			
-			Very dark gray (10YR 3/1) silt with clay and minor fine sand, moderate plasticity, mild sweet odor, saturated.	37.2	ML		Bentonite seal
- - 40-		100	Black (2.5Y 2.5/1), poorly sorted sand, fine-medium grained, sweet odor, woody debris at 38'.	40.0			
40-		100	Gray (5YR 5/1), poorly sorted, fine-medium sand, mild sweet odor, saturated, likely slough/heave from above.	43.9	SW		
		Wiji	Remarks:				



SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches

			Boring	ID:	PDI-3	35
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
45-			Black (2.5Y 2.5/1), poorly sorted fine-medium sand, saturated, mild sweet odor.			
- - -		100	Gray (5YR 5/1), poorly sorted fine-medium sand, saturated, mild sweet odor, likely slough from above.	sw		Grout backfill 2.25-in Borehole
_			49.3			V.
			Black (2.5Y 2.5/1), poorly sorted fine-medium sand, saturated, mild sweet odor.			:- x x ∴
50-			Dark olive gray (5YR 3/2) silt, trace fine sand, saturated, no odor.	ML		
-		100	52.4 Dark olive gray (5YR 3/2) silt with clay, trace fine sand, saturated, no odor.			V.
-			53.2			· 文 ·
_			Dark olive gray (5YR 3/2) sand, poorly sorted, fine-medium grained, trace silt, saturated, no odor. 55.0	SM	+ + + + + + + + + + + + + + + + + + +	
55-			Boring terminated at 55 feet			<u>1820</u>
-						
60-						
_						
-						
-						
65-						
-						
_						
-						
-						
			Remarks:			



SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches

Boring ID: PDI-36 Drilling Start Date: 07-Oct-2024 Northing: 702282.700

Drilling End Date: 07-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Tariq Barakat **SSC Contractor:** Cascade/GPRS SSC Method: Air-knife/Private Locate

6-in / 4-ft

SSC Diam./Depth:

Easting: 7627769.910 Surface Elevation: 37.3 ft amsl Borehole Diameter: 3.75 in **Borehole Depth:** 50.0 ft bgs Water Encountered: 27.5 ft bgs Logged By: David Stone **Reviewed By:** Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	SOSU	Lithology	Boring Backfill Details
0-			GROUND SURFACE			
			Not logged from 0-4' bgs			V
						V
-						V. P. V.
-						
_			4. Subangular gravel (1.5")) (GW	YO.YO	"V".
5-		120	Silt with sand and clay, dark brown-gray, subrounded gravel inclusions, brick, organic 4.		1	
١			matter debris, moist, mild tar-like odor 5.) ML		V P
			Brown (10YR 5/3) silt with clay, moist, mild tar-like odor, debris (brick, less than 0.25"-0.5") 5.	3		. ♥
-		84	Brown (2.5Y 3/2) clay with silt, low plasticity, angular gravel inclusion (0.25"-1"), moist, mild tar-like odor.			V P
_		04	Black (2.5Y 2.5/1) coarse grains (likely asphalt), tar-like odor.			∴ 4
_			Gray silt with clay, low plasticity, subangular gravel inclusions throughout (0.25-1"), gray grades to brown 7.6-7.8'] w		V
10-			8. Very dark grayish brown (10YR 3/2), poorly sorted fine-medium sand, moist, no odor.	5		7 . ∇ . ∇
			Dark yellowish brown (10YR 3/4) silt with fine sand, angular gravel inclusions (0.25-0.5") throughout, moist, no odor. 10.	ML		7 A V
			Dark yellowish brown (10YR 3/4) silt with fine sand, wet, no odor. 11.	1		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
		60	Debris (graphite rod pieces, ACM, brick) fine-medium sand matrix, moist, mild tar-like odor.			▼ . ▼ . ▼ .
=						7 V
-						V P
15-			15. Dark yellowish brown (10YR 3/4) silt with minor clay and fine sand, moist, mild tar-like) ML		▼
			odor.			▼ ▼
			Angular gravel (0.25-1") and graphite debris, poorly sorted fine-medium sand matrix, moist, mild sweet odor. 15.			. Φ V
		40	Dark grayish brown (10YR 4/2) silt with fine-medium sand and angular gravel (<0.25"), wet. mild tar-like odor.			~ 7 V · P
-			16. Very dark gray (10YR 3/1) silt with poorly sorted fine-medium sand, subangular gravel	1 ML		Grout backfill
\dashv			(0.25-1"), debris (ACM, graphite), mild sweet odor, wet.			
						A.



SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

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			В	Boring	ID	: PDI-3	86	
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Ba	ring ckfill tails
20-			Very dark gray (10YR 3/1) silt with poorly sorted fine-medium sand, subangular gravel (0.25-1"), debris (ACM, graphite), mild sweet odor, wet.	20.0	ML SM		3.75	5-in Borehole
-			Very dark grayish brown (10YR 3/2) sand with silt, minor clay, poorly sorted medium-fine grained, subangular gravel (0.25-0.5"), debris throughout (ACM, graphite), moist, no lodor.		ML		7 P	
		38	Very dark grayish brown (10YR 3/2) silt with poorly sorted fine-medium sand, wet, no odor, wood debris at 21.3', metal debris at 21.4'	21.2			ν	
_			Very dark gray (10YR 3/1) sand, poorly sorted, fine-medium grained, moist, no odor, red-brown stain (0.5") at 21.65' (70-90% saturation, likely from brick debris)	21.6	SW		7 V	
25-			Dark gray brown silt with fine-medium sand, gravel subangular (0.25-0.5"), brick debris throughout, moist, no odor.	25.0 25.5	ML		7 . 7 . 7 . 7 . 7 . 7 . 7 . 7 . 7 . 7 .	
_			Dark gray brown (10YR 3/2) sand, fine-medium grained, poorly sorted, wet, at 27-30' graded yellow staining (10%-80%), yellow laminations from 27.1-27.3', mild sweet odor				V P	
_		-₩-	Dark gray brown (10YR 3/2) sand, fine-medium grained, poorly sorted, saturated, at 27-30' graded yellow staining (10%-80%), mild sweet odor	27.5	SW		V V V V V V V V V V V V V V V V V V V	
30- -			Dark gray brown (10YR 3/2) sand, fine-medium grained, poorly sorted, 100% saturated for staining, mild sweet odor, saturated	30.0			V V V V V V V V V V V V V V V V V V V	
-		100	Gray (10YR 5/1) silt with fine sand, low plasticity, likely stained from above, saturated.	32.5	ML		V V	
-			Gray (10YR 5/1), poorly sorted fine-medium sand, saturated, sweet odor, likely stained.	32.7	SW		V Q	
-			Gray (10YR 5/1) silt with clay and minor fine sand, saturated, sweet odor, likely stained from above.	33.4	IVIL		V P	
35-			Reddish gray (2.5YR 5/1) poorly sorted fine-medium sand, saturated, sweet odor.	33.7 35.0	CW/		□ V P	
_			Reddish gray (2.5YR 5/1) poorly sorted fine-medium sand, saturated, sweet odor, trace subangular gravel (0.25-0.5"), yellow staining 90-100%		300		V 1	
-		100	Dark grayish brown (10YR 4/2) silt with clay and minor fine sand, low plasticity, sweet odor, saturated, 25% yellow staining.	37.0	ML			
_			Reddish gray (2.5YR 5/1) sand, poorly sorted, fine-medium grained, 80% yellow staining throughout, saturated, sweet odor.	37.8 <i>)</i> 38.5	SW ML		В	entonite seal
40-			Dark gray (10YR 4/1) silt with clay and minor fine sand, moderate plasticity, saturated, mild sweet odor.	39.3	SW			
_			Black (2.5Y 2.5/1) poorly sorted fine-medium sand with trace silt, saturated, mild sweet odor.	40.0	GW		. ▼ . ▼ 	
			Gray subangular gravel (0.25-0.5"), likely slough from above.	41.1	SM		₽ ₹	
-		100	Gray (5YR 5/1) poorly sorted fine-medium sand with silt, saturated, sweet odor, likely slough/heave from above.	42.5/	314		▼ A	
_			Black (2.5Y 2.5/1) poorly sorted fine-medium sand, saturated, mild sweet odor.		SW		P	
		Viji	Remarks:		i .	1		
// 1			SSC - Subsurface Clearance ft - feet Coordinates were surveyed by a third party in State Plane NAD83, Oreg NA - not available or not applicable amsl - above mean sea level	on North	n, In	ternationa	al Feet	
	ER	RM	in - inches ft bgs - feet below ground surfar © Copyright 2025 by ERM Worldwide Group Limited. All Rights Reserver		this wo	ork may be repr	Sheet:	09-May-2025 Page 2 of 3 out permission.

				Boring	ID:	PDI-3	36
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
45— — —		100	Black (2.5Y 2.5/1) poorly sorted fine-medium sand, saturated, mild sweet odor. Black (2.5Y 2.5/1) poorly sorted fine-medium sand, saturated, mild sweet odor, yellow staining from 45.8-46.4', 0.5" gravel inclusions at 45.5', staining and gravel are likely slough from above. Gray (5YR 5/1) silt with clay, trace fine sand, low plasticity, saturated, no odor.	45.0 <i>j</i>	SW		Grout backfill 2.25-in Borehole
50-			Boring terminated at 50 feet	30.0			USSAI
55-							
60-							
65— — —							
	11111	11//	Remarks:				



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches

Drilling Start Date: 08-Oct-2024 Drilling End Date: 08-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Tariq Barakat SSC Contractor: Cascade/GPRS SSC Method: Air-knife/Private Locate SSC Diam./Depth: 6-in / 2-ft

Northing: 702243.370 Easting: 7627803.300 Surface Elevation: 37.7 ft amsl Borehole Diameter: 3.75 in **Borehole Depth:** 42.5 ft bgs Water Encountered: 30.0 ft bgs Logged By: David Stone **Reviewed By:** Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE			
			Not logged from 0-20' bgs			₩
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						, P
5-						V
_						7 P
-						7 √ √ √ √ √ √ √ √ √ √ √ √ √ √ √ √ √ √ √
-						7
10-						, A
-						V P
-						V 7
-						3 75-in Borehole Grout backfill
-						7 V
15-						∵
-						♥`.
-						V P
-						, v.
-						V V
		11//	Domanico.			्रिक



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

			ı	Boring	ID	: PDI-3	37
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20- - - - 25- - - -		50	Not logged from 0-20' bgs Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, moist, mild sweet odor, ACM and brick debris throughout Subangular gravel (<0.25-1"), debris (graphite, ACM, brick) in dark gray-brown silt with fine sand, wet, no odor. Purple-blue subangular gravel (<0.25-0.5"), silty fine sand matrix, wet, no odor. Dark brown (10YR 3/3) silt with clay, trace fine sand, low plasticity, moist, no odor. Subrounded gravel (<0.25-1") dark gray-brown silt matrix, purple pea gravel throughout. Dark brown (10YR 3/3) fine sand with silt, wet, mild sweet odor. Very dark brown (10YR 2/2) poorly sorted fine-medium sand with silt, wet, sweet odor, sheen 27.3-27.7', silt fraction decreases from 27.3-28.6' (25%).	20.0/ 20.2/ 21.8/ 25.0/ 26.1/ 26.7/ 27.3/	GW ML GW		
35-		100	Very dark gray (10YR 3/1) silt with clay, moderate plasticity, mild sweet odor, saturated. Very dark gray (10YR 3/1) poorly sorted fine-medium sand with silt, saturated, sweet odor. Very dark gray (10YR 3/1) poorly sorted fine-medium sand with silt, saturated, sweet odor. Very dark gray (10YR 3/1) poorly sorted fine-medium sand with silt, saturated, sweet odor, contains slough from above.	33.3 34.1 35.0	ML		Grout backfill 2.25-in Borehole
 40 		200	Very dark grayish brown (10YR 3/2) silt with clay, low plasticity, saturated, mild sweet odor, yellow grades from 10-60% (39.3-39.6') Black (2.5Y 2.5/1) sand, poorly sorted, fine-medium grained with trace silt, saturated, mild sweet odor. 2.8' of slough (same as 38.7-39.6'), Dark olive brown (2.5Y 3/3) poorly sorted fine-medium sand with silt, saturated, mild sweet odor. Boring terminated at 42.5 feet	38.7 39.6, 40.0	ML SW		
	EF	RM	Remarks: SSC - Subsurface Clearance ft - feet Coordinates were surveyed by a third party in State Plane NAD83, Ore NA - not available or not applicable amsl - above mean sea level in - inches ft bgs - feet below ground surfa	ace			Printed: 09-May-2025 Sheet: Page 2 of 2

Drilling Start Date: 28-Oct-2024 **Drilling End Date:** 28-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Tariq Barakat SSC Contractor: **GPRS**

SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702257.090 Easting: 7627794.600 Surface Elevation: 37.6 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 50.0 ft bgs Water Encountered: 26.7 ft bgs

Logged By: Michael Sell **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

\square	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE			
			Not logged from 0-20' bgs			₩.
						V.
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						v.
5-						
						W.
						V S S V
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-						
10-						(A)
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						m
15-						X.
						V.
						V
						**
		11/4.				



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

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				Boring	ID:	PDI-3	87a	
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Bac	ring kfill ails
		56	Not logged from 0-20' bgs Dark gray (10YR 4/1) silt with clay and trace fine sand and gravel, debris (brick, ACM). Hard, yellow-stained interval at 22-22.3'. Graphite rod at 22.2'. Oil staining, wet, tar-like odor at 21.3-25'. No odor 20-21.3'.	20.0	ML			
25— — —			Dark grayish brown (10YR 4/2) poorly sorted fine-medium sand with trace silt, mild sweet odor, wet, silty clay lens (0.5") at 25.4' Brown (10YR 4/3) silt with clay and trace fine sand, low plasticity, subangular gravel inclusions throughout (0.5"), wet, mild sweet odor. Dark grayish brown (10YR 4/2) poorly sorted fine-medium sand with trace silt, saturated, mild sweet odor, faint sheen throughout. Very dark grayish brown (10YR 3/2) fine sand with silt, saturated, sweet odor, light sheen throughout.	25.0 26.3 26.7 27.3 27.8	SW ML SW			in Borehole rout backfill
30-		92	Very dark gray (10YR 3/1) poorly sorted fine-medium sand with silt, saturated, sweet odor, heavy sheen throughout. Very dark gray (10YR 3/1) poorly sorted fine-medium sand with silt, saturated, sweet odor, sheen throughout at 31.9-33' Dark gray (10YR 4/1) clay with silt and trace fine sand, moderate plasticity, saturated, sulfurous odor, yellow staining throughout (50%)	30.0	SM	+ + + + + + + + + + + + + + + + + + + +		
35— — —		94	Very dark gray (10YR 3/1) poorly sorted fine-medium sand with trace silt. Yellow grains dispersed throughout (10%), saturated, mild sweet odor	34.3	SW		ছাই কো জিব কৈ বিশ্ব হৈ কো কো জাই কো জাই হৈ জাই বিশ্ব হৈ জাই কো জাই কো জাই কো জাই কো জাই হৈ জাই বিশ্ব হৈ জাই বি	
40— — — —		92	Dark grayish brown (10YR 4/2) silt with clay and trace fine sand, low plasticity, wet, mild sweet odor, yellow staining 39.1-39.55' grades from 50%-0%. Sand lens (0.5" thick) at 39.15' Black (2.5Y 2.5/1) poorly sorted fine-medium sand, saturated, no odor.	40.0/	SW			
	EF	RM	Remarks: SSC - Subsurface Clearance ft - feet Coordinates were surveyed by a third party in State Plane NAD83, Ore NA - not available or not applicable amsl - above mean sea level in - inches ft bgs - feet below ground surfa	ace			Printed: (09-May-2025 Page 2 of 3 t permission.

			Boring	ID:	PDI-3	37a
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
45— — — — — — — — — — — — — — — — —			Black (2.5Y 2.5/1) poorly sorted fine-medium sand, saturated, no odor. 48.8 Olive gray (5Y 4/2) clay with silt and trace fine sand, wet, no odor, low plasticity. Olive gray (5Y 4/2) fine sand with silt, wet, no odor. 50.0, Boring terminated at 50 feet	SW CL SM		
55-						
65-						
		144	Remarks:			



SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches

Drilling Start Date: 08-Oct-2024
Drilling End Date: 08-Oct-2024
Drilling Contractor: Cascade Drilling
Drilling Method: Direct Push
Rig Make/Model: GeoProbe
Driller: Jake McKee
SSC Contractor: Cascade/GPRS
SSC Method: Air-knife/Private Locate

6-in / 1-ft

SSC Diam./Depth:

Northing: 702215.290
Easting: 7627824.670
Surface Elevation: 38.4 ft amsl
Borehole Diameter: 3.75 in
Borehole Depth: 45.0 ft bgs
Water Encountered: 32.0 ft bgs
Logged By: David Stone
Reviewed By: Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

			/			
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE Not logged from 0-20' bgs			
_						ि - पूर्व - प्राप्त - प्राप्त - प्राप्त
-						\[\frac{\pi}{\pi}\] \[\frac{\pi}{\pi}\]
_						√ ¬ ¬ ¬ ¬ ¬ ¬ ¬ ¬ ¬ ¬ ¬ ¬ ¬ ¬ ¬ ¬ ¬ ¬ ¬
						-
5-						V
-						
-						V 7
-						∇
_						7
10-						
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						3,75-in Borehole Grout backfill
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Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

Printed: 09-May-2025 Sheet: Page 1 of 2

			E	Boring	ID	: PDI-3	88
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-			Not logged from 0-20' bgs	20.0		00000	_\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
			Subangular gravel (0.25-1"), debris (graphite and ACM throughout), 21.5' white crystalline material easily pulverized, at 20.2' debris coated in oily tar-like fluid, moist, tar-like odor.		GW		\(\sigma \)
		54	Dark brown (10YR 3/3) fine sand with silt, grading to silt with fine sand, wet, mild sweet odor, brick debris at 22.4'	21.8		+ +	4 9 4 9 5 9 6 9 6 9 6 9
				25.0	SM	+ +	P
25-			Very dark gray (10YR 3/1) silt with fine sand, trace clay, moderate plasticity, moist, no	2310	ML		
-			odor, likely slough from above. Angular gravel (<0.25-0.5"), debris throughout (tile and brick), very dark gray silt with	25.6	GW	0000	
			fine sand matrix, moist, no odor, likely slough from above.	26.4			
-		84	Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, wet, mild sweet odor 26.4-28', sweet odor 28-30', brown mottling 26.4-27.3', light yellow staining <20% from 28-30', dispersed laminations throughout.	20.4	SW		
30-				30.0			
-			Angular gravel (<0.25-0.5"), debris (tile, brick, graphite), at 30.8' white crystalline material easily pulverized, moist, no odor, likely slough.	31.2	GW		V
			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, trace silt, wet, sweet odor, yellow staining from 31.2-31.7' 20-100% saturation				R. S.
-		100	Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, trace silt, saturated, sweet odor, at 32.8' fine sand with silt bed (2"), light yellow staining from 33.5-33.8' (<20%), light purple staining from 33.9-34.5', light yellow staining from 34.5-34.6'	32.0	sw		
			Very dark gray (10YR 3/1) silt with clay, trace fine sand, low plasticity, wet, sweet odor.	34.6	ML		
35-	٠		Very dark brown (10YR 2/2) poorly sorted fine-medium sand, saturated, sweet odor, light yellow staining 35-36.8', 1" yellow globules at 35.1' and 35.4'	35.0			Grout backfill 2.25-in Borehole
-		100		39.0	sw		
40-			Very dark gray (10YR 3/1) silt with clay, minor fine sand, moderate plasticity, saturated, sweet odor, yellow mottling throughout.	40.0	ML		V
			Very dark gray (10YR 3/1) poorly sorted fine-medium sand, saturated, mild sweet odor.	44.6	sw		
			Dark gray (10YR 4/1) silt with trace clay, low plasticity, saturated, mild sweet odor.	41.6	ML	 	v
		100	Very dark gray (10YR 3/1) poorly sorted fine-medium sand, saturated, sweet odor.	41.8			v. ∴
			Dark gray (10YR 4/1) poorly sorted fine-medium sand, saturated, sweet odor.	42.9	SW		
	.,,,,,,	1111	Boring terminated at 45 feet Remarks:		l	1	
			SSC - Subsurface Clearance ft - feet Coordinates were surveyed by a third party in State Plane NAD83, Oreg NA - not available or not applicable amsl - above mean sea level	gon North	n, In	ternationa	al Feet
	ER	RM	in - inches The standard or not applicable arms - above mean sea level		this wo	ork may be repr	Printed: 09-May-2025 Sheet: Page 2 of 2 oduced without permission.

Drilling Start Date: 14-Oct-2024 Northing: 702254.170

Drilling End Date: 14-Oct-2024
Drilling Contractor: Cascade Drilling
Drilling Method: Direct Push
Rig Make/Model: GeoProbe
Driller: Jake McKee
SSC Contractor: GPRS

SSC Contractor: GPRS
SSC Method: Private Locate
SSC Diam./Depth: Not Applicable

Northing: 702254.170
Easting: 7627839.550
Surface Elevation: 35.9 ft amsl
Borehole Diameter: 2.25 in
Borehole Depth: 71.0 ft bgs
Water Encountered: 26.6 ft bgs

Logged By: Michael Sell
Reviewed By: Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-		GROUND SURFACE Not logged from 0-20' bgs	-		
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Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

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			Boring	ID:	PDI-3	19
Depth (ft)	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-		Not logged from 0-20' bgs	20.0			- V
-	68	Very dark gray (10YR 3/1) silt with clay, gravel throughout (<0.25-1"), moderate plasticity, wet, no odor. Organic matter at 21.2' \pm 1". Rubble, debris (brick) at 23.1'	25.0	ML		
25-		Dark gray (10YR 4/1) poorly sorted fine-medium sand, trace silt, wet, mild sweet odor.	25.8	sw		
-		Very dark gray (10YR 3/1) silt with fine-medium sand, trace clay, wet, mild sweet odor, low	25.6	ML SW		v.
_	60	plasticity. Dark gray (10YR 4/1) sand, poorly sorted, fine-medium, trace silt, trace gravel (0.25"), wood debris at 26.3' (0.25" thick), sweet odor, wet.	26.2	ML		
-		Very dark gray (10YR 3/1) silt with fine sand, trace clay, low plasticity, wet, sweet odor.	26.5 26.6			· 및 - : - :
_		Dark gray (10YR 4/1) poorly sorted fine-medium sand, trace silt, saturated, sweet odor.	20.0			\$1 \$1
30-		Dark gray (10YR 4/1) poorly sorted fine-medium sand, trace silt, saturated, mild sweet odor, yellow staining (50%) at 32.8'	30.0	SW		
_	93	Dark gray (10YR 4/1) silt with fine sand, trace clay, low plasticity, trace fine sand, yellow	32.9			v.
_		staining 32.9-33.1' (20%), saturated, mild sweet odor. Very dark grayish brown (2.5Y 3/2) poorly sorted fine-medium sand, trace silt, mild sweet	34.2	ML		
35-		odor, wet.	35.0/			
_		Very dark gray (10YR 3/1) poorly sorted fine-medium sand with trace yellow silt, saturated, mild sweet odor.		SW		2.25-in Borehole Grout backfill
-			37.3			
_	88	Dark gray (10YR 4/1) silt with clay, trace fine sand, wet, moderate plasticity, faint sweet odor, sandy silt lens 1" inch thick at 37.45'	38.7	ML		**************************************
40		Black (2.5Y 2.5/1) Poorly sorted fine-medium sand, saturated, mild sweet odor.	40.0			
40-		Very dark gray (2.5Y 3/1) poorly sorted fine-med sand with trace silt, saturated, faint sweet odor, silt lens 1" thick at 41.95'				000 A 000 V 000 00
-	84			SW		V
	WIE	Remarks:				



SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches

		Bori	ng	ID:	PDI-3	39
Depth (ft)	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
45-		Very dark gray (2.5Y 3/1) poorly sorted fine-med sand with trace silt, saturated, faint sweet odor, silt lens 1" thick at 41.95' Very dark gray (2.5Y 3/1) poorly sorted fine-med sand with trace silt, saturated, no odor	5.0	SW		W.
50-	84	Dark grayish brown (10YR 4/2) silt with fine sand and trace clay, low plasticity, no odor, moist.	8.3	ML SP		V.
_	100	Dark grayish brown (2.5Y 4/2) silt with clay, trace fine sand, wet, no odor, moderate plasticity.	0.6			
55-		Dark grayish brown (2.5Y 4/2) silt with clay, trace fine sand, no odor, moderate plasticity, saturated. Dark grayish brown (2.5Y 4/2) silt with clay, trace fine sand, wet, no odor, moderate plasticity.	3.2 54.3 55.4	ML		
-	100	Dark grayish brown (2.5Y 4/2) silt with sand (40%), low plasticity, saturated, no odor. Dark grayish brown (2.5Y 4/2) fine sand with silt, saturated, no odor.	57.0			(A) (B) (B) (C) (B) (C) (C) (C) (C) (C) (C) (C)
60-		Dark grayish brown (2.5Y 4/2) fine sand with silt (40%), saturated, no odor.	59.1		+ + + + + + + + + + + + + + + + + + + +	40 80 10 10 10 10 10 10 10 10 10 10 10 10 10
_	63			SM	+ + + + + +	(1) (1) (1) (2) (2) (3) (4) (4) (4) (4)
65-		Very dark brown (10YR 2/2) fine sand with silt, wet, no odor.	55.0		+ + + + + + + + + + + + + + + + + + +	
 	100	Very dark brown (10YR 2/2) fine sand with silt, no odor, saturated.	66.4 67.1		+ + + + + +	
_				ML		
		Reming terminated at 71 feet Remarks: SSC - Subsurface Clearance ft - feet				

SSC - Subsurface Clearance

ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet NA - not available or not applicable amsl - above mean sea level

in - inches

Avery Soplata, RG

Drilling Start Date: 14-Oct-2024 Drilling End Date: 14-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Tariq Barakat **SSC Contractor: GPRS**

SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702289.020 Easting: 7627830.190 Surface Elevation: 34.6 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 73.0 ft bgs Water Encountered: 26.5 ft bgs Logged By: Michael Sell

Reviewed By:

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-		GROUND SURFACE			
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SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

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			Boring	ID	: PDI-4	10
Depth (ft)	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-		Not logged from 0-20' bgs	20.0/			- I
- - -	60	Very dark gray (10YR 3/1) silt with clay, trace fine sand, gravel inclusions throughout (0.25-1"), faint sweet odor, wet, dark brown mottling throughout, low plasticity	20.9	ML		
25-		Brown (10YR 4/3) silt with clay, trace fine sand, gravel inclusions throughout (<0.25-0.75"), moderate plasticity, no odor, wet, dark gray mottling throughout, organic material at 26'	25.0			(A) ₩ (A)
	_	Very dark brown (10YR 2/2) poorly sorted fine-medium sand with trace silt, wet, mild sweet odor.	26.2	sw		
-	68.2	L Very dark brown (10YR 2/2) poorly sorted fine-medium sand with trace silt, mild sweet odor,	26.5			V.
_		saturated. Gray (5YR 5/1) poorly sorted fine-medium sand, saturated, mild sweet odor.	26.7	ML		v
_		Dark reddish gray (5YR 4/2) silt with fine sand, wet, mild sweet odor, light gray mottling	27.0			
		throughout.	28.3	SW		. v
30-		Dark reddish gray (5YR 4/2) poorly sorted fine-medium sand, sweet odor, saturated.	30.0	300		\(\frac{1}{2}\).
_		Gray (5Y 5/1) poorly sorted fine-medium sand, mild sweet odor, saturated.	31.2			. . .
_		Dark gray (10YR 4/1) poorly sorted fine-medium sand with silt (30-40% silt), light brown staining throughout, saturated, sweet odor.	31.7	SM		
_	88	Dark grayish brown (10YR 4/2) silt with fine sand, trace clay, low plasticity, saturated, sweet odor, yellow staining (30%) from 32-32.45'	33.3	ML		\bar{\alpha}{\sqrt{\alpha}}
_		Dark grayish brown (10YR 4/2) silt with fine to medium sand and trace clay, saturated, low plasticity, mild sweet odor.	33.6			₩
35-		Very dark gray (10YR 3/1) poorly sorted fine-medium sand, trace silt, saturated, mild sweet odor, yellow staining (1" at 33.6'), wood debris at 34.2' (0.5"), yellow coarse grains throughout, fraction increases towards bottom (10-30%)	35.0	SW		C
-		Gray (10YR 5/1) poorly sorted fine-medium sand, saturated, mild sweet odor.				×
_	90	Very dark gray (10YR 3/1) silt with fine-medium sand, trace clay, brownish staining with fine wood debris 36.8-37.3', saturated, low plasticity, yellow staining 37.3-37.75' (50%), faint sweet odor.	36.8	ML		2,25-in Borehole Grout backfill
		Very dark gray (2.5Y 3/1) poorly sorted fine-medium sand with trace silt, saturated, faint	38.6			187 187
_		sweet odor. Yellow grains dispersed throughout (10%), brown stain at 38.55', wood debris at 38.65'	40.0			
- - -	94	Very dark gray (2.5Y 3/1) poorly sorted fine-medium sand, saturated, mild sweet odor, 43.9' silt fraction increases to ~20-30%		SW		
	WIE	Remarks:				



Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

ş 🐧 Stratigraphic Description 💆 🢆 Back		Boring	ID:	PDI-4	10
Very dark gray (2.5Y 3/1) poorly sorted fine-medium sand, saturated, mild sweet odor, 43.9' slit fraction increases to ~22-30% Very dark brown (10YR 2/2) poorly sorted fine-medium sand, saturated, no odor Sw Dark grayish brown (10YR 4/2) fine sand with trace silt, moist, no odor, clay bed 0.5' at 48.9', moderate plasticity Olive brown (2.5Y 4/3) silt with clay, trace fine sand, low plasticity, no odor, saturated Olive brown (2.5Y 4/3) fine sand with silt, saturated, no odor Olive brown (2.5Y 4/3) silt with clay and trace fine sand, low plasticity, no odor, saturated, one odor, Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, saturated. Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, saturated, 0.75' rounded gravel inclusion at 58.3' Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, saturated, 0.75' rounded gravel inclusion at 58.3' Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, wet. Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, wet. Very dark gray (10YR 3/1) fine sand with silt (40%), saturated, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, no plasticity, wet, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, no plasticity, wet, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, no plasticity, wet, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, no plasticity, wet, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, moderate plasticity, wet, no odor. Olive brown (2.5Y 4/3) fine sand with trace silt, saturated, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, moderate plasticity, wet, no odor. Olive brown (2.5Y 4/3) fine sand with trace silt, saturated, no odor.	Depth (ft) Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
Dark graysh brown (10YR 4/2) fine sand with trace silt, moist, no odor, clay bed 0.5" at 48.9', moderate plasticity 50.0 Olive brown (2.5Y 4/3) silt with clay, trace fine sand, low plasticity, no odor, saturated ML Olive brown (2.5Y 4/3) fine sand with silt, saturated, no odor SM Olive brown (2.5Y 4/3) silt with clay and trace fine sand, low plasticity, saturated, no odor. Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, saturated. Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, saturated. Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, saturated, 0.75" rounded gravel inclusion at 58.3' Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, saturated, 0.75" rounded gravel inclusion at 58.3' Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, wet. SM Very dark gray (10YR 3/1) fine sand with silt (40%), saturated, no odor. SM Very dark gray (10YR 3/1) silt with clay and fine sand, no plasticity, wet, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, moderate plasticity, wet, no odor. Olive brown (2.5Y 4/3) fine sand with silt (40%), saturated, no odor. SM SM SA SA Olive brown (2.5Y 4/3) silt with clay and fine sand, no plasticity, wet, no odor. Olive brown (2.5Y 4/3) fine sand with silt (40%), saturated, no odor. Olive brown (2.5Y 4/3) fine sand with silt (40%), saturated, no odor. Olive brown (2.5Y 4/3) fine sand with silt (40%), saturated, no odor. Olive brown (2.5Y 4/3) fine sand with silt (40%), saturated, no odor. Olive brown (2.5Y 4/3) fine sand with trace silt, saturated, no odor.	45	silt fraction increases to ~20-30%	SW		
Olive brown (2.5Y 4/3) fine sand with silt, saturated, no odor SM S1.3 Olive brown (2.5Y 4/3) silt with clay and trace fine sand, low plasticity, saturated, no odor. Olive brown (2.5Y 4/3) fine sand with silt, saturated, no odor S5.0 Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, saturated. Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, wet. Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, saturated, 0.75" rounded gravel inclusion at 58.3' Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, wet. Very dark gray (10YR 3/1) fine sand with silt (40%), saturated, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, no plasticity, wet, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, moderate plasticity, wet, no odor. Olive brown (2.5Y 4/3) fine sand with silt (40%), saturated, no odor. Olive brown (2.5Y 4/3) fine sand with silt (40%), saturated, no odor. Olive brown (2.5Y 4/3) fine sand with silt (40%), saturated, no odor. Olive brown (2.5Y 4/3) fine sand with silt (40%), saturated, no odor. Olive brown (2.5Y 4/3) fine sand with silt (40%), saturated, no odor.	50	Dark grayish brown (10YR 4/2) fine sand with trace silt, moist, no odor, clay bed 0.5" at 48.9', moderate plasticity 50.0	SP		
Olive brown (2.5Y 4/3) silt with clay and trace fine sand, low plasticity, saturated, no odor. Olive brown (2.5Y 4/3) fine sand with silt, saturated, no odor St.2 Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, saturated. Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, wet. Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, wet. Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, wet. Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, wet. Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, wet. Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, wet. Very dark gray (10YR 3/1) fine sand with silt (40%), saturated, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, no plasticity, wet, no odor. Olive brown (2.5Y 4/3) fine sand with silt (40%), saturated, no odor. Olive brown (2.5Y 4/3) fine sand with trace silt, saturated, no odor. Olive brown (2.5Y 4/3) fine sand with trace silt, saturated, no odor.	-	51.3		+	8
Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, saturated. Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, wet. Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, saturated, 0.75" rounded gravel inclusion at 58.3' Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, wet. Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, wet. Very dark gray (10YR 3/1) fine sand with silt (40%), saturated, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, no plasticity, wet, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, moderate plasticity, wet, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, moderate plasticity, wet, no odor. Olive brown (2.5Y 4/3) fine sand with trace silt, saturated, no odor. 64.1 ML Wery dark gray (10YR 3/1) silt with clay and fine sand, moderate plasticity, wet, no odor. 65.0 Olive brown (2.5Y 4/3) fine sand with trace silt, saturated, no odor.	_ 94 _	Olive brown (2.5Y 4/3) silt with clay and trace fine sand, low plasticity, saturated, no odor. 54.2			
Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, saturated, 0.75" rounded gravel inclusion at 58.3' Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, wet. 60.0 Very dark gray (10YR 3/1) fine sand with silt (40%), saturated, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, no plasticity, wet, no odor. Very dark gray (10YR 3/1) fine sand with silt (40%), saturated, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, moderate plasticity, wet, no odor. Olive brown (2.5Y 4/3) fine sand with trace silt, saturated, no odor. Olive brown (2.5Y 4/3) fine sand with trace silt, saturated, no odor.	55	Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, saturated. 56.4	31:1		
Very dark gray (10YR 3/1) fine sand with silt (40%), saturated, no odor. SM Very dark gray (10YR 3/1) silt with clay and fine sand, no plasticity, wet, no odor. Very dark gray (10YR 3/1) fine sand with silt (40%), saturated, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, moderate plasticity, wet, no odor. Olive brown (2.5Y 4/3) fine sand with trace silt, saturated, no odor. 67.7 SP	96	Olive brown (2.5Y 4/3) silt with clay and trace fine sand, moderate plasticity, no odor, saturated, 0.75" rounded gravel inclusion at 58.3' 58.4	ML		
Very dark gray (10YR 3/1) silt with clay and fine sand, no plasticity, wet, no odor. Very dark gray (10YR 3/1) fine sand with silt (40%), saturated, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, moderate plasticity, wet, no odor. Olive brown (2.5Y 4/3) fine sand with trace silt, saturated, no odor. 71 67.7 SP	0				
Very dark gray (10YR 3/1) fine sand with silt (40%), saturated, no odor. Very dark gray (10YR 3/1) silt with clay and fine sand, moderate plasticity, wet, no odor. Olive brown (2.5Y 4/3) fine sand with trace silt, saturated, no odor. 65.0 67.7	95		SM	+ + +	
Very dark gray (10YR 3/1) silt with clay and fine sand, moderate plasticity, wet, no odor. Olive brown (2.5Y 4/3) fine sand with trace silt, saturated, no odor. 71 67.7	-	Very dark gray (10YR 3/1) fine sand with silt (40%), saturated, no odor.	SM	<u> </u>	*** ***
	-	Very dark gray (10YR 3/1) silt with clay and fine sand, moderate plasticity, wet, no odor. 65.0 Olive brown (2.5Y 4/3) fine sand with trace silt, saturated, no odor.			
Boring terminated at 73 feet		Olive brown (2.5Y 4/3) fine sand with trace silt, wet, no odor.			



Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches

ft bgs - feet below ground surface

ft bgs - feet below ground surface

ft bgs - feet below ground surface

Sheet:

99-May-2025
Sheet:

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Boring ID: PDI-40a

Drilling Start Date: 30-Oct-2024 Drilling End Date: 30-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Tariq Barakat **SSC Contractor:**

GPRS SSC Method: Private Locate

Not Applicable

SSC Diam./Depth:

Northing: 702286.810 Easting: 7627821.500 Surface Elevation: 35.2 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 55.0 ft bgs Water Encountered: 26.0 ft bgs Logged By: Michael Sell

Avery Soplata, RG

Reviewed By:

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

				/ Departs Tree Applicable			
Donth (ft)	Deptin (11)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
	0-			GROUND SURFACE Not logged from 0-20' bgs			v v
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Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface **Printed:** 09-May-2025 **Sheet:** Page 1 of 3

			•	Boring	ID:	PDI-4	l0a
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
		54	Not logged from 0-20' bgs Dark gray (10YR 4/1) color shifts to brown (10YR 4/3) at 21.6-25'. Clay with trace fine sand, subangular gravel throughout (<0.25-0.75"), moderate plasticity, no odor, wet.	20.0	CL		
		54	Brown (10YR 4/3) clay with trace fine sand, subangular gravel throughout (<0.25-0.75"), moderate plasticity, no odor, wet. Very dark gray (10YR 3/1) poorly sorted fine-medium sand with trace gravel (subrounded, 0.25"), wet, faint sweet odor. Dark gray (10YR 4/1) poorly sorted fine-medium sand, saturated, faint sweet odor 26-26.7', mild sweet odor 26.7-30'	25.0 25.6 26.0			2 25-in Borehole Grout backfill
30-		94	Dark gray (10YR 4/1) poorly sorted fine-medium sand, saturated, mild sweet odor. Dark gray (10YR 4/1) silt with clay and trace fine sand, low plasticity, saturated, faint sulfurous odor. At 32.85-33.8' yellow staining (25%)	30.0	SW		**************************************
35-			Dark gray (10YR 4/1) poorly sorted fine to medium sand with trace silt, saturated, faint sulfurous odor, yellow staining and coarse yellow grains throughout (30%). Dark gray (10YR 4/1) poorly sorted fine-medium sand with trace silt, saturated, faint sweet odor, coarse yellow grains dispersed throughout (5%).	33.8	SW		
		92	Dark gray (10YR 4/1) clay with silt and trace fine sand, low plasticity, wet, no odor. Dark gray (10YR 4/1) poorly sorted fine-medium sand with trace silt, saturated, no odor. Dark gray (10YR 4/1) clay with silt and trace fine sand, wet, moderate plasticity, faint sulfurous odor, gray mottling throughout. Black (2.5Y 2.5/1) fine sand with trace silt, saturated, no odor. Black (2.5Y 2.5/1) fine sand with trace silt, saturated, no odor. Shelby tube sample 40-42'	37.0 37.2 37.3 38.3 40.0	CL SW CL		() () () () () () () () () ()
- - -		100			SP		
		W	Remarks: SSC - Subsurface Clearance ft - feet				



Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

			Borir	g ID	: PDI-4	10a
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	USCS	Lithology	Boring Backfill Details
45— — —		96	Black (2.5Y 2.5/1) fine sand with trace silt, saturated, no odor. Shelby tube sample 40-42' Very dark brown (10YR 2/2) fine sand with trace silt, saturated, faint sweet odor.	S.0/		
50—			Olive gray (5Y 4/2) silt with fine sand and trace clay, low plasticity, wet, no odor. 50 Olive gray (5Y 4/2) silt with clay and trace fine sand, low plasticity, saturated, no odor.	.0 ML		জ্ঞানুক বিশ্ব ক্লিক্লাক ক্লিক্লাক ক্লিক্লাক ক্লিক্লাক ক্লিক্লাক ক্লিক্লাক ক্লিক্লাক ক্লিক্লাক ক্লিক্লাক ক্লিক্
-		100	Olive gray (5Y 4/2) clay with trace fine sand, moderate plasticity, saturated, no odor.	6 CL		
55- - -			Boring terminated at 55 feet	3.0		
60-						
65— —						
_	IIII	Win	Remarks:			



Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

Boring ID: PDI-41

Reviewed By:

Drilling Start Date: 15-Oct-2024 Drilling End Date: 16-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Tariq Barakat **SSC Contractor: GPRS**

SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702321.480 Easting: 7627804.940 Surface Elevation: 34.9 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 57.0 ft bgs Water Encountered: 26.7 ft bgs Logged By: Michael Sell

Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-		GROUND SURFACE			
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Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

			Boring	ID:	PDI-4	1
Depth (ft)	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-		Not logged from 0-20' bgs	20.0/			
- -		Very dark gray (10YR 3/1) silt with clay and trace fine sand, low plasticity, moist, slight metallic odor. Very dark brown (10YR 2/2) poorly sorted fine to medium sand with gravel (<0.25 - 0.5"), wet, light metallic odor, sheen and light brown specs throughout.	20.6	SW		v.
-	64	Very dark gray (10YR 3/1) silt with clay and trace fine sand, moderate plasticity, gravel inclusions throughout (<0.25-1.0"), light yellow grading to orange staining from 22.5 - 25' (10% saturation).	21.1	ML		
25-		Brown (10YR 4/3) silt with clay and trace fine sand, moderate plasticity, wet, no odor, gravel inclusions throughout (0.25 - 1"), wood debris at 26'.	25.0 26.4			\$ 0.00 m
 	79	Dark grey (10YR 4/1) fine to medium sand, wet until 26.7' and saturated from 26.7' to 28.5', mild sweet odor, color grades from dark to light.	20.1	SW		
		Dark grey (10YR 4/1) Silt with trace fine sand, low plasticity, wet, mild sweet odor.	28.5	ML,		2.25-in Borehole Grout backfill
-		Grey (10YR 6/1) poorly sorted fine to medium sand, saturated, mild sweet odor.	28.6	SW		Grout backfill
30-		Grey (10YR 5/1) fine to medium sand with silt, grey silt beds (0.5") at 31' and 31.8', yellow staining (30% saturation) and medium yellow grains (10% saturation) throughout, sweet odor.	30.0	SM	+ + + + + + + + + + + + + + + + + + +	
_	100	Dark greyish brown (10YR 4/2) silt with trace clay and fine sand, low plasticity, saturated from 31.9-32.5' and wet from 32.5-34.1', sulfurous odor, yellow staining (30% saturation) from 31.9-32.5' and 33.4-34.1'.	31.9	ML		
35-		Dark Grey (10YR 4/1) Poorly sorted fine to medium sand with trace silt, saturated, faint sweet odor, yellow staining and grains (30% saturation) from 34.1-34.5', heavy yellow staining (50-70%) from 35-35.6'.	34.1 35.6	sw		() P () ()
-		Very dark grey (10YR 3/1) silt with clay (40% clay), moderate plasticity, wet, mild sulfurous odor, yellow staining (15% saturation) from 35.6-36.1'.		ML		
-	96	Black (2.5Y 2.5/1) Fine sand, woody debris at 37.9', wet, mild sweet odor, fine yellow grains throughout (<10% saturation).	37.7			80 A 90 A
40 -	88	Black (2.5Y 2.5/1) Fine sand with trace silt, silt fraction increases to 20% at 43.85', saturated, sweet odor	40.0	SP		



Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

		Boring	ID:	: PDI-4	1
Depth (ft)	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
45-		Black (2.5Y 2.5/1) Fine sand with trace silt, silt fraction increases to 20% at 43.85', saturated, sweet odor	_SP_		
-		No recovery 45.0			
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		50.0			X
50-		Black (2.5Y 2.5/1) fine sand with silt, saturated, mild sweet odor. 50.8	SM	+ + + .	
_		Olive grey (5Y 4/2) clay with trace fine sand, moderate plasticity, wet, no odor.	CL		\[\bar{\chi} \] \[\varphi \] \[\varphi \] \[\varphi \]
_		52.0 Olive grey (5Y 4/2) silt with clay and trace fine sand, low plasticity, saturated, no odor.			
_	100	Olive grey (5Y 4/2) fine sand with clay and silt, saturated, no odor.	ML		↑ v · · ·
			SM	+	↑
		55.0		+ + + + + + + + + + + + + + + + + + +	
55-		Olive grey (5Y 4/2) fine sand with trace silt, saturated, no odor, refusal encountered at 57' (bedrock/basalt)			w.
-	43		SP		(A)
-		57.0 Boring terminated at 57 feet			LEI
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Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

Drilling Start Date: 15-Oct-2024 Drilling End Date: 16-Oct-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Direct Push Rig Make/Model: GeoProbe Jake McKee **Driller: SSC Contractor: GPRS**

SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702377.090 Easting: 7627748.950 Surface Elevation: 36.0 ft amsl

Borehole Diameter: 2.25 in **Borehole Depth:** 54.0 ft bgs Water Encountered: 26.1 ft bgs Logged By: Michael Sell

Reviewed By: Avery Soplata, RG **Client:**

Consolidated Total

Boring ID: PDI-42

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
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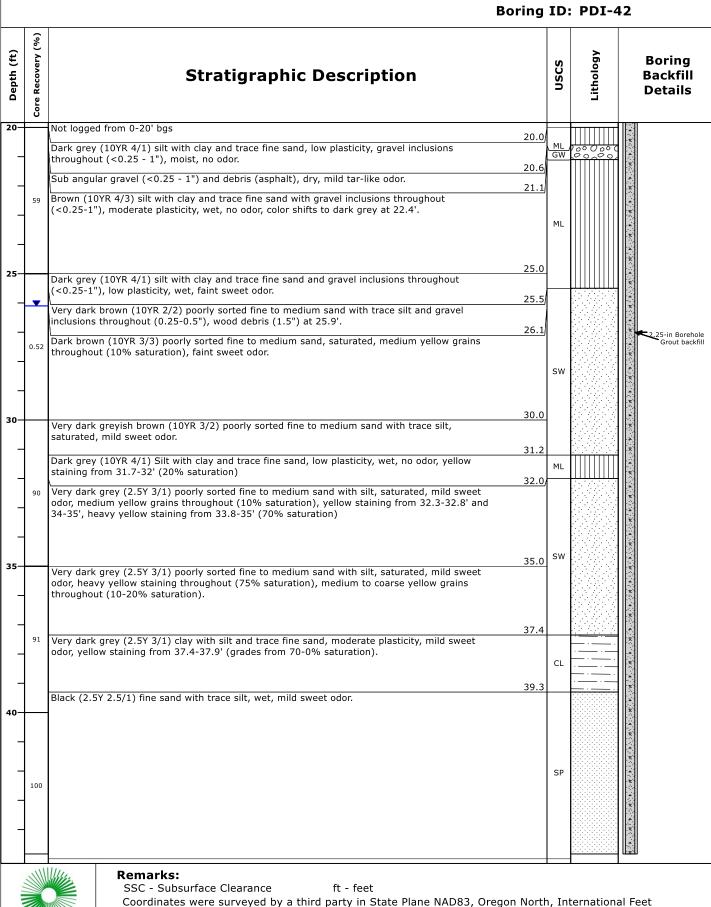
Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface



NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface Printed: 09-May-2025 Sheet: Page 2 of 3

Black (2.5Y 2.5/1) fine sand with trace silt, wet, mild sweet odor. Olive grey (5Y 4/2) silt with clay (40% clay), low plasticity, trace fine sand, saturated, no odor. Olive grey (5Y 4/2) fine sand with silt (40-50% silt) and trace clay, saturated, no odor. Olive grey (5Y 4/2) clay with fine sand, moderate plasticity, saturated, no odor. Olive grey (5Y 4/2) clay with silt and trace fine sand, low plasticity, wet, no odor. Olive grey (5Y 4/2) clay with silt and trace fine sand, moderate plasticity, wet, no odor. Olive grey (5Y 4/2) gine sand with silt, saturated, no odor. Olive grey (5Y 4/2) silt with fine sand and trace clay, low plasticity, wet, no odor. Olive grey (5Y 4/2) silt with fine sand and trace clay, low plasticity, saturated. Olive grey (5Y 4/2) fine sand with silt, wet, no odor, refusal at 54' Solution of the same should be saturated. Olive grey (5Y 4/2) fine sand with silt, wet, no odor, refusal at 54' Solution of the same should be saturated. Olive grey (5Y 4/2) fine sand with silt, wet, no odor, refusal at 54' Solution of the same should be saturated. Olive grey (5Y 4/2) fine sand with silt, wet, no odor, refusal at 54' Solution of the same should be saturated. Olive grey (5Y 4/2) fine sand with silt, wet, no odor, refusal at 54' Solution of the same should be saturated. Olive grey (5Y 4/2) fine sand with silt, wet, no odor, refusal at 54' Solution of the same should be saturated. Olive grey (5Y 4/2) fine sand with silt, wet, no odor, refusal at 54' Solution of the same should be saturated. Olive grey (5Y 4/2) fine sand with silt, wet, no odor, refusal at 54' Solution of the same should be saturated. Olive grey (5Y 4/2) fine sand with silt, wet, no odor, refusal at 54' Solution of the same should be saturated, no odor. Olive grey (5Y 4/2) fine sand with silt and trace clay, saturated, no odor. Solution of the saturated, no odor. Olive grey (5Y 4/2) silve should be saturated, no odor. Solution of the saturated, no odor. Solution of the saturated, no odor. Olive grey				Boring	ID:	PDI-4	12
Olive grey (SY 4/2) slit with clay and trace fine sand, saturated, no odor. Olive grey (SY 4/2) fine sand with sik (40-50% slit) and trace clay, saturated, no odor. Olive grey (SY 4/2) clay with fine sand, moderate plasticity, saturated, no odor. Olive grey (SY 4/2) slit with clay and trace fine sand, low plasticity, wet, no odor. Olive grey (SY 4/2) slit with clay and trace fine sand, moderate plasticity, wet, no odor. Olive grey (SY 4/2) slit with silt and trace fine sand, moderate plasticity, wet, no odor. Olive grey (SY 4/2) slit with fine sand and trace clay, toe plasticity, saturated. Olive grey (SY 4/2) slit with fine sand and trace clay, toe plasticity, saturated. Sa. 50 olive grey (SY 4/2) fine sand with silt, wet, no odor, refusal at 54' Saturated, no odor. Sa. 51 olive grey (SY 4/2) slit with fine sand and trace clay, toe plasticity, saturated. Sa. 51 olive grey (SY 4/2) fine sand with silt, wet, no odor, refusal at 54' Saturated, no odor. Sa. 52 olive grey (SY 4/2) slit with fine sand and trace clay, saturated, no odor. Sa. 52 olive grey (SY 4/2) fine sand with silt, wet, no odor, refusal at 54' Saturated, no odor. Sa. 52 olive grey (SY 4/2) slit with fine sand and trace fine sand, moderate plasticity, wet, no odor. Sa. 52 olive grey (SY 4/2) fine sand with silt, wet, no odor, refusal at 54' Saturated, no odor. Sa. 52 olive grey (SY 4/2) slit with fine sand and trace clay, saturated, no odor. Sa. 52 olive grey (SY 4/2) slit with fine sand with silt, wet, no odor. Sa. 52 olive grey (SY 4/2) slit with fine sand with silt, wet, no odor. Sa. 54 olive grey (SY 4/2) slit with fine sand with silt, wet, no odor. Sa. 54 olive grey (SY 4/2) slit with fine sand with silt with fine sand silt saturated, no odor. Sa. 54 olive grey (SY 4/2) slit with clay and trace clay, saturated, no odor. Sa. 55 olive grey (SY 4/2) slit with clay and trace fine sand, inverse grey slit with clay and trace clay, saturated, no odor. Sa. 55 olive grey (SY 4/2) slit with clay and trace clay, saturated, no od	Depth (ft)	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Backfill
Olive grey (5Y 4/2) silk with clay (40% clay), low plasticity, trace fine sand, asturated, no odor. Olive grey (5Y 4/2) fine sand with silt (40-50% silk) and trace clay, saturated, no odor. Olive grey (5Y 4/2) clay with fine sand, moderate plasticity, saturated, no odor. Olive grey (5Y 4/2) silk with clay and trace fine sand, low plasticity, wet, no odor. Olive grey (5Y 4/2) fine sand with silk saturated, no odor. Olive grey (5Y 4/2) silk with fine sand and trace clay, saturated. Olive grey (5Y 4/2) silk with fine sand and trace clay, saturated. Olive grey (5Y 4/2) silk with fine sand and trace clay, saturated. Say 350 Olive grey (5Y 4/2) fine sand with silk, saturated. Say 350 Olive grey (5Y 4/2) fine sand with silk, wet, no odor, refusal at 54' Say 350 Olive grey (5Y 4/2) fine sand with silk, wet, no odor, refusal at 54' Say 350 Olive grey (5Y 4/2) fine sand with silk, wet, no odor, refusal at 54' Say 350 Olive grey (5Y 4/2) fine sand with silk, wet, no odor, refusal at 54' Say 350 Olive grey (5Y 4/2) fine sand with silk, wet, no odor, refusal at 54' Say 350 Olive grey (5Y 4/2) fine sand with silk, wet, no odor, refusal at 54' Say 350 Olive grey (5Y 4/2) fine sand with silk, wet, no odor, refusal at 54' Say 350 Olive grey (5Y 4/2) fine sand with silk, wet, no odor, refusal at 54' Say 350 Olive grey (5Y 4/2) fine sand with silk, wet, no odor, refusal at 54' Say 350 Olive grey (5Y 4/2) fine sand with silk, wet, no odor, refusal at 54' Say 350 Olive grey (5Y 4/2) fine sand with silk, wet, no odor, refusal at 54' Say 350 Olive grey (5Y 4/2) fine sand with silk, wet, no odor, refusal at 54' Say 350 Olive grey (5Y 4/2) fine sand with silk, wet, no odor, refusal at 54' Say 350 Olive grey (5Y 4/2) fine sand with silk saturated, no odor, refusal at 54' Say 350 Olive grey (5Y 4/2) fine sand with silk saturated, no odor, refusal at 54' Say 350 Olive grey (5Y 4/2) fine sand with silk saturated, no odor, refusal at 54' Say 350 Olive grey (5Y 4/2) fine sand with silk saturated, no	45-			45.0			· · · · · · · · · · · · · · · · · · ·
Olive grey (SY 4/2) fine sand with sik (40-50% silt) and trace clay, saturated, no odor. SM Olive grey (SY 4/2) clay with fine sand, moderate plasticity, saturated, no odor. Olive grey (SY 4/2) silt with clay and trace fine sand, low plasticity, wet, no odor. Olive grey (SY 4/2) fine sand with silk adtrace fine sand, moderate plasticity, wet, no odor. Olive grey (SY 4/2) fine sand with silk, saturated, no odor. Olive grey (SY 4/2) fine sand with silk, saturated, no odor. S2.0 fine sand with silk adtrace clay, low plasticity, saturated. S3.5 SM Olive grey (SY 4/2) fine sand with silk, wet, no odor, refusal at 54' S4.0 Boring terminated at 54 feet	_				ML		
Olive grey (5Y 4/2) clay with fine sand, moderate plasticity, saturated, no odor. Olive grey (5Y 4/2) slit with clay and trace fine sand, low plasticity, wet, no odor. Olive grey (5Y 4/2) clay with slit and trace fine sand, moderate plasticity, wet, no odor. Olive grey (5Y 4/2) clay with slit and trace fine sand, moderate plasticity, wet, no odor. Olive grey (5Y 4/2) clay with slit and trace fine sand, moderate plasticity, wet, no odor. Olive grey (5Y 4/2) clay with slit and trace fine sand, moderate plasticity, wet, no odor. Olive grey (5Y 4/2) slit with fine sand and trace clay, low plasticity, saturated. Solution of the slit	_		Olive grey (5Y 4/2) fine sand with silt (40-50% silt) and trace clay, saturated, no odor.	46.2			\$
Olive grey (SY 4/2) clay with fine sand, moderate plasticity, saturated, no odor. CL Olive grey (SY 4/2) slit with clay and trace fine sand, low plasticity, wet, no odor. S1.2 Olive grey (SY 4/2) day with silt and trace fine sand, moderate plasticity, wet, no odor. Olive grey (SY 4/2) fine sand with silt, saturated, no odor. Olive grey (SY 4/2) slit with fine sand and trace clay, low plasticity, saturated. Olive grey (SY 4/2) fine sand with silt, wet, no odor, refusal at 54' Boring terminated at 54 feet		100					\$. \$.
Olive grey (5Y 4/2) clay with fine sand, moderate plasticity, saturated, no odor. Olive grey (5Y 4/2) slit with clay and trace fine sand, low plasticity, wet, no odor. Olive grey (5Y 4/2) clay with slit and trace fine sand, moderate plasticity, wet, no odor. Olive grey (5Y 4/2) clay with slit and trace fine sand, moderate plasticity, wet, no odor. Olive grey (5Y 4/2) fine sand with slit, saturated, no odor. Olive grey (5Y 4/2) slit with fine sand and trace clay, low plasticity, saturated. Olive grey (5Y 4/2) fine sand with slit, wet, no odor, refusal at 54' Borfing terminated at 54 feet	_				SM	+ + + + + + + + + + + + + + + + + + +	
Olive grey (5Y 4/2) clay with fine sand, moderate plasticity, saturated, no odor. Olive grey (5Y 4/2) slit with clay and trace fine sand, low plasticity, wet, no odor. Olive grey (5Y 4/2) clay with slit and trace fine sand, moderate plasticity, wet, no odor. Olive grey (5Y 4/2) clay with slit and trace fine sand, moderate plasticity, wet, no odor. Olive grey (5Y 4/2) fine sand with slit, saturated, no odor. Olive grey (5Y 4/2) slit with fine sand and trace clay, low plasticity, saturated. Olive grey (5Y 4/2) fine sand with slit, wet, no odor, refusal at 54' Borfing terminated at 54 feet	_						. V.
Olive grey (5Y 4/2) silt with clay and trace fine sand, low plasticity, wet, no odor. Olive grey (5Y 4/2) clay with silt and trace fine sand, moderate plasticity, wet, no odor. Olive grey (5Y 4/2) fine sand with silt, saturated, no odor. Olive grey (5Y 4/2) silt with fine sand and trace clay, low plasticity, saturated. Solve grey (5Y 4/2) fine sand with silt, wet, no odor, refusal at 54' Boring terminated at 54 feet	50-		Olive gray (EV 4/2) slav with fine cand, moderate placticity, saturated, no oder	50.0			(X)
Olive grey (5Y 4/2) slit with clay and trace fine sand, low plasticity, wet, no odor. Olive grey (5Y 4/2) clay with slit and trace fine sand, moderate plasticity, wet, no odor. Olive grey (5Y 4/2) fine sand with slit, saturated, no odor. Olive grey (5Y 4/2) slit with fine sand and trace clay, low plasticity, saturated. Olive grey (5Y 4/2) fine sand with slit, wet, no odor, refusal at 54' Borling terminated at 54 feet 53-5 66-6 66-7 67-7 68-7			Olive grey (51 4/2) clay with fine Sand, moderate plasticity, Saturated, no odor.	E1 2	CL		♥'
olive grey (5Y 4/2) clay with silt and trace fine sand, moderate plasticity, wet, no odor. Olive grey (5Y 4/2) fine sand with silt, saturated, no odor. Olive grey (5Y 4/2) silt with fine sand and trace clay, low plasticity, saturated. S3.2 M Olive grey (5Y 4/2) fine sand with silt, wet, no odor, refusal at 54' S3.5 SM Olive grey (5Y 4/2) fine sand with silt, wet, no odor, refusal at 54' S4.0 SM S5.6 SM SM Olive grey (5Y 4/2) fine sand with silt, wet, no odor, refusal at 54' S5.7 SM	Ī		Olive grey (5Y 4/2) silt with clay and trace fine sand, low plasticity, wet, no odor.	51.2	ML		v:
Olive grey (5Y 4/2) fine sand with silt, saturated, no odor. Olive grey (5Y 4/2) silt with fine sand and trace clay, low plasticity, saturated. S3.50 Olive grey (5Y 4/2) fine sand with silt, wet, no odor, refusal at 54' Boring terminated at 54 feet S4.00 S6.00 S7.00 S8.00 S8.00 S8.00 S9.00	-	100	Olive grey (5Y 4/2) clay with silt and trace fine sand, moderate plasticity, wet, no odor.		CL	<u> </u>	Ÿ.
Olive grey (5Y 4/2) silt with fine sand and trace clay, low plasticity, saturated. 53.5 Olive grey (5Y 4/2) fine sand with silt, wet, no odor, refusal at 54' Boring terminated at 54 feet 53.5 65.5 65.5 66.5 67.5 68.5 69.5 6	_		\				े प्र े .
Olive grey (5Y 4/2) fine sand with silt, wet, no odor, refusal at 54' Boring terminated at 54 feet 54.0 60- 61- 61- 61- 61- 61- 61- 61- 61- 61- 61	_		Olive grey (5Y 4/2) silt with fine sand and trace clay, low plasticity, saturated.		SM		. v.
Boring terminated at 54 feet 500- 555- - - - - - - - - - - -			Olive grey (5Y 4/2) fine sand with silt, wet, no odor, refusal at 54'		1 1		
65-	55-		Boring terminated at 54 feet				
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Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

Boring ID: PDI-43

Drilling Start Date: 16-Oct-2024 Drilling End Date: 16-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Tariq Barakat SSC Contractor: **GPRS**

SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702418.970 Easting: 7627729.810 Surface Elevation: 35.8 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 51.0 ft bgs Water Encountered: 27.2 ft bgs

Logged By: Michael Sell **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
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Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

		В	oring	ID:	PDI-4	13
Depth (ft)	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-		Not logged from 0-20' bgs	20.0			N N
-	62	Brown (10YR 4/3) silt with clay and trace fine sand, moderate plasticity, subangular gravel inclusions throughout (0.25-1"), brick debris from 22.35-22.55', dark grey mottling throughout, moist, mild sweet odor.	25.0	ML		から (1) (2) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4
25-		Brown (10YR 4/3) silt with clay and trace fine sand, moderate plasticity, subangular gravel inclusions throughout (0.25-1"), dark grey mottling throughout, moist, wet from 26.8-27.1', mild sweet odor.	27.1			2.25-in Borehole Grout backfill
	70	Very dark brown (10YR 2/2) poorly sorted fine to medium sand with trace silt, woody debris at 27.25, saturated, mild sweet odor.				
_		Very dark greyish brown (10YR 3/2) poorly sorted fine to medium sand with silt, saturated, mild sweet odor.	27.5	sw		C
30-		Dark grey (10YR 4/1) poorly sorted fine to medium sand with trace silt, saturated, faint sweet	30.0			za.
		odor.	30.5			
-		Dark grey (10YR 4/1) silt with clay and trace fine sand, low plasticity, wet, faint sweet odor.	30.7	SW		X A
_		Dark grey (10YR 4/1) poorly sorted fine to medium sand, saturated, no odor.	31.3	511		
_	93	Dark grey (10YR 4/1) silt with fine sand and trace clay, low plasticity, saturated, faint sweet odor, yellow staining (10% saturation) from 31.5-31.85'.	31.9			V
_		Dark grey (10YR 4/1) poorly sorted fine to medium sand with trace silt, saturated, mild sweet odor, dispersed yellow grains throughout (10% saturation), gradational yellow staining from 32.2-34.1' (10-40% saturation)	35.0	SW		0.000 km
35-		Very dark grey (10YR 3/1) poorly sorted fine to medium sand with silt, saturated, mild sweet odor.	35.4	ML		. V.
-		Dark grey (10YR 4/1) silt with clay and trace fine sand, low plasticity, wet, mild sweet odor.	35.8			
_	90	Very dark grey (10YR 3/1) fine to medium sand with trace silt, saturated, mild sweet odor.		SW		. v
		Dark grey (10YR 4/1) silt with trace clay and fine sand, low plasticity, sulfurous odor, wet.	38.2	ML		v.
-		Black (2.5Y 2.5/1) fine to medium sand with trace silt, saturated, mild sweet odor, wood debris (0.25") at 39.3'.	38.8			W.
40- - - -	95	Black (2.5Y 2.5/1) poorly sorted fine to medium sand with trace silt, saturated, faint sweet odor, silt fraction increases to 20% at 44.1'.	40.0	SW		
	1111	Remarks:				



Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

			Boring	ID:	PDI-4	13
Depth (ft)	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
45— —	l	Black (2.5Y 2.5/1) poorly sorted fine to medium sand with trace silt, saturated, faint sweet odor, silt fraction increases to 20% at 44.1'.	48.1	SW		
50-		Olive grey (5Y 4/2) silt with sand and trace clay, saturated, no odor, low plasticity. Olive grey (5Y 4/2) clay with trace fine sand, moderate plasticity, wet, no odor. Olive grey (5Y 4/2) Very fine sand with silt, saturated, no odor.	49.2	ML CL		
_	200	Olive grey (5Y 4/2) Silt with trace fine sand and clay, low plasticity, saturated, no odor, refusal at 51' (basalt/bedrock) Boring terminated at 51 feet	50.9 51.0	SM ML		
_ _ 55—						
-						
_						
60-						
-						
65— —						
_						
		Remarks:				



Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

Boring ID: PDI-43a

Drilling Start Date: 24-Oct-2024 **Drilling End Date:** 25-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Jake McKee **SSC Contractor: GPRS** SSC Method: Private Locate

Not Applicable

SSC Diam./Depth:

Northing: 702409.680 Easting: 7627720.960 Surface Elevation: 36.5 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 50.0 ft bgs Water Encountered: 30.0 ft bgs Logged By: David Stone **Reviewed By:** Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

				/ Departs Tree Applicable			
Donth (ft)	Deptin (11)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
	0-			GROUND SURFACE Not logged from 0-20' bgs			v v
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Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

			E	Boring	ID:	PDI-4	.3a
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-			Not logged from 0-20' bgs	20.0			
_ _ _ _		51	Dark brown (10YR 3/3) Silt with clay and trace fine sand with subrounded to subangular gravel inclusions (<0.25-1.5"), graphite and woody debris dispersed throughout, moderate plasticity, dark grey mottling from 20.3-25', wet, no odor.	20.0	ML		v v v v v v v v v v v v v v v v v v v
			subrounded gravel (0.25-1") with dark grey silty fine sand matrix, woody debris,	25.6	GM		Grout backfill
_		60	asbestos-containing material, and graphite present. Very dark grayish brown (10YR 3/2) poorly sorted fine to medium sand with trace silt, wet, no odor, 0.25" silt bed at 26.45', dark grey grains (20% saturation) from 26-26.4'.	25.9	SW		
30-			Very dark brown (10YR 2/2) poorly sorted fine to medium sand with silt (25%), 0.5" very	30.0			20 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
_			dark greyish brown (10YR 3/2) silt with fine sand trace clay bed at 30.6', saturated, no odor.	31.1,	SM ML	+ +	. x
			Very dark greyish brown (10YR 3/2) silt with clay and trace fine sand, moderate plasticity, saturated, faint sweet odor.		SW		
_		86	Very dark brown (10YR 2/2) poorly sorted fine to medium sand with silt (10%), saturated, no odor.	31.3			TO THE PARTY OF TH
_			Very dark grayish brown silt with clay and trace fine sand, low plasticity, saturated, no odor.	31.7 32.0	SW		
35-			Very dark brown (10YR 2/2) fine to coarse sand with dispersed yellow grains throughout (15-20% saturation), 0.5" yellow silt bed at 33.15' and 33.65', yellow staining from 32.65-33.15' increasing from 10-80% saturation, yellow staining from 33.15- 33.65' (30% saturation), yellow staining from 33.65-35' increasing from 10-90% saturation, faint sweet odor from 32-33.15', mild sweet odor from 33.15-35', saturated.	35.0			**************************************
-		100	Very dark brown (10YR 2/2) poorly sorted fine to medium sand with trace silt, yellow staining throughout decreasing from 20-0% saturation, saturated, sweet odor.	36.6	ML SW		v
-			Very dark greyish brown (10YR 3/2) silt with clay and trace fine, moderate plasticity, saturated, mild sweet odor.	36.8	ML		.v.
-			Very dark brown (10YR 2/2) poorly sorted fine to medium sand with trace silt, Light yellow staining (10% saturation) from 36.8-37', saturated, mild sweet odor.	37.8			**** *********************************
40-			Very dark greyish brown (10YR 3/2) silt with clay and trace fine sand, moderate plasticity, saturated, mild sweet odor.	38.7			*
			Very dark brown (10YR 2/2) poorly sorted fine to medium sand with trace silt, 2" moderate plasticity very dark greyish brown (10YR 3/2) silt with clay bed at 39.25', saturated, mild sweet odor.	40.0	SW		(A) (B) (C) (A)
_		100	Black (2.5Y 2.5/1) poorly sorted fine to medium sand with trace silt, saturated, faint sweet odor from 40-41', no odor from 41-44.65'.				
			Very dark grayish brown (10YR 3/2) silt with clay and trace fine sand, moderate	44.7	ML)		÷
	WIE	Wiji	Remarks:			!	



Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

				Boring	ID:	PDI-4	13a
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
45-			plasticity, saturated, faint sweet odor.	44.8	ML		
			Black (2.5Y 2.5/1) poorly sorted fine to medium sand with trace silt, saturated, no odor.	45.0	377		(A)
			No recovery	45.0			
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50-				50.0			
			Boring terminated at 50 feet				
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	1111	11/1/2	Remarks:		l		



Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

Boring ID: PDI-44 Drilling Start Date: 16-Oct-2024

Reviewed By:

Drilling End Date: 16-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe Jake McKee **Driller: SSC Contractor: GPRS**

SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702485.520 7627644.320 Easting: **Surface Elevation:** 36.1 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 50.0 ft bgs Water Encountered: 26.8 ft bgs Logged By: Michael Sell

Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-		GROUND SURFACE			
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Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

			Boring	ID:	PDI-4	4
Depth (ft)	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-		Not logged from 0-20' bgs	20.0			
-	79	Dark grey (10YR 4/1) silt with clay and trace fine sand and subangular gravel (0.25-1") inclusions throughout, moderate plasticity, moist, faint sweet odor. Very dark greyish brown (10YR 3/2) poorly sorted fine to medium sand with trace silt, wet,	23.0	ML		
- 25-		mild sweet odor.	25.8	SW		2, 25-in Borehole Grout backfill
		Grey (10YR 5/1) silt with clay and trace fine sand with wood debris at 26.05', low plasticity, moist, faint sweet odor.	1	ML		₩
- -	59	Very dark greyish brown (10YR 3/2) poorly sorted fine to medium sand, wet from 26.2-26.8' and saturated from 26.8-30', faint sweet odor.	26.2	SW		
30-		Very dark grey (10YR 3/1) poorly sorted fine to medium sand with trace silt, saturated, mild sweet odor.	30.0			w i
-		Dark grey (10YR 4/1) silt with trace fine sand and clay, low plasticity, saturated, faint sweet odor.	31.0	ML		***
-	94	Very dark grey (10YR 3/1) poorly sorted fine to medium sand with trace silt, saturated, faint sweet odor.	31.3 32.4	ML		\(\frac{1}{2}\)
		Very dark grey (10YR 3/1) silt with trace clay and fine sand, low plasticity, saturated, faint sweet odor.	32.4	SW		X V
35-		Very dark grey (10YR 3/1) poorly sorted fine to medium sand with trace silt, saturated, mild sweet odor.	33.2	ML		V
		Very dark grey (10YR 3/1) silt with trace fine sand, low plasticity, wet, mild sweet odor.	35.0	SW		
-		Very dark grey (10YR 3/1) poorly sorted fine to medium sand with trace silt, saturated, mild sweet odor. Very dark grey (10YR 3/1) silt with fine sand and trace clay, low plasticity, saturated, mild	35.4	sw		▼
	100	sweet odor. Very dark grey (10YR 3/1) sit with fine saild and trace clay, low plasticity, saturated, finid sweet odor. Very dark grey (10YR 3/1) poorly sorted fine to medium sand with trace silt, saturated, mild	35.5	ML		· v
		sweet odor from 35.5-36.5' and sweet odor from 36.5-37.45'. Dark grey (10YR 4/1) silt with clay and trace fine sand, low plasticity, wet, sweet odor.	37.5	SM ML		V.
40-		Very dark grey (10YR 3/1) fine to medium sand with silt, saturated, red DNAPL staining throughout, strong sweet odor.	37.9			V
		Dark grey (10YR 4/1) silt with clay and trace fine sand, low plasticity, red staining streaks (likely from above), moist.	38.1			
		Black (2.5Y 2.5/1) fine to medium sand with trace silt, wet, sweet odor.	39.1	SW		. P
	100	Black (2.5Y 2.5/1) fine to medium sand with trace silt, wet, faint sweet odor.	40.0	. 3W		(a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c
			44.5	ML		
	,,,,,,			<u> </u>		-



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

		Boring	ID:	PDI-	14
Depth (ft)	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
45— —		Olive grey (5Y 4/2) silt with clay and trace fine sand, low plasticity, wet, no odor.	ML		(**) (**) (**) (**) (**) (**) (**)
_ _	94	Olive grey (5Y 4/2) fine sand with trace silt, saturated, no odor.			
50-		49.3 Olive grey (5Y 4/2) silt with clay and trace fine sand, low plasticity, wet, no odor. 49.9	SM ML		\(\nabla \) \(\
-		Boring terminated at 50 feet			
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_		Remarks:			



Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

Boring ID: PDI-44a

Drilling Start Date: 28-Oct-2024 **Drilling End Date:** 29-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Tariq Barakat **SSC Contractor: GPRS**

SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702495.290 7627649.250 Easting: Surface Elevation: 35.8 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 50.0 ft bgs

Water Encountered: 27.0 ft bgs Logged By: Michael Sell **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

\square	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE			
			Not logged from 0-20' bgs			₩.
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Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

				Boring	ID:	PDI-4	44a
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-			Not logged from 0-20' bgs	20.0			
- -		84	Dark brown (10YR 3/3) clay with silt and trace fine sand, subangular gravel inclusions throughout (<0.25-1.25"), wet, low plasticity, no odor.		CL		
				23.7			. a.
-			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, moist, no odor.				
25-			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, moist, no odor, color grades to reddish-orange from 26.3-26.8'	25.0	SW		2,25-in Borehole Grout backfill
		•	Very dark gray (10YR 3/1) silt with clay and trace fine sand, low plasticity, moist, mild	26.8	MI		÷
		58	sulfurous odor.	27.0			8
- -			Dark yellowish brown (10YR 4/6) poorly sorted fine-medium sand with trace silt, saturated, no odor.	2710	SW		
30-				30.0			V.
30-			Dark gray (10YR 4/1) poorly sorted fine-medium sand with trace silt, saturated, no odor.				v
-			Dark gray (10YR 4/1) silt with fine sand, low plasticity, saturated, no odor.	31.1	ML,		w
_			Dark gray (10YR 4/1) poorly sorted fine-medium sand with trace silt, saturated, no odor.	31.3	sw		
 - -		94	Dark gray (10YR 4/1) silt with clay and trace fine sand, low plasticity, saturated, faint sweet odor at 32.2-33.4', no odor at 33.4-35'. Sheen from 32.2-33.1'	32.2	ML		
35-			Very dark gray (10YR 3/1) poorly sorted fine-medium sand, trace silt, saturated, faint sweet odor.	35.0 35.2	SW ML		
			Very dark gray (10YR 3/1) silt with trace clay and fine sand, low plasticity, saturated, mild sweet odor, woody debris at 35.5'		SW		
_		90	Very dark gray (10YR 3/1) poorly sorted fine-medium sand with trace silt, saturated, mild sweet odor at 35.5-36.7', sweet odor 36.7-36.9'. Faint sheen throughout. Dark grayish brown (10YR 4/2) silt with clay and trace fine sand, low plasticity, wet, mild	35.5 36.9	ML		
_			sweet odor, very dark brown (0.5") at 37.85' and 38.6'	38.7			
			Black (2.5Y 2.5/1) fine sand with trace silt, saturated, faint sweet odor.	40.0			
40-			Black (2.5Y 2.5/1) fine sand with trace silt, saturated, no odor.	1010			*
-							w) (4)
_					SP		V.
		94					.₩. :::
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			Remarks: SSC - Subsurface Clearance ft - feet Coordinates were surveyed by a third party in State Plane NAD83, Ore	gon North	n, Int	ernationa	al Feet



Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

				Boring	ID:	PDI-	14a
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
45-			Black (2.5Y 2.5/1) fine sand with trace silt, saturated, no odor.	45.0	_SP_		
_			Dark olive gray (5Y 3/2) clay, trace silt, moderate plasticity, wet, no odor.				
_					CL		
_		92	Dark olive gray (5Y 3/2) fine sand with silt and trace clay, saturated, faint sweet odor.	47.8			
					SM		. v
					3111	† † .	× v
50-			Boring terminated at 50 feet	50.0			
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	1111	11111	Remarks:				



SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

Boring ID: PDI-45

Drilling Start Date: 10-Oct-2024 Drilling End Date: 10-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Tariq Barakat **SSC Contractor: GPRS**

SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702492.660 Easting: 7627611.470 Surface Elevation: 35.8 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 50.0 ft bgs Water Encountered: 27.7 ft bgs

Logged By: David Stone **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

	· ·		Deptil: Not Applicable			
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE			[Dord]
			Not logged from 0-20' bgs			
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Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

			В	oring	ID:	PDI-4	15			
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details			
20-			Not logged from 0-20' bgs	20.0						
_			Brown (10YR 4/3) silt with clay, trace fine sand, moderate plasticity, wet, gray mottling (21-21.8'), subrounded gravel inclusions throughout (0.25-1"), metal wire debris at 21.4',	2010			· V			
			no odor.	21.8	ML		2.25-in Borehole with expendable point			
-			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand with trace silt, wet,				y point			
1 _		68	no odor, 0.5" light brown silt bed at 22.6' and 23'				· v			
					SW					
-										
25-			(40)(0.4(0.1))	25.0			×.			
			Brown (10YR 4/3) silt with trace fine sand, moderate plasticity, subrounded gravel inclusions (<0.25-0.5"), wet, no odor.	25.5	ML		V			
-			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand with trace silt, wet,	25.5			~ v.			
_			no odor.							
		€	Now, dayle against house (10VD 2/2) populs paytod fine modium and with trace silt	27.7			. ♥			
-			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand with trace silt, saturated, no odor.		SW					
_							×			
				30.0			. V			
30-			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand with trace silt, saturated, mild sweet odor.	30.0	ML ,		v			
-			Dark grayish brown (10YR 4/2) silt with clay, moderate plasticity, saturated, no odor.	30.4	(IVIL)	+ + + .	y.			
			Very dark gray (10YR 3/1) poorly sorted fine-medium sand with silt (~25%), saturated,	30.5	SM	+ +				
		100	wild sweet odor.	32.5/	ML	+				
-			Very dark gray (10YR 3/1) silt with fine-medium sand (30-40%), low plasticity, saturated, faint sweet odor	32.8	SM					
-			Very dark gray (10YR 3/1) poorly sorted fine-medium sand with silt, saturated, no odor.	33.8			A. V.			
35-			Very dark gray (10YR 3/1) silt with trace clay, low plasticity, saturated, faint sweet odor.	35.0	ML					
			Very dark gray (10YR 3/1) poorly sorted fine-medium sand with silt (~25%), no odor, saturated.	35.3	SM ML					
			Very dark gray (10YR 3/1) silt with clay, moderate plasticity, saturated, no odor.	36.6	1.1.2					
-			Very dark gray (10YR 3/1) poorly sorted fine-medium sand with trace silt, saturated, sweet odor 36.6-38.45', strong sweet odor 38.45-38.6', DNAPL present 38.45-38.6', red							
_		90	staining visible in smear, dispersed sheen 36.6-38.45', sheen 38.45-38.6'		SW					
			Dark gray (10YR 4/1) silt with clay, trace fine sand, low plasticity, sweet odor.	38.6						
-			park gray (1011 4/1) site with day, trace file saile, low plasticity, sweet odol.		ML		Bentonite seal			
40-			Black poorly sorted fine-medium sand, saturated, no odor.	40.0		<u> </u>				
			black poorly sorted line medium sand, saturated, no odor.							
		200			SW					
-				42.5						
			No recovery	42.5						
		_					v.			
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17.			Remarks: SSC - Subsurface Clearance ft - feet							
1	Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet NA - not available or not applicable amsl - above mean sea level									
	111	IIIII.	in - inches ft bgs - feet below ground surface	ce			Printed: 09-May-2025 Sheet: Page 2 of 3			
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			Boring	ID:	PDI-4	15
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
45-			No recovery 45.0			
_		100	Black poorly sorted fine-medium sand, saturated, mild sweet odor.			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
			47.0	SW		Grout backfill 2.25-in Borehole
-			Olive (5Y 4/3) poorly sorted fine sand with silt, saturated, faint sweet odor.		<u> </u>	.v.
_				SM	+	
		166.67	49.0			. <u></u>
-			Olive (5Y 4/3) silt with fine sand and clay, low plasticity, saturated, no odor.	ML		ъ.
50-		-	50.0			
			Boring terminated at 50 feet			
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55-						
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60-						
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65-						
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	1111	11/1/2	Remarks:			



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

Boring ID: PDI-45a

Drilling Start Date: 11-Oct-2024 Drilling End Date: 11-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Tariq Barakat **SSC Contractor: GPRS**

SSC Diam./Depth:

SSC Method: Private Locate

Not Applicable

Northing: 702495.670 Easting: 7627601.460 Surface Elevation: 35.7 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 54.0 ft bgs Water Encountered: 30.4 ft bgs Logged By: David Stone

Avery Soplata, RG

Reviewed By:

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

			, Depart Met Applicable			
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE Not logged from 0-20' bgs			V
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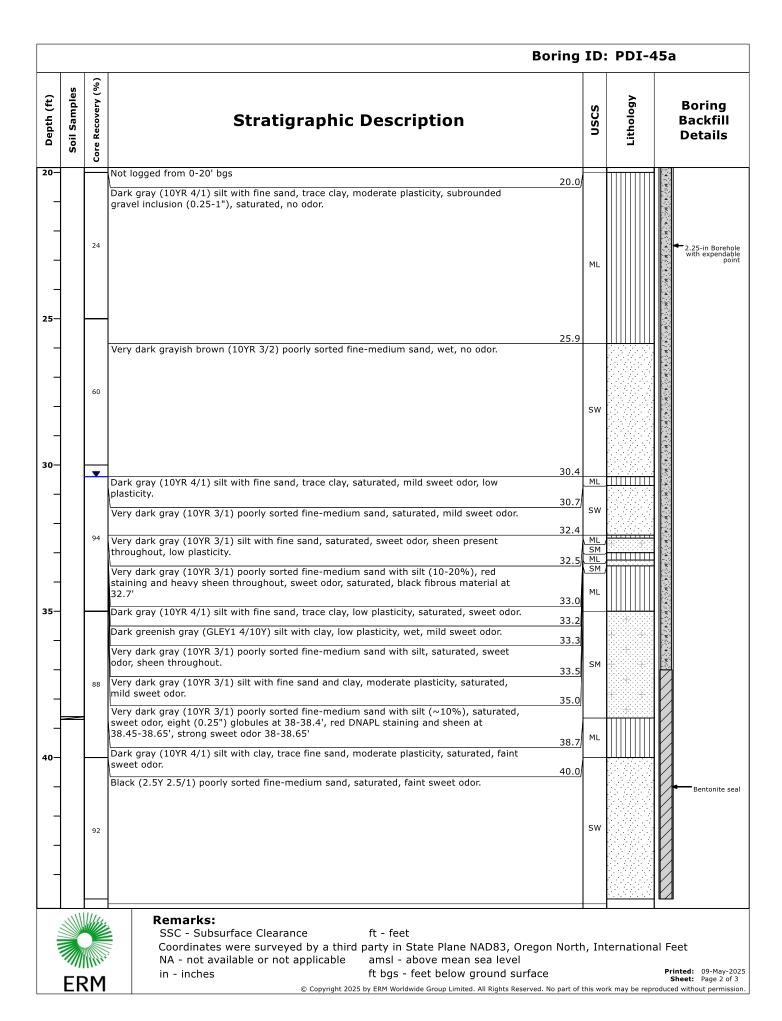
Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface



				Boring	ID:	PDI-4	15a
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
45-		Ě	Black (2.5Y 2.5/1) poorly sorted fine-medium sand, saturated, faint sweet odor.	45.0			
- - -		96	Black (2.5Y 2.5/1) poorly sorted fine-medium sand, saturated, no odor.	15.5	SW		
50-			Black (2.5Y 2.5/1) poorly sorted fine-medium sand, saturated, no odor, with bentonite	50.0			Grout backfill 2.25-in Borehole
<u>-</u>			chips.	50.2	CL		
			Olive (5Y 4/3) clay with silt, moderate plasticity, saturated, no odor.	51.9			
-		100	Dark olive gray (5Y 3/2) fine sand with silt, saturated, no odor.		SM	+ +	
-			Olive (5Y 4/3) silt with fine sand, trace clay, low plasticity, saturated, no odor. Refusal at 54'	53.0	ML		<u>.</u>
-			Boring terminated at 54 feet	54.0			
55-			borning terminated at 54 reet				
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		Wiji	Remarks: SSC - Subsurface Clearance ft - feet				



Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

Boring ID: PDI-45b

Drilling Start Date: 17-Oct-2024 Drilling End Date: 18-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Tariq Barakat **SSC Contractor: GPRS**

SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702498.240 Easting: 7627591.890 Surface Elevation: 35.8 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 49.5 ft bgs Water Encountered: 27.4 ft bgs

Logged By: Michael Sell **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

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Depth (ft)	(2) 4	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0)-			GROUND SURFACE Not logged from 0-20' bgs			() () ()
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Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

			В	oring	ID:	PDI-4	15b	
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Bad	ring ckfill tails
20-			Not logged from 0-20' bgs	20.0			Δ.	
-			Dark grayish brown (10YR 4/2) silt with clay and trace fine sand, low plasticity, gravel inclusions throughout (<0.25-0.75"), moist.		ML SW) 	<u>.</u>	
			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, moist, no odor.	20.4	(ML)			
_		54	Dark gray (10YR 4/1) silt with clay (30%), low plasticity, trace fine sand, moist, dark brown sand lens (0.5") at 21.15'				•	
_			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, moist, no odor, silt bed at 22.3' (0.5")	21.4	SW		V.	
25-			Dark grayish brown (10YR 4/2) silt with clay and trace fine gravel inclusions throughout (<0.25-0.75"), moist, no odor, low plasticity	25.0 25.6	ML SW		2.25	-in Borehole Grout backfill
			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, trace silt, moist, no odor	25.0	ML		▼	
-		70	Dark grayish brown (10YR 4/2) silt with clay and trace fine sand, gray mottling throughout, moist, no odor.	25.9 26.5			V.	
			Very dark brown (10YR 2/2) poorly sorted fine-medium sand, wet.	27.4			v.	
-			Very dark brown (10YR 2/2) poorly sorted fine-medium sand, saturated, clay beds (0.25") at 28.25' and 28.5'		SW		. v	
30-			Very dark gray (10YR 3/1) poorly sorted fine-medium sand, trace silt, saturated, no odor, silt bed (1") at 30.75'	30.0			* *	
-							V.	
-		96	Dark gray (10YR 4/1) silt with fine sand, trace clay, saturated, no odor, low plasticity, medium sand lens (0.5") at 32.7'	32.2			æ. V	
-			inculain sund tens (613) at 32.7	24.0	ML		v.	
-			Gray (10YR 5/1) clay, wet, moderate plasticity, no odor.	34.0 34.5	CL	— . —	v.	
35-			Very dark brown (10YR 2/2) poorly sorted fine to medium sand, trace silt, wet, no odor.	35.0/			V.	
_			Very dark gray (10YR 3/1) poorly sorted coarse to fine sand, trace silt, saturated, faint sweet odor.		SW			
-		94		38.5			w.	
-			Dark gray (10YR 4/1) silt with clay, trace fine sand, low plasticity, wet, no odor, oil sheen at 38.85'	39.4	ML		v.	
40-			Black (2.5Y 2.5/1) fine-medium sand, poorly sorted, trace silt, saturated, no odor.				A . No	
-		92			SW		() () () () () () () () () ()	
_							€6676789	
		Wiji	Remarks: SSC - Subsurface Clearance ft - feet			-		
			Coordinates were surveyed by a third party in State Plane NAD83, Oregon NA - not available or not applicable amsl - above mean sea level	n North	n, Int	ternationa	al Feet	
	ER	RM	in - inches ft bgs - feet below ground surfac © Copyright 2025 by ERM Worldwide Group Limited. All Rights Reserved.		this wo	rk may be repr	Sheet:	09-May-2025 Page 2 of 3 ut permission.

				Boring	ID:	PDI-4	15b
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
45-			Black (2.5Y 2.5/1) fine-medium sand, poorly sorted, trace silt, saturated, no odor.	45.0	SW		
			Olive gray (5Y 4/2) clay with trace fine sand, moderate plasticity, wet, no odor.		CL		v v v v v v v v v v
			Olive gray (5Y 4/2) fine sand with trace silt, saturated, no odor.	45.9	SP		v
_				47.3			, v
_		77.78	Olive gray (5Y 4/2) silt with clay and trace fine sand, low plasticity, saturated, no odor. Refusal encountered at 49.5' (basalt/bedrock)		ML		() () () () () () () () () ()
				49.5			
50-			Boring terminated at 49.5 feet				
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	WIE	Wife	Remarks: SSC - Subsurface Clearance ft - feet				
-	- June		SSC - Subsurface Clearance ft - feet				



Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

Boring ID: PDI-46a

Drilling Start Date: 24-Oct-2024
Drilling End Date: 24-Oct-2024
Drilling Contractor: Cascade Drilling
Drilling Method: Direct Push
Rig Make/Model: GeoProbe
Driller: Jake McKee
SSC Contractor: GPRS
SSC Method: Private Locate

Not Applicable

SSC Diam./Depth:

Northing: 702454.020
Easting: 7627608.980
Surface Elevation: 37.5 ft amsl
Borehole Diameter: 2.25 in
Borehole Depth: 47.5 ft bgs
Water Encountered: 31.5 ft bgs
Logged By: David Stone
Reviewed By: Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

O	Boring Backfill Details
Not logged from 0-20' bgs	
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Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

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			В	oring	ID	: PDI-4	l6a
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-			Not logged from 0-20' bgs	20.0			
l _			Dark brown (10YR 3/3) silt with clay and trace fine sand, moderate plasticity, wet, faint sweet odor, gray mottling throughout.	20.0	ML		· V
			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, trace silt, wet, no	20.3			v.
-			odor. 0.25" silt beds at 20.55', 21.25' and 22.0'. White grains ~25% of sand from 20.6-22'				X.
_		54	and <10% from 22-25'				ू । ' जू
							2.25-in Borehole
-					SW		Grout backfill
25-			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, trace silt, moist, no	25.0			
			odor, <10% white grains.				₩]
-							v V
-							₩.
_		63	Dark grayish brown (10YR 4/2) silt with clay, trace fine sand, low plasticity, wet, faint	27.8	ML	,	ै। •
			sweet odor.	27.9			Ĉ.
-			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, trace silt, wet, no odor. 0.5" gray-brown silt bed at 30.6'				
30-					SW		(2) (2) (3) (4)
				21.1			*)
-		_	Very dark grayish brown (10YR 3/2) silt with clay, trace fine sand, low plasticity, mild	31.1	ML	 	₹ ↑ 2
-			Sweet odor, saturated.	31.2			
		76	Very dark brown (10YR 2/2) poorly sorted fine-medium sand, trace silt, wet, faint sweet odor.	31.5	SW		
			Very dark brown (10YR 2/2) poorly sorted fine-medium sand, trace silt, saturated, faint sweet odor, 0.5" dark gray-brown silt bed at 31.5'	31.5			v.
-			Very dark grayish brown (10YR 3/2) silt with clay, trace fine sand, saturated, faint sweet	33.4			Q W
35-			odor, low plasticity.		ML		\$ \$
				35.8			
-			Very dark brown (10YR 2/2) poorly sorted fine-medium sand, trace silt, saturated. Gray silt inclusions 36.6-37.15', very light dispersed sheen from 36.9-37.15'. No odor until		sw		[w]
_			36.7' then mild sweet odor 36.7-37.15'. Woody debris at 37.1'	37.2			v.
		100	Dark grayish brown (10YR 4/2) silt with clay, trace fine sand, 0.25" brown oil-like fluid at 37.15' (captured in oil in soil), low plasticity, saturated, no odor.		ML		w
-			Very dark brown (10YR 2/2) poorly sorted fine-medium sand, trace silt, saturated, no	37.3	SW		v.
-			odor, woody debris at 38.8'	39.2			o d
40-			Very dark grayish brown (10YR 3/2) low plasticity silt with clay, saturated, no odor.	40.0	ML		x.
"			Woody debris fragments	40.2			
-			Black (2.5Y 2.5/1) poorly sorted fine-medium sand with silt, no odor, saturated, woody fragments at 44.4'				å
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		92			SM		. 17 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
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-	-						
	1111	11/1/2	Boring terminated at 47.5 feet Remarks:	·			
			SSC - Subsurface Clearance ft - feet Coordinates were surveyed by a third party in State Plane NAD83, Orego	n North	າ T∽:	tarnations	al Foot
1		III	NA - not available or not applicable amsl - above mean sea level		1, 111	cernations	
	FF	RM	in - inches ft bgs - feet below ground surface		thic ···-	uly many ha we	Printed: 09-May-2025 Sheet: Page 2 of 2
		<u> </u>	© Copyright 2025 by ERM Worldwide Group Limited. All Rights Reserved.	NO part of	ınıs wo	ık may be repr	ouucea without permission.

Boring ID: PDI-46

Reviewed By:

Drilling Start Date: 16-Oct-2024 Drilling End Date: 17-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe Jake McKee **Driller: SSC Contractor: GPRS**

SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702456.040 7627641.390 Easting: Surface Elevation: 35.8 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 51.0 ft bgs Water Encountered: 26.5 ft bgs Logged By: Michael Sell

Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-		GROUND SURFACE			
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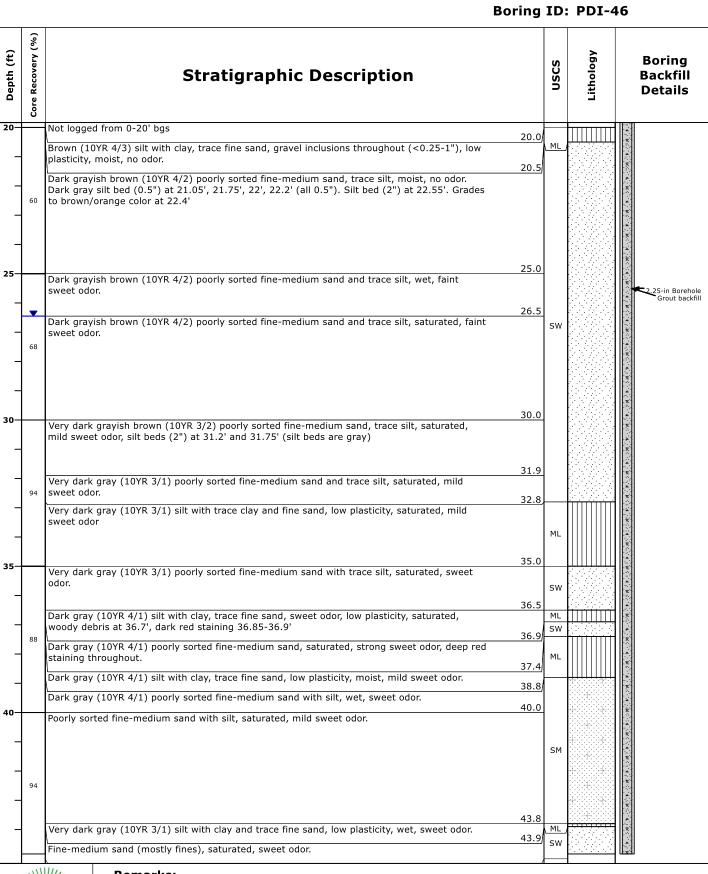


SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface





Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

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		Borin	g I	D:	PDI-4	16
Depth (ft)	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
45— —	100	Fine-medium sand (mostly fines), saturated, sweet odor. 45 Olive gray (5Y 4/2) clay with trace silt and fine sand, moderate plasticity, wet, no odor.	.0/	CL		
50-		Olive gray (5Y 4/2) fine sand with trace silt, saturated, no odor. Olive gray (5Y 4/2) clay with trace silt and fine sand, low plasticity, wet, no odor. 50 Olive gray (5Y 4/2) fine sand, saturated, trace silt, no odor. Refusal at 51' (bedrock/basalt)	.9) .0	SP CL		
- - -	80	Boring terminated at 51 feet	.0	SP		
55-						
- - -						
60-						
- 65-						
-						
_	1111	Remarks:				



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

Boring ID: PDI-47

Reviewed By:

Drilling Start Date: 16-Oct-2024 Drilling End Date: 17-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Tariq Barakat **SSC Contractor: GPRS**

SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702409.540 7627638.490 Easting: Surface Elevation: 37.5 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 53.0 ft bgs Water Encountered: 25.7 ft bgs Logged By: Michael Sell

Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-		GROUND SURFACE			
"		Not logged from 0-20' bgs			
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Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

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		i	Boring	ID:	PDI-4	7
Depth (ft)	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-		Not logged from 0-20' bgs	20.0			
	62	Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand and trace silt, moist, mild sweet odor, silt bed (0.25") at 20.7'		SW		
25-		Angular gravel (likely slough from above), dry, mild tar-like odor (>0.25-0.5")	25.0	GW	20000	(A)
		Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, wet, mild sweet odor.	25.3			
	62	Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, saturated, mild sweet odor. Water table at 25.7'	25.7	SW		2, 25-in Borehole Grout backfill
30-		Angular gravel (likely slough from above), dry, mild tar-like odor (>0.25-0.75")	30.0	GW ,	0202	w. V.
_		Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand and trace silt, wet, mild sweet odor, brown clay bed (0.5") at 30.9'	30.2	SW		. W
-	66	Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand and trace silt, saturated, mild sweet odor.	21.0			(V) (-) (-) (-)
35-	00	Dark gray (10YR 4/1) fine-medium sand with silt (30%), mild sweet odor, wet.	31.8	SM	+ + + + + + + + + + + + + + + + + + +	V
35		Very dark gray (10YR 3/1) silt with clay and trace fine sand, low plasticity, saturated, mild	35.3			· · · · · · · · · · · · · · · · · · ·
_		sweet odor.	37.2	ML		V A
	95	Dark gray (10YR 4/1) clay with silt and trace fine sand, moderate plasticity, wet, mild sweet odor. From 37.2-37.6' lighter gray color with very dark brown mottling.		CL		\(\nu_{i}\)
		Dark gray (10YR 4/1) poorly sorted fine-medium sand with trace silt, saturated, mild sweet odor.	38.1 38.9/	SW		
		Dark gray (10YR 4/1) silt with clay and trace fine sand, low plasticity, wet, mild sweet odor, fine-medium sand beds (0.5") at 39.15' and 39.35'	30.9	ML		X X
40-		Very dark brown (10YR 2/2) poorly sorted fine-medium sand and trace silt, faint sweet odor,	40.0/			×
-		saturated.	41.4	SW		V
		Very dark brown (10YR 2/2) silt with fine-medium sand (40-50%), wet, faint sweet odor, low plasticity.	41.4	ML		v.
	86	Black (2.5Y 2.5/1) poorly sorted fine-medium sand, saturated, faint sweet odor.	41.6			.₩.
_		2.2.2. (2.2.) 2.5, 2, poor, sortes median sana, saturated, fame sweet odon		SW		(a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c
	1111	Remarks:				



Remarks: SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

Stratigraphic Description Stratigraphic Description Black (2.5Y 2.5/1) poorly sorted fine-medium sand, saturated, faint sweet odor. Dark clive gray (5Y 3/2) fine sand with trace sits, saturated, faint sweet odor. Dark clive gray (5Y 3/2) fine sand with trace sits, saturated, mid sweet odor. Dark clive gray (5Y 3/2) fine sand with trace sits, saturated, mid sweet odor. Dark clive gray (5Y 3/2) fine sand with trace sits, saturated, mid sweet odor. Dark clive gray (5Y 3/2) clay with sit and trace fine sand, now pleaticity, moist, no odor. Substitute of the sand of the sa	Boring ID: PDI-47											
Dark olive gray (SY 3/2) fine sand with trace silt, saturated, faint sweet odor. Dark olive gray (SY 3/2) clay with silt and trace fine sand, low plasticity, moist, no odor. Dark olive gray (SY 3/2) fine sand with trace silt, saturated, mild sweet odor. Dark olive gray (SY 3/2) clay with silt and trace fine sand, moderate plasticity, saturated, no odor. Refusal at 53' (bedrock/basalt). Sp. 27 Dark olive gray (SY 3/2) clay with silt and trace fine sand, moderate plasticity, saturated, no odor. Refusal at 53' (bedrock/basalt). Sp. 27 Dark olive gray (SY 3/2) clay with silt and trace fine sand, moderate plasticity, saturated, no odor. Sp. 27 Sp. 27 Dark olive gray (SY 3/2) clay with silt and trace fine sand, moderate plasticity, saturated, no odor. Sp. 27 Dark olive gray (SY 3/2) clay with silt and trace fine sand, moderate plasticity, saturated, no odor. Sp. 27 Dark olive gray (SY 3/2) clay with silt and trace fine sand, moderate plasticity, saturated, no odor. Sp. 27 Dark olive gray (SY 3/2) clay with silt and trace fine sand, moderate plasticity, saturated, no odor. Sp. 27 Dark olive gray (SY 3/2) clay with silt and trace fine sand, moderate plasticity, saturated, no odor. Sp. 27 Dark olive gray (SY 3/2) clay with silt and trace fine sand, moderate plasticity, saturated, no odor. Sp. 27 Dark olive gray (SY 3/2) clay with silt and trace fine sand, moderate plasticity, saturated, no odor. Sp. 27 Dark olive gray (SY 3/2) clay with silt and trace fine sand, moderate plasticity, saturated, no odor. Sp. 27 Dark olive gray (SY 3/2) clay with silt and trace fine sand, low plasticity, moist, no odor. Sp. 27 Dark olive gray (SY 3/2) clay with silt and trace fine sand, low plasticity, moist, no odor. Sp. 27 Dark olive gray (SY 3/2) clay with silt and trace fine sand, low plasticity, moist, no odor. Sp. 27 Dark olive gray (SY 3/2) clay with silt and trace fine sand, low plasticity, moist, no odor. Sp. 27 Dark olive gray (SY 3/2) clay with silt and trace fine sand, low plasticity, moist, no odor. Sp. 27	Depth (ft)	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Backfill						
Dark olive gray (5Y 3/2) clay with silt and trace fine sand, low plasticity, moist, no odor. Dark olive gray (5Y 3/2) fine sand with trace silt, saturated, mild sweet odor. Dark olive gray (5Y 3/2) clay with silt and trace fine sand, moderate plasticity, saturated, no odor. Refusal at 53' (bedrock/basalt). Boring terminated at 53 feet	- - -		50.0									
Dark olive gray (5Y 3/2) fine sand with trace silt, saturated, mild sweet odor. Dark olive gray (5Y 3/2) clay with silt and trace fine sand, moderate plasticity, saturated, no odor. Refusal at 53' (bedrock/basalt). Boring terminated at 53 feet 60-			50.5	-		¥.						
Dark olive gray (5Y 3/2) clay with silt and trace fine sand, moderate plasticity, saturated, no odor. Refusal at 53' (bedrock/basalt). Boring terminated at 53 feet 60-	-	118.33	51.3	+-		v						
Dark olive gray (5Y 3/2) clay with silt and trace fine sand, moderate plasticity, saturated, no odor. Refusal at 53' (bedrock/basalt). Boring terminated at 53 feet 55- 60- - - - - - - - - - - - -	-		bark onve gray (31 3/2) fine saila with trace site, saturated, finia sweet odor.	SP								
odor. Refusal at 53' (bedrock/basalt). Boring terminated at 53 feet 55- 60-	l _		52.7 Dark olive gray (5Y 3/2) clay with silt and trace fine sand, moderate plasticity, saturated, no	CL		· • · · · · · · · · · · · · · · · · · ·						
55- - - - - - 60- - - -			odor. Refusal at 53' (bedrock/basalt).									
	-		Boring terminated at 53 feet									
	60-											



Remarks: SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

Boring ID: PDI-48

Drilling Start Date: 08-Oct-2024 Drilling End Date: 08-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Jake McKee SSC Contractor: Cascade/GPRS SSC Method: Air-knife/Private Locate

6-in / 8-ft

SSC Diam./Depth:

Northing: 702349.410 7627605.560 Easting: **Surface Elevation:** 36.4 ft amsl Borehole Diameter: 3.75 in **Borehole Depth:** 40.0 ft bgs Water Encountered: 30.0 ft bgs Logged By: David Stone **Reviewed By:** Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

			/			
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE Not logged from 0-20' bgs			
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10-						. ``````\```` ```````` P ``````` P ```````` P
-						3.75-in Borehole Grout backfill
-						Grout backfill
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Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

			ī	Boring	ID	PDI-4	18	
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfil Details	İl
20-			Not logged from 0-20' bgs	20.0			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
-		76	Dark brown (10YR 3/3) poorly sorted fine-medium sand, moist, no odor.					
25— —			Dark brown (10YR 3/3) poorly sorted fine-medium sand, moist, mild sweet odor, silt laminations at 26.6' and 26.9'	25.0	SW		B	
		74	Very dark gray (10YR 3/1) poorly sorted fine-medium sand, wet, sweet odor, yellow silt lamination 27.9-28.2'	27.5			8	
30-			Very dark gray (10YR 3/1) poorly sorted fine-medium sand with silt ~25%, saturated,	30.0			* 4	
			mild sweet odor.	30.8			▼ 4	
			Very dark gray (10YR 3/1) silty fine sand, saturated, mild sweet odor.	31.1			Grout ba 2.25-in Bore	ackfill ehole
		100	Very dark gray (10YR 3/1) poorly sorted fine-medium sand with silt \sim 25%, saturated, sweet odor, small red flecks of likely DNAPL 33.6-33.9', slight sheen 33.3-33.9'	33.9	SM	+ +		
			Very dark gray (10YR 3/1) silt with clay, trace fine sand, moderate plasticity, saturated, sweet odor.		ML		₩ W ₩ \	
35-			Very dark gray (10YR 3/1) poorly sorted fine-medium sand, saturated, mild sweet odor.	34.6) 35.0	SW ML		₩. Z	
_			Very dark gray (10YR 3/1) silt with fine sand, low plasticity, saturated, mild sweet odor.	35.5	SM	$+\cdots+$	v.	
			Very dark gray (10YR 3/1) silty fine sand, saturated, mild sweet odor.	36.0	SW		v. ∠ v	
		100	Very dark gray (10YR 3/1) silt with fine sand, trace clay, saturated, mild sweet odor, low plasticity.	3010	GW	0000		
_		100	Black (2.5Y 2.5/1) poorly sorted medium-coarse sand, saturated, mild sweet odor.	36.3				
			Rounded-subrounded gravel (<0.25-1"), medium-coarse sand (black) matrix (poorly	37.0	SW		7. 2. 7	
			sorted)	37.6			₩	
40		_	Black (2.5Y 2.5/1) poorly sorted fine-medium sand, saturated, no odor.	40.0/			<u>x</u> 7	
			Boring terminated at 40 feet	,				
-								
			Remarks: SSC - Subsurface Clearance ft - feet Coordinates were surveyed by a third party in State Plane NAD83, Oreg NA - not available or not applicable amsl - above mean sea level		n, In	 ternationa		. 2025
	ER	RM	in - inches ft bgs - feet below ground surfa © Copyright 2025 by ERM Worldwide Group Limited. All Rights Reserve		this wo	rk mav he ren	Printed: 09-May Sheet: Page 2 oduced without perm	of 2
			S COPYRIGHT 2023 by EARLY WORLDWIGE GROUP EITHILEGT All RIGHTS RESERVE	140 part UI	WU	may be repr	without peril	.1031011

Boring ID: PDI-48a

Drilling Start Date: 18-Oct-2024 Drilling End Date: 18-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe Jake McKee **Driller: SSC Contractor: GPRS** SSC Method: Private Locate

Not Applicable

SSC Diam./Depth:

Northing: 702354.010 Easting: 7627595.400 Surface Elevation: 36.3 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 50.0 ft bgs Water Encountered: 26.1 ft bgs Logged By: Michael Sell **Reviewed By:** Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

\square	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE			
			Not logged from 0-20' bgs			₩.
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15-						X.
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		11/4.				



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

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				Boring	ID:	PDI-4	8a
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-			Not logged from 0-20' bgs	20.0/		913813	
-		58	Dark brown (10YR 3/3) poorly sorted fine-medium sand, moist, no odor.	20.0			
25-			Dark grayish brown (10YR 4/2) poorly sorted fine-medium sand, trace silt, wet, faint sweet odor, light brown silt bed at 25.6' (<0.25")	25.0	SW		2.25-in Borehole Grout backfill
-		52	Dark brown (10YR 3/3) poorly sorted fine-medium sand with trace silt, saturated, faint sweet odor.	26.1			
30-			Dark gray (10YR 4/1) fine sand with silt, saturated, faint sweet odor.	30.0	SM		* 1
_		92	Dark gray (10YR 4/1) poorly sorted fine-medium sand with trace silt, saturated, mild sweet odor, gray silt bed (1") at 31.6'	30.7	sw		
-			Gray (10YR 5/1) silt with clay, trace fine sand, no plasticity, mild sweet odor, wet.	33.2	ML		¥.
_			Dark gray (10YR 4/1) poorly sorted fine-medium sand, trace silt, saturated, sweet odor.	33.8	SW		
35-			Dark gray (10YR 4/1) silt with trace fine sand and clay, low plasticity, wet, mild sweet odor.	35.0 35.3	ML SP ML		
			Very dark gray (10YR 3/1) fine sand with trace silt, saturated, mild sweet odor.	35.5			
_		95	Dark gray (10YR 4/1) silt with clay, trace fine sand, saturated, faint sweet odor, low plasticity. Very dark brown (10YR 2/2) poorly sorted fine-medium sand with trace silt, faint sweet odor, saturated. 37.6-38.25' rounded gravel inclusions (30%) (<0.25-1")	36.1	SW		Control of the contro
40-			Disch (2 F)(2 F(4) fine road with the second w	40.0			x.
-		100	Black (2.5Y 2.5/1) fine sand with trace silt, mild sulfurous odor, saturated.		SP		



SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

				Boring	ID:	PDI-4	18a
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		USCS	Lithology	Boring Backfill Details
45-			Black (2.5Y 2.5/1) fine sand with trace silt, mild sulfurous odor, saturated.	45.0	_SP_		
-		12	Olive (5Y 4/3) clay with trace fine sand, moderate plasticity, wet, no odor.				
_							î.
			Olive (5Y 4/3) clay with silt and trace fine sand, moderate plasticity, saturated, faint	47.5	CL		े •} •
		144	sweet odor.				.a
-				49.8		- · · - - · · -	() () () () ()
50-			Olive (5Y 4/3) silt with clay and trace fine sand, moderate plasticity, saturated, no odor.	50.0	ML		
-			Boring terminated at 50 feet				
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55-							
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65-							
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	W		Remarks:				



SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

Boring ID: PDI-48b

Drilling Start Date: 23-Oct-2024 **Drilling End Date:** 24-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Jake McKee **SSC Contractor: GPRS** SSC Method: Private Locate

Not Applicable

SSC Diam./Depth:

Northing: 702357.970 Easting: 7627584.600 Surface Elevation: 36.3 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 50.0 ft bgs Water Encountered: 30.0 ft bgs Logged By: David Stone **Reviewed By:** Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

\square	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE			
			Not logged from 0-20' bgs			₩.
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		11/4.				



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

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				Boring	ID:	PDI-4	-8b
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-		68	Not logged from 0-20' bgs Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, moist, mild sweet odor, yellow staining and yellow grains from 22.5-25' grading from <10% to 40%	20.0			
25— — —		60	Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, moist, mild sweet odor until 26', sweet odor 26-27'. Yellow staining and yellow grains from 25-25.3' (about 40% saturation), 0.25" tan silt bed at 25.3'. Yellow staining, yellow grains, and yellow laminations from 25.3-27' (about 25% saturation) Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, wet, sweet odor. Yellow staining, yellow grains, and yellow laminations (about 25% saturation)	25.0	sw		2,25-in Borehole Grout backfill
30-		•	Very dark brown (10YR 2/2) poorly sorted fine-medium sand with 10-20% silt, saturated, light yellow staining from 30-31.1', sweet odor 30-31.5', strong sweet odor 31.5-32.9'	30.0	SM		
35—		94	Very dark grayish brown (10YR 3/2) silt with clay, moderate plasticity, saturated, mild sweet odor. Very dark brown (10YR 2/2) poorly sorted fine-medium sand, trace silt, saturated, sweet odor. Very dark brown (10YR 2/2) silt with clay, low plasticity, mild sweet odor, saturated. Very dark brown (10YR 2/2) silt with clay, low plasticity, no odor, saturated.	32.9 33.6 <i>j</i> 34.4 35.0	ML SW		
40-		100	Black (2.5Y 2.5/1) poorly sorted fine-medium sand, trace silt, saturated, no odor. Woody debris at 31.3'. 0.5" black silt bed at 33.1', 1.5" black silt bed at 33.3'	36.3	SW		
			Remarks: SSC - Subsurface Clearance ft - feet				



Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

			•	Boring	ID:	PDI-4	18b
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		USCS	Lithology	Boring Backfill Details
45— — —		4	Very dark brown (10YR 2/2) silt with clay, trace fine sand, saturated, no odor. Olive (5Y 4/3) silt with fine sand, trace clay, low plasticity, saturated, no odor. Note: Not enough sample for oil in soil. Josh Hancock approved no oil in soil.	45.0) 50.0	ML		
50— — — —			Boring terminated at 50 feet				
60-							
65-							
-		Transition in the second					



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

Boring ID: PDI-49

Drilling Start Date: 08-Oct-2024 Drilling End Date: 09-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe Josh Doty **Driller: SSC Contractor:** GPRS SSC Method: Private Locate SSC Diam./Depth: Not Applicable

Northing: 702315.120 Easting: 7627576.800 Surface Elevation: 36.1 ft amsl Borehole Diameter: 3.75 in **Borehole Depth:** 50.0 ft bgs Water Encountered: 30.0 ft bgs Logged By: David Stone **Reviewed By:** Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

			/ Departs Tree Applicable			
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE Not logged from 0-20' bgs			
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15-						Grout backfill
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-						
-						
_						3.75-in Borehole
						7
	111,	1111	Pemarks:	1	1	



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

			E	Boring	ID:	PDI-4	19	
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Ва	oring ckfill tails
20-			Not logged from 0-20' bgs	20.0		1,000.000.000.000.000	√	
_			Grayish brown (10YR 5/2) poorly sorted fine-medium sand with silt, subangular gravel (<0.25-0.5"), slight tar-like odor, moist.	20.0	SM		▼ p	
			Dark reddish gray (10YR 4/2) poorly sorted fine-medium sand, no odor, moist.	20.3	sw		∇ P	
-		70		22.5			V 7	
-			Brown (10YR 5/3) poorly sorted fine-medium sand with silt, moist, no odor, yellow staining grading from 10-70% from 22.7-25' bgs.		SM	+ +	V V V V V V V V V V V V V V V V V V V	
25-			Dark brown (10YR 3/3) poorly sorted fine-medium sand, slight sweet odor, moist, yellow	25.0			,	
<u> </u>			medium sand grains (~10%)	26.0	sw		V	
			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, moist, slight sweet odor, light tan silt inclusion (<0.25") at bottom.				V P	
-		60	Dark grayish brown (10YR 4/2) fine-medium sand with silt (poorly sorted), trace clay,	26.7	SM		▼ .p	
-			moist, no odor, becomes darker at 26.9', ~10% tan/yellow grains, tan yellow laminations	27.6	ML	10.4000	▼	
_			Dark gray (10YR 4/1) silt with clay, trace fine sand, low plasticity, moist, no odor. Very dark gray (10YR 3/1) poorly sorted fine-medium sand with silt, moist, no odor.	27.7		+	▼ 7 ▼ 7	
			very dark gray (101K 3/1) poorly sorted line-medium sand with sitt, moist, no odor.	20.0	SM	+ + +	ν _P	
30-		_	Very dark gray (10YR 3/1) poorly sorted fine-medium sand with silt (30-40%), saturated,	30.0			▼ 7 ∇ P	
-			mild sweet odor, dispersed sheen throughout, silt decreases to 10% at 30.4' Very dark gray (10YR 3/1) silt with fine sand, low plasticity, mild sweet odor, saturated,	31.1				
			dispersed sheen throughout, larger sheen at 32.3'					
		92	Very dark gray (10YR 3/1) silt with fine sand and clay, moderate plasticity, mild sweet odor, wet.	32.3				
			Very dark gray (10YR 3/1) poorly sorted fine-medium sand, mild sweet odor, saturated.	33.6	SW ML			
			Very dark gray (10YR 3/1) silt with trace fine sand and clay, moderate plasticity, no odor, wet.		SM		F-B	entonite seal
35-			Black poorly sorted fine-medium sand with silt, saturated, mild sweet odor.	34.2	ML SW			
-			Very dark gray (10YR 3/1) silt with fine sand, trace clay, low plasticity, saturated, mild	34.5	ML			
		60	sweet odor. Black poorly sorted fine sand with woody debris (1"), saturated, sweet odor, dispersed	35.3				
			sheen throughout.	35.6				
-			Very dark gray (10YR 3/1) silt with fine sand, trace clay, saturated, sweet odor, dispersed sheen throughout, low plasticity.				A A	
-		200	Black poorly sorted fine-medium sand, trace silt, saturated, mild sweet odor, dispersed sheen throughout.	35.9			8	
40-			Black poorly sorted fine-medium sand, trace silt, saturated, no odor, bentonite chip	37.5	sw		Z .	
_			inclusions throughout. Black poorly sorted fine-medium sand, trace silt, saturated, no odor.	40.0	۷۷۷		V	
			States poorly sorted fine mediam sand, trace sitt, saturated, no odor.				v.	
		94					▼ \	
-							\$ F	
_							2.2	Grout backfill 5-in Borehole
	1111	White.	Remarks:					
			SSC - Subsurface Clearance ft - feet Coordinates were surveyed by a third party in State Plane NAD83, Orec	ion North	ı Int	ternation:	al Foot	
1		Illi	NA - not available or not applicable amsl - above mean sea level		1, 111	cernation		00 14
	ER	RM	in - inches ft bgs - feet below ground surfa © Copyright 2025 by ERM Worldwide Group Limited. All Rights Reserve		this wo	rk may be repr	Sheet:	09-May-2025 Page 2 of 3 out permission.

				Boring	ID:	PDI-4	19
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		USCS	Lithology	Boring Backfill Details
45-			Black poorly sorted fine-medium sand, trace silt, saturated, no odor.	45.0	(SW)		
-			Olive brown (2.5Y 4/3) silt with fine sand, trace clay, saturated, no odor, low plasticity.				
_							
		100		47.9	ML		\$ \$
-			Olive brown (2.5Y 4/3) silt with clay, trace fine sand, moderate plasticity, no odor, wet, soft				
-			Olive brown (2.5Y 4/3) silt with fine sand, trace clay, low plasticity, no odor.	48.5			
50-			Boring terminated at 50 feet	50.0			
_			Boring terminated at 50 feet				
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-							
55-							
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	WIE	Wifes	Remarks:		İ		



SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

Boring ID: PDI-49a

Drilling Start Date: 23-Oct-2024 Drilling End Date: 23-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Jake McKee **SSC Contractor: GPRS** SSC Method: Private Locate

Not Applicable

SSC Diam./Depth:

Northing: 702314.800 Easting: 7627578.490 Surface Elevation: 36.0 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 50.0 ft bgs Water Encountered: 30.0 ft bgs Logged By: David Stone **Reviewed By:** Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0- - - - - - - - - - - - - - - - - - -			Reddish gray (5YR 5/2) poorly sorted fine-medium sand, trace silt, moist, mild sweet odor, light pinkish gray laminations at 16.4-16.7' and 17-17.5'	SW		
	111.	11/11	Remarks:			



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

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			Ī	Boring	ID:	PDI-4	9a
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20 -		62	Reddish gray (5YR 5/2) poorly sorted fine-medium sand, trace silt, moist, mild sweet odor, light pinkish gray laminations at 16.4-16.7' and 17-17.5' Reddish gray (5YR 5/2) poorly sorted fine-medium sand, trace silt, moist, mild sweet odor, yellow staining and yellow grains from 22.7-23.1'	20.0			
25 —		53	Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, trace silt, moist, mild sweet odor. Yellow grains, staining, and laminations from 25-26', subrounded gravel inclusions 26.8-27', yellow staining 27-27.2', 0.5" silt with clay bed at 26.3'. Sweet odor 27-27.2'	25.0	sw		2 25-in Borehold Grout backfil
30— —			Very dark brown (10YR 2/2) poorly sorted fine-medium sand, trace silt, saturated, sweet odor. Very dark grayish brown (10YR 3/2) silt with fine sand, low plasticity, saturated, sweet odor, sheen 31.8-31.9'	30.0 30.5	ML		, v
		92	Very dark grayish brown (10YR 3/2) silt with clay, moderate plasticity, saturated, no odor. Very dark brown (10YR 2/2) poorly sorted fine-medium sand, trace silt, saturated, faint sweet odor.	32.6	SW		
35— —			Very dark grayish brown (10YR 3/2) silt with clay, moderate plasticity, saturated, no odor, very light sheen 33.25-33.4' Very dark grayish brown (10YR 3/2) moderate plasticity silt with clay, saturated, no odor. Black (2.5Y 2.5/1) poorly sorted fine-medium sand, trace silt, saturated, no odor. Woody	35.0 35.2	SW ML		
-		100	debris 35.2-35.3' Very dark grayish brown (10YR 3/2) silt with clay, moderate plasticity, saturated, no odor. Black (2.5Y 2.5/1) poorly sorted fine-medium sand, trace silt, saturated, no odor.	35.7 35.9			
40 -		87			SW		
110			Remarks: SSC - Subsurface Clearance ft - feet Coordinates were surveyed by a third party in State Plane NAD83, Oreg				

ERM

NA - not available or not applicable amsl - above mean sea level

			Во	ring	ID:	PDI-4	19a
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
45-			Black (2.5Y 2.5/1) poorly sorted fine-medium sand, trace silt, saturated, no odor.	45.0	(SW)		
			Olive (5Y 4/3) silt with clay, trace fine sand, moderate plasticity, saturated, no odor.	45.5			· v. ·
			Olive (5Y 4/3) silt with fine sand, trace clay, low plasticity, saturated, no odor.	46.6/			v
_			Olive (5Y 4/3) silt with clay, trace fine sand, low plasticity, wet, no odor.	40.0			
		66			ML		
_							
				50.0			v
50-			Boring terminated at 50 feet				
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55-							
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60-							
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65-							
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		11.					
17.			Remarks: SSC - Subsurface Clearance ft - feet				



Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

Boring ID: PDI-50 09-Oct-2024

Drilling Start Date: Drilling End Date: 09-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe Jake McKee **Driller: SSC Contractor:** GPRS

SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702233.830 Easting: 7627601.770 Surface Elevation: 36.3 ft amsl Borehole Diameter: 3.75 in **Borehole Depth:** 35.0 ft bgs Water Encountered: 23.3 ft bgs

Logged By: David Stone **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

GROUND SURFACE Angular gravel (<0.25-1"), debris: asphalt, concrete, dry, no odor. Dark graylish brown (10YR 4/2) silt with fine sand, low plasticity, moist. Yellow silt inclusion (0.25") at 1.6', gray silt inclusion (0.5") at 2.7' Graylish brown (10YR 5/2) silt with fine sand, trace gravel (<0.25") angular and clay, moist, no odor. Graylish brown (10YR 5/2) silt with fine sand, trace gravel (<0.25") angular and clay, saturated, no odor, subangular 1.25" clast at 7' 7.5 Gray (10YR 5/1) silt with clay and fine sand, low plasticity, wet, mild sweet odor. Very dark gray (10YR 3/1) fine sand with silt, gravel inclusion (1") at 8.7', moist, mild sweet odor. Graylish brown (10YR 5/2) fine sand with silt, wet, no odor. Graylish brown (10YR 5/2) fine sand with silt, wet, no odor. Dark gray (10YR 4/1) silt with clay, trace fine sand, low plasticity, wet, no odor. Very dark gray (10YR 3/1) silt with clay, trace fine sand, low plasticity, wet, no odor. Very dark graylish brown (10YR 3/2) fine sand with silt, wet, no odor. Very dark graylish brown (10YR 3/2) fine sand, trace clay, moderate plasticity, wet, mild sweet odor. Very dark graylish brown (10YR 3/2) fine sand with trace silt, mild sweet odor, wet. Very dark graylish brown (10YR 3/2) fine sand with trace silt, mild sweet odor. Very dark graylish brown (10YR 3/2) fine sand with trace silt, mild sweet odor. Very dark graylish brown (10YR 3/2) silt with fine sand, trace silt, wet, mild sweet odor. Very dark graylish brown (10YR 3/2) silt with fine sand, trace silt, wet, mild sweet odor. 15.0 ML Very dark graylish brown (10YR 3/2) silt with fine sand, low plasticity, wet, mild sweet odor. 16.1 GW 200000	Boring Backfill Details
Angular gravel (<0.25-1*), debris: asphalt, concrete, dry, no odor. Dark grayish brown (10YR 4/2) silt with fine sand, low plasticity, moist. Yellow silt inclusion (0.25*) at 1.6', gray silt inclusion (0.5*) at 2.7' Grayish brown (10YR 5/2) silt with fine sand, trace gravel (<0.25*) angular and clay, moist, no odor. Grayish brown (10YR 5/2) silt with fine sand, trace gravel (<0.25*) angular and clay, saturated, no odor, subangular 1.25" clast at 7' Gray (10YR 5/1) silt with clay and fine sand, low plasticity, wet, mild sweet odor. Very dark gray (10YR 3/1) fine sand with silt, gravel inclusion (1") at 8.7', moist, mild sweet odor. Incar brown stain from 7.8-8.2' Gray silt with clay and trace fine sand, moderate plasticity, wet, faint sweet odor, linear brown stain (0.5* thick) from 8.9-9.1' Grayish brown (10YR 5/2) fine sand with silt, wet, no odor. Dark gray (10YR 4/1) silt with clay, trace fine sand, low plasticity, wet, no odor. Very dark grayish brown (10YR 3/2) fine sand, trace clay, moderate plasticity, wet, mild sweet odor, wet. Very dark grayish brown (10YR 3/2) fine sand with trace silt, mild sweet odor, wet. Very dark grayish brown (10YR 3/2) fine sand with trace silt, mild sweet odor. Very dark gray (10YR 3/1) silt with clay, moderate plasticity, wet, no odor. 3.8 brown (10YR 4/3) poorly sorted fine-medium sand, trace silt, wet, mild sweet odor. Very dark grayish brown (10YR 3/2) silt with fine sand, low plasticity, wet, mild sweet odor. 16.1 GW Coccol Very dark grayish brown (10YR 3/2) silt with fine sand, low plasticity, wet, mild sweet odor. 4. september 2. Se	
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84 Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, trace silt, moist, no	
sw sw	



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

			E	Boring	ID:	PDI-5	50
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20- - - 25- - 30- - 35- - - 40- -		96	Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, trace silt, moist, no odor. Very dark grayish brown (10YR 3/2) silt with fine sand, low plasticity, wet, mild sweet odor, gravel inclusion at 21.3' (1") Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, trace silt, mild sweet odor from 21.3-23.5', smoist. Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, trace silt, mild sweet odor from 21.3-23.5', saturated. Very dark gray (10YR 3/1) poorly sorted fine-medium sand, trace silt, mild sweet odor 25-27', sweet odor 27-28.1', saturated, yellow grains throughout (10-20%), 0.5" yellow silt bed at 27.7' Dark grayish brown (10YR 4/1) fine-medium sand with silt (30-40%), poorly sorted, saturated, strong sweet odor, DNAPL/red staining (40-50%) Gray (10YR 5/1) silt with clay, saturated, strong sweet odor, sharp gray mottling, moderate plasticity Very dark gray (10YR 3/1) poorly sorted fine-medium sand with silt (10-20%), saturated, strong sweet odor. Very dark gray (10YR 3/1) silt with fine sand, low plasticity, mild sweet odor, saturated, wood chip at 29.4' Very dark gray (10YR 3/1) poorly sorted fine-medium sand with silt (10-20%), wet, faint sweet odor. Black (2.5Y 2.5/1) silt with clay, wet, no odor, low plasticity. Black fine-medium sand, wet, faint sweet odor. Boring terminated at 35 feet	20.5/ 21.3/ 23.3 25.0 28.1 28.5/ 28.9 29.2 30.0 31.8 32.5/ 33.8 35.0/			Grout backfill 2.25-in Borehole
	EF	RM	Remarks: SSC - Subsurface Clearance ft - feet Coordinates were surveyed by a third party in State Plane NAD83, Oreg NA - not available or not applicable amsl - above mean sea level in - inches ft bgs - feet below ground surfa © Copyright 2025 by ERM Worldwide Group Limited. All Rights Reserve	ce			Printed: 09-May-2025 Sheet: Page 2 of 2

Boring ID: PDI-50a

Drilling Start Date: 10-Oct-2024 Drilling End Date: 10-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe Jake McKee **Driller: SSC Contractor:** GPRS SSC Method: Private Locate

Northing: 702236.170 Easting: 7627591.250 Surface Elevation: 36.2 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 40.0 ft bgs Water Encountered: 26.4 ft bgs Logged By: David Stone **Reviewed By:** Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
 - - - -	58	GROUND SURFACE Angular gravel (<0.25-1"), dark gray silty fine sand matrix, dry, no odor. Angular gravel (<0.25-1"), dark gray silty fine sand matrix, moist, no odor. Angular gravel (<0.25-1"), dark gray silty fine sand matrix, wet, no odor.	0.3/ 1.1/	GW		
] - -	58	Angular gravel (<0.25-1"), dark gray silty fine sand matrix, moist, mild sweet odor. Angular gravel (<0.25-1"), dark gray silty fine sand matrix, wet, mild sweet odor. Dark yellowish brown (10YR 4/4) fine sand with silt, moist, mild sweet odor. Dark yellowish brown (10YR 4/4) clay with silt, low plasticity, moist, mild sweet odor.	5.0 5.6, 6.3	SM	00000000000000000000000000000000000000	
-) -		Subrounded gravel (<0.25-1"), dark gray brown silt fine sand matrix, moist, mild sweet odor. Dark yellowish brown (10YR 4/4) fine sand with silt, wet, mild sweet odor.	10.0	CL GW SM	2000000 000000000000000000000000000000	
_ _ _	92	Brick Greenish gray (GLEY1 6/10GY) silt with trace fine sand, moist, no odor. Brick	10.6	ML		Grout back
;-		Subrounded gravel (0.25-0.5") with silty fine sand matrix, likely slough. Very dark grayish brown (10YR 3/2) silt with trace fine sand, subrounded gravel inclusions (<0.5"), brick debris throughout, wet, no odor.	15.0 15.2	GW ,		



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

				Boring	ID:	PDI-5	50a
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand with trace silt, wet, no odor, yellow grains (5-10%)	20.0	SW ML		A Property
-			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand with trace silt, wet, mild sweet odor, yellow grains (5-10%) Very dark grayish brown (10YR 3/2) silt with clay and trace fine sand, gravel inclusions	20.3			V.
-		76	throughout (50%) (0.25-1"), wet, no odor. Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand with trace silt. Yellow grains (5-10%) from 21-23', light yellow staining grading (10-30%) from 23-25',	21.0	SW		A.V.
-			mild sweet odor 21-23', sweet odor 23-25'	25.0			
25-			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand with trace silt. Light yellow staining (10%), mild sweet odor.	25.5	SM		
-			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand with silt (40-50%), wet, sweet odor. Subangular gravel (0.5-1")	26.0	GW		
_		100	Very dark gray (10YR 3/1) poorly sorted fine-medium sand with trace silt, dispersed yellow grains throughout, saturated, sweet odor, yellow silt lamination and woody debris at 28.4', silt lamination at 28.55 and 29', yellow staining 28.55-29.25'	26.4	SW		
30-			Dark gray (10YR 4/1) silt with clay, moderate plasticity, saturated, strong sweet odor.	29.3 29.4	ML SM		
-			Dark gray (10YR 4/1) poorly sorted fine-medium sand with silt (30-40%), saturated, strong sweet odor, dispersed yellow and red staining (50%) from 29.4-29.5' Dark gray (10YR 4/1) silt with clay, moderate plasticity, sweet odor, saturated.	29.5	LML SM		Bentonite seal
-		100	Very dark gray (10YR 3/1) fine-medium sand with silt, saturated, mild sweet odor, poorly sorted, yellow staining (20%)	29.7 30.0	ML		
-			Very dark gray (10YR 3/1) fine-medium sand with silt, saturated, mild sweet odor, poorly sorted, yellow staining (30%)	30.5	SW		
35-			Black (10YR 2/1) silt with clay, low plasticity, wet, no odor. Black poorly sorted fine-medium sand, saturated, no odor, woody debris 33.35-33.7' and 34.3'	32.2			
_			Olive gray (5Y 4/2) silt with clay, moderate plasticity, saturated, no odor.	35.0			
_		100	Olive gray (5Y 4/2) silt with fine sand, trace clay, saturated, no odor.	37.7	ML		Grout backfill 2.25-in Borehole
-			Olive gray (5Y 4/2) silt with clay, moderate plasticity, saturated, no odor.	38.7			
40-			Boring terminated at 40 feet	40.0			[84]
-							
-							
			Remarks: SSC - Subsurface Clearance ft - feet Coordinates were surveyed by a third party in State Plane NAD83, Ore	aon North	n. Int	ternation	al Feet
	EF	RM	NA - not available or not applicable amsl - above mean sea level in - inches ft bgs - feet below ground surfi	ace			Printed: 09-May-2025 Sheet: Page 2 of 2

Boring ID: PDI-50b

Drilling Start Date: 10-Oct-2024 Drilling End Date: 10-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe Jake McKee **Driller: SSC Contractor: GPRS** SSC Method: Private Locate

Not Applicable

SSC Diam./Depth:

Northing: 702238.730 7627580.660 Easting: Surface Elevation: 36.1 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 45.0 ft bgs Water Encountered: 23.0 ft bgs Logged By: David Stone **Reviewed By:** Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
			GROUND SURFACE				
0-			Subangular gravel (<0.25-1.5"), moist, no odor, dark brown silt with fine sand matrix.				*** *** ***
		58			GW	0000	() () ()
					GW		
				5.0			
5-			Angular gravel (<0.25-1"), moist, no odor, fine-medium brown sand matrix.	5.0) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
-			Dark grayish brown (10YR 4/2) silt with clay, trace fine sand, wet, no odor. 6.6-6.8' slightly darker gray with brown mottling. Moderate plasticity		ML		
		60	Dark grayish brown (10YR 4/2) fine sand with silt, moist, faint sweet odor.	6.8 _/ 7.5 _/	SM	+ : : :	
$ \ $			Dark grayish brown (10YR 4/2) silt with clay, trace fine sand, low plasticity, moist, no odor.	,			i i
					ML		
10-			Angular gravel (<0.25-1"), moist, no odor, fine-medium sand matrix (brown).	10.0	GW	00000	
$ \ $			Dark grayish brown (10YR 4/2) fine sand with trace silt, moist, no odor.	10.5			
			Dark grayish brown (10YR 4/2) fine sand with trace silt, wet, no odor. 0.25" brown stain at 11.8' (no odor), woody debris at 11.9', rubber string at 12.6'		SP		
		100	Dark grayish brown (10YR 4/2) silt with trace fine sand, low plasticity, wet, no odor.	12.8	ML		
			Dark brown (10YR 3/3) fine sand, trace silt, wet, no odor.	13.2/ 13.9/	SP		Grout backfill
15-			Dark brown (10YR 3/3) fine sand, trace silt, saturated, no odor.	15.0	5		
15			Angular gravel (<0.25-1") with brown silt matrix, wet, no odor.	15.4/	GW)	: 0. 0. 0. 0. 0.
			Dark gray (10YR 4/1) silt with clay and trace fine sand, moderate plasticity, saturated, no odor.	16.9	ML		
		84	Brown (10YR 4/3) medium-coarse sand, wet, mild sweet odor, poorly sorted, 0.75" rounded gravel inclusion at 18'	10.9			₹ 2.25-in Borehole
$ \ $					SW		2.25-in Borehole with expendable point
-							• • • • • • • • • • • • • • • • • • •
	,,,,,	1111	Remarks:				[-A-7]



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

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			1	Boring	ID	: PDI-5	50b
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-			Brown (10YR 4/3) medium-coarse sand, wet, mild sweet odor, poorly sorted, 0.75" rounded gravel inclusion at 18'	20.0	SW ML		
-			Dark gray (10YR 4/1) silt with clay, trace fine sand and angular gravel inclusions throughout (0.25-1"), saturated, no odor.	20.0			
-		86	Brown (10YR 4/3) fine-medium sand, wet, no odor.	20.9			
-			Brown (10YR 4/3) fine-meNdium sand, saturated, mild sweet odor.	23.0	sw		w.
-							
25-			Dark gray (10YR 4/1) silt with clay and medium sand throughout, gravel angular throughout (0.25-1"), wet, mild sweet odor.	25.0	ML		
-			Brown (10YR 4/3) poorly sorted fine-medium sand with silt, saturated, mild sweet odor,	26.2	IMIL		· · · · · · · · · · · · · · · · · · ·
-		100	dark brown silt bed at 28.2' (1" thick) and 28.7' (0.5" thick). Grades to darker brown/gray at 28.25'. Sweet odor from 28.25-29.4'				
-		100			SM		
-				29.4			
30-			Gray (10YR 5/1) silt with fine sand, trace clay, low plasticity, saturated, sweet odor, dark brown mottling from 29.5-30'	30.0/			
-			Dark gray (10YR 4/1) silt with fine sand, saturated, mild sweet odor, angular gravel inclusions throughout (0.25-1"), low plasticity.	33.0	ML		Bentonite seal
				32.2			
		100	Black (10YR 2/1) silt with fine sand, trace clay, wet, mild sweet odor, low plasticity. Black (2.5YR 2.5/1) fine-medium sand, poor sorting, saturated, faint sweet odor.	33.0			
			black (2.31K 2.3/1) file friedfall safita, poor sorting, saturated, fallit sweet odol.		sw		
35-			Na vanagari	35.0			
			No recovery				
							\$ *
		0					(A) (X) (A)
							v.
40-				40.0			\[\frac{\text{V}}{2} \]
40			Olive (5Y 4/3) silt with clay, trace fine sand, moderate plasticity, saturated, no odor.				Grout backfill 2.25-in Borehole
					ML		<u>.</u>
		100		42.8			(本) (文) (文)
			Olive (5Y 4/3) fine sand with silt, trace clay, saturated, no odor.		SM	† †	
							• • • • • • • • • • • • • • • • • • •
	1111	Ulle.	Boring terminated at 45 feet Remarks:				<u> </u>
11/1/1			SSC - Subsurface Clearance ft - feet Coordinates were surveyed by a third party in State Plane NAD83, Oreg	gon North	n, In	ternation	al Feet
		William	NA - not available or not applicable amsl - above mean sea level in - inches ft bgs - feet below ground surfa				Printed: 09-May-2025 Sheet: Page 2 of 2
	Εĥ	<u> M</u>	© Copyright 2025 by ERM Worldwide Group Limited. All Rights Reserve		this wo	ork may be repr	-

Drilling Start Date: 11-Oct-2024 Drilling End Date: 11-Oct-2024 **Drilling Contractor:** Cascade Drilling

Drilling Method: Direct Push Rig Make/Model: GeoProbe Jake McKee **Driller: SSC Contractor:** GPRS

SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702210.730 Easting: 7627552.160 Surface Elevation: 36.7 ft amsl

Borehole Diameter: 2.25 in **Borehole Depth:** 40.0 ft bgs Water Encountered: 20.0 ft bgs Logged By: David Stone

Reviewed By: Avery Soplata, RG **Client:**

Consolidated Total

Boring ID: PDI-51

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		sosn	Lithology	Boring Backfill Details
			GROUND SURFACE				
0-			Asphalt	0.3/	GW	2000000	₩.
_			Subangular gravel (<0.25-1") in dark brown silty fine sand matrix, moist, no odor.	0.9/	ML		
			Dark grayish brown (10YR 4/2) silt with fine sand, trace clay, low plasticity, moist, no odor.		SM	+:::::	
_		55	Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand with silt (30-40%),	1.1			
_		33	moist, no odor.	1 7			V
			Dark grayish brown (10YR 4/2) silt with fine sand, moist, no odor, laminated throughout.	1.7	ML		v.
_							.v
5-							
•			Black gravel (<0.25"), likely cave in from asphalt	5.5	GW		V
_			Dark grayish brown (10YR 4/2) silt with fine sand, trace clay, moist, low plasticity	5.7			. v
			Dark grayish brown (101K 4/2) silt with fine saild, trace clay, moist, low plasticity	7.0	ML		
		93	Dark grayish brown (10YR 4/2) silt with fine sand, trace clay, wet, increase in clay % 7-7.5', high plasticity		МН		Grout backfill
_				7.5			Grout backini
			Dark grayish brown (10YR 4/2) silt with fine sand, trace clay, moist, low plasticity				
_					ML		. ↑ V
10-				10.2			. v
			Very dark greenish gray (GLEY1 3/10Y) silt with clay, trace fine sand, moderate	10.3			
_			plasticity, saturated, no odor.	11.4			\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\
			Light brown organic/rusted woody debris.	11.4	SM	+ + + + + + + + + + + + + + + + + + + +	v
		100	Very dark grayish brown (10YR 3/2) fine sand with silt, wet, no odor.	12.3			· ·
_			Very dark grayish brown (10YR 3/2) silt with clay, trace fine sand, low plasticity,				
			saturated, no odor, dark gray mottling 12.3-13.1' and 13.3-15'		ML		
_			Dayle and the house (40)(D.4/2) Consequence the title to the second and the secon	14.4			v
15-			Dark grayish brown (10YR 4/2) fine sand with silt, trace clay, wet, no odor.	15.0	SM	+ + + + + + + + + + + + + + + + + + + +	2.25-in Borehole
			Dark grayish brown (10YR 4/2) silt with clay, trace fine sand, saturated, no odor.				2.25-in Borehole with expendable point
_							
		20			ML		
_							
						[
						[
						<u> </u>	

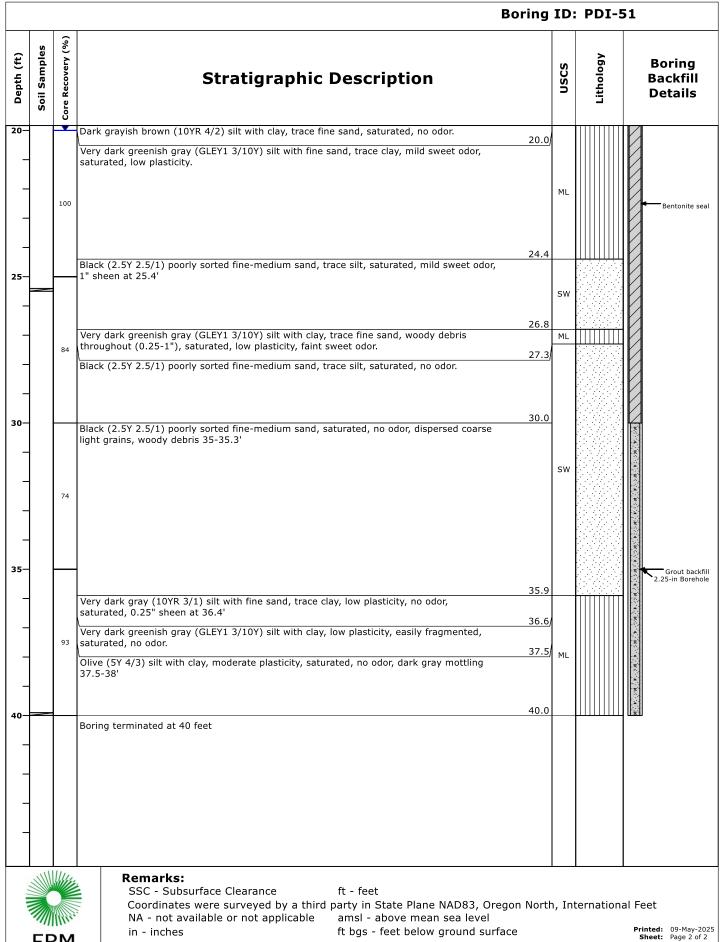


SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface



Drilling Start Date: 18-Oct-2024
Drilling End Date: 18-Oct-2024
Drilling Contractor: Cascade Drilling
Drilling Method: Direct Push
Rig Make/Model: GeoProbe
Driller: Kyle King

SSC Contractor: GPRS
SSC Method: Private Locate
SSC Diam./Depth: Not Applicable

 Northing:
 702184.610

 Easting:
 7627561.180

 Surface Elevation:
 37.1 ft amsl

 Borehole Diameter:
 2.25 in

Borehole Diameter: 2.25 in
Borehole Depth: 40.0 ft bgs
Water Encountered: 20.5 ft bgs
Logged By: Michael Sell

Reviewed By: Avery Soplata, RG

Client:

Consolidated Total

Boring ID: PDI-52

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE				
			Angular gravel (<0.25-0.75"), brown sandy silt matrix, dry, mild tar-like odor.	0.8	GW		₩ A
_			Dark brown (10YR 3/3) poorly sorted fine-medium sand with gravel inclusions throughout (0.25-0.5"), dry, no odor.	1.4	SW ML,		▼
+			Dark grayish brown (10YR 4/2) silt with clay, moderate plasticity, moist, no odor.	1.5	SW		v
4		64	Dark brown (10YR 3/3) poorly sorted fine-medium sand, trace silt, moist, no odor.	2.0	31		V
			Brown (10YR 5/3) fine sand, trace silt, moist, no odor.	2.9	ML		[v]
			Brown (10YR 5/3) silt with fine sand (40%), trace clay, wet, low plasticity, no odor.		ME		v.
5-			Brown (10YR 5/3) fine sand with silt, moist, faint sweet odor.	5.0 5.6	SM		. v.
\dashv			Brown (10YR 5/3) angular gravel (<0.25")	5.7	(GW)		x
			Brown (10YR 5/3) silt with fine sand and trace clay, saturated, no odor, low plasticity.	7.0	ML		V.
		66	Dark gray (10YR 4/1) silt with clay and trace fine sand, low plasticity, wet, no odor. Brown (10YR 5/3) fine sand with silt (30%), saturated, no odor.	7.6			x
- o-				10.6	SM	+ + + + + +	
-			Dark gray (10YR $4/1$) silt with clay with trace fine sand, moderate plasticity, no odor, wet.	11.5,	ML		
_			Dark gray (10YR 4/1) fine sand with silt and trace clay, wet, mild sweet odor, color grades from gray to brown. Oil sheen from 12.1-12.25'		SM	+::::	
_		68	Dark gray (10YR 4/1) silt with clay and trace fine sand , low plasticity, faint sweet odor, wet.	12.3			will A
-			Very dark gray (10YR 3/1) silt with fine sand and trace clay, moist, low plasticity, faint sweet odor.	12.7			P)
5-			Dark gray (10YR 4/1) silt with clay and trace fine sand, low plasticity, wet, dark brown silt laminations throughout.	13.1			A DE
4					ML		▼
_		10					() \$4 (A) (A) (A) (A) (A) (A) (A) (A) (A) (A)



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

				Boring	ID:	PDI-5	52	
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details	I
20-		_	Dark gray (10YR 4/1) silt with clay and trace fine sand, low plasticity, wet, dark brown silt laminations throughout.		ML SP		2.25-in Bore Grout back	hole ckfill
-			Brown (10YR 5/3) fine sand with angular gravel (0.25"), moist, no odor, likely slough from above.	20.0			\$. v	
_		90	Very dark gray (10YR 3/1) silt with clay and trace fine sand, low plasticity, saturated, mild sweet odor, dark brown pore water throughout.	20.5	ML		.v.	
-			Very dark brown (10YR 2/2) clay, trace fine sand, moderate plasticity, moist, mild sweet odor.	23.4	CL		· · · · · · · · · · · · · · · · · · ·	
25-			Very dark gray (10YR 3/1) silt with clay and trace fine sand, saturated, mild sweet odor, very dark brown pore water, low plasticity.	25.0	ML			
_			Very dark brown (10YR 2/2) clay and trace fine sand, high plasticity, saturated, mild sweet odor.	26.6	СН		v.	
_		100	Very dark brown (10YR 2/2) poorly sorted fine-medium sand with trace silt, saturated, mild sweet odor, oil sheen at 34.15'	27.1			V.	
30-							V.	
-							(A)	
-		94			sw		1 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1	
-								
-				25.0			W.	
35-			Black (2.5Y 2.5/1) poorly sorted fine-medium sand with trace silt, saturated, mild sweet odor, dispersed oil sheen from 35.3-36.3'	35.0				
_			Very dark gray (10YR 3/1) silt with fine sand and trace clay, wet, faint sweet odor, low	36.9				
_		100	plasticity.	39.0	ML		W	
			Olive gray (5Y 4/2) clay with silt and trace fine sand, wet, no odor, moderate plasticity.	40.0	CL		· v	
40-			Boring terminated at 40 feet	10.0			<u>[133]</u>	
			Remarks: SSC - Subsurface Clearance ft - feet				-1.5	
1			Coordinates were surveyed by a third party in State Plane NAD83, Or NA - not available or not applicable amsl - above mean sea level in - inches ft bgs - feet below ground sur		ı, In	ternation	al Feet Printed: 09-May	-2025
	EF	RM	in - Inches © Copyright 2025 by ERM Worldwide Group Limited. All Rights Rese		this wo	rk may be repi	Sheet: Page 2	of 2

Boring ID: PDI-53

Drilling Start Date: 18-Oct-2024
Drilling End Date: 21-Oct-2024
Drilling Contractor: Cascade Drilling
Drilling Method: Direct Push
Rig Make/Model: GeoProbe
Driller: Jake McKee
SSC Contractor: GPRS
SSC Method: Private Locate

Not Applicable

SSC Diam./Depth:

Northing: 702124.620
Easting: 7627623.990
Surface Elevation: 36.6 ft amsl
Borehole Diameter: 2.25 in
Borehole Depth: 45.0 ft bgs
Water Encountered: 12.2 ft bgs
Logged By: David Stone
Reviewed By: Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
o- -			GROUND SURFACE Subangular gravel (<0.25-0.75"), asphalt debris and dark brown silty-sand matrix, mild tar-like odor, dry. Dark brown (10YR 3/3) fine-medium sand, trace silt, moist, no odor, poorly sorted.	1.3	GW		
- - 5-		66	Dark brown (101K 3/3) fille-inledium sand, trace silt, moist, no odon, poorly sorted.	5.3	SW		() #0 () () () () () () () () () () () () ()
			Brown (10YR 5/3) fine sand with silt, saturated, mild sweet odor, light sheen throughout.	5.9	SM ML	+ + + + + + + + + + + + + + + + + + + +	. A.
		80	Brown (10YR 5/3) silt with clay and trace fine sand, low plasticity, saturated, mild sweet odor. Brown (10YR 5/3) fine sand with silt, saturated, mild sweet odor from 6.3-8.4', sweet odor 8.4-10'	6.3		+ + + + + + + + + + + + + + + + + + + +	
-				10.0	SM	+ + +	
10-			Dark grayish brown (10YR 4/2) silt with clay and trace fine sand, sweet odor, saturated, low plasticity.	10.9	ML		. v.
			Dark grayish brown (10YR 4/2) fine sand with trace silt, saturated, sweet odor.	11.6,	SP		<u>.</u>
-		_	Dark grayish brown (10YR 4/2) silt with clay, trace fine sand, wet, low plasticity, sweet odor.		ML		
-		100	Dark grayish brown (10YR 4/2) fine sand with silt, saturated, mild sweet odor.	12.2		+ + + + + + + + + + + + + + + + + + + +	
15— —					SM	+ + + + + + + + + + + + + + + + + + + +	
		96	Dark grayish brown (10YR 4/2) silt with clay and fine sand, wet, mild sweet odor, low plasticity.	17.6			
		1111			ML		



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

			В	oring	ID:	PDI-5	3
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-		100	Dark grayish brown (10YR 4/2) silt with clay and fine sand, wet, mild sweet odor, low plasticity.		ML		Z 25-in Borehole Grout backfill
30-		100	Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, wet, mild sweet odor. Grades from brown/reddish brown to dark gray. Grayish brown silt bed (0.5") at 27.9' Brown (10YR 4/3) clay with trace fine sand, wet, sweet odor, moderate plasticity. Dispersed sheen throughout, concentrated sheen Dark gray (10YR 4/1) silt with fine sand and trace clay, low plasticity, wet, mild sweet odor. Dark gray (10YR 4/1) fine sand with silt and trace clay, wet, mild sweet odor. Very dark brown (10YR 2/2) poorly sorted fine-medium sand, wet, faint sweet odor. Undetermined recovery from 30-35', driller could not extract liner and soil was placed into bags. Woody debris at 36.15'	27.1 28.1 28.5 29.1 30.0	SW CL ML SM		V V V V V V V V V V
35-			Very dark brown (10YR 2/2) silt with fine-medium sand, trace clay, low plasticity, faint sweet odor. Black (2.5Y 2.5/1) fine sand, trace silt, saturated, no odor.	36.4 36.7	SW ML		
40-		100	Olive (5Y 4/3) moderate plasticity silt with clay and trace fine sand, saturated, no odor. Boring terminated at 45 feet Remarks: SSC - Subsurface Clearance ft - feet	40.3	ML		
	EF	RM	Coordinates were surveyed by a third party in State Plane NAD83, Oregon NA - not available or not applicable amsl - above mean sea level in - inches ft bgs - feet below ground surfactions (© Copyright 2025 by ERM Worldwide Group Limited. All Rights Reserved	e			Printed: 09-May-2025 Sheet: Page 2 of 2

Drilling Start Date: 18-Oct-2024 Northing: 702092.180

Drilling End Date: 21-Oct-2024
Drilling Contractor: Cascade Drilling
Drilling Method: Direct Push
GeoProbe
Driller: Jake McKee

SSC Contractor: GPRS
SSC Method: Private Locate
SSC Diam./Depth: Not Applicable

Northing: 702092.180
Easting: 7627676.450
Surface Elevation: 38.3 ft amsl
Borehole Diameter: 2.25 in
Borehole Depth: 45.0 ft bgs
Water Encountered: 25.0 ft bgs
Logged By: David Stone
Reviewed By: Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft) Soil Samples	Soli Saliibies	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
			GROUND SURFACE				
o –	t		Subangular gravel (<0.25-1"), potential ACM at 0.3'		GW	10000	w.
╛			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand with trace silt,	0.4/	SW		
			moist, no odor.	1.1		.4 · · · P · 4 · · · P	
4			Concrete	1.4			₩.
4		54	Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand with silt, dry, no odor.	1.7		+ + +	(*) (*)
+						+ + + + + + + + + + + + + + + + + + +	\vec{v}_1
5-	L			5.0			
			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand with silt, dry, no odor, gravel inclusions throughout $(0.25")$	6.3		+ +	y S
			Dark grayish brown (10YR 4/2) fine sand with silt and trace clay, moist, faint sweet odor.	0.5			
-				7.3	SM		V
		56	Dark grayish brown (10YR 4/2) fine sand with silt and trace clay, wet, faint sweet odor.			+ + + + + + + + + + + + + + + + + + + +	
0-				10.0			
			Dark grayish brown (10YR 4/2) fine sand with silt and trace clay, saturated, faint sweet odor. Dispersed sheen throughout, subangular gravel inclusions throughout (0.5-1")			+ + + + + + + + + + + + + + + + + + +	To the second se
7		100		12.5		:::::+::::::::::::::::::::::::::::::::	Φ.
		100	Dark grayish brown (10YR 4/2) silt with clay, trace fine sand, wet, low plasticity, no odor.	13.1	ML		-
			Dark grayish brown (10YR 4/2) fine sand with trace silt, wet, no odor.	13.7	SP		.v.
+			Dark grayish brown (10YR 4/2) silt with fine sand, trace clay, low plasticity, wet, no odor, wood debris (2") at 14.4'	13.7			V
.5-				16.1	ML		X 1
			Dark grayish brown (10YR 4/2) fine sand with silt, trace clay, saturated, no odor.	10.1	SM		
		88	Dark grayish brown (10YR 4/2) silt with fine sand, trace clay, saturated, mild sweet odor,	17.3			. v.
			low plasticity.		ML		
	111/	11/1/2	Remarks:				11431



SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

				Boring	ID:	PDI-5	54
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
- - -		100	Dark grayish brown (10YR 4/2) silt with fine sand, trace clay, saturated, mild sweet odor, low plasticity.		ML		2,25-in Borehole Grout backfill
_ 25- -	•		Very dark brown (10YR 2/2) clay, moderate plasticity, wet, mild sweet odor. Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, trace silt, wet, no odor. Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, trace silt, saturated, mild sweet odor. Grayish brown silty clay bed (0.5") at 28.25', color grades from brown to dark gray at 27.6-28.2'	24.0 24.1 25.0	(CL)		
30-			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, trace silt, saturated, mild sweet odor. Dispersed sheen from 32.5-33.9'	30.0	SW		
35-		92	Dark gray (10YR 4/1) clay with silt, trace fine sand, moderate plasticity, wet, faint sweet odor. Very dark gray (10YR 3/1) poorly sorted fine-medium sand with trace silt, saturated, no odor.	34.0 35.0	CL		
-		100	Very dark brown (10YR 2/2) moderate plasticity clay with silt and trace fine sand, saturated, no odor.	37.1 39.0	SW		W
40- - -			Black (2.5Y 2.5/1) poorly sorted fine-medium sand with trace silt, saturated, no odor, woody debris at 39.4'		SW		
	.,,,,,	92	Olive gray (5Y 4/3) silt with clay and trace fine sand, moderate plasticity, saturated, no odor, dark olive gray from 42.75-43.4' Boring terminated at 45 feet	42.8	ML		V V
7/100			Remarks: SSC - Subsurface Clearance ft - feet Coordinates were surveyed by a third party in State Plane NAD83, Or NA - not available or not applicable amsl - above mean sea level		n, Ini	ternation	
	ER	M	in - inches ft bgs - feet below ground sur © Copyright 2025 by ERM Worldwide Group Limited. All Rights Rese		this wo	rk may be repr	Printed: 09-May-2025 Sheet: Page 2 of 2 oduced without permission.

Drilling Start Date: 21-Oct-2024
Drilling End Date: 21-Oct-2024
Drilling Contractor: Cascade Drilling
Drilling Method: Direct Push
Rig Make/Model: GeoProbe
Driller: Jake McKee

SSC Contractor: GPRS
SSC Method: Private Locate
SSC Diam./Depth: Not Applicable

 Northing:
 702114.590

 Easting:
 7627694.810

 Surface Elevation:
 38.4 ft amsl

 Borehole Diameter:
 2.25 ft

Borehole Depth: 45.0 ft bgs
Water Encountered: 25.0 ft bgs
Logged By: David Stone
Reviewed By: Avery Soplata, RG

Client:

Consolidated Total

Boring ID: PDI-55

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
			GROUND GUREAGE				
0-			GROUND SURFACE Angular gravel (<0.25-1"), dark gray silty fine sand matrix, wet, no odor.		GW	1808	v.
			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, wet, no odor.	0.4/	sw		
				1.5			V)
_			Concrete aggregate	2.2		A A A A	¥
		66	Dark yellowish brown (10YR 3/4) poorly sorted fine sand with silt, moist, no odor, subrounded gravel inclusions at 5.8'		SM	+ +	
5— —			Brown (10YR 4/3) silt with fine sand, low plasticity, moist, mild sweet odor, sheen and sweet odor from 7.2-7.6'	5.9	ML	+ + + + + + + + + + + + + + + + + + +	v.
_		92	Very dark brown (10YR 2/2) silt with clay and trace fine sand, moderate plasticity, mild sweet odor, saturated.	7.7 8.0			
_			Dark yellowish brown (10YR 3/4) silt to fine sand, sweet odor, saturated, slight sheen throughout.		SM		A V
10-			Dark yellowish brown (10YR 3/4) fine sand with silt, wet, sweet odor.	9.2			v l
-			Dark yellowish brown (10YR 3/4) fine sand with silt, saturated, strong sweet odor. Sheen and light red staining from 9.3-10'		GW ,	<u> </u>	▼
-		100	Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand with silt (\sim 25%), saturated, strong sweet odor, light sheen throughout.	10.5	ML		. v.
ᅵ		-7-	Subangular gravel (<0.25-0.5") dark gray-brown fine-medium sand matrix, sweet odor.	10.7			
			Dark brown (10YR 3/3) silt with fine sand, low plasticity, saturated, strong sweet odor.				. v.)
\dashv			Very dark gray (10YR 3/1) silt with fine sand, low plasticity, sweet odor.	12.7	SM		-7- X
15-			Dark brown (10YR 3/3) fine sand with silt, trace medium sand, saturated, strong sweet odor.	13.8 15.0	ا۴اد		A
			Very dark gray (10YR 3/1) silt with fine sand, low plasticity, saturated, sweet odor, slight dispersed sheen 16.7-17'		ML		V
		100	Very dark gray (10YR 3/1) silt with clay, trace fine sand, moderate plasticity, faint sweet odor, saturated.	17.5			
			Dark yellowish brown (10YR 3/4) poorly sorted fine-medium sand, wet, faint sweet odor.		SW		
	1111	1111	Remarks:				



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

				Boring	ID	: PDI-5	5	
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Bac	ring ckfill tails
20- - - - 25- -		48 ▼	Dark brown (10YR 3/3) poorly sorted fine-medium sand, wet, faint sweet odor. Dark brown (10YR 3/3) poorly sorted fine-medium sand, wet, faint sweet odor. Dark yellowish brown (10YR 3/4) poorly sorted fine-medium sand, wet, faint sweet odor. Dark brown (10YR 3/3) poorly sorted fine-medium sand, wet, faint sweet odor. Dark yellowish brown (10YR 3/4) poorly sorted fine-medium sand, wet, faint sweet odor. Dark yellowish brown (10YR 3/4) poorly sorted fine-medium sand, saturated, faint sweet odor. Very dark gray (10YR 3/1) poorly sorted fine-medium sand with silt, saturated, faint sweet odor. 1" clay with silt bed 27 and 27.6', grades from dark yellowish brown to dark gray at 27.6'	21.6 21.7 21.9 22.1 25.0	sw			i-in Borehole Grout backfill
30-		89	Very dark gray (10YR 3/1) silt with clay and trace fine sand, moderate plasticity, saturated, faint sweet odor. Black poorly sorted fine-medium sand, saturated, no odor, dispersed faint sheen from 32.9-33.2' Black (2.5Y 2.5/1) poorly sorted fine-medium sand, saturated, faint sweet odor.	33.2 33.9 <i>j</i> 35.0 <i>j</i>	SM ML			
40-		100	Very dark gray (10YR 2/1) silt with some clay, low plasticity, no odor. Black poorly sorted fine-medium sand with some silt, saturated. Very dark greenish gray (GLEY2 3/10BG) low plasticity clay with silt, saturated, no odor. Olive (5Y 4/3) moderate plasticity clay with silt, saturated, no odor.	39.5 40.2 41.0	ML SM		্ৰা কি লোক কি লোক কি লোক বিশ্ব কৰা কি লোক বিশ্ব কৰা কি লোক বিশ্ব কৰা কি লোক বিশ্ব কৰা কি লোক বিশ্ব কৰা কি লোক ব স্থানিক কৰি কৰা কি লোক বিশ্ব কৰা কি লোক বিশ্ব কৰা কি লোক বিশ্ব কৰা কি লোক বিশ্ব কৰা কি লোক বিশ্ব কৰা কি লোক বি	
W.	ER	RM	Boring terminated at 45 feet Remarks: SSC - Subsurface Clearance ft - feet Coordinates were surveyed by a third party in State Plane NAD83, Or NA - not available or not applicable amsl - above mean sea level in - inches ft bgs - feet below ground sur © Copyright 2025 by ERM Worldwide Group Limited. All Rights Rese	face			Printed: Sheet:	09-May-2025 Page 2 of 2 ut permission.

Drilling Start Date: 22-Oct-2024 **Drilling End Date:** 22-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe

Jake McKee **Driller: SSC Contractor:** GPRS SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702107.930 Easting: 7627701.960 Surface Elevation: 38.4 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 45.0 ft bgs

Water Encountered: 25.0 ft bgs Logged By: David Stone **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Boring ID: PDI-55a

Site Name:

Arkema Portland

Location:

Portland, US-OR

(a) mdaa	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
			GROUND SURFACE				
ין	Ī		Angular gravel (<0.25-1") with silty fine sand matrix, wet, no odor.	0.3/	GW	0000	V.
4			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, wet, no odor.	1.2,	SW		▼.
			Concrete aggregate	1.9		A A A A	1
		60	Brown (10YR 5/3) silt with fine sand, moist, mild sweet odor, tan laminations throughout.	1.3	ML		
5-			Subrounded gravel (0.25-1") with a dark grayish brown silty fine sand matrix, faint sweet	5.5	GW	0000	V.
\forall			odor	5.9			. v.
			Brown (10YR 5/3) silt with fine sand, low plasticity, moist	6.3		<u> </u>	V
		78	Brown (10YR 5/3) silt with fine sand, low plasticity, wet	6.8			.a. ∇.
+			Brown (10YR 5/3) silt with fine sand, low plasticity, moist	7.4	ML		
╞			Very dark gray (10YR 3/1) silt with trace fine sand, faint sweet odor, moderate plasticity, saturated.	7.4			v o
,-			Brown (10YR 5/3) silt with fine sand, saturated, mild sheen 7.7-8.3', sheen 8.3-8.9', mild sweet odor 8-8.3', strong sweet odor 8.3-8.9'	10.0	GW	0000	(*) ₩ (*)
4			Brown (10YR 5/3) silt with fine sand, low plasticity, moist, faint sweet odor.	10.3	GW		⊽.
			Subrounded gravel (<0.25-1"), silty fine sand dark brown matrix, mild sweet odor.	10.7	ML		. ▼
_		100	Dark grayish brown (10YR 4/2) silt with fine sand, trace clay, low plasticity, sweet odor, wet.	11.5		+	(1) (1) (1)
			Very dark gray (10YR 3/1) silt with clay and trace fine sand, moderate plasticity, sweet odor, dispersed sheen throughout.	12.0		+ +	
;-			Very dark gray (10YR 3/1) fine sand with silt, sweet odor, wet, 1" silt with clay bed at 14.4', woody debris at 13.5' and 14.8'		SM	+ +	
1			Very dark gray (10YR 3/1) fine sand with silt, wet, no odor.	17.0			
		100		17.5			⊽ .
\exists			Very dark gray (10YR 3/1) silt with clay, trace fine sand, moderate plasticity, saturated, no odor.	18.3/	ML		v.
$\frac{1}{2}$			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, wet, no odor.	10.3	SW		



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

				Boring	ID	PDI-5	5a
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, wet, no odor.	20.0/			
			Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, wet, faint sweet odor, darker brown bed at 22' (1")				* *
-		50	odol, danker stown bed de 22 (1)				2, 25-in Borehole Grout backfil
25-		_	Very dark grayish brown (10YR 3/2) poorly sorted fine-medium sand, saturated, faint	25.0			
			sweet odor, silt laminations at 26.3' and 27.1'				∇'.
					SW		▼.
			Very dark brown (10YR 2/2) poorly sorted fine-medium sand, trace silt, faint sweet odor,	27.2			V.
		64	saturated.				↑ • v
							(*) v
							V
30-							x
				32.4			♥
		90	Very dark gray (10YR 3/1) silt with clay, moderate plasticity, saturated, no odor.	32.6	ML SW		♥ 1
			Very dark brown (10YR 2/2) poorly sorted fine-medium sand, trace silt, no odor, saturated.	22.0	ML		₩.
			Very dark gray (10YR 3/1) silt with clay, moderate plasticity, saturated, no odor.	32.9 33.5			
35-			Black poorly sorted fine-medium sand, trace silt, saturated, no odor.	33.3			▼
					SW		w.
\parallel							
		100		38.0			Ψ.
			Very dark gray (10YR $3/1$) silt with clay, trace fine sand, low plasticity, saturated, no odor.	39.0	ML		V x
			Black poorly sorted fine-medium sand, trace silt, saturated, no odor.	33.0	SW		▼
40-			Very dark greenish gray (GLEY1 3/5GY) clay with silt, trace fine sand, moderate	40.2			ÿ.
			plasticity, saturated, no odor.				(a)
			Olive (5Y 4/3) moderate plasticity clay with silt, saturated, no odor.	41.4		<u> </u>	▼
		100			CL	<u> </u>	, v
		100			CL		
						· — · — · — · — · · · · · · · · · · · ·	* .
			Boring terminated at 45 feet				1.04
,,			Remarks: SSC - Subsurface Clearance ft - feet				
100			Coordinates were surveyed by a third party in State Plane NAD83, Or	egon North	n, In	ternationa	ıl Feet
	1111	Miller.	NA - not available or not applicable amsl - above mean sea level in - inches ft bgs - feet below ground sur	face			Printed: 09-May-202
	ER	ďΜ	© Copyright 2025 by ERM Worldwide Group Limited. All Rights Reser		this wo	rk may be repr	Sheet: Page 2 of 2 oduced without permission

Boring ID: PDI-55b

Drilling Start Date: 22-Oct-2024
Drilling End Date: 22-Oct-2024
Drilling Contractor: Cascade Drilling
Drilling Method: Direct Push
Rig Make/Model: GeoProbe
Driller: Jake McKee
SSC Contractor: GPRS
SSC Method: Private Locate

Northing: 702100.930
Easting: 7627711.630
Surface Elevation: 38.2 ft amsl
Borehole Diameter: 2.25 in
Borehole Depth: 10.0 ft bgs
Water Encountered:

David Stone

Avery Soplata, RG

Logged By:

Reviewed By:

Client: Cons

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

SSC Diam./Depth: Not Applicable Samples Depth (ft) ithology. Core Recovery Boring **Stratigraphic Description Backfill Details** Soil **GROUND SURFACE** o-Subangular gravel (<0.25-1"), dark brown silty fine sand matrix, wet, no odor. GW 0.5 Dark brown (10YR 3/3) poorly sorted fine-medium sand, trace silt, moist, no odor. SW 1.3 Concrete aggregate ML Dark yellowish brown (10YR 3/4) silt with fine sand, moist, no odor, low plasticity. 2.3 Concrete aggregate 2.6 Dark yellowish brown (10YR 3/4) silt with fine sand, moist, no odor, low plasticity. 2.7 Not logged 5.0 2.25-in Borehole Grout backfill Dark brown (10YR 3/3) poorly sorted fine-medium sand, trace silt, moist, no odor. SW 5.6 Concrete aggregate 6.0 Dark yellowish brown (10YR 3/4) silt with fine sand, low plasticity, moist, faint sweet 7 4 Dark yellowish brown (10YR 3/4) silt with fine sand, low plasticity, wet, faint sweet odor. 7.6 МІ Dark yellowish brown (10YR 3/4) silt with clay, trace fine sand, low plasticity, wet, mild 7.8 Very dark gray (10YR 3/1) silt with clay, moderate plasticity, wet, faint sweet odor. 8.1 Dark yellowish brown (10YR 3/4) silt with fine sand, low plasticity, sweet odor from 10 8.1-8.5', strong sweet odor 8.5-10', dispersed sheen throughout, wet. 10.0 Boring terminated at 10 feet 15



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface Printed: 09-May-2025 Sheet: Page 1 of 1

Drilling Start Date: 22-Oct-2024 Northing: 702093.040

Drilling End Date: 23-Oct-2024
Drilling Contractor: Cascade Drilling
Drilling Method: Direct Push
Rig Make/Model: GeoProbe
Driller: Jake McKee
SSC Contractor: GPRS

SSC Contractor: GPRS
SSC Method: Private Locate
SSC Diam./Depth: Not Applicable

Northing: 702093.040
Easting: 7627719.040
Surface Elevation: 38.1 ft amsl
Borehole Diameter: 2.25 in
Borehole Depth: 45.0 ft bgs
Water Encountered: 25.0 ft bgs
Logged By: David Stone
Reviewed By: Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
o- - -		60	Dark brown (10YR 3/3) poorly sorted fine-medium sand, wet, no odor, 1" subangular gravel at 1' Concrete aggregate	0.9 S 1.6/ 2.2/	SW 4L	00000	
5-		88	Dark brown (10YR 3/3) poorly sorted fine-medium sand with silt, subrounded gravel inclusions throughout (<0.5"), moist, no odor. Concrete aggregate Dark brown (10YR 3/3) silt with fine sand, trace clay, moist, no odor. Dark grayish brown (10YR 4/2) silt with fine sand, wet, no odor, low plasticity. Dark grayish brown (10YR 4/2) silt with clay, trace fine sand, moderate plasticity, wet, no odor. Brown (10YR 4/3) silt with fine sand, trace clay, low plasticity, wet, no odor, light gray	5.7 5.9 6.5	6M 1L	7 N 17 N	
10-		100	Brown (10YR 4/3) poorly sorted fine-medium sand with silt, gravel throughout (0.25-0.5"), moist, no odor. 1 Brown (7.5YR 5/2) silt with fine sand and clay, low plasticity, moist, faint sweet odor, yellow staining 10.6-10.8' and 11.1-11.25', 0.5" brown silt with clay bed at 10.7' Very dark grayish brown (10YR 3/2) silt with clay, moderate plasticity, yellow laminations 11.4-11.7', faint sweet odor, wet. Brown (7.5YR 5/2) silt with fine sand, low plasticity, wet, no odor, light yellow staining 11.7-11.9' and 12.4-12.7' Very dark grayish brown (10YR 3/2) silt with clay and trace fine sand, moderate plasticity, no odor, wet. Brown (10YR 4/3) silty fine-medium sand, wet, no odor, light yellow staining 13.8-14.25' Very dark grayish brown (10YR 3/2) silt with fine sand, trace clay, moist, no odor, low plasticity. 1 Dark gray (10YR 4/1) silt with fine sand and trace clay, low plasticity, no odor, wet, grades to clay at 17.1'	1.3 1.7 5 2.8 3.3 4.3	бМ ,		
_	.,,,,,		Dark brown (10YR 3/3) poorly sorted fine-medium sand, wet, no odor.	7.5 s	SW		



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

Printed: 09-May-2025 Sheet: Page 1 of 2

				Boring	ID	PDI-5	55c
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
		58	Dark brown (10YR 3/3) poorly sorted fine-medium sand, wet, no odor.		SW		2,25-in Borehole Grout backfill
25— —		72	Very dark brown (10YR 2/2) poorly sorted fine-medium sand, trace silt, saturated to water table at 25', no odor. Very dark grayish brown (10YR 3/2) silt with clay, trace fine sand, moderate plasticity, saturated, no odor.	25.0 27.2 27.4	<u>ML</u>		
30-			Very dark brown (10YR 2/2) poorly sorted fine-medium sand, trace silt, saturated, faint sweet odor. Very dark brown (10YR 2/2) poorly sorted fine-medium sand, trace silt, saturated, no odor. At 30.15': 1" very dark grayish brown silt with clay, moderate plasticity, saturated, no odor.	30.0	SW		TO THE STATE OF TH
		86	Very dark grayish brown (10YR 3/2) silt with clay, moderate plasticity, saturated, no odor. Black (2.5Y 2.5/1) poorly sorted fine-medium sand, trace silt, saturated, no odor.	32.3 35.0	ML		
 - -			No sample. Very dark grayish brown (10YR 3/2) silt with clay, trace fine sand, moderate plasticity, saturated, no odor.	37.5 38.6	ML		
40— —		80	Black (2.5Y 2.5/1) fine-medium sand (poorly sorted) with trace silt, saturated, no odor. Greenish black (GLEY1 2.5/10GY) low plasticity clay with silt, saturated, no odor. Olive (5Y 4/3) moderate plasticity silt with clay, saturated, no odor.	40.1	SW CL		(A) (A) (A) (A) (A) (A) (A) (A) (A) (A)
- -		90			ML		
			Remarks: SSC - Subsurface Clearance ft - feet Coordinates were surveyed by a third party in State Plane NAD83, Ordinates NA - not available or not applicable amsl - above mean sea level		ı, In	ternationa	Printed: 09-May-2025
	ER	ďΜ	© Copyright 2025 by ERM Worldwide Group Limited. All Rights Reser		his wo	rk may be repr	Sheet: Page 2 of 2 oduced without permission.

Boring ID: PDI-56

Drilling Start Date: 08-Oct-2024 Drilling End Date: 09-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Tariq Barakat **SSC Contractor: GPRS**

SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702183.630 7627689.770 Easting: Surface Elevation: 36.4 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 45.0 ft bgs Water Encountered: 28.1 ft bgs

Logged By: David Stone **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

			/ Departs Tree Applicable			
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE Not logged from 0-20' bgs			
_						5 0 5 1 4 5 1 4 5 1 7 7
						(1) -1,0 (±0) (±0)
-						- 0.4 - 0.5 - 0.5 - 0.5
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10-						(*) (*) (*)
_						5.70 -6.5 7 w 5 -7 m 5
						- 13 - 13 - 18 - 18 - 18
-						1
-						· v
15-						[*] *]
						Grout backfill
-						
-						
-						A C
	1111	11111	Remarks			



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

			В	oring	ID:	PDI-5	6
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-			Not logged from 0-20' bgs	20.0		00,00	2.25-in Borehole with expendable point
			Asphalt pieces, angular gravel (0.5-1"), matrix is silty medium sand, dry, no odor.	20.0	GW		point
			Vellowish brown (10YR 5/4) poorly sorted fine-medium sand, trace silt, moist, mild sweet odor, yellow color likely staining.				▼ ·
		66	Gray (5YR 5/1) poorly sorted fine-medium sand, moist, mild sweet odor.	21.8	GW/		Σ.
					SW		.a.
-							×.
25-	4		Subangular gravel (0.25-0.5"), coarse sand matrix, gray, wet, no odor.	25.0	GW	20000	. ↑. •
			Gray (5YR 5/1) poorly sorted fine-medium sand, trace silt, wet, slight sweet odor.	25.3	1		\dot \\ \dot \dot
		86					. ∴ - ▲ : - ♥ :
		_	Gray (5YR 5/1) poorly sorted fine-medium sand, trace silt, saturated, slight sweet odor	28.1			- (.) - (.) - (.)
-			from 28.1-28.5', sweet odor from 28.5-30'. Dark brown globule at 28.5' about 1" diameter, dark brown globule at 28.9' about 4" diameter				A
30-			Pinkish gray (5YR 6/2) poorly sorted fine-medium sand with trace silt, saturated, mild	30.0	SW		
			sweet odor 30-32.5', sweet odor 32.5-35'. Yellow staining 32.5-35' increasing from 30-100%, dark brown (1") globule at 34.7'				
			30 100 %, dark brown (1) globale at 34.7				Š
-		96					
-							
				35.0			
35-			Very dark gray (10YR 3/1) fine sand, trace clay, low plasticity, saturated, mild sweet odor.				
					SP		Bentonite seal
-				37.5			
		100	Black poorly sorted fine-medium sand, saturated, no odor.	37.3			
					SW		
			Dark greenish gray (5Y 3/2) silt with clay, moderate plasticity, saturated, no odor.	39.6			
40-			Brecciated vesicular basalt (0.25-1") with olive silt and clay matrix, saturated, no odor.	40.0			
			Grout slurry with angular vesicular basalt throughout, saturated, no odor. Refusal at 45'	41.0			▼) ∴
					NA.		♥
		80			ML		2.25-in Borehole Grout backfill
$ \ $							₩.
							. v.
	.,11	11.	Boring terminated at 45 feet				l ⊕i
11.			Remarks: SSC - Subsurface Clearance ft - feet				
II.			Coordinates were surveyed by a third party in State Plane NAD83, Oregon NA - not available or not applicable amsl - above mean sea level	n North	n, In	ternationa	al Feet
		JW.	in - inches ft bgs - feet below ground surfac				Printed: 09-May-2025 Sheet: Page 2 of 2
	ER	/1 <u>/1</u>	© Copyright 2025 by ERM Worldwide Group Limited. All Rights Reserved	No part of	this wo	rk may be repr	oduced without permission.

Boring ID: PDI-57

Drilling Start Date: 08-Oct-2024 Drilling End Date: 09-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Tariq Barakat **SSC Contractor: GPRS**

SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702234.100 7627709.980 Easting: Surface Elevation: 36.3 ft amsl Borehole Diameter: 3.75 in **Borehole Depth:** 42.5 ft bgs Water Encountered: 38.8 ft bgs

Logged By: David Stone **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE			(Ma)
			Not logged from 0-20' bgs			♥ .
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-						3 75-in Borehole Grout backfill
-						
-						~ V
15-						
-						▼
-						V p.
-						
-						V
		11/4.	Domanico.			\$ 7



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

\Box				Богінд	ID.	PDI-5	• /
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
0-	-		Not logged from 0-20' bgs	20.0			(
-		60	Very dark gray (10YR 3/1) poorly sorted fine-medium sand, moist, sild sweet odor, lighter gray from 22-25'				
5 —	-	46	Reddish gray (5YR 5/2) poorly sorted fine-medium sand, trace silt, wet, sweet odor.	25.0			
o	_	100			SW		Grout backfi
5		84	Reddish gray (5YR 5/2) poorly sorted fine-medium sand, saturated, mild sweet odor. 2" of yellow staining at 38.4' (80% saturation)	35.0			
			Dark grayish brown (10YR 4/2) silt with fine sand and trace clay, wet, no odor, low	38.6			v .
			plasticity. Dark brown (10YR 3/3) poorly sorted fine-medium sand with silt, saturated, no odor,	38.9			V
0-			yellow grain throughout (10-20%) Black (2.5Y 2.5/1) poorly sorted fine-medium sand with silt, saturated, no odor.	40.0	SM	+ + +	8 P
-			Boring terminated at 42.5 feet	42.5			



Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches

Boring ID: PDI-58

Drilling Start Date: 25-Oct-2024 **Drilling End Date:** 25-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Jake McKee **SSC Contractor: GPRS** SSC Method: Private Locate

Not Applicable

SSC Diam./Depth:

Northing: 702393.340 7627643.480 Easting: Surface Elevation: 37.2 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 50.0 ft bgs Water Encountered: 30.0 ft bgs Logged By: David Stone **Reviewed By:** Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

\square	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE			
			Not logged from 0-20' bgs			₩.
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15-						X.
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		11/4.				



Remarks:

SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

				Boring	ID	: PDI-5	58
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Boring Backfill Details
20-		Ě	Not logged from 0-20' bgs	20.0			
			Very dark grayish brown (10YR 3/2) silt with clay, trace fine sand, low plasticity, moist,	20.0	ML		V
			no odor (likely slough or cave in from above)	20.2			v i
_		60	Dark brown (10YR 3/3) poorly sorted fine-medium sand, trace silt, moist, faint sweet odor.				. x
_		69			sw		(\$\frac{1}{2}\).
							· V
-							· & .
25-			Subrounded gravel (<0.25-0.5") in silty fine sand matrix, dry, no odor (likely slough or	25.0	GW	<u> </u>	2.25-in Borehole Grout backfill
_			cave in from above)	25.2			Grout backini
			Dark brown (10YR 3/3) poorly sorted fine-medium sand, trace silt, wet, no odor.				
_		68					¥1 0
_							₩.
					SW		v.
30-			Very dark brown (10YR 2/2) poorly sorted fine-medium sand, trace silt, saturated, faint	30.0			×.
_			sweet odor. Orange-brown staining from 30-31' decreasing from 75% to 10%.				A .
			Very dark grayish brown (10YR 3/2) silt with clay, trace fine sand, saturated, low	31.4	ML		
-		75	plasticity, woody debris within, no odor.	31.6	SW		
-		, ,	Very dark brown (10YR 2/2) poorly sorted fine-medium sand, trace silt, saturated, no odor.	32.7	ML		V.
_			Very dark grayish brown (10YR 3/2) silt with fine sand, trace clay, low plasticity, saturated, faint sweet odor, woody debris at 32.65'	33.0	SM	+ + + + + + + + + + + + + + + + + + + +	▼
35-			Very dark brown (10YR 2/2) poorly sorted fine-medium sand with silt (\sim 20%), saturated, no odor.			#888	
_			Very dark grayish brown (10YR 3/2) silt with fine sand, trace clay, low plasticity, saturated, faint sweet odor until 35.6', mild sweet odor until 36.5'. Very slight sheen 35.3-35.45' and 35.6-36'	35.0	ML		A A A A A A A A A A
-			Very dark grayish brown (10YR 3/2) silt with clay, moderate plasticity, saturated, faint	36.5	1		. ♥
		94	sweet odor.	37.6	SW		v.
			Very dark brown (10YR 2/2) poorly sorted fine-medium sand, trace silt, saturated, mild sweet odor.	38.4			v
-			Very dark grayish brown (10YR 3/2) silt with clay, trace fine sand, saturated, no odor, low plasticity.	40.0	ML		V.
40-			Black (2.5Y 2.5/1) poorly sorted fine-medium sand, saturated, no odor.	10.0			X
-							v.
							w.
		100			SW		· v
-							
_							. v
							Ś
	1111	1111	Remarks:		i	1	
			SSC - Subsurface Clearance ft - feet				
1			Coordinates were surveyed by a third party in State Plane NAD83, Ore NA - not available or not applicable amsl - above mean sea level	egon North	n, In	ternationa	ai Feet
	-11		in - inches ft bgs - feet below ground surf	ace			Printed: 09-May-2025

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in - inches

ft bgs - feet below ground surface

Printed: 09-May-2025
Sheet: 9age 2 of 3

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Stratigraphic Description Stratigraphic Descrip					Boring	ID:	PDI-	58
Greenish Black (GLEY) 2.51/OGY) sit with clay, trace fine sand, moderate plasticity, saturated, no odor, grades to dark olive gray from 45.3-45.85" Dark olive gray (SY 3/2) fine sand with sit, saturated, no odor. SM Olive (SY 4/3) slit with clay, trace fine sand, moderate plasticity, increase in clay at 49.6°, saturated, no odor. Boring terminated at 50 feet	Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		nscs	Lithology	Backfill
Remarks:	50			Greenish black (GLEY1 2.5/10GY) silt with clay, trace fine sand, moderate plasticity, saturated, no odor, grades to dark olive gray from 45.5-45.85' Dark olive gray (SY 3/2) fine sand with silt, saturated, no odor. Olive (SY 4/3) silt with clay, trace fine sand, moderate plasticity, increase in clay at 49.6', saturated, no odor. Boring terminated at 50 feet	45.9 49.0	ML		



SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches

Boring ID: PDI-59

Drilling Start Date: 29-Oct-2024 **Drilling End Date:** 29-Oct-2024 **Drilling Contractor:** Cascade Drilling **Drilling Method:** Direct Push Rig Make/Model: GeoProbe **Driller:** Tariq Barakat

SSC Contractor: GPRS SSC Method: Private Locate SSC Diam./Depth: Not Applicable Northing: 702307.460 7627636.290 Easting: Surface Elevation: 36.2 ft amsl Borehole Diameter: 2.25 in **Borehole Depth:** 50.0 ft bgs Water Encountered: 27.4 ft bgs

Logged By: Michael Sell **Reviewed By:** Avery Soplata, RG **Client:**

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

33	CDI	aiii.	/ Depth: Not Applicable			
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE Not logged from 0-15' bgs			<u> </u>
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_						v.
-						▼: :: :: :: :: :: :: :: :: ::
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10-						V.
						, v.
						A
_						V.
15-			15.0 Dark brown (10YR 3/3) poorly sorted fine-medium sand, wet, no odor.			X X
_						
-		54		SW		``.
-						v.
	1111	11/1/2	Remarks:			



SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

			E	Boring	ID:	PDI-5	59
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		USCS	Lithology	Boring Backfill Details
-		66	Dark brown (10YR 3/3) poorly sorted fine-medium sand, wet, no odor. Olive (5Y 5/4) poorly sorted fine-medium sand with trace silt, wet, no odor, yellow staining throughout (40%)	22.2			
:5— —		70	Olive yellow (5Y 6/6) poorly sorted fine-medium sand, trace silt, wet, faint sweet odor, yellow staining throughout (60%) Gray (10YR 6/1) poorly sorted fine-medium sand, trace silt, saturated, mild sweet odor,	25.0 27.4	SW		2.25-in Boreh Grout back
_ 			yellow staining throughout (30%) Grayish brown (10YR 5/2) silt with fine sand, low plasticity, mild sweet odor, saturated, yellow staining throughout (20%)	30.8	_ML_)		
_		94	Gray (10YR 6/1) poorly sorted fine-medium sand with trace silt, saturated. Red DNAPL present at 33.3-34', sweet odor 32.9-34', mild sweet odor 31-32.9'. Yellow staining (40%) at 31-33.3' Dark grayish brown (10YR 4/2) clay with silt and trace fine sand, low plasticity, wet, mild	31.0	sw		
_			sweet odor. Dark gray (10YR 4/1) poorly sorted fine-medium sand with trace silt, saturated, mild sweet odor, yellow staining throughout (<10%)	35.0 36.7	SW		
_		94	Dark gray (10YR 4/1) clay with trace fine sand, moderate plasticity, wet, faint sweet odor. Very dark brown (10YR 2/2) poorly sorted fine-medium sand with trace silt, saturated, no odor. Very dark brown (10YR 2/2) silt with fine sand, trace clay, low plasticity, no odor, saturated.	37.1 37.6	CL SW ML)		
_			Black (2.5Y 2.5/1) fine sand with trace silt, wet, no odor. Black (2.5Y 2.5/1) fine sand with trace silt, wet, faint sulfurous odor.	37.8 40.0 <i>j</i>	SP		
- -		96					



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Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches

				Boring	ID:	PDI-	59
Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description		uscs	Lithology	Boring Backfill Details
45-			Black (2.5Y 2.5/1) fine sand with trace silt, wet, faint sulfurous odor.	45.0/	SP.		
-			Very dark greenish gray (GLEY1 3/5GY) silt with clay and trace fine sand, low plasticity, faint sulfurous odor, saturated.		ML		
-		100	Very dark greenish gray (GLEY1 3/5GY) fine sand with clay and silt, saturated, mild sulfurous odor.	47.6	SM	+	
_			Olive (5Y 4/3) fine sand with clay and silt, saturated, no odor.	48.9	011		
			Olive (5Y 4/3) clay with trace fine sand, moderate plasticity, wet, no odor.	49.4	CL		× 1
50				50.0/			
			Boring terminated at 50 feet				
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60-							
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65-							
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	. , , , , ,	11665.	Paragram .				
11			Remarks: SSC - Subsurface Clearance ft - feet				



SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches

Boring ID: PDI-60

Drilling Start Date: 29-Oct-2024
Drilling End Date: 29-Oct-2024
Drilling Contractor: Cascade Drilling
Drilling Method: Direct Push
Rig Make/Model: GeoProbe
Driller: Tariq Barakat
SSC Contractor: GPRS

SSC Contractor: GPRS
SSC Method: Private Locate
SSC Diam./Depth: Not Applicable

Northing: 702271.080
Easting: 7627615.990
Surface Elevation: 36.0 ft amsl
Borehole Diameter: 2.25 in
Borehole Depth: 45.0 ft bgs
Water Encountered: 27.1 ft bgs

Logged By: Michael Sell Reviewed By: Avery Soplata, RG

Client:

Consolidated Total

Site Name:

Arkema Portland

Location:

Portland, US-OR

Depth (ft)	Soil Samples	Core Recovery (%)	Stratigraphic Description	nscs	Lithology	Boring Backfill Details
0-			GROUND SURFACE Not logged from 0-15' bgs			
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_						
_						v
5-						
_						T
_						v v v v
						A CONTRACTOR
10-						V A
_						
_						
_						보기 소기 보기
_						Property of the state of the st
15-			15.0 Gray (10YR 5/1) poorly sorted fine-medium sand, no odor, wet. Color change at 16.6' to pale red (2.5YR 6/2)			(A)
		64		SW		. ↑ . ↓ . ↓
	,,,,,					4



Remarks:

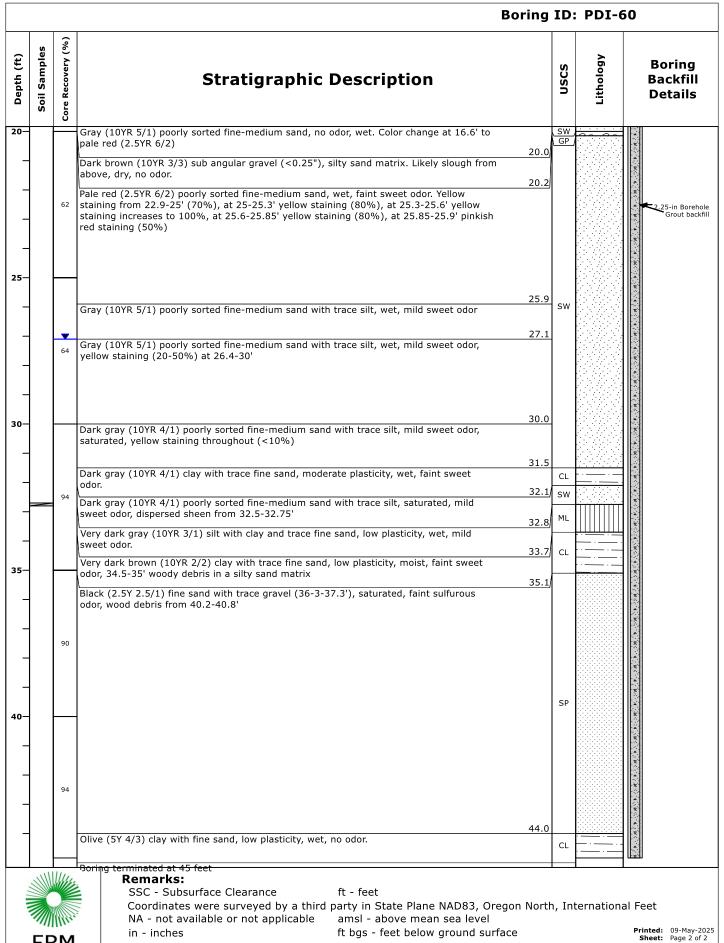
SSC - Subsurface Clearance ft - feet

Coordinates were surveyed by a third party in State Plane NAD83, Oregon North, International Feet

NA - not available or not applicable amsl - above mean sea level

in - inches ft bgs - feet below ground surface

Printed: 09-May-2025
Sheet: Page 1 of 2





APPENDIX B PHOTO LOG



Photo 1: Phase 1 - Vadose Zone - Fill (PDI-02 at a depth of 5-10 feet below ground surface (bgs))



Photo 2: Phase 1 - Vadose Zone - Fine-to-medium sand with silt and clay (PDI- 03 at a depth of 20-22.5 feet bgs)





Photo 3: Phase 1 - Vadose Zone - Sandy Silt (PDI-02 at a depth of 13.8-14.3 feet bgs)



Photo 4: Phase 1 - Shallow Zone - Fill (PDI-21 at a depth of 25-30 feet bgs)





Photo 5: Phase 1 - Shallow Zone - Fine-to-medium sand with silt and clay (PDI-30 at a depth of 35-40 feet bgs)



Photo 6: Phase 1 - Shallow Zone - Sandy silt (PDI-13 at a depth of 5-10 feet bgs)





Photo 7: Phase 1 - Shallow-Intermediate Silt Zone - Interbedded sand and silt (PDI-19 at a depth of 37.5-40 feet bgs)



Photo 8: Phase 1 - Intermediate Zone - Fine sand with clay (PDI-21 at a depth of 40-45 feet bgs)





Photo 9: Phase 1 - Deep Zone - Silt with clay (PDI-13 at a depth of 40-45 feet bgs)



Photo 10: Phase 1 - "No Evidence of dense nonaqueous-phase liquid (DNAPL) Contamination" treatability sample collected from 41.5-42.5 feet bgs at PDI-21 within the fine sand with clay unit of the Intermediate Zone.





Photo 11: Phase 1 - "Some DNAPL Contamination" treatability sample collected from 33.2-34.5 feet bgs at PDI-17 within the interbedded sand and silt unit of the Shallow-Intermediate Silt Zone



Photo 12: Phase 1 - "Contaminated" treatability sample collected from 11-12 feet bgs at PDI-13 within the sandy silt unit of the Shallow Zone.





Photo 13: Phase 1 - Suspected Pesticide- and Petroleum-related Contamination collected at PDI-24 from 23.1 feet bgs within the fill material of the Vadose Zone.



Photo 14: Phase 1 - Suspected Petroleum-based nonaqueous-phase liquid (NAPL) collected at PDI-21 from 20.2 feet bgs within the fill material of the Vadose Zone.





Photo 15: Phase 1 - PDI-15 Unknown Substance at 38 feet bgs on top of the interbedded sand and silt unit of the Shallow-Intermediate Silt Zone.



Photo 16: Phase 2 - Vadose Zone - Fill (PDI-36 at a depth of 10-15 feet bgs)





Photo 17: Phase 2 - Vadose Zone - Fine-to-medium sand with silt and clay (PDI-48a at a depth of 20-25 feet bgs)



Photo 18: Phase 2 - Vadose Zone - Sandy Silt (PDI-55 at a depth of 10-15 feet bgs)





Photo 19: Phase 2 - Shallow Zone - Fill (PDI-40 at a depth of 26.5-28.3 feet bgs)



Photo 20: Phase 2 - Shallow Zone - Fine-to-medium sand with silt and clay (PDI-48a at a depth of 30-35 feet bgs)





Photo 21: Phase 2 - Shallow Zone - Sandy silt (PDI-51 at a depth of 20-24.4 feet bgs)



Photo 22: Phase 2 - Shallow-Intermediate Silt Zone - Interbedded sand and silt (PDI-49a at a depth of 30.5-35 feet bgs)





Photo 23: Phase 2 - Intermediate Zone - Fine sand with clay (PDI-51 at a depth of 30-35 feet bgs)



Photo 24: Phase 2 - Deep Zone - Silt with clay (PDI-51 at a depth of 35.9-40 feet bgs)





APPENDIX C LABORATORY REPORTS

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PREPARED FOR

ANALYTICAL REPORT

Attn: Avery Soplata ERM-West 1050 SW 6th Avenue Suite 1650 Portland, Oregon 97204

Generated 10/23/2024 6:31:34 PM

JOB DESCRIPTION

Arkema PDI Sampling

JOB NUMBER

580-144612-1

Eurofins Seattle 5755 8th Street East Tacoma WA 98424

Eurofins Seattle

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization

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Authorized for release by Sheri Cruz, Project Manager I Sheri.Cruz@et.eurofinsus.com (253)922-2310

Shuid any

Client: ERM-West

Project/Site: Arkema PDI Sampling

Laboratory Job ID: 580-144612-1

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Case Narrative

Client: ERM-West Job ID: 580-144612-1

Project: Arkema PDI Sampling

Job ID: 580-144612-1 Eurofins Seattle

Job Narrative 580-144612-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these
 situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise
 specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 10/8/2024 1:35 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.4°C.

GC/MS VOA

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Eurofins Seattle

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Definitions/Glossary

Client: ERM-West Job ID: 580-144612-1

Project/Site: Arkema PDI Sampling

Qualifiers

GC/MS VOA

Qualifier **Qualifier Description**

Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation These commonly used abbreviations may or may not be present in this report.

Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery **CFL** Contains Free Liquid CFU Colony Forming Unit CNF Contains No Free Liquid

Duplicate Error Ratio (normalized absolute difference) **DER**

Dil Fac **Dilution Factor**

DL Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

Estimated Detection Limit (Dioxin) **EDL** LOD Limit of Detection (DoD/DOE) LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level" MDA Minimum Detectable Activity (Radiochemistry) MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit MLMinimum Level (Dioxin) MPN Most Probable Number Method Quantitation Limit MQL

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive QC **Quality Control**

Relative Error Ratio (Radiochemistry) **RER**

Reporting Limit or Requested Limit (Radiochemistry) RL

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin) **TEQ** Toxicity Equivalent Quotient (Dioxin)

Too Numerous To Count **TNTC**

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10/23/2024

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Client Sample Results

Client: ERM-West Job ID: 580-144612-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-35-SO-54.9-20241007 Lab Sample ID: 580-144612-1

Date Collected: 10/07/24 17:00 Matrix: Solid
Date Received: 10/08/24 13:35 Percent Solids: 70.6

Method: SW846 8260D	- Volatile Organic	Compounds by GC/MS	S					
Analyte	_	Qualifier RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND	0.028	0.0069	mg/Kg	<u></u>	10/14/24 13:20	10/15/24 00:58	1
1,1,1-Trichloroethane	ND	0.055	0.0064	mg/Kg	₽	10/14/24 13:20	10/15/24 00:58	1
1,1,2,2-Tetrachloroethane	ND	0.028	0.011	mg/Kg	₩	10/14/24 13:20	10/15/24 00:58	1
1,1,2-Trichloroethane	ND	0.028	0.010	mg/Kg	≎	10/14/24 13:20	10/15/24 00:58	1
1,1-Dichloroethane	ND	0.055	0.013	mg/Kg	₩	10/14/24 13:20	10/15/24 00:58	1
1,1-Dichloroethene	ND	0.055	0.017	mg/Kg	₩	10/14/24 13:20	10/15/24 00:58	1
1,1-Dichloropropene	ND	0.055	0.0073	mg/Kg		10/14/24 13:20	10/15/24 00:58	1
1,2,3-Trichlorobenzene	ND	0.11	0.055	mg/Kg	₩	10/14/24 13:20	10/15/24 00:58	1
1,2,3-Trichloropropane	ND	0.055	0.016	mg/Kg	₩	10/14/24 13:20	10/15/24 00:58	1
1,2,4-Trichlorobenzene	ND	0.11	0.059	mg/Kg		10/14/24 13:20	10/15/24 00:58	1
1,2,4-Trimethylbenzene	ND	0.055	0.019	mg/Kg	₩	10/14/24 13:20	10/15/24 00:58	1
1,2-Dibromo-3-Chloropropane	ND	0.083		mg/Kg			10/15/24 00:58	1
1,2-Dibromoethane	ND	0.028	0.0053				10/15/24 00:58	1
1,2-Dichlorobenzene	ND	0.055		mg/Kg	₩		10/15/24 00:58	1
1,2-Dichloroethane	ND	0.028	0.0076	0 0	☆		10/15/24 00:58	1
1,2-Dichloropropane	ND	0.028	0.0091				10/15/24 00:58	
1,3,5-Trimethylbenzene	ND	0.055		mg/Kg			10/15/24 00:58	1
1,3-Dichlorobenzene	ND	0.083		mg/Kg			10/15/24 00:58	1
1,3-Dichloropropane	ND	0.083	0.0077				10/15/24 00:58	· · · · · · · · · · · · · · · · · · ·
1,4-Dichlorobenzene	ND	0.083		mg/Kg	**		10/15/24 00:58	1
2,2-Dichloropropane	ND	0.055		mg/Kg	**		10/15/24 00:58	1
2-Chlorotoluene	ND	0.055		mg/Kg	 -		10/15/24 00:58	
4-Chlorotoluene	ND	0.055		mg/Kg	₩		10/15/24 00:58	1
4-Isopropyltoluene	ND ND	0.055		mg/Kg	₩		10/15/24 00:58	1
Benzene	ND	0.033	0.0053				10/15/24 00:58	
Bromobenzene	ND ND	0.026	0.0058		**		10/15/24 00:58	1
Bromochloromethane	ND ND	0.055			*		10/15/24 00:58	1
Bromodichloromethane			0.0086		 -			
	ND ND	0.055	0.0076	0 0	1,2		10/15/24 00:58	1
Bromoform	ND ND	0.055	0.0062				10/15/24 00:58	1
Carbon tetrachloride		0.028	0.0061		· · · · · ·		10/15/24 00:58	
Chlorobenzene	8.3	0.055	0.0066		*		10/15/24 00:58	1
Chloroform	ND	0.028	0.0058		*		10/15/24 00:58	1
Chloromethane	ND	0.083		mg/Kg	<u>.</u> .		10/15/24 00:58	1
cis-1,2-Dichloroethene	ND	0.083		mg/Kg	.		10/15/24 00:58	1
cis-1,3-Dichloropropene	ND	0.028	0.0055		☼		10/15/24 00:58	1
Dibromochloromethane	ND	0.028	0.0068				10/15/24 00:58	1
Dibromomethane	ND	0.055		mg/Kg	₩		10/15/24 00:58	1
Ethylbenzene	ND	0.055		mg/Kg	₽		10/15/24 00:58	1
Hexachlorobutadiene	ND	0.14		mg/Kg		10/14/24 13:20	10/15/24 00:58	1
Isopropylbenzene	ND	0.055		mg/Kg	☼		10/15/24 00:58	1
Methyl tert-butyl ether	ND	0.055		mg/Kg	₩	10/14/24 13:20	10/15/24 00:58	1
Methylene Chloride	0.25	J 0.35		mg/Kg		10/14/24 13:20	10/15/24 00:58	1
m-Xylene & p-Xylene	ND	0.055		mg/Kg	₩	10/14/24 13:20	10/15/24 00:58	1
Naphthalene	ND	0.21	0.054	mg/Kg	₩	10/14/24 13:20	10/15/24 00:58	1
n-Butylbenzene	ND	0.055	0.026	mg/Kg	₽	10/14/24 13:20	10/15/24 00:58	1
N-Propylbenzene	ND	0.055	0.021	mg/Kg	₽	10/14/24 13:20	10/15/24 00:58	1
o-Xylene	ND	0.055	0.0069	mg/Kg	₽	10/14/24 13:20	10/15/24 00:58	1
sec-Butylbenzene	ND	0.055	0.012	mg/Kg	≎	10/14/24 13:20	10/15/24 00:58	1
Styrene	ND	0.055	0.018	mg/Kg	₩	10/14/24 13:20	10/15/24 00:58	1

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10/23/2024

Client Sample Results

Client: ERM-West Job ID: 580-144612-1

Project/Site: Arkema PDI Sampling

Date Received: 10/08/24 13:35

Client Sample ID: PDI-35-SO-54.9-20241007

Lab Sample ID: 580-144612-1 Date Collected: 10/07/24 17:00 **Matrix: Solid**

Percent Solids: 70.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	ND		0.055	0.011	mg/Kg	<u></u>	10/14/24 13:20	10/15/24 00:58	1
Tetrachloroethene	ND		0.055	0.0073	mg/Kg	☼	10/14/24 13:20	10/15/24 00:58	1
Toluene	ND		0.083	0.019	mg/Kg	₩	10/14/24 13:20	10/15/24 00:58	1
trans-1,2-Dichloroethene	ND		0.083	0.020	mg/Kg	☼	10/14/24 13:20	10/15/24 00:58	1
trans-1,3-Dichloropropene	ND		0.055	0.0097	mg/Kg	₩	10/14/24 13:20	10/15/24 00:58	1
Trichloroethene	ND		0.055	0.014	mg/Kg	₩	10/14/24 13:20	10/15/24 00:58	1
Trichlorofluoromethane	ND		0.11	0.036	mg/Kg	☼	10/14/24 13:20	10/15/24 00:58	1
Vinyl chloride	ND		0.14	0.026	mg/Kg	₽	10/14/24 13:20	10/15/24 00:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		80 - 121				10/14/24 13:20	10/15/24 00:58	1
4-Bromofluorobenzene (Surr)	102		80 - 120				10/14/24 13:20	10/15/24 00:58	1
Dibromofluoromethane (Surr)	98		80 - 120				10/14/24 13:20	10/15/24 00:58	1
Toluene-d8 (Surr)	97		80 - 120				10/14/24 13:20	10/15/24 00:58	1
Method: SW846 8260D - Vo	latile Organie	Compoun	de by GC/MS	DΛ					
Analyte	_	Qualifier	RL	- KA MDL	Unit	D	Prepared	Analyzed	Dil Fac
D									

Method: SW846 8260D - Vo	olatile Organic Compou	nds by GC/MS	- RA					
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND ND	0.14	0.052	mg/Kg	*	10/15/24 10:05	10/15/24 15:15	1
Chloroethane	ND	0.11	0.029	mg/Kg	₩	10/15/24 10:05	10/15/24 15:15	1
Dichlorodifluoromethane	ND	0.35	0.063	mg/Kg	☼	10/15/24 10:05	10/15/24 15:15	1
Surrogate	%Recovery Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108	80 - 121				10/15/24 10:05	10/15/24 15:15	1

Surrogate	%Recovery 0	Qualifier Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108	80 - 121	10/15/24 10:05	10/15/24 15:15	1
4-Bromofluorobenzene (Surr)	100	80 - 120	10/15/24 10:05	10/15/24 15:15	1
Dibromofluoromethane (Surr)	106	80 - 120	10/15/24 10:05	10/15/24 15:15	1
Toluene-d8 (Surr)	100	80 - 120	10/15/24 10:05	10/15/24 15:15	1

General Chemistry Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	70.6		0.1	0.1	%			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	29.4		0.1	0.1	%			10/18/24 15:11	1

10/23/2024

Client: ERM-West Job ID: 580-144612-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-36-SO-49.9-20241007

Lab Sample ID: 580-144612-2 Date Collected: 10/07/24 17:05 Matrix: Solid Date Received: 10/08/24 13:35 Percent Solids: 66.9

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 0.030 mg/Kg 1,1,1,2-Tetrachloroethane ND 0.0076 10/14/24 13:20 10/15/24 01:19 ND 1.1.1-Trichloroethane 0.061 0.0070 mg/Kg 10/14/24 13:20 10/15/24 01:19 1,1,2,2-Tetrachloroethane ND 0.030 0.012 mg/Kg 10/14/24 13:20 10/15/24 01:19 ND 10/14/24 13:20 1,1,2-Trichloroethane 0.030 0.011 mg/Kg 10/15/24 01:19 0.061 0.014 mg/Kg 10/14/24 13:20 10/15/24 01:19 1.1-Dichloroethane ND 1,1-Dichloroethene ND 0.061 0.019 mg/Kg 10/14/24 13:20 10/15/24 01:10 1,1-Dichloropropene ND 0.061 0.0080 10/14/24 13:20 10/15/24 01:19 mg/Kg ND 0.060 10/14/24 13:20 10/15/24 01:19 1,2,3-Trichlorobenzene 0.12 mg/Kg 1,2,3-Trichloropropane ND 0.061 0.017 mg/Kg 10/14/24 13:20 10/15/24 01:19 1,2,4-Trichlorobenzene ND 0.12 0.065 mg/Kg 10/14/24 13:20 10/15/24 01:19 1,2,4-Trimethylbenzene ND 0.061 0.020 mg/Kg 10/14/24 13:20 10/15/24 01:19 mg/Kg 1.2-Dibromo-3-Chloropropane ND 0.091 0.023 10/14/24 13:20 10/15/24 01:19 1 1,2-Dibromoethane ND 0.030 0.0058 mg/Kg 10/14/24 13:20 10/15/24 01:19 1,2-Dichlorobenzene ND 0.061 0.013 mg/Kg 10/14/24 13:20 10/15/24 01:19 0.0083 ND 0.030 mg/Kg 10/14/24 13:20 10/15/24 01:19 1.2-Dichloroethane 0.010 1,2-Dichloropropane NΩ 0.030 mg/Kg 10/14/24 13:20 10/15/24 01:19 1,3,5-Trimethylbenzene ND 0.061 0.012 mg/Kg 10/14/24 13:20 10/15/24 01:19 1,3-Dichlorobenzene ND 0.091 0.020 mg/Kg 10/14/24 13:20 10/15/24 01:19 1,3-Dichloropropane ND 0.091 0.0085 mg/Kg 10/14/24 13:20 10/15/24 01:19 mg/Kg 1,4-Dichlorobenzene ND 0.091 0.016 10/14/24 13:20 10/15/24 01:19 2,2-Dichloropropane ND 0.061 0.018 mg/Kg ÷ 10/14/24 13:20 10/15/24 01:19 2-Chlorotoluene ND 0.061 0.013 mg/Kg 10/14/24 13:20 10/15/24 01:19 4-Chlorotoluene ND 0.061 0.015 mg/Kg 10/14/24 13:20 10/15/24 01:19 4-Isopropyltoluene ND 0.061 0.015 mg/Kg 10/14/24 13:20 10/15/24 01:19 Benzene ND 0.030 0.0058 mg/Kg 10/14/24 13:20 10/15/24 01:19 ND Bromobenzene 0.061 0.0064 mg/Kg 10/14/24 13:20 10/15/24 01:19 Bromochloromethane ND 0.061 0.0094 mg/Kg 10/14/24 13:20 10/15/24 01:19 Bromodichloromethane 0.0083 ND 0.061 mg/Kg 10/14/24 13:20 10/15/24 01:19 0.0068 Bromoform ND 0.061 mg/Kg 10/14/24 13:20 10/15/24 01:19 Carbon tetrachloride ND 10/14/24 13:20 0.030 0.0067 mg/Kg 10/15/24 01:19 Chlorobenzene 9.4 0.061 0.0073 mg/Kg 10/14/24 13:20 10/15/24 01:19 0.030 0.0064 mg/Kg 10/14/24 13:20 10/15/24 01:19 Chloroform 0.0077 Chloromethane 0.091 0.015 10/14/24 13:20 10/15/24 01:19 ND mg/Kg cis-1,2-Dichloroethene ND 10/14/24 13:20 10/15/24 01:19 0.091 0.019 mg/Kg cis-1,3-Dichloropropene ND 0.030 0.0061 mg/Kg 10/14/24 13:20 10/15/24 01:19 Dibromochloromethane ND 0.030 0.0074 mg/Kg 10/14/24 13:20 10/15/24 01:19 Dibromomethane ND 0.061 0.011 mg/Kg 10/14/24 13:20 10/15/24 01:19 Ethylbenzene ND 0.061 0.014 mg/Kg 10/14/24 13:20 10/15/24 01:19 ND 0.036 mg/Kg 10/14/24 13:20 Hexachlorobutadiene 0.15 10/15/24 01:19 Isopropylbenzene ND 0.061 0.013 mg/Kg 10/14/24 13:20 10/15/24 01:19 Methyl tert-butyl ether ND 0.061 0.0091 mg/Kg 10/14/24 13:20 10/15/24 01:19 **Methylene Chloride** 0.28 0.38 0.039 mg/Kg 10/14/24 13:20 10/15/24 01:19 m-Xylene & p-Xylene ND 0.061 0.011 mg/Kg 10/14/24 13:20 10/15/24 01:19 Naphthalene 0.059 10/14/24 13:20 10/15/24 01:19 ND 0.23 mg/Kg n-Butylbenzene ND 0.061 0.028 mg/Kg 10/14/24 13:20 10/15/24 01:19 N-Propylbenzene ND 0.061 0.023 mg/Kg 10/14/24 13:20 10/15/24 01:19 ND 0.0076 10/14/24 13:20 10/15/24 01:19 o-Xylene 0.061 mg/Kg sec-Butylbenzene ND 0.061 0.013 mg/Kg 10/14/24 13:20 10/15/24 01:19 Styrene ND 0.061 0.019 mg/Kg 10/14/24 13:20 10/15/24 01:19

Client: ERM-West Job ID: 580-144612-1

Project/Site: Arkema PDI Sampling

Date Received: 10/08/24 13:35

Client Sample ID: PDI-36-SO-49.9-20241007

Date Collected: 10/07/24 17:05

Lab Sample ID: 580-144612-2 **Matrix: Solid**

Percent Solids: 66.9

Method: SW846 8260D - Vo	olatile Organic	Compound	ds by GC/MS	(Conti	inued)				
Analyte	_	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	ND		0.061	0.012	mg/Kg	<u></u>	10/14/24 13:20	10/15/24 01:19	1
Tetrachloroethene	0.0093	J	0.061	0.0080	mg/Kg	₽	10/14/24 13:20	10/15/24 01:19	1
Toluene	ND		0.091	0.020	mg/Kg	⊅	10/14/24 13:20	10/15/24 01:19	1
trans-1,2-Dichloroethene	ND		0.091	0.022	mg/Kg	≎	10/14/24 13:20	10/15/24 01:19	1
trans-1,3-Dichloropropene	ND		0.061	0.011	mg/Kg	≎	10/14/24 13:20	10/15/24 01:19	1
Trichloroethene	ND		0.061	0.016	mg/Kg	₽	10/14/24 13:20	10/15/24 01:19	1
Trichlorofluoromethane	ND		0.12	0.039	mg/Kg	☼	10/14/24 13:20	10/15/24 01:19	1
Vinyl chloride	ND		0.15	0.028	mg/Kg	₩	10/14/24 13:20	10/15/24 01:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				10/14/24 13:20	10/15/24 01:19	1
4-Bromofluorobenzene (Surr)	102		80 - 120				10/14/24 13:20	10/15/24 01:19	1
Dibromofluoromethane (Surr)	97		80 - 120				10/14/24 13:20	10/15/24 01:19	1
Toluene-d8 (Surr)	99		80 - 120				10/14/24 13:20	10/15/24 01:19	1

- Toluelle-uo (Sull)	99		00 - 120				10/14/24 10:20	10/13/24 01.19	
Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	- RA					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Bromomethane	ND		0.15	0.057	mg/Kg	-	10/15/24 10:05	10/15/24 15:35	
Chloroethane	ND		0.12	0.032	mg/Kg	₽	10/15/24 10:05	10/15/24 15:35	
Dichlorodifluoromethane	ND		0.38	0.070	mg/Kg	≎	10/15/24 10:05	10/15/24 15:35	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
1,2-Dichloroethane-d4 (Surr)	106		80 - 121				10/15/24 10:05	10/15/24 15:35	-
4-Bromofluorobenzene (Surr)	100		80 - 120				10/15/24 10:05	10/15/24 15:35	
Dibromofluoromethane (Surr)	107		80 - 120				10/15/24 10:05	10/15/24 15:35	
Toluene-d8 (Surr)	99		80 - 120				10/15/24 10:05	10/15/24 15:35	
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fa

General Chemistry							
Analyte	Result Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	66.9	0.1	0.1 %			10/14/24 14:30	1
Percent Moisture (SM22 2540G)	33.1	0.1	0.1 %			10/14/24 14:30	1

Client: ERM-West Job ID: 580-144612-1

Project/Site: Arkema PDI Sampling

Styrene

Client Sample ID: PDI-35-SO-32.6-20241007

Lab Sample ID: 580-144612-3 Date Collected: 10/07/24 17:25 Matrix: Solid Date Received: 10/08/24 13:35 Percent Solids: 80.8

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 0.031 mg/Kg 1,1,1,2-Tetrachloroethane ND 0.0078 10/14/24 13:20 10/15/24 01:40 ND 1.1.1-Trichloroethane 0.062 0.0072 mg/Kg 10/14/24 13:20 10/15/24 01:40 1,1,2,2-Tetrachloroethane ND 0.031 0.012 mg/Kg 10/14/24 13:20 10/15/24 01:40 ND 1,1,2-Trichloroethane 0.031 0.012 mg/Kg 10/14/24 13:20 10/15/24 01:40 0.062 0.014 mg/Kg 10/14/24 13:20 10/15/24 01:40 1.1-Dichloroethane ND 1,1-Dichloroethene ND 0.062 0.019 mg/Kg 10/14/24 13:20 10/15/24 01:40 1,1-Dichloropropene ND 0.062 0.0083 mg/Kg 10/14/24 13:20 10/15/24 01:40 ND 0.062 10/14/24 13:20 10/15/24 01:40 1,2,3-Trichlorobenzene 0.12 mg/Kg 1,2,3-Trichloropropane ND 0.062 0.018 mg/Kg 10/14/24 13:20 10/15/24 01:40 1,2,4-Trichlorobenzene ND 0.12 0.066 mg/Kg 10/14/24 13:20 10/15/24 01:40 1,2,4-Trimethylbenzene ND 0.062 0.021 mg/Kg 10/14/24 13:20 10/15/24 01:40 mg/Kg 1.2-Dibromo-3-Chloropropane ND 0.094 0.024 10/14/24 13:20 10/15/24 01:40 1 1,2-Dibromoethane ND 0.031 0.0059 mg/Kg 10/14/24 13:20 10/15/24 01:40 1,2-Dichlorobenzene ND 0.062 0.014 mg/Kg 10/14/24 13:20 10/15/24 01:40 0.0086 ND 0.031 mg/Kg 10/14/24 13:20 10/15/24 01:40 1.2-Dichloroethane 0.010 1,2-Dichloropropane NΩ 0.031 mg/Kg 10/14/24 13:20 10/15/24 01:40 ND 0.012 1,3,5-Trimethylbenzene 0.062 mg/Kg 10/14/24 13:20 10/15/24 01:40 1,3-Dichlorobenzene ND 0.094 0.021 mg/Kg 10/14/24 13:20 10/15/24 01:40 1,3-Dichloropropane NΩ 0.094 0.0087 mg/Kg 10/14/24 13:20 10/15/24 01:40 mg/Kg 1,4-Dichlorobenzene 0.018 0.094 0.017 10/14/24 13:20 10/15/24 01:40 2,2-Dichloropropane ND 0.062 0.019 mg/Kg ÷ 10/14/24 13:20 10/15/24 01:40 2-Chlorotoluene ND 0.062 0.014 mg/Kg 10/14/24 13:20 10/15/24 01:40 4-Chlorotoluene ND 0.062 0.015 mg/Kg 10/14/24 13:20 10/15/24 01:40 4-Isopropyltoluene ND 0.062 0.016 mg/Kg 10/14/24 13:20 10/15/24 01:40 Benzene ND 0.031 0.0059 mg/Kg 10/14/24 13:20 10/15/24 01:40 ND Bromobenzene 0.062 0.0065 mg/Kg 10/14/24 13:20 10/15/24 01:40 Bromochloromethane ND 0.062 0.0097 mg/Kg 10/14/24 13:20 10/15/24 01:40 Bromodichloromethane 0.0086 ND 0.062 mg/Kg 10/14/24 13:20 10/15/24 01:40 Bromoform ND 0.062 0.0070 mg/Kg 10/14/24 13:20 10/15/24 01:40 10/14/24 13:20 Carbon tetrachloride ND 0.031 0.0069 mg/Kg 10/15/24 01:40 Chlorobenzene 8.8 0.062 0.0075 mg/Kg 10/14/24 13:20 10/15/24 01:40 Chloroform ND 0.031 0.0065 mg/Kg 10/14/24 13:20 10/15/24 01:40 Chloromethane ND 0.094 0.016 10/14/24 13:20 10/15/24 01:40 mg/Kg cis-1.2-Dichloroethene ND 10/14/24 13:20 10/15/24 01:40 0.094 0.020 mg/Kg cis-1,3-Dichloropropene ND 0.031 0.0062 mg/Kg 10/14/24 13:20 10/15/24 01:40 Dibromochloromethane ND 0.031 0.0076 mg/Kg 10/14/24 13:20 10/15/24 01:40 Dibromomethane ND 0.062 0.012 mg/Kg 10/14/24 13:20 10/15/24 01:40 Ethylbenzene ND 0.062 0.014 mg/Kg 10/14/24 13:20 10/15/24 01:40 ND 0.037 mg/Kg Hexachlorobutadiene 0.16 10/14/24 13:20 10/15/24 01:40 Isopropylbenzene ND 0.062 0.013 mg/Kg 10/14/24 13:20 10/15/24 01:40 Methyl tert-butyl ether ND 0.062 0.0094 mg/Kg 10/14/24 13:20 10/15/24 01:40 **Methylene Chloride** 0.29 0.39 0.041 mg/Kg 10/14/24 13:20 10/15/24 01:40 m-Xylene & p-Xylene ND 0.062 0.011 mg/Kg 10/14/24 13:20 10/15/24 01:40 Naphthalene 10/14/24 13:20 10/15/24 01:40 ND 0.23 0.061 mg/Kg n-Butylbenzene ND 0.062 0.029 mg/Kg 10/14/24 13:20 10/15/24 01:40 N-Propylbenzene ND 0.062 0.023 mg/Kg 10/14/24 13:20 10/15/24 01:40 ND 0.0078 10/14/24 13:20 10/15/24 01:40 o-Xylene 0.062 mg/Kg sec-Butylbenzene ND 0.062 0.013 mg/Kg 10/14/24 13:20 10/15/24 01:40 10/15/24 01:40

Eurofins Seattle

10/14/24 13:20

0.062

0.020 mg/Kg

ND

Client: ERM-West Job ID: 580-144612-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-35-SO-32.6-20241007

Date Collected: 10/07/24 17:25

Matrix: Solid Date Received: 10/08/24 13:35 Percent Solids: 80.8

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	ND		0.062	0.012	mg/Kg	<u></u>	10/14/24 13:20	10/15/24 01:40	1
Tetrachloroethene	0.011	J	0.062	0.0083	mg/Kg	₩	10/14/24 13:20	10/15/24 01:40	1
Toluene	ND		0.094	0.021	mg/Kg	₩	10/14/24 13:20	10/15/24 01:40	1
trans-1,2-Dichloroethene	ND		0.094	0.023	mg/Kg	₽	10/14/24 13:20	10/15/24 01:40	1
trans-1,3-Dichloropropene	ND		0.062	0.011	mg/Kg	₽	10/14/24 13:20	10/15/24 01:40	1
Trichloroethene	ND		0.062	0.016	mg/Kg	₩	10/14/24 13:20	10/15/24 01:40	1
Trichlorofluoromethane	ND		0.12	0.041	mg/Kg	₽	10/14/24 13:20	10/15/24 01:40	1
Vinyl chloride	ND		0.16	0.029	mg/Kg	≎	10/14/24 13:20	10/15/24 01:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		80 - 121				10/14/24 13:20	10/15/24 01:40	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/14/24 13:20	10/15/24 01:40	1
Dibromofluoromethane (Surr)	99		80 - 120				10/14/24 13:20	10/15/24 01:40	1
Toluene-d8 (Surr)	99		80 - 120				10/14/24 13:20	10/15/24 01:40	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		0.16	0.059	mg/Kg	<u></u>	10/15/24 10:05	10/15/24 15:56	1
Chloroethane	ND		0.12	0.033	mg/Kg	₩	10/15/24 10:05	10/15/24 15:56	1
Dichlorodifluoromethane	ND		0.39	0.072	mg/Kg	₩	10/15/24 10:05	10/15/24 15:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		80 - 121				10/15/24 10:05	10/15/24 15:56	1
4-Bromofluorobenzene (Surr)	97		80 - 120				10/15/24 10:05	10/15/24 15:56	1
Dibromofluoromethane (Surr)	103		80 - 120				10/15/24 10:05	10/15/24 15:56	1
			80 - 120				10/15/24 10:05	10/15/24 15:56	1

General Chemistry							
Analyte	Result Qualifier	RL	RL Un	it D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	80.8	0.1	0.1 %			10/14/24 14:30	1
Percent Moisture (SM22 2540G)	19.2	0.1	0.1 %			10/14/24 14:30	1

Lab Sample ID: 580-144612-3

Client: ERM-West Job ID: 580-144612-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-36-SO-36.5-20241007

Lab Sample ID: 580-144612-4 Date Collected: 10/07/24 17:30 Matrix: Solid Date Received: 10/08/24 13:35 Percent Solids: 76.7

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed mg/Kg 1,1,1,2-Tetrachloroethane ND 0.026 0.0064 10/14/24 13:20 10/15/24 02:00 ND 0.051 1.1.1-Trichloroethane 0.0059 mg/Kg 10/14/24 13:20 10/15/24 02:00 1,1,2,2-Tetrachloroethane ND 0.026 0.0097 mg/Kg 10/14/24 13:20 10/15/24 02:00 ND 0.0095 10/14/24 13:20 1,1,2-Trichloroethane 0.026 mg/Kg 10/15/24 02:00 ND 0.051 0.012 mg/Kg 10/14/24 13:20 10/15/24 02:00 1.1-Dichloroethane 1,1-Dichloroethene ND 0.051 0.016 mg/Kg 10/14/24 13:20 10/15/24 02:00 1,1-Dichloropropene ND 0.051 0.0068 10/14/24 13:20 10/15/24 02:00 mg/Kg ND 0.10 0.051 10/14/24 13:20 10/15/24 02:00 1,2,3-Trichlorobenzene mg/Kg 1,2,3-Trichloropropane ND 0.051 0.015 mg/Kg 10/14/24 13:20 10/15/24 02:00 1,2,4-Trichlorobenzene ND 0.10 0.055 mg/Kg 10/14/24 13:20 10/15/24 02:00 1,2,4-Trimethylbenzene ND 0.051 0.017 mg/Kg 10/14/24 13:20 10/15/24 02:00 mg/Kg 1.2-Dibromo-3-Chloropropane ND 0.077 0.019 10/14/24 13:20 10/15/24 02:00 1 1,2-Dibromoethane ND 0.026 0.0049 mg/Kg 10/14/24 13:20 10/15/24 02:00 0.025 J 0.051 0.011 mg/Kg 10/14/24 13:20 10/15/24 02:00 1,2-Dichlorobenzene ND 0.026 0.0070 mg/Kg 10/14/24 13:20 10/15/24 02:00 1.2-Dichloroethane 0.0085 1,2-Dichloropropane ND 0.026 mg/Kg 10/14/24 13:20 10/15/24 02:00 1,3,5-Trimethylbenzene ND 0.051 0.0097 mg/Kg 10/14/24 13:20 10/15/24 02:00 1,3-Dichlorobenzene ND 0.077 0.017 mg/Kg 10/14/24 13:20 10/15/24 02:00 1,3-Dichloropropane ND 0.077 0.0072 mg/Kg 10/14/24 13:20 10/15/24 02:00 1,4-Dichlorobenzene 0.15 0.077 0.014 mg/Kg 10/14/24 13:20 10/15/24 02:00 2,2-Dichloropropane ND 0.051 0.015 mg/Kg ÷ 10/14/24 13:20 10/15/24 02:00 2-Chlorotoluene ND 0.051 0.011 mg/Kg 10/14/24 13:20 10/15/24 02:00 0.013 4-Chlorotoluene ND 0.051 mg/Kg 10/14/24 13:20 10/15/24 02:00 4-Isopropyltoluene ND 0.051 0.013 mg/Kg 10/14/24 13:20 10/15/24 02:00 Benzene ND 0.026 0.0049 mg/Kg 10/14/24 13:20 10/15/24 02:00 ND 0.0054 Bromobenzene 0.051 mg/Kg 10/14/24 13:20 10/15/24 02:00 Bromochloromethane ND 0.051 0.0079 mg/Kg 10/14/24 13:20 10/15/24 02:00 Bromodichloromethane ND 0.0070 0.051 mg/Kg 10/14/24 13:20 10/15/24 02:00 0.0058 Bromoform ND 0.051 mg/Kg 10/14/24 13:20 10/15/24 02:00 10/14/24 13:20 Carbon tetrachloride ND 0.0056 0.026 mg/Kg 10/15/24 02:00 Chlorobenzene 6.5 0.051 0.0061 mg/Kg 10/14/24 13:20 10/15/24 02:00 0.026 0.0054 mg/Kg 10/14/24 13:20 10/15/24 02:00 Chloroform 0.035 Chloromethane ND 0.077 0.013 mg/Kg 10/14/24 13:20 10/15/24 02:00 cis-1,2-Dichloroethene ND 10/14/24 13:20 10/15/24 02:00 0.077 0.016 mg/Kg cis-1,3-Dichloropropene ND 0.026 0.0051 mg/Kg 10/14/24 13:20 10/15/24 02:00 Dibromochloromethane ND 0.026 0.0063 mg/Kg 10/14/24 13:20 10/15/24 02:00 0.0095 Dibromomethane ND 0.051 mg/Kg 10/14/24 13:20 10/15/24 02:00 Ethylbenzene ND 0.051 0.012 mg/Kg 10/14/24 13:20 10/15/24 02:00 ND 0.031 mg/Kg 10/14/24 13:20 Hexachlorobutadiene 0.13 10/15/24 02:00 Isopropylbenzene ND 0.051 0.011 mg/Kg 10/14/24 13:20 10/15/24 02:00 Methyl tert-butyl ether ND 0.051 0.0077 mg/Kg 10/14/24 13:20 10/15/24 02:00 **Methylene Chloride** 0.23 0.32 0.033 mg/Kg 10/14/24 13:20 10/15/24 02:00 0.0091 m-Xylene & p-Xylene ND 0.051 mg/Kg 10/14/24 13:20 10/15/24 02:00 Naphthalene 0.050 10/14/24 13:20 10/15/24 02:00 ND 0.19 mg/Kg n-Butylbenzene ND 0.051 10/15/24 02:00 0.024 mg/Kg 10/14/24 13:20 N-Propylbenzene ND 0.051 0.019 mg/Kg 10/14/24 13:20 10/15/24 02:00 ND 0.0064 mg/Kg 10/14/24 13:20 10/15/24 02:00 o-Xylene 0.051 sec-Butylbenzene ND 0.051 0.011 mg/Kg 10/14/24 13:20 10/15/24 02:00 10/15/24 02:00 Styrene ND 0.051 0.016 mg/Kg 10/14/24 13:20

Eurofins Seattle

10/23/2024

Client: ERM-West Job ID: 580-144612-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-36-SO-36.5-20241007

Lab Sample ID: 580-144612-4 Date Collected: 10/07/24 17:30 **Matrix: Solid** Date Received: 10/08/24 13:35 Percent Solids: 76.7

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued) Analyte Result Qualifier MDL Unit D Prepared Dil Fac **Analyzed** 0.0099 mg/Kg t-Butylbenzene 0.051 10/14/24 13:20 10/15/24 02:00 ND 0.051 0.0068 mg/Kg 10/14/24 13:20 10/15/24 02:00 **Tetrachloroethene** 0.030 J Toluene ND 0.077 0.017 mg/Kg 10/14/24 13:20 10/15/24 02:00 trans-1,2-Dichloroethene ND 0.077 0.019 mg/Kg 10/14/24 13:20 10/15/24 02:00 trans-1,3-Dichloropropene ND 0.051 0.0090 mg/Kg 10/14/24 13:20 10/15/24 02:00 ND Trichloroethene 0.051 0.013 mg/Kg 10/14/24 13:20 10/15/24 02:00 Trichlorofluoromethane ND 0.10 0.033 mg/Kg 10/14/24 13:20 10/15/24 02:00 Vinyl chloride ND 0.13 0.024 mg/Kg 10/14/24 13:20 10/15/24 02:00 %Recovery Qualifier Prepared Surrogate Limits Analyzed Dil Fac 1,2-Dichloroethane-d4 (Surr) 99 80 - 121 10/14/24 13:20 10/15/24 02:00 4-Bromofluorobenzene (Surr) 101 80 - 120 10/14/24 13:20 10/15/24 02:00 Dibromofluoromethane (Surr) 99 80 - 120 10/14/24 13:20 10/15/24 02:00 Toluene-d8 (Surr) 98 80 - 120 10/14/24 13:20 10/15/24 02:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		0.13	0.048	mg/Kg	— <u></u>	10/15/24 10:05	10/15/24 16:16	1
Chloroethane	ND		0.10	0.027	mg/Kg	₩	10/15/24 10:05	10/15/24 16:16	1
Dichlorodifluoromethane	ND		0.32	0.059	mg/Kg	≎	10/15/24 10:05	10/15/24 16:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		80 - 121				10/15/24 10:05	10/15/24 16:16	1
4-Bromofluorobenzene (Surr)	99		80 - 120				10/15/24 10:05	10/15/24 16:16	1
Dibromofluoromethane (Surr)	104		80 - 120				10/15/24 10:05	10/15/24 16:16	1
	100		80 - 120				10/15/24 10:05	10/15/24 16:16	1

General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	76.7		0.1	0.1	%			10/14/24 14:30	1
Percent Moisture (SM22 2540G)	23.3		0.1	0.1	%			10/14/24 14:30	1

QC Sample Results

Client: ERM-West Job ID: 580-144612-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS

MB MB

Lab Sample ID: MB 580-474602/1-A

Matrix: Solid

Analysis Batch: 474687

Client Sample ID: Method Blank **Prep Type: Total/NA**

Prep Batch: 474602

Analyte	MB Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.020	0.0050			10/14/24 09:28	10/14/24 23:56	1
1,1,1-Trichloroethane	ND		0.040	0.0046			10/14/24 09:28	10/14/24 23:56	1
1,1,2,2-Tetrachloroethane	ND		0.020	0.0076	0 0		10/14/24 09:28	10/14/24 23:56	1
1,1,2-Trichloroethane	ND		0.020	0.0074				10/14/24 23:56	1
1,1-Dichloroethane	ND		0.040	0.0092			10/14/24 09:28	10/14/24 23:56	1
1,1-Dichloroethene	ND		0.040		mg/Kg		10/14/24 09:28	10/14/24 23:56	1
1,1-Dichloropropene	ND		0.040	0.0053				10/14/24 23:56	1
1,2,3-Trichlorobenzene	ND		0.080		mg/Kg		10/14/24 09:28	10/14/24 23:56	1
1,2,3-Trichloropropane	ND		0.040		mg/Kg			10/14/24 23:56	1
1,2,4-Trichlorobenzene	ND		0.080		mg/Kg		10/14/24 09:28	10/14/24 23:56	1
1,2,4-Trimethylbenzene	ND		0.040		mg/Kg		10/14/24 09:28	10/14/24 23:56	1
1,2-Dibromo-3-Chloropropane	ND		0.060		mg/Kg		10/14/24 09:28	10/14/24 23:56	1
1,2-Dibromoethane	ND		0.020	0.0038			10/14/24 09:28	10/14/24 23:56	1
1,2-Dichlorobenzene	ND		0.040	0.0087	0 0			10/14/24 23:56	1
1,2-Dichloroethane	ND		0.020	0.0055				10/14/24 23:56	1
1,2-Dichloropropane	ND		0.020	0.0066				10/14/24 23:56	1
1,3,5-Trimethylbenzene	ND		0.040	0.0076				10/14/24 23:56	1
1,3-Dichlorobenzene	ND		0.060		mg/Kg		10/14/24 09:28	10/14/24 23:56	1
1,3-Dichloropropane	ND		0.060	0.0056				10/14/24 23:56	1
1,4-Dichlorobenzene	ND		0.060		mg/Kg			10/14/24 23:56	1
2,2-Dichloropropane	ND		0.040		mg/Kg			10/14/24 23:56	1
2-Chlorotoluene	ND		0.040	0.0088				10/14/24 23:56	1
4-Chlorotoluene	ND		0.040	0.0098				10/14/24 23:56	1
4-Isopropyltoluene	ND		0.040		mg/Kg			10/14/24 23:56	1
Benzene	ND		0.020	0.0038				10/14/24 23:56	1
Bromobenzene	ND		0.040	0.0042				10/14/24 23:56	1
Bromochloromethane	ND		0.040	0.0062				10/14/24 23:56	1
Bromodichloromethane	ND		0.040	0.0055				10/14/24 23:56	1
Bromoform	ND		0.040	0.0045			10/14/24 09:28	10/14/24 23:56	1
Carbon tetrachloride	ND		0.020	0.0044			10/14/24 09:28	10/14/24 23:56	1
Chlorobenzene	ND		0.040	0.0048			10/14/24 09:28	10/14/24 23:56	1
Chloroform	ND		0.020	0.0042			10/14/24 09:28	10/14/24 23:56	1
Chloromethane	ND		0.060		mg/Kg		10/14/24 09:28	10/14/24 23:56	1
cis-1,2-Dichloroethene	ND		0.060		mg/Kg		10/14/24 09:28	10/14/24 23:56	1
cis-1,3-Dichloropropene	ND		0.020	0.0040			10/14/24 09:28	10/14/24 23:56	1
Dibromochloromethane	ND		0.020	0.0049			10/14/24 09:28	10/14/24 23:56	1
Dibromomethane	ND		0.040	0.0074			10/14/24 09:28	10/14/24 23:56	1
Ethylbenzene	ND		0.040	0.0091			10/14/24 09:28	10/14/24 23:56	1
Hexachlorobutadiene	ND		0.10		mg/Kg			10/14/24 23:56	1
Isopropylbenzene	ND		0.040	0.0086				10/14/24 23:56	1
Methyl tert-butyl ether	ND		0.040	0.0060				10/14/24 23:56	1
Methylene Chloride	ND		0.25		mg/Kg			10/14/24 23:56	1
m-Xylene & p-Xylene	ND		0.040	0.0071				10/14/24 23:56	1
Naphthalene	ND		0.15		mg/Kg			10/14/24 23:56	1
n-Butylbenzene	ND		0.040		mg/Kg		10/14/24 09:28	10/14/24 23:56	1
N-Propylbenzene	ND		0.040		mg/Kg		10/14/24 09:28	10/14/24 23:56	 1
o-Xylene	ND		0.040	0.0050			10/14/24 09:28	10/14/24 23:56	1
sec-Butylbenzene	ND		0.040		mg/Kg			10/14/24 23:56	1

Client: ERM-West Job ID: 580-144612-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-474602/1-A

Matrix: Solid

Analysis Batch: 474687

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 474602

M	в мв						•	
Analyte Resu	lt Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene N	D	0.040	0.013	mg/Kg		10/14/24 09:28	10/14/24 23:56	1
t-Butylbenzene N	D	0.040	0.0077	mg/Kg		10/14/24 09:28	10/14/24 23:56	1
Tetrachloroethene N	D	0.040	0.0053	mg/Kg		10/14/24 09:28	10/14/24 23:56	1
Toluene N	D	0.060	0.014	mg/Kg		10/14/24 09:28	10/14/24 23:56	1
trans-1,2-Dichloroethene N	D	0.060	0.015	mg/Kg		10/14/24 09:28	10/14/24 23:56	1
trans-1,3-Dichloropropene N	D	0.040	0.0070	mg/Kg		10/14/24 09:28	10/14/24 23:56	1
Trichloroethene N	D	0.040	0.010	mg/Kg		10/14/24 09:28	10/14/24 23:56	1
Trichlorofluoromethane N	D	0.080	0.026	mg/Kg		10/14/24 09:28	10/14/24 23:56	1
Vinyl chloride N	D	0.10	0.019	mg/Kg		10/14/24 09:28	10/14/24 23:56	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		80 - 121	10/14/24 09:28	10/14/24 23:56	1
4-Bromofluorobenzene (Surr)	103		80 - 120	10/14/24 09:28	10/14/24 23:56	1
Dibromofluoromethane (Surr)	100		80 - 120	10/14/24 09:28	10/14/24 23:56	1
Toluene-d8 (Surr)	100		80 - 120	10/14/24 09:28	10/14/24 23:56	1

Lab Sample ID: LCS 580-474602/2-A

Matrix: Solid

Analysis Batch: 474687

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 474602

Analysis Baton. 474007	Spike	LCS	LCS				%Rec
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1,1,2-Tetrachloroethane	0.800	0.867		mg/Kg		108	79 - 128
1,1,1-Trichloroethane	0.800	0.789		mg/Kg		99	78 - 135
1,1,2,2-Tetrachloroethane	0.800	0.886		mg/Kg		111	77 - 122
1,1,2-Trichloroethane	0.800	0.893		mg/Kg		112	80 - 123
1,1-Dichloroethane	0.800	0.803		mg/Kg		100	78 - 126
1,1-Dichloroethene	0.800	0.828		mg/Kg		104	73 - 134
1,1-Dichloropropene	0.800	0.806		mg/Kg		101	76 - 140
1,2,3-Trichlorobenzene	0.800	0.765		mg/Kg		96	58 - 146
1,2,3-Trichloropropane	0.800	0.858		mg/Kg		107	77 - 127
1,2,4-Trichlorobenzene	0.800	0.809		mg/Kg		101	74 - 131
1,2,4-Trimethylbenzene	0.800	0.860		mg/Kg		108	73 - 138
1,2-Dibromo-3-Chloropropane	0.800	0.772		mg/Kg		96	64 - 129
1,2-Dibromoethane	0.800	0.860		mg/Kg		108	77 - 123
1,2-Dichlorobenzene	0.800	0.890		mg/Kg		111	78 - 126
1,2-Dichloroethane	0.800	0.794		mg/Kg		99	76 - 124
1,2-Dichloropropane	0.800	0.798		mg/Kg		100	73 - 130
1,3,5-Trimethylbenzene	0.800	0.856		mg/Kg		107	72 - 134
1,3-Dichlorobenzene	0.800	0.785		mg/Kg		98	78 - 132
1,3-Dichloropropane	0.800	0.816		mg/Kg		102	80 - 120
1,4-Dichlorobenzene	0.800	0.846		mg/Kg		106	77 - 123
2,2-Dichloropropane	0.800	0.730		mg/Kg		91	75 - 134
2-Chlorotoluene	0.800	0.835		mg/Kg		104	77 - 134
4-Chlorotoluene	0.800	0.808		mg/Kg		101	71 - 137
4-Isopropyltoluene	0.800	0.889		mg/Kg		111	71 - 142
Benzene	0.800	0.854		mg/Kg		107	79 - 135
Bromobenzene	0.800	0.851		mg/Kg		106	78 - 126
Bromochloromethane	0.800	0.831		mg/Kg		104	76 - 131

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Job ID: 580-144612-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-474602/2-A

Matrix: Solid

Client: ERM-West

Analysis Batch: 474687

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 474602

Allalysis Batch. 474007	Spike		LCS				%Rec
Analyte	Added		Qualifier	Unit	_ D	%Rec	Limits
Bromodichloromethane	0.800	0.840		mg/Kg		105	78 - 125
Bromoform	0.800	0.831		mg/Kg		104	71 - 130
Carbon tetrachloride	0.800	0.829		mg/Kg		104	76 - 140
Chlorobenzene	0.800	0.868		mg/Kg		108	80 - 125
Chloroform	0.800	0.779		mg/Kg		97	74 - 133
Chloromethane	0.800	0.880		mg/Kg		110	52 - 142
cis-1,2-Dichloroethene	0.800	0.798		mg/Kg		100	80 - 125
cis-1,3-Dichloropropene	0.800	0.806		mg/Kg		101	80 - 122
Dibromochloromethane	0.800	0.880		mg/Kg		110	75 - 125
Dibromomethane	0.800	0.849		mg/Kg		106	72 - 130
Ethylbenzene	0.800	0.802		mg/Kg		100	80 - 135
Hexachlorobutadiene	0.800	0.768		mg/Kg		96	65 - 145
Isopropylbenzene	0.800	0.944		mg/Kg		118	80 - 131
Methyl tert-butyl ether	0.800	0.840		mg/Kg		105	71 - 126
Methylene Chloride	0.800	0.862		mg/Kg		108	56 - 140
m-Xylene & p-Xylene	0.800	0.811		mg/Kg		101	80 - 132
Naphthalene	0.800	0.847		mg/Kg		106	56 - 145
n-Butylbenzene	0.800	0.823		mg/Kg		103	69 - 143
N-Propylbenzene	0.800	0.840		mg/Kg		105	78 - 133
o-Xylene	0.800	0.860		mg/Kg		107	80 - 132
sec-Butylbenzene	0.800	0.853		mg/Kg		107	71 - 143
Styrene	0.800	0.881		mg/Kg		110	79 - 129
t-Butylbenzene	0.800	0.857		mg/Kg		107	72 - 144
Tetrachloroethene	0.800	0.780		mg/Kg		97	75 - 141
Toluene	0.800	0.862		mg/Kg		108	75 - 125
trans-1,2-Dichloroethene	0.800	0.789		mg/Kg		99	77 - 134
trans-1,3-Dichloropropene	0.800	0.891		mg/Kg		111	80 - 121
Trichloroethene	0.800	0.781		mg/Kg		98	80 - 134
Trichlorofluoromethane	0.800	0.783		mg/Kg		98	71 - 150
Vinyl chloride	0.800	0.877		mg/Kg		110	62 - 144

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		80 - 121
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: LCSD 580-474602/3-A

Matrix: Solid

Analysis Batch: 474687

Client Sample	ID: Lab	Control	Sample	Dup
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Prep Type: Total/NA **Prep Batch: 474602**

Tananyono Battom in 1001									
	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1,1,2-Tetrachloroethane	0.800	0.877		mg/Kg		110	79 - 128	1	20
1,1,1-Trichloroethane	0.800	0.808		mg/Kg		101	78 - 135	2	20
1,1,2,2-Tetrachloroethane	0.800	0.849		mg/Kg		106	77 - 122	4	20
1,1,2-Trichloroethane	0.800	0.856		mg/Kg		107	80 - 123	4	20
1,1-Dichloroethane	0.800	0.779		mg/Kg		97	78 - 126	3	20
1,1-Dichloroethene	0.800	0.838		mg/Kg		105	73 - 134	1	25

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QC Sample Results

Client: ERM-West Job ID: 580-144612-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-474602/3-A

Matrix: Solid

Analysis Batch: 474687

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA
Prep Batch: 474602

Analysis Batch: 474687					Prep Ba	atch: 4	
Analyta	Spike Added		LCSD Qualifier Unit	D %Rec	%Rec Limits	RPD	RPD Limit
Analyte 1,1-Dichloropropene		0.823	Qualifier Unit mg/Kg	$\frac{1}{103}$	76 ₋ 140	2	20
1,2,3-Trichlorobenzene	0.800	0.862	mg/Kg	108	58 - 146	12	28
	0.800	0.845		106	77 ₋ 127	2	20
1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	0.800	0.883	mg/Kg	110	74 - 131	9	
			mg/Kg				26
1,2,4-Trimethylbenzene	0.800	0.847	mg/Kg	106	73 - 138	2	22
1,2-Dibromo-3-Chloropropane	0.800	0.768	mg/Kg	96	64 - 129	1	40
1,2-Dibromoethane	0.800	0.845	mg/Kg	106	77 - 123	2	20
1,2-Dichlorobenzene	0.800	0.877	mg/Kg	110	78 ₋ 126	1	20
1,2-Dichloroethane	0.800	0.792	mg/Kg	99	76 - 124	0	20
1,2-Dichloropropane	0.800	0.774	mg/Kg	97	73 - 130	3	20
1,3,5-Trimethylbenzene	0.800	0.837	mg/Kg	105	72 - 134	2	24
1,3-Dichlorobenzene	0.800	0.776	mg/Kg	97	78 - 132		20
1,3-Dichloropropane	0.800	0.799	mg/Kg	100	80 - 120	2	20
1,4-Dichlorobenzene	0.800	0.840	mg/Kg	105	77 - 123	1	20
2,2-Dichloropropane	0.800	0.750	mg/Kg	94	75 - 134	3	20
2-Chlorotoluene	0.800	0.818	mg/Kg	102	77 - 134	2	21
4-Chlorotoluene	0.800	0.783	mg/Kg	98	71 - 137	3	21
4-Isopropyltoluene	0.800	0.898	mg/Kg	112	71 - 142	1	29
Benzene	0.800	0.857	mg/Kg	107	79 - 135	0	20
Bromobenzene	0.800	0.823	mg/Kg	103	78 - 126	3	20
Bromochloromethane	0.800	0.823	mg/Kg	103	76 - 131	1	20
Bromodichloromethane	0.800	0.830	mg/Kg	104	78 - 125	1	20
Bromoform	0.800	0.810	mg/Kg	101	71 - 130	2	20
Carbon tetrachloride	0.800	0.862	mg/Kg	108	76 - 140	4	20
Chlorobenzene	0.800	0.879	mg/Kg	110	80 - 125	1	20
Chloroform	0.800	0.783	mg/Kg	98	74 - 133	1	20
Chloromethane	0.800	0.921	mg/Kg	115	52 - 142	5	40
cis-1,2-Dichloroethene	0.800	0.820	mg/Kg	102	80 - 125	3	20
cis-1,3-Dichloropropene	0.800	0.795	mg/Kg	99	80 - 122	1	20
Dibromochloromethane	0.800	0.889	mg/Kg	111	75 - 125	1	20
Dibromomethane	0.800	0.834	mg/Kg	104	72 - 130	2	40
Ethylbenzene	0.800	0.816	mg/Kg	102	80 - 135	2	20
Hexachlorobutadiene	0.800	0.881	mg/Kg	110	65 - 145	14	36
Isopropylbenzene	0.800	0.978	mg/Kg	122	80 - 131	3	20
Methyl tert-butyl ether	0.800	0.841	mg/Kg	105	71 - 126	0	20
Methylene Chloride	0.800	0.859	mg/Kg	107	56 - 140	0	20
m-Xylene & p-Xylene	0.800	0.818	mg/Kg	102	80 - 132	1	20
Naphthalene	0.800	0.910	mg/Kg	114	56 - 145	7	25
n-Butylbenzene	0.800	0.840	mg/Kg	105	69 - 143	2	31
N-Propylbenzene	0.800	0.813	mg/Kg	102	78 - 133	3	24
o-Xylene	0.800	0.877	mg/Kg	110	80 - 132	2	20
sec-Butylbenzene	0.800	0.857	mg/Kg	107	71 - 143	0	29
Styrene	0.800	0.888	mg/Kg	111	79 - 129	1	20
t-Butylbenzene	0.800	0.865	mg/Kg	108	72 - 144	1	27
Tetrachloroethene	0.800	0.803	mg/Kg	100	72 - 144 75 - 141	3	20
Toluene	0.800	0.859	mg/Kg	100	75 - 125	0	20
trans-1,2-Dichloroethene	0.800	0.801	mg/Kg	100	77 - 134	2	20
trans-1,3-Dichloropropene	0.800	0.870	mg/Kg	109	80 - 121	2	20
Trichloroethene	0.800	0.817	mg/Kg	102	80 - 134	5	20

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Client: ERM-West

Job ID: 580-144612-1 Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-474602/3-A

Matrix: Solid

Analysis Batch: 474687

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 474602

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Trichlorofluoromethane	0.800	0.810		mg/Kg		101	71 - 150	3	30
Vinyl chloride	0.800	0.895		mg/Kg		112	62 - 144	2	20

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		80 - 121
4-Bromofluorobenzene (Surr)	97		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120
Toluene-d8 (Surr)	100		80 - 120

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 474770

Lab Sample ID: MB 580-474770/3-A

Matrix: Solid

Analysis Batch: 474771

	IVID	IAID							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		0.10	0.038	mg/Kg		10/15/24 10:05	10/15/24 11:29	1
Chloroethane	ND		0.080	0.021	mg/Kg		10/15/24 10:05	10/15/24 11:29	1
Dichlorodifluoromethane	ND		0.25	0.046	mg/Kg		10/15/24 10:05	10/15/24 11:29	1

MB MB

MR MR

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106	80 - 121	10/15/24 10:05	10/15/24 11:29	1
4-Bromofluorobenzene (Surr)	98	80 - 120	10/15/24 10:05	10/15/24 11:29	1
Dibromofluoromethane (Surr)	107	80 - 120	10/15/24 10:05	10/15/24 11:29	1
Toluene-d8 (Surr)	98	80 - 120	10/15/24 10:05	10/15/24 11:29	1

Lab Sample ID: LCS 580-474770/1-A

Lab Sample ID: LCSD 580-474770/2-A

Matrix: Solid

Matrix: Solid

Analysis Batch: 474771

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 474770

	Spike	LCS	LCS				%Rec
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Bromomethane	0.800	0.901		mg/Kg		113	55 - 150
Chloroethane	0.800	0.843		mg/Kg		105	26 - 150
Dichlorodifluoromethane	0.800	0.872		ma/Ka		109	33 - 150

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		80 - 121
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	99		80 - 120

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analysis Batch: 4/4//1							Prep Ba	4//0	
	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Bromomethane	0.800	0.906		mg/Kg		113	55 - 150	1	26
Chloroethane	0.800	0.830		mg/Kg		104	26 - 150	2	40
Dichlorodifluoromethane	0.800	0.884		mg/Kg		110	33 - 150	1	31

QC Sample Results

Client: ERM-West Job ID: 580-144612-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-474770/2-A

Matrix: Solid

Analysis Batch: 474771

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 474770

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		80 - 121
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120
Toluene-d8 (Surr)	101		80 - 120

Client: ERM-West

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-35-SO-54.9-20241007

Date Collected: 10/07/24 17:00

Date Received: 10/08/24 13:35

_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Client Sample ID: PDI-35-SO-54.9-20241007

Date Collected: 10/07/24 17:00 Date Received: 10/08/24 13:35

Lau	Of Allalyzeu	
EET SEA	10/18/24 15:11	
Lah	Sample ID:	581

0-144612-1 Matrix: Solid Percent Solids: 70.6

Lab Sample ID: 580-144612-1

Job ID: 580-144612-1

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		474770	BYM	EET SEA	10/15/24 10:05
Total/NA	Analysis	8260D	RA	1	474771	BYM	EET SEA	10/15/24 15:15
Total/NA	Prep	5035			474602	AC	EET SEA	10/14/24 13:20
Total/NA	Analysis	8260D		1	474687	K1K	EET SEA	10/15/24 00:58

Client Sample ID: PDI-36-SO-49.9-20241007

Date Collected: 10/07/24 17:05 Date Received: 10/08/24 13:35

Lab Sample ID: 580-144612-2

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	474654	SCS	EET SEA	10/14/24 14:30

Client Sample ID: PDI-36-SO-49.9-20241007

Date Collected: 10/07/24 17:05 Date Received: 10/08/24 13:35

Lab Sample ID: 580-144612-2

Matrix: Solid Percent Solids: 66.9

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		474770	BYM	EET SEA	10/15/24 10:05
Total/NA	Analysis	8260D	RA	1	474771	BYM	EET SEA	10/15/24 15:35
Total/NA	Prep	5035			474602	AC	EET SEA	10/14/24 13:20
Total/NA	Analysis	8260D		1	474687	K1K	EET SEA	10/15/24 01:19

Client Sample ID: PDI-35-SO-32.6-20241007

Date Collected: 10/07/24 17:25 Date Received: 10/08/24 13:35

Lab Sample ID: 580-144612-3

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G	-	1	474654	SCS	EET SEA	10/14/24 14:30

Client Sample ID: PDI-35-SO-32.6-20241007

Date Collected: 10/07/24 17:25 Date Received: 10/08/24 13:35

Lab Sample ID: 580-144612-3

Matrix: Solid Percent Solids: 80.8

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		474770	BYM	EET SEA	10/15/24 10:05
Total/NA	Analysis	8260D	RA	1	474771	BYM	EET SEA	10/15/24 15:56
Total/NA	Prep	5035			474602	AC	EET SEA	10/14/24 13:20
Total/NA	Analysis	8260D		1	474687	K1K	EET SEA	10/15/24 01:40

Lab Chronicle

Client: ERM-West Job ID: 580-144612-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-36-SO-36.5-20241007

Lab Sample ID: 580-144612-4 Date Collected: 10/07/24 17:30 **Matrix: Solid**

Date Received: 10/08/24 13:35

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	474654	SCS	EET SEA	10/14/24 14:30

Client Sample ID: PDI-36-SO-36.5-20241007 Lab Sample ID: 580-144612-4

Date Collected: 10/07/24 17:30 **Matrix: Solid** Date Received: 10/08/24 13:35 Percent Solids: 76.7

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		474770	BYM	EET SEA	10/15/24 10:05
Total/NA	Analysis	8260D	RA	1	474771	BYM	EET SEA	10/15/24 16:16
Total/NA	Prep	5035			474602	AC	EET SEA	10/14/24 13:20
Total/NA	Analysis	8260D		1	474687	K1K	EET SEA	10/15/24 02:00

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: ERM-West Job ID: 580-144612-1

Project/Site: Arkema PDI Sampling

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Progra	am	Identification Number	Expiration Date	
Oregon	NELAF	ס	4167	07-07-25	
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,	s are included in this repo does not offer certification	•	not certified by the governing author	ity. This list may include anal	
,	•	•	not certified by the governing author Analyte	ity. This list may include anal	

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Sample Summary

Client: ERM-West

Project/Site: Arkema PDI Sampling

Job ID: 580-144612-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-144612-1	PDI-35-SO-54.9-20241007	Solid	10/07/24 17:00	10/08/24 13:35
580-144612-2	PDI-36-SO-49.9-20241007	Solid	10/07/24 17:05	10/08/24 13:35
580-144612-3	PDI-35-SO-32.6-20241007	Solid	10/07/24 17:25	10/08/24 13:35
580-144612-4	PDI-36-SO-36.5-20241007	Solid	10/07/24 17:30	10/08/24 13:35

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Eurofins Seattle

5755 8th Street East Tacoma, WA 98424 Phone (253) 922-2310

Chain of Custody Record



Environment Testing

Phone (253) 922-2310																			
Client Information	Sampler:				z, She	ri L					Carrier Trac		·): 		COC No: 580-62781	-19269	.12		
Client Contact: Avery Soplata	Phone:			E-Ma She	ail: eri.Cru:	z@et.e	eurofin	sus.co	om	S	state of Ori	gin:			Page: Page \ of	1			
company: ERM-West			PWSID:						Analysis	Requ	iested				Job#:				
oddress: 1050 SW 6th Avenue Suite 1650	Due Date Requeste	ed:				NO.									Preservation F - MeOH E - NaHSO4	n Code	s:		
city. Portland	TAT Requested (da	ays):			1	ı		9							A - HCL				
tate, Zip: DR, 97204	Compliance Projec	ct: A Yes	4 No					ent blanks											
Phone:	PO#: 0732436.301				9	동		equipmen											
mail: avery.soplata@erm.com	WO #:				sor	st Me	st_LL	st equ						2					
Project Name: Arkema - PDI Investigation	Project #: 58020754				ple (Yes or No	standard list MeOH	standard list_LL	standard list						containers	Other:				
Site:	SSOW#:			Sam									of	Other.					
		Sample	Sample Type (C=comp, G=grab) B1	Matrix (W=water, S=solid, O=waste/oil,	eid Filtered	8260D - Volatiles		8260D - Volatiles						Total Number	Snor	ial Inc	tructions	/Noto:	
Sample Identification	Sample Date	Time	Preservation				E A							Ż	Зрес	lai IIIS	tructions	WOLE.	
PDI-35-50-54.9-20241007	10/07/24	1700	6	5	П	X								9					
PDT-36-50-49.9-20241007	10/07/24			1	П	X								2					
PDI-35-50 - 32.6-20241007	10/3/24					X								2					
PDI-36-50-36.5-20241007	10/07/24		L	1	П	X								a					
										Ш									
					\perp														
					11	_		_		++		- 11							
					H	-		+		+-+		_							
					H			+		+-+	+	-							
					H		-	+		++			80-14461	2 Ch	ain of Cus	tody			
Possible Hazard Identification					I s	ample	Dispo	osal (A fee may	be as:	sessed i	f sample	es are re	taine	d longer ti	nan 1 n	nonth)		
Non-Hazard Flammable Skin Irritant Pois	on B Unkno	own \Box_F	Radiological			\square_R	eturn :	To Clie	ent	Dis	sposal By				ve For		_ Months		
Deliverable Requested: I, II, III, IV, Other (specify)					s	pecial	Instruc	ctions	QC Requir	rements									
Empty Kit Relinquished by:		Date:	10	ompany	Time		ived by:	*		11	Metho	od of Shipn	nent:				Company		
Relinquished by: David Stone FRM	Date/Time:	4 105	6			1/1	111	11.6	A C	1		K	18/2	y	105	6	M	· E.	
Relinquished by:	Date/Time: 21	1 3	1	ompany E	· .		Mad by:		CR	0)		1	015	10	1 13))	Company		
Relinquished by:	Date/Time:		C	ompany		,	ived by:					Date	e/Timle:				Company		
Custody Seals Intact: Custody Seal No.: Δ Yes Δ No				04	. (0 0		er Temp	erature	(s) °C and Ot	ther Rem	arks:	2.	1/200	1	PO	×	51-	1	000

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Ver: 04/02/20/23/2024

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5755 8th Street East **Eurofins Seattle** Client: ERM-West Job Number: 580-144612-1

Login Number: 144612 List Source: Eurofins Seattle

List Number: 1

Creator: O'Connell, Jason I

Creator. O Connell, Jason I		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Avery Soplata ERM-West 1050 SW 6th Avenue Suite 1650 Portland, Oregon 97204

Generated 12/10/2024 2:15:31 PM Revision 2

JOB DESCRIPTION

Arkema PDI Sampling

JOB NUMBER

580-144769-1

Eurofins Seattle 5755 8th Street East Tacoma WA 98424



Eurofins Seattle

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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Authorization

Generated 12/10/2024 2:15:31 PM Revision 2

Authorized for release by Sheri Cruz, Project Manager I Sheri.Cruz@et.eurofinsus.com (253)922-2310

Shuid ony

Client: ERM-West

Project/Site: Arkema PDI Sampling

Laboratory Job ID: 580-144769-1

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Case Narrative

Client: ERM-West Job ID: 580-144769-1

Project: Arkema PDI Sampling

Job ID: 580-144769-1 Eurofins Seattle

Job Narrative 580-144769-1

Revised 11/20/24 to revise sample ID PDI-45-SO-44.9-20241010 should be PDI-45-SO-49.9-20241010.
Revised report 12/10/2024 to clarify in narrative why the lab could not report 3 analytes analyzed out of hold in the original run due to ICAL not passing/usable on that instrument for those 3 analytes. See narrative notes below.

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these
 situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise
 specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed
 unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 10/11/2024 12:30 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.2°C.

GC/MS VOA

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-474979 recovered outside acceptance criteria, low biased, for Bromomethane and Chloroethane. A reporting limit (RL) standard was analyzed, and the target analytes are detected. Since the associated samples were non-detect for the analyte(s), the data are reported.

Method 8260D: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-474967 and analytical batch 580-474979 recovered outside control limits for the following analytes: Bromomethane.

Method 8260D: The method blank for preparation batch 580-475022 and analytical batch 580-475026 contained Hexachlorobutadiene above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

Method 8260D: The matrix spike (MS) recoveries for preparation batch 580-475022 and analytical batch 580-475026 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

Method 8260D: The matrix spike / matrix spike duplicate (MS/MSD/) precision for preparation batch 580-475022 and analytical batch 580-475026 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 8260D: The method blank for preparation batch 580-475029 and analytical batch 580-475093 contained Chlorobenzene above the method detection limit. This target analyte concentration was less than half the reporting limit (1/2RL) in the method blank; therefore, re-extraction and re-analysis of samples was not performed.

Method 8260D: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-475029 and analytical batch 580-475093 recovered outside control limits for the following analytes: Methylene Chloride. This analyte was biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 8260D: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 580-475697 and analytical batch 580-475700 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 8260D: The following samples were analyzed at reduced volume due to high concentrations of target analytes: PDI-50-SO-28.5-20241009 (580-144769-1), PDI-50a-SO-39.9-20241010 (580-144769-5) and PDI-45-SO-38.5-20241010 (580-144769-10). The calculation was performed using an initial volume adjustment rather than a dilution factor. The reporting limits have been elevated by the appropriate factor.

Eurofins Seattle

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4.

Case Narrative

Client: ERM-West Job ID: 580-144769-1

Project: Arkema PDI Sampling

Job ID: 580-144769-1 (Continued)

Eurofins Seattle

Method 8260D: The following samples were analyzed at reduced volume due to high concentrations of target analytes: PDI-56-SO-34.7-20241009 (580-144769-3), PDI-50a-SO-29.45-20241010 (580-144769-6), PDI-45-SO-38.5-20241010 (580-144769-10), PDI-48-SO-33.8-20241008 (580-144769-16) and PDI-57-SO-35-20241008 (580-144769-18). The calculation was performed using an initial volume adjustment rather than a dilution factor. The reporting limits have been elevated by the appropriate factor.

Method 8260D: The following sample was diluted to bring the concentration of target analytes within the calibration range: PDI-50-SO-28.5-20241009 (580-144769-1). Elevated reporting limits (RLs) are provided.

Method 8260D: Chlorobenzene was outside of calibration range in the following samples: PDI-50-SO-28.5-20241009 (580-144769-1) and PDI-50a-SO-29.45-20241010 (580-144769-6). Re-analysis was performed outside of analytical holding time, therefore, both sets of data are reported.

Method 8260D: 4-Bromofluorobenzene (Surr) was outside of control limits low in the following sample: PDI-50-SO-28.5-20241009 (580-144769-1). 4-Bromofluorobenzene (Surr) is not chemically associated with the target analytes. Therefore sample was not reanalyzed.

Method 8260D: Reanalysis of the following sample was performed outside of the analytical holding time: PDI-50-SO-28.5-20241009 (580-144769-1).

Method 8260D: Reanalysis of the following sample was performed outside of the analytical holding time due to results outside of calibration range in the initial analysis: PDI-50a-SO-29.45-20241010 (580-144769-6). Both sets of data are reported.

Method 8260D: Reanalysis of the following sample(s) was performed outside of the analytical holding time: PDI-38-SO-32.9-20241008 (580-144769-13), PDI-37-SO-31.2-20241008 (580-144769-15) and PDI-48-SO-40-20241008 (580-144769-17). The samples were originally analyzed on an instrument with an ICAL that was not passing/usable for Bromodichloromethane, Bromomethane and Chloroethane. These three samples were re-analyzed on a secondary instrument that had passing ICALs for these analytes and reported out of hold. The original run in hold could not be reported due to ICAL for those three analytes.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Definitions/Glossary

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Qualifiers

-			0	11		•
G	U	IV	3	v	U	А

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
В	Compound was found in the blank and sample.
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
Н	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1-	Surrogate recovery exceeds control limits, low biased.

Glossary

Glossary	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
\tilde{\	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)

MDA Minimum Detectable Activity (Radiochemistry)
MDC Minimum Detectable Concentration (Radiochemistry)
MDL Method Detection Limit

MDL Method Detection Limit
ML Minimum Level (Dioxin)
MPN Most Probable Number
MQL Method Quantitation Limit

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent
POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive
QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

TNTC Too Numerous To Count

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-50-SO-28.5-20241009

Lab Sample ID: 580-144769-1 Date Collected: 10/09/24 17:40 **Matrix: Solid**

Date Received: 10/11/24 12:30

Analyte	Result Qualifier	RL —	MDL		D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND	0.17		mg/Kg			10/17/24 15:38	1
1,1,1-Trichloroethane	0.065 J	0.34		mg/Kg			10/17/24 15:38	1
1,1,2,2-Tetrachloroethane	ND	0.17		mg/Kg			10/17/24 15:38	1
1,1,2-Trichloroethane	ND	0.17		mg/Kg			10/17/24 15:38	1
1,1-Dichloroethane	ND	0.34	0.078	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
1,1-Dichloroethene	ND	0.34	0.10	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
1,1-Dichloropropene	ND	0.34		mg/Kg		10/17/24 07:47	10/17/24 15:38	1
1,2,3-Trichlorobenzene	ND	0.68	0.34	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
1,2,3-Trichloropropane	ND	0.34	0.098	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
1,2,4-Trichlorobenzene	ND	0.68	0.36	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
1,2,4-Trimethylbenzene	ND	0.34	0.11	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
1,2-Dibromo-3-Chloropropane	ND	0.51	0.13	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
1,2-Dibromoethane	ND	0.17	0.032	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
1,2-Dichlorobenzene	7.1	0.34	0.074	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
1,2-Dichloroethane	ND	0.17	0.047	mg/Kg		10/17/24 07:47	10/17/24 15:38	
1,2-Dichloropropane	ND	0.17		mg/Kg		10/17/24 07:47	10/17/24 15:38	1
1,3,5-Trimethylbenzene	ND	0.34	0.065	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
1,3-Dichlorobenzene	0.44 J	0.51		mg/Kg		10/17/24 07:47	10/17/24 15:38	1
1,3-Dichloropropane	ND	0.51		mg/Kg		10/17/24 07:47	10/17/24 15:38	1
1,4-Dichlorobenzene	20	0.51		mg/Kg			10/17/24 15:38	1
2,2-Dichloropropane	ND	0.34		mg/Kg			10/17/24 15:38	
2-Chlorotoluene	ND	0.34		mg/Kg			10/17/24 15:38	
4-Chlorotoluene	ND	0.34		mg/Kg			10/17/24 15:38	,
4-Isopropyltoluene	ND ND	0.34		mg/Kg			10/17/24 15:38	,
Benzene	ND						10/17/24 15:38	
		0.17		mg/Kg				
Bromobenzene	ND ND	0.34		mg/Kg			10/17/24 15:38	1
Bromochloromethane	ND	0.34		mg/Kg			10/17/24 15:38	
Bromodichloromethane	ND	0.34		mg/Kg			10/17/24 15:38	
Bromoform	ND	0.34		mg/Kg			10/17/24 15:38	1
Carbon tetrachloride	ND	0.17		mg/Kg			10/17/24 15:38	
Chlorobenzene	790 E	0.68		mg/Kg			10/19/24 03:05	1
Chloroform	ND	0.17		mg/Kg			10/17/24 15:38	1
Chloromethane	ND	0.51		mg/Kg			10/17/24 15:38	1
cis-1,2-Dichloroethene	ND	0.51		mg/Kg			10/17/24 15:38	1
cis-1,3-Dichloropropene	ND	0.17		mg/Kg			10/17/24 15:38	•
Dibromochloromethane	ND	0.17	0.042	mg/Kg		10/17/24 07:47	10/17/24 15:38	
Dibromomethane	ND	0.34	0.063	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
Dichlorodifluoromethane	ND	2.1	0.39	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
Ethylbenzene	0.083 J	0.34	0.077	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
Hexachlorobutadiene	ND	0.85	0.20	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
Isopropylbenzene	ND	0.34	0.073	mg/Kg		10/17/24 07:47	10/17/24 15:38	•
Methyl tert-butyl ether	ND	0.34	0.051	mg/Kg		10/17/24 07:47	10/17/24 15:38	
Methylene Chloride	ND	2.1		mg/Kg		10/17/24 07:47	10/17/24 15:38	
m-Xylene & p-Xylene	ND	0.34	0.060	mg/Kg		10/17/24 07:47	10/17/24 15:38	
Naphthalene	ND	1.3		mg/Kg			10/17/24 15:38	
n-Butylbenzene	ND	0.34		mg/Kg			10/17/24 15:38	1
N-Propylbenzene	ND	0.34		mg/Kg			10/17/24 15:38	
o-Xylene	ND	0.34		mg/Kg			10/17/24 15:38	,
sec-Butylbenzene	ND	0.34		mg/Kg			10/17/24 15:38	· · · · · · · · · · · · · · · · · · ·

Client: ERM-West

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-50-SO-28.5-20241009

Date Collected: 10/09/24 17:40 Date Received: 10/11/24 12:30 Lab Sample ID: 580-144769-1

Matrix: Solid

Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	(Conti	inued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		0.34	0.11	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
t-Butylbenzene	ND		0.34	0.065	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
Tetrachloroethene	2.9		0.34	0.045	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
Toluene	ND		0.51	0.11	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
trans-1,2-Dichloroethene	ND		0.51	0.12	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
trans-1,3-Dichloropropene	ND		0.34	0.059	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
Trichloroethene	ND		0.34	0.087	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
Trichlorofluoromethane	ND		0.68	0.22	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
Vinyl chloride	ND		0.85	0.16	mg/Kg		10/17/24 07:47	10/17/24 15:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/17/24 07:47	10/17/24 15:38	1
4-Bromofluorobenzene (Surr)	98		80 - 120				10/17/24 07:47	10/17/24 15:38	1
Dibromofluoromethane (Surr)	100		80 - 120				10/17/24 07:47	10/17/24 15:38	1
Toluene-d8 (Surr)	120		80 - 120				10/17/24 07:47	10/17/24 15:38	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	1800	Н	6.8	0.82	mg/Kg		10/23/24 14:23	10/24/24 15:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		80 - 121				10/23/24 14:23	10/24/24 15:03	1
4-Bromofluorobenzene (Surr)	98		80 - 120				10/23/24 14:23	10/24/24 15:03	1
Dibromofluoromethane (Surr)	107		80 - 120				10/23/24 14:23	10/24/24 15:03	1
Toluene-d8 (Surr)	98		80 - 120				10/23/24 14:23	10/24/24 15:03	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	*1	1.1	0.41	mg/Kg		10/17/24 10:00	10/17/24 20:21	1
Chloroethane	ND		0.86	0.22	mg/Kg		10/17/24 10:00	10/17/24 20:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/17/24 10:00	10/17/24 20:21	1
4-Bromofluorobenzene (Surr)	65	S1-	80 - 120				10/17/24 10:00	10/17/24 20:21	1
Dibromofluoromethane (Surr)	88		80 - 120				10/17/24 10:00	10/17/24 20:21	1
Toluene-d8 (Surr)	89		80 - 120				10/17/24 10:00	10/17/24 20:21	1

General Chemistry Analyte	Result Qualifier	RL	RL I	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	79.1	0.1	0.1	%			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	20.9	0.1	0.1	%			10/18/24 15:11	1

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-50-SO-34.9-20241009

Lab Sample ID: 580-144769-2

Date Collected: 10/09/24 17:45 Matrix: Solid Date Received: 10/11/24 12:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 1,1,1,2-Tetrachloroethane ND 0.015 0.0037 mg/Kg 10/17/24 07:47 10/17/24 11:08 ND 0.030 1.1.1-Trichloroethane 0.0034 mg/Kg 10/17/24 07:47 10/17/24 11:08 1,1,2,2-Tetrachloroethane ND 0.015 0.0056 mg/Kg 10/17/24 07:47 10/17/24 11:08 ND 10/17/24 11:08 1,1,2-Trichloroethane 0.015 0.0055 mg/Kg 10/17/24 07:47 ND 0.030 0.0068 mg/Kg 10/17/24 07:47 10/17/24 11:08 1.1-Dichloroethane 1,1-Dichloroethene ND 0.030 0.0091 mg/Kg 10/17/24 07:47 10/17/24 11:08 1,1-Dichloropropene ND 0.030 0.0039 10/17/24 07:47 10/17/24 11:08 mg/Kg ND 0.059 0.029 10/17/24 07:47 10/17/24 11:08 1,2,3-Trichlorobenzene mg/Kg 1,2,3-Trichloropropane ND 0.030 0.0085 mg/Kg 10/17/24 07:47 10/17/24 11:08 1,2,4-Trichlorobenzene ND 0.059 0.032 mg/Kg 10/17/24 07:47 10/17/24 11:08 1,2,4-Trimethylbenzene ND 0.030 0.010 mg/Kg 10/17/24 07:47 10/17/24 11:08 1.2-Dibromo-3-Chloropropane ND 0.044 0.011 mg/Kg 10/17/24 07:47 10/17/24 11:08 1 1,2-Dibromoethane ND 0.015 0.0028 mg/Kg 10/17/24 07:47 10/17/24 11:08 mg/Kg 1,2-Dichlorobenzene ND 0.030 0.0064 10/17/24 07:47 10/17/24 11:08 ND 0.015 0.0041 mg/Kg 10/17/24 07:47 10/17/24 11:08 1.2-Dichloroethane 1,2-Dichloropropane ND 0.015 0.0049 mg/Kg 10/17/24 07:47 10/17/24 11:08 0.0056 1,3,5-Trimethylbenzene ND 0.030 mg/Kg 10/17/24 07:47 10/17/24 11:08 1,3-Dichlorobenzene ND 0.044 0.0098 mg/Kg 10/17/24 07:47 10/17/24 11:08 10/17/24 07:47 ND 0.044 0.0041 mg/Kg 10/17/24 11:08 1,3-Dichloropropane mg/Kg 1,4-Dichlorobenzene ND 0.044 0.0080 10/17/24 07:47 10/17/24 11:08 2,2-Dichloropropane ND 0.030 0.0090 mg/Kg 10/17/24 07:47 10/17/24 11:08 2-Chlorotoluene ND 0.030 0.0065 mg/Kg 10/17/24 07:47 10/17/24 11:08 4-Chlorotoluene ND 0.030 0.0072 mg/Kg 10/17/24 07:47 10/17/24 11:08 4-Isopropyltoluene ND 0.030 0.0075 mg/Kg 10/17/24 07:47 10/17/24 11:08 Benzene ND 0.015 0.0028 mg/Kg 10/17/24 07:47 10/17/24 11:08 0.0031 Bromobenzene ND 0.030 mg/Kg 10/17/24 07:47 10/17/24 11:08 Bromochloromethane ND 0.030 0.0046 mg/Kg 10/17/24 07:47 10/17/24 11:08 Bromodichloromethane 0.0041 ND 0.030 mg/Kg 10/17/24 07:47 10/17/24 11:08 0.0033 Bromoform ND 0.030 mg/Kg 10/17/24 07:47 10/17/24 11:08 Carbon tetrachloride ND 0.0033 mg/Kg 0.015 10/17/24 07:47 10/17/24 11:08 Chlorobenzene 5.0 0.030 0.0036 mg/Kg 10/17/24 07:47 10/17/24 11:08 0.015 0.0031 mg/Kg 10/17/24 07:47 10/17/24 11:08 0.0036 J Chloroform Chloromethane ND 0.044 0.0075 10/17/24 07:47 10/17/24 11:08 mg/Kg 10/17/24 07:47 10/17/24 11:08 cis-1,2-Dichloroethene 0.051 0.0440.0093 mg/Kg cis-1,3-Dichloropropene ND 0.015 0.0030 mg/Kg 10/17/24 07:47 10/17/24 11:08 Dibromochloromethane ND 0.015 0.0036 mg/Kg 10/17/24 07:47 10/17/24 11:08 0.0055 Dibromomethane ND 0.030 mg/Kg 10/17/24 07:47 10/17/24 11:08 Dichlorodifluoromethane ND 0.18 0.034 mg/Kg 10/17/24 07:47 10/17/24 11:08 ND 0.030 0.0067 Ethylbenzene mg/Kg 10/17/24 07:47 10/17/24 11:08 Hexachlorobutadiene 0.021 J_B 0.074 0.018 mg/Kg 10/17/24 07:47 10/17/24 11:08 Isopropylbenzene ND 0.030 0.0064 mg/Kg 10/17/24 07:47 10/17/24 11:08 Methyl tert-butyl ether ND 0.030 0.0044 mg/Kg 10/17/24 07:47 10/17/24 11:08 0.019 **Methylene Chloride** 0.023 0.18 mg/Kg 10/17/24 07:47 10/17/24 11:08 m-Xylene & p-Xylene 0.030 0.0053 10/17/24 07:47 10/17/24 11:08 ND mg/Kg Naphthalene ND 0.11 0.029 mg/Kg 10/17/24 07:47 10/17/24 11:08 n-Butylbenzene ND 0.030 0.014 mg/Kg 10/17/24 07:47 10/17/24 11:08 N-Propylbenzene ND 0.030 0.011 mg/Kg 10/17/24 07:47 10/17/24 11:08 o-Xylene ND 0.030 0.0037 mg/Kg 10/17/24 07:47 10/17/24 11:08 sec-Butylbenzene ND 0.030 0.0064 mg/Kg 10/17/24 07:47 10/17/24 11:08

Eurofins Seattle

12/10/2024 (Rev. 2)

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-50-SO-34.9-20241009

Date Collected: 10/09/24 17:45

Date Received: 10/11/24 12:30

Vinyl chloride

Toluene-d8 (Surr)

Lab Sample ID: 580-144769-2

10/17/24 07:47 10/17/24 11:08

10/17/24 07:47 10/17/24 11:08

Matrix: Solid

Dil Fac	5
1	
1	
1	

Method: SW846 8260D - V	olatile Organic	Compound	s by GC/MS	(Conti	inued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	MD		0.030	0.0094	mg/Kg		10/17/24 07:47	10/17/24 11:08	1
t-Butylbenzene	ND		0.030	0.0057	mg/Kg		10/17/24 07:47	10/17/24 11:08	1
Tetrachloroethene	0.0067	J	0.030	0.0039	mg/Kg		10/17/24 07:47	10/17/24 11:08	1
Toluene	ND		0.044	0.010	mg/Kg		10/17/24 07:47	10/17/24 11:08	1
trans-1,2-Dichloroethene	0.014	J	0.044	0.011	mg/Kg		10/17/24 07:47	10/17/24 11:08	1
trans-1,3-Dichloropropene	ND		0.030	0.0052	mg/Kg		10/17/24 07:47	10/17/24 11:08	1
Trichloroethene	0.012	J	0.030	0.0076	mg/Kg		10/17/24 07:47	10/17/24 11:08	1
Trichlorofluoromethane	ND		0.059	0.019	mg/Kg		10/17/24 07:47	10/17/24 11:08	1

•					
Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98	80 - 121	10/17/24 07:47	10/17/24 11:08	1
4-Bromofluorobenzene (Surr)	99	80 - 120	10/17/24 07:47	10/17/24 11:08	1
Dibromofluoromethane (Surr)	99	80 - 120	10/17/24 07:47	10/17/24 11:08	1

80 - 120

0.074

0.014 mg/Kg

ND

98

Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	- RA					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	*1	0.076	0.029	mg/Kg		10/17/24 10:00	10/17/24 15:30	1
Chloroethane	ND		0.060	0.016	mg/Kg		10/17/24 10:00	10/17/24 15:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		80 - 121				10/17/24 10:00	10/17/24 15:30	1
4-Bromofluorobenzene (Surr)	96		80 - 120				10/17/24 10:00	10/17/24 15:30	1
Dibromofluoromethane (Surr)	98		80 - 120				10/17/24 10:00	10/17/24 15:30	1
Toluene-d8 (Surr)	97		80 - 120				10/17/24 10:00	10/17/24 15:30	1

_ _								
General Chemistry								
Analyte	Result Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	81.3	0.1	0.1	%			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	18.8	0.1	0.1	%			10/18/24 15:11	1

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-56-SO-34.7-20241009

Date Collected: 10/09/24 17:30

Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-3

Matrix: Solid

D	Prepared	Analyzed	Dil Fac
	10/17/24 07:47	10/17/24 11:28	1
	10/17/24 07:47	10/17/24 11:28	1
	10/17/24 07:47	10/17/24 11:28	1
	40/47/04 07 47	40/47/04 44 00	

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.014	0.0036	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
1,1,1-Trichloroethane	ND		0.029	0.0033	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
1,1,2,2-Tetrachloroethane	ND		0.014	0.0055	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
1,1,2-Trichloroethane	ND		0.014	0.0053	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
1,1-Dichloroethane	ND		0.029	0.0066	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
1,1-Dichloroethene	ND		0.029	0.0088	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
1,1-Dichloropropene	ND		0.029	0.0038	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
1,2,3-Trichlorobenzene	ND		0.057	0.029	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
1,2,3-Trichloropropane	ND		0.029	0.0083	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
1,2,4-Trichlorobenzene	ND		0.057	0.031	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
1,2,4-Trimethylbenzene	ND		0.029	0.0097	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
1,2-Dibromo-3-Chloropropane	ND		0.043	0.011	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
1,2-Dibromoethane	ND		0.014	0.0027	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
1,2-Dichlorobenzene	0.014	J	0.029	0.0063	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
1,2-Dichloroethane	ND		0.014	0.0040	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
1,2-Dichloropropane	ND		0.014	0.0047			10/17/24 07:47	10/17/24 11:28	1
1,3,5-Trimethylbenzene	ND		0.029	0.0055			10/17/24 07:47	10/17/24 11:28	1
1,3-Dichlorobenzene	ND		0.043	0.0096			10/17/24 07:47	10/17/24 11:28	1
1,3-Dichloropropane	ND		0.043	0.0040	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
1,4-Dichlorobenzene	0.035	J	0.043	0.0078			10/17/24 07:47	10/17/24 11:28	1
2,2-Dichloropropane	ND		0.029	0.0087			10/17/24 07:47	10/17/24 11:28	1
2-Chlorotoluene	ND		0.029	0.0063			10/17/24 07:47	10/17/24 11:28	1
4-Chlorotoluene	ND		0.029	0.0070				10/17/24 11:28	1
4-Isopropyltoluene	ND		0.029	0.0073			10/17/24 07:47	10/17/24 11:28	1
Benzene	ND		0.014	0.0027			10/17/24 07:47	10/17/24 11:28	1
Bromobenzene	ND		0.029	0.0030			10/17/24 07:47	10/17/24 11:28	1
Bromochloromethane	ND		0.029	0.0045				10/17/24 11:28	1
Bromodichloromethane	ND		0.029	0.0040			10/17/24 07:47	10/17/24 11:28	1
Bromoform	ND		0.029	0.0032			10/17/24 07:47	10/17/24 11:28	1
Carbon tetrachloride	ND		0.014	0.0032			10/17/24 07:47	10/17/24 11:28	1
Chloroform	0.035		0.014	0.0030			10/17/24 07:47	10/17/24 11:28	1
Chloromethane	ND		0.043	0.0073				10/17/24 11:28	1
cis-1,2-Dichloroethene	ND		0.043	0.0091				10/17/24 11:28	1
cis-1,3-Dichloropropene	ND		0.014	0.0029				10/17/24 11:28	
Dibromochloromethane	ND		0.014	0.0035				10/17/24 11:28	1
Dibromomethane	ND		0.029	0.0053				10/17/24 11:28	1
Dichlorodifluoromethane	ND		0.18		mg/Kg			10/17/24 11:28	
Ethylbenzene	ND		0.029	0.0065			10/17/24 07:47		1
Hexachlorobutadiene	ND		0.072		mg/Kg			10/17/24 11:28	1
Isopropylbenzene	ND		0.029	0.0062	T T			10/17/24 11:28	
Methyl tert-butyl ether	ND		0.029	0.0043				10/17/24 11:28	1
Methylene Chloride	0.034	4	0.18		mg/Kg			10/17/24 11:28	1
m-Xylene & p-Xylene	ND		0.029	0.0051				10/17/24 11:28	
Naphthalene	ND		0.023		mg/Kg			10/17/24 11:28	1
n-Butylbenzene	ND		0.029		mg/Kg			10/17/24 11:28	1
N-Propylbenzene	ND		0.029		mg/Kg			10/17/24 11:28	· · · · · · 1
o-Xylene	ND		0.029	0.0036				10/17/24 11:28	1
sec-Butylbenzene	ND		0.029	0.0062				10/17/24 11:28	1
Styrene	ND		0.029		mg/Kg			10/17/24 11:28	· · · · · · · · · · · · · · · · · · ·

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-56-SO-34.7-20241009

Date Collected: 10/09/24 17:30 Date Received: 10/11/24 12:30 Lab Sample ID: 580-144769-3

Matrix: Solid

Job ID: 580-144769-1

Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	(Conti	nued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	MD		0.029	0.0055	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
Tetrachloroethene	0.012	J	0.029	0.0038	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
Toluene	ND		0.043	0.0097	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
trans-1,2-Dichloroethene	ND		0.043	0.010	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
trans-1,3-Dichloropropene	ND		0.029	0.0050	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
Trichloroethene	ND		0.029	0.0074	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
Trichlorofluoromethane	ND		0.057	0.019	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
Vinyl chloride	ND		0.072	0.013	mg/Kg		10/17/24 07:47	10/17/24 11:28	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		80 - 121				10/17/24 07:47	10/17/24 11:28	1
4-Bromofluorobenzene (Surr)	100		80 - 120				10/17/24 07:47	10/17/24 11:28	1
Dibromofluoromethane (Surr)	99		80 - 120				10/17/24 07:47	10/17/24 11:28	1
Toluene-d8 (Surr)	95		80 - 120				10/17/24 07:47	10/17/24 11:28	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	10		0.31	0.037	mg/Kg		10/18/24 14:45	10/19/24 02:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				10/18/24 14:45	10/19/24 02:24	1
4-Bromofluorobenzene (Surr)	100		80 - 120				10/18/24 14:45	10/19/24 02:24	1
Dibromofluoromethane (Surr)	99		80 - 120				10/18/24 14:45	10/19/24 02:24	1
Toluene-d8 (Surr)	104		80 - 120				10/18/24 14:45	10/19/24 02:24	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	*1	0.073	0.027	mg/Kg		10/17/24 10:00	10/17/24 15:53	1
Chloroethane	ND		0.058	0.015	mg/Kg		10/17/24 10:00	10/17/24 15:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90	-	80 - 121				10/17/24 10:00	10/17/24 15:53	1
4-Bromofluorobenzene (Surr)	93		80 - 120				10/17/24 10:00	10/17/24 15:53	1
Dibromofluoromethane (Surr)	95		80 - 120				10/17/24 10:00	10/17/24 15:53	1
Toluene-d8 (Surr)	96		80 - 120				10/17/24 10:00	10/17/24 15:53	1

General Chemistry Analyte	Result Qualifier	RL	RL Unit	D P	repared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	77.7	0.1	0.1 %			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	22.3	0.1	0.1 %			10/18/24 15:11	1

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-56-SO-39.5-20241009

Lab Sample ID: 580-144769-4 Date Collected: 10/09/24 17:35 Matrix: Solid

Date Received: 10/11/24 12:30

Styrene

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 1,1,1,2-Tetrachloroethane ND 0.016 0.0039 mg/Kg 10/17/24 07:47 10/17/24 11:48 ND 0.031 1.1.1-Trichloroethane 0.0036 mg/Kg 10/17/24 07:47 10/17/24 11:48 1,1,2,2-Tetrachloroethane ND 0.016 0.0060 mg/Kg 10/17/24 07:47 10/17/24 11:48 ND 10/17/24 11:48 1,1,2-Trichloroethane 0.016 0.0058 mg/Kg 10/17/24 07:47 ND 0.031 0.0072 mg/Kg 10/17/24 07:47 10/17/24 11:48 1.1-Dichloroethane 1,1-Dichloroethene ND 0.031 0.0097 mg/Kg 10/17/24 07:47 10/17/24 11:48 1,1-Dichloropropene ND 0.031 0.0042 10/17/24 07:47 10/17/24 11:48 mg/Kg ND 0.063 0.031 10/17/24 07:47 10/17/24 11:48 1,2,3-Trichlorobenzene mg/Kg 1,2,3-Trichloropropane ND 0.031 0.0090 mg/Kg 10/17/24 07:47 10/17/24 11:48 1,2,4-Trichlorobenzene ND 0.063 0.033 mg/Kg 10/17/24 07:47 10/17/24 11:48 1,2,4-Trimethylbenzene ND 0.031 0.011 mg/Kg 10/17/24 07:47 10/17/24 11:48 1.2-Dibromo-3-Chloropropane ND 0.047 0.012 mg/Kg 10/17/24 07:47 10/17/24 11:48 1 1,2-Dibromoethane ND 0.016 0.0030 mg/Kg 10/17/24 07:47 10/17/24 11:48 1,2-Dichlorobenzene ND 0.031 0.0068 mg/Kg 10/17/24 07:47 10/17/24 11:48 ND 0.016 0.0043 mg/Kg 10/17/24 07:47 1.2-Dichloroethane 10/17/24 11:48 0.0052 mg/Kg 1,2-Dichloropropane ND 0.016 10/17/24 07:47 10/17/24 11:48 0.0060 1,3,5-Trimethylbenzene ND 0.031 mg/Kg 10/17/24 07:47 10/17/24 11:48 1,3-Dichlorobenzene ND 0.047 0.010 mg/Kg 10/17/24 07:47 10/17/24 11:48 10/17/24 07:47 ND 0.047 0.0044 mg/Kg 10/17/24 11:48 1,3-Dichloropropane 1,4-Dichlorobenzene ND 0.047 0.0085 mg/Kg 10/17/24 07:47 10/17/24 11:48 2,2-Dichloropropane ND 0.031 0.0095 mg/Kg 10/17/24 07:47 10/17/24 11:48 2-Chlorotoluene ND 0.031 0.0069 mg/Kg 10/17/24 07:47 10/17/24 11:48 4-Chlorotoluene ND 0.031 0.0077 10/17/24 07:47 10/17/24 11:48 mg/Kg 4-Isopropyltoluene ND 0.031 0.0080 mg/Kg 10/17/24 07:47 10/17/24 11:48 Benzene ND 0.016 0.0030 mg/Kg 10/17/24 07:47 10/17/24 11:48 ND Bromobenzene 0.031 0.0033 mg/Kg 10/17/24 07:47 10/17/24 11:48 Bromochloromethane ND 0.031 0.0049 mg/Kg 10/17/24 07:47 10/17/24 11:48 Bromodichloromethane 0.0043 ND 0.031 mg/Kg 10/17/24 07:47 10/17/24 11:48 0.0035 Bromoform ND 0.031 mg/Kg 10/17/24 07:47 10/17/24 11:48 Carbon tetrachloride ND 0.0035 mg/Kg 0.016 10/17/24 07:47 10/17/24 11:48 Chloroform ND 0.016 0.0033 mg/Kg 10/17/24 07:47 10/17/24 11:48 Chloromethane ND 0.047 0.0079 mg/Kg 10/17/24 07:47 10/17/24 11:48 cis-1,2-Dichloroethene ND 0.047 0.0099 10/17/24 07:47 10/17/24 11:48 mg/Kg ND 10/17/24 11:48 cis-1,3-Dichloropropene 0.016 0.0031 mg/Kg 10/17/24 07:47 Dibromochloromethane ND 0.016 0.0039 mg/Kg 10/17/24 07:47 10/17/24 11:48 Dibromomethane ND 0.031 0.0058 mg/Kg 10/17/24 07:47 10/17/24 11:48 Dichlorodifluoromethane ND 0.20 0.036 mg/Kg 10/17/24 07:47 10/17/24 11:48 Ethylbenzene ND 0.031 0.0072 mg/Kg 10/17/24 07:47 10/17/24 11:48 ND 0.079 0.019 Hexachlorobutadiene mg/Kg 10/17/24 07:47 10/17/24 11:48 Isopropylbenzene ND 0.031 0.0068 mg/Kg 10/17/24 07:47 10/17/24 11:48 Methyl tert-butyl ether ND 0.031 0.0047 mg/Kg 10/17/24 07:47 10/17/24 11:48 **Methylene Chloride** 0.029 0.20 0.020 mg/Kg 10/17/24 07:47 10/17/24 11:48 0.0056 m-Xylene & p-Xylene ND 0.031 mg/Kg 10/17/24 07:47 10/17/24 11:48 Naphthalene 0.031 10/17/24 07:47 10/17/24 11:48 ND 0.12 mg/Kg n-Butylbenzene ND 0.031 0.015 mg/Kg 10/17/24 07:47 10/17/24 11:48 N-Propylbenzene ND 0.031 0.012 mg/Kg 10/17/24 07:47 10/17/24 11:48 ND 0.0039 mg/Kg o-Xylene 0.031 10/17/24 07:47 10/17/24 11:48 sec-Butylbenzene ND 0.031 0.0068 mg/Kg 10/17/24 07:47 10/17/24 11:48

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10/17/24 07:47 10/17/24 11:48

0.031

0.010 mg/Kg

ND

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-56-SO-39.5-20241009

Date Collected: 10/09/24 17:35 Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-4

Matrix: Solid

Job ID: 580-144769-1

Method: SW846 8260D - Vo Analyte	_	Qualifier	RL	MDL	nued) Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	ND		0.031	0.0061	mg/Kg		10/17/24 07:47	10/17/24 11:48	1
Tetrachloroethene	ND		0.031	0.0042	mg/Kg		10/17/24 07:47	10/17/24 11:48	1
Toluene	ND		0.047	0.011	mg/Kg		10/17/24 07:47	10/17/24 11:48	1
trans-1,2-Dichloroethene	ND		0.047	0.011	mg/Kg		10/17/24 07:47	10/17/24 11:48	1
trans-1,3-Dichloropropene	ND		0.031	0.0055	mg/Kg		10/17/24 07:47	10/17/24 11:48	1
Trichloroethene	ND		0.031	0.0081	mg/Kg		10/17/24 07:47	10/17/24 11:48	1
Trichlorofluoromethane	ND		0.063	0.020	mg/Kg		10/17/24 07:47	10/17/24 11:48	1
Vinyl chloride	ND		0.079	0.015	mg/Kg		10/17/24 07:47	10/17/24 11:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/17/24 07:47	10/17/24 11:48	1
4-Bromofluorobenzene (Surr)	99		80 - 120				10/17/24 07:47	10/17/24 11:48	1
Dibromofluoromethane (Surr)	99		80 - 120				10/17/24 07:47	10/17/24 11:48	1
Toluene-d8 (Surr)	102		80 - 120				10/17/24 07:47	10/17/24 11:48	1

Analyte	Result	Qualifier	RL	- RA MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	*1	0.086	0.032	mg/Kg		10/17/24 10:00	10/17/24 16:15	1
Chloroethane	ND		0.068	0.018	mg/Kg		10/17/24 10:00	10/17/24 16:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		80 - 121				10/17/24 10:00	10/17/24 16:15	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/17/24 10:00	10/17/24 16:15	1
Dibromofluoromethane (Surr)	100		80 - 120				10/17/24 10:00	10/17/24 16:15	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	0.41		0.031	0.0038	mg/Kg		10/18/24 14:45	10/19/24 01:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		80 - 121				10/18/24 14:45	10/19/24 01:43	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/18/24 14:45	10/19/24 01:43	1
Dibromofluoromethane (Surr)	101		80 - 120				10/18/24 14:45	10/19/24 01:43	1
Toluene-d8 (Surr)	102		80 - 120				10/18/24 14:45	10/19/24 01:43	1

General Chemistry Analyte	Result Qualifier	RL	RL Uni	it D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	76.1	0.1	0.1 %			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	23.9	0.1	0.1 %			10/18/24 15:11	1

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-50a-SO-39.9-20241010

Lab Sample ID: 580-144769-5 Date Collected: 10/10/24 12:00 **Matrix: Solid**

Date Received: 10/11/24 12:30

Analyte	Result Qualifier	RL _	MDL	Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND	0.16	0.040	mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,1,1-Trichloroethane	ND	0.32	0.037	mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,1,2,2-Tetrachloroethane	ND	0.16	0.061	mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,1,2-Trichloroethane	ND	0.16	0.060	mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,1-Dichloroethane	ND	0.32	0.074	mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,1-Dichloroethene	ND	0.32	0.099	mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,1-Dichloropropene	ND	0.32	0.043	mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,2,3-Trichlorobenzene	ND	0.64	0.32	mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,2,3-Trichloropropane	ND	0.32	0.093	mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,2,4-Trichlorobenzene	ND	0.64	0.34	mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,2,4-Trimethylbenzene	ND	0.32	0.11	mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,2-Dibromo-3-Chloropropane	ND	0.48	0.12	mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,2-Dibromoethane	ND	0.16	0.031	mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,2-Dichlorobenzene	ND	0.32		mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,2-Dichloroethane	ND	0.16		mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,2-Dichloropropane	ND	0.16		mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,3,5-Trimethylbenzene	ND	0.32				10/17/24 07:47	10/17/24 15:58	
1,3-Dichlorobenzene	ND	0.48		mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,3-Dichloropropane	ND	0.48		mg/Kg		10/17/24 07:47	10/17/24 15:58	
1,4-Dichlorobenzene	ND	0.48		mg/Kg		10/17/24 07:47	10/17/24 15:58	
2,2-Dichloropropane	ND	0.32		mg/Kg			10/17/24 15:58	
2-Chlorotoluene	ND	0.32		mg/Kg			10/17/24 15:58	
4-Chlorotoluene	ND	0.32		mg/Kg			10/17/24 15:58	
4-Isopropyltoluene	ND	0.32		mg/Kg			10/17/24 15:58	
Benzene	ND	0.16		mg/Kg			10/17/24 15:58	
Bromobenzene	ND	0.32		mg/Kg			10/17/24 15:58	
Bromochloromethane	ND	0.32		mg/Kg			10/17/24 15:58	
Bromodichloromethane	ND	0.32		mg/Kg			10/17/24 15:58	
Bromoform	ND	0.32		mg/Kg			10/17/24 15:58	
Carbon tetrachloride	ND	0.16		mg/Kg			10/17/24 15:58	
Chloroform	ND	0.16		mg/Kg			10/17/24 15:58	
Chloromethane	ND	0.48		mg/Kg			10/17/24 15:58	
cis-1,2-Dichloroethene	ND	0.48		mg/Kg			10/17/24 15:58	
cis-1,3-Dichloropropene	ND	0.16		mg/Kg			10/17/24 15:58	
Dibromochloromethane	ND	0.16		mg/Kg			10/17/24 15:58	
Dibromomethane	ND	0.10		mg/Kg			10/17/24 15:58	
Dichlorodifluoromethane		2.0		mg/Kg			10/17/24 15:58	
Ethylbenzene	ND ND	0.32		mg/Kg			10/17/24 15:58	
•							10/17/24 15:58	
Hexachlorobutadiene	ND ND	0.81		mg/Kg			10/17/24 15:58	
sopropylbenzene	ND ND	0.32		mg/Kg				
Methyl tert-butyl ether	ND	0.32		mg/Kg			10/17/24 15:58	
Methylene Chloride	ND ND	2.0		mg/Kg			10/17/24 15:58	
m-Xylene & p-Xylene	ND	0.32		mg/Kg			10/17/24 15:58	
Naphthalene	ND	1.2		mg/Kg			10/17/24 15:58	
n-Butylbenzene	ND	0.32		mg/Kg			10/17/24 15:58	
N-Propylbenzene	ND	0.32		mg/Kg			10/17/24 15:58	
o-Xylene	ND	0.32		mg/Kg			10/17/24 15:58	
sec-Butylbenzene	ND ND	0.32	0.069	mg/Kg		10/17/24 07:47	10/17/24 15:58 10/17/24 15:58	

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12/10/2024 (Rev. 2)

Client Sample ID: PDI-50a-SO-39.9-20241010

Date Collected: 10/10/24 12:00 Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-5

Matrix: Solid

Job ID: 580-144769-1

Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	(Conti	inued)				
Analyte	_	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	ND		0.32	0.062	mg/Kg		10/17/24 07:47	10/17/24 15:58	1
Tetrachloroethene	ND		0.32	0.043	mg/Kg		10/17/24 07:47	10/17/24 15:58	1
Toluene	ND		0.48	0.11	mg/Kg		10/17/24 07:47	10/17/24 15:58	1
trans-1,2-Dichloroethene	ND		0.48	0.12	mg/Kg		10/17/24 07:47	10/17/24 15:58	1
trans-1,3-Dichloropropene	ND		0.32	0.056	mg/Kg		10/17/24 07:47	10/17/24 15:58	1
Trichloroethene	ND		0.32	0.083	mg/Kg		10/17/24 07:47	10/17/24 15:58	1
Trichlorofluoromethane	ND		0.64	0.21	mg/Kg		10/17/24 07:47	10/17/24 15:58	1
Vinyl chloride	ND		0.81	0.15	mg/Kg		10/17/24 07:47	10/17/24 15:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		80 - 121				10/17/24 07:47	10/17/24 15:58	1
4-Bromofluorobenzene (Surr)	100		80 - 120				10/17/24 07:47	10/17/24 15:58	1
Dibromofluoromethane (Surr)	101		80 - 120				10/17/24 07:47	10/17/24 15:58	1
Toluene-d8 (Surr)	100		80 - 120				10/17/24 07:47	10/17/24 15:58	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	*1	1.1	0.40	mg/Kg		10/17/24 10:00	10/17/24 20:44	1
Chloroethane	ND		0.84	0.22	mg/Kg		10/17/24 10:00	10/17/24 20:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				10/17/24 10:00	10/17/24 20:44	1
4-Bromofluorobenzene (Surr)	97		80 - 120				10/17/24 10:00	10/17/24 20:44	1
Dibromofluoromethane (Surr)	99		80 - 120				10/17/24 10:00	10/17/24 20:44	1
Toluene-d8 (Surr)			80 - 120				10/17/24 10:00	10/17/24 20:44	

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	ND		0.32	0.039	mg/Kg		10/18/24 14:45	10/19/24 02:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/18/24 14:45	10/19/24 02:03	1
4-Bromofluorobenzene (Surr)	97		80 - 120				10/18/24 14:45	10/19/24 02:03	1
Dibromofluoromethane (Surr)	99		80 - 120				10/18/24 14:45	10/19/24 02:03	1
Toluene-d8 (Surr)	101		80 - 120				10/18/24 14:45	10/19/24 02:03	1

General Chemistry							
Analyte	Result Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	75.3	0.1	0.1 %			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	24.7	0.1	0.1 %			10/18/24 15:11	1

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-50a-SO-29.45-20241010

Lab Sample ID: 580-144769-6 Date Collected: 10/10/24 12:05 **Matrix: Solid**

Date Received: 10/11/24 12:30

Analyte	Result Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND	0.37	0.093	mg/Kg		10/18/24 14:45	10/19/24 03:26	
1,1,1-Trichloroethane	ND	0.75	0.086	mg/Kg		10/18/24 14:45	10/19/24 03:26	
1,1,2,2-Tetrachloroethane	ND	0.37	0.14	mg/Kg		10/18/24 14:45	10/19/24 03:26	
1,1,2-Trichloroethane	ND	0.37	0.14	mg/Kg		10/18/24 14:45	10/19/24 03:26	
1,1-Dichloroethane	ND	0.75	0.17	mg/Kg		10/18/24 14:45	10/19/24 03:26	
1,1-Dichloroethene	ND	0.75	0.23	mg/Kg		10/18/24 14:45	10/19/24 03:26	
1,1-Dichloropropene	ND	0.75	0.099	mg/Kg		10/18/24 14:45	10/19/24 03:26	
1,2,3-Trichlorobenzene	ND	1.5	0.74	mg/Kg		10/18/24 14:45	10/19/24 03:26	
1,2,3-Trichloropropane	ND	0.75	0.21	mg/Kg		10/18/24 14:45	10/19/24 03:26	
1,2,4-Trichlorobenzene	ND	1.5	0.79	mg/Kg		10/18/24 14:45	10/19/24 03:26	
1,2,4-Trimethylbenzene	ND	0.75	0.25	mg/Kg		10/18/24 14:45	10/19/24 03:26	
1,2-Dibromo-3-Chloropropane	ND	1.1	0.28	mg/Kg		10/18/24 14:45	10/19/24 03:26	
1,2-Dibromoethane	ND	0.37	0.071	mg/Kg		10/18/24 14:45	10/19/24 03:26	
1,2-Dichlorobenzene	6.2	0.75		mg/Kg		10/18/24 14:45	10/19/24 03:26	
1,2-Dichloroethane	ND	0.37		mg/Kg		10/18/24 14:45	10/19/24 03:26	
1,2-Dichloropropane	ND	0.37		mg/Kg			10/19/24 03:26	
1,3,5-Trimethylbenzene	ND	0.75		mg/Kg		10/18/24 14:45	10/19/24 03:26	
1,3-Dichlorobenzene	0.36 J	1.1		mg/Kg		10/18/24 14:45	10/19/24 03:26	
1,3-Dichloropropane	ND	1.1		mg/Kg			10/19/24 03:26	
1,4-Dichlorobenzene	16	1.1		mg/Kg			10/19/24 03:26	
2,2-Dichloropropane	ND	0.75		mg/Kg			10/19/24 03:26	
2-Chlorotoluene	ND	0.75		mg/Kg			10/19/24 03:26	
4-Chlorotoluene	ND	0.75		mg/Kg			10/19/24 03:26	
4-Isopropyltoluene	0.24 J	0.75		mg/Kg			10/19/24 03:26	
Benzene	ND	0.37		mg/Kg			10/19/24 03:26	
Bromobenzene	ND	0.75		mg/Kg			10/19/24 03:26	
Bromochloromethane	ND	0.75		mg/Kg			10/19/24 03:26	
Bromodichloromethane	ND	0.75		mg/Kg			10/19/24 03:26	
Bromoform	ND	0.75		mg/Kg			10/19/24 03:26	
Bromomethane	ND	1.9		mg/Kg			10/19/24 03:26	
Carbon tetrachloride	ND	0.37		mg/Kg			10/19/24 03:26	
Chlorobenzene	890 E	0.75		mg/Kg			10/19/24 03:26	
Chloroethane	ND	1.5		mg/Kg			10/19/24 03:26	
Chloroform	ND	0.37		mg/Kg			10/19/24 03:26	
Chloromethane	ND	1.1		mg/Kg			10/19/24 03:26	
cis-1,2-Dichloroethene	ND ND	1.1		mg/Kg			10/19/24 03:26	
cis-1,3-Dichloropropene								
Dibromochloromethane	ND	0.37		mg/Kg			10/19/24 03:26	
	ND ND	0.37		mg/Kg			10/19/24 03:26	
Dibromomethane	ND	0.75		mg/Kg			10/19/24 03:26	
Dichlorodifluoromethane	ND	4.7		mg/Kg			10/19/24 03:26	
Ethylbenzene	ND	0.75		mg/Kg			10/19/24 03:26	
Hexachlorobutadiene	ND	1.9		mg/Kg			10/19/24 03:26	
sopropylbenzene	ND	0.75		mg/Kg			10/19/24 03:26	
Methyl tert-butyl ether	ND	0.75		mg/Kg			10/19/24 03:26	
Methylene Chloride	ND	4.7		mg/Kg			10/19/24 03:26	
m-Xylene & p-Xylene	ND	0.75		mg/Kg			10/19/24 03:26	
Naphthalene	ND	2.8		mg/Kg			10/19/24 03:26	
n-Butylbenzene	ND	0.75	0.34	mg/Kg		10/18/24 14:45	10/19/24 03:26	

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-50a-SO-29.45-20241010

Lab Sample ID: 580-144769-6 Date Collected: 10/10/24 12:05 **Matrix: Solid**

Date Received: 10/11/24 12:30

Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	(Conti	nued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		0.75	0.093	mg/Kg		10/18/24 14:45	10/19/24 03:26	1
sec-Butylbenzene	ND		0.75	0.16	mg/Kg		10/18/24 14:45	10/19/24 03:26	1
Styrene	ND		0.75	0.24	mg/Kg		10/18/24 14:45	10/19/24 03:26	1
t-Butylbenzene	ND		0.75	0.14	mg/Kg		10/18/24 14:45	10/19/24 03:26	1
Tetrachloroethene	2.9		0.75	0.099	mg/Kg		10/18/24 14:45	10/19/24 03:26	1
Toluene	ND		1.1	0.25	mg/Kg		10/18/24 14:45	10/19/24 03:26	1
trans-1,2-Dichloroethene	ND		1.1	0.27	mg/Kg		10/18/24 14:45	10/19/24 03:26	1
trans-1,3-Dichloropropene	ND		0.75	0.13	mg/Kg		10/18/24 14:45	10/19/24 03:26	1
Trichloroethene	ND		0.75	0.19	mg/Kg		10/18/24 14:45	10/19/24 03:26	1
Trichlorofluoromethane	ND		1.5	0.48	mg/Kg		10/18/24 14:45	10/19/24 03:26	1
Vinyl chloride	ND		1.9	0.35	mg/Kg		10/18/24 14:45	10/19/24 03:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		80 - 121				10/18/24 14:45	10/19/24 03:26	1
4-Bromofluorobenzene (Surr)	97		80 - 120				10/18/24 14:45	10/19/24 03:26	1
Dibromofluoromethane (Surr)	98		80 - 120				10/18/24 14:45	10/19/24 03:26	1
Toluene-d8 (Surr)	101		80 - 120				10/18/24 14:45	10/19/24 03:26	1
 Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	- DL					
Analyte	_	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	2600		37	4.5	mg/Kg		10/25/24 07:50	10/25/24 12:46	1
Surrogate	%Recovery	Qualifier	l imits				Prenared	Analyzed	Dil Fac

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	2600	Н	37	4.5	mg/Kg		10/25/24 07:50	10/25/24 12:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/25/24 07:50	10/25/24 12:46	1
4-Bromofluorobenzene (Surr)	100		80 - 120				10/25/24 07:50	10/25/24 12:46	1
Dibromofluoromethane (Surr)	103		80 - 120				10/25/24 07:50	10/25/24 12:46	1
Toluene-d8 (Surr)	103		80 - 120				10/25/24 07:50	10/25/24 12:46	1

General Chemistry								
Analyte	Result Qual	ifier RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	72.8	0.1	0.1	%			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	27.2	0.1	0.1	%			10/18/24 15:11	1

Client Sample ID: PDI-50b-SO-44.9-20241010

Lab Sample ID: 580-144769-7 Date Collected: 10/10/24 15:50

Date Received: 10/11/24 12:30

Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND	F2	0.015	0.0037	mg/Kg		10/17/24 07:47	10/17/24 09:46	
1,1,1-Trichloroethane	ND	F1 F2	0.029	0.0034	mg/Kg		10/17/24 07:47	10/17/24 09:46	
1,1,2,2-Tetrachloroethane	ND	F2	0.015	0.0056	mg/Kg		10/17/24 07:47	10/17/24 09:46	
1,1,2-Trichloroethane	ND	F2	0.015	0.0054	mg/Kg		10/17/24 07:47	10/17/24 09:46	
,1-Dichloroethane	ND	F1 F2	0.029	0.0067	mg/Kg		10/17/24 07:47	10/17/24 09:46	
1,1-Dichloroethene	ND	F2	0.029	0.0090	mg/Kg		10/17/24 07:47	10/17/24 09:46	
1,1-Dichloropropene	ND	F2	0.029	0.0039	mg/Kg		10/17/24 07:47	10/17/24 09:46	
1,2,3-Trichlorobenzene	ND	F2	0.059	0.029	mg/Kg		10/17/24 07:47	10/17/24 09:46	
1,2,3-Trichloropropane	ND	F1 F2	0.029	0.0084	mg/Kg		10/17/24 07:47	10/17/24 09:46	
1,2,4-Trichlorobenzene	ND	F1 F2	0.059		mg/Kg		10/17/24 07:47	10/17/24 09:46	
1,2,4-Trimethylbenzene	ND	F2	0.029	0.0099			10/17/24 07:47	10/17/24 09:46	
1,2-Dibromo-3-Chloropropane	ND	F2	0.044		mg/Kg		10/17/24 07:47	10/17/24 09:46	
1,2-Dibromoethane		F1 F2	0.015	0.0028			10/17/24 07:47	10/17/24 09:46	
1,2-Dichlorobenzene	ND		0.029	0.0064				10/17/24 09:46	
1,2-Dichloroethane	ND	F1 F2	0.015	0.0040				10/17/24 09:46	
1,2-Dichloropropane		F2	0.015	0.0048				10/17/24 09:46	
1,3,5-Trimethylbenzene	ND		0.029	0.0056				10/17/24 09:46	
1,3-Dichlorobenzene		F1 F2	0.044	0.0097				10/17/24 09:46	
1,3-Dichloropropane		F1 F2	0.044	0.0041	mg/Kg			10/17/24 09:46	
1,4-Dichlorobenzene		F2	0.044	0.0079				10/17/24 09:46	
2,2-Dichloropropane		F2	0.029	0.0089				10/17/24 09:46	
2-Chlorotoluene		F1 F2	0.029	0.0064				10/17/24 09:46	
I-Chlorotoluene		F2	0.029	0.0072				10/17/24 09:46	
I-Isopropyltoluene	ND		0.029	0.0072	0 0			10/17/24 09:46	
Benzene	ND		0.029	0.0073				10/17/24 09:46	
Bromobenzene		F1 F2	0.013	0.0020				10/17/24 09:46	
Bromochloromethane		F2	0.029	0.0031				10/17/24 09:46	
Bromodichloromethane		F1 F2	0.029					10/17/24 09:46	
Bromoform		F1 F2	0.029	0.0040 0.0033					
	ND ND		0.029	0.0033				10/17/24 09:46 10/17/24 09:46	
Carbon tetrachloride	ND								
Chlorobenzene	ND ND		0.029	0.0035				10/17/24 09:46	
Chloroform			0.015	0.0031	mg/Kg			10/17/24 09:46	
Chloromethane	ND		0.044	0.0074				10/17/24 09:46	
cis-1,2-Dichloroethene		F1 F2	0.044	0.0092				10/17/24 09:46	
cis-1,3-Dichloropropene		F1 F2	0.015	0.0029				10/17/24 09:46	
Dibromochloromethane		F2	0.015	0.0036				10/17/24 09:46	
Dibromomethane	ND		0.029	0.0054				10/17/24 09:46	
Dichlorodifluoromethane		F2	0.18		mg/Kg			10/17/24 09:46	
Ethylbenzene		F1 F2	0.029	0.0067				10/17/24 09:46	
Hexachlorobutadiene	ND		0.073		mg/Kg			10/17/24 09:46	
sopropylbenzene		F1 F2	0.029	0.0063				10/17/24 09:46	
Methyl tert-butyl ether	ND		0.029	0.0044				10/17/24 09:46	
Methylene Chloride	0.027		0.18		mg/Kg			10/17/24 09:46	
n-Xylene & p-Xylene		F1 F2	0.029	0.0052				10/17/24 09:46	
Naphthalene	ND		0.11		mg/Kg			10/17/24 09:46	
n-Butylbenzene	ND		0.029		mg/Kg			10/17/24 09:46	
N-Propylbenzene	ND	F1 F2	0.029	0.011	mg/Kg		10/17/24 07:47	10/17/24 09:46	
o-Xylene	ND	F1 F2	0.029	0.0037	mg/Kg		10/17/24 07:47	10/17/24 09:46	

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-50b-SO-44.9-20241010

Date Collected: 10/10/24 15:50

Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-7

Method: SW846 8260D - Vo	latile Organic	Compound	ds by GC/MS	(Conti	inued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND	F2	0.029	0.0093	mg/Kg		10/17/24 07:47	10/17/24 09:46	1
t-Butylbenzene	ND	F2	0.029	0.0056	mg/Kg		10/17/24 07:47	10/17/24 09:46	1
Tetrachloroethene	ND	F2	0.029	0.0039	mg/Kg		10/17/24 07:47	10/17/24 09:46	1
Toluene	ND	F2	0.044	0.0099	mg/Kg		10/17/24 07:47	10/17/24 09:46	1
trans-1,2-Dichloroethene	ND	F1 F2	0.044	0.011	mg/Kg		10/17/24 07:47	10/17/24 09:46	1
trans-1,3-Dichloropropene	ND	F1 F2	0.029	0.0051	mg/Kg		10/17/24 07:47	10/17/24 09:46	1
Trichloroethene	ND	F1 F2	0.029	0.0075	mg/Kg		10/17/24 07:47	10/17/24 09:46	1
Trichlorofluoromethane	ND	F1 F2	0.059	0.019	mg/Kg		10/17/24 07:47	10/17/24 09:46	1
Vinyl chloride	ND	F2	0.073	0.014	mg/Kg		10/17/24 07:47	10/17/24 09:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/17/24 07:47	10/17/24 09:46	1
4-Bromofluorobenzene (Surr)	102		80 - 120				10/17/24 07:47	10/17/24 09:46	1
Dibromofluoromethane (Surr)	98		80 - 120				10/17/24 07:47	10/17/24 09:46	1
Toluene-d8 (Surr)	102		80 - 120				10/17/24 07:47	10/17/24 09:46	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	F2	0.073	0.028	mg/Kg		10/23/24 14:23	10/24/24 13:20	1
Chloroethane	ND	F2	0.059	0.015	mg/Kg		10/23/24 14:23	10/24/24 13:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		80 - 121				10/23/24 14:23	10/24/24 13:20	1
4-Bromofluorobenzene (Surr)	100		80 - 120				10/23/24 14:23	10/24/24 13:20	1
Dibromofluoromethane (Surr)	103		80 - 120				10/23/24 14:23	10/24/24 13:20	1
Toluene-d8 (Surr)	96		80 - 120				10/23/24 14:23	10/24/24 13:20	1

General Chemistry Analyte	Result Qualif	ier RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	74.9	0.1	0.1	%			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	25.1	0.1	0.1	%			10/18/24 15:11	1

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-50b-SO-29.5-20241010

Lab Sample ID: 580-144769-8

Date Collected: 10/10/24 15:55 **Matrix: Solid** Date Received: 10/11/24 12:30

Analyte	Result Qualifier	RL _	MDL	Unit	D	Prepared	Analyzed	Dil F
,1,1,2-Tetrachloroethane	ND	0.016	0.0039	mg/Kg		10/17/24 07:47	10/17/24 12:09	
,1,1-Trichloroethane	ND	0.031	0.0036			10/17/24 07:47	10/17/24 12:09	
,1,2,2-Tetrachloroethane	ND	0.016	0.0060	mg/Kg		10/17/24 07:47	10/17/24 12:09	
,1,2-Trichloroethane	ND	0.016	0.0058	mg/Kg		10/17/24 07:47	10/17/24 12:09	
,1-Dichloroethane	ND	0.031	0.0072	mg/Kg		10/17/24 07:47	10/17/24 12:09	
,1-Dichloroethene	ND	0.031	0.0097	mg/Kg		10/17/24 07:47	10/17/24 12:09	
,1-Dichloropropene	ND	0.031	0.0042	mg/Kg		10/17/24 07:47	10/17/24 12:09	
,2,3-Trichlorobenzene	ND	0.063	0.031	mg/Kg		10/17/24 07:47	10/17/24 12:09	
,2,3-Trichloropropane	ND	0.031	0.0091	mg/Kg		10/17/24 07:47	10/17/24 12:09	
,2,4-Trichlorobenzene	ND	0.063	0.034	mg/Kg		10/17/24 07:47	10/17/24 12:09	
,2,4-Trimethylbenzene	ND	0.031	0.011	mg/Kg		10/17/24 07:47	10/17/24 12:09	
,2-Dibromo-3-Chloropropane	ND	0.047	0.012	mg/Kg		10/17/24 07:47	10/17/24 12:09	
,2-Dibromoethane	ND	0.016	0.0030	mg/Kg		10/17/24 07:47	10/17/24 12:09	
,2-Dichlorobenzene	ND	0.031	0.0069	mg/Kg		10/17/24 07:47	10/17/24 12:09	
,2-Dichloroethane	ND	0.016	0.0043	mg/Kg		10/17/24 07:47	10/17/24 12:09	
,2-Dichloropropane	ND	0.016	0.0052	mg/Kg		10/17/24 07:47	10/17/24 12:09	
,3,5-Trimethylbenzene	ND	0.031	0.0060			10/17/24 07:47	10/17/24 12:09	
,3-Dichlorobenzene	ND	0.047		mg/Kg		10/17/24 07:47	10/17/24 12:09	
,3-Dichloropropane	ND	0.047	0.0044			10/17/24 07:47	10/17/24 12:09	
,4-Dichlorobenzene	ND	0.047	0.0085				10/17/24 12:09	
, ,2-Dichloropropane	ND	0.031	0.0095				10/17/24 12:09	
-Chlorotoluene	ND	0.031	0.0069				10/17/24 12:09	
-Chlorotoluene	ND	0.031	0.0077				10/17/24 12:09	
-Isopropyltoluene	ND	0.031	0.0080	0 0			10/17/24 12:09	
Benzene	ND	0.016	0.0030				10/17/24 12:09	
Bromobenzene	ND	0.031	0.0033				10/17/24 12:09	
Bromochloromethane	ND	0.031	0.0049				10/17/24 12:09	
Bromodichloromethane	ND	0.031	0.0043				10/17/24 12:09	
Bromoform	ND	0.031	0.0035				10/17/24 12:09	
Carbon tetrachloride	ND	0.016	0.0035				10/17/24 12:09	
Chlorobenzene	6.7	0.031	0.0038				10/17/24 12:09	
Chloroform	ND	0.031	0.0033				10/17/24 12:09	
Chloromethane	ND	0.047	0.0080				10/17/24 12:09	
sis-1,2-Dichloroethene	ND	0.047	0.0099				10/17/24 12:09	
sis-1,3-Dichloropropene	ND	0.047	0.0033				10/17/24 12:09	
Dibromochloromethane	ND	0.016	0.0031				10/17/24 12:09	
Dibromomethane Dichlorodifluoromethane	ND	0.031	0.0058				10/17/24 12:09	
	ND ND	0.20		mg/Kg			10/17/24 12:09	
thylbenzene	ND ND	0.031	0.0072				10/17/24 12:09	
lexachlorobutadiene	ND	0.079		mg/Kg			10/17/24 12:09	
sopropylbenzene	ND	0.031	0.0068				10/17/24 12:09	
Methyl tert-butyl ether	ND	0.031	0.0047				10/17/24 12:09	
Methylene Chloride	0.026 J	0.20		mg/Kg			10/17/24 12:09	
n-Xylene & p-Xylene	ND	0.031	0.0056				10/17/24 12:09	
laphthalene	ND	0.12		mg/Kg			10/17/24 12:09	
-Butylbenzene	ND	0.031		mg/Kg			10/17/24 12:09	
I-Propylbenzene	ND	0.031		mg/Kg			10/17/24 12:09	
o-Xylene	ND	0.031	0.0039	mg/Kg		10/17/24 07:47	10/17/24 12:09	

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-50b-SO-29.5-20241010

Date Collected: 10/10/24 15:55

Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-8

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		0.031	0.010	mg/Kg		10/17/24 07:47	10/17/24 12:09	1
t-Butylbenzene	ND		0.031	0.0061	mg/Kg		10/17/24 07:47	10/17/24 12:09	1
Tetrachloroethene	0.0061	J	0.031	0.0042	mg/Kg		10/17/24 07:47	10/17/24 12:09	1
Toluene	ND		0.047	0.011	mg/Kg		10/17/24 07:47	10/17/24 12:09	1
trans-1,2-Dichloroethene	ND		0.047	0.011	mg/Kg		10/17/24 07:47	10/17/24 12:09	1
trans-1,3-Dichloropropene	ND		0.031	0.0055	mg/Kg		10/17/24 07:47	10/17/24 12:09	1
Trichloroethene	ND		0.031	0.0081	mg/Kg		10/17/24 07:47	10/17/24 12:09	1
Trichlorofluoromethane	ND		0.063	0.020	mg/Kg		10/17/24 07:47	10/17/24 12:09	1
Vinyl chloride	ND		0.079	0.015	mg/Kg		10/17/24 07:47	10/17/24 12:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/17/24 07:47	10/17/24 12:09	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/17/24 07:47	10/17/24 12:09	1
Dibromofluoromethane (Surr)	98		80 - 120				10/17/24 07:47	10/17/24 12:09	1
Toluene-d8 (Surr)	99		80 - 120				10/17/24 07:47	10/17/24 12:09	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	*1	0.11	0.041	mg/Kg		10/17/24 10:00	10/17/24 16:37	1
Chloroethane	ND		0.087	0.023	mg/Kg		10/17/24 10:00	10/17/24 16:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				10/17/24 10:00	10/17/24 16:37	1
4-Bromofluorobenzene (Surr)	95		80 - 120				10/17/24 10:00	10/17/24 16:37	1
Dibromofluoromethane (Surr)	95		80 - 120				10/17/24 10:00	10/17/24 16:37	1
Toluene-d8 (Surr)	96		80 - 120				10/17/24 10:00	10/17/24 16:37	1

General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	82.6		0.1	0.1	%			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	17.4		0.1	0.1	%			10/18/24 15:11	1

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-45-SO-49.9-20241010

Date Collected: 10/10/24 16:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-9

Matrix: Solid

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Analyte	_	Qualifier RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND	0.015	0.0037	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,1,1-Trichloroethane	ND	0.030	0.0034	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,1,2,2-Tetrachloroethane	ND	0.015	0.0056	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,1,2-Trichloroethane	ND	0.015	0.0055	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,1-Dichloroethane	ND	0.030	0.0068	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,1-Dichloroethene	ND	0.030	0.0091	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,1-Dichloropropene	ND	0.030	0.0039	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,2,3-Trichlorobenzene	ND	0.059	0.029	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,2,3-Trichloropropane	ND	0.030	0.0085	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,2,4-Trichlorobenzene	ND	0.059	0.032	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,2,4-Trimethylbenzene	ND	0.030	0.010	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,2-Dibromo-3-Chloropropane	ND	0.044	0.011	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,2-Dibromoethane	ND	0.015	0.0028	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,2-Dichlorobenzene	ND	0.030	0.0064	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,2-Dichloroethane	ND	0.015	0.0041	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,2-Dichloropropane	ND	0.015	0.0049	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,3,5-Trimethylbenzene	ND	0.030	0.0056	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,3-Dichlorobenzene	ND	0.044	0.0099	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,3-Dichloropropane	ND	0.044	0.0042	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
1,4-Dichlorobenzene	ND	0.044	0.0080	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
2,2-Dichloropropane	ND	0.030	0.0090	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
2-Chlorotoluene	ND	0.030	0.0065	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
4-Chlorotoluene	ND	0.030	0.0073	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
4-Isopropyltoluene	ND	0.030	0.0076	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Benzene	ND	0.015	0.0028	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Bromobenzene	ND	0.030	0.0031	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Bromochloromethane	ND	0.030	0.0046	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Bromodichloromethane	ND	0.030	0.0041	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Bromoform	ND	0.030	0.0033	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Carbon tetrachloride	ND	0.015	0.0033	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Chlorobenzene	1.2	0.030	0.0036	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Chloroform	ND	0.015	0.0031	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Chloromethane	ND	0.044	0.0075	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
cis-1,2-Dichloroethene	ND	0.044	0.0093	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
cis-1,3-Dichloropropene	ND	0.015	0.0030	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Dibromochloromethane	ND	0.015	0.0036	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Dibromomethane	ND	0.030	0.0055	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Dichlorodifluoromethane	ND	0.19	0.034	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Ethylbenzene	ND	0.030	0.0067	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Hexachlorobutadiene	ND	0.074	0.018	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Isopropylbenzene	ND	0.030	0.0064	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Methyl tert-butyl ether	ND	0.030	0.0044	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Methylene Chloride	0.029	J 0.19	0.019	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
m-Xylene & p-Xylene	ND	0.030	0.0053	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Naphthalene	ND	0.11	0.029	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
n-Butylbenzene	ND	0.030	0.014	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
N-Propylbenzene	ND	0.030	0.011	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
o-Xylene	ND	0.030	0.0037	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
sec-Butylbenzene	ND	0.030	0.0064	mg/Kg		10/17/24 07:47	10/17/24 12:30	1

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-45-SO-49.9-20241010

Date Collected: 10/10/24 16:40 Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-9

Method: SW846 8260D - Vo	latile Organic	Compound	ds by GC/MS	(Conti	inued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		0.030	0.0094	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
t-Butylbenzene	ND		0.030	0.0057	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Tetrachloroethene	ND		0.030	0.0039	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Toluene	ND		0.044	0.010	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
trans-1,2-Dichloroethene	ND		0.044	0.011	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
trans-1,3-Dichloropropene	ND		0.030	0.0052	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Trichloroethene	ND		0.030	0.0076	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Trichlorofluoromethane	ND		0.059	0.019	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Vinyl chloride	ND		0.074	0.014	mg/Kg		10/17/24 07:47	10/17/24 12:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		80 - 121				10/17/24 07:47	10/17/24 12:30	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/17/24 07:47	10/17/24 12:30	1
Dibromofluoromethane (Surr)	99		80 - 120				10/17/24 07:47	10/17/24 12:30	1
Toluene-d8 (Surr)	101		80 - 120				10/17/24 07:47	10/17/24 12:30	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	*1	0.11	0.043	mg/Kg		10/17/24 10:00	10/17/24 17:00	1
Chloroethane	ND		0.091	0.024	mg/Kg		10/17/24 10:00	10/17/24 17:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		80 - 121				10/17/24 10:00	10/17/24 17:00	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/17/24 10:00	10/17/24 17:00	1
Dibromofluoromethane (Surr)	102		80 - 120				10/17/24 10:00	10/17/24 17:00	1
Toluene-d8 (Surr)	98		80 - 120				10/17/24 10:00	10/17/24 17:00	1

General Chemistry Analyte	Result Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	64.8	0.1	0.1	%			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	35.2	0.1	0.1	%			10/18/24 15:11	1

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-45-SO-38.5-20241010

Lab Sample ID: 580-144769-10 Date Collected: 10/10/24 16:35 **Matrix: Solid**

Date Received: 10/11/24 12:30

Analyte	Result Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	0.65	0.34		mg/Kg		10/18/24 14:45	10/19/24 03:46	
1,1,1-Trichloroethane	ND	0.68		mg/Kg			10/19/24 03:46	
1,1,2,2-Tetrachloroethane	ND	0.34		mg/Kg		10/18/24 14:45	10/19/24 03:46	
1,1,2-Trichloroethane	ND	0.34		mg/Kg		10/18/24 14:45	10/19/24 03:46	
1,1-Dichloroethane	ND	0.68	0.16	mg/Kg		10/18/24 14:45	10/19/24 03:46	
1,1-Dichloroethene	ND	0.68	0.21	mg/Kg		10/18/24 14:45	10/19/24 03:46	
1,1-Dichloropropene	ND	0.68		mg/Kg		10/18/24 14:45	10/19/24 03:46	
1,2,3-Trichlorobenzene	ND	1.4	0.67	mg/Kg		10/18/24 14:45	10/19/24 03:46	
1,2,3-Trichloropropane	ND	0.68	0.20	mg/Kg		10/18/24 14:45	10/19/24 03:46	
1,2,4-Trichlorobenzene	ND	1.4	0.72	mg/Kg		10/18/24 14:45	10/19/24 03:46	
1,2,4-Trimethylbenzene	ND	0.68	0.23	mg/Kg		10/18/24 14:45	10/19/24 03:46	
1,2-Dibromo-3-Chloropropane	ND	1.0	0.26	mg/Kg		10/18/24 14:45	10/19/24 03:46	
1,2-Dibromoethane	ND	0.34	0.064	mg/Kg		10/18/24 14:45	10/19/24 03:46	
1,2-Dichlorobenzene	6.5	0.68		mg/Kg		10/18/24 14:45	10/19/24 03:46	
1,2-Dichloroethane	ND	0.34		mg/Kg		10/18/24 14:45	10/19/24 03:46	
1,2-Dichloropropane	ND	0.34		mg/Kg		10/18/24 14:45	10/19/24 03:46	
1,3,5-Trimethylbenzene	ND	0.68		mg/Kg			10/19/24 03:46	
1,3-Dichlorobenzene	0.58 J	1.0		mg/Kg		10/18/24 14:45	10/19/24 03:46	
1,3-Dichloropropane	ND	1.0		mg/Kg			10/19/24 03:46	
1,4-Dichlorobenzene	20	1.0		mg/Kg			10/19/24 03:46	
2,2-Dichloropropane	ND	0.68		mg/Kg			10/19/24 03:46	
2-Chlorotoluene	ND	0.68		mg/Kg			10/19/24 03:46	
4-Chlorotoluene	ND	0.68		mg/Kg			10/19/24 03:46	
4-Isopropyltoluene	ND	0.68		mg/Kg			10/19/24 03:46	
Benzene	ND							
		0.34		mg/Kg			10/19/24 03:46	
Bromobenzene Bromoebleremethene	0.32 J	0.68		mg/Kg			10/19/24 03:46	
Bromochloromethane	ND	0.68		mg/Kg			10/19/24 03:46	
Bromodichloromethane	ND	0.68		mg/Kg			10/19/24 03:46	
Bromoform	ND	0.68		mg/Kg			10/19/24 03:46	
Bromomethane	ND	1.7		mg/Kg			10/19/24 03:46	
Carbon tetrachloride	11	0.34		mg/Kg			10/19/24 03:46	
Chloroethane	ND	1.4		mg/Kg			10/19/24 03:46	
Chloroform	0.74	0.34		mg/Kg			10/19/24 03:46	
Chloromethane	ND	1.0		mg/Kg			10/19/24 03:46	
cis-1,2-Dichloroethene	ND	1.0		mg/Kg		10/18/24 14:45	10/19/24 03:46	
cis-1,3-Dichloropropene	ND	0.34	0.068	mg/Kg		10/18/24 14:45	10/19/24 03:46	
Dibromochloromethane	ND	0.34		mg/Kg		10/18/24 14:45	10/19/24 03:46	
Dibromomethane	ND	0.68		mg/Kg			10/19/24 03:46	
Dichlorodifluoromethane	ND	4.2	0.78	mg/Kg		10/18/24 14:45	10/19/24 03:46	
Ethylbenzene	ND	0.68	0.15	mg/Kg		10/18/24 14:45	10/19/24 03:46	
Hexachlorobutadiene	18	1.7	0.41	mg/Kg		10/18/24 14:45	10/19/24 03:46	
sopropylbenzene	ND	0.68		mg/Kg		10/18/24 14:45	10/19/24 03:46	
Methyl tert-butyl ether	ND	0.68		mg/Kg		10/18/24 14:45	10/19/24 03:46	
Methylene Chloride	ND	4.2		mg/Kg		10/18/24 14:45	10/19/24 03:46	
m-Xylene & p-Xylene	ND	0.68		mg/Kg			10/19/24 03:46	
Naphthalene	ND	2.5		mg/Kg			10/19/24 03:46	
n-Butylbenzene	ND	0.68		mg/Kg			10/19/24 03:46	
N-Propylbenzene	ND	0.68		mg/Kg			10/19/24 03:46	
o-Xylene	ND	0.68		mg/Kg			10/19/24 03:46	

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-45-SO-38.5-20241010

Lab Sample ID: 580-144769-10 Date Collected: 10/10/24 16:35

Date Received: 10/11/24 12:30

Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	(Conti	nued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
sec-Butylbenzene	ND		0.68	0.15	mg/Kg		10/18/24 14:45	10/19/24 03:46	1
Styrene	ND		0.68	0.22	mg/Kg		10/18/24 14:45	10/19/24 03:46	1
t-Butylbenzene	ND		0.68	0.13	mg/Kg		10/18/24 14:45	10/19/24 03:46	1
Tetrachloroethene	63		0.68	0.090	mg/Kg		10/18/24 14:45	10/19/24 03:46	1
Toluene	0.27	J	1.0	0.23	mg/Kg		10/18/24 14:45	10/19/24 03:46	1
trans-1,2-Dichloroethene	ND		1.0	0.25	mg/Kg		10/18/24 14:45	10/19/24 03:46	1
trans-1,3-Dichloropropene	ND		0.68	0.12	mg/Kg		10/18/24 14:45	10/19/24 03:46	1
Trichloroethene	ND		0.68	0.17	mg/Kg		10/18/24 14:45	10/19/24 03:46	1
Trichlorofluoromethane	ND		1.4	0.44	mg/Kg		10/18/24 14:45	10/19/24 03:46	1
Vinyl chloride	ND		1.7	0.32	mg/Kg		10/18/24 14:45	10/19/24 03:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		80 - 121				10/18/24 14:45	10/19/24 03:46	1
4-Bromofluorobenzene (Surr)	100		80 - 120				10/18/24 14:45	10/19/24 03:46	1
Dibromofluoromethane (Surr)	96		80 - 120				10/18/24 14:45	10/19/24 03:46	1
Toluene-d8 (Surr)	106		80 - 120				10/18/24 14:45	10/19/24 03:46	1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS - DL											
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac		
Chlorobenzene	5700		34	4.1	mg/Kg		10/24/24 09:31	10/24/24 17:19	1		
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac		
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/24/24 09:31	10/24/24 17:19	1		
4-Bromofluorobenzene (Surr)	103		80 - 120				10/24/24 09:31	10/24/24 17:19	1		
Dibromofluoromethane (Surr)	102		80 - 120				10/24/24 09:31	10/24/24 17:19	1		
Toluene-d8 (Surr)	102		80 - 120				10/24/24 09:31	10/24/24 17:19	1		

General Chemistry							
Analyte	Result Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	85.7	0.1	0.1 %			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	14.3	0.1	0.1 %			10/18/24 15:11	1

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: DUP-01-SQ-20241010

Date Collected: 10/10/24 16:45

Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-11 **Matrix: Solid**

D	Prepared	Analyzed	Dil Fac
_	10/17/24 07:47	10/17/24 12:51	

Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND ND	0.015	0.0038	mg/Kg		10/17/24 07:47	10/17/24 12:51	
1,1,1-Trichloroethane	ND	0.030	0.0035	mg/Kg		10/17/24 07:47	10/17/24 12:51	
1,1,2,2-Tetrachloroethane	ND	0.015	0.0057	mg/Kg		10/17/24 07:47	10/17/24 12:51	
1,1,2-Trichloroethane	ND	0.015	0.0056	mg/Kg		10/17/24 07:47	10/17/24 12:51	
1,1-Dichloroethane	ND	0.030	0.0070	mg/Kg		10/17/24 07:47	10/17/24 12:51	
1,1-Dichloroethene	ND	0.030	0.0093	mg/Kg		10/17/24 07:47	10/17/24 12:51	
1,1-Dichloropropene	ND	0.030	0.0040	mg/Kg		10/17/24 07:47	10/17/24 12:51	
1,2,3-Trichlorobenzene	ND	0.060	0.030	mg/Kg		10/17/24 07:47	10/17/24 12:51	
1,2,3-Trichloropropane	ND	0.030	0.0087	mg/Kg		10/17/24 07:47	10/17/24 12:51	
1,2,4-Trichlorobenzene	ND	0.060	0.032	mg/Kg		10/17/24 07:47	10/17/24 12:51	
1,2,4-Trimethylbenzene	ND	0.030	0.010	mg/Kg		10/17/24 07:47	10/17/24 12:51	
1,2-Dibromo-3-Chloropropane	ND	0.045		mg/Kg		10/17/24 07:47	10/17/24 12:51	
1,2-Dibromoethane	ND	0.015	0.0029			10/17/24 07:47	10/17/24 12:51	
1,2-Dichlorobenzene	ND	0.030	0.0066			10/17/24 07:47	10/17/24 12:51	
1,2-Dichloroethane	ND	0.015	0.0042			10/17/24 07:47	10/17/24 12:51	
1,2-Dichloropropane	ND	0.015	0.0050			10/17/24 07:47	10/17/24 12:51	
1,3,5-Trimethylbenzene	ND	0.030	0.0057			10/17/24 07:47	10/17/24 12:51	
1,3-Dichlorobenzene	ND	0.045		mg/Kg		10/17/24 07:47	10/17/24 12:51	
1,3-Dichloropropane	ND	0.045	0.0042			10/17/24 07:47	10/17/24 12:51	
1,4-Dichlorobenzene	ND	0.045	0.0082			10/17/24 07:47	10/17/24 12:51	
2,2-Dichloropropane	ND	0.030	0.0091			10/17/24 07:47	10/17/24 12:51	
2-Chlorotoluene	ND	0.030	0.0066			10/17/24 07:47	10/17/24 12:51	
4-Chlorotoluene	ND	0.030	0.0074			10/17/24 07:47	10/17/24 12:51	
4-Isopropyltoluene	ND	0.030	0.0077				10/17/24 12:51	
Benzene	ND	0.015	0.0029				10/17/24 12:51	
Bromobenzene	ND	0.030	0.0032				10/17/24 12:51	
Bromochloromethane	ND	0.030	0.0047				10/17/24 12:51	
Bromodichloromethane	ND	0.030	0.0042				10/17/24 12:51	
Bromoform	ND	0.030	0.0034				10/17/24 12:51	
Carbon tetrachloride	ND	0.015	0.0033				10/17/24 12:51	
Chlorobenzene	1.3	0.030	0.0036				10/17/24 12:51	
Chloroform	ND	0.015	0.0032				10/17/24 12:51	
Chloromethane	ND	0.045	0.0076				10/17/24 12:51	
cis-1,2-Dichloroethene	ND	0.045	0.0095				10/17/24 12:51	
cis-1,3-Dichloropropene	ND	0.015	0.0030				10/17/24 12:51	
Dibromochloromethane	ND	0.015	0.0037				10/17/24 12:51	
Dibromomethane	ND	0.030	0.0056				10/17/24 12:51	
Dichlorodifluoromethane	ND	0.19		mg/Kg			10/17/24 12:51	
Ethylbenzene	ND	0.030	0.0069				10/17/24 12:51	
Hexachlorobutadiene	ND	0.076		mg/Kg			10/17/24 12:51	
sopropylbenzene	ND	0.030	0.0065				10/17/24 12:51	
Methyl tert-butyl ether	ND	0.030	0.0045				10/17/24 12:51	
Methylene Chloride	0.028 J	0.19		mg/Kg			10/17/24 12:51	
m-Xylene & p-Xylene	ND	0.030	0.0054				10/17/24 12:51	
Naphthalene	ND	0.030		mg/Kg			10/17/24 12:51	
n-Butylbenzene	ND	0.030		mg/Kg			10/17/24 12:51	
N-Propylbenzene	ND	0.030		mg/Kg			10/17/24 12:51	
o-Xylene	ND	0.030	0.0038				10/17/24 12:51	
sec-Butylbenzene	ND	0.030	0.0038				10/17/24 12:51	

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: DUP-01-SQ-20241010

Lab Sample ID: 580-144769-11 Date Collected: 10/10/24 16:45 **Matrix: Solid**

Date Received: 10/11/24 12:30

Method: SW846 8260D - Vo	olatile Organic (Compound	ds by GC/MS	(Conti	inued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		0.030	0.0096	mg/Kg		10/17/24 07:47	10/17/24 12:51	1
t-Butylbenzene	ND		0.030	0.0058	mg/Kg		10/17/24 07:47	10/17/24 12:51	1
Tetrachloroethene	ND		0.030	0.0040	mg/Kg		10/17/24 07:47	10/17/24 12:51	1
Toluene	ND		0.045	0.010	mg/Kg		10/17/24 07:47	10/17/24 12:51	1
trans-1,2-Dichloroethene	ND		0.045	0.011	mg/Kg		10/17/24 07:47	10/17/24 12:51	1
trans-1,3-Dichloropropene	ND		0.030	0.0053	mg/Kg		10/17/24 07:47	10/17/24 12:51	1
Trichloroethene	ND		0.030	0.0078	mg/Kg		10/17/24 07:47	10/17/24 12:51	1
Trichlorofluoromethane	ND		0.060	0.020	mg/Kg		10/17/24 07:47	10/17/24 12:51	1
Vinyl chloride	ND		0.076	0.014	mg/Kg		10/17/24 07:47	10/17/24 12:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		80 - 121				10/17/24 07:47	10/17/24 12:51	1
4-Bromofluorobenzene (Surr)	102		80 - 120				10/17/24 07:47	10/17/24 12:51	1
Dibromofluoromethane (Surr)	98		80 - 120				10/17/24 07:47	10/17/24 12:51	1
Toluene-d8 (Surr)	102		80 - 120				10/17/24 07:47	10/17/24 12:51	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	MD	*1	0.12	0.044	mg/Kg		10/17/24 10:00	10/17/24 17:22	1
Chloroethane	ND		0.094	0.025	mg/Kg		10/17/24 10:00	10/17/24 17:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		80 - 121				10/17/24 10:00	10/17/24 17:22	1
4-Bromofluorobenzene (Surr)	97		80 - 120				10/17/24 10:00	10/17/24 17:22	1
Dibromofluoromethane (Surr)	96		80 - 120				10/17/24 10:00	10/17/24 17:22	1
Toluene-d8 (Surr)	97		80 - 120				10/17/24 10:00	10/17/24 17:22	1

General Chemistry Analyte	Result Qualifier	RL	RL U	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	67.5	0.1	0.1	%			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	32.5	0.1	0.1	%			10/18/24 15:11	1

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-38-SO-45-20241008

Lab Sample ID: 580-144769-12 Date Collected: 10/08/24 11:25 **Matrix: Solid**

Date Received: 10/11/24 12:30

Analyte	Result Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND ND	0.015	0.0038	mg/Kg		10/17/24 07:47	10/17/24 13:12	
1,1,1-Trichloroethane	ND	0.030	0.0035	mg/Kg		10/17/24 07:47	10/17/24 13:12	
1,1,2,2-Tetrachloroethane	ND	0.015	0.0057	mg/Kg		10/17/24 07:47	10/17/24 13:12	
1,1,2-Trichloroethane	ND	0.015	0.0056	mg/Kg		10/17/24 07:47	10/17/24 13:12	
1,1-Dichloroethane	ND	0.030	0.0069	mg/Kg		10/17/24 07:47	10/17/24 13:12	
1,1-Dichloroethene	ND	0.030	0.0093	mg/Kg		10/17/24 07:47	10/17/24 13:12	
1,1-Dichloropropene	ND	0.030	0.0040	mg/Kg		10/17/24 07:47	10/17/24 13:12	
1,2,3-Trichlorobenzene	ND	0.060	0.030	mg/Kg		10/17/24 07:47	10/17/24 13:12	
1,2,3-Trichloropropane	ND	0.030	0.0087	mg/Kg		10/17/24 07:47	10/17/24 13:12	
1,2,4-Trichlorobenzene	ND	0.060	0.032	mg/Kg		10/17/24 07:47	10/17/24 13:12	
1,2,4-Trimethylbenzene	ND	0.030		mg/Kg		10/17/24 07:47	10/17/24 13:12	
1,2-Dibromo-3-Chloropropane	ND	0.045	0.011	mg/Kg		10/17/24 07:47	10/17/24 13:12	
1,2-Dibromoethane	ND	0.015	0.0029	mg/Kg		10/17/24 07:47	10/17/24 13:12	
1,2-Dichlorobenzene	ND	0.030	0.0065				10/17/24 13:12	
1,2-Dichloroethane	ND	0.015	0.0041	mg/Kg			10/17/24 13:12	
1,2-Dichloropropane	ND	0.015	0.0050				10/17/24 13:12	
1,3,5-Trimethylbenzene	ND	0.030	0.0057			10/17/24 07:47	10/17/24 13:12	
1,3-Dichlorobenzene	ND	0.045		mg/Kg		10/17/24 07:47	10/17/24 13:12	
1,3-Dichloropropane	ND	0.045	0.0042			10/17/24 07:47	10/17/24 13:12	
1,4-Dichlorobenzene	ND	0.045	0.0081				10/17/24 13:12	
2,2-Dichloropropane	ND	0.030	0.0091			10/17/24 07:47	10/17/24 13:12	
2-Chlorotoluene	ND	0.030	0.0066				10/17/24 13:12	
4-Chlorotoluene	ND	0.030	0.0074				10/17/24 13:12	
4-Isopropyltoluene	ND	0.030	0.0077				10/17/24 13:12	
Benzene	ND	0.015	0.0029				10/17/24 13:12	
Bromobenzene	ND	0.030	0.0032				10/17/24 13:12	
Bromochloromethane	ND	0.030	0.0047				10/17/24 13:12	
Bromodichloromethane	ND	0.030	0.0041				10/17/24 13:12	
Bromoform	ND	0.030	0.0034				10/17/24 13:12	
Carbon tetrachloride	ND	0.015	0.0033	0 0			10/17/24 13:12	
Chlorobenzene	0.13	0.030	0.0036				10/17/24 13:12	
Chloroform	ND	0.015	0.0032				10/17/24 13:12	
Chloromethane	ND	0.045	0.0076				10/17/24 13:12	
cis-1,2-Dichloroethene	ND	0.045	0.0095				10/17/24 13:12	
cis-1,3-Dichloropropene	ND	0.015	0.0030				10/17/24 13:12	
Dibromochloromethane	ND	0.015	0.0037				10/17/24 13:12	
Dibromomethane	ND	0.030	0.0056				10/17/24 13:12	
Dichlorodifluoromethane	ND	0.19		mg/Kg			10/17/24 13:12	
Ethylbenzene	ND	0.030	0.0068				10/17/24 13:12	
Hexachlorobutadiene	ND	0.075		mg/Kg			10/17/24 13:12	
Isopropylbenzene	ND	0.030	0.0065				10/17/24 13:12	
Methyl tert-butyl ether	ND	0.030	0.0045				10/17/24 13:12	
Methylene Chloride	0.025 J	0.19		mg/Kg			10/17/24 13:12	
m-Xylene & p-Xylene	ND	0.030	0.0053				10/17/24 13:12	
Naphthalene	ND ND	0.030		mg/Kg			10/17/24 13:12	
n-Butylbenzene	ND	0.030		mg/Kg			10/17/24 13:12	
N-Propylbenzene	ND ND	0.030		mg/Kg			10/17/24 13:12	
• •	ND ND	0.030					10/17/24 13:12	
o-Xylene sec-Butylbenzene	ND ND	0.030	0.0038 0.0065				10/17/24 13:12	

Eurofins Seattle

12/10/2024 (Rev. 2)

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-38-SO-45-20241008

Lab Sample ID: 580-144769-12 Date Collected: 10/08/24 11:25 Matrix: Solid

Date Received: 10/11/24 12:30

Method: SW846 8260D - V	olatile Organic	Compoun	ds by GC/MS	(Conti	nued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		0.030	0.0096	mg/Kg		10/17/24 07:47	10/17/24 13:12	1
t-Butylbenzene	ND		0.030	0.0058	mg/Kg		10/17/24 07:47	10/17/24 13:12	1
Tetrachloroethene	ND		0.030	0.0040	mg/Kg		10/17/24 07:47	10/17/24 13:12	1
Toluene	ND		0.045	0.010	mg/Kg		10/17/24 07:47	10/17/24 13:12	1
trans-1,2-Dichloroethene	ND		0.045	0.011	mg/Kg		10/17/24 07:47	10/17/24 13:12	1
trans-1,3-Dichloropropene	ND		0.030	0.0053	mg/Kg		10/17/24 07:47	10/17/24 13:12	1
Trichloroethene	ND		0.030	0.0078	mg/Kg		10/17/24 07:47	10/17/24 13:12	1
Trichlorofluoromethane	ND		0.060	0.020	mg/Kg		10/17/24 07:47	10/17/24 13:12	1
Vinyl chloride	ND		0.075	0.014	mg/Kg		10/17/24 07:47	10/17/24 13:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		80 - 121				10/17/24 07:47	10/17/24 13:12	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/17/24 07:47	10/17/24 13:12	1
Dibromofluoromethane (Surr)	98		80 - 120				10/17/24 07:47	10/17/24 13:12	1
Toluene-d8 (Surr)	102		80 - 120				10/17/24 07:47	10/17/24 13:12	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	*1	0.10	0.038	mg/Kg		10/17/24 10:00	10/17/24 17:45	1
Chloroethane	ND		0.081	0.021	mg/Kg		10/17/24 10:00	10/17/24 17:45	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		80 - 121				10/17/24 10:00	10/17/24 17:45	1
4-Bromofluorobenzene (Surr)	99		80 - 120				10/17/24 10:00	10/17/24 17:45	1
Dibromofluoromethane (Surr)	96		80 - 120				10/17/24 10:00	10/17/24 17:45	1
Toluene-d8 (Surr)	101		80 - 120				10/17/24 10:00	10/17/24 17:45	1

General Chemistry							
Analyte	Result Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	75.7	0.1	0.1 %			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	24.3	0.1	0.1 %			10/18/24 15:11	1

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-38-SO-32.9-20241008

Lab Sample ID: 580-144769-13 Date Collected: 10/08/24 11:30 **Matrix: Solid**

Date Received: 10/11/24 12:30

Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND	0.016	0.0040	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,1,1-Trichloroethane	ND	0.032	0.0037	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,1,2,2-Tetrachloroethane	ND	0.016	0.0061	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,1,2-Trichloroethane	ND	0.016	0.0060	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,1-Dichloroethane	ND	0.032	0.0074	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,1-Dichloroethene	ND	0.032	0.0099	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,1-Dichloropropene	ND	0.032	0.0043	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,2,3-Trichlorobenzene	ND	0.064	0.032	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,2,3-Trichloropropane	ND	0.032	0.0093	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,2,4-Trichlorobenzene	ND	0.064	0.034	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,2,4-Trimethylbenzene	ND	0.032	0.011	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,2-Dibromo-3-Chloropropane	ND	0.048	0.012	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,2-Dibromoethane	ND	0.016	0.0031	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,2-Dichlorobenzene	ND	0.032	0.0070	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,2-Dichloroethane	ND	0.016	0.0044	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,2-Dichloropropane	ND	0.016	0.0053	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,3,5-Trimethylbenzene	ND	0.032	0.0061	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,3-Dichlorobenzene	ND	0.048	0.011	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,3-Dichloropropane	ND	0.048	0.0045	mg/Kg		10/17/24 08:11	10/18/24 01:00	
1,4-Dichlorobenzene	0.083	0.048	0.0087	mg/Kg		10/17/24 08:11	10/18/24 01:00	
2,2-Dichloropropane	ND	0.032	0.0098	mg/Kg		10/17/24 08:11	10/18/24 01:00	
2-Chlorotoluene	ND	0.032	0.0071	mg/Kg		10/17/24 08:11	10/18/24 01:00	
4-Chlorotoluene	ND	0.032	0.0079			10/17/24 08:11	10/18/24 01:00	
4-Isopropyltoluene	ND	0.032	0.0082	mg/Kg		10/17/24 08:11	10/18/24 01:00	
Benzene	ND	0.016	0.0031	T T			10/18/24 01:00	
Bromobenzene	ND	0.032	0.0034			10/17/24 08:11	10/18/24 01:00	
Bromochloromethane	ND	0.032	0.0050			10/17/24 08:11	10/18/24 01:00	
Bromoform	ND	0.032	0.0036			10/17/24 08:11	10/18/24 01:00	
Carbon tetrachloride	ND	0.016	0.0035			10/17/24 08:11		
Chlorobenzene	1.2 B	0.032	0.0039				10/18/24 01:00	
Chloroform	0.0068 J	0.016	0.0034				10/18/24 01:00	
Chloromethane	ND	0.048	0.0081				10/18/24 01:00	
cis-1,2-Dichloroethene	0.035 J	0.048		mg/Kg			10/18/24 01:00	
cis-1,3-Dichloropropene	ND	0.016	0.0032				10/18/24 01:00	
Dibromochloromethane	ND	0.016	0.0040				10/18/24 01:00	
Dibromomethane	ND	0.032	0.0060				10/18/24 01:00	
Dichlorodifluoromethane	ND	0.20		mg/Kg			10/18/24 01:00	
Ethylbenzene	ND	0.032	0.0073				10/18/24 01:00	
Hexachlorobutadiene	0.047 J	0.081		mg/Kg			10/18/24 01:00	
sopropylbenzene	ND	0.032	0.0069				10/18/24 01:00	
Methyl tert-butyl ether	ND	0.032	0.0048				10/18/24 01:00	
Methylene Chloride	0.025 J*+	0.20		mg/Kg			10/18/24 01:00	
m-Xylene & p-Xylene	0.025 3 T	0.032	0.0057				10/18/24 01:00	
Naphthalene	ND	0.032		mg/Kg			10/18/24 01:00	
napritraterie n-Butylbenzene	ND ND	0.12		mg/Kg			10/18/24 01:00	
	ND	0.032		mg/Kg			10/18/24 01:00	
N-Propylbenzene	ND ND	0.032					10/18/24 01:00	
o-Xylene			0.0040					
sec-Butylbenzene Styrene	ND ND	0.032 0.032	0.0069	mg/Kg mg/Kg			10/18/24 01:00 10/18/24 01:00	

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-38-SO-32.9-20241008

Lab Sample ID: 580-144769-13 Date Collected: 10/08/24 11:30 Matrix: Solid

Date Received: 10/11/24 12:30

Dibromofluoromethane (Surr)

Toluene-d8 (Surr)

Method: SW846 8260D - Vo	latile Organic	Compound	(Conti	inued)					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	ND		0.032	0.0062	mg/Kg		10/17/24 08:11	10/18/24 01:00	1
Tetrachloroethene	0.045		0.032	0.0043	mg/Kg		10/17/24 08:11	10/18/24 01:00	1
Toluene	ND		0.048	0.011	mg/Kg		10/17/24 08:11	10/18/24 01:00	1
trans-1,2-Dichloroethene	ND		0.048	0.012	mg/Kg		10/17/24 08:11	10/18/24 01:00	1
trans-1,3-Dichloropropene	ND		0.032	0.0056	mg/Kg		10/17/24 08:11	10/18/24 01:00	1
Trichloroethene	0.053		0.032	0.0083	mg/Kg		10/17/24 08:11	10/18/24 01:00	1
Trichlorofluoromethane	ND		0.064	0.021	mg/Kg		10/17/24 08:11	10/18/24 01:00	1
Vinyl chloride	ND		0.081	0.015	mg/Kg		10/17/24 08:11	10/18/24 01:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				10/17/24 08:11	10/18/24 01:00	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/17/24 08:11	10/18/24 01:00	1
Dibromofluoromethane (Surr)	98		80 - 120				10/17/24 08:11	10/18/24 01:00	1
Toluene-d8 (Surr)	101		80 - 120				10/17/24 08:11	10/18/24 01:00	1

Method: SW846 8260D - Vo	olatile Organic	Compoun	ds by GC/MS	S - RA					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	MD	Н	0.032	0.0044	mg/Kg		10/25/24 09:04	10/25/24 12:49	1
Bromomethane	ND	Н	0.081	0.030	mg/Kg		10/25/24 09:04	10/25/24 12:49	1
Chloroethane	ND	Н	0.064	0.017	mg/Kg		10/25/24 09:04	10/25/24 12:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		80 - 121				10/25/24 09:04	10/25/24 12:49	1
4-Bromofluorobenzene (Surr)	103		80 - 120				10/25/24 09:04	10/25/24 12:49	1

80 - 120

80 - 120

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General Chemistry Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	68.0		0.1	0.1	%		-	10/18/24 15:11	1
Percent Moisture (SM22 2540G)	32.0		0.1	0.1	%			10/18/24 15:11	1

10/25/24 09:04 10/25/24 12:49 10/25/24 09:04 10/25/24 12:49

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-37-SO-42.5-20241008

Lab Sample ID: 580-144769-14 Date Collected: 10/08/24 12:10 **Matrix: Solid**

Date Received: 10/11/24 12:30

Analyte	Result Qualifier	RL _	MDL	UIIIL	D	Prepared	Analyzed	Dil F
1,1,1,2-Tetrachloroethane	ND	0.015	0.0037	mg/Kg		10/17/24 07:47	10/17/24 13:33	
1,1,1-Trichloroethane	ND	0.029	0.0034	mg/Kg		10/17/24 07:47	10/17/24 13:33	
1,1,2,2-Tetrachloroethane	ND	0.015	0.0056	mg/Kg		10/17/24 07:47	10/17/24 13:33	
1,1,2-Trichloroethane	ND	0.015	0.0054	mg/Kg		10/17/24 07:47	10/17/24 13:33	
1,1-Dichloroethane	ND	0.029	0.0067	mg/Kg		10/17/24 07:47	10/17/24 13:33	
1,1-Dichloroethene	ND	0.029	0.0090	mg/Kg		10/17/24 07:47	10/17/24 13:33	
1,1-Dichloropropene	ND	0.029	0.0039	mg/Kg		10/17/24 07:47	10/17/24 13:33	
1,2,3-Trichlorobenzene	ND	0.059	0.029	mg/Kg		10/17/24 07:47	10/17/24 13:33	
1,2,3-Trichloropropane	ND	0.029	0.0084	mg/Kg		10/17/24 07:47	10/17/24 13:33	
1,2,4-Trichlorobenzene	ND	0.059	0.031	mg/Kg		10/17/24 07:47	10/17/24 13:33	
1,2,4-Trimethylbenzene	ND	0.029	0.0099	mg/Kg		10/17/24 07:47	10/17/24 13:33	
1,2-Dibromo-3-Chloropropane	ND	0.044	0.011	mg/Kg		10/17/24 07:47	10/17/24 13:33	
1,2-Dibromoethane	ND	0.015	0.0028	mg/Kg		10/17/24 07:47	10/17/24 13:33	
1,2-Dichlorobenzene	ND	0.029	0.0064	mg/Kg		10/17/24 07:47	10/17/24 13:33	
I,2-Dichloroethane	ND	0.015	0.0040	mg/Kg		10/17/24 07:47	10/17/24 13:33	
1,2-Dichloropropane	ND	0.015	0.0048	mg/Kg		10/17/24 07:47	10/17/24 13:33	
1,3,5-Trimethylbenzene	ND	0.029	0.0056	mg/Kg		10/17/24 07:47	10/17/24 13:33	
,3-Dichlorobenzene	ND	0.044	0.0097			10/17/24 07:47	10/17/24 13:33	
,3-Dichloropropane	ND	0.044	0.0041	mg/Kg		10/17/24 07:47	10/17/24 13:33	
,4-Dichlorobenzene	ND	0.044	0.0079			10/17/24 07:47	10/17/24 13:33	
2,2-Dichloropropane	ND	0.029	0.0089			10/17/24 07:47	10/17/24 13:33	
-Chlorotoluene	ND	0.029	0.0064				10/17/24 13:33	
-Chlorotoluene	ND	0.029	0.0072				10/17/24 13:33	
l-Isopropyltoluene	ND	0.029	0.0075	0 0			10/17/24 13:33	
Benzene	ND	0.015	0.0028				10/17/24 13:33	
Bromobenzene	ND	0.029	0.0031				10/17/24 13:33	
Bromochloromethane	ND	0.029	0.0045				10/17/24 13:33	
Bromodichloromethane	ND	0.029	0.0040				10/17/24 13:33	
Bromoform	ND	0.029	0.0033				10/17/24 13:33	
Carbon tetrachloride	ND	0.015	0.0032				10/17/24 13:33	
Chlorobenzene	0.60	0.029	0.0035				10/17/24 13:33	
Chloroform	ND	0.015	0.0031				10/17/24 13:33	
Chloromethane	ND	0.044	0.0074				10/17/24 13:33	
sis-1,2-Dichloroethene	ND	0.044	0.0092				10/17/24 13:33	
cis-1,3-Dichloropropene	ND	0.015	0.0029				10/17/24 13:33	
Dibromochloromethane	ND	0.015	0.0036				10/17/24 13:33	
Dibromomethane	ND	0.029	0.0054				10/17/24 13:33	
Dichlorodifluoromethane	ND	0.023		mg/Kg			10/17/24 13:33	
Ethylbenzene	ND	0.029	0.0067				10/17/24 13:33	
Hexachlorobutadiene	ND	0.029		mg/Kg			10/17/24 13:33	
sopropylbenzene	ND	0.073	0.0063				10/17/24 13:33	
	ND	0.029					10/17/24 13:33	
Methyl tert-butyl ether			0.0044	mg/Kg			10/17/24 13:33	
Methylene Chloride	0.029 J	0.18						
n-Xylene & p-Xylene	ND ND	0.029	0.0052				10/17/24 13:33	
Naphthalene	ND ND	0.11		mg/Kg			10/17/24 13:33	
n-Butylbenzene	ND	0.029		mg/Kg			10/17/24 13:33	
N-Propylbenzene	ND	0.029		mg/Kg			10/17/24 13:33	
o-Xylene sec-Butylbenzene	ND ND	0.029	0.0037 0.0063				10/17/24 13:33 10/17/24 13:33	

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-37-SO-42.5-20241008

Lab Sample ID: 580-144769-14 Date Collected: 10/08/24 12:10

Date Received: 10/11/24 12:30

Method: SW846 8260D - Vo	latile Organic	Compound	ds by GC/MS	(Conti	nued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	MD		0.029	0.0093	mg/Kg		10/17/24 07:47	10/17/24 13:33	1
t-Butylbenzene	ND		0.029	0.0056	mg/Kg		10/17/24 07:47	10/17/24 13:33	1
Tetrachloroethene	ND		0.029	0.0039	mg/Kg		10/17/24 07:47	10/17/24 13:33	1
Toluene	ND		0.044	0.0099	mg/Kg		10/17/24 07:47	10/17/24 13:33	1
trans-1,2-Dichloroethene	ND		0.044	0.011	mg/Kg		10/17/24 07:47	10/17/24 13:33	1
trans-1,3-Dichloropropene	ND		0.029	0.0051	mg/Kg		10/17/24 07:47	10/17/24 13:33	1
Trichloroethene	ND		0.029	0.0075	mg/Kg		10/17/24 07:47	10/17/24 13:33	1
Trichlorofluoromethane	ND		0.059	0.019	mg/Kg		10/17/24 07:47	10/17/24 13:33	1
Vinyl chloride	ND		0.073	0.014	mg/Kg		10/17/24 07:47	10/17/24 13:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		80 - 121				10/17/24 07:47	10/17/24 13:33	1
4-Bromofluorobenzene (Surr)	102		80 - 120				10/17/24 07:47	10/17/24 13:33	1
Dibromofluoromethane (Surr)	98		80 - 120				10/17/24 07:47	10/17/24 13:33	1
Toluene-d8 (Surr)	101		80 - 120				10/17/24 07:47	10/17/24 13:33	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	*1	0.10	0.038	mg/Kg		10/17/24 10:00	10/17/24 18:07	1
Chloroethane	ND		0.081	0.021	mg/Kg		10/17/24 10:00	10/17/24 18:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		80 - 121				10/17/24 10:00	10/17/24 18:07	1
4-Bromofluorobenzene (Surr)	96		80 - 120				10/17/24 10:00	10/17/24 18:07	1
Dibromofluoromethane (Surr)	94		80 - 120				10/17/24 10:00	10/17/24 18:07	1
Toluene-d8 (Surr)	99		80 - 120				10/17/24 10:00	10/17/24 18:07	1

General Chemistry							
Analyte	Result Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	76.3	0.1	0.1 %			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	23.7	0.1	0.1 %			10/18/24 15:11	1

Eurofins Seattle

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-37-SO-31.2-20241008

Lab Sample ID: 580-144769-15 Date Collected: 10/08/24 12:15 **Matrix: Solid**

Date Received: 10/11/24 12:30

Analyte	Result Qualifier	RL _		Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND	0.016	0.0040			10/17/24 08:11	10/18/24 01:21	
I,1,1-Trichloroethane	ND	0.032	0.0036			10/17/24 08:11	10/18/24 01:21	
,1,2,2-Tetrachloroethane	ND	0.016	0.0060	mg/Kg		10/17/24 08:11	10/18/24 01:21	
,1,2-Trichloroethane	ND	0.016	0.0059	mg/Kg		10/17/24 08:11	10/18/24 01:21	
,1-Dichloroethane	ND	0.032	0.0073	mg/Kg		10/17/24 08:11	10/18/24 01:21	
,1-Dichloroethene	ND	0.032	0.0097	mg/Kg		10/17/24 08:11	10/18/24 01:21	
,1-Dichloropropene	ND	0.032	0.0042	mg/Kg		10/17/24 08:11	10/18/24 01:21	
,2,3-Trichlorobenzene	ND	0.063	0.031	mg/Kg		10/17/24 08:11	10/18/24 01:21	
,2,3-Trichloropropane	ND	0.032	0.0091	mg/Kg		10/17/24 08:11	10/18/24 01:21	
,2,4-Trichlorobenzene	ND	0.063	0.034	mg/Kg		10/17/24 08:11	10/18/24 01:21	
,2,4-Trimethylbenzene	ND	0.032	0.011	mg/Kg		10/17/24 08:11	10/18/24 01:21	
,2-Dibromo-3-Chloropropane	ND	0.047	0.012	mg/Kg		10/17/24 08:11	10/18/24 01:21	
,2-Dibromoethane	ND	0.016	0.0030	mg/Kg		10/17/24 08:11	10/18/24 01:21	
,2-Dichlorobenzene	0.020 J	0.032	0.0069	mg/Kg		10/17/24 08:11	10/18/24 01:21	
,2-Dichloroethane	ND	0.016	0.0044	mg/Kg		10/17/24 08:11	10/18/24 01:21	
,2-Dichloropropane	ND	0.016	0.0052	mg/Kg		10/17/24 08:11	10/18/24 01:21	
3,5-Trimethylbenzene	ND	0.032	0.0060	mg/Kg		10/17/24 08:11	10/18/24 01:21	
3-Dichlorobenzene	ND	0.047	0.011	mg/Kg		10/17/24 08:11	10/18/24 01:21	
3-Dichloropropane	ND	0.047	0.0044	mg/Kg		10/17/24 08:11	10/18/24 01:21	
4-Dichlorobenzene	0.11	0.047	0.0085	mg/Kg		10/17/24 08:11	10/18/24 01:21	
2-Dichloropropane	ND	0.032	0.0096	mg/Kg		10/17/24 08:11	10/18/24 01:21	
Chlorotoluene	ND	0.032	0.0070	mg/Kg		10/17/24 08:11	10/18/24 01:21	
Chlorotoluene	ND	0.032	0.0078			10/17/24 08:11	10/18/24 01:21	
Isopropyltoluene	ND	0.032	0.0081	0 0		10/17/24 08:11	10/18/24 01:21	
enzene	ND	0.016	0.0030			10/17/24 08:11	10/18/24 01:21	
romobenzene	ND	0.032	0.0033			10/17/24 08:11	10/18/24 01:21	
romochloromethane	ND	0.032	0.0049	0 0			10/18/24 01:21	
romoform	ND	0.032	0.0036				10/18/24 01:21	
arbon tetrachloride	ND	0.016	0.0035			10/17/24 08:11		
hlorobenzene	2.5 B	0.032	0.0038			10/17/24 08:11		
hloroform	ND	0.016	0.0033			10/17/24 08:11		
hloromethane	ND	0.047	0.0080				10/18/24 01:21	
is-1,2-Dichloroethene	0.016 J	0.047		mg/Kg			10/18/24 01:21	
s-1,3-Dichloropropene	ND	0.016	0.0032				10/18/24 01:21	
ibromochloromethane	ND	0.016	0.0039				10/18/24 01:21	
ibromomethane	ND	0.032	0.0059	0 0			10/18/24 01:21	
ichlorodifluoromethane	ND	0.20		mg/Kg			10/18/24 01:21	
thylbenzene	ND	0.032	0.0072				10/18/24 01:21	
exachlorobutadiene	0.030 J	0.032		mg/Kg			10/18/24 01:21	
opropylbenzene	0.030 J ND	0.079	0.0068				10/18/24 01:21	
ethyl tert-butyl ether	ND	0.032	0.0007				10/18/24 01:21	
				mg/Kg				
ethylene Chloride	0.035 J*+	0.20	0.021			10/17/24 08:11		
n-Xylene & p-Xylene	ND ND	0.032					10/18/24 01:21	
aphthalene Butulbanzana	ND ND	0.12		mg/Kg		10/17/24 08:11	10/18/24 01:21	
-Butylbenzene	ND	0.032		mg/Kg		10/17/24 08:11	10/18/24 01:21	
-Propylbenzene	ND	0.032		mg/Kg			10/18/24 01:21	
-Xylene	ND	0.032	0.0040				10/18/24 01:21	
ec-Butylbenzene Styrene	ND ND	0.032	0.0068	mg/Kg mg/Kg		10/17/24 08:11	10/18/24 01:21 10/18/24 01:21	

Client: ERM-West Job ID: 580-144769-1

0.032

0.032

0.047

0.047

0.032

0.032

0.063

0.079

MDL Unit

0.0061 mg/Kg

0.0042 mg/Kg

0.011 mg/Kg

0.012 mg/Kg

0.0055 mg/Kg

0.0082 mg/Kg

0.021 mg/Kg

0.015 mg/Kg

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-37-SO-31.2-20241008

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

ND

0.010 J

ND

ND

ND

0.019 J

ND

ND

Result Qualifier

Date Collected: 10/08/24 12:15

Date Received: 10/11/24 12:30

Analyte

Toluene

t-Butylbenzene

Tetrachloroethene

Trichloroethene

Vinyl chloride

trans-1,2-Dichloroethene

Trichlorofluoromethane

trans-1,3-Dichloropropene

Lab Sample ID: 580-144769-15

Prepared	Analyzed	Dil Fac	
10/11/24 00.11	10/10/24 01.21	'	
10/17/24 08:11	10/18/24 01:21	1	
10/17/24 08:11	10/18/24 01:21	1	
10/17/24 08:11	10/18/24 01:21	1	
10/17/24 08:11	10/18/24 01:21	1	
10/17/24 08:11	10/18/24 01:21	1	
10/17/24 08:11	10/18/24 01:21	1	
10/17/24 08:11	10/18/24 01:21	1	
10/17/24 08:11	10/18/24 01:21	1	
Prepared	Analyzed	Dil Fac	

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98	80 - 121	10/17/24 08:11	10/18/24 01:21	1
4-Bromofluorobenzene (Surr)	99	80 - 120	10/17/24 08:11	10/18/24 01:21	1
Dibromofluoromethane (Surr)	98	80 - 120	10/17/24 08:11	10/18/24 01:21	1
Toluene-d8 (Surr)	101	80 - 120	10/17/24 08:11	10/18/24 01:21	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	ND	Н	0.032	0.0044	mg/Kg		10/25/24 09:04	10/25/24 13:10	1
Bromomethane	ND	Н	0.079	0.030	mg/Kg		10/25/24 09:04	10/25/24 13:10	1
Chloroethane	ND	Н	0.063	0.017	mg/Kg		10/25/24 09:04	10/25/24 13:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		80 - 121				10/25/24 09:04	10/25/24 13:10	1
4-Bromofluorobenzene (Surr)	102		80 - 120				10/25/24 09:04	10/25/24 13:10	1
Dibromofluoromethane (Surr)	103		80 - 120				10/25/24 09:04	10/25/24 13:10	1
Toluene-d8 (Surr)	98		80 - 120				10/25/24 09:04	10/25/24 13:10	1

General Chemistry							
Analyte	Result Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	73.3	0.1	0.1 %			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	26.7	0.1	0.1 %			10/18/24 15:11	1

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-48-SO-33.8-20241008

Lab Sample ID: 580-144769-16 Date Collected: 10/08/24 16:00 **Matrix: Solid**

Date Received: 10/11/24 12:30

Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND ND	0.014	0.0035	mg/Kg		10/17/24 07:47	10/17/24 13:54	
1,1,1-Trichloroethane	ND	0.028	0.0032	mg/Kg		10/17/24 07:47	10/17/24 13:54	
1,1,2,2-Tetrachloroethane	ND	0.014	0.0053			10/17/24 07:47	10/17/24 13:54	
1,1,2-Trichloroethane	ND	0.014	0.0052	mg/Kg		10/17/24 07:47	10/17/24 13:54	
1,1-Dichloroethane	ND	0.028	0.0064			10/17/24 07:47	10/17/24 13:54	
1,1-Dichloroethene	ND	0.028	0.0086			10/17/24 07:47	10/17/24 13:54	
1,1-Dichloropropene	ND	0.028	0.0037				10/17/24 13:54	
1,2,3-Trichlorobenzene	ND	0.056		mg/Kg			10/17/24 13:54	
1,2,3-Trichloropropane	ND	0.028	0.0081			10/17/24 07:47	10/17/24 13:54	
1,2,4-Trichlorobenzene	ND	0.056		mg/Kg			10/17/24 13:54	
1,2,4-Trimethylbenzene	ND	0.028	0.0095				10/17/24 13:54	
1,2-Dibromo-3-Chloropropane	ND	0.042		mg/Kg			10/17/24 13:54	
1,2-Dibromoethane	ND	0.014	0.0027				10/17/24 13:54	
1,2-Dichlorobenzene	0.015 J	0.028	0.0061				10/17/24 13:54	
1,2-Dichloroethane	0.013 3 ND	0.020	0.0039				10/17/24 13:54	
1,2-Dichloropropane	ND	0.014	0.0046				10/17/24 13:54	
1,3,5-Trimethylbenzene	ND	0.028	0.0053				10/17/24 13:54	
1,3-Dichlorobenzene	ND	0.042	0.0093				10/17/24 13:54	
1,3-Dichloropropane	ND	0.042	0.0039				10/17/24 13:54	
• •	0.094	0.042		0 0			10/17/24 13:54	
1,4-Dichlorobenzene 2,2-Dichloropropane	0.094 ND	0.042	0.0076				10/17/24 13:54	
2-Chlorotoluene	ND	0.028		mg/Kg			10/17/24 13:54	
4-Chlorotoluene	ND	0.028	0.0062				10/17/24 13:54	
	ND ND	0.028	0.0009	0 0			10/17/24 13:54	
4-Isopropyltoluene Benzene	ND	0.028		mg/Kg mg/Kg			10/17/24 13:54	
	ND ND							
Bromobenzene	ND ND	0.028	0.0029	0 0			10/17/24 13:54	
Bromochloromethane		0.028	0.0043				10/17/24 13:54	
Bromodichloromethane	ND	0.028	0.0039	0 0			10/17/24 13:54	
Bromoform	ND	0.028	0.0032				10/17/24 13:54	
Carbon tetrachloride	ND	0.014	0.0031				10/17/24 13:54	
Chloroform	0.042	0.014	0.0029	0 0			10/17/24 13:54	
Chloromethane	ND	0.042	0.0071				10/17/24 13:54	
cis-1,2-Dichloroethene	ND	0.042	0.0088				10/17/24 13:54	
cis-1,3-Dichloropropene	ND	0.014	0.0028				10/17/24 13:54	
Dibromochloromethane	ND	0.014	0.0034				10/17/24 13:54	
Dibromomethane	ND	0.028		mg/Kg			10/17/24 13:54	
Dichlorodifluoromethane	ND	0.18		mg/Kg			10/17/24 13:54	
Ethylbenzene	ND	0.028		mg/Kg			10/17/24 13:54	
Hexachlorobutadiene	ND	0.070		mg/Kg			10/17/24 13:54	
Isopropylbenzene	ND	0.028		mg/Kg			10/17/24 13:54	
Methyl tert-butyl ether	ND	0.028		mg/Kg			10/17/24 13:54	
Methylene Chloride	0.024 J	0.18		mg/Kg			10/17/24 13:54	
m-Xylene & p-Xylene	ND	0.028		mg/Kg			10/17/24 13:54	
Naphthalene	ND	0.11		mg/Kg			10/17/24 13:54	
n-Butylbenzene	ND	0.028		mg/Kg			10/17/24 13:54	
N-Propylbenzene	ND	0.028		mg/Kg			10/17/24 13:54	
o-Xylene	ND	0.028		mg/Kg		10/17/24 07:47	10/17/24 13:54	
sec-Butylbenzene	ND	0.028		mg/Kg		10/17/24 07:47	10/17/24 13:54	
Styrene	ND	0.028	0.0089	mg/Kg		10/17/24 07:47	10/17/24 13:54	

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12/10/2024 (Rev. 2)

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-48-SO-33.8-20241008

Date Collected: 10/08/24 16:00 Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-16

Matrix: Solid

Job ID: 580-144769-1

	Dil Fac	5
4	1	
4	1	
4	1	
4	1	
4	1	

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	ND		0.028	0.0054	mg/Kg		10/17/24 07:47	10/17/24 13:54	1
Tetrachloroethene	0.038		0.028	0.0037	mg/Kg		10/17/24 07:47	10/17/24 13:54	1
Toluene	ND		0.042	0.0095	mg/Kg		10/17/24 07:47	10/17/24 13:54	1
trans-1,2-Dichloroethene	ND		0.042	0.010	mg/Kg		10/17/24 07:47	10/17/24 13:54	1
trans-1,3-Dichloropropene	ND		0.028	0.0049	mg/Kg		10/17/24 07:47	10/17/24 13:54	1
Trichloroethene	ND		0.028	0.0072	mg/Kg		10/17/24 07:47	10/17/24 13:54	1
Trichlorofluoromethane	ND		0.056	0.018	mg/Kg		10/17/24 07:47	10/17/24 13:54	1
Vinyl chloride	ND		0.070	0.013	mg/Kg		10/17/24 07:47	10/17/24 13:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/17/24 07:47	10/17/24 13:54	1
4-Bromofluorobenzene (Surr)	99		80 - 120				10/17/24 07:47	10/17/24 13:54	1
Dibromofluoromethane (Surr)	98		80 - 120				10/17/24 07:47	10/17/24 13:54	1
Toluene-d8 (Surr)	102		80 - 120				10/17/24 07:47	10/17/24 13:54	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	110		0.60	0.072	mg/Kg		10/18/24 14:45	10/19/24 04:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				10/18/24 14:45	10/19/24 04:07	1
4-Bromofluorobenzene (Surr)	96		80 - 120				10/18/24 14:45	10/19/24 04:07	1
Dibromofluoromethane (Surr)	99		80 - 120				10/18/24 14:45	10/19/24 04:07	1
Toluene-d8 (Surr)	102		80 - 120				10/18/24 14:45	10/19/24 04:07	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	*1	0.10	0.038	mg/Kg		10/17/24 10:00	10/17/24 18:29	1
Chloroethane	ND		0.081	0.021	mg/Kg		10/17/24 10:00	10/17/24 18:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		80 - 121				10/17/24 10:00	10/17/24 18:29	1
4-Bromofluorobenzene (Surr)	84		80 - 120				10/17/24 10:00	10/17/24 18:29	1
Dibromofluoromethane (Surr)	93		80 - 120				10/17/24 10:00	10/17/24 18:29	1
Toluene-d8 (Surr)	92		80 - 120				10/17/24 10:00	10/17/24 18:29	1

General Chemistry							
Analyte	Result Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	73.2	0.1	0.1 %			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	26.8	0.1	0.1 %			10/18/24 15:11	1

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-48-SO-40-20241008

Lab Sample ID: 580-144769-17 Date Collected: 10/08/24 16:05 Matrix: Solid

Date Received: 10/11/24 12:30

Analyte	Result Qu	ualifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND ND	0.014	0.0036	mg/Kg		10/17/24 07:47	10/17/24 14:15	
1,1,1-Trichloroethane	ND	0.029	0.0033	mg/Kg		10/17/24 07:47	10/17/24 14:15	
1,1,2,2-Tetrachloroethane	ND	0.014	0.0054	mg/Kg		10/17/24 07:47	10/17/24 14:15	
1,1,2-Trichloroethane	ND	0.014	0.0053	mg/Kg		10/17/24 07:47	10/17/24 14:15	
1,1-Dichloroethane	ND	0.029	0.0066	mg/Kg		10/17/24 07:47	10/17/24 14:15	
1,1-Dichloroethene	ND	0.029	0.0088	mg/Kg		10/17/24 07:47	10/17/24 14:15	
1,1-Dichloropropene	ND	0.029	0.0038	mg/Kg		10/17/24 07:47	10/17/24 14:15	
1,2,3-Trichlorobenzene	ND	0.057	0.028	mg/Kg		10/17/24 07:47	10/17/24 14:15	
1,2,3-Trichloropropane	ND	0.029	0.0082	mg/Kg		10/17/24 07:47	10/17/24 14:15	
1,2,4-Trichlorobenzene	ND	0.057	0.030	mg/Kg		10/17/24 07:47	10/17/24 14:15	
1,2,4-Trimethylbenzene	ND	0.029	0.0097	mg/Kg		10/17/24 07:47	10/17/24 14:15	
1,2-Dibromo-3-Chloropropane	ND	0.043		mg/Kg		10/17/24 07:47	10/17/24 14:15	
1,2-Dibromoethane	ND	0.014	0.0027			10/17/24 07:47	10/17/24 14:15	
1,2-Dichlorobenzene	ND	0.029	0.0062				10/17/24 14:15	
1,2-Dichloroethane	ND	0.014	0.0039	0 0			10/17/24 14:15	
1,2-Dichloropropane	ND	0.014	0.0047				10/17/24 14:15	
1,3,5-Trimethylbenzene	ND	0.029	0.0054				10/17/24 14:15	
1,3-Dichlorobenzene	ND	0.043	0.0095				10/17/24 14:15	
1,3-Dichloropropane	ND	0.043	0.0040				10/17/24 14:15	
1,4-Dichlorobenzene	ND	0.043	0.0077				10/17/24 14:15	
2,2-Dichloropropane	ND	0.029	0.0087				10/17/24 14:15	
2-Chlorotoluene	ND	0.029	0.0063				10/17/24 14:15	
4-Chlorotoluene	ND	0.029	0.0070				10/17/24 14:15	
4-Isopropyltoluene	ND	0.029	0.0073				10/17/24 14:15	
Benzene	ND	0.014	0.0073				10/17/24 14:15	
Bromobenzene	ND	0.029	0.0027				10/17/24 14:15	
Bromochloromethane	ND ND	0.029	0.0030				10/17/24 14:15	
Bromodichloromethane	ND	0.029	0.0039				10/17/24 14:15	
Bromoform	ND ND	0.029	0.0039				10/17/24 14:15	
Carbon tetrachloride	ND ND	0.029	0.0032				10/17/24 14:15	
							10/17/24 14:15	
Chloroform	ND	0.014	0.0030					
Chloromethane	ND	0.043	0.0072				10/17/24 14:15	
cis-1,2-Dichloroethene	ND	0.043	0.0090				10/17/24 14:15	
cis-1,3-Dichloropropene	ND	0.014	0.0029				10/17/24 14:15	
Dibromochloromethane	ND	0.014	0.0035				10/17/24 14:15	
Dibromomethane	ND	0.029	0.0053				10/17/24 14:15	
Dichlorodifluoromethane	ND	0.18		mg/Kg			10/17/24 14:15	
Ethylbenzene	ND	0.029	0.0065				10/17/24 14:15	
Hexachlorobutadiene 	ND	0.072		mg/Kg			10/17/24 14:15	
Isopropylbenzene	ND	0.029	0.0062				10/17/24 14:15	
Methyl tert-butyl ether	ND	0.029	0.0043				10/17/24 14:15	
Methylene Chloride	0.024 J	0.18		mg/Kg			10/17/24 14:15	
m-Xylene & p-Xylene	ND	0.029	0.0051				10/17/24 14:15	
Naphthalene	ND	0.11		mg/Kg			10/17/24 14:15	
n-Butylbenzene	ND	0.029		mg/Kg			10/17/24 14:15	
N-Propylbenzene	ND	0.029		mg/Kg			10/17/24 14:15	
o-Xylene	ND	0.029	0.0036				10/17/24 14:15	
sec-Butylbenzene	ND	0.029	0.0062	mg/Kg		10/17/24 07:47	10/17/24 14:15	

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-48-SO-40-20241008

Method: SW846 8260D - Volatile Organic Compounds by GC/MS - RA

Lab Sample ID: 580-144769-17 Date Collected: 10/08/24 16:05 Matrix: Solid

Date Received: 10/11/24 12:30

Method: SW846 8260D - Vo	latile Organic	Compound	ds by GC/MS	(Conti	inued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	ND		0.029	0.0055	mg/Kg		10/17/24 07:47	10/17/24 14:15	1
Tetrachloroethene	ND		0.029	0.0038	mg/Kg		10/17/24 07:47	10/17/24 14:15	1
Toluene	ND		0.043	0.0097	mg/Kg		10/17/24 07:47	10/17/24 14:15	1
trans-1,2-Dichloroethene	ND		0.043	0.010	mg/Kg		10/17/24 07:47	10/17/24 14:15	1
trans-1,3-Dichloropropene	ND		0.029	0.0050	mg/Kg		10/17/24 07:47	10/17/24 14:15	1
Trichloroethene	ND		0.029	0.0074	mg/Kg		10/17/24 07:47	10/17/24 14:15	1
Trichlorofluoromethane	ND		0.057	0.019	mg/Kg		10/17/24 07:47	10/17/24 14:15	1
Vinyl chloride	ND		0.072	0.013	mg/Kg		10/17/24 07:47	10/17/24 14:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		80 - 121				10/17/24 07:47	10/17/24 14:15	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/17/24 07:47	10/17/24 14:15	1
Dibromofluoromethane (Surr)	96		80 - 120				10/17/24 07:47	10/17/24 14:15	1
Toluene-d8 (Surr)	101		80 - 120				10/17/24 07:47	10/17/24 14:15	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	*1	0.10	0.038	mg/Kg		10/17/24 10:00	10/17/24 18:52	1
Chlorobenzene	0.10	Н	0.029	0.0034	mg/Kg		10/25/24 09:04	10/25/24 13:30	1
Chloroethane	ND		0.081	0.021	mg/Kg		10/17/24 10:00	10/17/24 18:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		80 - 121				10/17/24 10:00	10/17/24 18:52	1
1,2-Dichloroethane-d4 (Surr)	110		80 - 121				10/25/24 09:04	10/25/24 13:30	1
4-Bromofluorobenzene (Surr)	96		80 - 120				10/17/24 10:00	10/17/24 18:52	1
4-Bromofluorobenzene (Surr)	103		80 - 120				10/25/24 09:04	10/25/24 13:30	1
Dibromofluoromethane (Surr)	97		80 - 120				10/17/24 10:00	10/17/24 18:52	1
Dibromofluoromethane (Surr)	101		80 - 120				10/25/24 09:04	10/25/24 13:30	1
Toluene-d8 (Surr)	100		80 - 120				10/17/24 10:00	10/17/24 18:52	1
Toluene-d8 (Surr)	102		80 - 120				10/25/24 09:04	10/25/24 13:30	1

General Chemistry								
Analyte	Result Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	79.7	0.1	0.1	%			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	20.3	0.1	0.1	%			10/18/24 15:11	1

12/10/2024 (Rev. 2)

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-57-SO-35-20241008

Lab Sample ID: 580-144769-18 Date Collected: 10/08/24 15:55 **Matrix: Solid**

Date Received: 10/11/24 12:30

Analyte	Result Qualifier	RL		Unit	<u>D</u>	Prepared	Analyzed	Dil F
1,1,1,2-Tetrachloroethane	ND	0.017	0.0042			10/17/24 08:11	10/18/24 02:02	
1,1,1-Trichloroethane	ND	0.034	0.0039	0 0			10/18/24 02:02	
I,1,2,2-Tetrachloroethane	ND	0.017	0.0064				10/18/24 02:02	
,1,2-Trichloroethane	ND	0.017	0.0062	0 0			10/18/24 02:02	
,1-Dichloroethane	ND	0.034	0.0077	mg/Kg		10/17/24 08:11	10/18/24 02:02	
,1-Dichloroethene	ND	0.034		mg/Kg		10/17/24 08:11	10/18/24 02:02	
,1-Dichloropropene	ND	0.034	0.0045	mg/Kg		10/17/24 08:11	10/18/24 02:02	
,2,3-Trichlorobenzene	ND	0.067	0.033	mg/Kg		10/17/24 08:11	10/18/24 02:02	
,2,3-Trichloropropane	ND	0.034	0.0097	mg/Kg		10/17/24 08:11	10/18/24 02:02	
,2,4-Trichlorobenzene	ND	0.067	0.036	mg/Kg		10/17/24 08:11	10/18/24 02:02	
,2,4-Trimethylbenzene	ND	0.034	0.011	mg/Kg		10/17/24 08:11	10/18/24 02:02	
,2-Dibromo-3-Chloropropane	ND	0.051	0.013	mg/Kg		10/17/24 08:11	10/18/24 02:02	
,2-Dibromoethane	ND	0.017	0.0032	mg/Kg		10/17/24 08:11	10/18/24 02:02	
,2-Dichlorobenzene	0.068	0.034	0.0073	mg/Kg		10/17/24 08:11	10/18/24 02:02	
,2-Dichloroethane	ND	0.017	0.0046	mg/Kg		10/17/24 08:11	10/18/24 02:02	
,2-Dichloropropane	ND	0.017	0.0056			10/17/24 08:11	10/18/24 02:02	
,3,5-Trimethylbenzene	ND	0.034	0.0064	0 0		10/17/24 08:11	10/18/24 02:02	
3-Dichlorobenzene	ND	0.051		mg/Kg		10/17/24 08:11	10/18/24 02:02	
3-Dichloropropane	ND	0.051	0.0047			10/17/24 08:11	10/18/24 02:02	
2-Dichloropropane	ND	0.034		mg/Kg			10/18/24 02:02	
Chlorotoluene	ND	0.034	0.0074				10/18/24 02:02	
Chlorotoluene	ND	0.034	0.0074				10/18/24 02:02	
Isopropyltoluene	ND	0.034	0.0086				10/18/24 02:02	
enzene	ND	0.034	0.0032			10/17/24 08:11		
romobenzene	ND	0.017	0.0032				10/18/24 02:02	
romochloromethane	ND	0.034	0.0052	0 0			10/18/24 02:02	
romoform	ND	0.034	0.0038				10/18/24 02:02	
arbon tetrachloride	ND	0.017	0.0037				10/18/24 02:02	
hloroform	0.030	0.017	0.0035				10/18/24 02:02	
hloromethane	ND	0.051	0.0085				10/18/24 02:02	
is-1,2-Dichloroethene	ND	0.051		mg/Kg			10/18/24 02:02	
s-1,3-Dichloropropene	ND	0.017	0.0034				10/18/24 02:02	
ibromochloromethane	ND	0.017	0.0041				10/18/24 02:02	
ibromomethane	ND	0.034	0.0062				10/18/24 02:02	
ichlorodifluoromethane	ND	0.21		mg/Kg		10/17/24 08:11	10/18/24 02:02	
thylbenzene	ND	0.034	0.0077	mg/Kg		10/17/24 08:11	10/18/24 02:02	
exachlorobutadiene	ND	0.084	0.020	mg/Kg		10/17/24 08:11	10/18/24 02:02	
opropylbenzene	ND	0.034	0.0072	mg/Kg		10/17/24 08:11	10/18/24 02:02	
lethyl tert-butyl ether	ND	0.034	0.0051	mg/Kg		10/17/24 08:11	10/18/24 02:02	
lethylene Chloride	0.030 J*+	0.21	0.022	mg/Kg		10/17/24 08:11	10/18/24 02:02	
-Xylene & p-Xylene	ND	0.034	0.0060	mg/Kg		10/17/24 08:11	10/18/24 02:02	
aphthalene	ND	0.13	0.033	mg/Kg		10/17/24 08:11	10/18/24 02:02	
Butylbenzene	ND	0.034		mg/Kg		10/17/24 08:11	10/18/24 02:02	
-Propylbenzene	ND	0.034		mg/Kg		10/17/24 08:11	10/18/24 02:02	
-Xylene	ND	0.034	0.0042				10/18/24 02:02	
ec-Butylbenzene	ND	0.034	0.0072				10/18/24 02:02	
tyrene	ND	0.034		mg/Kg			10/18/24 02:02	
Butylbenzene	ND	0.034	0.0065				10/18/24 02:02	
etrachloroethene	0.020 J	0.034	0.0005				10/18/24 02:02	

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-57-SO-35-20241008

Lab Sample ID: 580-144769-18 Date Collected: 10/08/24 15:55 Matrix: Solid

Date Received: 10/11/24 12:30

Percent Moisture (SM22 2540G)

Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	(Conti	inued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	ND		0.051	0.011	mg/Kg		10/17/24 08:11	10/18/24 02:02	1
trans-1,2-Dichloroethene	ND		0.051	0.012	mg/Kg		10/17/24 08:11	10/18/24 02:02	1
trans-1,3-Dichloropropene	ND		0.034	0.0059	mg/Kg		10/17/24 08:11	10/18/24 02:02	1
Trichloroethene	ND		0.034	0.0087	mg/Kg		10/17/24 08:11	10/18/24 02:02	1
Trichlorofluoromethane	ND		0.067	0.022	mg/Kg		10/17/24 08:11	10/18/24 02:02	1
Vinyl chloride	ND		0.084	0.016	mg/Kg		10/17/24 08:11	10/18/24 02:02	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/17/24 08:11	10/18/24 02:02	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/17/24 08:11	10/18/24 02:02	1
Dibromofluoromethane (Surr)	99		80 - 120				10/17/24 08:11	10/18/24 02:02	1
Toluene-d8 (Surr)	98		80 - 120				10/17/24 08:11	10/18/24 02:02	1

loluene-as (Surr)	98		80 - 120				10/17/24 08:11	10/18/24 02:02	7
Method: SW846 8260D - Vola	atile Organic	Compoun	ds by GC/MS	- DL					
Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.54	0.098	mg/Kg		10/18/24 14:45	10/19/24 02:44	1
Bromodichloromethane	ND		0.36	0.050	mg/Kg		10/18/24 14:45	10/19/24 02:44	1
Bromomethane	ND		0.91	0.34	mg/Kg		10/18/24 14:45	10/19/24 02:44	1
Chlorobenzene	8.8		0.36	0.043	mg/Kg		10/18/24 14:45	10/19/24 02:44	1
Chloroethane	ND		0.72	0.19	mg/Kg		10/18/24 14:45	10/19/24 02:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		80 - 121				10/18/24 14:45	10/19/24 02:44	1
4-Bromofluorobenzene (Surr)	100		80 - 120				10/18/24 14:45	10/19/24 02:44	1
Dibromofluoromethane (Surr)	97		80 - 120				10/18/24 14:45	10/19/24 02:44	1
Toluene-d8 (Surr)	105		80 - 120				10/18/24 14:45	10/19/24 02:44	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	74.3		0.1	0.1	%			10/18/24 15:11	1

0.1

0.1 %

25.7

10/18/24 15:11

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-49-SO-30.9-20241009

Lab Sample ID: 580-144769-19 Date Collected: 10/09/24 13:30 **Matrix: Solid**

Date Received: 10/11/24 12:30

Analyte	Result Qualifier	RL _	MDL		D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND	0.018	0.0045				10/17/24 14:35	1
1,1,1-Trichloroethane	ND	0.036	0.0042				10/17/24 14:35	1
1,1,2,2-Tetrachloroethane	ND	0.018	0.0069				10/17/24 14:35	1
1,1,2-Trichloroethane	ND	0.018	0.0067				10/17/24 14:35	1
1,1-Dichloroethane	ND	0.036	0.0083	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
1,1-Dichloroethene	ND	0.036	0.011	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
1,1-Dichloropropene	ND	0.036	0.0048			10/17/24 07:47	10/17/24 14:35	1
1,2,3-Trichlorobenzene	ND	0.072	0.036	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
1,2,3-Trichloropropane	ND	0.036	0.010	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
1,2,4-Trichlorobenzene	ND	0.072	0.039	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
1,2,4-Trimethylbenzene	ND	0.036	0.012	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
1,2-Dibromo-3-Chloropropane	ND	0.054	0.014	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
1,2-Dibromoethane	ND	0.018	0.0034	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
1,2-Dichlorobenzene	ND	0.036	0.0079	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
1,2-Dichloroethane	ND	0.018	0.0050	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
1,2-Dichloropropane	ND	0.018	0.0060	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
1,3,5-Trimethylbenzene	ND	0.036	0.0069	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
1,3-Dichlorobenzene	ND	0.054	0.012	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
1,3-Dichloropropane	ND	0.054	0.0051	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
1,4-Dichlorobenzene	0.011 J	0.054	0.0098			10/17/24 07:47	10/17/24 14:35	1
2,2-Dichloropropane	ND	0.036		mg/Kg		10/17/24 07:47	10/17/24 14:35	1
2-Chlorotoluene	ND	0.036	0.0080			10/17/24 07:47	10/17/24 14:35	1
4-Chlorotoluene	ND	0.036	0.0089			10/17/24 07:47	10/17/24 14:35	1
4-Isopropyltoluene	ND	0.036	0.0092				10/17/24 14:35	1
Benzene	ND	0.018	0.0034				10/17/24 14:35	 1
Bromobenzene	ND	0.036	0.0038				10/17/24 14:35	1
Bromochloromethane	ND	0.036	0.0056				10/17/24 14:35	1
Bromodichloromethane	ND	0.036	0.0050				10/17/24 14:35	· 1
Bromoform	ND	0.036					10/17/24 14:35	. 1
Carbon tetrachloride	ND	0.018	0.0040	0 0			10/17/24 14:35	1
Chlorobenzene	10	0.036	0.0043				10/17/24 14:35	
Chloroform	ND	0.018	0.0038				10/17/24 14:35	1
Chloromethane	ND	0.054	0.0091				10/17/24 14:35	1
cis-1,2-Dichloroethene	ND	0.054		mg/Kg			10/17/24 14:35	' 1
cis-1,3-Dichloropropene	ND	0.034	0.0036				10/17/24 14:35	1
Dibromochloromethane	ND	0.018		0 0			10/17/24 14:35	1
		0.016	0.0044 0.0067				10/17/24 14:35	
Dibromomethane Dichlorodifluoromethane	ND ND			mg/Kg			10/17/24 14:35	1
	ND ND	0.23						1
Ethylbenzene Hexachlorobutadiene	ND ND	0.036	0.0082				10/17/24 14:35 10/17/24 14:35	1
	ND	0.091		mg/Kg				1
Isopropylbenzene	ND	0.036	0.0078				10/17/24 14:35	1
Methyl tert-butyl ether	ND	0.036	0.0054				10/17/24 14:35	
Methylene Chloride	0.034 J	0.23		mg/Kg			10/17/24 14:35	1
m-Xylene & p-Xylene	ND	0.036	0.0064				10/17/24 14:35	1
Naphthalene	ND	0.14		mg/Kg			10/17/24 14:35	
n-Butylbenzene	ND	0.036		mg/Kg			10/17/24 14:35	1
N-Propylbenzene	ND	0.036		mg/Kg			10/17/24 14:35	1
o-Xylene	ND	0.036	0.0045				10/17/24 14:35	1
sec-Butylbenzene	ND	0.036	0.0078	mg/Kg		10/17/24 07:47	10/17/24 14:35	

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-49-SO-30.9-20241009

Lab Sample ID: 580-144769-19 Date Collected: 10/09/24 13:30

Date Received: 10/11/24 12:30

Method: SW846 8260D	- Volatile Organic	Compoun	ds by GC/MS	(Conti	nued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		0.036	0.012	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
t-Butylbenzene	ND		0.036	0.0070	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
Tetrachloroethene	0.0097	J	0.036	0.0048	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
Toluene	ND		0.054	0.012	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
trans-1,2-Dichloroethene	ND		0.054	0.013	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
trans-1,3-Dichloropropene	ND		0.036	0.0063	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
Trichloroethene	ND		0.036	0.0093	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
Trichlorofluoromethane	ND		0.072	0.024	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
Vinyl chloride	ND		0.091	0.017	mg/Kg		10/17/24 07:47	10/17/24 14:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/17/24 07:47	10/17/24 14:35	1
4-Bromofluorobenzene (Surr)	99		80 - 120				10/17/24 07:47	10/17/24 14:35	1
Dibromofluoromethane (Surr)	99		80 - 120				10/17/24 07:47	10/17/24 14:35	1
Toluene-d8 (Surr)	98		80 - 120				10/17/24 07:47	10/17/24 14:35	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	*1	0.10	0.039	mg/Kg		10/17/24 10:00	10/17/24 19:14	1
Chloroethane	ND		0.083	0.022	mg/Kg		10/17/24 10:00	10/17/24 19:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		80 - 121				10/17/24 10:00	10/17/24 19:14	1
4-Bromofluorobenzene (Surr)	93		80 - 120				10/17/24 10:00	10/17/24 19:14	1
Dibromofluoromethane (Surr)	97		80 - 120				10/17/24 10:00	10/17/24 19:14	1
Toluene-d8 (Surr)	96		80 - 120				10/17/24 10:00	10/17/24 19:14	1

General Chemistry								
Analyte	Result Qualifi	ier RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	74.9	0.1	0.1	%			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	25.1	0.1	0.1	%			10/18/24 15:11	1

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Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-49-SO-49.9-20241009

Lab Sample ID: 580-144769-20 Date Collected: 10/09/24 13:35 Matrix: Solid

Date Received: 10/11/24 12:30

sec-Butylbenzene

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND		0.015	0.0037	mg/Kg		10/17/24 07:47	10/17/24 14:56	
1,1,1-Trichloroethane	ND		0.030	0.0034			10/17/24 07:47	10/17/24 14:56	
1,1,2,2-Tetrachloroethane	ND		0.015	0.0056			10/17/24 07:47	10/17/24 14:56	
1,1,2-Trichloroethane	ND		0.015	0.0055			10/17/24 07:47	10/17/24 14:56	
1,1-Dichloroethane	ND		0.030					10/17/24 14:56	
1,1-Dichloroethene	ND		0.030	0.0091	mg/Kg			10/17/24 14:56	
1,1-Dichloropropene	ND		0.030	0.0039				10/17/24 14:56	
1,2,3-Trichlorobenzene	ND		0.059		mg/Kg			10/17/24 14:56	
1,2,3-Trichloropropane	ND		0.030	0.0085				10/17/24 14:56	
1,2,4-Trichlorobenzene	ND		0.059		mg/Kg			10/17/24 14:56	
1,2,4-Trimethylbenzene	ND		0.030		mg/Kg			10/17/24 14:56	
1,2-Dibromo-3-Chloropropane	ND		0.044		mg/Kg			10/17/24 14:56	
1,2-Dibromoethane	ND		0.015	0.0028				10/17/24 14:56	
1,2-Dishorhoctriane 1,2-Dishorhoctriane	ND		0.013	0.0028				10/17/24 14:56	
1,2-Dichlorogenzene	ND ND		0.030	0.0004	mg/Kg			10/17/24 14:56	
					7 7			10/17/24 14:56	
1,2-Dichloropropane	ND ND		0.015	0.0049					
1,3,5-Trimethylbenzene			0.030	0.0056				10/17/24 14:56	
1,3-Dichlorobenzene	ND		0.044	0.0098	mg/Kg			10/17/24 14:56	
1,3-Dichloropropane	ND		0.044	0.0041	mg/Kg			10/17/24 14:56	
1,4-Dichlorobenzene	ND		0.044	0.0080				10/17/24 14:56	
2,2-Dichloropropane	ND		0.030	0.0089	mg/Kg			10/17/24 14:56	
2-Chlorotoluene	ND		0.030	0.0065				10/17/24 14:56	
4-Chlorotoluene	ND		0.030	0.0072				10/17/24 14:56	
4-Isopropyltoluene	ND		0.030	0.0075				10/17/24 14:56	
Benzene	ND		0.015	0.0028			10/17/24 07:47	10/17/24 14:56	
Bromobenzene	ND		0.030	0.0031			10/17/24 07:47	10/17/24 14:56	
Bromochloromethane	ND		0.030	0.0046	mg/Kg		10/17/24 07:47	10/17/24 14:56	
Bromodichloromethane	ND		0.030	0.0041			10/17/24 07:47	10/17/24 14:56	
Bromoform	ND		0.030	0.0033	mg/Kg		10/17/24 07:47	10/17/24 14:56	
Carbon tetrachloride	ND		0.015	0.0032	mg/Kg		10/17/24 07:47	10/17/24 14:56	
Chlorobenzene	0.038		0.030	0.0035	mg/Kg		10/17/24 07:47	10/17/24 14:56	
Chloroform	ND		0.015	0.0031	mg/Kg		10/17/24 07:47	10/17/24 14:56	
Chloromethane	ND		0.044	0.0075	mg/Kg		10/17/24 07:47	10/17/24 14:56	
cis-1,2-Dichloroethene	ND		0.044	0.0093	mg/Kg		10/17/24 07:47	10/17/24 14:56	
cis-1,3-Dichloropropene	ND		0.015	0.0030	mg/Kg		10/17/24 07:47	10/17/24 14:56	
Dibromochloromethane	ND		0.015	0.0036	mg/Kg		10/17/24 07:47	10/17/24 14:56	
Dibromomethane	ND		0.030	0.0055	mg/Kg		10/17/24 07:47	10/17/24 14:56	
Dichlorodifluoromethane	ND		0.18		mg/Kg		10/17/24 07:47	10/17/24 14:56	
Ethylbenzene	ND		0.030	0.0067	mg/Kg		10/17/24 07:47	10/17/24 14:56	
Hexachlorobutadiene	ND		0.074	0.018	mg/Kg		10/17/24 07:47	10/17/24 14:56	
Isopropylbenzene	ND		0.030	0.0064			10/17/24 07:47	10/17/24 14:56	
Methyl tert-butyl ether	ND		0.030	0.0044				10/17/24 14:56	
Methylene Chloride	0.029	J	0.18		mg/Kg			10/17/24 14:56	
m-Xylene & p-Xylene	ND	-	0.030	0.0052				10/17/24 14:56	
Naphthalene	ND		0.11		mg/Kg			10/17/24 14:56	
n-Butylbenzene	ND		0.030		mg/Kg			10/17/24 14:56	
N-Propylbenzene	ND		0.030		mg/Kg			10/17/24 14:56	
o-Xylene	ND		0.030	0.0037				10/17/24 14:56	

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10/17/24 07:47 10/17/24 14:56

0.030

ND

0.0064 mg/Kg

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-49-SO-49.9-20241009

Date Collected: 10/09/24 13:35 Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-20

Matrix: Solid

Method: SW846 8260D - Vo	olatile Organic	Compound	ds by GC/MS	(Conti	inued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		0.030	0.0094	mg/Kg		10/17/24 07:47	10/17/24 14:56	1
t-Butylbenzene	ND		0.030	0.0057	mg/Kg		10/17/24 07:47	10/17/24 14:56	1
Tetrachloroethene	ND		0.030	0.0039	mg/Kg		10/17/24 07:47	10/17/24 14:56	1
Toluene	ND		0.044	0.010	mg/Kg		10/17/24 07:47	10/17/24 14:56	1
trans-1,2-Dichloroethene	ND		0.044	0.011	mg/Kg		10/17/24 07:47	10/17/24 14:56	1
trans-1,3-Dichloropropene	ND		0.030	0.0052	mg/Kg		10/17/24 07:47	10/17/24 14:56	1
Trichloroethene	ND		0.030	0.0076	mg/Kg		10/17/24 07:47	10/17/24 14:56	1
Trichlorofluoromethane	ND		0.059	0.019	mg/Kg		10/17/24 07:47	10/17/24 14:56	1
Vinyl chloride	ND		0.074	0.014	mg/Kg		10/17/24 07:47	10/17/24 14:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				10/17/24 07:47	10/17/24 14:56	1
4-Bromofluorobenzene (Surr)	99		80 - 120				10/17/24 07:47	10/17/24 14:56	1
Dibromofluoromethane (Surr)	98		80 - 120				10/17/24 07:47	10/17/24 14:56	1
Toluene-d8 (Surr)	102		80 - 120				10/17/24 07:47	10/17/24 14:56	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	*1	0.099	0.038	mg/Kg		10/17/24 10:00	10/17/24 19:37	1
Chloroethane	ND		0.079	0.021	mg/Kg		10/17/24 10:00	10/17/24 19:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		80 - 121				10/17/24 10:00	10/17/24 19:37	1
4-Bromofluorobenzene (Surr)	100		80 - 120				10/17/24 10:00	10/17/24 19:37	1
Dibromofluoromethane (Surr)	91		80 - 120				10/17/24 10:00	10/17/24 19:37	1
Toluene-d8 (Surr)	102		80 - 120				10/17/24 10:00	10/17/24 19:37	1

General Chemistry							
Analyte	Result Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	71.8	0.1	0.1 %			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	28.2	0.1	0.1 %			10/18/24 15:11	1

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-SO-20241009

Lab Sample ID: 580-144769-21 Date Collected: 10/09/24 13:00 **Matrix: Solid**

Date Received: 10/11/24 12:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND		0.020	0.0050	mg/Kg		10/17/24 07:47	10/17/24 09:25	
1,1,1-Trichloroethane	ND		0.040	0.0046	mg/Kg		10/17/24 07:47	10/17/24 09:25	
1,1,2,2-Tetrachloroethane	ND		0.020	0.0076	mg/Kg		10/17/24 07:47	10/17/24 09:25	
1,1,2-Trichloroethane	ND		0.020	0.0074	mg/Kg		10/17/24 07:47	10/17/24 09:25	
1,1-Dichloroethane	ND		0.040	0.0092			10/17/24 07:47	10/17/24 09:25	
1,1-Dichloroethene	ND		0.040	0.012	mg/Kg		10/17/24 07:47	10/17/24 09:25	
1,1-Dichloropropene	ND		0.040	0.0053			10/17/24 07:47	10/17/24 09:25	
1,2,3-Trichlorobenzene	ND		0.080	0.040	mg/Kg		10/17/24 07:47	10/17/24 09:25	
1,2,3-Trichloropropane	ND		0.040	0.012	mg/Kg		10/17/24 07:47	10/17/24 09:25	
1,2,4-Trichlorobenzene	ND		0.080	0.043	mg/Kg		10/17/24 07:47	10/17/24 09:25	
1,2,4-Trimethylbenzene	ND		0.040		mg/Kg		10/17/24 07:47	10/17/24 09:25	
1,2-Dibromo-3-Chloropropane	ND		0.060	0.015	mg/Kg		10/17/24 07:47	10/17/24 09:25	
1,2-Dibromoethane	ND		0.020	0.0038			10/17/24 07:47	10/17/24 09:25	
1,2-Dichlorobenzene	ND		0.040	0.0087			10/17/24 07:47	10/17/24 09:25	
1,2-Dichloroethane	ND		0.020	0.0055				10/17/24 09:25	
l,2-Dichloropropane	ND		0.020	0.0066				10/17/24 09:25	
,3,5-Trimethylbenzene	ND		0.040	0.0076				10/17/24 09:25	
,3-Dichlorobenzene	ND		0.060		mg/Kg			10/17/24 09:25	
1,3-Dichloropropane	ND		0.060	0.0056				10/17/24 09:25	
I,4-Dichlorobenzene	ND		0.060	0.011	mg/Kg			10/17/24 09:25	
2,2-Dichloropropane	ND		0.040		mg/Kg			10/17/24 09:25	
2-Chlorotoluene	ND		0.040	0.0088				10/17/24 09:25	
l-Chlorotoluene	ND		0.040	0.0098			10/17/24 07:47	10/17/24 09:25	
I-Isopropyltoluene	ND		0.040		mg/Kg			10/17/24 09:25	
Benzene	ND		0.020	0.0038				10/17/24 09:25	
Bromobenzene	ND		0.040	0.0042				10/17/24 09:25	
Bromochloromethane	ND		0.040	0.0062				10/17/24 09:25	
Bromodichloromethane	ND		0.040	0.0055				10/17/24 09:25	
Bromoform	ND		0.040	0.0045				10/17/24 09:25	
Carbon tetrachloride	ND		0.020	0.0044				10/17/24 09:25	
Chlorobenzene	ND		0.040	0.0048				10/17/24 09:25	
Chloroform	ND		0.020	0.0042				10/17/24 09:25	
Chloromethane	ND		0.060		mg/Kg			10/17/24 09:25	
cis-1,2-Dichloroethene	ND		0.060		mg/Kg			10/17/24 09:25	
cis-1,3-Dichloropropene	ND		0.020	0.0040				10/17/24 09:25	
Dibromochloromethane	ND		0.020	0.0049				10/17/24 09:25	
Dibromomethane	ND		0.040	0.0074				10/17/24 09:25	
Dichlorodifluoromethane	ND		0.25		mg/Kg			10/17/24 09:25	
Ethylbenzene	ND		0.040	0.0091	0 0			10/17/24 09:25	
Hexachlorobutadiene	ND		0.10		mg/Kg			10/17/24 09:25	
sopropylbenzene	ND		0.040	0.0086				10/17/24 09:25	
Methyl tert-butyl ether	ND		0.040	0.0060				10/17/24 09:25	
Methylene Chloride	0.038		0.25		mg/Kg			10/17/24 09:25	
n-Xylene & p-Xylene	ND	•	0.23	0.020				10/17/24 09:25	
Naphthalene	ND		0.040		mg/Kg			10/17/24 09:25	
n-Butylbenzene	ND		0.040		mg/Kg			10/17/24 09:25	
N-Propylbenzene	ND ND		0.040		mg/Kg			10/17/24 09:25	
n-Propylberizerie p-Xylene	ND ND		0.040					10/17/24 09:25	
sec-Butylbenzene	ND ND		0.040	0.0050 0.0086				10/17/24 09:25	

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-SO-20241009

Lab Sample ID: 580-144769-21 **Matrix: Solid**

Date Collected: 10/09/24 13:00 Date Received: 10/11/24 12:30

Method: SW846 8260D - Vo	olatile Organic	Compoun	ds by GC/MS	(Conti	inued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		0.040	0.013	mg/Kg		10/17/24 07:47	10/17/24 09:25	1
t-Butylbenzene	ND		0.040	0.0077	mg/Kg		10/17/24 07:47	10/17/24 09:25	1
Tetrachloroethene	ND		0.040	0.0053	mg/Kg		10/17/24 07:47	10/17/24 09:25	1
Toluene	ND		0.060	0.014	mg/Kg		10/17/24 07:47	10/17/24 09:25	1
trans-1,2-Dichloroethene	ND		0.060	0.015	mg/Kg		10/17/24 07:47	10/17/24 09:25	1
trans-1,3-Dichloropropene	ND		0.040	0.0070	mg/Kg		10/17/24 07:47	10/17/24 09:25	1
Trichloroethene	ND		0.040	0.010	mg/Kg		10/17/24 07:47	10/17/24 09:25	1
Trichlorofluoromethane	ND		0.080	0.026	mg/Kg		10/17/24 07:47	10/17/24 09:25	1
Vinyl chloride	ND		0.10	0.019	mg/Kg		10/17/24 07:47	10/17/24 09:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				10/17/24 07:47	10/17/24 09:25	1
4-Bromofluorobenzene (Surr)	102		80 - 120				10/17/24 07:47	10/17/24 09:25	1
Dibromofluoromethane (Surr)	98		80 - 120				10/17/24 07:47	10/17/24 09:25	1
Toluene-d8 (Surr)	102		80 - 120				10/17/24 07:47	10/17/24 09:25	1

Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	- RA					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	*1	0.10	0.039	mg/Kg		10/17/24 10:00	10/17/24 13:39	1
Chloroethane	ND		0.082	0.021	mg/Kg		10/17/24 10:00	10/17/24 13:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		80 - 121				10/17/24 10:00	10/17/24 13:39	1
4-Bromofluorobenzene (Surr)	100		80 - 120				10/17/24 10:00	10/17/24 13:39	1
Dibromofluoromethane (Surr)	97		80 - 120				10/17/24 10:00	10/17/24 13:39	1
Toluene-d8 (Surr)	100		80 - 120				10/17/24 10:00	10/17/24 13:39	1

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-57-SO-42.4-20241009

Lab Sample ID: 580-144769-22 Date Collected: 10/09/24 14:05 **Matrix: Solid**

Date Received: 10/11/24 12:30

Method: SW846 8260D - Vola Analyte	Result Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND ND	0.017	0.0041	mg/Kg		10/17/24 07:47	10/17/24 15:17	
1,1,1-Trichloroethane	ND	0.033	0.0038	mg/Kg		10/17/24 07:47	10/17/24 15:17	
1,1,2,2-Tetrachloroethane	ND	0.017	0.0063	mg/Kg		10/17/24 07:47	10/17/24 15:17	
1,1,2-Trichloroethane	ND	0.017	0.0061	mg/Kg		10/17/24 07:47	10/17/24 15:17	
1,1-Dichloroethane	ND	0.033	0.0076	mg/Kg		10/17/24 07:47	10/17/24 15:17	
1,1-Dichloroethene	ND	0.033	0.010	mg/Kg		10/17/24 07:47	10/17/24 15:17	
1,1-Dichloropropene	ND	0.033	0.0044			10/17/24 07:47	10/17/24 15:17	
1,2,3-Trichlorobenzene	ND	0.066	0.033	mg/Kg		10/17/24 07:47	10/17/24 15:17	
1,2,3-Trichloropropane	ND	0.033	0.0095			10/17/24 07:47	10/17/24 15:17	
1,2,4-Trichlorobenzene	ND	0.066		mg/Kg		10/17/24 07:47	10/17/24 15:17	
1,2,4-Trimethylbenzene	ND	0.033	0.011			10/17/24 07:47	10/17/24 15:17	
1,2-Dibromo-3-Chloropropane	ND	0.050		mg/Kg			10/17/24 15:17	
1,2-Dibromoethane	ND	0.017	0.0031			10/17/24 07:47	10/17/24 15:17	
1,2-Dichlorobenzene	ND	0.033	0.0072				10/17/24 15:17	
1,2-Dichloroethane	ND	0.017	0.0045				10/17/24 15:17	
1,2-Dichloropropane	ND	0.017	0.0055				10/17/24 15:17	
1,3,5-Trimethylbenzene	ND	0.033	0.0063				10/17/24 15:17	
1,3-Dichlorobenzene	ND	0.050		mg/Kg			10/17/24 15:17	
1,3-Dichloropropane	ND	0.050	0.0046				10/17/24 15:17	
1.4-Dichlorobenzene	ND	0.050	0.0089				10/17/24 15:17	
2,2-Dichloropropane	ND	0.033		mg/Kg			10/17/24 15:17	
2-Chlorotoluene	ND	0.033	0.0073				10/17/24 15:17	
4-Chlorotoluene	ND	0.033	0.0070				10/17/24 15:17	
4-Isopropyltoluene	ND	0.033	0.0084	0 0			10/17/24 15:17	
Benzene	ND	0.033	0.0031				10/17/24 15:17	
Bromobenzene	ND	0.033	0.0031				10/17/24 15:17	
Bromochloromethane	ND	0.033	0.0051				10/17/24 15:17	
Bromodichloromethane	ND	0.033	0.0031				10/17/24 15:17	
Bromoform	ND ND	0.033	0.0043				10/17/24 15:17	
Carbon tetrachloride	ND ND	0.033	0.0037				10/17/24 15:17	
		0.017					10/17/24 15:17	
Chlorobenzene Chloroform	0.054 ND	0.033	0.0040 0.0035				10/17/24 15:17	
Chloromethane	ND ND	0.017					10/17/24 15:17	
	ND ND		0.0083				10/17/24 15:17	
cis-1,2-Dichloroethene	ND ND	0.050		mg/Kg			10/17/24 15:17	
cis-1,3-Dichloropropene		0.017	0.0033					
Dibromochloromethane	ND	0.017	0.0040				10/17/24 15:17	
Dishlare diffuser methods	ND	0.033		mg/Kg			10/17/24 15:17	
Dichlorodifluoromethane	ND	0.21		mg/Kg			10/17/24 15:17	
Ethylbenzene	ND	0.033	0.0075				10/17/24 15:17	
Hexachlorobutadiene	ND	0.083		mg/Kg			10/17/24 15:17	
Isopropylbenzene	ND ND	0.033	0.0071				10/17/24 15:17	
Methyl tert-butyl ether	ND	0.033	0.0050				10/17/24 15:17	
Methylene Chloride	0.033 J	0.21		mg/Kg			10/17/24 15:17	
m-Xylene & p-Xylene	ND	0.033	0.0059				10/17/24 15:17	
Naphthalene	ND	0.12		mg/Kg			10/17/24 15:17	
n-Butylbenzene	ND	0.033		mg/Kg			10/17/24 15:17	
N-Propylbenzene	ND	0.033		mg/Kg			10/17/24 15:17	
o-Xylene	ND	0.033	0.0041				10/17/24 15:17	
sec-Butylbenzene	ND	0.033	0.0071	mg/Kg		10/17/24 07:47	10/17/24 15:17	

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12/10/2024 (Rev. 2)

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-57-SO-42.4-20241009

Date Collected: 10/09/24 14:05

Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-22

Method: SW846 8260D - Vo	latile Organic C	Compound	ds by GC/MS	(Conti	nued)				
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		0.033	0.010	mg/Kg		10/17/24 07:47	10/17/24 15:17	1
t-Butylbenzene	ND		0.033	0.0064	mg/Kg		10/17/24 07:47	10/17/24 15:17	1
Tetrachloroethene	ND		0.033	0.0044	mg/Kg		10/17/24 07:47	10/17/24 15:17	1
Toluene	ND		0.050	0.011	mg/Kg		10/17/24 07:47	10/17/24 15:17	1
trans-1,2-Dichloroethene	ND		0.050	0.012	mg/Kg		10/17/24 07:47	10/17/24 15:17	1
trans-1,3-Dichloropropene	ND		0.033	0.0058	mg/Kg		10/17/24 07:47	10/17/24 15:17	1
Trichloroethene	ND		0.033	0.0085	mg/Kg		10/17/24 07:47	10/17/24 15:17	1
Trichlorofluoromethane	ND		0.066	0.021	mg/Kg		10/17/24 07:47	10/17/24 15:17	1
Vinyl chloride	ND		0.083	0.015	mg/Kg		10/17/24 07:47	10/17/24 15:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				10/17/24 07:47	10/17/24 15:17	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/17/24 07:47	10/17/24 15:17	1
Dibromofluoromethane (Surr)	97		80 - 120				10/17/24 07:47	10/17/24 15:17	1
Toluene-d8 (Surr)	103		80 - 120				10/17/24 07:47	10/17/24 15:17	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	*1	0.10	0.038	mg/Kg		10/17/24 10:00	10/17/24 19:59	1
Chloroethane	ND		0.080	0.021	mg/Kg		10/17/24 10:00	10/17/24 19:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		80 - 121				10/17/24 10:00	10/17/24 19:59	1
4-Bromofluorobenzene (Surr)	97		80 - 120				10/17/24 10:00	10/17/24 19:59	1
Dibromofluoromethane (Surr)	95		80 - 120				10/17/24 10:00	10/17/24 19:59	1
Toluene-d8 (Surr)	100		80 - 120				10/17/24 10:00	10/17/24 19:59	1

General Chemistry Analyte	Result Qua	lifier RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	78.9	0.1	0.1	%			10/18/24 15:11	1
Percent Moisture (SM22 2540G)	21.1	0.1	0.1	%			10/18/24 15:11	1

Method: 8260D - Volatile Organic Compounds by GC/MS

MD MD

Lab Sample ID: MB 580-474967/3-A

Matrix: Solid

Analysis Batch: 474979

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 474967

	IVID	IVID							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		0.10	0.038	mg/Kg		10/17/24 10:00	10/17/24 13:16	1
Chloroethane	ND		0.080	0.021	mg/Kg		10/17/24 10:00	10/17/24 13:16	1
	MB	MB							
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/17/24 10:00	10/17/24 13:16	1
4-Bromofluorobenzene (Surr)	99		80 - 120				10/17/24 10:00	10/17/24 13:16	1
Dibromofluoromethane (Surr)	103		80 - 120				10/17/24 10:00	10/17/24 13:16	1

80 - 120

LCS LCS

0.467

0.440

Result Qualifier

Unit

mg/Kg

mg/Kg

Spike

Added

0.800

0.800

Lab Sample ID: LCS 580-474967/1-A

Matrix: Solid

Bromomethane

Chloroethane

Analyte

Toluene-d8 (Surr)

Analysis Batch: 474979

Client Sample ID: Lab Control Sample

26 - 150

10/17/24 10:00 10/17/24 13:16

Prep Type: Total/NA **Prep Batch: 474967**

%Rec D %Rec Limits 58 55 - 150

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		80 - 121
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	95		80 - 120
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: LCSD 580-474967/2-A

Matrix: Solid

Analysis Batch: 474979

Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

55

Prep Batch: 474967

Spike LCSD LCSD %Rec **RPD** Added Result Qualifier RPD Limit Analyte Unit D %Rec Limits Bromomethane 0.800 0.637 *1 mg/Kg 80 55 - 150 31 26 Chloroethane 0.800 0.581 73 26 - 150 40 mg/Kg 27

LCSD LCSD Surrogate %Recovery Qualifier Limits 1,2-Dichloroethane-d4 (Surr) 80 - 121 90 4-Bromofluorobenzene (Surr) 100 80 - 120 80 - 120 Dibromofluoromethane (Surr) 98 Toluene-d8 (Surr) 97 80 - 120

Lab Sample ID: MB 580-475022/3-A

Matrix: Solid

Analysis Batch: 475026

Client Sample ID: Method Blank Prep Type: Total/NA

Prep Batch: 475022

	MB	МВ							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.020	0.0050	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,1,1-Trichloroethane	ND		0.040	0.0046	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,1,2,2-Tetrachloroethane	ND		0.020	0.0076	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,1,2-Trichloroethane	ND		0.020	0.0074	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,1-Dichloroethane	ND		0.040	0.0092	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,1-Dichloroethene	ND		0.040	0.012	mg/Kg		10/17/24 07:47	10/17/24 09:04	1

QC Sample Results

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

MB MB

Lab Sample ID: MB 580-475022/3-A

Matrix: Solid

Toluene

trans-1,2-Dichloroethene

trans-1,3-Dichloropropene

Analysis Batch: 475026

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 475022

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloropropene	ND		0.040	0.0053	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,2,3-Trichlorobenzene	ND		0.080	0.040	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,2,3-Trichloropropane	ND		0.040	0.012	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,2,4-Trichlorobenzene	ND		0.080	0.043	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,2,4-Trimethylbenzene	ND		0.040	0.014	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,2-Dibromo-3-Chloropropane	ND		0.060	0.015	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,2-Dibromoethane	ND		0.020	0.0038	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,2-Dichlorobenzene	ND		0.040	0.0087	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,2-Dichloroethane	ND		0.020	0.0055	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,2-Dichloropropane	ND		0.020	0.0066	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,3,5-Trimethylbenzene	ND		0.040	0.0076	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,3-Dichlorobenzene	ND		0.060	0.013	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,3-Dichloropropane	ND		0.060	0.0056	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
1,4-Dichlorobenzene	ND		0.060	0.011	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
2,2-Dichloropropane	ND		0.040	0.012	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
2-Chlorotoluene	ND		0.040	0.0088	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
4-Chlorotoluene	ND		0.040	0.0098	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
4-Isopropyltoluene	ND		0.040	0.010	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Benzene	ND		0.020	0.0038	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Bromobenzene	ND		0.040	0.0042	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Bromochloromethane	ND		0.040	0.0062	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Bromodichloromethane	ND		0.040	0.0055	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Bromoform	ND		0.040	0.0045	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Carbon tetrachloride	ND		0.020	0.0044	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Chlorobenzene	ND		0.040	0.0048	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Chloroform	ND		0.020	0.0042	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Chloromethane	ND		0.060	0.010	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
cis-1,2-Dichloroethene	ND		0.060	0.013	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
cis-1,3-Dichloropropene	ND		0.020	0.0040	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Dibromochloromethane	ND		0.020	0.0049	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Dibromomethane	ND		0.040	0.0074	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Dichlorodifluoromethane	ND		0.25	0.046	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Ethylbenzene	ND		0.040	0.0091	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Hexachlorobutadiene	0.0487	J	0.10	0.024	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Isopropylbenzene	ND		0.040	0.0086	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Methyl tert-butyl ether	ND		0.040	0.0060	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Methylene Chloride	ND		0.25	0.026	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
m-Xylene & p-Xylene	ND		0.040	0.0071	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Naphthalene	ND		0.15	0.039	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
n-Butylbenzene	ND		0.040	0.019	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
N-Propylbenzene	ND		0.040	0.015	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
o-Xylene	ND		0.040	0.0050	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
sec-Butylbenzene	ND		0.040	0.0086	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Styrene	ND		0.040	0.013	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
t-Butylbenzene	ND		0.040	0.0077	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Tetrachloroethene	ND		0.040	0.0053	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
T.1	ND		0.000	0.044			40/47/04 07 47	40/47/04 00 04	

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10/17/24 07:47 10/17/24 09:04

10/17/24 07:47 10/17/24 09:04

10/17/24 07:47 10/17/24 09:04

0.060

0.060

0.040

0.014 mg/Kg

0.015 mg/Kg

0.0070 mg/Kg

ND

ND

ND

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-475022/3-A

Matrix: Solid

Analysis Batch: 475026

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 475022

_	MB MB					•		
Analyte	Result Quali	ifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	ND	0.040	0.010	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Trichlorofluoromethane	ND	0.080	0.026	mg/Kg		10/17/24 07:47	10/17/24 09:04	1
Vinyl chloride	ND	0.10	0.019	mg/Kg		10/17/24 07:47	10/17/24 09:04	1

MB MB

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100	80 - 121	10/17/24 07:47	10/17/24 09:04	1
4-Bromofluorobenzene (Surr)	100	80 - 120	10/17/24 07:47	10/17/24 09:04	1
Dibromofluoromethane (Surr)	102	80 - 120	10/17/24 07:47	10/17/24 09:04	1
Toluene-d8 (Surr)	100	80 - 120	10/17/24 07:47	10/17/24 09:04	1

Lab Sample ID: LCS 580-475022/1-A

Matrix: Solid

Analysis Batch: 475026

Client Sample ID: Lab Control Sample

Prep Type: Total/NA Prep Batch: 475022

Allalysis Batch. 473020	Spike	LCS	LCS				%Rec
Analyte	Added	_	Qualifier	Unit	D	%Rec	Limits
1,1,1,2-Tetrachloroethane	0.800	0.825		mg/Kg	_ =	103	79 - 128
1,1,1-Trichloroethane	0.800	0.735		mg/Kg		92	78 - 135
1,1,2,2-Tetrachloroethane	0.800	0.842		mg/Kg		105	77 - 122
1,1,2-Trichloroethane	0.800	0.839		mg/Kg		105	80 - 123
1,1-Dichloroethane	0.800	0.744		mg/Kg		93	78 - 126
1,1-Dichloroethene	0.800	0.784		mg/Kg		98	73 - 134
1,1-Dichloropropene	0.800	0.775		mg/Kg		97	76 - 140
1,2,3-Trichlorobenzene	0.800	0.820		mg/Kg		102	58 - 146
1,2,3-Trichloropropane	0.800	0.770		mg/Kg		96	77 - 127
1,2,4-Trichlorobenzene	0.800	0.793		mg/Kg		99	74 - 131
1,2,4-Trimethylbenzene	0.800	0.791		mg/Kg		99	73 - 138
1,2-Dibromo-3-Chloropropane	0.800	0.695		mg/Kg		87	64 - 129
1,2-Dibromoethane	0.800	0.789		mg/Kg		99	77 - 123
1,2-Dichlorobenzene	0.800	0.827		mg/Kg		103	78 - 126
1,2-Dichloroethane	0.800	0.727		mg/Kg		91	76 - 124
1,2-Dichloropropane	0.800	0.757		mg/Kg		95	73 - 130
1,3,5-Trimethylbenzene	0.800	0.782		mg/Kg		98	72 - 134
1,3-Dichlorobenzene	0.800	0.741		mg/Kg		93	78 - 132
1,3-Dichloropropane	0.800	0.768		mg/Kg		96	80 - 120
1,4-Dichlorobenzene	0.800	0.804		mg/Kg		101	77 - 123
2,2-Dichloropropane	0.800	0.746		mg/Kg		93	75 - 134
2-Chlorotoluene	0.800	0.764		mg/Kg		96	77 - 134
4-Chlorotoluene	0.800	0.745		mg/Kg		93	71 - 137
4-Isopropyltoluene	0.800	0.836		mg/Kg		105	71 - 142
Benzene	0.800	0.812		mg/Kg		101	79 - 135
Bromobenzene	0.800	0.779		mg/Kg		97	78 - 126
Bromochloromethane	0.800	0.795		mg/Kg		99	76 - 131
Bromodichloromethane	0.800	0.773		mg/Kg		97	78 - 125
Bromoform	0.800	0.745		mg/Kg		93	71 - 130
Carbon tetrachloride	0.800	0.766		mg/Kg		96	76 - 140
Chlorobenzene	0.800	0.841		mg/Kg		105	80 - 125
Chloroform	0.800	0.729		mg/Kg		91	74 - 133
Chloromethane	0.800	0.780		mg/Kg		97	52 - 142

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Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-475022/1-A

Matrix: Solid

Client: ERM-West

Analysis Batch: 475026

Prep Type: Total/NA Prep Batch: 475022 %Rec

Analysis Baton: 470020	Spike	LCS	LCS				%Rec
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
cis-1,2-Dichloroethene	0.800	0.757		mg/Kg		95	80 - 125
cis-1,3-Dichloropropene	0.800	0.763		mg/Kg		95	80 - 122
Dibromochloromethane	0.800	0.826		mg/Kg		103	75 - 125
Dibromomethane	0.800	0.771		mg/Kg		96	72 - 130
Dichlorodifluoromethane	0.800	0.814		mg/Kg		102	33 - 150
Ethylbenzene	0.800	0.774		mg/Kg		97	80 - 135
Hexachlorobutadiene	0.800	0.831		mg/Kg		104	65 - 145
Isopropylbenzene	0.800	0.900		mg/Kg		112	80 - 131
Methyl tert-butyl ether	0.800	0.764		mg/Kg		96	71 - 126
Methylene Chloride	0.800	0.808		mg/Kg		101	56 - 140
m-Xylene & p-Xylene	0.800	0.762		mg/Kg		95	80 - 132
Naphthalene	0.800	0.782		mg/Kg		98	56 - 145
n-Butylbenzene	0.800	0.801		mg/Kg		100	69 - 143
N-Propylbenzene	0.800	0.761		mg/Kg		95	78 - 133
o-Xylene	0.800	0.811		mg/Kg		101	80 - 132
sec-Butylbenzene	0.800	0.801		mg/Kg		100	71 - 143
Styrene	0.800	0.846		mg/Kg		106	79 - 129
t-Butylbenzene	0.800	0.785		mg/Kg		98	72 - 144
Tetrachloroethene	0.800	0.766		mg/Kg		96	75 - 141
Toluene	0.800	0.823		mg/Kg		103	75 - 125
trans-1,2-Dichloroethene	0.800	0.746		mg/Kg		93	77 - 134
trans-1,3-Dichloropropene	0.800	0.839		mg/Kg		105	80 - 121
Trichloroethene	0.800	0.753		mg/Kg		94	80 - 134
Trichlorofluoromethane	0.800	0.769		mg/Kg		96	71 - 150

0.800

0.880

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	96		80 - 121
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	99		80 - 120
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: LCSD 580-475022/2-A

Matrix: Solid

Vinyl chloride

Analysis Batch: 475026

Chent 2	ampie iu:	Lab	Control	Sample	։

110

mg/Kg

62 - 144

Prep Type: Total/NA **Prep Batch: 475022**

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1,1,2-Tetrachloroethane	0.800	0.830		mg/Kg		104	79 - 128	1	20
1,1,1-Trichloroethane	0.800	0.765		mg/Kg		96	78 - 135	4	20
1,1,2,2-Tetrachloroethane	0.800	0.850		mg/Kg		106	77 - 122	1	20
1,1,2-Trichloroethane	0.800	0.846		mg/Kg		106	80 - 123	1	20
1,1-Dichloroethane	0.800	0.763		mg/Kg		95	78 - 126	3	20
1,1-Dichloroethene	0.800	0.812		mg/Kg		101	73 - 134	3	25
1,1-Dichloropropene	0.800	0.800		mg/Kg		100	76 - 140	3	20
1,2,3-Trichlorobenzene	0.800	0.853		mg/Kg		107	58 - 146	4	28
1,2,3-Trichloropropane	0.800	0.827		mg/Kg		103	77 - 127	7	20
1,2,4-Trichlorobenzene	0.800	0.848		mg/Kg		106	74 - 131	7	26
1,2,4-Trimethylbenzene	0.800	0.843		mg/Kg		105	73 - 138	6	22

QC Sample Results

Spike

Client: ERM-West Job ID: 580-144769-1

LCSD LCSD

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-475022/2-A

Matrix: Solid

Trichloroethene Trichlorofluoromethane

Vinyl chloride

Analysis Batch: 475026

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA Prep Batch: 475022 %Rec RPD

	Spike LCS		LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,2-Dibromo-3-Chloropropane	0.800	0.739		mg/Kg		92	64 - 129	6	40
1,2-Dibromoethane	0.800	0.828		mg/Kg		104	77 - 123	5	20
1,2-Dichlorobenzene	0.800	0.878		mg/Kg		110	78 - 126	6	20
1,2-Dichloroethane	0.800	0.765		mg/Kg		96	76 - 124	5	20
1,2-Dichloropropane	0.800	0.789		mg/Kg		99	73 - 130	4	20
1,3,5-Trimethylbenzene	0.800	0.845		mg/Kg		106	72 - 134	8	24
1,3-Dichlorobenzene	0.800	0.791		mg/Kg		99	78 - 132	7	20
1,3-Dichloropropane	0.800	0.792		mg/Kg		99	80 - 120	3	20
1,4-Dichlorobenzene	0.800	0.866		mg/Kg		108	77 - 123	7	20
2,2-Dichloropropane	0.800	0.784		mg/Kg		98	75 - 134	5	20
2-Chlorotoluene	0.800	0.806		mg/Kg		101	77 - 134	5	21
4-Chlorotoluene	0.800	0.794		mg/Kg		99	71 - 137	6	21
4-Isopropyltoluene	0.800	0.896		mg/Kg		112	71 - 142	7	29
Benzene	0.800	0.834		mg/Kg		104	79 - 135	3	20
Bromobenzene	0.800	0.827		mg/Kg		103	78 - 126	6	20
Bromochloromethane	0.800	0.811		mg/Kg		101	76 - 131	2	20
Bromodichloromethane	0.800	0.803		mg/Kg		100	78 - 125	4	20
Bromoform	0.800	0.781		mg/Kg		98	71 - 130	5	20
Carbon tetrachloride	0.800	0.797		mg/Kg		100	76 - 140	4	20
Chlorobenzene	0.800	0.847		mg/Kg		106	80 - 125	1	20
Chloroform	0.800	0.760		mg/Kg		95	74 - 133	4	20
Chloromethane	0.800	0.800		mg/Kg		100	52 - 142	3	40
cis-1,2-Dichloroethene	0.800	0.803		mg/Kg		100	80 - 125	6	20
cis-1,3-Dichloropropene	0.800	0.781		mg/Kg		98	80 - 122	2	20
Dibromochloromethane	0.800	0.838		mg/Kg		105	75 - 125	1	20
Dibromomethane	0.800	0.800		mg/Kg		100	72 - 130	4	40
Dichlorodifluoromethane	0.800	0.809		mg/Kg		101	33 - 150	1	31
Ethylbenzene	0.800	0.789		mg/Kg		99	80 - 135	2	20
Hexachlorobutadiene	0.800	0.829		mg/Kg		104	65 - 145	0	36
Isopropylbenzene	0.800	0.922		mg/Kg		115	80 - 131	2	20
Methyl tert-butyl ether	0.800	0.805		mg/Kg		101	71 - 126	5	20
Methylene Chloride	0.800	0.851		mg/Kg		106	56 - 140	5	20
m-Xylene & p-Xylene	0.800	0.781		mg/Kg		98	80 - 132	3	20
Naphthalene	0.800	0.812		mg/Kg		101	56 - 145	4	25
n-Butylbenzene	0.800	0.858		mg/Kg		107	69 - 143	7	31
N-Propylbenzene	0.800	0.834		mg/Kg		104	78 - 133	9	24
o-Xylene	0.800	0.839		mg/Kg		105	80 - 132	3	20
sec-Butylbenzene	0.800	0.857		mg/Kg		107	71 - 143	7	29
Styrene	0.800	0.873		mg/Kg		109	79 - 129	3	20
t-Butylbenzene	0.800	0.852		mg/Kg		107	72 - 144	8	27
Tetrachloroethene	0.800	0.779		mg/Kg		97	75 - 141	2	20
Toluene	0.800	0.854		mg/Kg		107	75 - 125	4	20
trans-1,2-Dichloroethene	0.800	0.772		mg/Kg		97	77 - 134	3	20
trans-1,3-Dichloropropene	0.800	0.852		mg/Kg		107	80 - 121	2	20
Trichlaracthana	0.800	0.765		5. J		06	00 124	2	20

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20

30

20

0.765

0.809

0.916

mg/Kg

mg/Kg

mg/Kg

96

101

115

80 - 134

71 - 150

62 - 144

0.800

0.800

0.800

QC Sample Results

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

LCSD LCSD

Lab Sample ID: LCSD 580-475022/2-A

Matrix: Solid

Analysis Batch: 475026

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 475022

%Recovery Qualifier Limits Surrogate 1,2-Dichloroethane-d4 (Surr) 95 80 - 121 4-Bromofluorobenzene (Surr) 97 80 - 120 99 80 - 120 Dibromofluoromethane (Surr) Toluene-d8 (Surr) 100 80 - 120

Lab Sample ID: 580-144769-7 MS

Matrix: Solid

Client Sample ID: PDI-50b-SO-44.9-20241010

Prep Type: Total/NA

Prep Batch: 475022

Analysis Batch: 475026 Sample Sample Spike MS MS %Rec Result Qualifier Added Result Qualifier Unit %Rec Limits ND F2 0.601 0.472 79 - 128 mg/Kg 79

Analyte 1.1.1.2-Tetrachloroethane 1,1,1-Trichloroethane ND F1F2 0.601 0.466 F1 mg/Kg 77 78 - 135 1,1,2,2-Tetrachloroethane ND F2 0.601 0.472 mg/Kg 79 77 - 122 ND F2 0.484 1,1,2-Trichloroethane 0.601 mg/Kg 80 80 - 123 1,1-Dichloroethane ND F1F2 0.601 0.457 F1 mg/Kg 76 78 - 126 1,1-Dichloroethene ND F2 0.601 0.461 77 73 - 134 mg/Kg 81 1,1-Dichloropropene ND F2 0.601 0.486 mg/Kg 76 - 140ND F2 0.601 0.400 67 58 - 146 1,2,3-Trichlorobenzene mg/Kg 1,2,3-Trichloropropane ND F1 F2 0.601 0.453 F1 mg/Kg 75 77 - 127 74 - 131 1,2,4-Trichlorobenzene ND F1F2 0.601 0.418 F1 70 mg/Kg 1,2,4-Trimethylbenzene 0.601 0.469 78 73 - 138 ND F2 mg/Kg 0.601 0.390 mg/Kg 65 64 - 129 1,2-Dibromo-3-Chloropropane ND F2 1,2-Dibromoethane ND F1F2 0.601 0.456 F1 mg/Kg 76 77 - 1231,2-Dichlorobenzene ND F2 0.601 0.487 81 78 - 126 mg/Kg 71 1,2-Dichloroethane ND F1 F2 0.601 0.428 F1 mg/Kg 76 - 124 1.2-Dichloropropane ND F2 0.601 0.442 mg/Kg 74 73 - 1300.462 77 1,3,5-Trimethylbenzene ND F2 0.601 mg/Kg 72 - 134ND F1F2 0.442 F1 1,3-Dichlorobenzene 0.601 mg/Kg 74 78 - 132 ND F1F2 0.436 F1 72 80 - 120 1,3-Dichloropropane 0.601 mg/Kg 1,4-Dichlorobenzene ND F2 0.601 0.481 mg/Kg 80 77 - 123 0.489 ND F2 0.601 81 75 - 1342,2-Dichloropropane mg/Kg 2-Chlorotoluene F1 F2 0.601 0.452 F1 75 77 - 134ND mg/Kg 74 4-Chlorotoluene ND F2 0.601 0.446 mg/Kg 71 - 1374-Isopropyltoluene ND 0.601 0.500 83 71 - 142 mg/Kg ND F2 0.601 0.483 mg/Kg 80 79 - 135 Benzene Bromobenzene ND F1F2 0.601 0.454 F1 mg/Kg 76 78 - 126 Bromochloromethane ND F2 0.601 0.464 mg/Kg 77 76 - 131 Bromodichloromethane ND F1F2 0.433 F1 72 78 - 125 0.601 mg/Kg **Bromoform** ND F1F2 0.601 0.416 F1 mg/Kg 69 71 - 130Carbon tetrachloride ND F2 0.601 0.483 mg/Kg 80 76 - 140Chlorobenzene ND F2 0.601 0.497 83 80 - 125 mg/Kg 74 74 - 133 Chloroform ND F2 0.601 0.446 mg/Kg Chloromethane 0.601 0.434 72 52 - 142 ND F2 mg/Kg cis-1,2-Dichloroethene ND F1 F2 0.601 0.467 F1 78 80 - 125 mg/Kg cis-1,3-Dichloropropene ND F1 F2 0.601 0.451 F1 75 80 - 122 mg/Kg 78 Dibromochloromethane ND F2 0.601 0.467 mg/Kg 75 - 125 Dibromomethane ND 0.601 0.457 mg/Kg 76 72 - 130Dichlorodifluoromethane ND F2 0.601 0.463 mg/Kg 77 33 - 150

Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 580-144769-7 MS

Matrix: Solid

Client: ERM-West

Analysis Batch: 475026

Client Sample ID: PDI-50b-SO-44.9-20241010

Prep Type: Total/NA

Prep Batch: 475022

•	Sample	Sample	Spike	MS	MS			%Rec
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D %Rec	Limits
Ethylbenzene	ND	F1 F2	0.601	0.455	F1	mg/Kg	76	80 - 135
Hexachlorobutadiene	ND	F2	0.601	0.469		mg/Kg	78	65 - 145
Isopropylbenzene	ND	F1 F2	0.601	0.476	F1	mg/Kg	79	80 - 131
Methyl tert-butyl ether	ND	F2	0.601	0.430		mg/Kg	72	71 - 126
Methylene Chloride	0.027	J F2	0.601	0.504		mg/Kg	79	56 - 140
m-Xylene & p-Xylene	ND	F1 F2	0.601	0.451	F1	mg/Kg	75	80 - 132
Naphthalene	ND	F2	0.601	0.367		mg/Kg	61	56 - 145
n-Butylbenzene	ND	F2	0.601	0.467		mg/Kg	78	69 - 143
N-Propylbenzene	ND	F1 F2	0.601	0.457	F1	mg/Kg	76	78 - 133
o-Xylene	ND	F1 F2	0.601	0.471	F1	mg/Kg	78	80 - 132
sec-Butylbenzene	ND	F2	0.601	0.473		mg/Kg	79	71 - 143
Styrene	ND	F2	0.601	0.488		mg/Kg	81	79 - 129
t-Butylbenzene	ND	F2	0.601	0.467		mg/Kg	78	72 - 144
Tetrachloroethene	ND	F2	0.601	0.469		mg/Kg	78	75 - 141
Toluene	ND	F2	0.601	0.485		mg/Kg	81	75 - 125
trans-1,2-Dichloroethene	ND	F1 F2	0.601	0.460	F1	mg/Kg	76	77 - 134
trans-1,3-Dichloropropene	ND	F1 F2	0.601	0.451	F1	mg/Kg	75	80 - 121
Trichloroethene	ND	F1 F2	0.601	0.444	F1	mg/Kg	74	80 - 134
Trichlorofluoromethane	ND	F1 F2	0.601	0.404	F1	mg/Kg	67	71 - 150
Vinyl chloride	ND	F2	0.601	0.458		mg/Kg	76	62 - 144

MS MS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		80 - 121
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	100		80 - 120

Lab Sample ID: 580-144769-7 MSD

Matrix: Solid

Analysis Batch: 475026

Client Sample I	D: PDI-50	b-SO	-44.9-2	2 024 1	1010
		_	_		

Prep Type: Total/NA

Prep Batch: 475022

Spike MSD MSD Sample Sample %Rec **RPD** Result Qualifier Added Result Qualifier Limit Analyte Unit %Rec Limits **RPD** 0.676 F2 ND F2 0.719 1,1,1,2-Tetrachloroethane mg/Kg 94 79 - 128 35 20 1,1,1-Trichloroethane ND F1 F2 0.719 0.682 F2 mg/Kg 95 78 - 135 38 20 ND F2 0.719 0.703 F2 98 77 - 122 39 20 1,1,2,2-Tetrachloroethane mg/Kg 1,1,2-Trichloroethane ND F2 0.719 0.691 F2 mg/Kg 96 80 - 123 35 20 1,1-Dichloroethane ND F1F2 0.719 0.676 F2 mg/Kg 94 78 - 126 39 20 0.719 0.703 F2 98 73 - 134 42 25 1,1-Dichloroethene ND F2 mg/Kg 1,1-Dichloropropene ND F2 0.719 0.720 F2 mg/Kg 100 76 - 140 39 20 0.665 F2 1,2,3-Trichlorobenzene ND F2 0.719 mg/Kg 92 58 - 146 50 28 1,2,3-Trichloropropane ND F1F2 0.719 0.708 F2 mg/Kg 98 77 - 127 44 20 74 - 131 92 1,2,4-Trichlorobenzene ND F1F2 0.719 0.665 F2 45 26 mg/Kg 1,2,4-Trimethylbenzene ND F2 0.719 0.723 F2 100 73 - 138 43 22 mg/Kg 1,2-Dibromo-3-Chloropropane ND F2 0.719 0.623 F2 mg/Kg 87 64 - 129 46 40 1,2-Dibromoethane ND F1F2 0.719 0.664 F2 92 77 - 123 37 20 mg/Kg 1.2-Dichlorobenzene ND F2 0.719 0.734 F2 102 78 - 126 40 20 mg/Kg 1,2-Dichloroethane ND F1F2 0.719 0.640 F2 mg/Kg 89 76 - 124 40 20 1,2-Dichloropropane ND F2 0.719 0.674 F2 mg/Kg 73 - 130

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Job ID: 580-144769-1

Client: ERM-West Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 580-144769-7 MSD

Matrix: Solid

Analysis Batch: 475026

Client Sample ID: PDI-50b-SO-44.9-20241010

Prep Type: Total/NA

Prep Batch: 475022

Analyte	•	Sample Qualifier	Spike Added		MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,3,5-Trimethylbenzene	ND	F2	0.719	0.703	F2	mg/Kg		98	72 - 134	41	24
1,3-Dichlorobenzene	ND	F1 F2	0.719	0.659	F2	mg/Kg		92	78 - 132	39	20
1,3-Dichloropropane	ND	F1 F2	0.719	0.656	F2	mg/Kg		91	80 - 120	40	20
1,4-Dichlorobenzene	ND	F2	0.719	0.729	F2	mg/Kg		101	77 - 123	41	20
2,2-Dichloropropane	ND	F2	0.719	0.708	F2	mg/Kg		98	75 - 134	37	20
2-Chlorotoluene	ND	F1 F2	0.719	0.688	F2	mg/Kg		96	77 - 134	41	21
4-Chlorotoluene	ND	F2	0.719	0.670	F2	mg/Kg		93	71 - 137	40	21
4-Isopropyltoluene	ND	F2	0.719	0.762	F2	mg/Kg		106	71 - 142	42	29
Benzene	ND	F2	0.719	0.725	F2	mg/Kg		101	79 - 135	40	20
Bromobenzene	ND	F1 F2	0.719	0.698	F2	mg/Kg		97	78 - 126	42	20
Bromochloromethane	ND	F2	0.719	0.679	F2	mg/Kg		94	76 - 131	38	20
Bromodichloromethane	ND	F1 F2	0.719	0.670	F2	mg/Kg		93	78 - 125	43	20
Bromoform	ND	F1 F2	0.719	0.630	F2	mg/Kg		88	71 - 130	41	20
Carbon tetrachloride	ND	F2	0.719	0.717	F2	mg/Kg		100	76 - 140	39	20
Chlorobenzene	ND	F2	0.719	0.715	F2	mg/Kg		99	80 - 125	36	20
Chloroform	ND	F2	0.719	0.662	F2	mg/Kg		92	74 - 133	39	20
Chloromethane	ND	F2	0.719	0.691	F2	mg/Kg		96	52 - 142	46	40
cis-1,2-Dichloroethene	ND	F1 F2	0.719	0.680	F2	mg/Kg		95	80 - 125	37	20
cis-1,3-Dichloropropene	ND	F1 F2	0.719	0.679	F2	mg/Kg		94	80 - 122	40	20
Dibromochloromethane	ND	F2	0.719	0.681		mg/Kg		95	75 - 125	37	20
Dibromomethane	ND		0.719	0.684		mg/Kg		95	72 - 130	40	40
Dichlorodifluoromethane	ND	F2	0.719	0.719	F2	mg/Kg		100	33 - 150	43	31
Ethylbenzene	ND	F1 F2	0.719	0.665		mg/Kg		92	80 - 135	37	20
Hexachlorobutadiene	ND	F2	0.719	0.751		mg/Kg		104	65 - 145	46	36
Isopropylbenzene	ND	F1 F2	0.719	0.697	F2	mg/Kg		97	80 - 131	38	20
Methyl tert-butyl ether	ND	F2	0.719	0.661	F2	mg/Kg		92	71 - 126	42	20
Methylene Chloride	0.027	J F2	0.719	0.729	F2	mg/Kg		98	56 - 140	37	20
m-Xylene & p-Xylene	ND	F1 F2	0.719	0.657		mg/Kg		91	80 - 132	37	20
Naphthalene	ND	F2	0.719	0.637		mg/Kg		89	56 - 145	54	25
n-Butylbenzene	ND	F2	0.719	0.753		mg/Kg		105	69 - 143	47	31
N-Propylbenzene	ND	F1 F2	0.719	0.704		mg/Kg		98	78 - 133	43	24
o-Xylene	ND	F1 F2	0.719	0.682	F2	mg/Kg		95	80 - 132	37	20
sec-Butylbenzene	ND	F2	0.719	0.738		mg/Kg		103	71 - 143	44	29
Styrene	ND	F2	0.719	0.707		mg/Kg		98	79 - 129	37	20
t-Butylbenzene	ND	F2	0.719	0.716	F2	mg/Kg		100	72 - 144	42	27
Tetrachloroethene	ND		0.719	0.656		mg/Kg		91	75 - 141	33	20
Toluene	ND		0.719	0.709		mg/Kg		99	75 - 125	37	20
trans-1,2-Dichloroethene		F1 F2	0.719	0.681		mg/Kg		95	77 - 134	39	20
trans-1,3-Dichloropropene		F1 F2	0.719	0.678		mg/Kg		94	80 - 121	40	20
Trichloroethene		F1 F2	0.719	0.662		mg/Kg		92	80 - 134	39	20
Trichlorofluoromethane		F1 F2	0.719	0.624		mg/Kg		87	71 - 150	43	30
Vinyl chloride	ND		0.719	0.663		mg/Kg		92	62 - 144	37	20

MSD MSD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		80 - 121
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120
Toluene-d8 (Surr)	98		80 - 120

QC Sample Results

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

MB MB

Lab Sample ID: MB 580-475029/5-A

Matrix: Solid

m-Xylene & p-Xylene

Naphthalene

o-Xylene

n-Butylbenzene

N-Propylbenzene

sec-Butylbenzene

Analysis Batch: 475093

Client Sample ID: Method Blank Prep Type: Total/NA Prep Batch: 475029

Result Qualifier RL **MDL** Unit Dil Fac Analyte D Prepared Analyzed 1,1,1,2-Tetrachloroethane ND 0.020 0.0050 mg/Kg 10/17/24 08:11 10/17/24 20:07 1,1,1-Trichloroethane ND 0.040 0.0046 mg/Kg 10/17/24 08:11 10/17/24 20:07 ND 0.020 0.0076 mg/Kg 10/17/24 20:07 1,1,2,2-Tetrachloroethane 10/17/24 08:11 1,1,2-Trichloroethane ND 0.020 0.0074 mg/Kg 10/17/24 08:11 10/17/24 20:07 1 1-Dichloroethane ND 0.040 0.0092 mg/Kg 10/17/24 08:11 10/17/24 20:07 0.012 mg/Kg 1,1-Dichloroethene ND 0.040 10/17/24 08:11 10/17/24 20:07 ND 0.040 0.0053 mg/Kg 10/17/24 20:07 1,1-Dichloropropene 10/17/24 08:11 1,2,3-Trichlorobenzene ND 0.080 0.040 mg/Kg 10/17/24 08:11 10/17/24 20:07 1,2,3-Trichloropropane ND 0.040 0.012 mg/Kg 10/17/24 08:11 10/17/24 20:07 1,2,4-Trichlorobenzene ND 0.080 0.043 mg/Kg 10/17/24 08:11 10/17/24 20:07 1,2,4-Trimethylbenzene ND 0.040 0.014 mg/Kg 10/17/24 08:11 10/17/24 20:07 1 1,2-Dibromo-3-Chloropropane ND 0.060 0.015 mg/Kg 10/17/24 08:11 10/17/24 20:07 1.2-Dibromoethane ND 0.020 0.0038 mg/Kg 10/17/24 08:11 10/17/24 20:07 0.0087 1,2-Dichlorobenzene ND 0.040 mg/Kg 10/17/24 08:11 10/17/24 20:07 1,2-Dichloroethane ND 0.020 0.0055 mg/Kg 10/17/24 08:11 10/17/24 20:07 ND 0.0066 10/17/24 08:11 10/17/24 20:07 1,2-Dichloropropane 0.020 mg/Kg 1,3,5-Trimethylbenzene ND 0.040 0.0076 mg/Kg 10/17/24 08:11 10/17/24 20:07 ND 0.060 0.013 mg/Kg 10/17/24 08:11 10/17/24 20:07 1.3-Dichlorobenzene 1,3-Dichloropropane ND 0.060 0.0056 mg/Kg 10/17/24 08:11 10/17/24 20:07 ND 0.011 mg/Kg 10/17/24 08:11 10/17/24 20:07 1.4-Dichlorobenzene 0.060 0.040 0.012 10/17/24 08:11 10/17/24 20:07 2,2-Dichloropropane ND mg/Kg 0.0088 2-Chlorotoluene ND 0.040 mg/Kg 10/17/24 08:11 10/17/24 20:07 4-Chlorotoluene ND 0.040 0.0098 mg/Kg 10/17/24 08:11 10/17/24 20:07 ND 0.040 0.010 10/17/24 08:11 10/17/24 20:07 4-Isopropyltoluene mg/Kg Benzene ND 0.020 0.0038 mg/Kg 10/17/24 08:11 10/17/24 20:07 Bromobenzene ND 0.040 0.0042 mg/Kg 10/17/24 08:11 10/17/24 20:07 ND 0.0062 mg/Kg Bromochloromethane 0.040 10/17/24 08:11 10/17/24 20:07 **Bromoform** ND 0.040 0.0045 mg/Kg 10/17/24 08:11 10/17/24 20:07 Carbon tetrachloride ND 0.020 0.0044 mg/Kg 10/17/24 08:11 10/17/24 20:07 Chlorobenzene 0.00789 J 0.040 0.0048 mg/Kg 10/17/24 08:11 10/17/24 20:07 Chloroform ND 0.020 0.0042 mg/Kg 10/17/24 08:11 10/17/24 20:07 ND 0.060 0.010 10/17/24 08:11 10/17/24 20:07 Chloromethane mg/Kg 0.013 mg/Kg cis-1.2-Dichloroethene ND 0.060 10/17/24 08:11 10/17/24 20:07 cis-1,3-Dichloropropene 0.020 0.0040 10/17/24 08:11 10/17/24 20:07 ND mg/Kg Dibromochloromethane ND 10/17/24 08:11 10/17/24 20:07 0.020 0.0049 mg/Kg Dibromomethane ND 0.040 0.0074 mg/Kg 10/17/24 08:11 10/17/24 20:07 Dichlorodifluoromethane ND 0.25 0.046 mg/Kg 10/17/24 08:11 10/17/24 20:07 Ethylbenzene ND 0.040 0.0091 mg/Kg 10/17/24 08:11 10/17/24 20:07 Hexachlorobutadiene ND 0.10 0.024 mg/Kg 10/17/24 08:11 10/17/24 20:07 Isopropylbenzene ND 0.040 0.0086 mg/Kg 10/17/24 08:11 10/17/24 20:07 Methyl tert-butyl ether ND 0.040 0.0060 mg/Kg 10/17/24 08:11 10/17/24 20:07 ND 0.25 Methylene Chloride 0.026 mg/Kg 10/17/24 08:11 10/17/24 20:07

Eurofins Seattle

10/17/24 20:07

10/17/24 20:07

0.040

0.15

0.040

0.040

0.040

0.040

0.0071

0.039

0.019

0.0050

mg/Kg

mg/Kg

mg/Kg

mg/Kg

0.015 mg/Kg

0.0086 mg/Kg

10/17/24 08:11

10/17/24 08:11

10/17/24 08:11 10/17/24 20:07

10/17/24 08:11 10/17/24 20:07

10/17/24 08:11 10/17/24 20:07

10/17/24 08:11 10/17/24 20:07

ND

ND

ND

ND

ND

ND

6

8

9

4

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

MR ME

Lab Sample ID: MB 580-475029/5-A

Matrix: Solid

Analysis Batch: 475093

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 475029

		VID.							
Analyte	Result C	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		0.040	0.013	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
t-Butylbenzene	ND		0.040	0.0077	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
Tetrachloroethene	ND		0.040	0.0053	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
Toluene	ND		0.060	0.014	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
trans-1,2-Dichloroethene	ND		0.060	0.015	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
trans-1,3-Dichloropropene	ND		0.040	0.0070	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
Trichloroethene	ND		0.040	0.010	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
Trichlorofluoromethane	ND		0.080	0.026	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
Vinyl chloride	ND		0.10	0.019	mg/Kg		10/17/24 08:11	10/17/24 20:07	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		80 - 121	10/17/24 08:11	10/17/24 20:07	1
4-Bromofluorobenzene (Surr)	102		80 - 120	10/17/24 08:11	10/17/24 20:07	1
Dibromofluoromethane (Surr)	101		80 - 120	10/17/24 08:11	10/17/24 20:07	1
Toluene-d8 (Surr)	102		80 - 120	10/17/24 08:11	10/17/24 20:07	1

Lab Sample ID: LCS 580-475029/1-A

Matrix: Solid

Analysis Batch: 475093

Client Sample ID: Lab Control Sample

Prep Type: Total/NA **Prep Batch: 475029**

Spike LCS LCS %Rec Added Result Qualifier Unit %Rec Limits **Analyte** 0.800 0.803 100 79 - 128 1,1,1,2-Tetrachloroethane mg/Kg 1,1,1-Trichloroethane 0.800 0.732 mg/Kg 92 78 - 135 1,1,2,2-Tetrachloroethane 0.800 0.802 100 77 - 122 mg/Kg 104 1,1,2-Trichloroethane 0.800 0.833 mg/Kg 80 - 123 1,1-Dichloroethane 0.800 0.767 mg/Kg 96 78 - 126 0.800 0.780 97 1,1-Dichloroethene mg/Kg 73 - 134 0.800 0.748 93 76 - 140 1,1-Dichloropropene mg/Kg 1,2,3-Trichlorobenzene 0.800 0.734 mg/Kg 92 58 - 146 1,2,3-Trichloropropane 0.800 0.800 mg/Kg 100 77 - 127 1,2,4-Trichlorobenzene 0.800 0.733 92 74 - 131 mg/Kg 1,2,4-Trimethylbenzene 0.800 0.805 101 73 - 138 mg/Kg 83 1,2-Dibromo-3-Chloropropane 0.800 0.666 mg/Kg 64 - 1291,2-Dibromoethane 0.800 0.783 98 77 - 123 mg/Kg 1,2-Dichlorobenzene 0.800 0.827 103 78 - 126 mg/Kg 0.800 1,2-Dichloroethane 0.737 mg/Kg 92 76 - 124 1,2-Dichloropropane 0.800 0.773 mg/Kg 97 73 - 130 0.800 72 - 134 1,3,5-Trimethylbenzene 0.784 mg/Kg 98 1,3-Dichlorobenzene 0.800 0.743 mg/Kg 93 78 - 132 1,3-Dichloropropane 0.800 0.773 mg/Kg 97 80 - 120 1,4-Dichlorobenzene 0.800 0.806 mg/Kg 101 77 - 123 84 2,2-Dichloropropane 0.800 0.672 mg/Kg 75 - 134 2-Chlorotoluene 0.800 0.760 95 77 - 134 mg/Kg 4-Chlorotoluene 0.800 0.753 94 71 - 137 mg/Kg 4-Isopropyltoluene 0.800 0.805 mg/Kg 101 71 - 142 0.800 104 Benzene 0.829 79 - 135 mg/Kg Bromobenzene 0.800 0.790 mg/Kg 99 78 - 126 76 - 131 Bromochloromethane 0.800 0.791 mg/Kg

Job ID: 580-144769-1

Client: ERM-West Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-475029/1-A

Matrix: Solid

Analysis Batch: 475093

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 475029

•		LCS		- ~-	%Rec
		Qualitier			
					92 71 - 130
			0 0		93 76 - 140
			0 0		93 74 - 133
			mg/Kg		97 52 - 142
			mg/Kg	9	95 80 - 125
			0 0		91 80 - 122
					99 75 - 125
0.800	0.785		mg/Kg	9	98 72 - 130
0.800	0.796		mg/Kg	9	99 33 - 150
0.800	0.748		mg/Kg	9	94 80 - 135
0.800	0.739		mg/Kg	9	92 65 - 145
0.800	0.852		mg/Kg	10	06 80 - 131
0.800	0.781		mg/Kg	9	98 71 - 126
0.800	1.38	*+	mg/Kg	17	73 56 - 140
0.800	0.741		mg/Kg	9	93 80 - 132
0.800	0.712		mg/Kg	8	39 56 - 145
0.800	0.762		mg/Kg	9	95 69 - 143
0.800	0.784		mg/Kg	9	98 78 - 133
0.800	0.779		mg/Kg	9	97 80 - 132
0.800	0.791		mg/Kg	9	99 71 - 143
0.800	0.818		mg/Kg	10)2 79 - 129
0.800	0.779		mg/Kg	6	97 72 - 144
0.800	0.715		mg/Kg	8	39 75 - 141
0.800	0.803		mg/Kg	10	00 75 - 125
0.800	0.738		mg/Kg	6	92 77 - 134
0.800	0.802		mg/Kg	10	00 80 - 121
0.800	0.735		mg/Kg	6	92 80 - 134
0.800	0.778		mg/Kg	6	97 71 - 150
0.800	0.857		mg/Kg	10	07 62 - 144
	0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800	Added Result 0.800 0.738 0.800 0.747 0.800 0.855 0.800 0.741 0.800 0.779 0.800 0.763 0.800 0.796 0.800 0.796 0.800 0.796 0.800 0.794 0.800 0.795 0.800 0.794 0.800 0.781 0.800 0.781 0.800 0.741 0.800 0.741 0.800 0.762 0.800 0.762 0.800 0.779 0.800 0.779 0.800 0.779 0.800 0.779 0.800 0.775 0.800 0.738 0.800 0.738 0.800 0.738 0.800 0.735 0.800 0.778	Added Result Qualifier 0.800 0.738 0.800 0.747 0.800 0.855 0.800 0.741 0.800 0.779 0.800 0.763 0.800 0.790 0.800 0.796 0.800 0.748 0.800 0.739 0.800 0.781 0.800 0.781 0.800 0.741 0.800 0.741 0.800 0.762 0.800 0.779 0.800 0.779 0.800 0.779 0.800 0.779 0.800 0.779 0.800 0.779 0.800 0.738 0.800 0.738 0.800 0.738 0.800 0.738 0.800 0.735 0.800 0.778	Added Result Qualifier Unit 0.800 0.738 mg/Kg 0.800 0.747 mg/Kg 0.800 0.855 mg/Kg 0.800 0.741 mg/Kg 0.800 0.779 mg/Kg 0.800 0.726 mg/Kg 0.800 0.790 mg/Kg 0.800 0.795 mg/Kg 0.800 0.785 mg/Kg 0.800 0.796 mg/Kg 0.800 0.748 mg/Kg 0.800 0.748 mg/Kg 0.800 0.781 mg/Kg 0.800 0.781 mg/Kg 0.800 0.781 mg/Kg 0.800 0.741 mg/Kg 0.800 0.741 mg/Kg 0.800 0.762 mg/Kg 0.800 0.784 mg/Kg 0.800 0.779 mg/Kg 0.800 0.779 mg/Kg 0.800 0.779 mg/Kg	Added Result Qualifier Unit D %Re 0.800 0.738 mg/Kg 9 0.800 0.747 mg/Kg 9 0.800 0.855 mg/Kg 10 0.800 0.741 mg/Kg 9 0.800 0.779 mg/Kg 9 0.800 0.763 mg/Kg 9 0.800 0.726 mg/Kg 9 0.800 0.790 mg/Kg 9 0.800 0.795 mg/Kg 9 0.800 0.796 mg/Kg 9 0.800 0.748 mg/Kg 9 0.800 0.739 mg/Kg 9 0.800 0.739 mg/Kg 10 0.800 0.781 mg/Kg 10 0.800 0.781 mg/Kg 17 0.800 0.741 mg/Kg 9 0.800 0.741 mg/Kg 9 0.800 0.772 <td< td=""></td<>

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		80 - 121
4-Bromofluorobenzene (Surr)	97		80 - 120
Dibromofluoromethane (Surr)	99		80 - 120
Toluene-d8 (Surr)	99		80 - 120

Lab Sample ID: LCSD 580-475029/2-A

Matrix: Solid

Analysis Batch: 475093

Client Sample	ID: Lab	Control	Sam	ple Dup
		Prep Ty	/pe: ⁻	Total/NA

Prep Batch: 475029

Spi	ke LCSD	LCSD			%Rec		RPD
Analyte Add	ed Result	Qualifier	Unit D	%Rec	Limits	RPD	Limit
1,1,1,2-Tetrachloroethane 0.8	00 0.838		mg/Kg	105	79 - 128	4	20
1,1,1-Trichloroethane 0.8	00 0.777		mg/Kg	97	78 - 135	6	20
1,1,2,2-Tetrachloroethane 0.8	00 0.865		mg/Kg	108	77 - 122	8	20
1,1,2-Trichloroethane 0.8	00 0.856		mg/Kg	107	80 - 123	3	20
1,1-Dichloroethane 0.8	00 0.821		mg/Kg	103	78 - 126	7	20
1,1-Dichloroethene 0.8	0.836		mg/Kg	105	73 - 134	7	25

QC Sample Results

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-475029/2-A

Matrix: Solid

Analysis Batch: 475093

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 475029

Analysis Batch: 475093	.						Prep Batch: 475029		
Analyte	Spike Added	LCSD	Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloropropene		0.807	Qualifier	mg/Kg		101	76 ₋ 140	8	20
1,2,3-Trichlorobenzene	0.800	0.878		mg/Kg		110	58 - 146	18	28
1,2,3-Trichloropropane	0.800	0.859		mg/Kg		107	77 - 127	7	20
1,2,4-Trichlorobenzene	0.800	0.848		mg/Kg		106	74 - 131	15	26
1,2,4-Trimethylbenzene	0.800	0.893		mg/Kg		112	73 - 138	10	22
1,2-Dibromo-3-Chloropropane	0.800	0.893		mg/Kg		93	64 ₋ 129	11	40
1,2-Dibromoethane	0.800	0.819		mg/Kg		102	77 - 123	4	20
1,2-Dichlorobenzene	0.800	0.913		mg/Kg		114	77 - 123 78 - 126	10	20
1,2-Dichloroethane	0.800	0.786		mg/Kg		98	76 - 120 76 - 124	6	20
1,2-Dichloropropane	0.800	0.819		mg/Kg		102	73 - 130	6	20
1,3,5-Trimethylbenzene	0.800	0.900		mg/Kg		113	73 - 130 72 - 134	14	24
1,3-Dichlorobenzene	0.800	0.823				103	72 - 134 78 - 132	10	20
	0.800	0.823		mg/Kg			80 - 120	5	20
1,3-Dichloropropane	0.800	0.920		mg/Kg		101 115	77 ₋ 123	13	20
1,4-Dichlorobenzene	0.800			mg/Kg					
2,2-Dichloropropane		0.739		mg/Kg		107	75 - 134	10	20
2-Chlorotoluene	0.800	0.860		mg/Kg			77 ₋ 134	12	21
4-Chlorotoluene	0.800 0.800	0.849 0.928		mg/Kg		106	71 - 137	12	21
4-Isopropyltoluene				mg/Kg		116	71 - 142	14	29
Benzene	0.800	0.884		mg/Kg		111	79 ₋ 135	6	20
Bromobenzene	0.800	0.903		mg/Kg		113	78 ₋ 126 76 ₋ 131	13	20
Bromochloromethane	0.800	0.829		mg/Kg		104		5	20
Bromoform	0.800	0.803		mg/Kg		100	71 - 130	8	20
Carbon tetrachloride	0.800	0.806		mg/Kg		101	76 - 140	8	20
Chlorobenzene	0.800	0.907		mg/Kg		113	80 - 125	6	20
Chloroform	0.800	0.784		mg/Kg		98	74 - 133	6	20
Chloromethane	0.800	0.832		mg/Kg		104	52 - 142	7	40
cis-1,2-Dichloroethene	0.800	0.805		mg/Kg		101	80 - 125	5	20
cis-1,3-Dichloropropene	0.800	0.788		mg/Kg		99	80 - 122	8	20
Dibromochloromethane	0.800	0.840		mg/Kg		105	75 - 125	6	20
Dibromomethane	0.800	0.830		mg/Kg		104	72 - 130	6	40
Dichlorodifluoromethane	0.800	0.828		mg/Kg		104	33 - 150	4	31
Ethylbenzene	0.800	0.794		mg/Kg		99	80 - 135	6	20
Hexachlorobutadiene	0.800	0.858		mg/Kg		107	65 - 145	15	36
Isopropylbenzene	0.800	0.933		mg/Kg		117	80 - 131	9	20
Methyl tert-butyl ether	0.800	0.831		mg/Kg		104	71 - 126	6	20
Methylene Chloride	0.800	1.52	*+	mg/Kg		189	56 - 140	9	20
m-Xylene & p-Xylene	0.800	0.792		mg/Kg		99	80 - 132	7	20
Naphthalene	0.800	0.845		mg/Kg		106	56 - 145	17	25
n-Butylbenzene	0.800	0.880		mg/Kg		110	69 - 143	14	31
N-Propylbenzene	0.800	0.860		mg/Kg		108	78 - 133	9	24
o-Xylene	0.800	0.835		mg/Kg		104	80 - 132	7	20
sec-Butylbenzene	0.800	0.895		mg/Kg		112	71 - 143	12	29
Styrene	0.800	0.875		mg/Kg		109	79 - 129	7	20
t-Butylbenzene	0.800	0.883		mg/Kg		110	72 - 144	12	27
Tetrachloroethene	0.800	0.772		mg/Kg		96	75 - 141	8	20
Toluene	0.800	0.854		mg/Kg		107	75 - 125	6	20
trans-1,2-Dichloroethene	0.800	0.795		mg/Kg		99	77 - 134	7	20
trans-1,3-Dichloropropene	0.800	0.862		mg/Kg		108	80 - 121	7	20
Trichloroethene	0.800	0.775		mg/Kg		97	80 - 134	5	20
		2		55				•	•

Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-475029/2-A

Matrix: Solid

Client: ERM-West

Analysis Batch: 475093

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 475029

LCSD LCSD Spike %Rec **RPD** Added Result Qualifier Unit D %Rec Limits RPD Limit Trichlorofluoromethane 0.800 0.816 mg/Kg 102 71 - 150 5 30 Vinyl chloride 0.800 0.950 mg/Kg 20 119 62 - 144 10

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97	-	80 - 121
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	99		80 - 120
Toluene-d8 (Surr)	99		80 - 120

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 475263

Lab Sample ID: MB 580-475263/1-A

Matrix: Solid

Analysis Batch: 475265

Analysis Batch. 47 0200	MB	MB						Trep Baten.	
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.020	0.0050	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,1,1-Trichloroethane	ND		0.040	0.0046	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,1,2,2-Tetrachloroethane	ND		0.020	0.0076	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,1,2-Trichloroethane	ND		0.020	0.0074	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,1-Dichloroethane	ND		0.040	0.0092	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,1-Dichloroethene	ND		0.040	0.012	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,1-Dichloropropene	ND		0.040	0.0053	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,2,3-Trichlorobenzene	ND		0.080	0.040	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,2,3-Trichloropropane	ND		0.040	0.012	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,2,4-Trichlorobenzene	ND		0.080	0.043	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,2,4-Trimethylbenzene	ND		0.040	0.014	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,2-Dibromo-3-Chloropropane	ND		0.060	0.015	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,2-Dibromoethane	ND		0.020	0.0038	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,2-Dichlorobenzene	ND		0.040	0.0087	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,2-Dichloroethane	ND		0.020	0.0055	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,2-Dichloropropane	ND		0.020	0.0066	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,3,5-Trimethylbenzene	ND		0.040	0.0076	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,3-Dichlorobenzene	ND		0.060	0.013	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,3-Dichloropropane	ND		0.060	0.0056	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
1,4-Dichlorobenzene	ND		0.060	0.011	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
2,2-Dichloropropane	ND		0.040	0.012	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
2-Chlorotoluene	ND		0.040	0.0088	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
4-Chlorotoluene	ND		0.040	0.0098	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
4-Isopropyltoluene	ND		0.040	0.010	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Benzene	ND		0.020	0.0038	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Bromobenzene	ND		0.040	0.0042	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Bromochloromethane	ND		0.040	0.0062	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Bromodichloromethane	ND		0.040	0.0055	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Bromoform	ND		0.040	0.0045	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Bromomethane	ND		0.10	0.038	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Carbon tetrachloride	ND		0.020	0.0044	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Chlorobenzene	ND		0.040	0.0048	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Chloroethane	ND		0.080	0.021	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Chloroform	ND		0.020	0.0042	mg/Kg		10/18/24 14:45	10/18/24 21:56	1

Project/Site: Arkema PDI Sampling

Job ID: 580-144769-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-475263/1-A

Matrix: Solid

Analysis Batch: 475265

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 475263

7 mm, 7 cro 2 m cm	MB	МВ							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloromethane	ND		0.060	0.010	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
cis-1,2-Dichloroethene	ND		0.060	0.013	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
cis-1,3-Dichloropropene	ND		0.020	0.0040	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Dibromochloromethane	ND		0.020	0.0049	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Dibromomethane	ND		0.040	0.0074	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Dichlorodifluoromethane	ND		0.25	0.046	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Ethylbenzene	ND		0.040	0.0091	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Hexachlorobutadiene	ND		0.10	0.024	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Isopropylbenzene	ND		0.040	0.0086	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Methyl tert-butyl ether	ND		0.040	0.0060	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Methylene Chloride	ND		0.25	0.026	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
m-Xylene & p-Xylene	ND		0.040	0.0071	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Naphthalene	ND		0.15	0.039	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
n-Butylbenzene	ND		0.040	0.019	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
N-Propylbenzene	ND		0.040	0.015	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
o-Xylene	ND		0.040	0.0050	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
sec-Butylbenzene	ND		0.040	0.0086	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Styrene	ND		0.040	0.013	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
t-Butylbenzene	ND		0.040	0.0077	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Tetrachloroethene	ND		0.040	0.0053	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Toluene	ND		0.060	0.014	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
trans-1,2-Dichloroethene	ND		0.060	0.015	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
trans-1,3-Dichloropropene	ND		0.040	0.0070	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Trichloroethene	ND		0.040	0.010	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Trichlorofluoromethane	ND		0.080	0.026	mg/Kg		10/18/24 14:45	10/18/24 21:56	1
Vinyl chloride	ND		0.10	0.019	mg/Kg		10/18/24 14:45	10/18/24 21:56	1

MB MB

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99	80 - 121	10/18/24 14:45	10/18/24 21:56	1
4-Bromofluorobenzene (Surr)	99	80 - 120	10/18/24 14:45	10/18/24 21:56	1
Dibromofluoromethane (Surr)	102	80 - 120	10/18/24 14:45	10/18/24 21:56	1
Toluene-d8 (Surr)	102	80 - 120	10/18/24 14:45	10/18/24 21:56	1

Lab Sample ID: LCS 580-475263/2-A

Matrix: Solid

Analysis Batch: 475265

Client Sample ID: Lab Control Sample

Prep Type: Total/NA **Prep Batch: 475263**

Analysis Baton: 470200	Spike	LCS	LCS				%Rec
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1,1,2-Tetrachloroethane	0.800	0.762		mg/Kg		95	79 - 128
1,1,1-Trichloroethane	0.800	0.799		mg/Kg		100	78 - 135
1,1,2,2-Tetrachloroethane	0.800	0.781		mg/Kg		98	77 - 122
1,1,2-Trichloroethane	0.800	0.847		mg/Kg		106	80 - 123
1,1-Dichloroethane	0.800	0.839		mg/Kg		105	78 - 126
1,1-Dichloroethene	0.800	0.868		mg/Kg		109	73 - 134
1,1-Dichloropropene	0.800	0.828		mg/Kg		104	76 - 140
1,2,3-Trichlorobenzene	0.800	0.757		mg/Kg		95	58 - 146
1,2,3-Trichloropropane	0.800	0.766		mg/Kg		96	77 - 127
1,2,4-Trichlorobenzene	0.800	0.766		mg/Kg		96	74 - 131

QC Sample Results

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-475263/2-A

Matrix: Solid

Chloroethane

Chloromethane

Dibromomethane

Ethylbenzene

Naphthalene

o-Xylene

Styrene

Toluene

n-Butylbenzene

N-Propylbenzene

sec-Butylbenzene

Tetrachloroethene

trans-1,2-Dichloroethene

trans-1,3-Dichloropropene

Trichlorofluoromethane

t-Butylbenzene

Trichloroethene

cis-1,2-Dichloroethene

cis-1,3-Dichloropropene

Dibromochloromethane

Dichlorodifluoromethane

Hexachlorobutadiene

Methyl tert-butyl ether

Methylene Chloride

m-Xylene & p-Xylene

Isopropylbenzene

Chloroform

Analysis Batch: 475265

Client	Sample	ID:	Lab	Control	Sample

Prep	Type: Total/NA
Prep	Batch: 475263

•	Spike	LCS L	_CS				%Rec	
Analyte	Added	Result (Qualifier	Unit	D	%Rec	Limits	
1,2,4-Trimethylbenzene	0.800	0.765		mg/Kg		96	73 - 138	
1,2-Dibromo-3-Chloropropane	0.800	0.665		mg/Kg		83	64 - 129	
1,2-Dibromoethane	0.800	0.796		mg/Kg		99	77 - 123	
1,2-Dichlorobenzene	0.800	0.783		mg/Kg		98	78 - 126	
1,2-Dichloroethane	0.800	0.868		mg/Kg		108	76 - 124	
1,2-Dichloropropane	0.800	0.809		mg/Kg		101	73 - 130	
1,3,5-Trimethylbenzene	0.800	0.805		mg/Kg		101	72 - 134	
1,3-Dichlorobenzene	0.800	0.740		mg/Kg		92	78 - 132	
1,3-Dichloropropane	0.800	0.824		mg/Kg		103	80 - 120	
1,4-Dichlorobenzene	0.800	0.730		mg/Kg		91	77 - 123	
2,2-Dichloropropane	0.800	0.841		mg/Kg		105	75 - 134	
2-Chlorotoluene	0.800	0.755		mg/Kg		94	77 - 134	
4-Chlorotoluene	0.800	0.783		mg/Kg		98	71 - 137	
4-Isopropyltoluene	0.800	0.767		mg/Kg		96	71 - 142	
Benzene	0.800	0.860		mg/Kg		107	79 - 135	
Bromobenzene	0.800	0.783		mg/Kg		98	78 - 126	
Bromochloromethane	0.800	0.815		mg/Kg		102	76 - 131	
Bromodichloromethane	0.800	0.828		mg/Kg		104	78 - 125	
Bromoform	0.800	0.705		mg/Kg		88	71 - 130	
Bromomethane	0.800	0.781		mg/Kg		98	55 - 150	
Carbon tetrachloride	0.800	0.814		mg/Kg		102	76 - 140	
Chlorobenzene	0.800	0.765		mg/Kg		96	80 - 125	

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0.749

0.767

0.831

0.782

0.801

0.778

0.864

0.834

0.983

0.790

0.790

0.763

0.793

0.785

0.788

0.775

0.779

0.840

0.808

0.777

0.794

0.855

0.787

mg/Kg

115

103

91

94

96

98

100

97

108

104

123

99

99

95

99

98

99

97

97

105

101

97

99

98

107

104

107

26 - 150

74 - 133

52 - 142

80 - 125 80 - 122

75 - 125

72 - 130

33 - 150

80 - 135

65 - 145

80 - 131

71 - 126

56 - 140

80 - 132

56 - 145

69 - 143

78 - 133

80 - 132

71 - 143

79 - 129

72 - 144

75 - 141

75 - 125

77 - 134

80 - 121

80 - 134

71 - 150

Spike

0.800

Added

LCS LCS

0.819

Result Qualifier Unit

mg/Kg

Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-475263/2-A

Lab Sample ID: LCSD 580-475263/3-A

Matrix: Solid

Analyte

Vinyl chloride

Matrix: Solid

Client: ERM-West

Analysis Batch: 475265

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 475263

%Rec

Limits

D %Rec 102 62 - 144

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		80 - 121
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	98		80 - 120
Toluene-d8 (Surr)	101		80 - 120

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analysis Batch: 475265	Spike	LCSD	LCSD				Prep Ba		
Analyte	Added		Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1,1,2-Tetrachloroethane	0.800	0.762		mg/Kg		95	79 - 128		
1,1,1-Trichloroethane	0.800	0.789		mg/Kg		99	78 - 135	1	20
1,1,2,2-Tetrachloroethane	0.800	0.766		mg/Kg		96	77 - 122	2	20
1,1,2-Trichloroethane	0.800	0.843		mg/Kg		105	80 - 123	0	20
1,1-Dichloroethane	0.800	0.838		mg/Kg		105	78 - 126	0	20
1,1-Dichloroethene	0.800	0.863		mg/Kg		108	73 - 134	1	25
1,1-Dichloropropene	0.800	0.816		mg/Kg		102	76 - 140	1	20
1,2,3-Trichlorobenzene	0.800	0.731		mg/Kg		91	58 - 146	3	28
1,2,3-Trichloropropane	0.800	0.736		mg/Kg		92	77 - 127	4	20
1,2,4-Trichlorobenzene	0.800	0.780		mg/Kg		98	74 - 131	2	26
1,2,4-Trimethylbenzene	0.800	0.736		mg/Kg		92	73 - 138	4	22
1,2-Dibromo-3-Chloropropane	0.800	0.665		mg/Kg		83	64 - 129	0	40
1,2-Dibromoethane	0.800	0.798		mg/Kg		100	77 - 123	0	20
1,2-Dichlorobenzene	0.800	0.743		mg/Kg		93	78 - 126	5	20
1,2-Dichloroethane	0.800	0.854		mg/Kg		107	76 - 124	2	20
1,2-Dichloropropane	0.800	0.798		mg/Kg		100	73 - 130	1	20
1,3,5-Trimethylbenzene	0.800	0.780		mg/Kg		97	72 - 134	3	24
1,3-Dichlorobenzene	0.800	0.798		mg/Kg		100	78 - 132	8	20
1,3-Dichloropropane	0.800	0.818		mg/Kg		102	80 - 120	1	20
1,4-Dichlorobenzene	0.800	0.733		mg/Kg		92	77 - 123	0	20
2,2-Dichloropropane	0.800	0.840		mg/Kg		105	75 - 134	0	20
2-Chlorotoluene	0.800	0.741		mg/Kg		93	77 - 134	2	21
4-Chlorotoluene	0.800	0.754		mg/Kg		94	71 - 137	4	21
4-Isopropyltoluene	0.800	0.748		mg/Kg		94	71 - 142	2	29
Benzene	0.800	0.851		mg/Kg		106	79 - 135	1	20
Bromobenzene	0.800	0.761		mg/Kg		95	78 - 126	3	20
Bromochloromethane	0.800	0.806		mg/Kg		101	76 - 131	1	20
Bromodichloromethane	0.800	0.824		mg/Kg		103	78 - 125	1	20
Bromoform	0.800	0.708		mg/Kg		88	71 - 130	0	20
Bromomethane	0.800	0.819		mg/Kg		102	55 - 150	5	26
Carbon tetrachloride	0.800	0.816		mg/Kg		102	76 - 140	0	20
Chlorobenzene	0.800	0.774		mg/Kg		97	80 - 125	1	20
Chloroethane	0.800	0.923		mg/Kg		115	26 - 150	0	40
Chloroform	0.800	0.824		mg/Kg		103	74 - 133	0	20
Chloromethane	0.800	0.736		mg/Kg		92	52 - 142	1	40

Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-475263/3-A

Matrix: Solid

Client: ERM-West

Analysis Batch: 475265

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA Prep Batch: 475263

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
cis-1,2-Dichloroethene	0.800	0.853		mg/Kg		107	80 - 125	1	20
cis-1,3-Dichloropropene	0.800	0.752		mg/Kg		94	80 - 122	0	20
Dibromochloromethane	0.800	0.756		mg/Kg		95	75 - 125	1	20
Dibromomethane	0.800	0.833		mg/Kg		104	72 - 130	0	40
Dichlorodifluoromethane	0.800	0.785		mg/Kg		98	33 - 150	0	31
Ethylbenzene	0.800	0.807		mg/Kg		101	80 - 135	1	20
Hexachlorobutadiene	0.800	0.768		mg/Kg		96	65 - 145	1	36
Isopropylbenzene	0.800	0.864		mg/Kg		108	80 - 131	0	20
Methyl tert-butyl ether	0.800	0.826		mg/Kg		103	71 - 126	1	20
Methylene Chloride	0.800	0.969		mg/Kg		121	56 - 140	1	20
m-Xylene & p-Xylene	0.800	0.791		mg/Kg		99	80 - 132	0	20
Naphthalene	0.800	0.757		mg/Kg		95	56 - 145	4	25
n-Butylbenzene	0.800	0.757		mg/Kg		95	69 - 143	1	31
N-Propylbenzene	0.800	0.778		mg/Kg		97	78 - 133	2	24
o-Xylene	0.800	0.776		mg/Kg		97	80 - 132	1	20
sec-Butylbenzene	0.800	0.766		mg/Kg		96	71 - 143	3	29
Styrene	0.800	0.781		mg/Kg		98	79 - 129	1	20
t-Butylbenzene	0.800	0.742		mg/Kg		93	72 - 144	5	27
Tetrachloroethene	0.800	0.804		mg/Kg		101	75 - 141	4	20
Toluene	0.800	0.820		mg/Kg		103	75 - 125	2	20
trans-1,2-Dichloroethene	0.800	0.785		mg/Kg		98	77 - 134	1	20
trans-1,3-Dichloropropene	0.800	0.785		mg/Kg		98	80 - 121	1	20
Trichloroethene	0.800	0.845		mg/Kg		106	80 - 134	1	20
Trichlorofluoromethane	0.800	0.785		mg/Kg		98	71 - 150	0	30
Vinyl chloride	0.800	0.814		mg/Kg		102	62 - 144	1	20

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		80 - 121
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	98		80 - 120
Toluene-d8 (Surr)	100		80 - 120

Lab Sample ID: MB 580-475697/3-A

Matrix: Solid

Analysis Batch: 475700

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 475697

	MB	MR							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		0.10	0.038	mg/Kg		10/23/24 14:23	10/24/24 10:56	1
Chlorobenzene	ND		0.040	0.0048	mg/Kg		10/23/24 14:23	10/24/24 10:56	1
Chloroethane	ND		0.080	0.021	mg/Kg		10/23/24 14:23	10/24/24 10:56	1

	мв мв				
Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108	80 - 121	10/23/24 14:23	10/24/24 10:56	1
4-Bromofluorobenzene (Surr)	101	80 - 120	10/23/24 14:23	10/24/24 10:56	1
Dibromofluoromethane (Surr)	108	80 - 120	10/23/24 14:23	10/24/24 10:56	1
Toluene-d8 (Surr)	100	80 - 120	10/23/24 14:23	10/24/24 10:56	1

Client: ERM-West

Project/Site: Arkema PDI Sampling

Job ID: 580-144769-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-475697/1-A

Matrix: Solid

Analysis Batch: 475700

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 475697

•	Spike	LCS	LCS				%Rec
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Bromomethane	0.800	0.865		mg/Kg		108	55 - 150
Chlorobenzene	0.800	0.709		mg/Kg		89	80 - 125
Chloroethane	0.800	0.781		mg/Kg		98	26 - 150

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		80 - 121
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120
Toluene-d8 (Surr)	99		80 - 120

Client Sample ID: Lab Control Sample Dup

Matrix: Solid

Analysis Batch: 475700

Lab Sample ID: LCSD 580-475697/2-A

Prep Type: Total/NA **Prep Batch: 475697**

_	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Bromomethane	0.800	0.845		mg/Kg		106	55 - 150	2	26
Chlorobenzene	0.800	0.760		mg/Kg		95	80 - 125	7	20
Chloroethane	0.800	0.902		mg/Kg		113	26 - 150	14	40

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	101		80 - 121
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	102		80 - 120
Toluene-d8 (Surr)	102		80 - 120

Client Sample ID: Method Blank Prep Type: Total/NA

Prep Batch: 475765

Analysis Batch: 475773 MB MB MDL Unit Analyte Result Qualifier RL Analyzed Dil Fac Prepared 0.040 10/24/24 09:31 10/24/24 13:09 Chlorobenzene 0.0048 mg/Kg ND

	MB MB				
Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96	80 - 121	10/24/24 09:31	10/24/24 13:09	1
4-Bromofluorobenzene (Surr)	99	80 - 120	10/24/24 09:31	10/24/24 13:09	1
Dibromofluoromethane (Surr)	102	80 - 120	10/24/24 09:31	10/24/24 13:09	1
Toluene-d8 (Surr)	106	80 - 120	10/24/24 09:31	10/24/24 13:09	1

Lab Sample ID: LCS 580-475765/1-A

Lab Sample ID: MB 580-475765/5-A

Matrix: Solid

Matrix: Solid

Analysis Batch: 475773

Client Sample ID: Lab Control Sample Prep Type: Total/NA **Prep Batch: 475765**

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chlorobenzene	0.800	0.897		mg/Kg	_	112	80 - 125	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	94		80 - 121

Client: ERM-West

Job ID: 580-144769-1 Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-475765/1-A

Lab Sample ID: LCSD 580-475765/2-A

Matrix: Solid

Matrix: Solid

Matrix: Solid

Analysis Batch: 475773

Analysis Batch: 475773

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 475765

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	99		80 - 120
Toluene-d8 (Surr)	104		80 - 120

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 475765 %Rec **RPD**

Spike LCSD LCSD Analyte Added Result Qualifier Unit D %Rec Limits RPD Limit Chlorobenzene 0.800 0.918 115 80 - 125 2 20 mg/Kg

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	94		80 - 121
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	104		80 - 120

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 475879

Analysis Batch: 475821 MB MB

Analyte Result Qualifier RL MDL Unit Prepared Analyzed Dil Fac Chlorobenzene ND 0.040 0.0048 mg/Kg 10/25/24 07:50 10/25/24 10:19

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		80 - 121	10/25/24 07:50	10/25/24 10:19	1
4-Bromofluorobenzene (Surr)	103		80 - 120	10/25/24 07:50	10/25/24 10:19	1
Dibromofluoromethane (Surr)	99		80 - 120	10/25/24 07:50	10/25/24 10:19	1
Toluene-d8 (Surr)	105		80 - 120	10/25/24 07:50	10/25/24 10:19	1

LCS LCS

Lab Sample ID: LCS 580-475879/1-A

Lab Sample ID: MB 580-475879/5-A

Matrix: Solid

Analysis Batch: 475821

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 475879 %Rec

Added Result Qualifier **Analyte** Unit D %Rec Limits Chlorobenzene 0.800 0.879 mg/Kg 80 - 125

Spike

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	96		80 - 121
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	102		80 - 120

Spike

Added

0.800

LCSD LCSD

0.890

Result Qualifier Unit

mg/Kg

Client: ERM-West

Project/Site: Arkema PDI Sampling

Job ID: 580-144769-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-475879/2-A

Matrix: Solid

Chlorobenzene

Analyte

Analysis Batch: 475821

Client Sample ID: Lab Control Sample Dup

D %Rec

111

Prep Type: Total/NA

Prep Batch: 475879

%Rec Limits

RPD RPD Limit 80 - 125

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	96		80 - 121
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	102		80 - 120
Toluene-d8 (Surr)	103		80 - 120

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 475900

Lab Sample ID: MB 580-475900/1-A

Matrix: Solid

Analysis Batch: 475905

MB MB

Analyte	Result (Qualifier RI	. MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	ND	0.040	0.0055	mg/Kg		10/25/24 09:04	10/25/24 12:29	1
Bromomethane	ND	0.10	0.038	mg/Kg		10/25/24 09:04	10/25/24 12:29	1
Chlorobenzene	ND	0.040	0.0048	mg/Kg		10/25/24 09:04	10/25/24 12:29	1
Chloroethane	ND	0.080	0.021	mg/Kg		10/25/24 09:04	10/25/24 12:29	1

MB MB

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110	80 - 121	10/25/24 09:04	10/25/24 12:29	1
4-Bromofluorobenzene (Surr)	101	80 - 120	10/25/24 09:04	10/25/24 12:29	1
Dibromofluoromethane (Surr)	105	80 - 120	10/25/24 09:04	10/25/24 12:29	1
Toluene-d8 (Surr)	103	80 - 120	10/25/24 09:04	10/25/24 12:29	1

Lab Sample ID: LCS 580-475900/2-A

Matrix: Solid

Analysis Batch: 475905

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 475900

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Bromodichloromethane	0.800	0.809		mg/Kg		101	78 - 125	 _
Bromomethane	0.800	0.815		mg/Kg		102	55 - 150	
Chlorobenzene	0.800	0.742		mg/Kg		93	80 - 125	
Chloroethane	0.800	0.880		ma/Ka		110	26 - 150	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	105		80 - 121
4-Bromofluorobenzene (Surr)	103		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	98		80 - 120

Client Sample ID: Lab Control Sample Dup

Matrix: Solid

Analysis Batch: 475905

Lab Sample ID: LCSD 580-475900/3-A

Prep Type: Total/NA **Prep Batch: 475900**

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Bromodichloromethane	0.800	0.808		mg/Kg		101	78 - 125	0	20
Bromomethane	0.800	0.764		mg/Kg		95	55 - 150	7	26
Chlorobenzene	0.800	0.764		mg/Kg		96	80 - 125	3	20

Spike

Added

0.800

Spike

Added

0.601

0.601

MS MS

0.557

0.609

Result Qualifier

Unit

mg/Kg

mg/Kg

Client: ERM-West Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-475900/3-A

Matrix: Solid

Analyte

Chloroethane

Analysis Batch: 475905

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA **Prep Batch: 475900**

Job ID: 580-144769-1

%Rec **RPD**

LCSD LCSD Result Qualifier Unit %Rec Limits RPD Limit 0.896 mg/Kg 112 26 - 150 2 40

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	104		80 - 121
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120
Toluene-d8 (Surr)	99		80 - 120

Method: 8260D - Volatile Organic Compounds by GC/MS - RA

Sample Sample

ND F2

ND F2

Result Qualifier

Lab Sample ID: 580-144769-7 MS

Matrix: Solid

Bromomethane - RA

Chloroethane - RA

Analyte

Analysis Batch: 475700

Client Sample ID: PDI-50b-SO-44.9-20241010

101

Prep Type: Total/NA

Prep Batch: 475697 %Rec D %Rec Limits 93 55 - 150

26 - 150

		MS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr) -	102		80 - 121
RA			
4-Bromofluorobenzene (Surr) -	100		80 - 120
RA			
Dibromofluoromethane (Surr) -	102		80 - 120
RA			
Toluene-d8 (Surr) - RA	101		80 - 120

Lab Sample ID: 580-144769-7 MSD

Matrix: Solid

Analysis Batch: 475700

Client Sample ID: PDI-50b-SO-44.9-20241010

Prep Type: Total/NA **Prep Batch: 475697**

Sample Sample Spike MSD MSD %Rec **RPD** Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits RPD Limit Bromomethane - RA ND F2 0.719 0.914 F2 mg/Kg 127 55 - 150 48 26 Chloroethane - RA ND F2 0.719 1.08 F2 150 56 mg/Kg 26 - 150 40

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr) - RA	105		80 - 121
4-Bromofluorobenzene (Surr) - RA	101		80 - 120
Dibromofluoromethane (Surr) - RA	109		80 - 120
Toluene-d8 (Surr) - RA	99		80 - 120

QC Sample Results

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Method: 2540G - SM 2540G

Lab Sample ID: 580-144769-18 DU Client Sample ID: PDI-57-SO-35-20241008 **Prep Type: Total/NA**

Matrix: Solid

Analysis Batch: 475288

Alialysis Datell. 47 0200								
	Sample	Sample	DU	DU				RPD
Analyte	Result	Qualifier	Result	Qualifier	Unit	D	RPD	Limit
Percent Solids	74.3		73.7		%		 8.0	20
Percent Moisture	25.7		26.3		%		2	20

Project/Site: Arkema PDI Sampling

Client: ERM-West

Client Sample ID: PDI-50-SO-28.5-20241009

Date Collected: 10/09/24 17:40 Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-1

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475263	AC	EET SEA	10/18/24 14:45
Total/NA	Analysis	8260D		1	475265	TL1	EET SEA	10/19/24 03:05
Total/NA	Prep	5035	DL		475697	BYM	EET SEA	10/23/24 14:23
Total/NA	Analysis	8260D	DL	1	475700	BYM	EET SEA	10/24/24 15:03
Total/NA	Prep	5035			475022	BYM	EET SEA	10/17/24 07:47
Total/NA	Analysis	8260D		1	475026	K1K	EET SEA	10/17/24 15:38
Total/NA	Prep	5035	RA		474967	BYM	EET SEA	10/17/24 10:00
Total/NA	Analysis	8260D	RA	1	474979	K1K	EET SEA	10/17/24 20:21
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Client Sample ID: PDI-50-SO-34.9-20241009

Date Collected: 10/09/24 17:45 Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-2

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475022	BYM	EET SEA	10/17/24 07:47
Total/NA	Analysis	8260D		1	475026	K1K	EET SEA	10/17/24 11:08
Total/NA	Prep	5035	RA		474967	BYM	EET SEA	10/17/24 10:00
Total/NA	Analysis	8260D	RA	1	474979	K1K	EET SEA	10/17/24 15:30
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Client Sample ID: PDI-56-SO-34.7-20241009

Date Collected: 10/09/24 17:30

Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-3

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	DL		475263	AC	EET SEA	10/18/24 14:45
Total/NA	Analysis	8260D	DL	1	475265	TL1	EET SEA	10/19/24 02:24
Total/NA	Prep	5035			475022	BYM	EET SEA	10/17/24 07:47
Total/NA	Analysis	8260D		1	475026	K1K	EET SEA	10/17/24 11:28
Total/NA	Prep	5035	RA		474967	BYM	EET SEA	10/17/24 10:00
Total/NA	Analysis	8260D	RA	1	474979	K1K	EET SEA	10/17/24 15:53
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Client Sample ID: PDI-56-SO-39.5-20241009

Date Collected: 10/09/24 17:35

Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-4

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA2		475263	AC	EET SEA	10/18/24 14:45
Total/NA	Analysis	8260D	RA2	1	475265	TL1	EET SEA	10/19/24 01:43
Total/NA	Prep	5035			475022	BYM	EET SEA	10/17/24 07:47
Total/NA	Analysis	8260D		1	475026	K1K	EET SEA	10/17/24 11:48
Total/NA	Prep	5035	RA		474967	BYM	EET SEA	10/17/24 10:00
Total/NA	Analysis	8260D	RA	1	474979	K1K	EET SEA	10/17/24 16:15

Client: ERM-West Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-56-SO-39.5-20241009

Date Collected: 10/09/24 17:35

Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-4

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Client Sample ID: PDI-50a-SO-39.9-20241010

Date Collected: 10/10/24 12:00 Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-5

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA2		475263	AC	EET SEA	10/18/24 14:45
Total/NA	Analysis	8260D	RA2	1	475265	TL1	EET SEA	10/19/24 02:03
Total/NA	Prep	5035			475022	BYM	EET SEA	10/17/24 07:47
Total/NA	Analysis	8260D		1	475026	K1K	EET SEA	10/17/24 15:58
Total/NA	Prep	5035	RA		474967	BYM	EET SEA	10/17/24 10:00
Total/NA	Analysis	8260D	RA	1	474979	K1K	EET SEA	10/17/24 20:44
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Client Sample ID: PDI-50a-SO-29.45-20241010

Date Collected: 10/10/24 12:05 Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-6 **Matrix: Solid**

Lab Sample ID: 580-144769-8

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475263	AC	EET SEA	10/18/24 14:45
Total/NA	Analysis	8260D		1	475265	TL1	EET SEA	10/19/24 03:26
Total/NA	Prep	5035	DL		475879	BYM	EET SEA	10/25/24 07:50
Total/NA	Analysis	8260D	DL	1	475821	AC	EET SEA	10/25/24 12:46
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Client Sample ID: PDI-50b-SO-44.9-20241010

Lab Sample ID: 580-144769-7 Date Collected: 10/10/24 15:50 Matrix: Solid Date Received: 10/11/24 12:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		475697	BYM	EET SEA	10/23/24 14:23
Total/NA	Analysis	8260D	RA	1	475700	BYM	EET SEA	10/24/24 13:20
Total/NA	Prep	5035			475022	BYM	EET SEA	10/17/24 07:47
Total/NA	Analysis	8260D		1	475026	K1K	EET SEA	10/17/24 09:46
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Client Sample ID: PDI-50b-SO-29.5-20241010

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ate Collected: 10/10/24 15:55	Matrix: Solid
ate Received: 10/11/24 12:30	

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475022	BYM	EET SEA	10/17/24 07:47
Total/NA	Analysis	8260D		1	475026	K1K	EET SEA	10/17/24 12:09

Project/Site: Arkema PDI Sampling

Client: ERM-West

Client Sample ID: PDI-50b-SO-29.5-20241010

Date Collected: 10/10/24 15:55 Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-8

Matrix: Solid

Batch Batch Dilution Batch Prepared **Prep Type** Method Number Analyst or Analyzed Type Run **Factor** Lab 10/17/24 10:00 Total/NA 5035 RA 474967 BYM EET SEA Prep Total/NA 8260D RA EET SEA 10/17/24 16:37 Analysis 474979 K1K 1 Total/NA Analysis 2540G 1 475288 SCS **EET SEA** 10/18/24 15:11

Client Sample ID: PDI-45-SO-49.9-20241010

Date Collected: 10/10/24 16:40 Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-9

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475022	BYM	EET SEA	10/17/24 07:47
Total/NA	Analysis	8260D		1	475026	K1K	EET SEA	10/17/24 12:30
Total/NA	Prep	5035	RA		474967	BYM	EET SEA	10/17/24 10:00
Total/NA	Analysis	8260D	RA	1	474979	K1K	EET SEA	10/17/24 17:00
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Client Sample ID: PDI-45-SO-38.5-20241010

Date Collected: 10/10/24 16:35 Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-10

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475263	AC	EET SEA	10/18/24 14:45
Total/NA	Analysis	8260D		1	475265	TL1	EET SEA	10/19/24 03:46
Total/NA	Prep	5035	DL		475765	BYM	EET SEA	10/24/24 09:31
Total/NA	Analysis	8260D	DL	1	475773	TL1	EET SEA	10/24/24 17:19
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Client Sample ID: DUP-01-SQ-20241010

Date Collected: 10/10/24 16:45 Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-11

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475022	BYM	EET SEA	10/17/24 07:47
Total/NA	Analysis	8260D		1	475026	K1K	EET SEA	10/17/24 12:51
Total/NA	Prep	5035	RA		474967	BYM	EET SEA	10/17/24 10:00
Total/NA	Analysis	8260D	RA	1	474979	K1K	EET SEA	10/17/24 17:22
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Client Sample ID: PDI-38-SO-45-20241008

Date Collected: 10/08/24 11:25

Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-12

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475022	BYM	EET SEA	10/17/24 07:47
Total/NA	Analysis	8260D		1	475026	K1K	EET SEA	10/17/24 13:12

Project/Site: Arkema PDI Sampling

Client: ERM-West

Client Sample ID: PDI-38-SO-45-20241008

Date Collected: 10/08/24 11:25

Lab Sample ID: 580-144769-12

Matrix: Solid

Date Received: 10/11/24 12:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		474967	BYM	EET SEA	10/17/24 10:00
Total/NA	Analysis	8260D	RA	1	474979	K1K	EET SEA	10/17/24 17:45
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Client Sample ID: PDI-38-SO-32.9-20241008

Lab Sample ID: 580-144769-13 Date Collected: 10/08/24 11:30

Matrix: Solid

Date Received: 10/11/24 12:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		475900	AC	EET SEA	10/25/24 09:04
Total/NA	Analysis	8260D	RA	1	475905	BYM	EET SEA	10/25/24 12:49
Total/NA	Prep	5035			475029	BYM	EET SEA	10/17/24 08:11
Total/NA	Analysis	8260D		1	475093	TL1	EET SEA	10/18/24 01:00
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Client Sample ID: PDI-37-SO-42.5-20241008

Lab Sample ID: 580-144769-14 Date Collected: 10/08/24 12:10

Matrix: Solid

Date Received: 10/11/24 12:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475022	BYM	EET SEA	10/17/24 07:47
Total/NA	Analysis	8260D		1	475026	K1K	EET SEA	10/17/24 13:33
Total/NA	Prep	5035	RA		474967	BYM	EET SEA	10/17/24 10:00
Total/NA	Analysis	8260D	RA	1	474979	K1K	EET SEA	10/17/24 18:07
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Client Sample ID: PDI-37-SO-31.2-20241008

Lab Sample ID: 580-144769-15 Date Collected: 10/08/24 12:15 Matrix: Solid

Date Received: 10/11/24 12:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		475900	AC	EET SEA	10/25/24 09:04
Total/NA	Analysis	8260D	RA	1	475905	BYM	EET SEA	10/25/24 13:10
Total/NA	Prep	5035			475029	BYM	EET SEA	10/17/24 08:11
Total/NA	Analysis	8260D		1	475093	TL1	EET SEA	10/18/24 01:21
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Client Sample ID: PDI-48-SO-33.8-20241008 Lab Sample ID: 580-144769-16

Date Collected: 10/08/24 16:00 **Matrix: Solid**

Date Received: 10/11/24 12:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	DL		475263	AC	EET SEA	10/18/24 14:45
Total/NA	Analysis	8260D	DI	1	475265	TI 1	FFT SFA	10/19/24 04:07

Client: ERM-West

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-48-SO-33.8-20241008

Date Collected: 10/08/24 16:00 Date Received: 10/11/24 12:30

Lab Sample ID: 580-144769-16

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475022	BYM	EET SEA	10/17/24 07:47
Total/NA	Analysis	8260D		1	475026	K1K	EET SEA	10/17/24 13:54
Total/NA	Prep	5035	RA		474967	BYM	EET SEA	10/17/24 10:00
Total/NA	Analysis	8260D	RA	1	474979	K1K	EET SEA	10/17/24 18:29
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Lab Sample ID: 580-144769-17 Client Sample ID: PDI-48-SO-40-20241008

Date Collected: 10/08/24 16:05 Date Received: 10/11/24 12:30

Matrix: Solid

Dilution Batch **Prepared** Batch **Batch Prep Type** Method **Number Analyst** or Analyzed Type Run **Factor** Lab Total/NA 5035 RA 10/25/24 09:04 475900 AC **EET SEA** Prep Total/NA Analysis 8260D RA 1 475905 BYM **EET SEA** 10/25/24 13:30 5035 Total/NA Prep 475022 BYM **EET SEA** 10/17/24 07:47 Total/NA Analysis 8260D 475026 K1K **EET SEA** 10/17/24 14:15 1 5035 Total/NA Prep RA 474967 BYM **EET SEA** 10/17/24 10:00 Total/NA 8260D RA 474979 K1K EET SEA 10/17/24 18:52 Analysis 1 **EET SEA** Total/NA Analysis 2540G 1 475288 SCS 10/18/24 15:11

Client Sample ID: PDI-57-SO-35-20241008 Lab Sample ID: 580-144769-18

Date Collected: 10/08/24 15:55 Date Received: 10/11/24 12:30

Matrix: Solid

_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	DL		475263	AC	EET SEA	10/18/24 14:45
Total/NA	Analysis	8260D	DL	1	475265	TL1	EET SEA	10/19/24 02:44
Total/NA	Prep	5035			475029	BYM	EET SEA	10/17/24 08:11
Total/NA	Analysis	8260D		1	475093	TL1	EET SEA	10/18/24 02:02
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Client Sample ID: PDI-49-SO-30.9-20241009

Date Collected: 10/09/24 13:30

Date Received: 10/11/24 12:30

470200 000	ELT GEA 10/10/24 13.11
	Lab Sample ID: 580-144769-19
	Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475022	BYM	EET SEA	10/17/24 07:47
Total/NA	Analysis	8260D		1	475026	K1K	EET SEA	10/17/24 14:35
Total/NA	Prep	5035	RA		474967	BYM	EET SEA	10/17/24 10:00
Total/NA	Analysis	8260D	RA	1	474979	K1K	EET SEA	10/17/24 19:14
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Client: ERM-West

Client Sample ID: PDI-49-SO-49.9-20241009

Date Collected: 10/09/24 13:35

Lab Sample ID: 580-144769-20

Matrix: Solid

Date Received: 10/11/24 12:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475022	BYM	EET SEA	10/17/24 07:47
Total/NA	Analysis	8260D		1	475026	K1K	EET SEA	10/17/24 14:56
Total/NA	Prep	5035	RA		474967	BYM	EET SEA	10/17/24 10:00
Total/NA	Analysis	8260D	RA	1	474979	K1K	EET SEA	10/17/24 19:37
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Date Collected: 10/09/24 13:00 Matrix: Solid

Date Received: 10/11/24 12:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475022	BYM	EET SEA	10/17/24 07:47
Total/NA	Analysis	8260D		1	475026	K1K	EET SEA	10/17/24 09:25
Total/NA	Prep	5035	RA		474967	BYM	EET SEA	10/17/24 10:00
Total/NA	Analysis	8260D	RA	1	474979	K1K	EET SEA	10/17/24 13:39

Client Sample ID: PDI-57-SO-42.4-20241009 Lab Sample ID: 580-144769-22

Date Collected: 10/09/24 14:05 Matrix: Solid

Date Received: 10/11/24 12:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475022	BYM	EET SEA	10/17/24 07:47
Total/NA	Analysis	8260D		1	475026	K1K	EET SEA	10/17/24 15:17
Total/NA	Prep	5035	RA		474967	BYM	EET SEA	10/17/24 10:00
Total/NA	Analysis	8260D	RA	1	474979	K1K	EET SEA	10/17/24 19:59
Total/NA	Analysis	2540G		1	475288	SCS	EET SEA	10/18/24 15:11

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: ERM-West Job ID: 580-144769-1

Project/Site: Arkema PDI Sampling

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Progra	am	Identification Number	Expiration Date
Oregon	NELAF)	4167	07-07-25
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Sample Summary

Client: ERM-West

580-144769-13

580-144769-14

580-144769-15

580-144769-16

580-144769-17

580-144769-18

580-144769-19

580-144769-20

580-144769-21

580-144769-22

Project/Site: Arkema PDI Sampling

PDI-38-SO-32.9-20241008

PDI-37-SO-42.5-20241008

PDI-37-SO-31.2-20241008

PDI-48-SO-33.8-20241008

PDI-48-SO-40-20241008

PDI-57-SO-35-20241008

PDI-49-SO-30.9-20241009

PDI-49-SO-49.9-20241009

PDI-57-SO-42.4-20241009

TB-01-SO-20241009

Matrix Collected Received Lab Sample ID Client Sample ID 580-144769-1 PDI-50-SO-28.5-20241009 Solid 10/09/24 17:40 10/11/24 12:30 580-144769-2 PDI-50-SO-34.9-20241009 Solid 10/09/24 17:45 10/11/24 12:30 580-144769-3 PDI-56-SO-34.7-20241009 Solid 10/09/24 17:30 10/11/24 12:30 580-144769-4 PDI-56-SO-39.5-20241009 Solid 10/09/24 17:35 10/11/24 12:30 580-144769-5 PDI-50a-SO-39.9-20241010 Solid 10/10/24 12:00 10/11/24 12:30 PDI-50a-SO-29.45-20241010 Solid 10/10/24 12:05 10/11/24 12:30 580-144769-6 580-144769-7 PDI-50b-SO-44.9-20241010 Solid 10/10/24 15:50 10/11/24 12:30 580-144769-8 10/11/24 12:30 PDI-50b-SO-29.5-20241010 Solid 10/10/24 15:55 580-144769-9 PDI-45-SO-49.9-20241010 Solid 10/10/24 16:40 10/11/24 12:30 10/11/24 12:30 580-144769-10 PDI-45-SO-38.5-20241010 Solid 10/10/24 16:35 580-144769-11 DUP-01-SQ-20241010 Solid 10/10/24 16:45 10/11/24 12:30 580-144769-12 PDI-38-SO-45-20241008 Solid 10/08/24 11:25 10/11/24 12:30

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Job ID: 580-144769-1

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Eurofins Seattle

5755 8th Street East Tacoma. WA 98424

Chain of Custody Record

eurofins	Î	Environment	Testi
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Phone (253) 922-2310	Complet			Lab PM:				Carrie	er Tracking N	o(s):	COC	No:		1			
Client Information	Sampler:	Cruz, She	eri L			Chris	of Origin:		580 Page	62781-19269.12		4					
lient Contact:	Phone:			E-Mail: Sheri.Cru:	z@et.e	eurofin	sus.com	State	of Origin:		Pag	eapf 2		1			
Avery Soplata			PWSID:					oio Dogues	tod		Job i	f:					
company: ERM-West							Analy	sis Reques	ieu			ervation Codes:		1			
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Email: avery.soplata@erm.com				8	III ₹	ist	ist										
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Eurofins Seattle

5755 8th Street East Tacoma, WA 98424 Phone (253) 922-2310

Chain of Custody Record

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Environment Testing

	Sampler: M.S.	Lab PN Cruz	M: , Sheri L						Carrier Tracking No(s):					COC No: 580-62781-19269.12			
Client Information Client Contact:	Phone:			E-Mail:								of Origin				Page: Page of 2	
Avery Soplata			PWSID:	Sheri.	.Cruz(get.e	urotin					OK.				Job#:	
Company: ERM-West									Analy	sis Re	equest	ed				Preservation Codes:	
Address: 1050 SW 6th Avenue Suite 1650	Due Date Requeste	ed:														F - MeOH E - NaHSO4	
City:	TAT Requested (da	ıys):														A - HCL	
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avery.soplata@erm.com Project Name:	Project #:				S N	rd list MeOH	P Iss	d list							containers		
Arkema - PDI Investigation	58020754) eld	ndar	andar	- Judan							ont	Other:	
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Relinquished by:	Date/Time:	,	Co	mpany 6	_		ed by		80	QU			Date	/Tilge:	18	Company OV	
Relinquished by:	Date/Time: Company									Company							
Custody Seals Intact: Custody Seal No.: Δ Yes Δ No						. 3							PDS SEM				

Page 82 of 85

12/10/2024 (Rev. 2)

Eurofins Seattle						
5755 8th Street East Tacoma, WA 98424 Phone (253) 922-2310	Chain of	n of Custo	Custody Record			eurofins Environment Testing
Client Information	Sampler: スら		Lab PM: Cruz, Sheri L		Carrier Tracking No(s):	COC No: 580-62781-19269.12
Client Contact: Avery Soplata	Phone:		E-Mail: Sheri.Cruz@et.eurofinsus.co	ofinsus.com	State of Origin:	Page: Pageoof
Company: ERM-West		PWSID:		Analysis Requested	quested	Job #:
Address: 1050 SW 6th Avenue Suite 1650	Due Date Requested:					Preservation Codes: F - MeOH
	TAT Requested (days):	て				A - HCL
State, Zip: OR 97204	Compliance Project: A Yes	S A NO		blanks		
Phone:	PO#: 0732436 301			ment		
Emall:	WO#:		MeOl			
ta@erm.com	Project #		l list			
ema - PDI Investigation	58020754		ndard			
ste: Arkena	SSOW#:		s, sta		580-14476	SOU-144/69 Chain of Custody
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Remails Identification	Sample Date Time	(C=comp,	ield F			Total N
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-50-39,95-	10/09 1735	5 6	2 X			N
-50-39.9-	00K1 PK/01/01	0 6	8 X			a high concentration
	14	S G				C
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50-49	O	0	SIX			ير
-45-50-	10/10/2 1635	5	× Ω			a high concentration
-01-5Q-2024	holay 16	45 6	υ ×			<u>رو</u>
Identification			Sample DI	Sample Disposal (A fee may be assessed if samples	ssessed if samples ar	er than 1 mo
Non-Hazard Flammable Skin Initant Poison B Deliverable Requested: I,(II) III, IV, Other (specify)	\ Unknown	Radiological	Special Ins	Special Instructions/QC Requirements:	nts:	Archive For Months
Empty Kit Relinquished by:	Date:		Time:		// Method of Shipment:	
Relinquished by Man M	Date/Time:	1700 CO	Company N Received	d by	DateAine	1121 120 Company C
INAKII M	11/2/		Company Received		Datayyon	Company
Relinquished by:	Date/Time	36	mbany Received	0	MINGO (CHES SO SO SO
ody Seals			Cooler To	Cooler Temperature(s) °C and Other Remarks:	marks: 7,6 1.1	C POX SCIL
Δ Tes Δ NO					-	1 1 2 2

A Yes A No	002	Relinquished by:	Relinguished by: Mall Mall	Empty Kit Relinquished by:	Other (specify)	□ Non-Hazard □ Flammable □ Skin Irritant □ Poison B	Possible Hazard Identification	18-01-50-20241009	4001402-4,44-05-44-IDA	PDI- 49-50-309-20241004	8001400-35-03-104	8001400-04-05-84 - IDA	PDT-48-50-33-8-20241008	800112003 - 37-30-3138-20241008	PDI-37-50-42.5-2024 1008	8001HCCK-15-32-38-30-1008	8001 noc-38-30-45-2019		Sample Identification	sine Arkema	Project Name: Arkema - PDI Investigation	Email: avery.soplata@erm.com	Phone:	State, ZIp: OR, 97204	City	Address: 1050 SW 6th Avenue Suite 1650	Company: ERM-West	Client Contact: Avery Sopiata	Client Information	Eurotins Seattle 5755 8th Street East Tacoma, WA 98424 Phone (253) 922-2310
	2	Date/Time:	10/10/24 @ 1"	Date:		Unknown	10/09/241 1405	10/09 1300	10/09 1385	10/04 1330	10/08 1555	10/08	10/08	10/08 1215	10/08 1210	10/08 1130	10/08 1125		Sample Date Time	SSOW#:	Project #: 58020754	WO #	PO#: 0732436.301	Compliance Project: A Yes	TAT Requested (days):	Due Date Requested:		Phone:	Sampler: M.S.	Chain
5	Too Coppany	238 Company E.	730 COMPANY			Radiological	5 6 5	0	5 6 5	e	S	6	_	6	6 8	6		0	Sample Matrix Type (Wewnter, C=comp, O=wastatol, G=grab) ST=Tiasus, A=Air)					∆ No			PWSID:		Cruz	Chain of Custody Record
Cooler Temperature(e) © and Other Remarks:	Received by:	Rischado River 2000	Rec	Time:	Special Instructions/QC Requirements	ant [Sample Disposal (A fee may be	×	X	X	>	*	X	X	X	×	×	X F E A	Field Filtered Second MS 8260D - Volatile 8260D - Volatile	es, sta	ndard I	ist Me	ОН	t blank	CS.		Analysis Requested	E-Mail: Sheri.Cruz@et.eurofinsus.com	Lab PM: Cruz, Sheri L	ecord
B(4171	2 PO(12)	Dalentine: Dal W 8 &		Method of Shipment:	ents:	Disposal By Lab Arch	accessed if campios are retains			2	N.	20	2	E)	23	ಬ	90	X	Total Numbe	· of co	ontaine	ers					equested	State of Origin:	Carrier Tracking No(s):	
3 Ver: 04/02/2024	3	4 1780 COMPANY CHO	1130			Archive For Months	ed longer than 1 month)												Special instructions/Note:	Other:					A - HCL	Preservation Codes: F - MeOH	Job #:	Page of Q	COC No: 580-62781-19269.12	💸 eurofins Environment Testing

Client: ERM-West Job Number: 580-144769-1

Login Number: 144769 List Source: Eurofins Seattle

List Number: 1

Creator: Silva, Shawn 1

Grouter: Growth F		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Avery Soplata ERM-West 1050 SW 6th Avenue Suite 1650 Portland, Oregon 97204

Generated 12/10/2024 2:24:55 PM Revision 1

JOB DESCRIPTION

Arkema PDI Sampling

JOB NUMBER

580-144838-1

Eurofins Seattle 5755 8th Street East Tacoma WA 98424



Eurofins Seattle

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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Authorization

Generated 12/10/2024 2:24:55 PM Revision 1

Authorized for release by Sheri Cruz, Project Manager I Sheri.Cruz@et.eurofinsus.com (253)922-2310

Shuid ony

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Client: ERM-West

Project/Site: Arkema PDI Sampling

Laboratory Job ID: 580-144838-1

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Case Narrative

Client: ERM-West Job ID: 580-144838-1

Project: Arkema PDI Sampling

Job ID: 580-144838-1 Eurofins Seattle

Job Narrative 580-144838-1

Revised report 12/10/2024 to clarify in the narrative why the lab could not report 3 analytes analyzed out of hold in the original run due to ICAL not passing/usable on that instrument for those 3 analytes. See narrative notes below.

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these
 situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise
 specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 10/15/2024 12:35 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.7°C.

GC/MS VOA

Method 8260D: The method blank for analytical batch 580-474946 contained 1,2,4-Trichlorobenzene and 1,2,3-Trichlorobenzene above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

Method 8260D: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-475029 and analytical batch 580-475093 recovered outside control limits for the following analytes: Methylene Chloride. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 8260D: The method blank for preparation batch 580-475029 and analytical batch 580-475093 contained Chlorobenzene above the method detection limit. This target analyte concentration was less than half the reporting limit (1/2RL) in the method blank; therefore, re-extraction and re-analysis of samples was not performed.

Method 8260D: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-475697 and analytical batch 580-475700 recovered outside control limits for the following analytes: Methylene Chloride.

Method 8260D: The following samples were diluted to bring the concentration of target analytes within the calibration range: PDI-51-SO-25.4-20241011 (580-144838-1) and PDI-45a-SO-38.6-20241011 (580-144838-5). Elevated reporting limits (RLs) are provided.

Method 8260D: Surrogate recovery for the following sample was outside the upper control limit: PDI-45a-SO-38.6-20241011 (580-144838-5). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Method 8260D: Surrogate recovery for the following sample was outside the upper control limit: PDI-45a-SO-38.6-20241011 (580-144838-5). This sample did not contain any Chemically associated target analytes; therefore, re-extraction and/or reanalysis was not performed.

Method 8260D: Reanalysis of the following samples were performed outside of the analytical holding time due to failure of quality control parameters in the initial analysis: PDI-51-SO-39.9-20241011 (580-144838-2), PDI-45a-SO-53.9-20241011 (580-144838-6) and TB-01-SO-20241011 (580-144838-7). The samples were originally analyzed on an instrument with an ICAL that was not passing/usable for Bromodichloromethane, Bromomethane and Chloroethane. These three samples were reanalyzed on a secondary instrument that had passing ICALs for these analytes and reported out of hold. The original run in hold could not be reported due to ICAL for those three analytes.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

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Case Narrative

Client: ERM-West Job ID: 580-144838-1

Project: Arkema PDI Sampling

Job ID: 580-144838-1 (Continued)

Eurofins Seattle

General ChemistryNo additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Definitions/Glossary

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Qualifiers

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Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
В	Compound was found in the blank and sample.
Н	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1+	Surrogate recovery exceeds control limits, high biased.

Glossary

DL, RA, RE, IN

DLC EDL

Ciossaiy	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)

Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

LOD Limit of Detection (DoD/DOE)

LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level"

MDA Minimum Detectable Activity (Padiochemistry)

MDA Minimum Detectable Activity (Radiochemistry)

MDC Minimum Detectable Concentration (Radiochemistry)

Estimated Detection Limit (Dioxin)

Decision Level Concentration (Radiochemistry)

MDL Method Detection Limit
ML Minimum Level (Dioxin)
MPN Most Probable Number
MQL Method Quantitation Limit

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent
POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

TNTC Too Numerous To Count

Eurofins Seattle

12/10/2024 (Rev. 1)

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-51-SO-25.4-20241011 Lab Sample ID: 580-144838-1

Date Collected: 10/11/24 12:55

Date Received: 10/15/24 12:35

Matrix: Solid
Percent Solids: 75.6

Method: SW846 8260D - Vola		-	•						
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND		0.025	0.0063		₩	10/17/24 12:06	10/17/24 22:54	
,1,1-Trichloroethane	ND		0.051	0.0058	0 0	₩		10/17/24 22:54	
,1,2,2-Tetrachloroethane	ND		0.025	0.0096		₩	10/17/24 12:06	10/17/24 22:54	
,1,2-Trichloroethane	ND		0.025	0.0094	mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	
,1-Dichloroethane	ND		0.051	0.012	mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	
,1-Dichloroethene	ND		0.051	0.016	mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	
,1-Dichloropropene	ND		0.051	0.0067	0 0	☼	10/17/24 12:06	10/17/24 22:54	
,2,3-Trichlorobenzene	ND		0.10		mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	
,2,3-Trichloropropane	ND		0.051	0.015	mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	
,2,4-Trichlorobenzene	ND		0.10	0.054	mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	
,2,4-Trimethylbenzene	ND		0.051	0.017	mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	
,2-Dibromo-3-Chloropropane	ND		0.076	0.019	mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	
,2-Dibromoethane	ND		0.025	0.0048	mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	
,2-Dichlorobenzene	ND		0.051	0.011	mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	
,2-Dichloroethane	ND		0.025	0.0070	mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	
,2-Dichloropropane	ND		0.025	0.0084	mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	
,3,5-Trimethylbenzene	ND		0.051	0.0096	mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	
,3-Dichlorobenzene	ND		0.076	0.017	mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	
,3-Dichloropropane	ND		0.076	0.0071		 ☆	10/17/24 12:06	10/17/24 22:54	
,4-Dichlorobenzene	ND		0.076		mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	
,2-Dichloropropane	ND		0.051		mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	
-Chlorotoluene	ND		0.051		mg/Kg			10/17/24 22:54	
-Chlorotoluene	ND		0.051		mg/Kg	₩		10/17/24 22:54	
-Isopropyltoluene	ND		0.051		mg/Kg	₩		10/17/24 22:54	
Benzene	ND		0.025	0.0048				10/17/24 22:54	
romobenzene	ND		0.051	0.0053		₩		10/17/24 22:54	
Bromochloromethane	ND		0.051	0.0079	0 0	₩.		10/17/24 22:54	
Bromoform	ND		0.051	0.0057				10/17/24 22:54	
Carbon tetrachloride	ND		0.025	0.0056	0 0	~ ☆		10/17/24 22:54	
Chloroform	ND		0.025	0.0053	0 0	~ ☆		10/17/24 22:54	
Chloromethane	ND		0.023		mg/Kg			10/17/24 22:54	
sis-1,2-Dichloroethene	ND		0.076		mg/Kg	₩		10/17/24 22:54	
is-1,3-Dichloropropene	ND		0.025	0.0051		₩		10/17/24 22:54	
Dibromochloromethane	ND		0.025	0.0062				10/17/24 22:54	
Dibromomethane	ND ND		0.025	0.0002	0 0	₽		10/17/24 22:54	
Dichlorodifluoromethane					0 0				
	ND		0.32		mg/Kg	· · · · · · · · · · · · · · · · · · ·		10/17/24 22:54 10/17/24 22:54	
Ethylbenzene	ND		0.051		mg/Kg	*			
łexachlorobutadiene 	ND		0.13		mg/Kg	*		10/17/24 22:54	
sopropylbenzene	ND		0.051		mg/Kg	<u>.</u>		10/17/24 22:54	
Methyl tert-butyl ether	ND		0.051	0.0076		☼		10/17/24 22:54	
Methylene Chloride	ND	*+	0.32		mg/Kg	☼		10/17/24 22:54	
n-Xylene & p-Xylene	ND		0.051	0.0090				10/17/24 22:54	
laphthalene	ND		0.19		mg/Kg	☼		10/17/24 22:54	
-Butylbenzene	ND		0.051		mg/Kg	₩		10/17/24 22:54	
I-Propylbenzene	ND		0.051		mg/Kg			10/17/24 22:54	
-Xylene	ND		0.051	0.0063		₩		10/17/24 22:54	
ec-Butylbenzene	ND		0.051	0.011	mg/Kg	₽	10/17/24 12:06	10/17/24 22:54	
Styrene	ND		0.051		mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	
-Butylbenzene	ND		0.051	0.0098	mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	

Eurofins Seattle

12/10/2024 (Rev. 1)

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Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-51-SO-25.4-20241011 Lab Sample ID: 580-144838-1

Date Collected: 10/11/24 12:55 **Matrix: Solid** Date Received: 10/15/24 12:35

Percent Solids: 75.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND		0.051	0.0067	mg/Kg	⊅	10/17/24 12:06	10/17/24 22:54	1
Toluene	ND		0.076	0.017	mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	1
trans-1,2-Dichloroethene	ND		0.076	0.019	mg/Kg	⊅	10/17/24 12:06	10/17/24 22:54	1
trans-1,3-Dichloropropene	ND		0.051	0.0089	mg/Kg	☼	10/17/24 12:06	10/17/24 22:54	1
Trichloroethene	ND		0.051	0.013	mg/Kg	☼	10/17/24 12:06	10/17/24 22:54	1
Trichlorofluoromethane	ND		0.10	0.033	mg/Kg	₩	10/17/24 12:06	10/17/24 22:54	1
Vinyl chloride	ND		0.13	0.024	mg/Kg	☼	10/17/24 12:06	10/17/24 22:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				10/17/24 12:06	10/17/24 22:54	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/17/24 12:06	10/17/24 22:54	1
Dibromofluoromethane (Surr)	98		80 - 120				10/17/24 12:06	10/17/24 22:54	1
Toluene-d8 (Surr)	98		80 - 120				10/17/24 12:06	10/17/24 22:54	1

Method: SW846 8260D - V	olatile Organic	Compounds	by GC/MS	- DL					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	ND		0.54	0.075	mg/Kg	<u></u>	10/23/24 14:23	10/24/24 16:05	1
Bromomethane	ND		1.4	0.51	mg/Kg	₩	10/23/24 14:23	10/24/24 16:05	1
Chlorobenzene	17		0.54	0.065	mg/Kg	₩	10/23/24 14:23	10/24/24 16:05	1
Chloroethane	ND		1.1	0.28	mg/Kg	₽	10/23/24 14:23	10/24/24 16:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		80 - 121	10/23/24 14:23	10/24/24 16:05	1
4-Bromofluorobenzene (Surr)	101		80 - 120	10/23/24 14:23	10/24/24 16:05	1
Dibromofluoromethane (Surr)	112		80 - 120	10/23/24 14:23	10/24/24 16:05	1
Toluene-d8 (Surr)	99		80 - 120	10/23/24 14:23	10/24/24 16:05	1

General Chemistry Analyte	Result Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	75.6	0.1	0.1	%			10/17/24 11:33	1
Percent Moisture (SM22 2540G)	24.4	0.1	0.1	%			10/17/24 11:33	1

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-51-SO-39.9-20241011

Lab Sample ID: 580-144838-2 Date Collected: 10/11/24 13:00 **Matrix: Solid** Date Received: 10/15/24 12:35 Percent Solids: 72.0

Analyte	olatile Organic (Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.029	0.0073	mg/Kg	\	10/17/24 12:06	10/17/24 23:15	1
1,1,1-Trichloroethane	ND		0.058	0.0067	mg/Kg	₩	10/17/24 12:06	10/17/24 23:15	1
1,1,2,2-Tetrachloroethane	ND		0.029	0.011	mg/Kg	₩	10/17/24 12:06	10/17/24 23:15	1
1,1,2-Trichloroethane	ND		0.029	0.011	mg/Kg	₽	10/17/24 12:06	10/17/24 23:15	1
1,1-Dichloroethane	ND		0.058	0.013	mg/Kg	₽	10/17/24 12:06	10/17/24 23:15	1
1,1-Dichloroethene	ND		0.058		mg/Kg	₩	10/17/24 12:06	10/17/24 23:15	1
1,1-Dichloropropene	ND		0.058	0.0077	mg/Kg	ф	10/17/24 12:06	10/17/24 23:15	1
1,2,3-Trichlorobenzene	ND		0.12	0.058	mg/Kg	₽	10/17/24 12:06	10/17/24 23:15	1
1,2,3-Trichloropropane	ND		0.058		mg/Kg	₩	10/17/24 12:06	10/17/24 23:15	1
1,2,4-Trichlorobenzene	ND		0.12	0.062	mg/Kg		10/17/24 12:06	10/17/24 23:15	1
1,2,4-Trimethylbenzene	ND		0.058		mg/Kg	₩	10/17/24 12:06	10/17/24 23:15	1
1,2-Dibromo-3-Chloropropane	ND		0.087		mg/Kg	₩		10/17/24 23:15	1
1,2-Dibromoethane	ND		0.029	0.0055				10/17/24 23:15	1
1,2-Dichlorobenzene	ND		0.058		mg/Kg	₩		10/17/24 23:15	1
1,2-Dichloroethane	ND		0.029	0.0080		÷		10/17/24 23:15	1
1,2-Dichloropropane	ND		0.029	0.0096				10/17/24 23:15	 1
1,3,5-Trimethylbenzene	ND		0.058		mg/Kg			10/17/24 23:15	1
1,3-Dichlorobenzene	ND		0.087		mg/Kg			10/17/24 23:15	1
1,3-Dichloropropane	ND		0.087	0.0082				10/17/24 23:15	· · · · · · · · · · · · · · · · · · ·
1,4-Dichlorobenzene	ND		0.087		mg/Kg	~ :↑:		10/17/24 23:15	1
2,2-Dichloropropane	ND		0.058		mg/Kg	ж ж		10/17/24 23:15	1
2-Chlorotoluene	ND		0.058		mg/Kg			10/17/24 23:15	
4-Chlorotoluene	ND		0.058		mg/Kg	☆		10/17/24 23:15	1
4-Isopropyltoluene	ND ND		0.058		mg/Kg	☆		10/17/24 23:15	1
Benzene	ND		0.030	0.0055				10/17/24 23:15	'
Bromobenzene	ND		0.023	0.0061		₩		10/17/24 23:15	1
Bromochloromethane	ND ND		0.058	0.0001		**		10/17/24 23:15	1
Bromoform	ND ND			0.0090				10/17/24 23:15	
	ND ND		0.058 0.029		0 0	;;; ;;		10/17/24 23:15	1
Carbon tetrachloride			0.029	0.0064 0.0070		₽		10/17/24 23:15	1
Chlorobenzene	0.026								
Chloroform	ND ND		0.029	0.0061		ψ.		10/17/24 23:15	1
Chloromethane			0.087		mg/Kg	ψ.		10/17/24 23:15	1
cis-1,2-Dichloroethene	ND		0.087		mg/Kg			10/17/24 23:15	
cis-1,3-Dichloropropene	ND		0.029	0.0058		:Q:		10/17/24 23:15	1
Dibromochloromethane	ND		0.029	0.0071		‡		10/17/24 23:15	1
Dibromomethane	ND		0.058		mg/Kg	. .		10/17/24 23:15	1
Dichlorodifluoromethane	ND		0.36		mg/Kg			10/17/24 23:15	1
Ethylbenzene	ND		0.058		mg/Kg	**		10/17/24 23:15	1
Hexachlorobutadiene	ND		0.15		mg/Kg	. .		10/17/24 23:15	1
Isopropylbenzene	ND		0.058		mg/Kg	₩		10/17/24 23:15	1
Methyl tert-butyl ether	ND		0.058		mg/Kg	₩		10/17/24 23:15	1
Methylene Chloride	ND	*+ 	0.36		mg/Kg	.		10/17/24 23:15	1
m-Xylene & p-Xylene	ND		0.058		mg/Kg	₩		10/17/24 23:15	1
Naphthalene	ND		0.22		mg/Kg	₽		10/17/24 23:15	1
n-Butylbenzene	ND		0.058		mg/Kg	₩	10/17/24 12:06	10/17/24 23:15	1
N-Propylbenzene	ND		0.058		mg/Kg	₩	10/17/24 12:06	10/17/24 23:15	1
o-Xylene	ND		0.058	0.0073	mg/Kg	₩	10/17/24 12:06	10/17/24 23:15	1
sec-Butylbenzene	ND		0.058	0.013	mg/Kg	₩		10/17/24 23:15	1
Styrene	ND		0.058	0.019	mg/Kg	₩	10/17/24 12:06	10/17/24 23:15	1

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-51-SO-39.9-20241011

Date Collected: 10/11/24 13:00

Date Received: 10/15/24 12:35

Lab Sample ID: 580-144838-2

Matrix: Solid Percent Solids: 72.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	MD		0.058	0.011	mg/Kg	<u></u>	10/17/24 12:06	10/17/24 23:15	1
Tetrachloroethene	ND		0.058	0.0077	mg/Kg	₩	10/17/24 12:06	10/17/24 23:15	1
Toluene	ND		0.087	0.020	mg/Kg	₩	10/17/24 12:06	10/17/24 23:15	1
trans-1,2-Dichloroethene	ND		0.087	0.021	mg/Kg	₩	10/17/24 12:06	10/17/24 23:15	1
trans-1,3-Dichloropropene	ND		0.058	0.010	mg/Kg	₩	10/17/24 12:06	10/17/24 23:15	1
Trichloroethene	ND		0.058	0.015	mg/Kg	₩	10/17/24 12:06	10/17/24 23:15	1
Trichlorofluoromethane	ND		0.12	0.038	mg/Kg	₽	10/17/24 12:06	10/17/24 23:15	1
Vinyl chloride	ND		0.15	0.027	mg/Kg	₩	10/17/24 12:06	10/17/24 23:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				10/17/24 12:06	10/17/24 23:15	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/17/24 12:06	10/17/24 23:15	1
Dibromofluoromethane (Surr)	98		80 - 120				10/17/24 12:06	10/17/24 23:15	1
Toluene-d8 (Surr)	103		80 - 120				10/17/24 12:06	10/17/24 23:15	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	ND	Н	0.058	0.0080	mg/Kg	— <u></u>	10/28/24 08:38	10/28/24 14:53	1
Bromomethane	ND	Н	0.15	0.055	mg/Kg	₩	10/28/24 08:38	10/28/24 14:53	1
Chloroethane	ND	Н	0.12	0.030	mg/Kg	≎	10/28/24 08:38	10/28/24 14:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		80 - 121				10/28/24 08:38	10/28/24 14:53	1
4-Bromofluorobenzene (Surr)	104		80 - 120				10/28/24 08:38	10/28/24 14:53	1
Dibromofluoromethane (Surr)	103		80 - 120				10/28/24 08:38	10/28/24 14:53	1
Toluene-d8 (Surr)	101		80 - 120				10/28/24 08:38	10/28/24 14:53	1
General Chemistry									
Analyte	Desuit	Qualifier	DI	DI.	Unit	n	Droparod	Analyzod	Dil Fac

General Chemistry								
Analyte	Result Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	72.0	0.1	0.1	%			10/17/24 11:33	1
Percent Moisture (SM22 2540G)	28.0	0.1	0.1	%			10/17/24 11:33	1

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Client Sample ID: RB-01-WQ-20241011

Lab Sample ID: 580-144838-3

Date Collected: 10/11/24 14:00 **Matrix: Water** Date Received: 10/15/24 12:35

Analyte	Result C	Qualitier	RL _	MDL		D	Prepared	Analyzed	Dil Fa
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			10/16/24 20:28	
Chloromethane	0.37 J	J	1.0	0.28	ug/L			10/16/24 20:28	
Vinyl chloride	ND		1.0	0.22	ug/L			10/16/24 20:28	
Bromomethane	ND		1.0	0.21	ug/L			10/16/24 20:28	
Chloroethane	ND		1.0	0.35	ug/L			10/16/24 20:28	
Trichlorofluoromethane	ND		1.0	0.36	ug/L			10/16/24 20:28	
1,1-Dichloroethene	ND		1.0	0.28	ug/L			10/16/24 20:28	
Methylene Chloride	ND		5.0	1.4	ug/L			10/16/24 20:28	
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			10/16/24 20:28	
1,1-Dichloroethane	ND		1.0		ug/L			10/16/24 20:28	
2,2-Dichloropropane	ND		1.0		ug/L			10/16/24 20:28	
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/16/24 20:28	
Bromochloromethane	ND		1.0		ug/L			10/16/24 20:28	
Chloroform	ND		1.0		ug/L			10/16/24 20:28	
1,1,1-Trichloroethane	ND		1.0		ug/L			10/16/24 20:28	
Carbon tetrachloride	ND		1.0		ug/L			10/16/24 20:28	
1,1-Dichloropropene	ND		1.0		ug/L			10/16/24 20:28	
Benzene	ND		1.0		ug/L			10/16/24 20:28	
1,2-Dichloroethane	ND		1.0		ug/L			10/16/24 20:28	
Trichloroethene	ND ND		1.0		ug/L			10/16/24 20:28	
1,2-Dichloropropane	ND		1.0		_			10/16/24 20:28	
Dibromomethane	ND ND		1.0		ug/L ug/L			10/16/24 20:28	
					-				
Bromodichloromethane	ND		1.0		ug/L			10/16/24 20:28	
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/16/24 20:28	
Toluene	ND		1.0		ug/L			10/16/24 20:28	
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/16/24 20:28	
1,1,2-Trichloroethane	ND		1.0		ug/L			10/16/24 20:28	
Tetrachloroethene	ND		1.0		ug/L			10/16/24 20:28	
1,3-Dichloropropane	ND		1.0		ug/L			10/16/24 20:28	
Dibromochloromethane	ND		1.0		ug/L			10/16/24 20:28	
1,2-Dibromoethane	ND		1.0		ug/L			10/16/24 20:28	
Chlorobenzene	ND		1.0		ug/L			10/16/24 20:28	
Ethylbenzene	ND		1.0		ug/L			10/16/24 20:28	
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			10/16/24 20:28	
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	-			10/16/24 20:28	
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			10/16/24 20:28	
o-Xylene	ND		1.0	0.39	ug/L			10/16/24 20:28	
Styrene	ND		1.0	0.53	ug/L			10/16/24 20:28	
Bromoform	ND		1.0	0.51	ug/L			10/16/24 20:28	
Isopropylbenzene	ND		1.0	0.44	ug/L			10/16/24 20:28	
Bromobenzene	ND		1.0	0.43	ug/L			10/16/24 20:28	
N-Propylbenzene	ND		1.0	0.50	ug/L			10/16/24 20:28	
1,2,3-Trichloropropane	ND		1.0		ug/L			10/16/24 20:28	
2-Chlorotoluene	ND		1.0		ug/L			10/16/24 20:28	
1,3,5-Trimethylbenzene	ND		1.0		ug/L			10/16/24 20:28	
4-Chlorotoluene	ND		1.0		ug/L			10/16/24 20:28	
t-Butylbenzene	ND		2.0		ug/L			10/16/24 20:28	
1,2,4-Trimethylbenzene	ND		3.0		ug/L			10/16/24 20:28	
sec-Butylbenzene	ND		1.0		ug/L ug/L			10/16/24 20:28	

Eurofins Seattle

12/10/2024 (Rev. 1)

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Client Sample ID: RB-01-WQ-20241011

Lab Sample ID: 580-144838-3 Date Collected: 10/11/24 14:00

Matrix: Water

Date Received: 10/15/24 12:35

Method: SW846 8260D - Vo Analyte	_	Qualifier	RL	•	Unit	D	Prepared	Analyzed	Dil Fac
		Qualifier					Fiepaieu		DII Fac
1,3-Dichlorobenzene	ND		1.0		ug/L			10/16/24 20:28	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			10/16/24 20:28	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			10/16/24 20:28	1
n-Butylbenzene	ND		1.0	0.44	ug/L			10/16/24 20:28	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			10/16/24 20:28	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			10/16/24 20:28	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			10/16/24 20:28	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			10/16/24 20:28	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			10/16/24 20:28	1
Naphthalene	ND		3.0	0.93	ug/L			10/16/24 20:28	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			10/16/24 20:28	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	102		80 - 120			•		10/16/24 20:28	1
4-Bromofluorobenzene (Surr)	99		80 - 120					10/16/24 20:28	1
Dibromofluoromethane (Surr)	99		80 - 120					10/16/24 20:28	1
1,2-Dichloroethane-d4 (Surr)	99		80 - 120					10/16/24 20:28	1

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-WQ-20241011

Lab Sample ID: 580-144838-4

Date Collected: 10/11/24 00:00 **Matrix: Water** Date Received: 10/15/24 12:35

Analyte	Result Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
Dichlorodifluoromethane	ND —	1.0	0.53	ug/L			10/16/24 18:43	
Chloromethane	ND	1.0	0.28	ug/L			10/16/24 18:43	
Vinyl chloride	ND	1.0	0.22	ug/L			10/16/24 18:43	
Bromomethane	ND	1.0	0.21	ug/L			10/16/24 18:43	
Chloroethane	ND	1.0	0.35	ug/L			10/16/24 18:43	
Trichlorofluoromethane	ND	1.0	0.36	ug/L			10/16/24 18:43	
1,1-Dichloroethene	ND	1.0	0.28	ug/L			10/16/24 18:43	
Methylene Chloride	ND	5.0	1.4	ug/L			10/16/24 18:43	
trans-1,2-Dichloroethene	ND	1.0	0.39	ug/L			10/16/24 18:43	
1,1-Dichloroethane	ND	1.0	0.22	ug/L			10/16/24 18:43	
2,2-Dichloropropane	ND	1.0	0.32	ug/L			10/16/24 18:43	
cis-1,2-Dichloroethene	ND	1.0	0.35	ug/L			10/16/24 18:43	
Bromochloromethane	ND	1.0	0.29	ug/L			10/16/24 18:43	
Chloroform	ND	1.0		ug/L			10/16/24 18:43	
1,1,1-Trichloroethane	ND	1.0	0.39	ug/L			10/16/24 18:43	
Carbon tetrachloride	ND	1.0		ug/L			10/16/24 18:43	
1,1-Dichloropropene	ND	1.0		ug/L			10/16/24 18:43	
Benzene	ND	1.0		ug/L			10/16/24 18:43	
1,2-Dichloroethane	ND	1.0		ug/L			10/16/24 18:43	
Trichloroethene	ND	1.0		ug/L			10/16/24 18:43	
1,2-Dichloropropane	ND	1.0		ug/L			10/16/24 18:43	
Dibromomethane	ND	1.0		ug/L			10/16/24 18:43	
Bromodichloromethane	ND	1.0		ug/L			10/16/24 18:43	
cis-1,3-Dichloropropene	ND	1.0		ug/L			10/16/24 18:43	
Toluene	ND	1.0		ug/L			10/16/24 18:43	
trans-1,3-Dichloropropene	ND	1.0		ug/L			10/16/24 18:43	
1,1,2-Trichloroethane	ND	1.0		ug/L			10/16/24 18:43	
Tetrachloroethene	ND	1.0		ug/L			10/16/24 18:43	
1,3-Dichloropropane	ND	1.0		ug/L			10/16/24 18:43	
Dibromochloromethane	ND	1.0		ug/L			10/16/24 18:43	
1,2-Dibromoethane	ND	1.0		ug/L			10/16/24 18:43	
Chlorobenzene	ND	1.0		ug/L			10/16/24 18:43	
Ethylbenzene	ND	1.0		ug/L			10/16/24 18:43	
1,1,1,2-Tetrachloroethane	ND	1.0		ug/L			10/16/24 18:43	
1,1,2,2-Tetrachloroethane	ND	1.0		ug/L			10/16/24 18:43	
m-Xylene & p-Xylene	ND	2.0		ug/L			10/16/24 18:43	
o-Xylene	ND	1.0		ug/L			10/16/24 18:43	
Styrene	ND	1.0		ug/L			10/16/24 18:43	
Bromoform	ND	1.0		ug/L			10/16/24 18:43	
Isopropylbenzene	ND	1.0		ug/L ug/L			10/16/24 18:43	
Bromobenzene	ND	1.0		ug/L			10/16/24 18:43	
	ND ND			ug/L ug/L			10/16/24 18:43	
N-Propylbenzene 1,2,3-Trichloropropane		1.0					10/16/24 18:43	
• •	ND ND	1.0		ug/L				
2-Chlorotoluene	ND ND	1.0		ug/L			10/16/24 18:43 10/16/24 18:43	
1,3,5-Trimethylbenzene	ND ND	1.0		ug/L				
4-Chlorotoluene	ND ND	1.0		ug/L			10/16/24 18:43	
t-Butylbenzene	ND	2.0		ug/L			10/16/24 18:43	
1,2,4-Trimethylbenzene sec-Butylbenzene	ND ND	3.0		ug/L ug/L			10/16/24 18:43 10/16/24 18:43	

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-WQ-20241011

Lab Sample ID: 580-144838-4

Date Collected: 10/11/24 00:00 **Matrix: Water** Date Received: 10/15/24 12:35

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			10/16/24 18:43	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			10/16/24 18:43	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			10/16/24 18:43	1
n-Butylbenzene	ND		1.0	0.44	ug/L			10/16/24 18:43	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			10/16/24 18:43	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			10/16/24 18:43	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			10/16/24 18:43	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			10/16/24 18:43	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			10/16/24 18:43	1
Naphthalene	ND		3.0	0.93	ug/L			10/16/24 18:43	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			10/16/24 18:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		80 - 120			•		10/16/24 18:43	1
4-Bromofluorobenzene (Surr)	98		80 - 120					10/16/24 18:43	1
Dibromofluoromethane (Surr)	101		80 - 120					10/16/24 18:43	1
1,2-Dichloroethane-d4 (Surr)	101		80 - 120					10/16/24 18:43	1

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-45a-SO-38.6-20241011

Lab Sample ID: 580-144838-5 Date Collected: 10/11/24 15:30 Matrix: Solid Date Received: 10/15/24 12:35 Percent Solids: 83.9

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 1,1,1,2-Tetrachloroethane 0.26 0.065 mg/Kg 10/23/24 14:23 10/24/24 16:46 2.3 ND 0.52 1,1,1-Trichloroethane 0.060 mg/Kg 10/23/24 14:23 10/24/24 16:46 1,1,2,2-Tetrachloroethane 0.43 0.26 0.099 mg/Kg 10/23/24 14:23 10/24/24 16:46 0.26 1,1,2-Trichloroethane ND 0.096 mg/Kg 10/23/24 14:23 10/24/24 16:46 ND 0.52 0.12 mg/Kg 10/23/24 14:23 10/24/24 16:46 1.1-Dichloroethane 10/24/24 16:46 1,1-Dichloroethene ND 0.52 0.16 mg/Kg 10/23/24 14:23 1,1-Dichloropropene ND 0.52 0.069 10/23/24 14:23 10/24/24 16:46 mg/Kg ND 10/23/24 14:23 10/24/24 16:46 1,2,3-Trichlorobenzene 1.0 0.52 mg/Kg 1,2,3-Trichloropropane ND 0.52 0.15 mg/Kg 10/23/24 14:23 10/24/24 16:46 1,2,4-Trichlorobenzene ND 1.0 0.55 mg/Kg 10/23/24 14:23 10/24/24 16:46 1,2,4-Trimethylbenzene ND 0.52 0.18 mg/Kg 10/23/24 14:23 10/24/24 16:46 1.2-Dibromo-3-Chloropropane ND 0.78 0.20 mg/Kg 10/23/24 14:23 10/24/24 16:46 1 1,2-Dibromoethane ND 0.26 0.049 mg/Kg 10/23/24 14:23 10/24/24 16:46 0.52 0.11 mg/Kg 10/23/24 14:23 10/24/24 16:46 1,2-Dichlorobenzene 13 ND 0.26 0.072 mg/Kg 10/23/24 14:23 10/24/24 16:46 1.2-Dichloroethane 1,2-Dichloropropane ND 0.26 0.086 mg/Kg 10/23/24 14:23 10/24/24 16:46 1,3,5-Trimethylbenzene ND 0.52 0.099 mg/Kg 10/23/24 14:23 10/24/24 16:46 0.78 0.17 mg/Kg 10/23/24 14:23 10/24/24 16:46 1.3-Dichlorobenzene 1.4 0.073 ND 0.78 10/23/24 14:23 10/24/24 16:46 1,3-Dichloropropane mg/Kg 1,4-Dichlorobenzene 41 0.78 0.14 mg/Kg 10/23/24 14:23 10/24/24 16:46 2-Chlorotoluene ND 0.52 0.11 mg/Kg 10/23/24 14:23 10/24/24 16:46 ť 4-Chlorotoluene ND 0.52 0.13 mg/Kg 10/23/24 14:23 10/24/24 16:46 0.52 10/23/24 14:23 4-Isopropyltoluene 0.23 0.13 mg/Kg 10/24/24 16:46 Benzene ND 0.26 0.049 mg/Kg 10/23/24 14:23 10/24/24 16:46 0.52 0.055 mg/Kg 10/23/24 14:23 10/24/24 16:46 **Bromobenzene** 0.62 Bromochloromethane ND 0.52 0.081 mg/Kg 10/23/24 14:23 10/24/24 16:46 Bromodichloromethane ND 0.52 0.072 mg/Kg 10/23/24 14:23 10/24/24 16:46 Bromoform 0.059 ND 0.52 mg/Kg 10/23/24 14:23 10/24/24 16:46 Bromomethane ND 1.3 0.49 mg/Kg 10/23/24 14:23 10/24/24 16:46 0.26 10/23/24 14:23 Carbon tetrachloride 48 0.057 mg/Kg 10/24/24 16:46 Chloroethane ND 1.0 0.27 mg/Kg 10/23/24 14:23 10/24/24 16:46 0.26 0.055 mg/Kg 10/23/24 14:23 10/24/24 16:46 2.0 Chloroform Chloromethane 0.78 0.13 10/23/24 14:23 10/24/24 16:46 ND mg/Kg 0.16 10/23/24 14:23 10/24/24 16:46 cis-1,2-Dichloroethene 0.33 0.78 mg/Kg cis-1,3-Dichloropropene ND 0.26 0.052 mg/Kg 10/23/24 14:23 10/24/24 16:46 Dibromochloromethane ND 0.26 0.064 mg/Kg 10/23/24 14:23 10/24/24 16:46 Dibromomethane ND 0.52 0.096 mg/Kg 10/23/24 14:23 10/24/24 16:46 Dichlorodifluoromethane ND 3.3 0.60 mg/Kg 10/23/24 14:23 10/24/24 16:46 ND 0.52 10/23/24 14:23 Ethylbenzene 0.12 mg/Kg 10/24/24 16:46 Hexachlorobutadiene 24 1.3 0.31 mg/Kg 10/23/24 14:23 10/24/24 16:46 Isopropylbenzene ND 0.52 0.11 mg/Kg 10/23/24 14:23 10/24/24 16:46 Methyl tert-butyl ether NΩ 0.52 0.078 mg/Kg 10/23/24 14:23 10/24/24 16:46 10/24/24 16:46 Methylene Chloride ND 3.3 0.34 mg/Kg 10/23/24 14:23 m-Xylene & p-Xylene 0.52 0.092 10/23/24 14:23 10/24/24 16:46 ND mg/Kg **Naphthalene** 0.90 20 0.51 mg/Kg 10/23/24 14:23 10/24/24 16:46 n-Butylbenzene ND 0.52 0.24 mg/Kg 10/23/24 14:23 10/24/24 16:46 N-Propylbenzene ND 0.52 10/23/24 14:23 0.20 mg/Kg 10/24/24 16:46 o-Xylene ND 0.52 0.065 mg/Kg ₩ 10/23/24 14:23 10/24/24 16:46 sec-Butylbenzene ND 0.52 0.11 mg/Kg 10/23/24 14:23 10/24/24 16:46

Eurofins Seattle

12/10/2024 (Rev. 1)

138 S1+

Method: SW846 8260D - Volatile Organic Compounds by GC/MS - DL

Method: SW846 8260D - Volatile Organic Compounds by GC/MS - DL2

Project/Site: Arkema PDI Sampling

Date Received: 10/15/24 12:35

Toluene-d8 (Surr)

Client Sample ID: PDI-45a-SO-38.6-20241011

Date Collected: 10/11/24 15:30

Lab Sample ID: 580-144838-5

10/23/24 14:23 10/24/24 16:46

Matrix: Solid Percent Solids: 83.9

Job ID: 580-144838-1

Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	(Conti	inued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		0.52	0.17	mg/Kg	— <u></u>	10/23/24 14:23	10/24/24 16:46	1
t-Butylbenzene	ND		0.52	0.10	mg/Kg	₩	10/23/24 14:23	10/24/24 16:46	1
Toluene	0.81		0.78	0.18	mg/Kg	₩	10/23/24 14:23	10/24/24 16:46	1
trans-1,2-Dichloroethene	ND		0.78	0.19	mg/Kg	₩	10/23/24 14:23	10/24/24 16:46	1
trans-1,3-Dichloropropene	ND		0.52	0.091	mg/Kg	₩	10/23/24 14:23	10/24/24 16:46	1
Trichloroethene	1.7		0.52	0.13	mg/Kg	₩	10/23/24 14:23	10/24/24 16:46	1
Trichlorofluoromethane	ND		1.0	0.34	mg/Kg	₩	10/23/24 14:23	10/24/24 16:46	1
Vinyl chloride	ND		1.3	0.24	mg/Kg	≎	10/23/24 14:23	10/24/24 16:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				10/23/24 14:23	10/24/24 16:46	1
4-Bromofluorobenzene (Surr)	134	S1+	80 - 120				10/23/24 14:23	10/24/24 16:46	1
Dibromofluoromethane (Surr)	97		80 - 120				10/23/24 14:23	10/24/24 16:46	1

80 - 120

Analyte	Result	Qualifier	RL	MDL	Unit	ט	Prepared	Analyzed	Dil Fac
2,2-Dichloropropane	ND		0.52	0.16	mg/Kg	*	10/25/24 07:50	10/25/24 14:09	1
Tetrachloroethene	200		1.0	0.14	mg/Kg	₩	10/23/24 14:23	10/24/24 16:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/23/24 14:23	10/24/24 16:26	1
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/25/24 07:50	10/25/24 14:09	1
4-Bromofluorobenzene (Surr)	105		80 - 120				10/23/24 14:23	10/24/24 16:26	1
4-Bromofluorobenzene (Surr)	96		80 - 120				10/25/24 07:50	10/25/24 14:09	1
Dibromofluoromethane (Surr)	98		80 - 120				10/23/24 14:23	10/24/24 16:26	1
Dibromofluoromethane (Surr)	102		80 - 120				10/25/24 07:50	10/25/24 14:09	1
Toluene-d8 (Surr)	110		80 - 120				10/23/24 14:23	10/24/24 16:26	1
Toluene-d8 (Surr)	178	S1+	80 - 120				10/25/24 07:50	10/25/24 14:09	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	13000		52	6.2	mg/Kg	*	10/25/24 07:50	10/25/24 13:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/25/24 07:50	10/25/24 13:48	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/25/24 07:50	10/25/24 13:48	1
Dibromofluoromethane (Surr)	103		80 - 120				10/25/24 07:50	10/25/24 13:48	1
Toluene-d8 (Surr)	101		80 - 120				10/25/24 07:50	10/25/24 13:48	1

General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	83.9		0.1	0.1	%			10/17/24 11:33	1
Percent Moisture (SM22 2540G)	16.1		0.1	0.1	%			10/17/24 11:33	1

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-45a-SO-53.9-20241011

Lab Sample ID: 580-144838-6 Date Collected: 10/11/24 15:25 **Matrix: Solid**

Date Received: 10/15/24 12:35 Percent Solids: 65.6

1,1,1,2-Tetrachloroethane	Analyzed		Analyze			red	Prepa		D	Unit	MDL	r	RL	Qualifier	ult	Result	nalyte
1,1,1-Trichloroethane	- -	_		3 1	6			10	_ <u></u>	mg/Kg	0085	0.0		<u> </u>			-
1.1.2.2-Tetrachloroethane ND 0.034 0.013 mg/kg 0 10/17/24 12 1.1.2-Trichloroethane ND 0.034 0.013 mg/kg 0 10/17/24 12 1.1.1.2-Trichloroethane ND 0.068 0.016 mg/kg 0 10/17/24 12 1.1.1-Dichloroethane ND 0.068 0.021 mg/kg 0 10/17/24 12 1.1.1-Dichloroethane ND 0.068 0.0090 mg/kg 0 10/17/24 12 1.1.1-Dichloroethane ND 0.068 0.0090 mg/kg 0 10/17/24 12 12.3-Trichloroptopane ND 0.068 0.0090 mg/kg 0 10/17/24 12 12.3-Trichlorobenzene ND 0.068 0.0090 mg/kg 0 10/17/24 12 12.3-Trichlorobenzene ND 0.068 0.000 mg/kg 0 10/17/24 12 12.3-Trichlorobenzene ND 0.068 0.020 mg/kg 0 10/17/24 12 12.3-Trichlorobenzene ND 0.044 0.073 mg/kg 0 10/17/24 12 12.3-Trichlorobenzene ND 0.068 0.023 mg/kg 0 10/17/24 12 12.3-Dichlorobenzene ND 0.008 0.023 mg/kg 0 10/17/24 12 12.Dichloroethane ND 0.034 0.0065 mg/kg 0 10/17/24 12 12.Dichloroethane ND 0.034 0.0065 mg/kg 0 10/17/24 12 12.Dichloroethane ND 0.034 0.0065 mg/kg 0 10/17/24 12 12.Dichloroethane ND 0.034 0.0014 mg/kg 0 10/17/24 12 12.Dichloroptopane ND 0.034 0.0014 mg/kg 0 10/17/24 12 13.Dichloroptopane ND 0.034 0.0014 mg/kg 0 10/17/24 12 13.Dichloroptopane ND 0.036 0.013 mg/kg 0 10/17/24 12 13.Dichloroptopane ND 0.036 0.013 mg/kg 0 10/17/24 12 13.Dichloroptopane ND 0.0068 0.013 mg/kg 0 10/17/24 12 13.Dichloroptopane ND 0.0068 0.013 mg/kg 0 10/17/24 12 13.Dichloroptopane ND 0.0068 0.015 mg/kg 0 10/17/24 12 13.Dichloroptopane ND 0.0068 0.015 mg/kg 0 10/17/24 12 12.Dichloroptopane ND 0.0068 0.0072 mg/kg 0 10/17/24 12 12.Dichloroptopane ND 0.0068 0.0072 mg/kg 0 10/17/24 12 12.Dichloroptopane ND 0.0068 0.0072 mg/kg 0 10/17/24 12 12.Dichloroptopane ND 0.0068 0.0072 mg/kg 0 10/17/24 12 12.Dichloroptopane ND 0.0068 0.0072 mg/kg 0 10/17/24 12 12.Dichloroptopane ND 0.0068 0.0072 mg/kg 0 10/17/24 12 12.Dichloroptopane ND 0.0068 0.0072 mg/kg 0 10/17/24 12 12.Dichloroptopane ND 0.0068 0.0072 mg/kg 0 10/17/24 12 12.Dichloroptopane ND 0.0068 0.0073 mg/kg 0 10/17/24 12 12.Dichloroptopane ND 0.0068 0.0073 mg/kg 0 10/17/24 12.Dichloroptopane ND 0.0068 0.0073 mg/kg 0 10/17/24 12.Dichloroptopane ND 0.0068 0.0073	6 10/17/24 23:36	10	10/17/24 2	3 1	6	12:06	/17/24	10	☼	mg/Kg	079	0.0	0.068		ND	ND	,1,1-Trichloroethane
1.1.2-Trichloroethane ND 0.034 0.013 mg/kg 0 10/17/24 12 1.1-Dichloroethane ND 0.068 0.016 mg/kg 10/17/24 12 1.1-Dichloroethane ND 0.068 0.016 mg/kg 10/17/24 12 1.1-Dichloropropene ND 0.068 0.0090 mg/kg 10/17/24 12 1.2.3-Trichloropropene ND 0.068 0.0090 mg/kg 10/17/24 12 12.3-Trichloropropene ND 0.044 0.068 mg/kg 10/17/24 12 12.3-Trichloropropene ND 0.044 0.068 mg/kg 10/17/24 12 12.3-Trichloropropene ND 0.044 0.068 0.0020 mg/kg 10/17/24 12 12.3-Trichloropropene ND 0.14 0.073 mg/kg 10/17/24 12 12.4-Trinethylbenzene ND 0.068 0.023 mg/kg 10/17/24 12 12.4-Trinethylbenzene ND 0.068 0.023 mg/kg 10/17/24 12 12.2-Dibromo-Chloropropene ND 0.068 0.023 mg/kg 10/17/24 12 12.2-Dibromo-Chloropropene ND 0.034 0.0065 mg/kg 10/17/24 12 12.2-Dibromo-Chloropropene ND 0.034 0.0065 mg/kg 10/17/24 12 12.2-Dichloropenzene ND 0.034 0.0065 mg/kg 10/17/24 12 12.2-Dichloropropene ND 0.034 0.0065 mg/kg 10/17/24 12 12.2-Dichloropropene ND 0.034 0.0094 mg/kg 10/17/24 12 12.2-Dichloropropene ND 0.034 0.0094 mg/kg 10/17/24 12 12.2-Dichloropropene ND 0.034 0.0094 mg/kg 10/17/24 12 12.2-Dichloropropene ND 0.034 0.0094 mg/kg 10/17/24 12 12.2-Dichloropropene ND 0.034 0.0096 mg/kg 10/17/24 12 12.2-Dichloropropene ND 0.034 0.0096 mg/kg 10/17/24 12 12.2-Dichloropropene ND 0.034 0.0096 mg/kg 10/17/24 12 12.2-Dichloropropene ND 0.034 0.0096 mg/kg 10/17/24 12 12.2-Dichloropropene ND 0.034 0.0096 mg/kg 10/17/24 12 12.2-Dichloropropene ND 0.034 0.0096 mg/kg 10/17/24 12 12.2-Dichloropropene ND 0.036 0.013 mg/kg 10/17/24 12 12.2-Dichloropropene ND 0.036 0.015 mg/kg 10/17/24 12 12.2-Dichloropropene ND 0.036 0.001 mg/kg 10/17/24 12 12.2-Dichloropropene ND 0.036 0.001 mg/kg 10/17/24 12.2-Dichloropropene ND 0.036 0.001 mg/kg 10/17/24 12.2-Dichloropropene ND 0.036 0.001 mg/kg 10/17/24 12.2-Dichloropropene ND 0.036 0.001 mg/kg 10/17/24 12.2-Dichloropropene ND 0.036 0.0068 0.001 mg/kg 10/17/24 12.2-Dichloropropene ND 0.036 0.0068 0.0068 mg/kg 10/17/24 12.2-Dichloropropene ND 0.036 0.0068 0.0068 mg/kg 10/17/24 12.2-Dichloropropene ND 0.036 0.0068 0.0068 mg/kg 10/1	6 10/17/24 23:36	10	10/17/24 2	6 1	6	12:06	/17/24	10	≎			0	0.034		ND	ND	,1,2,2-Tetrachloroethane
1.1-Dichloroethane	6 10/17/24 23:36	10	10/17/24 2	 3 1	6	12:06	/17/24	10	 				0.034		ND	ND	,1,2-Trichloroethane
1.1-Dichloroethene	6 10/17/24 23:36	10	10/17/24 2	3 1	6	12:06	/17/24	10	₩				0.068		ND	ND	•
1,1-Dichloropropene	6 10/17/24 23:36	10	10/17/24 2	3 1	6	12:06	/17/24	10	₩				0.068		ND	ND	,1-Dichloroethene
1,2,3-Trichlorobenzene ND 0.14 0.068 mg/Kg 10/17/24 12 12,12,3-Trichloropropane ND 0.068 0.020 mg/Kg 10/17/24 12 12,12,4-Trichloropropane ND 0.04 0.073 mg/Kg 10/17/24 12 12,12-Trichlorobenzene ND 0.01 0.028 mg/Kg 10/17/24 12 12,12-Dibromo-3-Chloropropane ND 0.01 0.026 mg/Kg 10/17/24 12 12,12-Dibromo-3-Chloropropane ND 0.034 0.0065 mg/Kg 10/17/24 12 12,12-Dichloropropane ND 0.034 0.0055 mg/Kg 10/17/24 12 12,12-Dichloropropane ND 0.034 0.0054 mg/Kg 10/17/24 12 12,12-Dichloropropane ND 0.034 0.0014 mg/Kg 10/17/24 12 12,12-Dichloropropane ND 0.034 0.0014 mg/Kg 10/17/24 12 12,12-Dichloropropane ND 0.010 0.023 mg/Kg 10/17/24 12 12,13-Dichloropropane ND 0.010 0.023 mg/Kg 10/17/24 12 12,13-Dichloropropane ND 0.10 0.034 0.018	6 10/17/24 23:36	10	10/17/24 2	 3 1	6	12:06	/17/24	10					0.068		ND	ND	,1-Dichloropropene
1,2,4-Trichlorobenzene	6 10/17/24 23:36	10	10/17/24 2	3 1	6	12:06	/17/24	10	₩				0.14		ND	ND	
1,2,4-Trichloroberzene	6 10/17/24 23:36	10	10/17/24 2	3 1	6	12:06	/17/24	10	☆				0.068		ND	ND	.2.3-Trichloropropane
1,2,4-Trimethylbenzene	6 10/17/24 23:36	10	10/17/24 2	 3 1	6	12:06	/17/24	10					0.14		ND	ND	,2,4-Trichlorobenzene
1,2-Dibromo-3-Chloropropane ND 0.10 0.026 mg/Kg 0.1017/24 12 1,2-Dibromoethane ND 0.034 0.0065 mg/Kg 0.1017/24 12 1,2-Dibromoethane ND 0.068 0.015 mg/Kg 0.1017/24 12 1,2-Dibromoethane ND 0.034 0.0094 mg/Kg 0.1017/24 12 1,2-Dibromoethane ND 0.034 0.0094 mg/Kg 0.1017/24 12 1,2-Dibromoethane ND 0.034 0.0011 mg/Kg 0.1017/24 12 1,2-Dibromoethane ND 0.034 0.0011 mg/Kg 0.1017/24 12 1,3-Dibromoethane ND 0.068 0.013 mg/Kg 0.1017/24 12 1,3-Dibromoethane ND 0.10 0.003 mg/Kg 0.1017/24 12 1,3-Dibromoethane ND 0.10 0.003 mg/Kg 0.1017/24 12 1,4-Dibropropane ND 0.10 0.018 mg/Kg 0.1017/24 12 1,4-Dibromoethane ND 0.068 0.021 mg/Kg 0.1017/24 12 1,4-Dibromoethane ND 0.068 0.015 mg/Kg 0.1017/24 12 1,4-Dibromoethane ND 0.068 0.015 mg/Kg 0.1017/24 12 1,4-Dibromoethane ND 0.068 0.017 mg/Kg 0.1017/24 12 1,4-Dibromoethane ND 0.068 0.011 mg/Kg 0.1017/24 12 1,4-Dibromoethane ND 0.068 0.011 mg/Kg 0.1017/24 12 1,4-Dibromoethane ND 0.068 0.011 mg/Kg 0.1017/24 12 1,4-Dibromoethane ND 0.068 0.002 mg/Kg 0.1017/24 12 1,4-Dibromoethane ND 0.068 0.002 mg/Kg 0.1017/24 12 1,4-Dibromoethane ND 0.068 0.010 mg/Kg 0.101	6 10/17/24 23:36	10	10/17/24 2	3 1	6	12:06	/17/24	10	☆				0.068				•
	6 10/17/24 23:36								☆								•
1,2-Dichlorobenzene ND	6 10/17/24 23:36								 ☆								`
1,2-Dichloroethane																	
1,2-Dichloropropane ND																	
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Eurofins Seattle

12/10/2024 (Rev. 1)

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Date Received: 10/15/24 12:35

Client Sample ID: PDI-45a-SO-53.9-20241011

Date Collected: 10/11/24 15:25

Lab Sample ID: 580-144838-6 **Matrix: Solid**

Percent Solids: 65.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	MD		0.068	0.013	mg/Kg	<u></u>	10/17/24 12:06	10/17/24 23:36	1
Tetrachloroethene	ND		0.068	0.0090	mg/Kg	☼	10/17/24 12:06	10/17/24 23:36	1
Toluene	ND		0.10	0.023	mg/Kg	☼	10/17/24 12:06	10/17/24 23:36	1
trans-1,2-Dichloroethene	ND		0.10	0.025	mg/Kg	☼	10/17/24 12:06	10/17/24 23:36	1
trans-1,3-Dichloropropene	ND		0.068	0.012	mg/Kg	☼	10/17/24 12:06	10/17/24 23:36	1
Trichloroethene	ND		0.068	0.018	mg/Kg	⊅	10/17/24 12:06	10/17/24 23:36	1
Trichlorofluoromethane	ND		0.14	0.044	mg/Kg	☼	10/17/24 12:06	10/17/24 23:36	1
Vinyl chloride	ND		0.17	0.032	mg/Kg	₩	10/17/24 12:06	10/17/24 23:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/17/24 12:06	10/17/24 23:36	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/17/24 12:06	10/17/24 23:36	1
Dibromofluoromethane (Surr)	98		80 - 120				10/17/24 12:06	10/17/24 23:36	1
Toluene-d8 (Surr)	100		80 - 120				10/17/24 12:06	10/17/24 23:36	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	ND	Н	0.068	0.0094	mg/Kg	*	10/28/24 08:38	10/28/24 15:14	1
Bromomethane	ND	Н	0.17	0.065	mg/Kg	₩	10/28/24 08:38	10/28/24 15:14	1
Chloroethane	ND	Н	0.14	0.036	mg/Kg	☼	10/28/24 08:38	10/28/24 15:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	116		80 - 121				10/28/24 08:38	10/28/24 15:14	1
4-Bromofluorobenzene (Surr)	100		80 - 120				10/28/24 08:38	10/28/24 15:14	1
Dibromofluoromethane (Surr)	112		80 - 120				10/28/24 08:38	10/28/24 15:14	1
Toluene-d8 (Surr)	99		80 - 120				10/28/24 08:38	10/28/24 15:14	1
General Chemistry									
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General Chemistry							
Analyte	Result Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	65.6	0.1	0.1 %			10/17/24 11:33	1
Percent Moisture (SM22 2540G)	34.4	0.1	0.1 %			10/17/24 11:33	1

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-SO-20241011

Lab Sample ID: 580-144838-7 Date Collected: 10/11/24 00:00 Matrix: Solid

Date Received: 10/15/24 12:35

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 1,1,1,2-Tetrachloroethane ND 0.020 0.0050 mg/Kg 10/17/24 12:06 10/17/24 23:57 ND 1.1.1-Trichloroethane 0.040 0.0046 mg/Kg 10/17/24 12:06 10/17/24 23:57 1,1,2,2-Tetrachloroethane ND 0.020 0.0076 mg/Kg 10/17/24 12:06 10/17/24 23:57 ND 0.0074 mg/Kg 1,1,2-Trichloroethane 0.020 10/17/24 12:06 10/17/24 23:57 ND 0.040 0.0092 mg/Kg 10/17/24 12:06 10/17/24 23:57 1.1-Dichloroethane 10/17/24 23:57 1,1-Dichloroethene ND 0.040 0.012 mg/Kg 10/17/24 12:06 1,1-Dichloropropene ND 0.040 0.0053 mg/Kg 10/17/24 12:06 10/17/24 23:57 ND 0.080 0.040 10/17/24 12:06 10/17/24 23:57 1,2,3-Trichlorobenzene mg/Kg 1,2,3-Trichloropropane ND 0.040 0.012 mg/Kg 10/17/24 12:06 10/17/24 23:57 1,2,4-Trichlorobenzene ND 0.080 0.043 mg/Kg 10/17/24 12:06 10/17/24 23:57 1,2,4-Trimethylbenzene ND 0.040 0.014 mg/Kg 10/17/24 12:06 10/17/24 23:57 1.2-Dibromo-3-Chloropropane ND 0.060 0.015 mg/Kg 10/17/24 12:06 10/17/24 23:57 1 1,2-Dibromoethane ND 0.020 0.0038 mg/Kg 10/17/24 12:06 10/17/24 23:57 mg/Kg 1,2-Dichlorobenzene ND 0.040 0.0087 10/17/24 12:06 10/17/24 23:57 ND 0.020 0.0055 mg/Kg 10/17/24 12:06 10/17/24 23:57 1.2-Dichloroethane 0.0066 1,2-Dichloropropane ND 0.020 mg/Kg 10/17/24 12:06 10/17/24 23:57 0.0076 1,3,5-Trimethylbenzene ND 0.040 mg/Kg 10/17/24 12:06 10/17/24 23:57 1,3-Dichlorobenzene ND 0.060 0.013 mg/Kg 10/17/24 12:06 10/17/24 23:57 ND 0.060 0.0056 mg/Kg 10/17/24 12:06 10/17/24 23:57 1,3-Dichloropropane 1,4-Dichlorobenzene ND 0.060 0.011 mg/Kg 10/17/24 12:06 10/17/24 23:57 2,2-Dichloropropane ND 0.040 0.012 mg/Kg 10/17/24 12:06 10/17/24 23:57 2-Chlorotoluene ND 0.040 8800.0 mg/Kg 10/17/24 12:06 10/17/24 23:57 4-Chlorotoluene ND 0.0098 10/17/24 12:06 10/17/24 23:57 0.040 mg/Kg 4-Isopropyltoluene ND 0.040 0.010 mg/Kg 10/17/24 12:06 10/17/24 23:57 Benzene ND 0.020 0.0038 mg/Kg 10/17/24 12:06 10/17/24 23:57 0.0042 Bromobenzene ND 0.040 mg/Kg 10/17/24 12:06 10/17/24 23:57 Bromochloromethane ND 0.040 0.0062 mg/Kg 10/17/24 12:06 10/17/24 23:57 Bromoform ND 0.0045 0.040 mg/Kg 10/17/24 12:06 10/17/24 23:57 0.0044 mg/Kg Carbon tetrachloride NΩ 0.020 10/17/24 12:06 10/17/24 23:57 0.0048 mg/Kg Chlorobenzene 0.042 B 0.040 10/17/24 12:06 10/17/24 23:57 Chloroform ND 0.020 0.0042 mg/Kg 10/17/24 12:06 10/17/24 23:57 Chloromethane ND 0.060 0.010 mg/Kg 10/17/24 12:06 10/17/24 23:57 cis-1,2-Dichloroethene ND 0.060 0.013 10/17/24 12:06 10/17/24 23:57 mg/Kg ND cis-1,3-Dichloropropene 0.020 0.0040 mg/Kg 10/17/24 12:06 10/17/24 23:57 Dibromochloromethane ND 0.020 0.0049 mg/Kg 10/17/24 12:06 10/17/24 23:57 Dibromomethane ND 0.040 0.0074 mg/Kg 10/17/24 12:06 10/17/24 23:57 Dichlorodifluoromethane ND 0.25 0.046 mg/Kg 10/17/24 12:06 10/17/24 23:57 Ethylbenzene ND 0.040 0.0091 mg/Kg 10/17/24 12:06 10/17/24 23:57 ND 0.024 mg/Kg Hexachlorobutadiene 0.10 10/17/24 12:06 10/17/24 23:57 Isopropylbenzene ND 0.040 0.0086 mg/Kg 10/17/24 12:06 10/17/24 23:57 Methyl tert-butyl ether ND 0.040 0.0060 mg/Kg 10/17/24 12:06 10/17/24 23:57 Methylene Chloride ND 0.25 0.026 mg/Kg 10/17/24 12:06 10/17/24 23:57 0.0071 m-Xylene & p-Xylene ND 0.040 mg/Kg 10/17/24 12:06 10/17/24 23:57 Naphthalene 0.039 10/17/24 23:57 ND 0.15 mg/Kg 10/17/24 12:06 ND n-Butylbenzene 0.040 0.019 mg/Kg 10/17/24 12:06 10/17/24 23:57 N-Propylbenzene ND 0.040 0.015 mg/Kg 10/17/24 12:06 10/17/24 23:57 ND 0.040 0.0050 10/17/24 23:57 o-Xylene mg/Kg 10/17/24 12:06 sec-Butylbenzene ND 0.040 0.0086 mg/Kg 10/17/24 12:06 10/17/24 23:57 10/17/24 23:57 Styrene ND 0.040 0.013 mg/Kg 10/17/24 12:06

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-SO-20241011

Lab Sample ID: 580-144838-7 Date Collected: 10/11/24 00:00 **Matrix: Solid**

Date Received: 10/15/24 12:35

Method: SW846 8260D - V	olatile Organic	Compound	ds by GC/MS	(Conti	inued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	ND		0.040	0.0077	mg/Kg		10/17/24 12:06	10/17/24 23:57	1
Tetrachloroethene	ND		0.040	0.0053	mg/Kg		10/17/24 12:06	10/17/24 23:57	1
Toluene	ND		0.060	0.014	mg/Kg		10/17/24 12:06	10/17/24 23:57	1
trans-1,2-Dichloroethene	ND		0.060	0.015	mg/Kg		10/17/24 12:06	10/17/24 23:57	1
trans-1,3-Dichloropropene	ND		0.040	0.0070	mg/Kg		10/17/24 12:06	10/17/24 23:57	1
Trichloroethene	ND		0.040	0.010	mg/Kg		10/17/24 12:06	10/17/24 23:57	1
Trichlorofluoromethane	ND		0.080	0.026	mg/Kg		10/17/24 12:06	10/17/24 23:57	1
Vinyl chloride	ND		0.10	0.019	mg/Kg		10/17/24 12:06	10/17/24 23:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/17/24 12:06	10/17/24 23:57	1
4-Bromofluorobenzene (Surr)	99		80 - 120				10/17/24 12:06	10/17/24 23:57	1
Dibromofluoromethane (Surr)	97		80 - 120				10/17/24 12:06	10/17/24 23:57	1
Toluene-d8 (Surr)	103		80 - 120				10/17/24 12:06	10/17/24 23:57	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	ND	H	0.040	0.0055	mg/Kg		10/28/24 08:38	10/28/24 12:50	1
Bromomethane	ND	Н	0.10	0.038	mg/Kg		10/28/24 08:38	10/28/24 12:50	1
Chloroethane	ND	Н	0.080	0.021	mg/Kg		10/28/24 08:38	10/28/24 12:50	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		80 - 121				10/28/24 08:38	10/28/24 12:50	1
4-Bromofluorobenzene (Surr)	104		80 - 120				10/28/24 08:38	10/28/24 12:50	1
Dibromofluoromethane (Surr)	102		80 - 120				10/28/24 08:38	10/28/24 12:50	1
Dibromonacionicinane (carr)									

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS

MB MB

Lab Sample ID: MB 580-474946/7

Matrix: Water

Analysis Batch: 474946

Client Sample ID: Method Blank

Prep Type: Total/NA

D	Prepared	Analyzed	Dil Fac
	-	10/16/24 15:36	1
		10/16/24 15:36	1
		10/16/24 15:36	1
		10/16/24 15:36	1
		10/16/24 15:36	1
		10/16/24 15:36	1
		10/16/24 15:36	1
		10/16/24 15:36	1
		10/16/24 15:36	1
		10/16/24 15:36	1
		10/16/24 15:36	1
		10/16/24 15:36	1
		10/16/24 15:36	1
		10/16/24 15:36	1
		10/16/24 15:36	1
		10/16/24 15:36	1

Analyte	Result Qu	alifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND ND	1.0	0.28	ug/L			10/16/24 15:36	1
1,1-Dichloroethane	ND	1.0	0.22	ug/L			10/16/24 15:36	1
1,1,1-Trichloroethane	ND	1.0	0.39	ug/L			10/16/24 15:36	1
1,1-Dichloropropene	ND	1.0	0.29	ug/L			10/16/24 15:36	1
1,2-Dichloroethane	ND	1.0	0.42	ug/L			10/16/24 15:36	1
1,2-Dichloropropane	ND	1.0	0.18	ug/L			10/16/24 15:36	1
2,2-Dichloropropane	ND	1.0	0.32	ug/L			10/16/24 15:36	1
Benzene	ND	1.0	0.24	ug/L			10/16/24 15:36	1
1,1,2-Trichloroethane	ND	1.0	0.24	ug/L			10/16/24 15:36	1
Bromochloromethane	ND	1.0	0.29	ug/L			10/16/24 15:36	1
1,3-Dichloropropane	ND	1.0	0.35	ug/L			10/16/24 15:36	1
Bromodichloromethane	ND	1.0	0.29	ug/L			10/16/24 15:36	1
1,2-Dibromoethane	ND	1.0	0.40	ug/L			10/16/24 15:36	1
Bromomethane	ND	1.0	0.21	ug/L			10/16/24 15:36	1
Carbon tetrachloride	ND	1.0	0.30	ug/L			10/16/24 15:36	1
Chlorobenzene	ND	1.0	0.44	ug/L			10/16/24 15:36	1
1,1,1,2-Tetrachloroethane	ND	1.0	0.18	ug/L			10/16/24 15:36	1
Chloroethane	ND	1.0	0.35	ug/L			10/16/24 15:36	1
1,1,2,2-Tetrachloroethane	ND	1.0	0.52	ug/L			10/16/24 15:36	1
Chloroform	ND	1.0	0.26	ug/L			10/16/24 15:36	1
Chloromethane	ND	1.0	0.28	ug/L			10/16/24 15:36	1
cis-1,2-Dichloroethene	ND	1.0	0.35	ug/L			10/16/24 15:36	1
cis-1,3-Dichloropropene	ND	1.0	0.42	ug/L			10/16/24 15:36	1
Bromoform	ND	1.0	0.51	ug/L			10/16/24 15:36	1
Dibromochloromethane	ND	1.0	0.43	ug/L			10/16/24 15:36	1
Bromobenzene	ND	1.0	0.43	ug/L			10/16/24 15:36	1
Dibromomethane	ND	1.0	0.34	ug/L			10/16/24 15:36	1
Dichlorodifluoromethane	ND	1.0	0.53	ug/L			10/16/24 15:36	1
1,2,3-Trichloropropane	ND	1.0	0.41	ug/L			10/16/24 15:36	1
Ethylbenzene	ND	1.0	0.50	ug/L			10/16/24 15:36	1
2-Chlorotoluene	ND	1.0	0.51	ug/L			10/16/24 15:36	1
1,3,5-Trimethylbenzene	ND	1.0	0.55	ug/L			10/16/24 15:36	1
Isopropylbenzene	ND	1.0	0.44	ug/L			10/16/24 15:36	1
4-Chlorotoluene	ND	1.0	0.38	ug/L			10/16/24 15:36	1
Methylene Chloride	ND	5.0	1.4	ug/L			10/16/24 15:36	1
1,2,4-Trimethylbenzene	ND	3.0	0.61	ug/L			10/16/24 15:36	1
m-Xylene & p-Xylene	ND	2.0	0.53	ug/L			10/16/24 15:36	1
1,3-Dichlorobenzene	ND	1.0	0.48				10/16/24 15:36	1
4-Isopropyltoluene	ND	1.0	0.28				10/16/24 15:36	1
N-Propylbenzene	ND	1.0	0.50				10/16/24 15:36	1
1,4-Dichlorobenzene	ND	1.0	0.46	ug/L			10/16/24 15:36	1
o-Xylene	ND	1.0	0.39	-			10/16/24 15:36	1
n-Butylbenzene	ND	1.0	0.44				10/16/24 15:36	1
sec-Butylbenzene	ND	1.0	0.49				10/16/24 15:36	1
1,2-Dichlorobenzene	ND	1.0	0.46	-			10/16/24 15:36	1
Styrene	ND	1.0	0.53				10/16/24 15:36	1
1,2-Dibromo-3-Chloropropane	ND	3.0	0.57				10/16/24 15:36	1
t-Butylbenzene	ND	2.0	0.58	-			10/16/24 15:36	1

RL

1.0

1.0

2.0

1.0

3.0

3.0

1.0

1.0

1.0

1.0

1.0

1.0

MDL Unit

0.33 ug/L

0.41 ug/L

0.43 ug/L

0.39 ug/L

0.79 ug/L

0.93 ug/L

0.39 ug/L

0.41 ug/L

0.26 ug/L

0.36 ug/L

0.44 ug/L

0.22 ug/L

6

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

MB MB Result Qualifier

0.331 J

ND

0.497

Lab Sample ID: MB 580-474946/7

Matrix: Water

1,2,4-Trichlorobenzene

1,2,3-Trichlorobenzene

Hexachlorobutadiene

trans-1,2-Dichloroethene

trans-1,3-Dichloropropene

Trichlorofluoromethane

Methyl tert-butyl ether

Tetrachloroethene

Toluene

Naphthalene

Trichloroethene

Vinyl chloride

Analysis Batch: 474946

Client Sample ID: Method Blank

Prep Type: Total/NA

D Prepared Analyzed Dil Fac 10/16/24 15:36 1 10/16/24 15:36 1 10/16/24 15:36 1 10/16/24 15:36 1

10/16/24 15:36 1
10/16/24 15:36 1
10/16/24 15:36 1
10/16/24 15:36 1
10/16/24 15:36 1
10/16/24 15:36 1
10/16/24 15:36 1

10/16/24 15:36

10/16/24 15:36

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101		80 - 120		10/16/24 15:36	1
4-Bromofluorobenzene (Surr)	100		80 - 120		10/16/24 15:36	1
Dibromofluoromethane (Surr)	100		80 - 120		10/16/24 15:36	1
1,2-Dichloroethane-d4 (Surr)	98		80 - 120		10/16/24 15:36	1

Lab Sample ID: LCS 580-474946/4

Matrix: Water

Analysis Batch: 474946

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analysis Batch: 474946	.						~-
	Spike	_	LCS		_	0/ =	%Rec
Analyte	Added		Qualifier	Unit	D	%Rec	Limits
1,1-Dichloroethene	10.0	10.8		ug/L		108	70 - 129
1,1-Dichloroethane	10.0	10.5		ug/L		105	80 - 120
1,1,1-Trichloroethane	10.0	10.5		ug/L		105	74 - 130
1,1-Dichloropropene	10.0	10.2		ug/L		102	74 - 120
1,2-Dichloroethane	10.0	9.33		ug/L		93	69 - 126
1,2-Dichloropropane	10.0	9.67		ug/L		97	80 - 120
2,2-Dichloropropane	10.0	10.9		ug/L		109	66 - 126
Benzene	10.0	10.9		ug/L		109	80 - 122
1,1,2-Trichloroethane	10.0	10.1		ug/L		101	80 - 121
Bromochloromethane	10.0	10.9		ug/L		109	78 - 120
1,3-Dichloropropane	10.0	9.70		ug/L		97	79 - 120
Bromodichloromethane	10.0	9.82		ug/L		98	75 - 124
1,2-Dibromoethane	10.0	9.75		ug/L		97	79 - 126
Bromomethane	10.0	11.1		ug/L		111	36 - 150
Carbon tetrachloride	10.0	10.0		ug/L		100	72 - 129
Chlorobenzene	10.0	10.7		ug/L		107	80 - 120
1,1,1,2-Tetrachloroethane	10.0	10.1		ug/L		101	79 - 120
Chloroethane	10.0	10.8		ug/L		108	38 - 150
1,1,2,2-Tetrachloroethane	10.0	10.2		ug/L		102	74 - 124
Chloroform	10.0	10.8		ug/L		108	78 - 127
Chloromethane	10.0	9.03		ug/L		90	25 - 150
cis-1,2-Dichloroethene	10.0	10.3		ug/L		103	76 - 120
cis-1,3-Dichloropropene	10.0	9.37		ug/L		94	77 - 120
Bromoform	10.0	9.62		ug/L		96	56 - 139

Spike

Client: ERM-West Job ID: 580-144838-1

LCS LCS

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-474946/4

Matrix: Water

Analysis Batch: 474946

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

%Rec

Analyte	Added	Result	Qualifier Unit	D %Rec	Limits	
Dibromochloromethane	10.0	9.68	ug/L	97	73 - 125	
Bromobenzene	10.0	10.1	ug/L	101	80 - 120	
Dibromomethane	10.0	10.4	ug/L	104	80 - 120	
Dichlorodifluoromethane	10.0	9.57	ug/L	96	20 - 150	
1,2,3-Trichloropropane	10.0	9.73	ug/L	97	76 - 124	
Ethylbenzene	10.0	10.0	ug/L	100	80 - 120	
2-Chlorotoluene	10.0	9.71	ug/L	97	80 - 120	
1,3,5-Trimethylbenzene	10.0	10.2	ug/L	102	80 - 122	
Isopropylbenzene	10.0	10.9	ug/L	109	80 - 123	
4-Chlorotoluene	10.0	10.2	ug/L	102	73 - 129	
Methylene Chloride	10.0	11.5	ug/L	115	77 - 125	
1,2,4-Trimethylbenzene	10.0	10.2	ug/L	102	80 - 120	
m-Xylene & p-Xylene	10.0	10.1	ug/L	101	80 - 120	
1,3-Dichlorobenzene	10.0	10.2	ug/L	102	77 - 127	
4-Isopropyltoluene	10.0	9.93	ug/L	99	77 - 126	
N-Propylbenzene	10.0	9.82	ug/L	98	80 - 122	
1,4-Dichlorobenzene	10.0	10.5	ug/L	105	80 - 120	
o-Xylene	10.0	10.1	ug/L	101	80 - 120	
n-Butylbenzene	10.0	9.91	ug/L	99	57 - 133	
sec-Butylbenzene	10.0	9.98	ug/L	100	78 - 122	
1,2-Dichlorobenzene	10.0	10.2	ug/L	102	80 - 120	
Styrene	10.0	10.1	ug/L	101	76 - 122	
1,2-Dibromo-3-Chloropropane	10.0	9.25	ug/L	93	65 - 133	
t-Butylbenzene	10.0	9.85	ug/L	99	75 - 123	
1,2,4-Trichlorobenzene	10.0	10.4	ug/L	104	61 - 148	
Tetrachloroethene	10.0	9.78	ug/L	98	76 - 125	
1,2,3-Trichlorobenzene	10.0	11.1	ug/L	111	65 - 150	
Toluene	10.0	10.6	ug/L	106	80 - 120	
Hexachlorobutadiene	10.0	11.3	ug/L	113	74 - 131	
Naphthalene	10.0	10.2	ug/L	102	63 - 150	
trans-1,2-Dichloroethene	10.0	10.4	ug/L	104	75 - 120	
trans-1,3-Dichloropropene	10.0	9.76	ug/L	98	76 - 122	
Trichloroethene	10.0	10.1	ug/L	101	80 - 125	
Trichlorofluoromethane	10.0	9.60	ug/L	96	45 - 148	
Methyl tert-butyl ether	10.0	10.2	ug/L	102	72 - 120	
Vinyl chloride	10.0	10.1	ug/L	101	31 - 150	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	100		80 - 120
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	99		80 - 120
1,2-Dichloroethane-d4 (Surr)	97		80 - 120

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-474946/5

Matrix: Water

Analysis Batch: 474946

Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

	Spike	LCSD	LCSD				%Rec		RF
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Lin
1,1-Dichloroethene	10.0	10.8		ug/L		108	70 - 129	0	
1,1-Dichloroethane	10.0	10.9		ug/L		109	80 - 120	4	
1,1,1-Trichloroethane	10.0	10.3		ug/L		103	74 - 130	2	
1,1-Dichloropropene	10.0	10.2		ug/L		102	74 - 120	0	
1,2-Dichloroethane	10.0	9.29		ug/L		93	69 - 126	0	
1,2-Dichloropropane	10.0	10.1		ug/L		101	80 - 120	4	
2,2-Dichloropropane	10.0	10.8		ug/L		108	66 - 126	1	
Benzene	10.0	11.0		ug/L		110	80 - 122	1	
1,1,2-Trichloroethane	10.0	10.2		ug/L		102	80 - 121	1	
Bromochloromethane	10.0	10.8		ug/L		108	78 - 120	1	
1,3-Dichloropropane	10.0	9.77		ug/L		98	79 - 120	1	
Bromodichloromethane	10.0	10.2		ug/L		102	75 - 124	3	
1,2-Dibromoethane	10.0	10.1		ug/L		101	79 - 126	3	
, Bromomethane	10.0	11.1		ug/L		111	36 - 150	0	
Carbon tetrachloride	10.0	10.2		ug/L		102	72 - 129	1	
Chlorobenzene	10.0	10.6		ug/L		106	80 - 120	1	
1,1,1,2-Tetrachloroethane	10.0	9.96		ug/L		100	79 - 120	1	
Chloroethane	10.0	10.9		ug/L		109	38 - 150	1	
1,1,2,2-Tetrachloroethane	10.0	10.7		ug/L		107	74 - 124	5	
Chloroform	10.0	10.9		ug/L		109	78 - 127	1	
Chloromethane	10.0	9.14		ug/L		91	25 - 150	1	
cis-1,2-Dichloroethene	10.0	10.4		ug/L		104	76 - 120		
cis-1,3-Dichloropropene	10.0	9.55		ug/L		95	77 - 120	2	
Bromoform	10.0	9.85		ug/L		98	56 ₋ 139	2	
Dibromochloromethane	10.0	9.49		ug/L		95	73 - 125	2	
Bromobenzene	10.0	10.2		ug/L		102	80 - 120	0	
Dibromomethane	10.0	10.2		ug/L ug/L		102	80 - 120	2	
Dichlorodifluoromethane	10.0	9.39					20 - 150	2	
	10.0	9.39		ug/L		94 100	76 ₋ 124	3	
1,2,3-Trichloropropane	10.0	9.96		ug/L		99	76 - 124 80 - 120	ა 1	
Ethylbenzene				ug/L					
2-Chlorotoluene	10.0	9.76 10.2		ug/L		98	80 - 120	1	
1,3,5-Trimethylbenzene	10.0			ug/L		102	80 - 122	0	
Isopropylbenzene 4-Chlorotoluene	10.0	11.1		ug/L		111	80 - 123	2	
	10.0	10.2		ug/L		102	73 - 129	0	
Methylene Chloride	10.0	11.6		ug/L		116	77 - 125	0	
1,2,4-Trimethylbenzene	10.0	10.5		ug/L		105	80 - 120		
m-Xylene & p-Xylene	10.0	9.94		ug/L		99	80 - 120	1	
1,3-Dichlorobenzene	10.0	10.4		ug/L		104	77 - 127	2	
4-Isopropyltoluene	10.0	10.1		ug/L		101	77 - 126	2	
N-Propylbenzene	10.0	10.3		ug/L		103	80 - 122	5	
1,4-Dichlorobenzene	10.0	10.7		ug/L		107	80 - 120	2	
o-Xylene	10.0	10.1		ug/L		101	80 - 120		
n-Butylbenzene	10.0	9.95		ug/L		100	57 - 133	0	
sec-Butylbenzene	10.0	10.1		ug/L		101	78 - 122	1	
1,2-Dichlorobenzene	10.0	10.3		ug/L		103	80 - 120	1	
Styrene	10.0	9.97		ug/L		100	76 - 122	1	
1,2-Dibromo-3-Chloropropane	10.0	9.42		ug/L		94	65 - 133	2	
t-Butylbenzene	10.0	9.97		ug/L		100	75 - 123	1	

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Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-474946/5

Matrix: Water

Analysis Batch: 474946

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,2,4-Trichlorobenzene	10.0	10.1		ug/L		101	61 - 148	3	27
Tetrachloroethene	10.0	9.90		ug/L		99	76 - 125	1	13
1,2,3-Trichlorobenzene	10.0	10.4		ug/L		104	65 - 150	7	33
Toluene	10.0	10.5		ug/L		105	80 - 120	0	13
Hexachlorobutadiene	10.0	11.4		ug/L		114	74 - 131	1	22
Naphthalene	10.0	9.89		ug/L		99	63 - 150	3	33
trans-1,2-Dichloroethene	10.0	10.6		ug/L		106	75 - 120	2	21
trans-1,3-Dichloropropene	10.0	9.85		ug/L		99	76 - 122	1	20
Trichloroethene	10.0	10.3		ug/L		103	80 - 125	1	13
Trichlorofluoromethane	10.0	9.56		ug/L		96	45 - 148	0	35
Methyl tert-butyl ether	10.0	10.4		ug/L		104	72 - 120	1	18
Vinyl chloride	10.0	10.2		ug/L		102	31 - 150	1	26

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	100		80 - 120
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	98		80 - 120

Lab Sample ID: MB 580-475029/5-A

Matrix: Solid

Analysis Batch: 475093

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 475029

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.040	0.012	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
1,1-Dichloroethane	ND		0.040	0.0092	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
1,1,1-Trichloroethane	ND		0.040	0.0046	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
1,1-Dichloropropene	ND		0.040	0.0053	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
1,2-Dichloroethane	ND		0.020	0.0055	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
1,2-Dichloropropane	ND		0.020	0.0066	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
2,2-Dichloropropane	ND		0.040	0.012	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
Benzene	ND		0.020	0.0038	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
1,1,2-Trichloroethane	ND		0.020	0.0074	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
Bromochloromethane	ND		0.040	0.0062	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
1,3-Dichloropropane	ND		0.060	0.0056	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
1,2-Dibromoethane	ND		0.020	0.0038	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
Carbon tetrachloride	ND		0.020	0.0044	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
Chlorobenzene	0.00789	J	0.040	0.0048	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
1,1,1,2-Tetrachloroethane	ND		0.020	0.0050	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
1,1,2,2-Tetrachloroethane	ND		0.020	0.0076	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
Chloroform	ND		0.020	0.0042	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
Chloromethane	ND		0.060	0.010	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
cis-1,2-Dichloroethene	ND		0.060	0.013	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
cis-1,3-Dichloropropene	ND		0.020	0.0040	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
Bromoform	ND		0.040	0.0045	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
Dibromochloromethane	ND		0.020	0.0049	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
Bromobenzene	ND		0.040	0.0042	mg/Kg		10/17/24 08:11	10/17/24 20:07	1
Dibromomethane	ND		0.040	0.0074	mg/Kg		10/17/24 08:11	10/17/24 20:07	1

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Project/Site: Arkema PDI Sampling

Client Sample ID: Method Blank

Prep Type: Total/NA Prep Batch: 475029

Job ID: 580-144838-1

Lab Sample ID: MB 580-475029/5-A

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Matrix: Solid

Analysis Batch: 475093

MB MB Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac Dichlorodifluoromethane ND 0.25 0.046 mg/Kg 10/17/24 08:11 10/17/24 20:07 1,2,3-Trichloropropane ND 0.040 0.012 mg/Kg 10/17/24 08:11 10/17/24 20:07 ND Ethylbenzene 0.040 0.0091 mg/Kg 10/17/24 08:11 10/17/24 20:07 2-Chlorotoluene ND 0.040 0.0088 mg/Kg 10/17/24 08:11 10/17/24 20:07 ND 0.0076 mg/Kg 10/17/24 08:11 10/17/24 20:07 1,3,5-Trimethylbenzene 0.040 Isopropylbenzene ND 0.040 0.0086 mg/Kg 10/17/24 08:11 10/17/24 20:07 4-Chlorotoluene ND 0.040 0.0098 mg/Kg 10/17/24 08:11 10/17/24 20:07 0.026 mg/Kg Methylene Chloride ND 0.25 10/17/24 08:11 10/17/24 20:07 1,2,4-Trimethylbenzene ND 0.040 0.014 mg/Kg 10/17/24 08:11 10/17/24 20:07 ND 0.0071 m-Xylene & p-Xylene 0.040 mg/Kg 10/17/24 08:11 10/17/24 20:07 1,3-Dichlorobenzene ND 0.060 0.013 mg/Kg 10/17/24 08:11 10/17/24 20:07 ND 4-Isopropyltoluene 0.040 0.010 mg/Kg 10/17/24 08:11 10/17/24 20:07 10/17/24 08:11 10/17/24 20:07 N-Propylbenzene 0.015 mg/Kg ND 0.040 1,4-Dichlorobenzene ND 0.060 0.011 mg/Kg 10/17/24 08:11 10/17/24 20:07 o-Xylene ND 0.040 0.0050 mg/Kg 10/17/24 08:11 10/17/24 20:07 ND n-Butylbenzene 0.040 0.019 mg/Kg 10/17/24 08:11 10/17/24 20:07 sec-Butylbenzene ND 0.040 0.0086 mg/Kg 10/17/24 08:11 10/17/24 20:07 1,2-Dichlorobenzene ND 0.0087 mg/Kg 10/17/24 08:11 10/17/24 20:07 0.040 Styrene ND 0.040 0.013 mg/Kg 10/17/24 08:11 10/17/24 20:07 1,2-Dibromo-3-Chloropropane ND 0.060 0.015 mg/Kg 10/17/24 08:11 10/17/24 20:07 t-Butylbenzene ND 0.040 0.0077 mg/Kg 10/17/24 08:11 10/17/24 20:07 1.2.4-Trichlorobenzene ND 0.080 0.043 mg/Kg 10/17/24 08:11 10/17/24 20:07 0.0053 mg/Kg Tetrachloroethene ND 0.040 10/17/24 08:11 10/17/24 20:07 1,2,3-Trichlorobenzene 0.040 mg/Kg ND 0.080 10/17/24 08:11 10/17/24 20:07 ND Toluene 0.060 0.014 mg/Kg 10/17/24 08:11 10/17/24 20:07 Hexachlorobutadiene ND 0.024 mg/Kg 10/17/24 08:11 10/17/24 20:07 0.10 Naphthalene ND 0.15 0.039 mg/Kg 10/17/24 08:11 10/17/24 20:07 trans-1,2-Dichloroethene ND 0.060 0.015 mg/Kg 10/17/24 08:11 10/17/24 20:07 trans-1,3-Dichloropropene ND 0.040 0.0070 mg/Kg 10/17/24 08:11 10/17/24 20:07 Trichloroethene ND 0.040 0.010 mg/Kg 10/17/24 08:11 10/17/24 20:07 Trichlorofluoromethane ND 0.080 0.026 mg/Kg 10/17/24 08:11 10/17/24 20:07 Methyl tert-butyl ether ND 0.040 0.0060 mg/Kg 10/17/24 08:11 10/17/24 20:07

ND

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	102	80 - 120	10/17/24 08:11	10/17/24 20:07	1
4-Bromofluorobenzene (Surr)	102	80 - 120	10/17/24 08:11	10/17/24 20:07	1
Dibromofluoromethane (Surr)	101	80 - 120	10/17/24 08:11	10/17/24 20:07	1
1.2-Dichloroethane-d4 (Surr)	100	80 - 121	10/17/24 08:11	10/17/24 20:07	1

0.10

0.019 mg/Kg

Lab Sample ID: LCS 580-475029/1-A

Matrix: Solid

Vinyl chloride

Analysis Batch: 475093

Client Sample	ID:	Lab	Control	Sample
		_		

10/17/24 08:11 10/17/24 20:07

Prep Type: Total/NA Prep Batch: 475029

	Spike	LCS	LCS				%Rec
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1-Dichloroethene	0.800	0.780		mg/Kg		97	73 - 134
1,1-Dichloroethane	0.800	0.767		mg/Kg		96	78 - 126
1,1,1-Trichloroethane	0.800	0.732		mg/Kg		92	78 - 135

Spike

Client: ERM-West Job ID: 580-144838-1

LCS LCS

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-475029/1-A

Matrix: Solid

Isopropylbenzene

Methylene Chloride

1,2,4-Trimethylbenzene

m-Xylene & p-Xylene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

4-Isopropyltoluene

N-Propylbenzene

n-Butylbenzene

t-Butylbenzene

Tetrachloroethene

sec-Butylbenzene

1,2-Dichlorobenzene

1,2,4-Trichlorobenzene

1,2,3-Trichlorobenzene

Hexachlorobutadiene

trans-1,2-Dichloroethene

1,2-Dibromo-3-Chloropropane

o-Xylene

Styrene

Toluene

Naphthalene

4-Chlorotoluene

Analysis Batch: 475093

Client Sample ID: Lab Control Sample Prep Type: Total/NA

106

94

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101

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80 - 131

71 - 137

56 - 140

73 - 138

80 - 132

78 - 132

71 - 142

78 - 133

77 - 123

80 - 132

69 - 143

71 - 143

78 - 126

79 - 129

64 - 129

72 - 144

74 - 131

75 - 141

58 - 146

75 - 125

65 - 145

56 - 145

77 - 134

mg/Kg

%Rec

Prep Batch: 475029

Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloropropene	0.800	0.748		mg/Kg		93	76 - 140	
1,2-Dichloroethane	0.800	0.737		mg/Kg		92	76 - 124	
1,2-Dichloropropane	0.800	0.773		mg/Kg		97	73 - 130	
2,2-Dichloropropane	0.800	0.672		mg/Kg		84	75 - 134	
Benzene	0.800	0.829		mg/Kg		104	79 - 135	
1,1,2-Trichloroethane	0.800	0.833		mg/Kg		104	80 - 123	
Bromochloromethane	0.800	0.791		mg/Kg		99	76 - 131	
1,3-Dichloropropane	0.800	0.773		mg/Kg		97	80 - 120	
1,2-Dibromoethane	0.800	0.783		mg/Kg		98	77 - 123	
Carbon tetrachloride	0.800	0.747		mg/Kg		93	76 - 140	
Chlorobenzene	0.800	0.855		mg/Kg		107	80 - 125	
1,1,1,2-Tetrachloroethane	0.800	0.803		mg/Kg		100	79 - 128	
1,1,2,2-Tetrachloroethane	0.800	0.802		mg/Kg		100	77 - 122	
Chloroform	0.800	0.741		mg/Kg		93	74 - 133	
Chloromethane	0.800	0.779		mg/Kg		97	52 - 142	
cis-1,2-Dichloroethene	0.800	0.763		mg/Kg		95	80 - 125	
cis-1,3-Dichloropropene	0.800	0.726		mg/Kg		91	80 - 122	
Bromoform	0.800	0.738		mg/Kg		92	71 - 130	
Dibromochloromethane	0.800	0.790		mg/Kg		99	75 - 125	
Bromobenzene	0.800	0.790		mg/Kg		99	78 - 126	
Dibromomethane	0.800	0.785		mg/Kg		98	72 - 130	
Dichlorodifluoromethane	0.800	0.796		mg/Kg		99	33 - 150	
1,2,3-Trichloropropane	0.800	0.800		mg/Kg		100	77 - 127	
Ethylbenzene	0.800	0.748		mg/Kg		94	80 - 135	
2-Chlorotoluene	0.800	0.760		mg/Kg		95	77 - 134	
1,3,5-Trimethylbenzene	0.800	0.784		mg/Kg		98	72 - 134	

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0.806

0.779

0.762

0.791

0.827

0.818

0.666

0.779

0.733

0.715

0.734

0.803

0.739

0.712

0.738

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Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-475029/1-A

Lab Sample ID: LCSD 580-475029/2-A

Matrix: Solid

Matrix: Solid

Analysis Batch: 475093

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 475029

	Бріке	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
trans-1,3-Dichloropropene	0.800	0.802		mg/Kg		100	80 - 121	
Trichloroethene	0.800	0.735		mg/Kg		92	80 - 134	
Trichlorofluoromethane	0.800	0.778		mg/Kg		97	71 - 150	
Methyl tert-butyl ether	0.800	0.781		mg/Kg		98	71 - 126	
Vinyl chloride	0.800	0.857		mg/Kg		107	62 - 144	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	99		80 - 120
4-Bromofluorobenzene (Surr)	97		80 - 120
Dibromofluoromethane (Surr)	99		80 - 120
1,2-Dichloroethane-d4 (Surr)	98		80 - 121

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Matrix. John							riepiy	pe. Tot	aiii
Analysis Batch: 475093							Prep Ba	itch: 47	75029
	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added		Qualifier	Unit	_ D	%Rec	Limits	RPD	Limit
1,1-Dichloroethene	0.800	0.836		mg/Kg		105	73 - 134	7	25
1,1-Dichloroethane	0.800	0.821		mg/Kg		103	78 - 126	7	20
1,1,1-Trichloroethane	0.800	0.777		mg/Kg		97	78 - 135	6	20
1,1-Dichloropropene	0.800	0.807		mg/Kg		101	76 - 140	8	20
1,2-Dichloroethane	0.800	0.786		mg/Kg		98	76 - 124	6	20
1,2-Dichloropropane	0.800	0.819		mg/Kg		102	73 - 130	6	20
2,2-Dichloropropane	0.800	0.739		mg/Kg		92	75 - 134	10	20
Benzene	0.800	0.884		mg/Kg		111	79 - 135	6	20
1,1,2-Trichloroethane	0.800	0.856		mg/Kg		107	80 - 123	3	20
Bromochloromethane	0.800	0.829		mg/Kg		104	76 - 131	5	20
1,3-Dichloropropane	0.800	0.811		mg/Kg		101	80 - 120	5	20
1,2-Dibromoethane	0.800	0.819		mg/Kg		102	77 - 123	4	20
Carbon tetrachloride	0.800	0.806		mg/Kg		101	76 - 140	8	20
Chlorobenzene	0.800	0.907		mg/Kg		113	80 - 125	6	20
1,1,1,2-Tetrachloroethane	0.800	0.838		mg/Kg		105	79 - 128	4	20
1,1,2,2-Tetrachloroethane	0.800	0.865		mg/Kg		108	77 - 122	8	20
Chloroform	0.800	0.784		mg/Kg		98	74 - 133	6	20
Chloromethane	0.800	0.832		mg/Kg		104	52 - 142	7	40
cis-1,2-Dichloroethene	0.800	0.805		mg/Kg		101	80 - 125	5	20
cis-1,3-Dichloropropene	0.800	0.788		mg/Kg		99	80 - 122	8	20
Bromoform	0.800	0.803		mg/Kg		100	71 - 130	8	20
Dibromochloromethane	0.800	0.840		mg/Kg		105	75 - 125	6	20
Bromobenzene	0.800	0.903		mg/Kg		113	78 - 126	13	20
Dibromomethane	0.800	0.830		mg/Kg		104	72 - 130	6	40
Dichlorodifluoromethane	0.800	0.828		mg/Kg		104	33 - 150	4	31
1,2,3-Trichloropropane	0.800	0.859		mg/Kg		107	77 - 127	7	20
Ethylbenzene	0.800	0.794		mg/Kg		99	80 - 135	6	20
2-Chlorotoluene	0.800	0.860		mg/Kg		107	77 - 134	12	21
1,3,5-Trimethylbenzene	0.800	0.900		mg/Kg		113	72 - 134	14	24
Isopropylbenzene	0.800	0.933		mg/Kg		117	80 - 131	9	20
4-Chlorotoluene	0.800	0.849		mg/Kg		106	71 - 137	12	21

Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-475029/2-A

Matrix: Solid

Client: ERM-West

Analysis Batch: 475093

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA Prep Batch: 475029

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Methylene Chloride	0.800	1.52	*+	mg/Kg		189	56 - 140	9	20
1,2,4-Trimethylbenzene	0.800	0.893		mg/Kg		112	73 - 138	10	22
m-Xylene & p-Xylene	0.800	0.792		mg/Kg		99	80 - 132	7	20
1,3-Dichlorobenzene	0.800	0.823		mg/Kg		103	78 - 132	10	20
4-Isopropyltoluene	0.800	0.928		mg/Kg		116	71 - 142	14	29
N-Propylbenzene	0.800	0.860		mg/Kg		108	78 - 133	9	24
1,4-Dichlorobenzene	0.800	0.920		mg/Kg		115	77 - 123	13	20
o-Xylene	0.800	0.835		mg/Kg		104	80 - 132	7	20
n-Butylbenzene	0.800	0.880		mg/Kg		110	69 - 143	14	31
sec-Butylbenzene	0.800	0.895		mg/Kg		112	71 - 143	12	29
1,2-Dichlorobenzene	0.800	0.913		mg/Kg		114	78 - 126	10	20
Styrene	0.800	0.875		mg/Kg		109	79 - 129	7	20
1,2-Dibromo-3-Chloropropane	0.800	0.748		mg/Kg		93	64 - 129	11	40
t-Butylbenzene	0.800	0.883		mg/Kg		110	72 - 144	12	27
1,2,4-Trichlorobenzene	0.800	0.848		mg/Kg		106	74 - 131	15	26
Tetrachloroethene	0.800	0.772		mg/Kg		96	75 - 141	8	20
1,2,3-Trichlorobenzene	0.800	0.878		mg/Kg		110	58 - 146	18	28
Toluene	0.800	0.854		mg/Kg		107	75 - 125	6	20
Hexachlorobutadiene	0.800	0.858		mg/Kg		107	65 - 145	15	36
Naphthalene	0.800	0.845		mg/Kg		106	56 - 145	17	25
trans-1,2-Dichloroethene	0.800	0.795		mg/Kg		99	77 - 134	7	20
trans-1,3-Dichloropropene	0.800	0.862		mg/Kg		108	80 - 121	7	20
Trichloroethene	0.800	0.775		mg/Kg		97	80 - 134	5	20
Trichlorofluoromethane	0.800	0.816		mg/Kg		102	71 - 150	5	30
Methyl tert-butyl ether	0.800	0.831		mg/Kg		104	71 - 126	6	20
Vinyl chloride	0.800	0.950		mg/Kg		119	62 - 144	10	20

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	99		80 - 120
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	99		80 - 120
1,2-Dichloroethane-d4 (Surr)	97		80 - 121

Lab Sample ID: MB 580-475697/3-A

Matrix: Solid

Analysis Batch: 475700

Client Sample ID: Method Blank Prep Type: Total/NA

Prep Batch: 475697

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	MB N	ИВ							
Analyte	Result C	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND ND		0.040	0.012	mg/Kg		10/23/24 14:23	10/24/24 10:56	1
1,1-Dichloroethane	ND		0.040	0.0092	mg/Kg		10/23/24 14:23	10/24/24 10:56	1
1,1,1-Trichloroethane	ND		0.040	0.0046	mg/Kg		10/23/24 14:23	10/24/24 10:56	1
1,1-Dichloropropene	ND		0.040	0.0053	mg/Kg		10/23/24 14:23	10/24/24 10:56	1
1,2-Dichloroethane	ND		0.020	0.0055	mg/Kg		10/23/24 14:23	10/24/24 10:56	1
1,2-Dichloropropane	ND		0.020	0.0066	mg/Kg		10/23/24 14:23	10/24/24 10:56	1
Benzene	ND		0.020	0.0038	mg/Kg		10/23/24 14:23	10/24/24 10:56	1
1,1,2-Trichloroethane	ND		0.020	0.0074	mg/Kg		10/23/24 14:23	10/24/24 10:56	1
Bromochloromethane	ND		0.040	0.0062	mg/Kg		10/23/24 14:23	10/24/24 10:56	1
1,3-Dichloropropane	ND		0.060	0.0056	mg/Kg		10/23/24 14:23	10/24/24 10:56	1

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Client: ERM-West Job ID: 580-144838-1

RL

0.040

MDL Unit

0.0055 mg/Kg

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

MB MB Result Qualifier

ND

ND

ND

ND

ND

ND

ND

ND

Lab Sample ID: MB 580-475697/3-A

Matrix: Solid

Naphthalene

Trichloroethene

Vinyl chloride

trans-1,2-Dichloroethene

trans-1,3-Dichloropropene

Trichlorofluoromethane

Methyl tert-butyl ether

Bromodichloromethane

Analysis Batch: 475700

Client Sample ID: Method Blank

10/23/24 14:23 10/24/24 10:56

Analyzed

Prepared

Prep Type: Total/NA

Prep Batch: 475697

Bromodomoromounario	110	0.010	0.0000 1119/119	10/20/21 11:20 10/21/21 10:00	•
1,2-Dibromoethane	ND	0.020	0.0038 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Bromomethane	ND	0.10	0.038 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Carbon tetrachloride	ND	0.020	0.0044 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Chlorobenzene	ND	0.040	0.0048 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
1,1,1,2-Tetrachloroethane	ND	0.020	0.0050 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Chloroethane	ND	0.080	0.021 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
1,1,2,2-Tetrachloroethane	ND	0.020	0.0076 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Chloroform	ND	0.020	0.0042 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Chloromethane	ND	0.060	0.010 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
cis-1,2-Dichloroethene	ND	0.060	0.013 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
cis-1,3-Dichloropropene	ND	0.020	0.0040 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Bromoform	ND	0.040	0.0045 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Dibromochloromethane	ND	0.020	0.0049 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Bromobenzene	ND	0.040	0.0042 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Dibromomethane	ND	0.040	0.0074 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Dichlorodifluoromethane	ND	0.25	0.046 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
1,2,3-Trichloropropane	ND	0.040	0.012 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Ethylbenzene	ND	0.040	0.0091 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
2-Chlorotoluene	ND	0.040	0.0088 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
1,3,5-Trimethylbenzene	ND	0.040	0.0076 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Isopropylbenzene	ND	0.040	0.0086 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
4-Chlorotoluene	ND	0.040	0.0098 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Methylene Chloride	ND	0.25	0.026 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
1,2,4-Trimethylbenzene	ND	0.040	0.014 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
m-Xylene & p-Xylene	ND	0.040	0.0071 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
1,3-Dichlorobenzene	ND	0.060	0.013 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
4-Isopropyltoluene	ND	0.040	0.010 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
N-Propylbenzene	ND	0.040	0.015 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
1,4-Dichlorobenzene	ND	0.060	0.011 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
o-Xylene	ND	0.040	0.0050 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
n-Butylbenzene	ND	0.040	0.019 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
sec-Butylbenzene	ND	0.040	0.0086 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
1,2-Dichlorobenzene	ND	0.040	0.0087 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Styrene	ND	0.040	0.013 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
1,2-Dibromo-3-Chloropropane	ND	0.060	0.015 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
t-Butylbenzene	ND	0.040	0.0077 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
1,2,4-Trichlorobenzene	ND	0.080	0.043 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Tetrachloroethene	ND	0.040	0.0053 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
1,2,3-Trichlorobenzene	ND	0.080	0.040 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Toluene	ND	0.060	0.014 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
Hexachlorobutadiene	ND	0.10	0.024 mg/Kg	10/23/24 14:23 10/24/24 10:56	1
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10/23/24 14:23 10/24/24 10:56

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10/23/24 14:23 10/24/24 10:56

10/23/24 14:23 10/24/24 10:56

0.15

0.060

0.040

0.040

0.080

0.040

0.10

0.039 mg/Kg

0.015 mg/Kg

0.0070 mg/Kg

0.010 mg/Kg

0.026 mg/Kg

0.019 mg/Kg

0.0060 mg/Kg

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Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

	MB MB				
Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100	80 - 120	10/23/24 14:23	10/24/24 10:56	1
4-Bromofluorobenzene (Surr)	101	80 - 120	10/23/24 14:23	10/24/24 10:56	1
Dibromofluoromethane (Surr)	108	80 - 120	10/23/24 14:23	10/24/24 10:56	1
1,2-Dichloroethane-d4 (Surr)	108	80 - 121	10/23/24 14:23	10/24/24 10:56	1

Lab Sample ID: LCS 580-475697/1-A

Matrix: Solid

Client Sample ID: I	Lab Control Sample
	Prep Type: Total/NA
	Prep Batch: 475697

Analysis Batch: 475700	Spike	LCS	LCS				Prep Type: Total/N Prep Batch: 47569 %Rec
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1-Dichloroethene	0.800	0.787		mg/Kg		98	73 - 134
1,1-Dichloroethane	0.800	0.792		mg/Kg		99	78 - 126
1,1,1-Trichloroethane	0.800	0.767		mg/Kg		96	78 - 135
1,1-Dichloropropene	0.800	0.761		mg/Kg		95	76 - 140
1,2-Dichloroethane	0.800	0.740		mg/Kg		92	76 - 124
1,2-Dichloropropane	0.800	0.786		mg/Kg		98	73 - 130
Benzene	0.800	0.764		mg/Kg		95	79 - 135
1,1,2-Trichloroethane	0.800	0.770		mg/Kg		96	80 - 123
Bromochloromethane	0.800	0.759		mg/Kg		95	76 - 131
1,3-Dichloropropane	0.800	0.768		mg/Kg		96	80 - 120
Bromodichloromethane	0.800	0.798		mg/Kg		100	78 - 125
1,2-Dibromoethane	0.800	0.760		mg/Kg		95	77 - 123
Bromomethane	0.800	0.865		mg/Kg		108	55 - 150
Carbon tetrachloride	0.800	0.762		mg/Kg		95	76 - 140
Chlorobenzene	0.800	0.709		mg/Kg		89	80 - 125
1,1,1,2-Tetrachloroethane	0.800	0.784		mg/Kg		98	79 - 128
Chloroethane	0.800	0.781		mg/Kg		98	26 - 150
1,1,2,2-Tetrachloroethane	0.800	0.727		mg/Kg		91	77 - 122
Chloroform	0.800	0.779		mg/Kg		97	74 - 133
Chloromethane	0.800	0.748		mg/Kg		94	52 - 142
cis-1,2-Dichloroethene	0.800	0.773		mg/Kg		97	80 - 125
cis-1,3-Dichloropropene	0.800	0.691		mg/Kg		86	80 - 122
Bromoform	0.800	0.630		mg/Kg		79	71 - 130
Dibromochloromethane	0.800	0.774		mg/Kg		97	75 - 125
Bromobenzene	0.800	0.717		mg/Kg		90	78 - 126
Dibromomethane	0.800	0.766		mg/Kg		96	72 - 130
Dichlorodifluoromethane	0.800	0.764		mg/Kg		95	33 - 150
1,2,3-Trichloropropane	0.800	0.760		mg/Kg		95	77 - 127
Ethylbenzene	0.800	0.736		mg/Kg		92	80 - 135
2-Chlorotoluene	0.800	0.715		mg/Kg		89	77 - 134
1,3,5-Trimethylbenzene	0.800	0.698		mg/Kg		87	72 - 134
Isopropylbenzene	0.800	0.825		mg/Kg		103	80 - 131
4-Chlorotoluene	0.800	0.709		mg/Kg		89	71 - 137
Methylene Chloride	0.800	0.796		mg/Kg		99	56 - 140
1,2,4-Trimethylbenzene	0.800	0.692		mg/Kg		86	73 - 138
m-Xylene & p-Xylene	0.800	0.748		mg/Kg		94	80 - 132
1,3-Dichlorobenzene	0.800	0.764		mg/Kg		96	78 - 132
4-Isopropyltoluene	0.800	0.691		mg/Kg		86	71 - 142
N-Propylbenzene	0.800	0.707		mg/Kg		88	78 - 133
1,4-Dichlorobenzene	0.800	0.647		mg/Kg		81	77 - 123
o-Xylene	0.800	0.764		mg/Kg		96	80 - 132

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Job ID: 580-144838-1

mg/Kg

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-475697/1-A

Matrix: Solid

Client: ERM-West

Analysis Batch: 475700

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 475697

Tananyono Datom morto	.		_		- 10p Datom 11000
	Spike	LCS LC			%Rec
Analyte	Added	Result Qu	ualifier Unit	D %Rec	Limits
n-Butylbenzene	0.800	0.654	mg/Kg	82	69 - 143
sec-Butylbenzene	0.800	0.699	mg/Kg	87	71 - 143
1,2-Dichlorobenzene	0.800	0.719	mg/Kg	90	78 - 126
Styrene	0.800	0.766	mg/Kg	96	79 - 129
1,2-Dibromo-3-Chloropropane	0.800	0.683	mg/Kg	85	64 - 129
t-Butylbenzene	0.800	0.698	mg/Kg	87	72 - 144
1,2,4-Trichlorobenzene	0.800	0.700	mg/Kg	88	74 - 131
Tetrachloroethene	0.800	0.749	mg/Kg	94	75 - 141
1,2,3-Trichlorobenzene	0.800	0.676	mg/Kg	85	58 - 146
Toluene	0.800	0.723	mg/Kg	90	75 - 125
Hexachlorobutadiene	0.800	0.664	mg/Kg	83	65 - 145
Naphthalene	0.800	0.661	mg/Kg	83	56 - 145
trans-1,2-Dichloroethene	0.800	0.761	mg/Kg	95	77 - 134
trans-1,3-Dichloropropene	0.800	0.749	mg/Kg	94	80 - 121
Trichloroethene	0.800	0.708	mg/Kg	88	80 - 134
Trichlorofluoromethane	0.800	0.805	mg/Kg	101	71 - 150
Methyl tert-butyl ether	0.800	0.759	mg/Kg	95	71 - 126

0.800

0.821

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	99		80 - 120
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120
1,2-Dichloroethane-d4 (Surr)	100		80 - 121

Lab Sample ID: LCSD 580-475697/2-A

Matrix: Solid

Vinyl chloride

Analysis Batch: 475700

Client Sample ID: Lab Control Sample Du	Client Sar	nple ID:	Lab	Control	Sami	ple	Dui
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Prep Type: Total/NA Prep Batch: 475697

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Spike	LCSD	LCSD				%Rec		RPD
Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
0.800	0.780		mg/Kg		98	73 - 134	1	25
0.800	0.819		mg/Kg		102	78 - 126	3	20
0.800	0.803		mg/Kg		100	78 - 135	5	20
0.800	0.794		mg/Kg		99	76 - 140	4	20
0.800	0.785		mg/Kg		98	76 - 124	6	20
0.800	0.826		mg/Kg		103	73 - 130	5	20
0.800	0.806		mg/Kg		101	79 - 135	5	20
0.800	0.828		mg/Kg		104	80 - 123	7	20
0.800	0.799		mg/Kg		100	76 - 131	5	20
0.800	0.824		mg/Kg		103	80 - 120	7	20
0.800	0.844		mg/Kg		105	78 - 125	6	20
0.800	0.840		mg/Kg		105	77 - 123	10	20
0.800	0.845		mg/Kg		106	55 - 150	2	26
0.800	0.798		mg/Kg		100	76 - 140	5	20
0.800	0.760		mg/Kg		95	80 - 125	7	20
0.800	0.818		mg/Kg		102	79 - 128	4	20
0.800	0.902		mg/Kg		113	26 - 150	14	40
0.800	0.797		mg/Kg		100	77 - 122	9	20
	Added 0.800	Added Result 0.800 0.780 0.800 0.819 0.800 0.803 0.800 0.794 0.800 0.785 0.800 0.826 0.800 0.828 0.800 0.799 0.800 0.824 0.800 0.844 0.800 0.845 0.800 0.760 0.800 0.818 0.800 0.902	Added Result Qualifier 0.800 0.780 0.800 0.819 0.800 0.803 0.800 0.794 0.800 0.785 0.800 0.826 0.800 0.806 0.800 0.828 0.800 0.799 0.800 0.824 0.800 0.844 0.800 0.845 0.800 0.798 0.800 0.760 0.800 0.818 0.800 0.902	Added Result Qualifier Unit 0.800 0.780 mg/Kg 0.800 0.819 mg/Kg 0.800 0.803 mg/Kg 0.800 0.794 mg/Kg 0.800 0.785 mg/Kg 0.800 0.826 mg/Kg 0.800 0.828 mg/Kg 0.800 0.799 mg/Kg 0.800 0.824 mg/Kg 0.800 0.844 mg/Kg 0.800 0.840 mg/Kg 0.800 0.845 mg/Kg 0.800 0.798 mg/Kg 0.800 0.760 mg/Kg 0.800 0.818 mg/Kg 0.800 0.902 mg/Kg	Added Result Qualifier Unit D 0.800 0.780 mg/Kg mg/Kg 0.800 0.819 mg/Kg mg/Kg 0.800 0.803 mg/Kg mg/Kg 0.800 0.794 mg/Kg mg/Kg 0.800 0.785 mg/Kg mg/Kg 0.800 0.826 mg/Kg mg/Kg 0.800 0.828 mg/Kg mg/Kg 0.800 0.799 mg/Kg mg/Kg 0.800 0.844 mg/Kg mg/Kg 0.800 0.840 mg/Kg mg/Kg 0.800 0.798 mg/Kg mg/Kg 0.800 0.760 mg/Kg mg/Kg 0.800 0.818 mg/Kg mg/Kg 0.800 0.902 mg/Kg mg/Kg	Added Result Qualifier Unit D %Rec 0.800 0.780 mg/Kg 98 0.800 0.819 mg/Kg 102 0.800 0.803 mg/Kg 100 0.800 0.794 mg/Kg 99 0.800 0.785 mg/Kg 98 0.800 0.826 mg/Kg 103 0.800 0.806 mg/Kg 101 0.800 0.828 mg/Kg 104 0.800 0.799 mg/Kg 103 0.800 0.824 mg/Kg 103 0.800 0.844 mg/Kg 105 0.800 0.844 mg/Kg 105 0.800 0.845 mg/Kg 106 0.800 0.798 mg/Kg 100 0.800 0.760 mg/Kg 95 0.800 0.818 mg/Kg 102 0.800 0.902 mg/Kg 113	Spike LCSD LCSD WRec Added Result Qualifier Unit D %Rec Limits 0.800 0.780 mg/Kg 98 73 - 134 0.800 0.819 mg/Kg 102 78 - 126 0.800 0.803 mg/Kg 100 78 - 135 0.800 0.794 mg/Kg 99 76 - 140 0.800 0.785 mg/Kg 98 76 - 124 0.800 0.826 mg/Kg 103 73 - 130 0.800 0.826 mg/Kg 101 79 - 135 0.800 0.828 mg/Kg 104 80 - 123 0.800 0.799 mg/Kg 100 76 - 131 0.800 0.824 mg/Kg 105 78 - 125 0.800 0.844 mg/Kg 105 77 - 123 0.800 0.845 mg/Kg 106 55 - 150 0.800 0.760 mg/Kg 100 76 - 140	Spike LCSD LCSD WRec Limits RPD 0.800 0.780 mg/Kg 98 73 - 134 1 0.800 0.819 mg/Kg 102 78 - 126 3 0.800 0.803 mg/Kg 100 78 - 135 5 0.800 0.794 mg/Kg 99 76 - 140 4 0.800 0.785 mg/Kg 98 76 - 124 6 0.800 0.826 mg/Kg 103 73 - 130 5 0.800 0.826 mg/Kg 101 79 - 135 5 0.800 0.828 mg/Kg 104 80 - 123 7 0.800 0.799 mg/Kg 100 76 - 131 5 0.800 0.824 mg/Kg 105 78 - 125 6 0.800 0.844 mg/Kg 105 77 - 123 10 0.800 0.845 mg/Kg 106 55 - 150 2 0.800 0

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-475697/2-A

Matrix: Solid

Analysis Batch: 475700

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 475697

Analyte	Spike Added		LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloroform	0.800	0.818		mg/Kg		102	74 - 133	5	20
Chloromethane	0.800	0.752		mg/Kg		94	52 - 142	0	40
cis-1,2-Dichloroethene	0.800	0.821		mg/Kg		103	80 - 125	6	20
cis-1,3-Dichloropropene	0.800	0.783		mg/Kg		98	80 - 122	12	20
Bromoform	0.800	0.666		mg/Kg		83	71 - 130	5	20
Dibromochloromethane	0.800	0.841		mg/Kg		105	75 - 125	8	20
Bromobenzene	0.800	0.791		mg/Kg		99	78 - 126	10	20
Dibromomethane	0.800	0.836		mg/Kg		104	72 - 130	9	40
Dichlorodifluoromethane	0.800	0.768		mg/Kg		96	33 - 150	1	31
1,2,3-Trichloropropane	0.800	0.795		mg/Kg		99	77 - 127	4	20
Ethylbenzene	0.800	0.792		mg/Kg		99	80 - 135	7	20
2-Chlorotoluene	0.800	0.776		mg/Kg		97	77 - 134	8	21
1,3,5-Trimethylbenzene	0.800	0.765		mg/Kg		96	72 - 134	9	24
Isopropylbenzene	0.800	0.880		mg/Kg		110	80 - 131	6	20
4-Chlorotoluene	0.800	0.778		mg/Kg		97	71 - 137	9	21
Methylene Chloride	0.800	0.630	*1	mg/Kg		79	56 - 140	23	20
1,2,4-Trimethylbenzene	0.800	0.746		mg/Kg		93	73 - 138	8	22
m-Xylene & p-Xylene	0.800	0.797		mg/Kg		100	80 - 132	6	20
1,3-Dichlorobenzene	0.800	0.739		mg/Kg		92	78 - 132	3	20
4-Isopropyltoluene	0.800	0.759		mg/Kg		95	71 - 142	9	29
N-Propylbenzene	0.800	0.788		mg/Kg		98	78 - 133	11	24
1,4-Dichlorobenzene	0.800	0.690		mg/Kg		86	77 - 123	6	20
o-Xylene	0.800	0.809		mg/Kg		101	80 - 132	6	20
n-Butylbenzene	0.800	0.731		mg/Kg		91	69 - 143	11	31
sec-Butylbenzene	0.800	0.761		mg/Kg		95	71 - 143	9	29
1,2-Dichlorobenzene	0.800	0.771		mg/Kg		96	78 - 126	7	20
Styrene	0.800	0.834		mg/Kg		104	79 - 129	9	20
1,2-Dibromo-3-Chloropropane	0.800	0.735		mg/Kg		92	64 - 129	7	40
t-Butylbenzene	0.800	0.749		mg/Kg		94	72 - 144	7	27
1,2,4-Trichlorobenzene	0.800	0.755		mg/Kg		94	74 - 131	8	26
Tetrachloroethene	0.800	0.782		mg/Kg		98	75 - 141	4	20
1,2,3-Trichlorobenzene	0.800	0.754		mg/Kg		94	58 - 146	11	28
Toluene	0.800	0.789		mg/Kg		99	75 - 125	9	20
Hexachlorobutadiene	0.800	0.708		mg/Kg		89	65 - 145	7	36
Naphthalene	0.800	0.725		mg/Kg		91	56 - 145	9	25
trans-1,2-Dichloroethene	0.800	0.754		mg/Kg		94	77 - 134	1	20
trans-1,3-Dichloropropene	0.800	0.862		mg/Kg		108	80 - 121	14	20
Trichloroethene	0.800	0.757		mg/Kg		95	80 - 134	7	20
Trichlorofluoromethane	0.800	0.843		mg/Kg		105	71 - 150	5	30
Methyl tert-butyl ether	0.800	0.813		mg/Kg		102	71 - 126	7	20
Vinyl chloride	0.800	0.829		mg/Kg		104	62 - 144	1	20

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	102		80 - 120
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	102		80 - 120
1,2-Dichloroethane-d4 (Surr)	101		80 - 121

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Client: ERM-West

Project/Site: Arkema PDI Sampling

Job ID: 580-144838-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-475879/5-A

Matrix: Solid

Analysis Batch: 475821

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 475879

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,2-Dichloropropane	ND		0.040	0.012	mg/Kg		10/25/24 07:50	10/25/24 10:19	1
Bromomethane	ND		0.10	0.038	mg/Kg		10/25/24 07:50	10/25/24 10:19	1
Chlorobenzene	ND		0.040	0.0048	mg/Kg		10/25/24 07:50	10/25/24 10:19	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		80 - 120	10/25/24 07:50	10/25/24 10:19	1
4-Bromofluorobenzene (Surr)	103		80 - 120	10/25/24 07:50	10/25/24 10:19	1
Dibromofluoromethane (Surr)	99		80 - 120	10/25/24 07:50	10/25/24 10:19	1
1,2-Dichloroethane-d4 (Surr)	100		80 - 121	10/25/24 07:50	10/25/24 10:19	1

Lab Sample ID: LCS 580-475879/1-A

Matrix: Solid

Analysis Batch: 475821

Client Sample ID: Lab Control Sample

Prep Type: Total/NA Prep Batch: 475879

Spike LCS LCS %Rec Analyte Added Result Qualifier Unit D %Rec Limits 2,2-Dichloropropane 0.800 0.779 97 75 - 134 mg/Kg 0.800 0.879 110 80 - 125 Chlorobenzene mg/Kg

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	102		80 - 120
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	96		80 - 121

Lab Sample ID: LCSD 580-475879/2-A

Matrix: Solid

Analysis Batch: 475821

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 475879

-	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,2-Dichloropropane	0.800	0.807		mg/Kg		101	75 - 134	3	20
Chlorobenzene	0.800	0.890		mg/Kg		111	80 - 125	1	20

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	103		80 - 120
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	102		80 - 120
1,2-Dichloroethane-d4 (Surr)	96		80 - 121

Lab Sample ID: MB 580-476038/3-A

Matrix: Solid

Analysis Batch: 476046

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 476038

MB MB

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	ND		0.040	0.0055	mg/Kg		10/28/24 08:38	10/28/24 12:29	1
Bromomethane	ND		0.10	0.038	mg/Kg		10/28/24 08:38	10/28/24 12:29	1
Chloroethane	ND		0.080	0.021	mg/Kg		10/28/24 08:38	10/28/24 12:29	1

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-476038/3-A

Matrix: Solid

Analysis Batch: 476046

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 476038

	MB MB				
Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	102	80 - 120	10/28/24 08:38	10/28/24 12:29	1
4-Bromofluorobenzene (Surr)	106	80 - 120	10/28/24 08:38	10/28/24 12:29	1
Dibromofluoromethane (Surr)	119	80 - 120	10/28/24 08:38	10/28/24 12:29	1
1,2-Dichloroethane-d4 (Surr)	115	80 - 121	10/28/24 08:38	10/28/24 12:29	1

Lab Sample ID: LCS 580-476038/1-A

Matrix: Solid

Analysis Batch: 476046

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 476038

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Bromodichloromethane	0.800	0.772		mg/Kg		96	78 - 125	
Bromomethane	0.800	0.773		mg/Kg		97	55 - 150	
Chloroethane	0.800	0.836		mg/Kg		104	26 - 150	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	97		80 - 120
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120
1,2-Dichloroethane-d4 (Surr)	100		80 - 121

Client Sample ID: Lab Control Sample Dup

Matrix: Solid

Analysis Batch: 476046

Lab Sample ID: LCSD 580-476038/2-A

Prep Type: Total/NA

Prep Batch: 476038

	Spike	LCSD	LCSD				%Rec		RPD	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Bromodichloromethane	0.800	0.818		mg/Kg		102	78 - 125	6	20	
Bromomethane	0.800	0.751		mg/Kg		94	55 - 150	3	26	
Chloroethane	0.800	0.791		mg/Kg		99	26 - 150	5	40	
	Bromodichloromethane Bromomethane	AnalyteAddedBromodichloromethane0.800Bromomethane0.800	Analyte Added Result Bromodichloromethane 0.800 0.818 Bromomethane 0.800 0.751	AnalyteAddedResultQualifierBromodichloromethane0.8000.818Bromomethane0.8000.751	Analyte Added Result Qualifier Unit Bromodichloromethane 0.800 0.818 mg/Kg Bromomethane 0.800 0.751 mg/Kg	AnalyteAddedResultQualifierUnitDBromodichloromethane0.8000.818mg/KgBromomethane0.8000.751mg/Kg	Analyte Added Result Qualifier Unit D %Rec Bromodichloromethane 0.800 0.818 mg/Kg 102 Bromomethane 0.800 0.751 mg/Kg 94	Analyte Added Result Qualifier Unit D %Rec Limits Bromodichloromethane 0.800 0.818 mg/Kg 102 78 - 125 Bromomethane 0.800 0.751 mg/Kg 94 55 - 150	Analyte Added Result Qualifier Unit D %Rec Limits RPD Bromodichloromethane 0.800 0.818 mg/Kg 102 78 - 125 6 Bromomethane 0.800 0.751 mg/Kg 94 55 - 150 3	Analyte Added Result Qualifier Unit up D %Rec widter Limits RPD Limits Bromodichloromethane 0.800 0.818 mg/Kg 102 78 - 125 6 20 Bromomethane 0.800 0.751 mg/Kg 94 55 - 150 3 26

LCSD	LCSD
LUJD	LUJD

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	99		80 - 120
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	99		80 - 120
1,2-Dichloroethane-d4 (Surr)	99		80 - 121

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-51-SO-25.4-20241011

Lab Sample ID: 580-144838-1 Date Collected: 10/11/24 12:55 **Matrix: Solid**

Date Received: 10/15/24 12:35

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	475081	FCG	EET SEA	10/17/24 11:33

Client Sample ID: PDI-51-SO-25.4-20241011

Lab Sample ID: 580-144838-1 Date Collected: 10/11/24 12:55 **Matrix: Solid**

Date Received: 10/15/24 12:35 Percent Solids: 75.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Fieb Type	туре	Wiethou	- Kuli	- Factor	Nullibel	Allalyst	Lau	
Total/NA	Prep	5035	DL		475697	BYM	EET SEA	10/23/24 14:23
Total/NA	Analysis	8260D	DL	1	475700	BYM	EET SEA	10/24/24 16:05
Total/NA	Prep	5035			475029	BYM	EET SEA	10/17/24 12:06
Total/NA	Analysis	8260D		1	475093	TL1	EET SEA	10/17/24 22:54

Client Sample ID: PDI-51-SO-39.9-20241011

Lab Sample ID: 580-144838-2 Date Collected: 10/11/24 13:00 **Matrix: Solid**

Date Received: 10/15/24 12:35

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	475081	FCG	EET SEA	10/17/24 11:33

Client Sample ID: PDI-51-SO-39.9-20241011

Lab Sample ID: 580-144838-2 Date Collected: 10/11/24 13:00 **Matrix: Solid**

Date Received: 10/15/24 12:35 Percent Solids: 72.0

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		476038	BYM	EET SEA	10/28/24 08:38
Total/NA	Analysis	8260D	RA	1	476046	K1K	EET SEA	10/28/24 14:53
Total/NA	Prep	5035			475029	BYM	EET SEA	10/17/24 12:06
Total/NA	Analysis	8260D		1	475093	TL1	EET SEA	10/17/24 23:15

Client Sample ID: RB-01-WQ-20241011

Lab Sample ID: 580-144838-3 Date Collected: 10/11/24 14:00 **Matrix: Water**

Date Received: 10/15/24 12:35

Γ	Batch	Batch		Dilution	Batch			Prepared	
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed	
Total/NA	Analysis	8260D			474946	JBT	EET SEA	10/16/24 20:28	

Lab Sample ID: 580-144838-4 Client Sample ID: TB-01-WQ-20241011

Date Collected: 10/11/24 00:00 **Matrix: Water**

Date Received: 10/15/24 12:35

	Batch	Batch		Dilution	Batch		Prepared
Prep Type	Туре	Method	Run	Factor	Number Analy	st Lab	or Analyzed
Total/NA	Analysis	8260D		1	474946 JBT	EET SEA	10/16/24 18:43

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-45a-SO-38.6-20241011

Lab Sample ID: 580-144838-5 Date Collected: 10/11/24 15:30 **Matrix: Solid**

Date Received: 10/15/24 12:35

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	475081	FCG	EET SEA	10/17/24 11:33

Client Sample ID: PDI-45a-SO-38.6-20241011

Lab Sample ID: 580-144838-5 Date Collected: 10/11/24 15:30 **Matrix: Solid**

Date Received: 10/15/24 12:35 Percent Solids: 83.9

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	DL		475697	BYM	EET SEA	10/23/24 14:23
Total/NA	Analysis	8260D	DL	1	475700	BYM	EET SEA	10/24/24 16:26
Total/NA	Prep	5035			475697	BYM	EET SEA	10/23/24 14:23
Total/NA	Analysis	8260D		1	475700	BYM	EET SEA	10/24/24 16:46
Total/NA	Prep	5035	DL2		475879	BYM	EET SEA	10/25/24 07:50
Total/NA	Analysis	8260D	DL2	1	475821	AC	EET SEA	10/25/24 13:48
Total/NA	Prep	5035	DL		475879	BYM	EET SEA	10/25/24 07:50
Total/NA	Analysis	8260D	DL	1	475821	AC	EET SEA	10/25/24 14:09

Client Sample ID: PDI-45a-SO-53.9-20241011 Lab Sample ID: 580-144838-6

Date Collected: 10/11/24 15:25 **Matrix: Solid**

Date Received: 10/15/24 12:35

	Batch	Batch		Dilution	Batch		Prepared
Prep Type	Туре	Method	Run	Factor	Number Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G			475081 FCG	EET SEA	10/17/24 11:33

Client Sample ID: PDI-45a-SO-53.9-20241011 Lab Sample ID: 580-144838-6

Date Collected: 10/11/24 15:25 **Matrix: Solid** Date Received: 10/15/24 12:35 Percent Solids: 65.6

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		476038	BYM	EET SEA	10/28/24 08:38
Total/NA	Analysis	8260D	RA	1	476046	K1K	EET SEA	10/28/24 15:14
Total/NA	Prep	5035			475029	BYM	EET SEA	10/17/24 12:06
Total/NA	Analysis	8260D		1	475093	TL1	EET SEA	10/17/24 23:36

Client Sample ID: TB-01-SO-20241011 Lab Sample ID: 580-144838-7

Date Collected: 10/11/24 00:00 Date Received: 10/15/24 12:35

Γ	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		476038	BYM	EET SEA	10/28/24 08:38
Total/NA	Analysis	8260D	RA	1	476046	K1K	EET SEA	10/28/24 12:50
Total/NA	Prep	5035			475029	BYM	EET SEA	10/17/24 12:06
Total/NA	Analysis	8260D		1	475093	TL1	EET SEA	10/17/24 23:57

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Eurofins Seattle

Matrix: Solid

Accreditation/Certification Summary

Client: ERM-West Job ID: 580-144838-1

Project/Site: Arkema PDI Sampling

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Progra	am	Identification Number	Expiration Date		
Oregon	NELAF	D	4167	07-07-25		
				ity. This list may include analy		
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Sample Summary

Client: ERM-West

Project/Site: Arkema PDI Sampling

Job ID: 580-144838-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-144838-1	PDI-51-SO-25.4-20241011	Solid	10/11/24 12:55	10/15/24 12:35
580-144838-2	PDI-51-SO-39.9-20241011	Solid	10/11/24 13:00	10/15/24 12:35
580-144838-3	RB-01-WQ-20241011	Water	10/11/24 14:00	10/15/24 12:35
580-144838-4	TB-01-WQ-20241011	Water	10/11/24 00:00	10/15/24 12:35
580-144838-5	PDI-45a-SO-38.6-20241011	Solid	10/11/24 15:30	10/15/24 12:35
580-144838-6	PDI-45a-SO-53.9-20241011	Solid	10/11/24 15:25	10/15/24 12:35
580-144838-7	TB-01-SO-20241011	Solid	10/11/24 00:00	10/15/24 12:35

Eurofins Seattle

5755 8th Street East Tacoma, WA 98424

Chain of Custody Record

13	eurofins	
	Contrilli	

Environment Testing

Phone (253) 922-2310													Environment testing
Client Information	Sampler: M.S).			Lab PM: Cruz, Sh	neri L				Carrier Tra	cking No(s):		COC No: 580-62781-19269.12
Client Contact: Avery Soplata	Phone:				E-Mail:		euro	finsus.cor	1	State of Or	igin:		Page: Page of
Company: ERM-West			PWSID:							equested			Job#:
Address: 1050 SW 6th Avenue Suite 1650	Due Date Request	ted:											Preservation Codes: F - MeOH
City: Portland Stale, Zip: OR, 97204 Phone:	TAT Requested (d	lays):	V.c										E - NaHSO4 A - HCL
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avery.soplata@erm.com Project Name:	Project #:				or or	rd list &	J list LL	Ilst e				1978	,
Arkema - PDI Investigation Site: // \	58020754 SSOW#:) eld	andar	Indan	Indan				containera	
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			Sample Type	Matrix (w-water		Volatii	Volati	Volatii				Jotel Number	
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Completediation	Sample Date	Time	G≖grab) e Preservat				28 E	A				S	Special Instructions/Note:
PDT-51-50-25.4-20241011	10/11/24	1255	6	S		X					Secretaria de Company	2	
PUI-51-50-39,9-20241011	10/11/24	1300	6	5		X						a	
AB-01-WQ-20241011	10/1/24	1900		WB				Y				3	
TB-01-WQ-20241011	10/11/24		6	W				X				1	
PDT-45a-50-38.6-20241011	10/11/24	1530	6	5		X.						Q	high conceatration
PDI - 454-50-53.9-20241011	10/11/24	1525	6	5		χ						5	THE STOP STOP
TB-01-50-20241011	10/11/24		G	5		X							
											(10000		
Possible Hazard Identification												4838 Ch	nain of Custody
Non-Hazard Flammable Skin Irritant Poisc	on B Unkno	wn De	adiological		S	1		osal (A f To Client		assessed if		7	g-, cran i inonui)
Deliverable Requested: (II) III, IV, Other (specify)	in o omino	7.0	adiological		Sp				Requireme	Disposal By ints:	Lab	Archiv	e For Months
Empty Kit Relinquished by:	1	Date:			Time	:				Method	of Shipment:		
Relinquished by Michael M. 1	Date/Time: 10/15/24@	1000	Co	mpany ER	M	Receiv	ved by	11/10	1/1		Date/Time:	1/24	1 133 Company E.
Relinquished by:	Date/Time:			mnany	· E ·	Rederiv	red by:	7			Date/I ma:		
Relinquished by:	Date/Time:	1 2		mpany	, 0,	Receiv	red by				Date/Tinie:	5/4	1253 Company
Custody Seals Intact: Custody Seal No.:						Cooler	Temp	erature(s) °	and Other Re	emarks:			~ 4 1
Δ Yes Δ No			Pa	age 40	of 42					1-(0/12		12/10/2024 (Rev

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Tacoma, WA 98424 Phone (253) 922-2310	.4				Environment Testing
Client Information	Sampler: M.S.		Cruz, Sheri L	Carrier Tracking No(s):	COC No: 580-62781-19269.12
Cilent Contact: Avery Soplata	Phone:		E-Mail: Sheri.Cruz@et.eurofinsus.com	State of Origin:	Page of
Company: ERM-West		PWSID:		alysis Requested	Job#:
Address: 1050 SW 6th Avenue Suite 1650	Due Date Requested:				Preservation Codes: F-MeOH
City. Portland	TAT Requested (days):	2%	5 m		A-HCL A-HCL
State, Zlp: OR, 97204	A S	A No	blank		
Phone:	PO#: 0732436.301		Н		
Email: averv.soplata@erm.com	WO#		et MeC		
Project Name: Arkema - PDI Investigation	Project #: 58020754		lard li		taine
sile Arkenia	SSOW#:		s, stan s, stan		Officer:
	Sample	Sample Matrix Type (W=water, 5=colid, 0=wateful)	om SoD - Volatile		tal Number
Cemple Relimberton	X X	Preservation Code:	XXF E /		X
FDT-51-50-25,4-26241011	10/11/24 lass	6 8	×.		2
-51-50-39	4	3	×		تع
	1011/24 1338	G W8	×		- Cu
TB-01-WB-20241011	10/11/24 +	6 W			
		H	×		& high Concest to hun "
-50-53	PELIT	6 5			C
01-50-20241	111/24	+			
				580-144838	8 Chain of Custody
Possible Hazard Identification Non-Hazard I Flammable Skin Initant Poison B	[™] Unknown	Radiological	Sample Disposal (A fee may Return To Client	ee may be assessed if sa. Disposal By Lab	Archive For Months
V, Other (specify)	+				
Empty Kit Relinquished by:	Date:		Time:	/ Method of Shipment:	
Wy Commission of the Control of the	3001 @hr/51			い	24 1133 Company E.
Relinquished by:		235 Company	ल	1/5	CM 1253 COMPARTE
II.	Date(11me) /5/15/04	TO COMP	The House	(0/16)	124 09:30 EFTAL
A Yes A No			Jell 0.5/1.	1.1	AN SC IN

Job Number: 580-144838-1

Client: ERM-West

Login Number: 144838 List Source: Eurofins Seattle

List Number: 1

Creator: Silva, Shawn 1

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

PREPARED FOR

Attn: Avery Soplata ERM-West 1050 SW 6th Avenue Suite 1650 Portland, Oregon 97204 Generated 10/30/2024 7:03:26 PM

JOB DESCRIPTION

Arkema PDI Sampling

JOB NUMBER

580-144971-1

Eurofins Seattle 5755 8th Street East Tacoma WA 98424



Eurofins Seattle

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization

Generated 10/30/2024 7:03:26 PM

Authorized for release by Sheri Cruz, Project Manager I Sheri.Cruz@et.eurofinsus.com (253)922-2310

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Client: ERM-West

Project/Site: Arkema PDI Sampling

Laboratory Job ID: 580-144971-1

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Case Narrative

Client: ERM-West Job ID: 580-144971-1

Project: Arkema PDI Sampling

Job ID: 580-144971-1 Eurofins Seattle

Job Narrative 580-144971-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these
 situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise
 specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 10/18/2024 12:45 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.5°C.

GC/MS VOA

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-475492 recovered above the upper control limit for Methylene Chloride. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: PDI-45b-SO-38.85-20241017 (580-144971-1), TB-01-SO-20241017 (580-144971-2), PDI-45b-SO-49.4-20241018 (580-144971-3) and (CCVIS 580-475492/3).

Method 8260D: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-475488 and analytical batch 580-475492 recovered outside control limits for the following analytes: Methylene Chloride. This analyte was biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 8260D: The method blank for preparation batch 580-475488 contained Methylene Chloride above the reporting limit (MDL). The target analyte associated with this method blank was less than half the reporting limit (1/2RL); therefore, re-extraction and/or re-analysis of samples were not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Eurofins Seattle

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Definitions/Glossary

Client: ERM-West Job ID: 580-144971-1

Project/Site: Arkema PDI Sampling

Qualifiers

GC/MS VOA

Qualifier Qualifier Description

*+ LCS and/or LCSD is outside acceptance limits, high biased.

J Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation These commonly used abbreviations may or may not be present in this report.

Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery
CFL Contains Free Liquid
CFU Colony Forming Unit
CNF Contains No Free Liquid

DER Duplicate Error Ratio (normalized absolute difference)

Dil Fac Dilution Factor

DL Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

EDL Estimated Detection Limit (Dioxin)

LOD Limit of Detection (DoD/DOE)

LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level"

MDA Minimum Detectable Activity (Radiochemistry)

MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit
ML Minimum Level (Dioxin)
MPN Most Probable Number
MQL Method Quantitation Limit

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent
POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

TNTC Too Numerous To Count

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Client: ERM-West Job ID: 580-144971-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-45b-SO-38.85-20241017

Lab Sample ID: 580-144971-1 Date Collected: 10/17/24 17:00 Matrix: Solid Date Received: 10/18/24 12:45 Percent Solids: 71.5

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 1,1,1,2-Tetrachloroethane ND 0.028 0.0069 mg/Kg 10/22/24 10:52 10/22/24 14:11 ND 0.055 1.1.1-Trichloroethane 0.0064 mg/Kg 10/22/24 10:52 10/22/24 14:11 1,1,2,2-Tetrachloroethane ND 0.028 0.011 mg/Kg 10/22/24 10:52 10/22/24 14:11 10/22/24 10:52 1,1,2-Trichloroethane ND 0.028 0.010 mg/Kg 10/22/24 14:11 0.055 0.013 mg/Kg 10/22/24 10:52 10/22/24 14:11 1.1-Dichloroethane ND 1,1-Dichloroethene ND 0.055 0.017 mg/Kg 10/22/24 10:52 10/22/24 14:11 1,1-Dichloropropene ND 0.055 0.0073 10/22/24 10:52 10/22/24 14:11 mg/Kg ND 0.055 10/22/24 10:52 10/22/24 14:11 1,2,3-Trichlorobenzene 0 11 mg/Kg 1,2,3-Trichloropropane ND 0.055 0.016 mg/Kg 10/22/24 10:52 10/22/24 14:11 1,2,4-Trichlorobenzene ND 0.11 0.059 mg/Kg 10/22/24 10:52 10/22/24 14:11 1,2,4-Trimethylbenzene ND 0.055 0.019 mg/Kg 10/22/24 10:52 10/22/24 14:11 mg/Kg 1.2-Dibromo-3-Chloropropane ND 0.083 0.021 10/22/24 10:52 10/22/24 14:11 1 1,2-Dibromoethane ND 0.028 0.0053 mg/Kg 10/22/24 10:52 10/22/24 14:11 0.055 0.012 mg/Kg 10/22/24 10:52 10/22/24 14:11 1,2-Dichlorobenzene 0.12 ND 0.028 0.0076 mg/Kg 10/22/24 10:52 10/22/24 14:11 1.2-Dichloroethane 0.0092 10/22/24 10:52 10/22/24 14:11 1,2-Dichloropropane ND 0.028 mg/Kg 1,3,5-Trimethylbenzene ND 0.055 0.011 mg/Kg 10/22/24 10:52 10/22/24 14:11 1,3-Dichlorobenzene ND 0.083 0.018 mg/Kg 10/22/24 10:52 10/22/24 14:11 0.0078 NΩ 0.083 mg/Kg 10/22/24 10:52 10/22/24 14:11 1,3-Dichloropropane 1,4-Dichlorobenzene 0.43 0.083 0.015 mg/Kg 10/22/24 10:52 10/22/24 14:11 0.017 2,2-Dichloropropane ND 0.055 mg/Kg 10/22/24 10:52 10/22/24 14:11 2-Chlorotoluene ND 0.055 0.012 mg/Kg 10/22/24 10:52 10/22/24 14:11 0.014 4-Chlorotoluene ND 0.055 mg/Kg 10/22/24 10:52 10/22/24 14:11 4-Isopropyltoluene 0.031 0.055 0.014 mg/Kg 10/22/24 10:52 10/22/24 14:11 Benzene ND 0.028 0.0053 mg/Kg 10/22/24 10:52 10/22/24 14:11 0.0058 10/22/24 10:52 10/22/24 14:11 Bromobenzene ND 0.055 mg/Kg Bromochloromethane ND 0.055 0.0086 mg/Kg 10/22/24 10:52 10/22/24 14:11 Bromodichloromethane 0.0076 10/22/24 10:52 10/22/24 14:11 ND 0.055 mg/Kg 0.0062 Bromoform NΩ 0.055 mg/Kg 10/22/24 10:52 10/22/24 14:11 Carbon tetrachloride ND 10/22/24 10:52 10/22/24 14:11 0.028 0.0061 mg/Kg Chloroform 0.13 0.028 0.0058 mg/Kg 10/22/24 10:52 10/22/24 14:11 Chloromethane ND 0.083 0.014 mg/Kg 10/22/24 10:52 10/22/24 14:11 0.043 0.083 0.017 10/22/24 10:52 10/22/24 14:11 cis-1,2-Dichloroethene mg/Kg ND 10/22/24 10:52 10/22/24 14:11 cis-1,3-Dichloropropene 0.028 0.0055 mg/Kg Dibromochloromethane ND 0.028 0.0068 mg/Kg 10/22/24 10:52 10/22/24 14:11 0.010 Dibromomethane ND 0.055 mg/Kg 10/22/24 10:52 10/22/24 14:11 Ethylbenzene ND 0.055 0.013 mg/Kg 10/22/24 10:52 10/22/24 14:11 Hexachlorobutadiene ND 0.14 0.033 mg/Kg 10/22/24 10:52 10/22/24 14:11 ND 0.055 0.012 10/22/24 10:52 Isopropylbenzene mg/Kg 10/22/24 14:11 Methyl tert-butyl ether ND 0.055 0.0083 mg/Kg 10/22/24 10:52 10/22/24 14:11 Methylene Chloride ND 0.35 0.036 mg/Kg 10/22/24 10:52 10/22/24 14:11 m-Xylene & p-Xylene ND 0.055 0.0098 mg/Kg 10/22/24 10:52 10/22/24 14:11 0.054 10/22/24 10:52 10/22/24 14:11 **Naphthalene** 0.097 0.21 mg/Kg n-Butylbenzene 0.055 0.026 10/22/24 10:52 10/22/24 14:11 ND mg/Kg 0.055 10/22/24 10:52 10/22/24 14:11 N-Propylbenzene ND 0.021 mg/Kg o-Xylene ND 0.055 0.0069 mg/Kg 10/22/24 10:52 10/22/24 14:11 ND 10/22/24 10:52 10/22/24 14:11 sec-Butylbenzene 0.055 0.012 mg/Kg Styrene ND 0.055 0.018 mg/Kg ₩ 10/22/24 10:52 10/22/24 14:11 t-Butylbenzene ND 0.055 0.011 mg/Kg 10/22/24 10:52 10/22/24 14:11

Client: ERM-West Job ID: 580-144971-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-45b-SO-38.85-20241017

Lab Sample ID: 580-144971-1 Date Collected: 10/17/24 17:00 **Matrix: Solid**

Date Received: 10/18/24 12:45 Percent Solids: 71.5

Method: SW846 8260D - Vo	olatile Organic	Compoun	ds by GC/MS	(Conti	inued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Tetrachloroethene	2.0		0.055	0.0073	mg/Kg	-	10/22/24 10:52	10/22/24 14:11	
Toluene	ND		0.083	0.019	mg/Kg	☼	10/22/24 10:52	10/22/24 14:11	
trans-1,2-Dichloroethene	ND		0.083	0.020	mg/Kg	₽	10/22/24 10:52	10/22/24 14:11	
trans-1,3-Dichloropropene	ND		0.055	0.0097	mg/Kg	☼	10/22/24 10:52	10/22/24 14:11	
Trichloroethene	0.085		0.055	0.014	mg/Kg	☼	10/22/24 10:52	10/22/24 14:11	
Trichlorofluoromethane	ND		0.11	0.036	mg/Kg	⊅	10/22/24 10:52	10/22/24 14:11	
Vinyl chloride	ND		0.14	0.026	mg/Kg	≎	10/22/24 10:52	10/22/24 14:11	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				10/22/24 10:52	10/22/24 14:11	
4-Bromofluorobenzene (Surr)	99		80 - 120				10/22/24 10:52	10/22/24 14:11	
Dibromofluoromethane (Surr)	100		80 - 120				10/22/24 10:52	10/22/24 14:11	
Toluene-d8 (Surr)	109		80 - 120				10/22/24 10:52	10/22/24 14:11	
Method: SW846 8260D - Vo Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Chlorobenzene	220		1.2	0.14	mg/Kg	☆	10/25/24 07:50	10/25/24 14:51	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
1,2-Dichloroethane-d4 (Surr)	101		80 - 121				10/25/24 07:50	10/25/24 14:51	
4-Bromofluorobenzene (Surr)	104		80 - 120				10/25/24 07:50	10/25/24 14:51	
Dibromofluoromethane (Surr)	102		80 - 120				10/25/24 07:50	10/25/24 14:51	
Toluene-d8 (Surr)	100		80 - 120				10/25/24 07:50	10/25/24 14:51	
Method: SW846 8260D - Vo	olatile Organic	Compoun	ds by GC/MS	- RA					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Bromomethane	ND		0.14	0.052	mg/Kg	☼	10/23/24 14:23	10/24/24 11:58	
Chloroethane	0.53		0.11	0.029	mg/Kg	☼	10/23/24 14:23	10/24/24 11:58	
Dichlorodifluoromethane	ND		0.35	0.064	mg/Kg	☼	10/23/24 14:23	10/24/24 11:58	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa

- Cilior Cottinuito	0.00	• • • • • • • • • • • • • • • • • • • •	0.020g,g			•
Dichlorodifluoromethane	ND	0.35	0.064 mg/Kg	☼ 10/23/24 14:23	10/24/24 11:58	1
Surrogate	%Recovery Qualifier	Limits		Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108	80 - 121		10/23/24 14:23	10/24/24 11:58	1
4-Bromofluorobenzene (Surr)	98	80 - 120		10/23/24 14:23	10/24/24 11:58	1
Dibromofluoromethane (Surr)	108	80 - 120		10/23/24 14:23	10/24/24 11:58	1
Toluene-d8 (Surr)	99	80 - 120		10/23/24 14:23	10/24/24 11:58	1

General Chemistry							
Analyte	Result Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	71.5	0.1	0.1 %			10/21/24 12:57	1
Percent Moisture (SM22 2540G)	28.5	0.1	0.1 %			10/21/24 12:57	1

Client: ERM-West Job ID: 580-144971-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-SO-20241017

Lab Sample ID: 580-144971-2 Date Collected: 10/17/24 17:05 **Matrix: Solid**

Date Received: 10/18/24 12:45

Analyte		Qualifier	RL	MDL		<u>D</u>	Prepared	Analyzed	Dil F
1,1,1,2-Tetrachloroethane	ND		0.020	0.0050			10/22/24 10:52	10/22/24 12:48	
1,1,1-Trichloroethane	ND		0.040	0.0046			10/22/24 10:52	10/22/24 12:48	
1,1,2,2-Tetrachloroethane	ND		0.020	0.0076	mg/Kg		10/22/24 10:52	10/22/24 12:48	
1,1,2-Trichloroethane	ND		0.020	0.0074	mg/Kg		10/22/24 10:52	10/22/24 12:48	
1,1-Dichloroethane	ND		0.040	0.0092	mg/Kg		10/22/24 10:52	10/22/24 12:48	
1,1-Dichloroethene	ND		0.040	0.012	mg/Kg		10/22/24 10:52	10/22/24 12:48	
1,1-Dichloropropene	ND		0.040	0.0053	mg/Kg		10/22/24 10:52	10/22/24 12:48	
1,2,3-Trichlorobenzene	ND		0.080	0.040	mg/Kg		10/22/24 10:52	10/22/24 12:48	
1,2,3-Trichloropropane	ND		0.040	0.012	mg/Kg		10/22/24 10:52	10/22/24 12:48	
1,2,4-Trichlorobenzene	ND		0.080	0.043	mg/Kg		10/22/24 10:52	10/22/24 12:48	
1,2,4-Trimethylbenzene	ND		0.040	0.014	mg/Kg		10/22/24 10:52	10/22/24 12:48	
1,2-Dibromo-3-Chloropropane	ND		0.060	0.015	mg/Kg		10/22/24 10:52	10/22/24 12:48	
1,2-Dibromoethane	ND		0.020	0.0038			10/22/24 10:52	10/22/24 12:48	
1,2-Dichlorobenzene	ND		0.040	0.0087			10/22/24 10:52	10/22/24 12:48	
1,2-Dichloroethane	ND		0.020	0.0055				10/22/24 12:48	
1,2-Dichloropropane	ND		0.020	0.0066				10/22/24 12:48	
1,3,5-Trimethylbenzene	ND		0.040	0.0076				10/22/24 12:48	
1,3-Dichlorobenzene	ND		0.060		mg/Kg			10/22/24 12:48	
1,3-Dichloropropane	ND		0.060	0.0056				10/22/24 12:48	
1,4-Dichlorobenzene	ND		0.060		mg/Kg			10/22/24 12:48	
2,2-Dichloropropane	ND		0.040		mg/Kg			10/22/24 12:48	
2-Chlorotoluene	ND		0.040	0.0088				10/22/24 12:48	
4-Chlorotoluene	ND		0.040	0.0098				10/22/24 12:48	
4-Isopropyltoluene	ND		0.040		mg/Kg			10/22/24 12:48	
Benzene	ND		0.020	0.0038				10/22/24 12:48	
Bromobenzene	ND ND		0.020	0.0038				10/22/24 12:48	
Bromochloromethane	ND ND		0.040	0.0042	0 0			10/22/24 12:48	
Bromodichloromethane	ND		0.040	0.0055	0 0			10/22/24 12:48	
Bromoform	ND		0.040	0.0045				10/22/24 12:48	
Carbon tetrachloride	ND		0.020	0.0044				10/22/24 12:48	
Chlorobenzene	ND		0.040	0.0048				10/22/24 12:48	
Chloroform	ND		0.020	0.0042				10/22/24 12:48	
Chloromethane	ND		0.060		mg/Kg			10/22/24 12:48	
cis-1,2-Dichloroethene	ND		0.060		mg/Kg			10/22/24 12:48	
cis-1,3-Dichloropropene	ND		0.020	0.0040			10/22/24 10:52	10/22/24 12:48	
Dibromochloromethane	ND		0.020	0.0049				10/22/24 12:48	
Dibromomethane	ND		0.040	0.0074				10/22/24 12:48	
Ethylbenzene	ND		0.040	0.0091				10/22/24 12:48	
Hexachlorobutadiene	ND		0.10		mg/Kg			10/22/24 12:48	
sopropylbenzene	ND		0.040	0.0086				10/22/24 12:48	
Methyl tert-butyl ether	ND		0.040	0.0060			10/22/24 10:52	10/22/24 12:48	
Methylene Chloride	ND	*+	0.25		mg/Kg		10/22/24 10:52	10/22/24 12:48	
n-Xylene & p-Xylene	ND		0.040	0.0071	mg/Kg		10/22/24 10:52	10/22/24 12:48	
Naphthalene	ND		0.15	0.039	mg/Kg		10/22/24 10:52	10/22/24 12:48	
n-Butylbenzene	ND		0.040	0.019	mg/Kg		10/22/24 10:52	10/22/24 12:48	
N-Propylbenzene	ND		0.040	0.015	mg/Kg		10/22/24 10:52	10/22/24 12:48	
o-Xylene	ND		0.040	0.0050	mg/Kg		10/22/24 10:52	10/22/24 12:48	
sec-Butylbenzene	ND		0.040	0.0086	mg/Kg		10/22/24 10:52	10/22/24 12:48	
Styrene	ND		0.040	0.013	mg/Kg			10/22/24 12:48	

Client: ERM-West Job ID: 580-144971-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-SO-20241017

Date Collected: 10/17/24 17:05

Date Received: 10/18/24 12:45

Lab Sample ID: 580-144971-2

Matrix: Solid

Method: SW846 8260D - Vo	_	•	•	(Conti	'	_			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	ND		0.040	0.0077	mg/Kg		10/22/24 10:52	10/22/24 12:48	1
Tetrachloroethene	ND		0.040	0.0053	mg/Kg		10/22/24 10:52	10/22/24 12:48	1
Toluene	ND		0.060	0.014	mg/Kg		10/22/24 10:52	10/22/24 12:48	1
trans-1,2-Dichloroethene	ND		0.060	0.015	mg/Kg		10/22/24 10:52	10/22/24 12:48	1
trans-1,3-Dichloropropene	ND		0.040	0.0070	mg/Kg		10/22/24 10:52	10/22/24 12:48	1
Trichloroethene	ND		0.040	0.010	mg/Kg		10/22/24 10:52	10/22/24 12:48	1
Trichlorofluoromethane	ND		0.080	0.026	mg/Kg		10/22/24 10:52	10/22/24 12:48	1
Vinyl chloride	ND		0.10	0.019	mg/Kg		10/22/24 10:52	10/22/24 12:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/22/24 10:52	10/22/24 12:48	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/22/24 10:52	10/22/24 12:48	1
Dibromofluoromethane (Surr)	100		80 - 120				10/22/24 10:52	10/22/24 12:48	1
Toluene-d8 (Surr)	102		80 - 120				10/22/24 10:52	10/22/24 12:48	1

Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	- RA					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		0.10	0.038	mg/Kg		10/23/24 14:23	10/24/24 11:37	1
Chloroethane	ND		0.080	0.021	mg/Kg		10/23/24 14:23	10/24/24 11:37	1
Dichlorodifluoromethane	ND		0.25	0.046	mg/Kg		10/23/24 14:23	10/24/24 11:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		80 - 121				10/23/24 14:23	10/24/24 11:37	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/23/24 14:23	10/24/24 11:37	1
Dibromofluoromethane (Surr)	101		80 - 120				10/23/24 14:23	10/24/24 11:37	1
Toluene-d8 (Surr)	100		80 - 120				10/23/24 14:23	10/24/24 11:37	1

10/30/2024

Client: ERM-West Job ID: 580-144971-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-45b-SO-49.4-20241018

Lab Sample ID: 580-144971-3 Date Collected: 10/18/24 09:30 Matrix: Solid Date Received: 10/18/24 12:45 Percent Solids: 68.7

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 0.031 1,1,1,2-Tetrachloroethane ND 0.0077 mg/Kg 10/22/24 10:52 10/22/24 14:31 ND 1.1.1-Trichloroethane 0.061 0.0071 mg/Kg 10/22/24 10:52 10/22/24 14:31 1,1,2,2-Tetrachloroethane ND 0.031 0.012 mg/Kg 10/22/24 10:52 10/22/24 14:31 1,1,2-Trichloroethane ND 0.031 0.011 mg/Kg 10/22/24 10:52 10/22/24 14:31 0.061 0.014 mg/Kg 10/22/24 10:52 10/22/24 14:31 1.1-Dichloroethane ND 1,1-Dichloroethene ND 0.061 0.019 mg/Kg 10/22/24 10:52 10/22/24 14:31 1,1-Dichloropropene ND 0.061 0.0081 10/22/24 10:52 10/22/24 14:31 mg/Kg ND 0.061 10/22/24 10:52 10/22/24 14:31 1,2,3-Trichlorobenzene 0.12 mg/Kg 1,2,3-Trichloropropane ND 0.061 0.018 mg/Kg 10/22/24 10:52 10/22/24 14:31 1,2,4-Trichlorobenzene ND 0.12 0.065 mg/Kg 10/22/24 10:52 10/22/24 14:31 1,2,4-Trimethylbenzene ND 0.061 0.021 mg/Kg 10/22/24 10:52 10/22/24 14:31 mg/Kg 1.2-Dibromo-3-Chloropropane ND 0.092 0.023 10/22/24 10:52 10/22/24 14:31 1 1,2-Dibromoethane ND 0.031 0.0058 mg/Kg 10/22/24 10:52 10/22/24 14:31 1,2-Dichlorobenzene ND 0.061 0.013 mg/Kg 10/22/24 10:52 10/22/24 14:31 0.0084 ND 0.031 mg/Kg 10/22/24 10:52 10/22/24 14:31 1.2-Dichloroethane 0.010 10/22/24 10:52 1,2-Dichloropropane NΩ 0.031 mg/Kg 10/22/24 14:31 0.012 1,3,5-Trimethylbenzene ND 0.061 mg/Kg 10/22/24 10:52 10/22/24 14:31 1,3-Dichlorobenzene ND 0.092 0.020 mg/Kg 10/22/24 10:52 10/22/24 14:31 ND 0.092 0.0086 mg/Kg 10/22/24 10:52 10/22/24 14:31 1,3-Dichloropropane mg/Kg 1,4-Dichlorobenzene ND 0.092 0.017 10/22/24 10:52 10/22/24 14:31 2,2-Dichloropropane ND 0.061 0.019 mg/Kg 10/22/24 10:52 10/22/24 14:31 2-Chlorotoluene ND 0.061 0.014 mg/Kg 10/22/24 10:52 10/22/24 14:31 4-Chlorotoluene ND 0.061 0.015 mg/Kg 10/22/24 10:52 10/22/24 14:31 4-Isopropyltoluene ND 0.061 0.016 mg/Kg 10/22/24 10:52 10/22/24 14:31 Benzene ND 0.031 0.0058 mg/Kg 10/22/24 10:52 10/22/24 14:31 10/22/24 10:52 10/22/24 14:31 Bromobenzene ND 0.061 0.0064 mg/Kg Bromochloromethane ND 0.061 0.0095 mg/Kg 10/22/24 10:52 10/22/24 14:31 Bromodichloromethane 0.0084 ND 0.061 mg/Kg 10/22/24 10:52 10/22/24 14:31 0.0069 Bromoform NΩ 0.061 mg/Kg 10/22/24 10:52 10/22/24 14:31 Carbon tetrachloride ND 10/22/24 14:31 0.031 0.0068 mg/Kg 10/22/24 10:52 Chlorobenzene 0.66 0.061 0.0074 mg/Kg 10/22/24 10:52 10/22/24 14:31 Chloroform ND 0.031 0.0064 mg/Kg 10/22/24 10:52 10/22/24 14:31 Chloromethane ND 0.092 0.016 10/22/24 10:52 10/22/24 14:31 mg/Kg cis-1.2-Dichloroethene 10/22/24 10:52 10/22/24 14:31 ND 0.092 0.019 mg/Kg cis-1,3-Dichloropropene ND 0.031 0.0061 mg/Kg 10/22/24 10:52 10/22/24 14:31 Dibromochloromethane ND 0.031 0.0075 mg/Kg 10/22/24 10:52 10/22/24 14:31 Dibromomethane ND 0.061 0.011 mg/Kg 10/22/24 10:52 10/22/24 14:31 Ethylbenzene ND 0.061 0.014 mg/Kg 10/22/24 10:52 10/22/24 14:31 ND 0.037 mg/Kg 10/22/24 10:52 10/22/24 14:31 Hexachlorobutadiene 0.15 Isopropylbenzene ND 0.061 0.013 mg/Kg 10/22/24 10:52 10/22/24 14:31 Methyl tert-butyl ether ND 0.061 0.0092 mg/Kg 10/22/24 10:52 10/22/24 14:31 Methylene Chloride ND 0.38 0.040 mg/Kg 10/22/24 10:52 10/22/24 14:31 10/22/24 10:52 10/22/24 14:31 m-Xylene & p-Xylene ND 0.061 0.011 mg/Kg Naphthalene 0.060 10/22/24 10:52 10/22/24 14:31 ND 0.23 mg/Kg ND 10/22/24 14:31 n-Butylbenzene 0.061 0.028 mg/Kg 10/22/24 10:52 N-Propylbenzene ND 0.061 0.023 mg/Kg 10/22/24 10:52 10/22/24 14:31 ND 0.0077 mg/Kg 10/22/24 10:52 10/22/24 14:31 o-Xylene 0.061 sec-Butylbenzene ND 0.061 0.013 mg/Kg 10/22/24 10:52 10/22/24 14:31 10/22/24 14:31 Styrene ND 0.061 0.019 mg/Kg 10/22/24 10:52

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10/30/2024

Client: ERM-West Job ID: 580-144971-1

Project/Site: Arkema PDI Sampling

Analyte

Client Sample ID: PDI-45b-SO-49.4-20241018

Lab Sample ID: 580-144971-3 Date Collected: 10/18/24 09:30

Matrix: Solid Date Received: 10/18/24 12:45 Percent Solids: 68.7

Method: SW846 8260D - Vo Analyte	_	Qualifier	RL	(Conti	,	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	ND		0.061		mg/Kg	— <u> </u>	10/22/24 10:52	10/22/24 14:31	1
Tetrachloroethene	ND		0.061	0.0081	mg/Kg	₩	10/22/24 10:52	10/22/24 14:31	1
Toluene	ND		0.092	0.021	mg/Kg	₩	10/22/24 10:52	10/22/24 14:31	1
trans-1,2-Dichloroethene	ND		0.092	0.022	mg/Kg	₽	10/22/24 10:52	10/22/24 14:31	1
trans-1,3-Dichloropropene	ND		0.061	0.011	mg/Kg	₩	10/22/24 10:52	10/22/24 14:31	1
Trichloroethene	ND		0.061	0.016	mg/Kg	☼	10/22/24 10:52	10/22/24 14:31	1
Trichlorofluoromethane	ND		0.12	0.040	mg/Kg	₽	10/22/24 10:52	10/22/24 14:31	1
Vinyl chloride	ND		0.15	0.029	mg/Kg	₽	10/22/24 10:52	10/22/24 14:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/22/24 10:52	10/22/24 14:31	1
4-Bromofluorobenzene (Surr)	100		80 - 120				10/22/24 10:52	10/22/24 14:31	1
Dibromofluoromethane (Surr)	100		80 - 120				10/22/24 10:52	10/22/24 14:31	1
Toluene-d8 (Surr)	99		80 - 120				10/22/24 10:52	10/22/24 14:31	1

Bromomethane	ND	0.15	0.058 mg/Kg	10/23/24 14:23	10/24/24 12:19	1
Chloroethane	0.22	0.12	0.032 mg/Kg	10/23/24 14:23	10/24/24 12:19	1
Dichlorodifluoromethane	ND	0.38	0.070 mg/Kg	10/23/24 14:23	10/24/24 12:19	1
Surrogate	%Recovery Qualifier	Limits		Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111	80 - 121		10/23/24 14:23	10/24/24 12:19	1
4-Bromofluorobenzene (Surr)	101	80 - 120		10/23/24 14:23	10/24/24 12:19	1
Dibromofluoromethane (Surr)	109	80 - 120		10/23/24 14:23	10/24/24 12:19	1
Toluene-d8 (Surr)	102	80 - 120		10/23/24 14:23	10/24/24 12:19	1

RL

MDL Unit

D

Prepared

Result Qualifier

General Chemistry							
Analyte	Result Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	68.7	0.1	0.1 %			10/21/24 12:57	1
Percent Moisture (SM22 2540G)	31.3	0.1	0.1 %			10/21/24 12:57	1

Dil Fac

Analyzed

QC Sample Results

Client: ERM-West Job ID: 580-144971-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-475488/5-A

Matrix: Solid

Analysis Batch: 475492

Client Sample ID: Method Blank

Prep Type: Total/NA

Dil Fac	
1	
1	
	1

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND		0.020	0.0050	mg/Kg		10/22/24 09:09	10/22/24 12:06	
1,1,1-Trichloroethane	ND		0.040	0.0046			10/22/24 09:09	10/22/24 12:06	
1,1,2,2-Tetrachloroethane	ND		0.020	0.0076	mg/Kg		10/22/24 09:09	10/22/24 12:06	
1,1,2-Trichloroethane	ND		0.020	0.0074	mg/Kg		10/22/24 09:09	10/22/24 12:06	
1,1-Dichloroethane	ND		0.040	0.0092			10/22/24 09:09	10/22/24 12:06	
1,1-Dichloroethene	ND		0.040	0.012	mg/Kg		10/22/24 09:09	10/22/24 12:06	
1,1-Dichloropropene	ND		0.040	0.0053	mg/Kg		10/22/24 09:09	10/22/24 12:06	
1,2,3-Trichlorobenzene	ND		0.080	0.040	mg/Kg		10/22/24 09:09	10/22/24 12:06	
1,2,3-Trichloropropane	ND		0.040		mg/Kg		10/22/24 09:09	10/22/24 12:06	
1,2,4-Trichlorobenzene	ND		0.080		mg/Kg		10/22/24 09:09	10/22/24 12:06	
1,2,4-Trimethylbenzene	ND		0.040		mg/Kg		10/22/24 09:09	10/22/24 12:06	
1,2-Dibromo-3-Chloropropane	ND		0.060		mg/Kg		10/22/24 09:09	10/22/24 12:06	
1,2-Dibromoethane	ND		0.020	0.0038			10/22/24 09:09	10/22/24 12:06	
1,2-Dichlorobenzene	ND		0.040	0.0087			10/22/24 09:09	10/22/24 12:06	
1,2-Dichloroethane	ND		0.020	0.0055			10/22/24 09:09	10/22/24 12:06	
1,2-Dichloropropane	ND		0.020	0.0066			10/22/24 09:09	10/22/24 12:06	
1,3,5-Trimethylbenzene	ND		0.040	0.0076			10/22/24 09:09	10/22/24 12:06	
1,3-Dichlorobenzene	ND		0.060		mg/Kg		10/22/24 09:09		
1,3-Dichloropropane	ND		0.060	0.0056			10/22/24 09:09	10/22/24 12:06	
1,4-Dichlorobenzene	ND		0.060		mg/Kg		10/22/24 09:09	10/22/24 12:06	
2,2-Dichloropropane	ND		0.040		mg/Kg		10/22/24 09:09	10/22/24 12:06	
2-Chlorotoluene	ND		0.040	0.0088			10/22/24 09:09	10/22/24 12:06	
4-Chlorotoluene	ND		0.040	0.0098			10/22/24 09:09		
4-Isopropyltoluene	ND		0.040		mg/Kg		10/22/24 09:09		
Benzene	ND		0.020	0.0038				10/22/24 12:06	
Bromobenzene	ND		0.040	0.0042			10/22/24 09:09		
Bromochloromethane	ND		0.040	0.0062			10/22/24 09:09		
Bromodichloromethane	ND		0.040	0.0055			10/22/24 09:09		
Bromoform	ND		0.040	0.0045			10/22/24 09:09	10/22/24 12:06	
Carbon tetrachloride	ND		0.020	0.0044			10/22/24 09:09		
Chlorobenzene	ND		0.040	0.0048			10/22/24 09:09		
Chloroform	ND		0.020	0.0042			10/22/24 09:09		
Chloromethane	ND		0.060		mg/Kg		10/22/24 09:09		
cis-1,2-Dichloroethene	ND		0.060		mg/Kg		10/22/24 09:09		
cis-1,3-Dichloropropene	ND		0.020	0.0040				10/22/24 12:06	
Dibromochloromethane	ND		0.020	0.0049			10/22/24 09:09	10/22/24 12:06	
Dibromomethane	ND		0.040	0.0074			10/22/24 09:09		
Ethylbenzene	ND		0.040	0.0091			10/22/24 09:09		
Hexachlorobutadiene	ND		0.10		mg/Kg		10/22/24 09:09		
Isopropylbenzene	ND		0.040	0.0086			10/22/24 09:09		
Methyl tert-butyl ether	ND		0.040	0.0060			10/22/24 09:09		
Methylene Chloride	0.989		0.25		mg/Kg		10/22/24 09:09	10/22/24 12:06	
m-Xylene & p-Xylene	ND		0.23	0.020			10/22/24 09:09	10/22/24 12:06	
Naphthalene	ND ND		0.040		mg/Kg		10/22/24 09:09	10/22/24 12:06	
napritialene n-Butylbenzene	ND ND		0.15		mg/Kg		10/22/24 09:09		
					mg/Kg				
N-Propylbenzene	ND ND		0.040 0.040	0.015			10/22/24 09:09		
o-Xylene sec-Butylbenzene	ND ND		0.040	0.0050			10/22/24 09:09 10/22/24 09:09		

QC Sample Results

Client: ERM-West Job ID: 580-144971-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-475488/5-A

Matrix: Solid

Analysis Batch: 475492

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 475488

	MB	МВ						•	
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		0.040	0.013	mg/Kg		10/22/24 09:09	10/22/24 12:06	1
t-Butylbenzene	ND		0.040	0.0077	mg/Kg		10/22/24 09:09	10/22/24 12:06	1
Tetrachloroethene	ND		0.040	0.0053	mg/Kg		10/22/24 09:09	10/22/24 12:06	1
Toluene	ND		0.060	0.014	mg/Kg		10/22/24 09:09	10/22/24 12:06	1
trans-1,2-Dichloroethene	ND		0.060	0.015	mg/Kg		10/22/24 09:09	10/22/24 12:06	1
trans-1,3-Dichloropropene	ND		0.040	0.0070	mg/Kg		10/22/24 09:09	10/22/24 12:06	1
Trichloroethene	ND		0.040	0.010	mg/Kg		10/22/24 09:09	10/22/24 12:06	1
Trichlorofluoromethane	ND		0.080	0.026	mg/Kg		10/22/24 09:09	10/22/24 12:06	1
Vinyl chloride	ND		0.10	0.019	mg/Kg		10/22/24 09:09	10/22/24 12:06	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121	10/22/24 09:09	10/22/24 12:06	1
4-Bromofluorobenzene (Surr)	104		80 - 120	10/22/24 09:09	10/22/24 12:06	1
Dibromofluoromethane (Surr)	99		80 - 120	10/22/24 09:09	10/22/24 12:06	1
Toluene-d8 (Surr)	101		80 - 120	10/22/24 09:09	10/22/24 12:06	1

Lab Sample ID: LCS 580-475488/1-A

Matrix: Solid

Analysis Batch: 475492

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 475488

Analysis Datch. 473432	Spike	LCS	LCS				%Rec
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1,1,2-Tetrachloroethane	0.800	0.870		mg/Kg		109	79 - 128
1,1,1-Trichloroethane	0.800	0.782		mg/Kg		98	78 - 135
1,1,2,2-Tetrachloroethane	0.800	0.861		mg/Kg		108	77 - 122
1,1,2-Trichloroethane	0.800	0.866		mg/Kg		108	80 - 123
1,1-Dichloroethane	0.800	0.815		mg/Kg		102	78 - 126
1,1-Dichloroethene	0.800	0.864		mg/Kg		108	73 - 134
1,1-Dichloropropene	0.800	0.821		mg/Kg		103	76 - 140
1,2,3-Trichlorobenzene	0.800	0.767		mg/Kg		96	58 - 146
1,2,3-Trichloropropane	0.800	0.811		mg/Kg		101	77 - 127
1,2,4-Trichlorobenzene	0.800	0.793		mg/Kg		99	74 - 131
1,2,4-Trimethylbenzene	0.800	0.841		mg/Kg		105	73 - 138
1,2-Dibromo-3-Chloropropane	0.800	0.753		mg/Kg		94	64 - 129
1,2-Dibromoethane	0.800	0.846		mg/Kg		106	77 - 123
1,2-Dichlorobenzene	0.800	0.882		mg/Kg		110	78 - 126
1,2-Dichloroethane	0.800	0.772		mg/Kg		96	76 - 124
1,2-Dichloropropane	0.800	0.809		mg/Kg		101	73 - 130
1,3,5-Trimethylbenzene	0.800	0.827		mg/Kg		103	72 - 134
1,3-Dichlorobenzene	0.800	0.784		mg/Kg		98	78 - 132
1,3-Dichloropropane	0.800	0.800		mg/Kg		100	80 - 120
1,4-Dichlorobenzene	0.800	0.857		mg/Kg		107	77 - 123
2,2-Dichloropropane	0.800	0.781		mg/Kg		98	75 - 134
2-Chlorotoluene	0.800	0.803		mg/Kg		100	77 - 134
4-Chlorotoluene	0.800	0.787		mg/Kg		98	71 - 137
4-Isopropyltoluene	0.800	0.861		mg/Kg		108	71 - 142
Benzene	0.800	0.879		mg/Kg		110	79 - 135
Bromobenzene	0.800	0.826		mg/Kg		103	78 - 126
Bromochloromethane	0.800	0.831		mg/Kg		104	76 - 131

Eurofins Seattle

10/30/2024

Client: ERM-West Job ID: 580-144971-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-475488/1-A

Matrix: Solid

Analysis Batch: 475492

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 475488

Allalysis Batch. 473432	Spike	LCS	LCS				%Rec
Analyte	Added		Qualifier	Unit	D	%Rec	Limits
Bromodichloromethane	0.800	0.838		mg/Kg		105	78 - 125
Bromoform	0.800	0.810		mg/Kg		101	71 - 130
Carbon tetrachloride	0.800	0.832		mg/Kg		104	76 - 140
Chlorobenzene	0.800	0.880		mg/Kg		110	80 - 125
Chloroform	0.800	0.788		mg/Kg		98	74 - 133
Chloromethane	0.800	0.817		mg/Kg		102	52 - 142
cis-1,2-Dichloroethene	0.800	0.811		mg/Kg		101	80 - 125
cis-1,3-Dichloropropene	0.800	0.800		mg/Kg		100	80 - 122
Dibromochloromethane	0.800	0.874		mg/Kg		109	75 - 125
Dibromomethane	0.800	0.839		mg/Kg		105	72 - 130
Ethylbenzene	0.800	0.807		mg/Kg		101	80 - 135
Hexachlorobutadiene	0.800	0.845		mg/Kg		106	65 - 145
Isopropylbenzene	0.800	0.937		mg/Kg		117	80 - 131
Methyl tert-butyl ether	0.800	0.833		mg/Kg		104	71 - 126
Methylene Chloride	0.800	1.79	*+	mg/Kg		224	56 - 140
m-Xylene & p-Xylene	0.800	0.802		mg/Kg		100	80 - 132
Naphthalene	0.800	0.761		mg/Kg		95	56 - 145
n-Butylbenzene	0.800	0.821		mg/Kg		103	69 - 143
N-Propylbenzene	0.800	0.828		mg/Kg		104	78 - 133
o-Xylene	0.800	0.866		mg/Kg		108	80 - 132
sec-Butylbenzene	0.800	0.842		mg/Kg		105	71 - 143
Styrene	0.800	0.887		mg/Kg		111	79 - 129
t-Butylbenzene	0.800	0.835		mg/Kg		104	72 - 144
Tetrachloroethene	0.800	0.790		mg/Kg		99	75 - 141
Toluene	0.800	0.860		mg/Kg		108	75 - 125
trans-1,2-Dichloroethene	0.800	0.797		mg/Kg		100	77 - 134
trans-1,3-Dichloropropene	0.800	0.875		mg/Kg		109	80 - 121
Trichloroethene	0.800	0.796		mg/Kg		99	80 - 134
Trichlorofluoromethane	0.800	0.815		mg/Kg		102	71 - 150
Vinyl chloride	0.800	0.901		mg/Kg		113	62 - 144

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		80 - 121
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120
Toluene-d8 (Surr)	100		80 - 120

Lab Sample ID: LCSD 580-475488/2-A

Matrix: Solid

Analysis Batch: 475492

Prep Type: Total/NA **Prep Batch: 475488**

ı	7 , 0.0 _ a 1. 0									
l		Spike	LCSD	LCSD				%Rec		RPD
l	Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
l	1,1,1,2-Tetrachloroethane	0.800	0.851		mg/Kg		106	79 - 128	2	20
l	1,1,1-Trichloroethane	0.800	0.797		mg/Kg		100	78 - 135	2	20
l	1,1,2,2-Tetrachloroethane	0.800	0.829		mg/Kg		104	77 - 122	4	20
l	1,1,2-Trichloroethane	0.800	0.869		mg/Kg		109	80 - 123	0	20
l	1,1-Dichloroethane	0.800	0.805		mg/Kg		101	78 - 126	1	20
l	1,1-Dichloroethene	0.800	0.842		mg/Kg		105	73 - 134	3	25

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QC Sample Results

Client: ERM-West Job ID: 580-144971-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-475488/2-A

Matrix: Solid

Analysis Batch: 475492

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA Prep Batch: 475488

nalysis Batch: 475492			D LCSD			Prep Batch: 475488			
Analyte	Spike Added		Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloropropene	0.800	0.813	- Qualifier	mg/Kg	_ =	102	76 ₋ 140	1	20
1,2,3-Trichlorobenzene	0.800	0.830		mg/Kg		104	58 - 146	 8	28
1,2,3-Trichloropropane	0.800	0.812		mg/Kg		102	77 - 127	0	20
1,2,4-Trichlorobenzene	0.800	0.830		mg/Kg		104	74 - 131	5	26
1,2,4-Trimethylbenzene	0.800	0.835		mg/Kg		104	73 - 138	1	22
1,2-Dibromo-3-Chloropropane	0.800	0.741		mg/Kg		93	64 - 129	2	40
1,2-Dibromoethane	0.800	0.829		mg/Kg		104	77 - 123	2	20
1,2-Dichlorobenzene	0.800	0.854		mg/Kg		107	78 - 126	3	20
1,2-Dichloroethane	0.800	0.786		mg/Kg		98	76 - 124	2	20
1,2-Dichloropropane	0.800	0.811		mg/Kg		101	73 - 130	0	20
1,3,5-Trimethylbenzene	0.800	0.826		mg/Kg		101	73 - 130 72 - 134	0	24
1,3-Dichlorobenzene	0.800	0.761		mg/Kg		95	78 - 132	3	20
1,3-Dichloropropane	0.800	0.794				99	80 - 120		20
1,4-Dichlorobenzene	0.800	0.794		mg/Kg		105	77 - 123	2	20
·	0.800	0.798		mg/Kg		100	77 - 123 75 - 134	2	20
2,2-Dichloropropane 2-Chlorotoluene				mg/Kg					
	0.800	0.811		mg/Kg		101	77 ₋ 134	1	21
4-Chlorotoluene	0.800	0.778		mg/Kg		97	71 - 137	1	21
4-Isopropyltoluene	0.800	0.857		mg/Kg		107	71 - 142	0	29
Benzene	0.800	0.864		mg/Kg		108	79 - 135	2	20
Bromobenzene	0.800	0.815		mg/Kg		102	78 - 126	1	20
Bromochloromethane	0.800	0.826		mg/Kg		103	76 - 131		20
Bromodichloromethane	0.800	0.840		mg/Kg		105	78 - 125	0	20
Bromoform	0.800	0.813		mg/Kg		102	71 - 130	0	20
Carbon tetrachloride	0.800	0.821		mg/Kg		103	76 - 140	1	20
Chlorobenzene	0.800	0.872		mg/Kg		109	80 - 125	1	20
Chloroform	0.800	0.778		mg/Kg		97	74 - 133	1	20
Chloromethane	0.800	0.809		mg/Kg		101	52 - 142	1	40
cis-1,2-Dichloroethene	0.800	0.809		mg/Kg		101	80 - 125	0	20
cis-1,3-Dichloropropene	0.800	0.791		mg/Kg		99	80 - 122	1	20
Dibromochloromethane	0.800	0.861		mg/Kg		108	75 - 125		20
Dibromomethane	0.800	0.832		mg/Kg		104	72 - 130	1	40
Ethylbenzene	0.800	0.796		mg/Kg		99	80 - 135	1	20
Hexachlorobutadiene	0.800	0.875		mg/Kg		109	65 - 145	4	36
Isopropylbenzene	0.800	0.929		mg/Kg		116	80 - 131	1	20
Methyl tert-butyl ether	0.800	0.838		mg/Kg		105	71 - 126	1	20
Methylene Chloride	0.800	1.78	*+	mg/Kg		223	56 - 140		20
m-Xylene & p-Xylene	0.800	0.791		mg/Kg		99	80 - 132	1	20
Naphthalene	0.800	0.822		mg/Kg		103	56 - 145	8	25
n-Butylbenzene	0.800	0.835		mg/Kg		104	69 - 143	2	31
N-Propylbenzene	0.800	0.811		mg/Kg		101	78 - 133	2	24
o-Xylene	0.800	0.844		mg/Kg		106	80 - 132	3	20
sec-Butylbenzene	0.800	0.827		mg/Kg		103	71 - 143	2	29
Styrene	0.800	0.875		mg/Kg		109	79 - 129	1	20
t-Butylbenzene	0.800	0.828		mg/Kg		103	72 - 144	1	27
Tetrachloroethene	0.800	0.779		mg/Kg		97	75 - 141	1	20
Toluene	0.800	0.850		mg/Kg		106	75 - 125	1	20
trans-1,2-Dichloroethene	0.800	0.796		mg/Kg		99	77 - 134	0	20
trans-1,3-Dichloropropene	0.800	0.875		mg/Kg		109	80 - 121	0	20
Trichloroethene	0.800	0.783		mg/Kg		98	80 - 134	2	20

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10/30/2024

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Prep Type: Total/NA **Prep Batch: 475488**

Client Sample ID: Lab Control Sample Dup

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Trichlorofluoromethane	0.800	0.807		mg/Kg		101	71 - 150	1	30
Vinyl chloride	0.800	0.893		mg/Kg		112	62 - 144	1	20

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	96		80 - 121
4-Bromofluorobenzene (Surr)	97		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120
Toluene-d8 (Surr)	99		80 - 120

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

MD MD

Lab Sample ID: MB 580-475697/3-A

Matrix: Solid

Client: ERM-West

Matrix: Solid

Project/Site: Arkema PDI Sampling

Analysis Batch: 475492

Lab Sample ID: LCSD 580-475488/2-A

Analysis Batch: 475700

Client Sample ID: Method Blank Prep Type: Total/NA

Prep Batch: 475697

	IVID	IVID							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	MD		0.10	0.038	mg/Kg		10/23/24 14:23	10/24/24 10:56	1
Chloroethane	ND		0.080	0.021	mg/Kg		10/23/24 14:23	10/24/24 10:56	1
Dichlorodifluoromethane	ND		0.25	0.046	mg/Kg		10/23/24 14:23	10/24/24 10:56	1

	MB	MB				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		80 - 121	10/23/24 14:23	10/24/24 10:56	1
4-Bromofluorobenzene (Surr)	101		80 - 120	10/23/24 14:23	10/24/24 10:56	1
Dibromofluoromethane (Surr)	108		80 - 120	10/23/24 14:23	10/24/24 10:56	1
Toluene-d8 (Surr)	100		80 - 120	10/23/24 14:23	10/24/24 10:56	1

Lab Sample ID: LCS 580-475697/1-A

Matrix: Solid

Analysis Batch: 475700

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 475697

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Bromomethane	0.800	0.865		mg/Kg		108	55 - 150	
Chloroethane	0.800	0.781		mg/Kg		98	26 - 150	
Dichlorodifluoromethane	0.800	0.764		mg/Kg		95	33 - 150	

Spike

Added

0.800

0.800

0.800

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		80 - 121
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120
Toluene-d8 (Surr)	99		80 - 120

Lab Sample ID: LCSD 580-475697/2-A

Matrix: Solid

Bromomethane

Dichlorodifluoromethane

Chloroethane

Analyte

Analysis Batch: 475700

Client Sample	ID: Lab Control Sample Dup
	Prep Type: Total/NA

Prep Batch: 475697 %Rec **RPD** D %Rec Limits RPD Limit 106 55 - 150 113 26 - 150 40 96 33 - 150

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LCSD LCSD

0.845

0.902

0.768

Result Qualifier Unit

mg/Kg

mg/Kg

mg/Kg

Client: ERM-West Job ID: 580-144971-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-475697/2-A

Matrix: Solid

Analysis Batch: 475700

Client Sample ID: Lab Control Sample Dup

Prep Batch: 475697

Prep Type: Total/NA

Prep Type: Total/NA

LCSD LCSD %Recovery Qualifier Limits Surrogate 1,2-Dichloroethane-d4 (Surr) 101 80 - 121 4-Bromofluorobenzene (Surr) 100 80 - 120 Dibromofluoromethane (Surr) 102 80 - 120 Toluene-d8 (Surr) 102 80 - 120

Client Sample ID: Method Blank Lab Sample ID: MB 580-475879/5-A

Matrix: Solid

Analysis Batch: 475821

Prep Batch: 475879 MB MB

Analyte Result Qualifier RL MDL Unit Prepared Analyzed Dil Fac Chlorobenzene ND 0.040 0.0048 mg/Kg 10/25/24 07:50 10/25/24 10:19 MB MB

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100	80 - 121	10/25/24 07:50	10/25/24 10:19	1
4-Bromofluorobenzene (Surr)	103	80 - 120	10/25/24 07:50	10/25/24 10:19	1
Dibromofluoromethane (Surr)	99	80 - 120	10/25/24 07:50	10/25/24 10:19	1
Toluene-d8 (Surr)	105	80 - 120	10/25/24 07:50	10/25/24 10:19	1

Lab Sample ID: LCS 580-475879/1-A

Matrix: Solid

Analysis Batch: 475821

Prep Type: Total/NA **Prep Batch: 475879** Spike LCS LCS %Rec

Analyte Added Result Qualifier Unit %Rec Limits Chlorobenzene 0.800 0.879 110 80 - 125 mg/Kg

LCS LCS Surrogate %Recovery Qualifier Limits 1,2-Dichloroethane-d4 (Surr) 96 80 - 121 4-Bromofluorobenzene (Surr) 100 80 - 120 Dibromofluoromethane (Surr) 101 80 - 120 Toluene-d8 (Surr) 80 - 120 102

Lab Sample ID: LCSD 580-475879/2-A

Matrix: Solid

Analysis Batch: 475821

Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

Client Sample ID: Lab Control Sample

Prep Batch: 475879

LCSD LCSD %Rec Spike **RPD** Analyte Added Result Qualifier Unit %Rec Limits RPD Limit 0.800 0.890 Chlorobenzene 111 80 - 125 mg/Kg

LCSD LCSD Surrogate %Recovery Qualifier Limits 1,2-Dichloroethane-d4 (Surr) 96 80 - 121 99 80 - 120 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) 102 80 - 120 Toluene-d8 (Surr) 103 80 - 120

QC Sample Results

Client: ERM-West Job ID: 580-144971-1

Project/Site: Arkema PDI Sampling

Method: 2540G - SM 2540G

Lab Sample ID: 580-144971-1 DU Client Sample ID: PDI-45b-SO-38.85-20241017

Matrix: Solid

Analysis Batch: 475428

7 midily 010 = 0100111 11 0 1=0								
	Sample	Sample	DU	DU				RPD
Analyte	Result	Qualifier	Result	Qualifier	Unit	D	RPD	Limit
Percent Solids	71.5		70.3		%		 2	20
Percent Moisture	28.5		29.7		%		4	20

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Prep Type: Total/NA

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Project/Site: Arkema PDI Sampling

Client: ERM-West

Client Sample ID: PDI-45b-SO-38.85-20241017

Date Collected: 10/17/24 17:00 Date Received: 10/18/24 12:45 Lab Sample ID: 580-144971-1

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	475428	SCS	EET SEA	10/21/24 12:57

Client Sample ID: PDI-45b-SO-38.85-20241017

Date Collected: 10/17/24 17:00

Date Received: 10/18/24 12:45

Lab Sample ID: 580-144971-1

Matrix: Solid Percent Solids: 71.5

Prep Type Total/NA	Batch Type Prep	Batch Method 5035	Run RA	Dilution Factor	Number 475697	BYM	Lab EET SEA	Prepared or Analyzed 10/23/24 14:23
Total/NA Total/NA Total/NA	Analysis Prep Analysis	8260D 5035 8260D	RA	1	475700 475488 475492	BYM	EET SEA EET SEA	10/24/24 11:58 10/22/24 10:52 10/22/24 14:11
Total/NA Total/NA	Prep Analysis	5035 8260D	DL DL	1	475879 475821	BYM AC	EET SEA EET SEA	10/25/24 07:50 10/25/24 14:51

Client Sample ID: TB-01-SO-20241017

Date Collected: 10/17/24 17:05

Date Received: 10/18/24 12:45

Lab Sample ID: 580-144971-2

Lab Sample ID: 580-144971-3

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		475697	BYM	EET SEA	10/23/24 14:23
Total/NA	Analysis	8260D	RA	1	475700	BYM	EET SEA	10/24/24 11:37
Total/NA	Prep	5035			475488	BYM	EET SEA	10/22/24 10:52
Total/NA	Analysis	8260D		1	475492	TL1	EET SEA	10/22/24 12:48

Client Sample ID: PDI-45b-SO-49.4-20241018

Date Collected: 10/18/24 09:30	Matrix: Solid
Date Received: 10/18/24 12:45	

۱		Batch	Batch		Dilution	Batch			Prepared
۱	Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
l	Total/NA	Analysis	2540G		1	475428	SCS	EET SEA	10/21/24 12:57

Client

Date Co

Date Received: 10/18/24 12:45

•	
: Sample ID: PDI-45b-SO-49.4-20241018	Lab Sample ID: 580-144971-3
ollected: 10/18/24 09:30	Matrix: Solid
eceived: 10/18/24 12:45	Percent Solids: 68.7

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		475697	BYM	EET SEA	10/23/24 14:23
Total/NA	Analysis	8260D	RA	1	475700	BYM	EET SEA	10/24/24 12:19
Total/NA	Prep	5035			475488	BYM	EET SEA	10/22/24 10:52
Total/NA	Analysis	8260D		1	475492	TL1	EET SEA	10/22/24 14:31

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: ERM-West Job ID: 580-144971-1

Project/Site: Arkema PDI Sampling

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority		am	Identification Number	Expiration Date		
Oregon	NELAF)	4167	07-07-25		
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Sample Summary

Client: ERM-West

Project/Site: Arkema PDI Sampling

Job ID: 580-144971-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-144971-1	PDI-45b-SO-38.85-20241017	Solid	10/17/24 17:00	10/18/24 12:45
580-144971-2	TB-01-SO-20241017	Solid	10/17/24 17:05	10/18/24 12:45
580-144971-3	PDI-45b-SO-49.4-20241018	Solid	10/18/24 09:30	10/18/24 12:45

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5755 8th Street East Tacoma, WA 98424

Chain of Custody Record

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Environment Testing

Phone (253) 922-2310				Lab Pl	M·					Carrier 1	Tracking No	o(s):		COC No: 580-62781-19269.12
	Sampler:	5.			, Sheri	i L								
Client Information		<i>J</i> •		E-Mail	1.					State of	Origin:			Page: Page (of I
lient Contact:	Phone:			Sher	i.Cruz(@et.e	urofi	nsus.c	om	-	//			Job#:
very Soplata			PWSID:						Analysis F	onuseta	he			
Company:					- Carrie				Analysis	equest				Preservation Codes:
ERM-West	Due Date Requeste	d:												F - MeOH
050 SW 6th Avenue Suite 1650											1 1			E - NaHSO4 A - HCL
Sity:	TAT Requested (da		,											
Portland	1 2	week	43					blanks						
State, Zip:	Compliance Projec	t: A Yes A	No			l e		pla						
DR, 97204	PO#:						1	ent						
Phone:	0732436.301				इ	Ŧ		ig						
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Email: avery.soplata@erm.com					8 3	list	ist	ist					ine	
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Arkema - PDI Investigation	58020754				울	and	and	and					8	Other:
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Arkema					g I	∰ E	tiles	tile					age	
			Sample	Matrix	Te I	- Volatile	- Volatiles	8260D - Volatiles					Number	160
			Туре	(W=water, S≃solid,			6	6					<u></u>	
		Sample	(C=Comp,	O=waste/oil.	딇	8260D	8260D	1260					Total	Special Instructions/Note:
Sample Identification	Sample Date	Time	G=grab)	BT=Tissue, A=Alr	***		E	A					X	
			Preserva	tion Code:	Y	F	E	^					2	
207 USI CA 3005 20201017	10/17/24	1700	G	S		X						\rightarrow	a	,
PDI-456-50-38.85-20241017				S		13/	1						1	
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														Custodis
											580-1	44971 CI	nain of	Custody
					++	-	+	-						
														ned longer than 1 month)
All Officials						Samp	le Di	isposa	(A fee may	be asses	sed if s	ampies ai	re retail	ned longer than 1 month) hive For Months
Possible Hazard Identification	oison B W Unki	nown	Radiological	1			Retu	urn To	Client	└─ ^¹ Dispo	sal By La	ab	Arc	chive For Months
	oison B - Unki	IUWII	r (autological			Speci	al Ins	structio	ns/QC Requi	rements:				
Deliverable Requested: I, II, III, IV, Other (specify)											Method	Shipment:		
Fresh Vit Bolinguished by		Date:			Tim	ne:				1	Metriod			Company
Empty Kit Relinquished by:	Date/Time:			Company	_	Re	eceive	ed by:	//			Date/Time	18/2	
Relinquished by:	10/18/20	100 D	940	ERN ERN	1				10	1			6.	Company
The work of the	Date/Time:	100		Company	,	R	cceive	d by:	111	(7)		Date/Time	118	14 1245 FET
Relinquished by:	10/13/24	12	45	ME					X	1		Date/Time		Company
Relinquished by:	Date/Time:			Company		R	eceive	ed by:					t	
Nellinquisited by:						-		T	ture(s) °C and C	ther Remark	(S:		21	1/25 POX SCAD
Custody Seals Intact: Custody Seal No.:							ooler	emper	ture(s) C and C	THE RESIDEN			5.7	
Δ Yes Δ No			P	age 22	of 2	4_1_	_							Ver: 04/07/30/20

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Chain of Custody Record

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Environment Testing

Phone (253) 922-2310					Carrier Tracking No(s):	COC No.
Client Information	Sampler. M.S.		Cruz, Sheri L	F	State of Origin:	580-62781-19269.12
Avery Soplata		DWSID:	Sheri.Cruz	Sheri.Cruz@et.eurofinsus.com	200	Page (of I
Company: ERM-West		PWSID:		Analysis Re	Requested	
Address: 1050 SW 6th Avenue Suite 1650	Due Date Requested:					Preservation Codes: F - MeOH E - NaHSO4
City: Portland	TAT Requested (days):	is):	-1-	S		A - HCL
State, Zip: OR: 97204	Compliance Project: A	Δ Yes Δ No		blank		
Phone:	PO#: 0732436.301		D)			
Email: avery soniata@erm.com	WO#		or N	t_LL		rs
Project Name: Arkema - PDI Investigation	Project #: 58020754		e (Ye	dard li		ntaine
Site: Ar Kaima	SSOW#:		arren	, star		Officer:
			Serie Seed S	atiles		ber
	<i>'</i>		(W=water, S=solid, S=solid, eld Fifte	260D - Vol 260D - Vol		otal Num
Sample Identification	X	Preserva	\leftrightarrow	П,		X
PDT-456-50-38,85-20241017	10/17/24 1700	0	S	X		g)
7101 HEOR-10-10-81, 4-189	500 hell 1101	6 6	S	X		
1		7	N	<>>		J)
					580-144971	Chain of Custody ————————————————————————————————————
Possible Hazard Identification Non-Hazard Plammable Skin Initant Poison B	₩ Unknown	Radiological	Sa	Sample Disposal (A fee may be	assessed if samples Disposal By Lab	fee may be assessed if samples are retained longer than 1 month) I Disposal By Lab Archive For Months
Other (specify)			Sp	Special Instructions/QC Requirements:		
Empty Kit Relinquished by:	Date:		Time:		Method of Shipment:	
Relinquished by: William Brown	While W	040	ERM	Received by:	Date/Time:	18/24 1020
Relinquished by:	10 (18/24	1245	M.C	Neceived by:	Date:	118/14 1245
Relinquished by:	Date/Time: 18/14	1200	Company	Received by:	Date/lime	me:) ' company
Custody Seals Lakect: Custody Seal No.: A Yes A No	-			Cooler Temperature(s) °C and Other Remarks:	Remarks:	34/15 604 864
						10,9/0.3 15 Bollow

Client: ERM-West Job Number: 580-144971-1

Login Number: 144971 List Source: Eurofins Seattle

List Number: 1

Creator: O'Connell, Jason I

Grouter: G Common, Guesti I		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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PREPARED FOR

Attn: Avery Soplata ERM-West 1050 SW 6th Avenue Suite 1650 Portland, Oregon 97204

ANALYTICAL REPORT

Generated 12/13/2024 4:53:41 PM Revision 1

JOB DESCRIPTION

Arkema PDI Sampling

JOB NUMBER

580-145045-1

Eurofins Seattle 5755 8th Street East Tacoma WA 98424



Eurofins Seattle

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization

Generated 12/13/2024 4:53:41 PM Revision 1

Authorized for release by Sheri Cruz, Project Manager I Sheri.Cruz@et.eurofinsus.com (253)922-2310

Shuid ony

Eurofins Seattle is a laboratory within Eurofins Environment Testing Northwest, LLC, a company within Eurofins Environment Testing Group of Companies Page 2 of 56 12/13/2024 (Rev. 1)

Client: ERM-West

Project/Site: Arkema PDI Sampling

Laboratory Job ID: 580-145045-1

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Case Narrative

Client: ERM-West Job ID: 580-145045-1
Project: Arkema PDI Sampling

Job ID: 580-145045-1 Eurofins Seattle

Job Narrative 580-145045-1

Revised report 12/10/2024 to clarify in the narrative why the lab could not report 3 analytes analyzed out of hold in the original run due to ICAL not passing/usable on that instrument for those 3 analytes. See narrative notes below.

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these
 situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise
 specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 10/22/2024 12:29 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.7°C.

GC/MS VOA

Method 8260D: The method blank for preparation batch 580-475802 and analytical batch 580-475804 contained Chlorobenzene above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

Method 8260D: The following samples were provided to the laboratory with a significantly different initial weight than that required by the reference method: PDI-54-SO-33.5-20241018 (580-145045-2), PDI-53-SO-28.3-20241018 (580-145045-3), PDI-52-SO-39.9-20241018 (580-145045-4) and PDI-48a-SO-34.2-20241018 (580-145045-5). Deviations in the weight by more than 20% may affect reporting limits and potentially method performance. The method specifies 10g. The amount provided was above this range.

Method 8260D: Surrogate recovery for the following sample was outside the upper control limit: PDI-53-SO-28.3-20241018 (580-145045-3). This sample did not contain any chemically associated target analytes; therefore, re-extraction and/or re-analysis was not performed.

Method 8260D: The following sample was diluted to bring the concentration of target analytes within the calibration range: PDI-53-SO-28.3-20241018 (580-145045-3). Elevated reporting limits (RLs) are provided.

Method 8260D: Reanalysis of the following sample(s) was performed outside of the analytical holding time: PDI-54-SO-33.5-20241018 (580-145045-2), PDI-53-SO-28.3-20241018 (580-145045-3), PDI-52-SO-39.9-20241018 (580-145045-4) and PDI-48a-SO-34.2-20241018 (580-145045-5).

Method 8260D: Reanalysis of the following samples were performed outside of the analytical holding time due to failure of quality control parameters in the initial analysis: PDI-54-SO-33.5-20241018 (580-145045-2), PDI-53-SO-28.3-20241018 (580-145045-3), PDI-52-SO-39.9-20241018 (580-145045-4) and PDI-48a-SO-34.2-20241018 (580-145045-5). The samples were originally analyzed on an instrument with an ICAL that was not passing/usable for Dichlorodifluoromethane, Bromomethane and Chloroethane. These three samples were re-analyzed on a secondary instrument that had passing ICALs for these analytes and reported out of hold. The original run in hold could not be reported due to ICAL for those three analytes.

Method 8260D: Original data suspected of probable sample switching. The initial run was E flagged for Chlorobenzene. The second run was diluted and didn't match. A 3rd analysis was analyzed at the dilution again. Both dilutions match each other and don't match the initial in hold run. We are reporting both sets but due to confirmation, we believe the dilution run reported represents the sample since it was done twice with confirming results. The initial run has been reported as secondary in-hold data and the dilution has been reported at primary. PDI-54-SO-33.5-20241018 (580-145045-2) and PDI-52-SO-39.9-20241018 (580-145045-4)

Method 8260D: The following sample(s) was analyzed outside of analytical holding time. PDI-54-SO-33.5-20241018

Eurofins Seattle

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Case Narrative

Client: ERM-West Job ID: 580-145045-1

Project: Arkema PDI Sampling

Job ID: 580-145045-1 (Continued)

Eurofins Seattle

(580-145045-2) and PDI-52-SO-39.9-20241018 (580-145045-4).

Method 8260D: The method blank for preparation batch 580-476692 and analytical batch 580-476696 contained Hexachlorobutadiene and Tetrachloroethene above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

Method 8260D: Surrogate recovery for the following samples were outside the upper control limit: PDI-52-SO-39.9-20241018 (580-145045-4) and PDI-48a-SO-34.2-20241018 (580-145045-5). This sample did not contain any chemically associated target analytes; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

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Definitions/Glossary

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Qualifiers

GC/MS VOA

 Qualifier
 Qualifier Description

 B
 Compound was found in the blank and sample.

H Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.

J Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

S1+ Surrogate recovery exceeds control limits, high biased.

Glossary

Abbreviation These commonly used abbreviations may or may not be present in this	report.
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Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery
CFL Contains Free Liquid
CFU Colony Forming Unit
CNF Contains No Free Liquid

DER Duplicate Error Ratio (normalized absolute difference)

Dil Fac Dilution Factor

DL Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

EDL Estimated Detection Limit (Dioxin)

LOD Limit of Detection (DoD/DOE)

LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level"

MDA Minimum Detectable Activity (Radiochemistry)

MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit
ML Minimum Level (Dioxin)
MPN Most Probable Number
MQL Method Quantitation Limit

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive
QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

TNTC Too Numerous To Count

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Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Date Collected: 10/21/24 09:20

Matrix: Solid

Date Received: 10/22/24 12:29

Percent Solids: 78.6

Method: SW846 8260D - Vola	Result Qua	lifior Di	MD	l Init	P	Dropered	A notice of	Dil E-
Analyte	. <u> </u>		MDL		<u>D</u>	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND	0.025	0.0062		₩.	10/24/24 12:37	10/24/24 22:36	
1,1,1-Trichloroethane	ND	0.049	0.0057		₩.		10/24/24 22:36	
1,1,2,2-Tetrachloroethane	ND	0.025	0.0093				10/24/24 22:36	
1,1,2-Trichloroethane	ND	0.025		mg/Kg	∵		10/24/24 22:36	
1,1-Dichloroethane	ND	0.049		mg/Kg	₽		10/24/24 22:36	
1,1-Dichloroethene	ND	0.049		mg/Kg	<u>.</u>		10/24/24 22:36	
1,1-Dichloropropene	ND	0.049	0.0065		₩		10/24/24 22:36	
1,2,3-Trichlorobenzene	ND	0.098		mg/Kg	☼		10/24/24 22:36	
1,2,3-Trichloropropane	ND	0.049		mg/Kg			10/24/24 22:36	
1,2,4-Trichlorobenzene	ND	0.098		mg/Kg	₩		10/24/24 22:36	
1,2,4-Trimethylbenzene	ND	0.049		mg/Kg	₩		10/24/24 22:36	
1,2-Dibromo-3-Chloropropane	ND	0.074	0.019	mg/Kg		10/24/24 12:37	10/24/24 22:36	
1,2-Dibromoethane	ND	0.025	0.0047	mg/Kg	₩	10/24/24 12:37	10/24/24 22:36	
1,2-Dichlorobenzene	ND	0.049	0.011	mg/Kg	₩	10/24/24 12:37	10/24/24 22:36	
1,2-Dichloroethane	ND	0.025	0.0068	mg/Kg	₩	10/24/24 12:37	10/24/24 22:36	
1,2-Dichloropropane	ND	0.025	0.0081	mg/Kg	₩	10/24/24 12:37	10/24/24 22:36	
1,3,5-Trimethylbenzene	ND	0.049	0.0093	mg/Kg	☼	10/24/24 12:37	10/24/24 22:36	
1,3-Dichlorobenzene	ND	0.074	0.016	mg/Kg	☼	10/24/24 12:37	10/24/24 22:36	
1,3-Dichloropropane	ND	0.074	0.0069	mg/Kg	₩	10/24/24 12:37	10/24/24 22:36	
1,4-Dichlorobenzene	ND	0.074	0.013	mg/Kg	₩	10/24/24 12:37	10/24/24 22:36	
2,2-Dichloropropane	ND	0.049	0.015	mg/Kg	₩	10/24/24 12:37	10/24/24 22:36	
2-Chlorotoluene	ND	0.049	0.011	mg/Kg	₩	10/24/24 12:37	10/24/24 22:36	
l-Chlorotoluene	ND	0.049	0.012	mg/Kg	₩	10/24/24 12:37	10/24/24 22:36	
1-Isopropyltoluene	ND	0.049	0.013	mg/Kg	₩	10/24/24 12:37	10/24/24 22:36	
Benzene	ND	0.025	0.0047	mg/Kg	₽	10/24/24 12:37	10/24/24 22:36	
Bromobenzene	ND	0.049	0.0052	mg/Kg	₩	10/24/24 12:37	10/24/24 22:36	
Bromochloromethane	ND	0.049	0.0076	mg/Kg	₩	10/24/24 12:37	10/24/24 22:36	
Bromodichloromethane	ND	0.049	0.0068		₩	10/24/24 12:37	10/24/24 22:36	
Bromoform	ND	0.049	0.0055		₩	10/24/24 12:37	10/24/24 22:36	
Bromomethane	ND	0.12		mg/Kg	₩	10/24/24 12:37	10/24/24 22:36	
Carbon tetrachloride	ND	0.025	0.0054		∴	10/24/24 12:37	10/24/24 22:36	
- Chlorobenzene	3.4 B	0.049	0.0059		₩		10/24/24 22:36	
Chloroethane	ND	0.098		mg/Kg	₩		10/24/24 22:36	
Chloroform	ND	0.025	0.0052				10/24/24 22:36	
Chloromethane	ND	0.074		mg/Kg	₩.		10/24/24 22:36	
cis-1,2-Dichloroethene	ND	0.074		mg/Kg			10/24/24 22:36	
cis-1,3-Dichloropropene	ND	0.025	0.0049		**		10/24/24 22:36	
Dibromochloromethane	ND	0.025	0.0060		₩		10/24/24 22:36	
Dibromomethane	ND	0.049	0.0001		₩		10/24/24 22:36	
Dichlorodifluoromethane	ND	0.31					10/24/24 22:36	
				mg/Kg	φ.			
Ethylbenzene	ND	0.049		mg/Kg	☆		10/24/24 22:36	
Hexachlorobutadiene	ND	0.12		mg/Kg	· · · · · · · · · · · · · · · · · · ·		10/24/24 22:36	
sopropylbenzene	ND	0.049		mg/Kg	₩.		10/24/24 22:36	
Methyl tert-butyl ether	ND	0.049	0.0074	0 0	₩.		10/24/24 22:36	
Methylene Chloride	ND	0.31		mg/Kg	.		10/24/24 22:36	
n-Xylene & p-Xylene	ND	0.049	0.0087		**		10/24/24 22:36	
Naphthalene	ND	0.18		mg/Kg	₩		10/24/24 22:36	
n-Butylbenzene	ND	0.049		mg/Kg	₩	10/24/24 12:37	10/24/24 22:36	
N-Propylbenzene	ND	0.049	0.018	mg/Kg	₽	10/24/24 12:37	10/24/24 22:36	

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Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Percent Moisture (SM22 2540G)

21.4

Date Collected: 10/21/24 09:20

Matrix: Solid

Date Received: 10/22/24 12:29

Percent Solids: 78.6

Method: SW846 8260D - Vola Analyte	_	Qualifier	RL	•	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND	Qualifici	0.049	0.0062		— <u>-</u>	10/24/24 12:37	10/24/24 22:36	1
•					0 0	1.V			ا م
sec-Butylbenzene	ND		0.049	0.011			10/24/24 12:37	10/24/24 22:36	1
Styrene	ND		0.049	0.016	mg/Kg	₩	10/24/24 12:37	10/24/24 22:36	1
t-Butylbenzene	ND		0.049	0.0095	mg/Kg	₩	10/24/24 12:37	10/24/24 22:36	1
Tetrachloroethene	ND		0.049	0.0065	mg/Kg	☼	10/24/24 12:37	10/24/24 22:36	1
Toluene	ND		0.074	0.017	mg/Kg	₩	10/24/24 12:37	10/24/24 22:36	1
trans-1,2-Dichloroethene	ND		0.074	0.018	mg/Kg	☼	10/24/24 12:37	10/24/24 22:36	1
trans-1,3-Dichloropropene	ND		0.049	0.0086	mg/Kg	☼	10/24/24 12:37	10/24/24 22:36	1
Trichloroethene	ND		0.049	0.013	mg/Kg	☼	10/24/24 12:37	10/24/24 22:36	1
Trichlorofluoromethane	ND		0.098	0.032	mg/Kg	☼	10/24/24 12:37	10/24/24 22:36	1
Vinyl chloride	ND		0.12	0.023	mg/Kg	≎	10/24/24 12:37	10/24/24 22:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)			80 - 121				10/24/24 12:37	10/24/24 22:36	1
4-Bromofluorobenzene (Surr)	101		80 - 120				10/24/24 12:37	10/24/24 22:36	1
Dibromofluoromethane (Surr)	101		80 - 120				10/24/24 12:37	10/24/24 22:36	1
Toluene-d8 (Surr)	102		80 - 120				10/24/24 12:37	10/24/24 22:36	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	78.6		0.1	0.1	%			10/28/24 19:02	1

0.1

0.1 %

10/28/24 19:02

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-54-SO-33.5-20241018

Lab Sample ID: 580-145045-2 Date Collected: 10/18/24 16:45 **Matrix: Solid** Date Received: 10/22/24 12:29

Percent Solids: 82.8

ND	Qualifier H	RL		Unit	<u>D</u>	Prepared	Analyzed	
NIP.	11	0.021	0.0052	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	
ND	Н	0.042	0.0048	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	
ND	Н	0.021	0.0079	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	
ND	Н	0.021	0.0077	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	
ND	Н	0.042	0.0096	mg/Kg	₽	11/04/24 08:44	11/04/24 10:33	
ND	Н	0.042	0.013	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	
ND	Н	0.042	0.0055	mg/Kg		11/04/24 08:44	11/04/24 10:33	
ND	Н	0.083	0.041	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	
ND	Н	0.042	0.012	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	
ND	Н	0.083				11/04/24 08:44	11/04/24 10:33	
ND	Н			0 0	☆	11/04/24 08:44	11/04/24 10:33	
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ND	Н				₩	11/04/24 08:44	11/04/24 10:33	
ND	Н	0.26	0.048	mg/Kg	₩			
ND	Н	0.042			₩	11/04/24 08:44	11/04/24 10:33	
0.025	JHB	0.10			₩	11/04/24 08:44	11/04/24 10:33	
ND	Н	0.042			₩	11/04/24 08:44	11/04/24 10:33	
ND	Н	0.042	0.0062	mg/Kg	☼	11/04/24 08:44	11/04/24 10:33	
0.046	JH	0.26	0.027	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	
ND	Н	0.042	0.0074	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	
ND	Н	0.16	0.041	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	
ND	Н	0.042	0.019	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	
	ND ND ND ND ND ND ND ND ND ND ND ND ND N	ND H ND H ND H ND H ND H ND H ND H ND H	ND H 0.042 ND H 0.042 ND H 0.042 ND H 0.083 ND H 0.083 ND H 0.062 ND H 0.062 ND H 0.021 ND H 0.021 ND H 0.021 ND H 0.062 ND H 0.062 ND H 0.062 ND H 0.062 ND H 0.062 ND H 0.062 ND H 0.062 ND H 0.062 ND H 0.062 ND H 0.062 ND H 0.042 ND H 0.062 ND H 0.042	ND H	ND H ND H	ND H	ND H	ND H

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-54-SO-33.5-20241018

Date Collected: 10/18/24 16:45 Date Received: 10/22/24 12:29 Lab Sample ID: 580-145045-2

Matrix: Solid
Percent Solids: 82.8

Job ID: 580-145045-1

Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	(Conti	inued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND	H	0.042	0.0052	mg/Kg	<u></u>	11/04/24 08:44	11/04/24 10:33	1
sec-Butylbenzene	ND	Н	0.042	0.0089	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	1
Styrene	ND	Н	0.042	0.013	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	1
t-Butylbenzene	ND	Н	0.042	0.0080	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	1
Tetrachloroethene	0.0072	JHB	0.042	0.0055	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	1
Toluene	ND	Н	0.062	0.014	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	1
trans-1,2-Dichloroethene	ND	Н	0.062	0.015	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	1
trans-1,3-Dichloropropene	ND	Н	0.042	0.0073	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	1
Trichloroethene	ND	Н	0.042	0.011	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	1
Trichlorofluoromethane	ND	Н	0.083	0.027	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	1
Vinyl chloride	ND	Н	0.10	0.019	mg/Kg	₩	11/04/24 08:44	11/04/24 10:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				11/04/24 08:44	11/04/24 10:33	1
1,2-Dichloroethane-d4 (Surr)	111		80 - 121				11/04/24 09:34	11/04/24 13:03	1
4-Bromofluorobenzene (Surr)	98		80 - 120				11/04/24 08:44	11/04/24 10:33	1
4-Bromofluorobenzene (Surr)	102		80 - 120				11/04/24 09:34	11/04/24 13:03	1
Dibromofluoromethane (Surr)	101		80 - 120				11/04/24 08:44	11/04/24 10:33	1
Dibromofluoromethane (Surr)	101		80 - 120				11/04/24 09:34	11/04/24 13:03	1
Toluene-d8 (Surr)	104		80 - 120				11/04/24 08:44	11/04/24 10:33	1
Toluene-d8 (Surr)	98		80 - 120				11/04/24 09:34	11/04/24 13:03	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.45	0.11	mg/Kg	☆	10/31/24 08:53	10/31/24 15:43	1
1,1,1-Trichloroethane	ND		0.89	0.10	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,1,2,2-Tetrachloroethane	ND		0.45	0.17	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,1,2-Trichloroethane	ND		0.45	0.17	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,1-Dichloroethane	ND		0.89	0.21	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,1-Dichloroethene	ND		0.89	0.28	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,1-Dichloropropene	ND		0.89	0.12	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,2,3-Trichlorobenzene	ND		1.8	0.89	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,2,3-Trichloropropane	ND		0.89	0.26	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,2,4-Trichlorobenzene	ND		1.8	0.95	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,2,4-Trimethylbenzene	ND		0.89	0.30	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,2-Dibromo-3-Chloropropane	ND		1.3	0.34	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,2-Dibromoethane	ND		0.45	0.085	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,2-Dichlorobenzene	ND		0.89	0.19	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,2-Dichloroethane	ND		0.45	0.12	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,2-Dichloropropane	ND		0.45	0.15	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,3,5-Trimethylbenzene	ND		0.89	0.17	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,3-Dichlorobenzene	ND		1.3	0.30	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,3-Dichloropropane	ND		1.3	0.13	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
1,4-Dichlorobenzene	ND		1.3	0.24	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
2,2-Dichloropropane	ND		0.89	0.27	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
2-Chlorotoluene	ND		0.89	0.20	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
4-Chlorotoluene	ND		0.89	0.22	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
4-Isopropyltoluene	ND		0.89	0.23	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Benzene	ND		0.45	0.085	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Bromobenzene	ND		0.89	0.094	mg/Kg	≎	10/31/24 08:53	10/31/24 15:43	1

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-54-SO-33.5-20241018

Lab Sample ID: 580-145045-2 Date Collected: 10/18/24 16:45 **Matrix: Solid**

Date Received: 10/22/24 12:29 Percent Solids: 82.8

Method: SW846 8260D - Vola	_	•	•	•	•				
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Bromochloromethane	ND		0.89		mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Bromodichloromethane	ND		0.89	0.12	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Bromoform	ND		0.89	0.10	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Carbon tetrachloride	ND		0.45	0.098	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Chloroform	ND		0.45	0.094	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Chloromethane	ND		1.3	0.23	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
cis-1,2-Dichloroethene	ND		1.3	0.28	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
cis-1,3-Dichloropropene	ND		0.45	0.089	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Dibromochloromethane	ND		0.45	0.11	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Dibromomethane	ND		0.89	0.17	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Ethylbenzene	ND		0.89	0.20	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Hexachlorobutadiene	ND		2.2	0.53	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Isopropylbenzene	ND		0.89	0.19	mg/Kg	₽	10/31/24 08:53	10/31/24 15:43	1
Methyl tert-butyl ether	ND		0.89	0.13	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Methylene Chloride	ND		5.6	0.58	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
m-Xylene & p-Xylene	ND		0.89	0.16	mg/Kg	₽	10/31/24 08:53	10/31/24 15:43	1
Naphthalene	ND		3.4	0.87	mg/Kg	₩.	10/31/24 08:53	10/31/24 15:43	1
n-Butylbenzene	ND		0.89	0.41	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
N-Propylbenzene	ND		0.89	0.34	mg/Kg	₽	10/31/24 08:53	10/31/24 15:43	1
o-Xylene	ND		0.89	0.11	mg/Kg		10/31/24 08:53	10/31/24 15:43	1
sec-Butylbenzene	ND		0.89	0.19	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Styrene	ND		0.89	0.28	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
t-Butylbenzene	ND		0.89	0.17	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Tetrachloroethene	ND		0.89		mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Toluene	ND		1.3	0.30	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
trans-1,2-Dichloroethene	ND		1.3		mg/Kg	₩.	10/31/24 08:53	10/31/24 15:43	1
trans-1,3-Dichloropropene	ND		0.89		mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Trichloroethene	ND		0.89	0.23	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Trichlorofluoromethane	ND		1.8	0.58	mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Vinyl chloride	ND		2.2		mg/Kg	₩	10/31/24 08:53	10/31/24 15:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				10/31/24 08:53	10/31/24 15:43	1
4-Bromofluorobenzene (Surr)	100		80 - 120				10/31/24 08:53	10/31/24 15:43	1
Dibromofluoromethane (Surr)	101		80 - 120				10/31/24 08:53	10/31/24 15:43	1
Toluene-d8 (Surr)	106		80 - 120				10/31/24 08:53	10/31/24 15:43	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	82.8		0.1	0.1	%	_		10/28/24 19:02	1
Percent Moisture (SM22 2540G)	17.2		0.1	0.1	%			10/28/24 19:02	1

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Toluene

Vinyl chloride

trans-1,2-Dichloroethene

trans-1,3-Dichloropropene

Trichlorofluoromethane

Client Sample ID: PDI-53-SO-28.3-20241018

Lab Sample ID: 580-145045-3 Date Collected: 10/18/24 16:40 Matrix: Solid Date Received: 10/22/24 12:29 Percent Solids: 75.3

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 1,1,1,2-Tetrachloroethane ND 0.026 0.0065 mg/Kg 10/31/24 08:53 10/31/24 15:02 ND 1.1.1-Trichloroethane 0.052 0.0060 mg/Kg 10/31/24 08:53 10/31/24 15:02 1,1,2,2-Tetrachloroethane ND 0.026 0.0099 mg/Kg 10/31/24 08:53 10/31/24 15:02 1,1,2-Trichloroethane ND 0.026 0.0097 mg/Kg 10/31/24 08:53 10/31/24 15:02 0.052 0.012 mg/Kg 10/31/24 08:53 10/31/24 15:02 1.1-Dichloroethane ND 10/31/24 15:02 1,1-Dichloroethene ND 0.052 0.016 mg/Kg 10/31/24 08:53 1,1-Dichloropropene ND 0.052 0.0069 10/31/24 08:53 10/31/24 15:02 mg/Kg ND 0.10 0.052 10/31/24 08:53 10/31/24 15:02 1,2,3-Trichlorobenzene mg/Kg 1,2,3-Trichloropropane ND 0.052 0.015 mg/Kg 10/31/24 08:53 10/31/24 15:02 1,2,4-Trichlorobenzene ND 0.10 0.056 mg/Kg 10/31/24 08:53 10/31/24 15:02 1,2-Dibromo-3-Chloropropane ND 0.078 0.020 mg/Kg 10/31/24 08:53 10/31/24 15:02 mg/Kg 1.2-Dibromoethane ND 0.026 0.0050 10/31/24 08:53 10/31/24 15:02 1 1,2-Dichloroethane ND 0.026 0.0072 mg/Kg 10/31/24 08:53 10/31/24 15:02 1,2-Dichloropropane ND 0.026 0.0086 mg/Kg 10/31/24 08:53 10/31/24 15:02 ND 0.052 0.0099 mg/Kg 10/31/24 08:53 10/31/24 15:02 1,3,5-Trimethylbenzene 1,3-Dichloropropane NΩ 0.078 0.0073 mg/Kg 10/31/24 08:53 10/31/24 15:02 0.016 2,2-Dichloropropane ND 0.052 mg/Kg 10/31/24 08:53 10/31/24 15:02 2-Chlorotoluene ND 0.052 0.011 mg/Kg 10/31/24 08:53 10/31/24 15:02 4-Chlorotoluene 0.013 ND 0.052 mg/Kg 10/31/24 08:53 10/31/24 15:02 mg/Kg Benzene ND 0.026 0.0050 10/31/24 08:53 10/31/24 15:02 Bromobenzene ND 0.052 0.0055 mg/Kg 10/31/24 08:53 10/31/24 15:02 ť Bromochloromethane ND 0.052 0.0081 mg/Kg 10/31/24 08:53 10/31/24 15:02 Bromodichloromethane ND 0.052 0.0072 mg/Kg 10/31/24 08:53 10/31/24 15:02 Bromoform ND 0.052 0.0059 mg/Kg 10/31/24 08:53 10/31/24 15:02 Bromomethane ND 1.4 0.53 mg/Kg 11/04/24 09:34 11/04/24 15:08 Carbon tetrachloride ND 0.026 0.0057 mg/Kg 10/31/24 08:53 10/31/24 15:02 Chloroethane ND 1.1 0.29 mg/Kg 11/04/24 09:34 11/04/24 15:08 Chloromethane 0.013 ND 0.078 mg/Kg 10/31/24 08:53 10/31/24 15:02 cis-1,2-Dichloroethene NΩ 0.078 0.016 mg/Kg 10/31/24 08:53 10/31/24 15:02 ND 0.0052 cis-1,3-Dichloropropene 0.026 mg/Kg 10/31/24 08:53 10/31/24 15:02 Dibromochloromethane ND 0.026 0.0064 mg/Kg 10/31/24 08:53 10/31/24 15:02 Dibromomethane ND 0.052 0.0097 mg/Kg 10/31/24 08:53 10/31/24 15:02 Dichlorodifluoromethane ND 0.64 mg/Kg 11/04/24 09:34 11/04/24 15:08 3.5 ND 10/31/24 08:53 10/31/24 15:02 Hexachlorobutadiene 0.13 0.031 mg/Kg Isopropylbenzene ND 0.052 0.011 mg/Kg 10/31/24 08:53 10/31/24 15:02 Methyl tert-butyl ether ND 0.052 0.0078 mg/Kg 10/31/24 08:53 10/31/24 15:02 Methylene Chloride ND 0.33 0.034 mg/Kg 10/31/24 08:53 10/31/24 15:02 m-Xylene & p-Xylene ND 0.052 0.0093 mg/Kg 10/31/24 08:53 10/31/24 15:02 ND 0.052 0.024 mg/Kg n-Butylbenzene 10/31/24 08:53 10/31/24 15:02 N-Propylbenzene ND 0.052 0.020 mg/Kg 10/31/24 08:53 10/31/24 15:02 sec-Butylbenzene ND 0.052 0.011 mg/Kg 10/31/24 08:53 10/31/24 15:02 Styrene ND 0.052 0.017 mg/Kg 10/31/24 08:53 10/31/24 15:02 0.010 10/31/24 15:02 t-Butylbenzene ND 0.052 mg/Kg 10/31/24 08:53

Eurofins Seattle

10/31/24 15:02

10/31/24 15:02

10/31/24 15:02

10/31/24 15:02

10/31/24 15:02

10/31/24 08:53

10/31/24 08:53

10/31/24 08:53

10/31/24 08:53

10/31/24 08:53

0.078

0.078

0.052

0.10

0.13

ND

ND

ND

ND

ND

0.018

0.019

0.0091

mg/Kg

mg/Kg

mg/Kg

0.034 mg/Kg

0.024 mg/Kg

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-53-SO-28.3-20241018 Lab Sample ID: 580-145045-3

Date Collected: 10/18/24 16:40 **Matrix: Solid** Percent Solids: 75.3 Date Received: 10/22/24 12:29

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99	80 - 121	10/31/24 08:53	10/31/24 15:02	1
1,2-Dichloroethane-d4 (Surr)	110	80 - 121	11/04/24 09:34	11/04/24 15:08	1
4-Bromofluorobenzene (Surr)	99	80 - 120	10/31/24 08:53	10/31/24 15:02	1
4-Bromofluorobenzene (Surr)	98	80 - 120	11/04/24 09:34	11/04/24 15:08	1
Dibromofluoromethane (Surr)	100	80 - 120	10/31/24 08:53	10/31/24 15:02	1
Dibromofluoromethane (Surr)	106	80 - 120	11/04/24 09:34	11/04/24 15:08	1
Toluene-d8 (Surr)	127 S1+	80 - 120	10/31/24 08:53	10/31/24 15:02	1
Toluene-d8 (Surr)	97	80 - 120	11/04/24 09:34	11/04/24 15:08	1

Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	ND ND	0.56	0.19	mg/Kg	☆	11/01/24 08:11	11/01/24 11:08	1
1,2-Dichlorobenzene	ND	0.56	0.12	mg/Kg	☼	11/01/24 08:11	11/01/24 11:08	1
1,3-Dichlorobenzene	ND	0.84	0.19	mg/Kg	₩	11/01/24 08:11	11/01/24 11:08	1
1,4-Dichlorobenzene	0.32 J	0.84	0.15	mg/Kg	☼	11/01/24 08:11	11/01/24 11:08	1
4-Isopropyltoluene	ND	0.56	0.14	mg/Kg	₩	11/01/24 08:11	11/01/24 11:08	1
Chloroform	ND	0.28	0.059	mg/Kg	₩	11/01/24 08:11	11/01/24 11:08	1
Ethylbenzene	ND	0.56	0.13	mg/Kg	☼	11/01/24 08:11	11/01/24 11:08	1
Naphthalene	ND	2.1	0.55	mg/Kg	₩	11/01/24 08:11	11/01/24 11:08	1
o-Xylene	ND	0.56	0.070	mg/Kg	₩	11/01/24 08:11	11/01/24 11:08	1
Tetrachloroethene	0.32 J	0.56	0.074	mg/Kg	₩	11/01/24 08:11	11/01/24 11:08	1
Trichloroethene	ND	0.56	0.14	mg/Kg	☼	11/01/24 08:11	11/01/24 11:08	1

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101	80 - 121	11/01/24 08:11	11/01/24 11:08	1
4-Bromofluorobenzene (Surr)	102	80 - 120	11/01/24 08:11	11/01/24 11:08	1
Dibromofluoromethane (Surr)	102	80 - 120	11/01/24 08:11	11/01/24 11:08	1
Toluene-d8 (Surr)	100	80 - 120	11/01/24 08:11	11/01/24 11:08	1

Method: SW846 8260D - Volati	le Organic	Compoun	ds by GC/N	IS - DL2					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	310		2.8	0.34	mg/Kg	-	11/01/24 08:13	11/01/24 19:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	115	80 - 121	11/01/24 08:13	11/01/24 19:12	1
4-Bromofluorobenzene (Surr)	102	80 - 120	11/01/24 08:13	11/01/24 19:12	1
Dibromofluoromethane (Surr)	113	80 - 120	11/01/24 08:13	11/01/24 19:12	1
Toluene-d8 (Surr)	100	80 - 120	11/01/24 08:13	11/01/24 19:12	1

General Chemistry Analyte	Result Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	75.3	0.1	0.1	%			10/28/24 17:55	1
Percent Moisture (SM22 2540G)	24.7	0.1	0.1	%			10/28/24 17:55	1

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Date Collected: 10/18/24 13:55

Date Received: 10/22/24 12:29

Matrix: Solid
Percent Solids: 77.9

Method: SW846 8260D - Vola Analyte	_	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND	H -	0.023	0.0058	mg/Kg	— <u></u>	11/04/24 08:44	11/04/24 10:54	
1,1,1-Trichloroethane	ND	Н	0.047	0.0054	mg/Kg	☼	11/04/24 08:44	11/04/24 10:54	
I,1,2,2-Tetrachloroethane	ND	Н	0.023	0.0089	mg/Kg	₽	11/04/24 08:44	11/04/24 10:54	
I,1,2-Trichloroethane	ND	Н	0.023	0.0086	mg/Kg		11/04/24 08:44	11/04/24 10:54	
I,1-Dichloroethane	ND	Н	0.047	0.011	mg/Kg	₩	11/04/24 08:44	11/04/24 10:54	
1,1-Dichloroethene	ND	Н	0.047	0.014	mg/Kg	₩	11/04/24 08:44	11/04/24 10:54	
I,1-Dichloropropene	ND	Н	0.047	0.0062	mg/Kg		11/04/24 08:44	11/04/24 10:54	
,2,3-Trichlorobenzene	ND	Н	0.093	0.046	mg/Kg	₩	11/04/24 08:44	11/04/24 10:54	
,2,3-Trichloropropane	ND	Н	0.047		mg/Kg	₩	11/04/24 08:44	11/04/24 10:54	
I,2,4-Trichlorobenzene	ND	Н	0.093		mg/Kg		11/04/24 08:44	11/04/24 10:54	
I,2,4-Trimethylbenzene	ND	Н	0.047		mg/Kg	☆	11/04/24 08:44	11/04/24 10:54	
I,2-Dibromo-3-Chloropropane	ND	Н	0.070		mg/Kg	⊅	11/04/24 08:44	11/04/24 10:54	
,2-Dibromoethane	ND		0.023	0.0044			11/04/24 08:44	11/04/24 10:54	
,2-Dichlorobenzene	ND	Н	0.047		mg/Kg	₩	11/04/24 08:44	11/04/24 10:54	
,2-Dichloroethane	ND		0.023	0.0064		☆	11/04/24 08:44	11/04/24 10:54	
,, 2-Dichloropropane	ND		0.023	0.0077		∷	11/04/24 08:44	11/04/24 10:54	
,3,5-Trimethylbenzene	ND	H	0.047	0.0089		₩	11/04/24 08:44	11/04/24 10:54	
,3-Dichlorobenzene	ND	Н	0.070		mg/Kg	₩	11/04/24 08:44	11/04/24 10:54	
,3-Dichloropropane	ND	. : : . H	0.070	0.0065		∴	11/04/24 08:44	11/04/24 10:54	
,4-Dichlorobenzene	ND	н	0.070		mg/Kg	~ ☆	11/04/24 08:44	11/04/24 10:54	
2.2-Dichloropropane	ND		0.047		mg/Kg		11/04/24 08:44	11/04/24 10:54	
-Chlorotoluene	ND		0.047		mg/Kg		11/04/24 08:44	11/04/24 10:54	
-Chlorotoluene	ND		0.047		mg/Kg	~ ☆	11/04/24 08:44	11/04/24 10:54	
-Isopropyltoluene	ND		0.047		mg/Kg	~ ☆	11/04/24 08:44	11/04/24 10:54	
Benzene	ND	. '.'	0.023	0.0044			11/04/24 08:44	11/04/24 10:54	
Bromobenzene	ND	H	0.023	0.0044	0 0	₩	11/04/24 08:44	11/04/24 10:54	
Bromochloromethane	ND ND	H	0.047	0.0049	0 0	₩	11/04/24 08:44	11/04/24 10:54	
Bromodichloromethane	ND	. '.' H	0.047	0.0072		` -		11/04/24 10:54	
Bromoform	ND ND	Н	0.047	0.0053		₩	11/04/24 08:44	11/04/24 10:54	
Bromomethane	ND ND		0.047		mg/Kg	₩	11/04/24 00:44	11/04/24 10:34	
Carbon tetrachloride	ND	. '.' H	0.023	0.0051			11/04/24 09:34	11/04/24 10:54	
Chlorobenzene	ND ND	Н	0.023	0.0051	0 0	☆	11/04/24 08:44	11/04/24 10:54	
Chloroethane	ND ND		0.047		mg/Kg	₩	11/04/24 00:44	11/04/24 10:34	
Chloroform	ND		0.093	0.024				11/04/24 13:24	
Chloromethane	ND ND		0.023		0 0	☆ ☆			
					mg/Kg			11/04/24 10:54	
is-1,2-Dichloroethene	ND		0.070		mg/Kg	<u>.</u> .	11/04/24 08:44	11/04/24 10:54	
is-1,3-Dichloropropene	ND		0.023	0.0047		*	11/04/24 08:44		
Dibromochloromethane	ND		0.023	0.0057		*		11/04/24 10:54	
Dibromomethane	ND		0.047	0.0086		*		11/04/24 10:54	
Dichlorodifluoromethane	ND		0.29		mg/Kg	*		11/04/24 13:24	
Ethylbenzene	ND		0.047		mg/Kg	*	11/04/24 08:44	11/04/24 10:54	
lexachlorobutadiene	ND		0.12		mg/Kg	<u>.</u> .	11/04/24 08:44	11/04/24 10:54	
sopropylbenzene	ND		0.047		mg/Kg	☼	11/04/24 08:44	11/04/24 10:54	
Methyl tert-butyl ether	ND		0.047	0.0070		☼	11/04/24 08:44	11/04/24 10:54	
Methylene Chloride	ND		0.29		mg/Kg		11/04/24 08:44	11/04/24 10:54	
n-Xylene & p-Xylene	ND		0.047	0.0083		₩	11/04/24 08:44	11/04/24 10:54	
Naphthalene	ND		0.18		mg/Kg	₩		11/04/24 10:54	
n-Butylbenzene	ND	Н	0.047		mg/Kg	≎	11/04/24 08:44	11/04/24 10:54	
N-Propylbenzene	ND	Н	0.047		mg/Kg	₽	11/04/24 08:44	11/04/24 10:54	

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Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-52-SO-39.9-20241018

Date Collected: 10/18/24 13:55 Date Received: 10/22/24 12:29 Lab Sample ID: 580-145045-4

Matrix: Solid Percent Solids: 77.9

Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	(Conti	nued)				
Analyte	_	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND	H	0.047	0.0058	mg/Kg	₩	11/04/24 08:44	11/04/24 10:54	1
sec-Butylbenzene	ND	Н	0.047	0.010	mg/Kg	₩	11/04/24 08:44	11/04/24 10:54	1
Styrene	ND	Н	0.047	0.015	mg/Kg	₩	11/04/24 08:44	11/04/24 10:54	1
t-Butylbenzene	ND	Н	0.047	0.0090	mg/Kg	₩	11/04/24 08:44	11/04/24 10:54	1
Tetrachloroethene	0.0069	JHB	0.047	0.0062	mg/Kg	₩	11/04/24 08:44	11/04/24 10:54	1
Toluene	ND	Н	0.070	0.016	mg/Kg	₩	11/04/24 08:44	11/04/24 10:54	1
trans-1,2-Dichloroethene	ND	Н	0.070	0.017	mg/Kg	₩	11/04/24 08:44	11/04/24 10:54	1
trans-1,3-Dichloropropene	ND	Н	0.047	0.0082	mg/Kg	₩	11/04/24 08:44	11/04/24 10:54	1
Trichloroethene	ND	Н	0.047	0.012	mg/Kg	₩	11/04/24 08:44	11/04/24 10:54	1
Trichlorofluoromethane	ND	Н	0.093	0.030	mg/Kg	₩	11/04/24 08:44	11/04/24 10:54	1
Vinyl chloride	ND	Н	0.12	0.022	mg/Kg	☼	11/04/24 08:44	11/04/24 10:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		80 - 121				11/04/24 08:44	11/04/24 10:54	1
1,2-Dichloroethane-d4 (Surr)	125	S1+	80 - 121				11/04/24 09:34	11/04/24 13:24	1
4-Bromofluorobenzene (Surr)	97		80 - 120				11/04/24 08:44	11/04/24 10:54	1
4-Bromofluorobenzene (Surr)	108		80 - 120				11/04/24 09:34	11/04/24 13:24	1
Dibromofluoromethane (Surr)	101		80 - 120				11/04/24 08:44	11/04/24 10:54	1
Dibromofluoromethane (Surr)	118		80 - 120				11/04/24 09:34	11/04/24 13:24	1
Toluene-d8 (Surr)	105		80 - 120				11/04/24 08:44	11/04/24 10:54	1
Toluene-d8 (Surr)	98		80 - 120				11/04/24 09:34	11/04/24 13:24	1

Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND	0.25	0.063	mg/Kg	_	10/31/24 08:53	10/31/24 16:04	1
1,1,1-Trichloroethane	ND	0.50	0.058	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,1,2,2-Tetrachloroethane	ND	0.25	0.095	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,1,2-Trichloroethane	ND	0.25	0.093	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,1-Dichloroethane	ND	0.50	0.12	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,1-Dichloroethene	ND	0.50	0.15	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,1-Dichloropropene	ND	0.50	0.066	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,2,3-Trichlorobenzene	ND	1.0	0.50	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,2,3-Trichloropropane	ND	0.50	0.14	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,2,4-Trichlorobenzene	ND	1.0	0.53	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,2,4-Trimethylbenzene	ND	0.50	0.17	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,2-Dibromo-3-Chloropropane	ND	0.75	0.19	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,2-Dibromoethane	ND	0.25	0.048	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,2-Dichlorobenzene	ND	0.50	0.11	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,2-Dichloroethane	ND	0.25	0.069	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,2-Dichloropropane	ND	0.25	0.083	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,3,5-Trimethylbenzene	ND	0.50	0.095	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,3-Dichlorobenzene	ND	0.75	0.17	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,3-Dichloropropane	ND	0.75	0.070	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
1,4-Dichlorobenzene	ND	0.75	0.14	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
2,2-Dichloropropane	ND	0.50	0.15	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
2-Chlorotoluene	ND	0.50	0.11	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
4-Chlorotoluene	ND	0.50	0.12	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
4-Isopropyltoluene	ND	0.50	0.13	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
Benzene	ND	0.25		mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
Bromobenzene	ND	0.50		mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-52-SO-39.9-20241018

Lab Sample ID: 580-145045-4 Date Collected: 10/18/24 13:55 **Matrix: Solid**

Percent Solids: 77.9 Date Received: 10/22/24 12:29

Method: SW846 8260D - Vola	_	•	•	•	•	_	_		
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Bromochloromethane	ND		0.50		mg/Kg	⇔	10/31/24 08:53	10/31/24 16:04	
Bromodichloromethane	ND		0.50		mg/Kg	₩		10/31/24 16:04	1
Bromoform	ND		0.50		mg/Kg	₩		10/31/24 16:04	1
Carbon tetrachloride	ND		0.25		mg/Kg	₩.		10/31/24 16:04	1
Chloroform	ND		0.25		mg/Kg	₩		10/31/24 16:04	1
Chloromethane	ND		0.75		mg/Kg	₩		10/31/24 16:04	1
cis-1,2-Dichloroethene	ND		0.75		mg/Kg	₩		10/31/24 16:04	1
cis-1,3-Dichloropropene	ND		0.25	0.050	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
Dibromochloromethane	ND		0.25	0.061	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
Dibromomethane	ND		0.50	0.093	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
Ethylbenzene	ND		0.50	0.11	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
Hexachlorobutadiene	ND		1.3	0.30	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
Isopropylbenzene	ND		0.50	0.11	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
Methyl tert-butyl ether	ND		0.50	0.075	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
Methylene Chloride	ND		3.1	0.33	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
m-Xylene & p-Xylene	ND		0.50	0.089	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
Naphthalene	ND		1.9	0.49	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
n-Butylbenzene	ND		0.50	0.23	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
N-Propylbenzene	ND		0.50	0.19	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
o-Xylene	ND		0.50	0.063	mg/Kg	₽	10/31/24 08:53	10/31/24 16:04	1
sec-Butylbenzene	ND		0.50	0.11	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
Styrene	ND		0.50	0.16	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
t-Butylbenzene	ND		0.50	0.097	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
Tetrachloroethene	ND		0.50		mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
Toluene	ND		0.75	0.17	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
trans-1,2-Dichloroethene	ND		0.75	0.18	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
trans-1,3-Dichloropropene	ND		0.50		mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
Trichloroethene	ND		0.50	0.13	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
Trichlorofluoromethane	ND		1.0	0.33	mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
Vinyl chloride	ND		1.3		mg/Kg	₩	10/31/24 08:53	10/31/24 16:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				10/31/24 08:53	10/31/24 16:04	1
4-Bromofluorobenzene (Surr)	99		80 - 120				10/31/24 08:53	10/31/24 16:04	1
Dibromofluoromethane (Surr)	103		80 - 120				10/31/24 08:53	10/31/24 16:04	1
Toluene-d8 (Surr)	106		80 - 120				10/31/24 08:53	10/31/24 16:04	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	77.9	_	0.1	0.1	%	_		10/28/24 19:02	1
Percent Moisture (SM22 2540G)	22.1		0.1	0.1	%			10/28/24 19:02	1

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Date Collected: 10/18/24 12:10

Matrix: Solid

Date Received: 10/22/24 12:29

Percent Solids: 79.5

Method: SW846 8260D - Vola Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND		0.025	0.0063		— <u>-</u>	10/31/24 08:53	10/31/24 15:22	
1,1,1-Trichloroethane	ND		0.050	0.0058	0 0	₩	10/31/24 08:53	10/31/24 15:22	
1,1,2,2-Tetrachloroethane	ND		0.025	0.0096		₩	10/31/24 08:53		
I,1,2-Trichloroethane	ND		0.025	0.0093				10/31/24 15:22	
,1-Dichloroethane	ND		0.050		mg/Kg	₩	10/31/24 08:53		
I,1-Dichloroethene	ND		0.050		mg/Kg	Ď.		10/31/24 15:22	
1,1-Dichloropropene	ND		0.050	0.0067				10/31/24 15:22	
,2,3-Trichlorobenzene	ND		0.10		mg/Kg	₩.		10/31/24 15:22	
,2,3-Trichloropropane	ND		0.050		mg/Kg	₩.		10/31/24 15:22	
,2,4-Trichlorobenzene	ND		0.10		mg/Kg			10/31/24 15:22	
,2,4-Trimethylbenzene	ND		0.050		mg/Kg	Ď.		10/31/24 15:22	
,2-Dibromo-3-Chloropropane	ND		0.076		mg/Kg	Ď.		10/31/24 15:22	
,2-Dibromoethane	ND		0.025	0.0048				10/31/24 15:22	
,2-Dichlorobenzene	ND		0.050		mg/Kg	₩		10/31/24 15:22	
.2-Dichloroethane	ND		0.035	0.0069		₩		10/31/24 15:22	
2-Dichloropropane	ND		0.025	0.0083				10/31/24 15:22	
,3,5-Trimethylbenzene	ND		0.050	0.0003		₩		10/31/24 15:22	
,3-Dichlorobenzene	ND		0.036		mg/Kg	₩		10/31/24 15:22	
3-Dichloropropane	ND		0.076					10/31/24 15:22	
,4-Dichlorobenzene	0.057		0.076		mg/Kg	₽		10/31/24 15:22	
	0.057 ND	J			0 0				
2-Dichloropropane			0.050		mg/Kg	· · · · ·		10/31/24 15:22	
Chlorotoluene	ND		0.050		mg/Kg	φ.		10/31/24 15:22	
-Chlorotoluene	ND		0.050		mg/Kg	*		10/31/24 15:22	
-lsopropyltoluene	ND		0.050		mg/Kg			10/31/24 15:22	
enzene	ND		0.025	0.0048	0 0	*		10/31/24 15:22	
romobenzene	ND		0.050	0.0053	0 0	*		10/31/24 15:22	
romochloromethane	ND		0.050	0.0078		<u>.</u> .		10/31/24 15:22	
romodichloromethane	ND		0.050	0.0069		*		10/31/24 15:22	
romoform	ND		0.050	0.0057		*		10/31/24 15:22	
romomethane	ND	Н	0.13		mg/Kg	.		11/04/24 15:29	
arbon tetrachloride	ND		0.025	0.0056		☼		10/31/24 15:22	
hloroethane	0.11	Н	0.10		mg/Kg	☼	11/04/24 09:34	11/04/24 15:29	
hloroform	0.052		0.025	0.0053		<u></u>		10/31/24 15:22	
hloromethane	ND		0.076		mg/Kg	₩		10/31/24 15:22	
s-1,2-Dichloroethene	ND		0.076		mg/Kg	₩		10/31/24 15:22	
s-1,3-Dichloropropene	ND		0.025	0.0050				10/31/24 15:22	
ibromochloromethane	ND		0.025	0.0062		₩		10/31/24 15:22	
ibromomethane	ND		0.050	0.0093		₩		10/31/24 15:22	
ichlorodifluoromethane	ND	Н	0.32	0.058	mg/Kg	₩		11/04/24 15:29	
thylbenzene	ND		0.050	0.011	mg/Kg	₩	10/31/24 08:53	10/31/24 15:22	
exachlorobutadiene	ND		0.13		mg/Kg	₩	10/31/24 08:53	10/31/24 15:22	
opropylbenzene	ND		0.050		mg/Kg	₽		10/31/24 15:22	
lethyl tert-butyl ether	ND		0.050	0.0076		₩		10/31/24 15:22	
lethylene Chloride	ND		0.32	0.033	mg/Kg	☼		10/31/24 15:22	
n-Xylene & p-Xylene	ND		0.050	0.0090	mg/Kg	₩	10/31/24 08:53	10/31/24 15:22	
laphthalene	ND		0.19	0.049	mg/Kg	₩	10/31/24 08:53	10/31/24 15:22	
-Butylbenzene	ND		0.050	0.023	mg/Kg	₩	10/31/24 08:53	10/31/24 15:22	
I-Propylbenzene	ND		0.050	0.019	mg/Kg	☼	10/31/24 08:53	10/31/24 15:22	
o-Xylene	ND		0.050	0.0063	mg/Kg	₩	10/31/24 08:53	10/31/24 15:22	

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Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Analyte

Percent Solids (SM22 2540G)

Percent Moisture (SM22 2540G)

Client Sample ID: PDI-48a-SO-34.2-20241018

Lab Sample ID: 580-145045-5 Date Collected: 10/18/24 12:10

Result Qualifier

79.5

20.5

Matrix: Solid Percent Solids: 79.5 Date Received: 10/22/24 12:29

Method: SW846 8260D - Vo	_	-	•	(Conti	•				
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
sec-Butylbenzene	ND		0.050		mg/Kg	₩	10/31/24 08:53	10/31/24 15:22	1
Styrene	ND		0.050		mg/Kg		10/31/24 08:53	10/31/24 15:22	1
t-Butylbenzene	ND		0.050	0.0097	mg/Kg	₩	10/31/24 08:53	10/31/24 15:22	1
Tetrachloroethene	0.019	J	0.050	0.0067	mg/Kg	≎	10/31/24 08:53	10/31/24 15:22	1
Toluene	ND		0.076	0.017	mg/Kg	₩	10/31/24 08:53	10/31/24 15:22	1
trans-1,2-Dichloroethene	ND		0.076		mg/Kg	₩	10/31/24 08:53	10/31/24 15:22	1
trans-1,3-Dichloropropene	ND		0.050	0.0088	mg/Kg	₩	10/31/24 08:53	10/31/24 15:22	1
Trichloroethene	ND		0.050	0.013	mg/Kg	₩	10/31/24 08:53	10/31/24 15:22	1
Trichlorofluoromethane	ND		0.10	0.033	mg/Kg	₩	10/31/24 08:53	10/31/24 15:22	1
Vinyl chloride	ND		0.13	0.024	mg/Kg	₩	10/31/24 08:53	10/31/24 15:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				10/31/24 08:53	10/31/24 15:22	1
1,2-Dichloroethane-d4 (Surr)	122	S1+	80 - 121				11/04/24 09:34	11/04/24 15:29	1
4-Bromofluorobenzene (Surr)	103		80 - 120				10/31/24 08:53	10/31/24 15:22	1
4-Bromofluorobenzene (Surr)	100		80 - 120				11/04/24 09:34	11/04/24 15:29	1
Dibromofluoromethane (Surr)	100		80 - 120				10/31/24 08:53	10/31/24 15:22	1
Dibromofluoromethane (Surr)	119		80 - 120				11/04/24 09:34	11/04/24 15:29	1
Toluene-d8 (Surr)	100		80 - 120				10/31/24 08:53	10/31/24 15:22	1
Toluene-d8 (Surr)	97		80 - 120				11/04/24 09:34	11/04/24 15:29	1
Method: SW846 8260D - Vo	latile Organic	Compound	ds by GC/MS	- DL					
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	37		0.54	0.065	mg/Kg	-	11/01/24 08:11	11/01/24 11:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				11/01/24 08:11	11/01/24 11:29	1
4-Bromofluorobenzene (Surr)	101		80 - 120				11/01/24 08:11	11/01/24 11:29	1
Dibromofluoromethane (Surr)	102		80 - 120				11/01/24 08:11	11/01/24 11:29	1
Toluene-d8 (Surr)	104		80 - 120				11/01/24 08:11	11/01/24 11:29	1

RL

0.1

0.1

RL Unit

0.1 %

0.1 %

D

Prepared

Analyzed

10/28/24 19:02

10/28/24 19:02

Dil Fac

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12/13/2024 (Rev. 1)

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-SO-20241021

Lab Sample ID: 580-145045-6

Date Collected: 10/21/24 00:01 Matrix: Solid Date Received: 10/22/24 12:29

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 1,1,1,2-Tetrachloroethane ND 0.020 0.0050 mg/Kg 10/24/24 12:37 10/24/24 21:34 ND 1.1.1-Trichloroethane 0.040 0.0046 mg/Kg 10/24/24 12:37 10/24/24 21:34 1,1,2,2-Tetrachloroethane ND 0.020 0.0076 mg/Kg 10/24/24 12:37 10/24/24 21:34 ND 0.0074 mg/Kg 1,1,2-Trichloroethane 0.020 10/24/24 12:37 10/24/24 21:34 ND 0.040 0.0092 mg/Kg 10/24/24 12:37 10/24/24 21:34 1.1-Dichloroethane 1,1-Dichloroethene ND 0.040 0.012 mg/Kg 10/24/24 12:37 10/24/24 21:34 1,1-Dichloropropene ND 0.040 0.0053 10/24/24 12:37 10/24/24 21:34 mg/Kg ND 0.080 0.040 10/24/24 12:37 10/24/24 21:34 1,2,3-Trichlorobenzene mg/Kg 1,2,3-Trichloropropane ND 0.040 0.012 mg/Kg 10/24/24 12:37 10/24/24 21:34 1,2,4-Trichlorobenzene ND 0.080 0.043 mg/Kg 10/24/24 12:37 10/24/24 21:34 1,2,4-Trimethylbenzene ND 0.040 0.014 mg/Kg 10/24/24 12:37 10/24/24 21:34 mg/Kg 1.2-Dibromo-3-Chloropropane ND 0.060 0.015 10/24/24 12:37 10/24/24 21:34 1 1,2-Dibromoethane ND 0.020 0.0038 mg/Kg 10/24/24 12:37 10/24/24 21:34 mg/Kg 1,2-Dichlorobenzene ND 0.040 0.0087 10/24/24 12:37 10/24/24 21:34 ND 0.020 0.0055 mg/Kg 10/24/24 12:37 10/24/24 21:34 1.2-Dichloroethane 0.0066 1,2-Dichloropropane ND 0.020 mg/Kg 10/24/24 12:37 10/24/24 21:34 0.0076 1,3,5-Trimethylbenzene ND 0.040 mg/Kg 10/24/24 12:37 10/24/24 21:34 1,3-Dichlorobenzene ND 0.060 0.013 mg/Kg 10/24/24 12:37 10/24/24 21:34 ND 0.060 0.0056 mg/Kg 10/24/24 12:37 10/24/24 21:34 1,3-Dichloropropane 1,4-Dichlorobenzene ND 0.060 0.011 mg/Kg 10/24/24 12:37 10/24/24 21:34 2,2-Dichloropropane ND 0.040 0.012 mg/Kg 10/24/24 12:37 10/24/24 21:34 2-Chlorotoluene ND 0.040 8800.0 mg/Kg 10/24/24 12:37 10/24/24 21:34 4-Chlorotoluene ND 0.0098 10/24/24 12:37 10/24/24 21:34 0.040 mg/Kg 4-Isopropyltoluene ND 0.040 0.010 mg/Kg 10/24/24 12:37 10/24/24 21:34 Benzene ND 0.020 0.0038 mg/Kg 10/24/24 12:37 10/24/24 21:34 ND 0.0042 Bromobenzene 0.040 mg/Kg 10/24/24 12:37 10/24/24 21:34 Bromochloromethane ND 0.040 0.0062 mg/Kg 10/24/24 12:37 10/24/24 21:34 Bromodichloromethane 0.0055 ND 0.040 mg/Kg 10/24/24 12:37 10/24/24 21:34 0.0045 Bromoform ND 0.040 mg/Kg 10/24/24 12:37 10/24/24 21:34 ND 0.038 Bromomethane 0.10 mg/Kg 10/24/24 12:37 10/24/24 21:34 Carbon tetrachloride ND 0.020 0.0044 mg/Kg 10/24/24 12:37 10/24/24 21:34 0.040 0.0048 mg/Kg 10/24/24 12:37 10/24/24 21:34 0.022 Chlorobenzene Chloroethane ND 0.080 0.021 10/24/24 12:37 10/24/24 21:34 mg/Kg Chloroform ND 0.020 0.0042 mg/Kg 10/24/24 12:37 10/24/24 21:34 Chloromethane ND 0.060 0.010 mg/Kg 10/24/24 12:37 10/24/24 21:34 cis-1.2-Dichloroethene ND 0.060 0.013 mg/Kg 10/24/24 12:37 10/24/24 21:34 cis-1,3-Dichloropropene ND 0.020 0.0040 mg/Kg 10/24/24 12:37 10/24/24 21:34 Dibromochloromethane ND 0.020 0.0049 mg/Kg 10/24/24 12:37 10/24/24 21:34 Dibromomethane ND 0.0074 mg/Kg 0.040 10/24/24 12:37 10/24/24 21:34 Dichlorodifluoromethane ND 0.25 0.046 mg/Kg 10/24/24 12:37 10/24/24 21:34 Ethylbenzene ND 0.040 0.0091 mg/Kg 10/24/24 12:37 10/24/24 21:34 Hexachlorobutadiene ND 0.10 0.024 mg/Kg 10/24/24 12:37 10/24/24 21:34 0.0086 ND 10/24/24 21:34 Isopropylbenzene 0.040 mg/Kg 10/24/24 12:37 Methyl tert-butyl ether 0.040 0.0060 10/24/24 12:37 10/24/24 21:34 ND mg/Kg ND 0.25 Methylene Chloride 0.026 mg/Kg 10/24/24 12:37 10/24/24 21:34 m-Xylene & p-Xylene ND 0.040 0.0071 mg/Kg 10/24/24 12:37 10/24/24 21:34 Naphthalene ND 10/24/24 12:37 10/24/24 21:34 0.15 0.039 mg/Kg n-Butylbenzene ND 0.040 0.019 mg/Kg 10/24/24 12:37 10/24/24 21:34 10/24/24 21:34 N-Propylbenzene ND 0.040 0.015 mg/Kg 10/24/24 12:37

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-SO-20241021

Lab Sample ID: 580-145045-6

Date Collected: 10/21/24 00:01 **Matrix: Solid** Date Received: 10/22/24 12:29

Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	(Conti	nued)				
Analyte	_	Qualifier	RL	•	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		0.040	0.0050	mg/Kg		10/24/24 12:37	10/24/24 21:34	1
sec-Butylbenzene	ND		0.040	0.0086	mg/Kg		10/24/24 12:37	10/24/24 21:34	1
Styrene	ND		0.040	0.013	mg/Kg		10/24/24 12:37	10/24/24 21:34	1
t-Butylbenzene	ND		0.040	0.0077	mg/Kg		10/24/24 12:37	10/24/24 21:34	1
Tetrachloroethene	ND		0.040	0.0053	mg/Kg		10/24/24 12:37	10/24/24 21:34	1
Toluene	ND		0.060	0.014	mg/Kg		10/24/24 12:37	10/24/24 21:34	1
trans-1,2-Dichloroethene	ND		0.060	0.015	mg/Kg		10/24/24 12:37	10/24/24 21:34	1
trans-1,3-Dichloropropene	ND		0.040	0.0070	mg/Kg		10/24/24 12:37	10/24/24 21:34	1
Trichloroethene	ND		0.040	0.010	mg/Kg		10/24/24 12:37	10/24/24 21:34	1
Trichlorofluoromethane	ND		0.080	0.026	mg/Kg		10/24/24 12:37	10/24/24 21:34	1
Vinyl chloride	ND		0.10	0.019	mg/Kg		10/24/24 12:37	10/24/24 21:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)			80 - 121				10/24/24 12:37	10/24/24 21:34	1
4-Bromofluorobenzene (Surr)	103		80 - 120				10/24/24 12:37	10/24/24 21:34	1
Dibromofluoromethane (Surr)	102		80 - 120				10/24/24 12:37	10/24/24 21:34	1
Toluene-d8 (Surr)	97		80 - 120				10/24/24 12:37	10/24/24 21:34	1

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-53-SO-44.9-20241021 Lab Sample ID: 580-145045-7

Date Collected: 10/21/24 11:40

Matrix: Solid

Date Received: 10/22/24 12:29

Percent Solids: 70.6

Method: SW846 8260D - Vola	_	-	•				_		
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND		0.030	0.0075		₩		10/25/24 00:19	
1,1,1-Trichloroethane	ND		0.060	0.0069	0 0	₩		10/25/24 00:19	
1,1,2,2-Tetrachloroethane	ND		0.030		mg/Kg	.		10/25/24 00:19	
1,1,2-Trichloroethane	ND		0.030		mg/Kg	₩		10/25/24 00:19	
1,1-Dichloroethane	ND		0.060		mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
1,1-Dichloroethene	ND		0.060		mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
1,1-Dichloropropene	ND		0.060	0.0080	mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
1,2,3-Trichlorobenzene	ND		0.12	0.060	mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
1,2,3-Trichloropropane	ND		0.060	0.017	mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
1,2,4-Trichlorobenzene	ND		0.12	0.064	mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
1,2,4-Trimethylbenzene	ND		0.060	0.020	mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
1,2-Dibromo-3-Chloropropane	ND		0.090	0.023	mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
1,2-Dibromoethane	ND		0.030	0.0057	mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
1,2-Dichlorobenzene	ND		0.060	0.013	mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
1,2-Dichloroethane	ND		0.030	0.0083	mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
1,2-Dichloropropane	ND		0.030	0.0099	mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
1,3,5-Trimethylbenzene	ND		0.060	0.011	mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
1,3-Dichlorobenzene	ND		0.090	0.020	mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
1,3-Dichloropropane	ND		0.090	0.0084		 ☆	10/24/24 12:37	10/25/24 00:19	
1,4-Dichlorobenzene	ND		0.090		mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
2,2-Dichloropropane	ND		0.060		mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
2-Chlorotoluene	ND		0.060		mg/Kg		10/24/24 12:37	10/25/24 00:19	
4-Chlorotoluene	ND		0.060		mg/Kg	₩		10/25/24 00:19	
4-Isopropyltoluene	ND		0.060		mg/Kg	₩		10/25/24 00:19	
Benzene	ND		0.030	0.0057				10/25/24 00:19	
Bromobenzene	ND		0.060	0.0063				10/25/24 00:19	
Bromochloromethane	ND		0.060	0.0003	0 0	₩		10/25/24 00:19	
Bromodichloromethane	ND		0.060	0.0083				10/25/24 00:19	
Bromoform	ND		0.060	0.0068		₩		10/25/24 00:19	
Bromomethane	ND		0.000		mg/Kg	₩		10/25/24 00:19	
Carbon tetrachloride	ND		0.030	0.0066				10/25/24 00:19	
		В				*			
Chlorobenzene		В	0.060	0.0072		φ.		10/25/24 00:19	
Chloroethane	ND		0.12		mg/Kg			10/25/24 00:19	
Chloroform	ND		0.030	0.0063	0 0	*		10/25/24 00:19	
Chloromethane	ND		0.090		mg/Kg	\$		10/25/24 00:19	
cis-1,2-Dichloroethene	ND		0.090		mg/Kg	. .		10/25/24 00:19	
cis-1,3-Dichloropropene	ND		0.030	0.0060		☼		10/25/24 00:19	
Dibromochloromethane	ND		0.030	0.0074		₩		10/25/24 00:19	
Dibromomethane	ND		0.060		mg/Kg			10/25/24 00:19	
Dichlorodifluoromethane	ND		0.38		mg/Kg	₩		10/25/24 00:19	
Ethylbenzene	ND		0.060		mg/Kg	₩		10/25/24 00:19	
Hexachlorobutadiene	ND		0.15		mg/Kg			10/25/24 00:19	
Isopropylbenzene	ND		0.060		mg/Kg	₩		10/25/24 00:19	
Methyl tert-butyl ether	ND		0.060	0.0090		₽		10/25/24 00:19	
Methylene Chloride	ND		0.38	0.039	mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
m-Xylene & p-Xylene	ND		0.060		mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
Naphthalene	ND		0.23	0.059	mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
n-Butylbenzene	ND		0.060	0.028	mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	
N-Propylbenzene	ND		0.060	0.023	mg/Kg	₩	10/24/24 12:37	10/25/24 00:19	

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Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-53-SO-44.9-20241021

Lab Sample ID: 580-145045-7 Date Collected: 10/21/24 11:40 **Matrix: Solid**

Date Received: 10/22/24 12:29 Percent Solids: 70.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		0.060	0.0075	mg/Kg	<u></u>	10/24/24 12:37	10/25/24 00:19	1
sec-Butylbenzene	ND		0.060	0.013	mg/Kg	☆	10/24/24 12:37	10/25/24 00:19	1
Styrene	ND		0.060	0.019	mg/Kg	☆	10/24/24 12:37	10/25/24 00:19	
t-Butylbenzene	ND		0.060	0.012	mg/Kg	≎	10/24/24 12:37	10/25/24 00:19	
Tetrachloroethene	ND		0.060	0.0080	mg/Kg	☆	10/24/24 12:37	10/25/24 00:19	•
Toluene	ND		0.090	0.020	mg/Kg	₽	10/24/24 12:37	10/25/24 00:19	
trans-1,2-Dichloroethene	ND		0.090	0.022	mg/Kg	☆	10/24/24 12:37	10/25/24 00:19	
trans-1,3-Dichloropropene	ND		0.060	0.011	mg/Kg	☆	10/24/24 12:37	10/25/24 00:19	
Trichloroethene	ND		0.060	0.016	mg/Kg	☼	10/24/24 12:37	10/25/24 00:19	
Trichlorofluoromethane	ND		0.12	0.039	mg/Kg	☆	10/24/24 12:37	10/25/24 00:19	•
Vinyl chloride	ND		0.15	0.028	mg/Kg	≎	10/24/24 12:37	10/25/24 00:19	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
1,2-Dichloroethane-d4 (Surr)	110		80 - 121				10/24/24 12:37	10/25/24 00:19	
4-Bromofluorobenzene (Surr)	100		80 - 120				10/24/24 12:37	10/25/24 00:19	
Dibromofluoromethane (Surr)	102		80 - 120				10/24/24 12:37	10/25/24 00:19	
Toluene-d8 (Surr)	101		80 - 120				10/24/24 12:37	10/25/24 00:19	
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fa
Percent Solids (SM22 2540G)	70.6		0.1	0.1	%			10/28/24 19:02	
Percent Moisture (SM22 2540G)	29.4		0.1	0.1	%			10/28/24 19:02	

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-55-SO-44.9-20241021

Lab Sample ID: 580-145045-8 Date Collected: 10/21/24 16:20 Matrix: Solid

Date Received: 10/22/24 12:29 Percent Solids: 83.5 Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 1,1,1,2-Tetrachloroethane ND 0.021 0.0054 mg/Kg 10/24/24 12:37 10/25/24 00:40 ND 1.1.1-Trichloroethane 0.043 0.0049 mg/Kg 10/24/24 12:37 10/25/24 00:40 1,1,2,2-Tetrachloroethane ND 0.021 0.0082 mg/Kg 10/24/24 12:37 10/25/24 00:40 1,1,2-Trichloroethane ND 0.021 0.0079 mg/Kg 10/24/24 12:37 10/25/24 00:40 0.0099 mg/Kg 10/24/24 12:37 10/25/24 00:40 1.1-Dichloroethane ND 0.043 1,1-Dichloroethene ND 0.043 0.013 mg/Kg 10/24/24 12:37 10/25/24 00:40 1,1-Dichloropropene ND 0.043 0.0057 10/24/24 12:37 10/25/24 00:40 mg/Kg ND 0.086 0.043 10/24/24 12:37 10/25/24 00:40 1,2,3-Trichlorobenzene mg/Kg 1,2,3-Trichloropropane ND 0.043 0.012 mg/Kg 10/24/24 12:37 10/25/24 00:40 1,2,4-Trichlorobenzene ND 0.086 0.046 mg/Kg 10/24/24 12:37 10/25/24 00:40 1,2,4-Trimethylbenzene ND 0.043 0.014 mg/Kg 10/24/24 12:37 10/25/24 00:40 mg/Kg 1.2-Dibromo-3-Chloropropane ND 0.064 0.016 10/24/24 12:37 10/25/24 00:40 1 1,2-Dibromoethane ND 0.021 0.0041 mg/Kg 10/24/24 12:37 10/25/24 00:40 1,2-Dichlorobenzene ND 0.043 0.0093 mg/Kg 10/24/24 12:37 10/25/24 00:40 0.021 0.0059 mg/Kg 10/24/24 12:37 10/25/24 00:40 1,2-Dichloroethane 0.0089 1,2-Dichloropropane ND 0.021 0.0071 mg/Kg 10/24/24 12:37 10/25/24 00:40 0.0082 1,3,5-Trimethylbenzene ND 0.043 mg/Kg 10/24/24 12:37 10/25/24 00:40 1,3-Dichlorobenzene ND 0.064 0.014 mg/Kg 10/24/24 12:37 10/25/24 00:40 ND 0.064 0.0060 mg/Kg 10/24/24 12:37 10/25/24 00:40 1,3-Dichloropropane 1,4-Dichlorobenzene ND 0.064 0.012 mg/Kg 10/24/24 12:37 10/25/24 00:40 2,2-Dichloropropane ND 0.043 0.013 mg/Kg ÷ 10/24/24 12:37 10/25/24 00:40 2-Chlorotoluene ND 0.043 0.0094 mg/Kg 10/24/24 12:37 10/25/24 00:40 0.011 4-Chlorotoluene ND 10/24/24 12:37 10/25/24 00:40 0.043 mg/Kg 4-Isopropyltoluene ND 0.043 0.011 mg/Kg 10/24/24 12:37 10/25/24 00:40 0.024 0.021 0.0041 mg/Kg 10/24/24 12:37 10/25/24 00:40 Benzene 0.0045 Bromobenzene ND 0.043 mg/Kg 10/24/24 12:37 10/25/24 00:40 Bromochloromethane ND 0.043 0.0067 mg/Kg 10/24/24 12:37 10/25/24 00:40 Bromodichloromethane 0.0059 ND 0.043 mg/Kg 10/24/24 12:37 10/25/24 00:40 0.0048 Bromoform ND 0.043 mg/Kg 10/24/24 12:37 10/25/24 00:40 10/24/24 12:37 ND 0.041 Bromomethane 0.11 mg/Kg 10/25/24 00:40 Carbon tetrachloride ND 0.021 0.0047 mg/Kg 10/24/24 12:37 10/25/24 00:40 0.043 0.0052 mg/Kg 10/24/24 12:37 10/25/24 00:40 Chlorobenzene 5.1 Chloroethane 0.086 0.022 10/24/24 12:37 10/25/24 00:40 ND mg/Kg ND 10/24/24 12:37 10/25/24 00:40 Chloroform 0.021 0.0045 mg/Kg Chloromethane ND 0.064 0.011 mg/Kg 10/24/24 12:37 10/25/24 00:40 cis-1.2-Dichloroethene ND 0.064 0.014 10/24/24 12:37 10/25/24 00:40 mg/Kg cis-1,3-Dichloropropene ND 0.021 0.0043 mg/Kg 10/24/24 12:37 10/25/24 00:40 Dibromochloromethane ND 0.021 0.0053 mg/Kg 10/24/24 12:37 10/25/24 00:40 Dibromomethane ND 0.0079 10/24/24 12:37 0.043 mg/Kg 10/25/24 00:40 Dichlorodifluoromethane ND 0.27 0.049 mg/Kg 10/24/24 12:37 10/25/24 00:40 Ethylbenzene ND 0.043 0.0098 mg/Kg 10/24/24 12:37 10/25/24 00:40 Hexachlorobutadiene ND 0 11 0.026 mg/Kg 10/24/24 12:37 10/25/24 00:40 0.0092 ND Isopropylbenzene 0.043 mg/Kg 10/24/24 12:37 10/25/24 00:40 Methyl tert-butyl ether 0.043 0.0064 10/24/24 12:37 10/25/24 00:40 ND mg/Kg ND Methylene Chloride 0.27 0.028 mg/Kg 10/24/24 12:37 10/25/24 00:40 m-Xylene & p-Xylene ND 0.043 0.0076 mg/Kg 10/24/24 12:37 10/25/24 00:40 Naphthalene ND 10/24/24 12:37 0.16 0.042 mg/Kg 10/25/24 00:40 n-Butylbenzene ND 0.043 0.020 mg/Kg ₩ 10/24/24 12:37 10/25/24 00:40 N-Propylbenzene ND 0.043 0.016 mg/Kg 10/24/24 12:37 10/25/24 00:40

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-55-SO-44.9-20241021

Lab Sample ID: 580-145045-8 Date Collected: 10/21/24 16:20 **Matrix: Solid**

Date Received: 10/22/24 12:29 Percent Solids: 83.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		0.043	0.0054	mg/Kg	<u></u>	10/24/24 12:37	10/25/24 00:40	1
sec-Butylbenzene	ND		0.043	0.0092	mg/Kg	≎	10/24/24 12:37	10/25/24 00:40	1
Styrene	ND		0.043	0.014	mg/Kg	☆	10/24/24 12:37	10/25/24 00:40	
t-Butylbenzene	ND		0.043	0.0083	mg/Kg	≎	10/24/24 12:37	10/25/24 00:40	
Tetrachloroethene	ND		0.043	0.0057	mg/Kg	☆	10/24/24 12:37	10/25/24 00:40	
Toluene	0.026	J	0.064	0.014	mg/Kg	₽	10/24/24 12:37	10/25/24 00:40	
trans-1,2-Dichloroethene	ND		0.064	0.016	mg/Kg	☆	10/24/24 12:37	10/25/24 00:40	
trans-1,3-Dichloropropene	ND		0.043	0.0075	mg/Kg	☆	10/24/24 12:37	10/25/24 00:40	
Trichloroethene	ND		0.043	0.011	mg/Kg	☼	10/24/24 12:37	10/25/24 00:40	
Trichlorofluoromethane	ND		0.086	0.028	mg/Kg	☆	10/24/24 12:37	10/25/24 00:40	
Vinyl chloride	ND		0.11	0.020	mg/Kg	≎	10/24/24 12:37	10/25/24 00:40	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
1,2-Dichloroethane-d4 (Surr)	110		80 - 121				10/24/24 12:37	10/25/24 00:40	
4-Bromofluorobenzene (Surr)	101		80 - 120				10/24/24 12:37	10/25/24 00:40	
Dibromofluoromethane (Surr)	103		80 - 120				10/24/24 12:37	10/25/24 00:40	
Toluene-d8 (Surr)	102		80 - 120				10/24/24 12:37	10/25/24 00:40	
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fa
Percent Solids (SM22 2540G)	83.5		0.1	0.1	%			10/28/24 19:02	
Percent Moisture (SM22 2540G)	16.5		0.1	0.1	%			10/28/24 19:02	

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-55-SO-9.9-20241021

Date Collected: 10/21/24 16:25 Date Received: 10/22/24 12:29 Lab Sample ID: 580-145045-9

Matrix: Solid Percent Solids: 73.1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil F
1,1,1,2-Tetrachloroethane	ND	<u> </u>	0.027	0.0068	mg/Kg	— <u></u>	10/24/24 12:37	10/25/24 01:00	
1,1,1-Trichloroethane	ND		0.054	0.0062	0 0	₩	10/24/24 12:37		
1,1,2,2-Tetrachloroethane	ND		0.027		mg/Kg	₩	10/24/24 12:37	10/25/24 01:00	
1,1,2-Trichloroethane	ND		0.027		mg/Kg		10/24/24 12:37	10/25/24 01:00	
1,1-Dichloroethane	ND		0.054		mg/Kg	☆	10/24/24 12:37	10/25/24 01:00	
1.1-Dichloroethene	ND		0.054		mg/Kg	ά		10/25/24 01:00	
1,1-Dichloropropene	ND		0.054	0.0072				10/25/24 01:00	
1,2,3-Trichlorobenzene	ND		0.11		mg/Kg	ά		10/25/24 01:00	
1,2,3-Trichloropropane	ND		0.054		mg/Kg	ά		10/25/24 01:00	
1,2,4-Trichlorobenzene	ND		0.11		mg/Kg	∵		10/25/24 01:00	
1,2,4-Trimethylbenzene	ND		0.054		mg/Kg			10/25/24 01:00	
1,2-Dibromo-3-Chloropropane	ND		0.081		mg/Kg	Ť Ť		10/25/24 01:00	
1,2-Dibromoethane	ND		0.027	0.0051				10/25/24 01:00	
1,2-Dichlorobenzene	ND		0.054		mg/Kg	~ \$		10/25/24 01:00	
1,2-Dichlorobenzene	ND		0.034	0.0074		₩ ₩		10/25/24 01:00	
1,2-Dichloropropane	ND		0.027	0.0074				10/25/24 01:00	
1,3,5-Trimethylbenzene	ND		0.027		mg/Kg	₩		10/25/24 01:00	
1,3-Dichlorobenzene	ND		0.034		mg/Kg	ж ж		10/25/24 01:00	
I,3-Dichloropropane	ND		0.081	0.0076				10/25/24 01:00	
• •			0.081			14: 14:		10/25/24 01:00	
1,4-Dichlorobenzene	0.053 ND	J			mg/Kg			10/25/24 01:00	
2,2-Dichloropropane			0.054		mg/Kg	· · · · · · · · · · · · · · · · · · ·		10/25/24 01:00	
2-Chlorotoluene	ND		0.054		mg/Kg	₩.			
-Chlorotoluene	ND		0.054		mg/Kg	*		10/25/24 01:00	
I-Isopropyltoluene	ND		0.054		mg/Kg	.		10/25/24 01:00	
Benzene	ND		0.027	0.0051		: Q :		10/25/24 01:00	
Bromobenzene	ND		0.054	0.0057	0 0	*		10/25/24 01:00	
3romochloromethane	ND		0.054	0.0084		. .		10/25/24 01:00	
Bromodichloromethane	ND		0.054	0.0074		*		10/25/24 01:00	
Bromoform	ND		0.054	0.0061	0 0	*		10/25/24 01:00	
Bromomethane	ND		0.14	0.051	mg/Kg	.		10/25/24 01:00	
Carbon tetrachloride	ND		0.027	0.0060	mg/Kg	☼		10/25/24 01:00	
Chlorobenzene	9.8	В	0.054	0.0065		☼		10/25/24 01:00	
Chloroethane	ND		0.11			.		10/25/24 01:00	
Chloroform	ND		0.027	0.0057	0 0	☼		10/25/24 01:00	
Chloromethane	ND		0.081		mg/Kg	₩		10/25/24 01:00	
is-1,2-Dichloroethene	ND		0.081		mg/Kg			10/25/24 01:00	
is-1,3-Dichloropropene	ND		0.027	0.0054		☼		10/25/24 01:00	
Dibromochloromethane	ND		0.027	0.0066	0 0	₩		10/25/24 01:00	
Dibromomethane	ND		0.054		mg/Kg	₩		10/25/24 01:00	
Dichlorodifluoromethane	ND		0.34		mg/Kg	☼	10/24/24 12:37	10/25/24 01:00	
Ethylbenzene	ND		0.054	0.012	mg/Kg	☼	10/24/24 12:37	10/25/24 01:00	
lexachlorobutadiene	ND		0.14		mg/Kg	₽	10/24/24 12:37	10/25/24 01:00	
sopropylbenzene	ND		0.054	0.012	mg/Kg	☼	10/24/24 12:37	10/25/24 01:00	
flethyl tert-butyl ether	ND		0.054	0.0081	mg/Kg	☼	10/24/24 12:37	10/25/24 01:00	
flethylene Chloride	ND		0.34	0.035	mg/Kg	☼	10/24/24 12:37	10/25/24 01:00	
n-Xylene & p-Xylene	ND		0.054	0.0096	mg/Kg	₩	10/24/24 12:37	10/25/24 01:00	
laphthalene	ND		0.20	0.053	mg/Kg	☆	10/24/24 12:37	10/25/24 01:00	
n-Butylbenzene	ND		0.054	0.025	mg/Kg	₽	10/24/24 12:37	10/25/24 01:00	
N-Propylbenzene	ND		0.054		mg/Kg	₩.	10/24/24 12:37	10/25/24 01:00	

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-55-SO-9.9-20241021

Lab Sample ID: 580-145045-9 Date Collected: 10/21/24 16:25 **Matrix: Solid**

Date Received: 10/22/24 12:29 Percent Solids: 73.1

Method: SW846 8260D - Volati Analyte	_	Qualifier	RL	(Conti	,	D	Droparod	Analyzod	Dil Fac
		Quaimer					Prepared	Analyzed	טוו רמנ
o-Xylene	ND		0.054	0.0068		☆	10/24/24 12:37	10/25/24 01:00	•
sec-Butylbenzene	ND		0.054		mg/Kg			10/25/24 01:00	
Styrene	ND		0.054	0.017	mg/Kg	₩	10/24/24 12:37	10/25/24 01:00	
t-Butylbenzene	ND		0.054	0.010	mg/Kg	☆	10/24/24 12:37	10/25/24 01:00	
Tetrachloroethene	0.024	J	0.054	0.0072	mg/Kg	≎	10/24/24 12:37	10/25/24 01:00	
Toluene	ND		0.081	0.018	mg/Kg	☆	10/24/24 12:37	10/25/24 01:00	
trans-1,2-Dichloroethene	ND		0.081	0.020	mg/Kg	₩	10/24/24 12:37	10/25/24 01:00	
trans-1,3-Dichloropropene	ND		0.054	0.0095	mg/Kg	₩	10/24/24 12:37	10/25/24 01:00	
Trichloroethene	ND		0.054	0.014	mg/Kg	☆	10/24/24 12:37	10/25/24 01:00	
Trichlorofluoromethane	ND		0.11	0.035	mg/Kg	≎	10/24/24 12:37	10/25/24 01:00	
Vinyl chloride	ND		0.14	0.025	mg/Kg	≎	10/24/24 12:37	10/25/24 01:00	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
1,2-Dichloroethane-d4 (Surr)	107		80 - 121				10/24/24 12:37	10/25/24 01:00	
4-Bromofluorobenzene (Surr)	99		80 - 120				10/24/24 12:37	10/25/24 01:00	
Dibromofluoromethane (Surr)	101		80 - 120				10/24/24 12:37	10/25/24 01:00	
Toluene-d8 (Surr)	100		80 - 120				10/24/24 12:37	10/25/24 01:00	
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fa
Percent Solids (SM22 2540G)	73.1		0.1	0.1	%			10/28/24 19:02	
Percent Moisture (SM22 2540G)	26.9		0.1	0.1	%			10/28/24 19:02	

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-48a-SO-49.9-20241018

Lab Sample ID: 580-145045-10 Date Collected: 10/18/24 12:15 **Matrix: Solid**

Date Received: 10/22/24 12:29 Percent Solids: 85.6

Method: SW846 8260D - Vola	_	•	•						
Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND		0.021	0.0053		₩	10/24/24 12:37		
1,1,1-Trichloroethane	ND		0.042	0.0048		₩	10/24/24 12:37	10/25/24 01:21	
1,1,2,2-Tetrachloroethane	ND		0.021	0.0080		₩	10/24/24 12:37	10/25/24 01:21	
1,1,2-Trichloroethane	ND		0.021	0.0078	mg/Kg	₩	10/24/24 12:37	10/25/24 01:21	
1,1-Dichloroethane	ND		0.042	0.0097	mg/Kg	☼	10/24/24 12:37	10/25/24 01:21	
I,1-Dichloroethene	ND		0.042	0.013	mg/Kg	☼	10/24/24 12:37	10/25/24 01:21	
I,1-Dichloropropene	ND		0.042	0.0056	mg/Kg	₩	10/24/24 12:37	10/25/24 01:21	
1,2,3-Trichlorobenzene	ND		0.084	0.042	mg/Kg	☼	10/24/24 12:37	10/25/24 01:21	
,2,3-Trichloropropane	ND		0.042	0.012	mg/Kg	₽	10/24/24 12:37	10/25/24 01:21	
I,2,4-Trichlorobenzene	ND		0.084	0.045	mg/Kg	₽	10/24/24 12:37	10/25/24 01:21	
1,2,4-Trimethylbenzene	ND		0.042	0.014	mg/Kg	₩	10/24/24 12:37	10/25/24 01:21	
,2-Dibromo-3-Chloropropane	ND		0.063	0.016	mg/Kg	₩	10/24/24 12:37	10/25/24 01:21	
I,2-Dibromoethane	ND		0.021	0.0040	mg/Kg	₩	10/24/24 12:37	10/25/24 01:21	
I,2-Dichlorobenzene	ND		0.042	0.0092	mg/Kg	☆	10/24/24 12:37	10/25/24 01:21	
,2-Dichloroethane	ND		0.021	0.0058	0 0	₩	10/24/24 12:37	10/25/24 01:21	
I,2-Dichloropropane	ND		0.021	0.0070		∴	10/24/24 12:37	10/25/24 01:21	
1,3,5-Trimethylbenzene	ND		0.042	0.0080	0 0	₩		10/25/24 01:21	
,3-Dichlorobenzene	ND		0.063		mg/Kg	₩.		10/25/24 01:21	
,3-Dichloropropane	ND		0.063	0.0059				10/25/24 01:21	
,4-Dichlorobenzene	ND		0.063		mg/Kg	~ ☆		10/25/24 01:21	
2,2-Dichloropropane	ND		0.042		mg/Kg	~ ☆		10/25/24 01:21	
2-Chlorotoluene	ND		0.042	0.0093				10/25/24 01:21	
-Chlorotoluene	ND ND		0.042		mg/Kg	₩		10/25/24 01:21	
	ND ND		0.042		mg/Kg			10/25/24 01:21	
l-Isopropyltoluene	ND		0.042	0.011		· · · · · ·		10/25/24 01:21	
Benzene					0 0	₩.			
Bromobenzene	ND		0.042	0.0044	0 0			10/25/24 01:21	
Bromochloromethane	ND		0.042	0.0065		*		10/25/24 01:21	
Bromodichloromethane	ND		0.042	0.0058		*		10/25/24 01:21	
Bromoform	ND		0.042	0.0047	0 0	*		10/25/24 01:21	
Bromomethane	ND		0.11		mg/Kg	. .		10/25/24 01:21	
Carbon tetrachloride	ND	_	0.021	0.0046		‡		10/25/24 01:21	
Chlorobenzene		В	0.042	0.0051	0 0	☼		10/25/24 01:21	
Chloroethane	ND		0.084		mg/Kg			10/25/24 01:21	
Chloroform	ND		0.021	0.0044		₩		10/25/24 01:21	
Chloromethane	ND		0.063		mg/Kg	₩	10/24/24 12:37	10/25/24 01:21	
cis-1,2-Dichloroethene	ND		0.063		mg/Kg	₩		10/25/24 01:21	
sis-1,3-Dichloropropene	ND		0.021	0.0042		₩	10/24/24 12:37	10/25/24 01:21	
Dibromochloromethane	ND		0.021	0.0052	mg/Kg	☼	10/24/24 12:37	10/25/24 01:21	
Dibromomethane	ND		0.042	0.0078	mg/Kg	₩	10/24/24 12:37	10/25/24 01:21	
Dichlorodifluoromethane	ND		0.26	0.048	mg/Kg	₩	10/24/24 12:37	10/25/24 01:21	
Ethylbenzene	ND		0.042	0.0096	mg/Kg	₽	10/24/24 12:37	10/25/24 01:21	
lexachlorobutadiene	ND		0.11	0.025	mg/Kg	₩	10/24/24 12:37	10/25/24 01:21	
sopropylbenzene	ND		0.042	0.0091	mg/Kg	₩	10/24/24 12:37	10/25/24 01:21	
Methyl tert-butyl ether	ND		0.042	0.0063		₽	10/24/24 12:37	10/25/24 01:21	
Methylene Chloride	ND		0.26		mg/Kg	☼	10/24/24 12:37	10/25/24 01:21	
n-Xylene & p-Xylene	ND		0.042	0.0075			10/24/24 12:37	10/25/24 01:21	
Naphthalene	ND		0.16		mg/Kg	.∵		10/25/24 01:21	
-Butylbenzene	ND		0.042		mg/Kg			10/25/24 01:21	
N-Propylbenzene	ND		0.042		mg/Kg			10/25/24 01:21	

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-48a-SO-49.9-20241018

Lab Sample ID: 580-145045-10 Date Collected: 10/18/24 12:15 **Matrix: Solid**

Percent Solids: 85.6 Date Received: 10/22/24 12:29

Method: SW846 8260D - Volat	_	•	•	(Conti	,	_	B	A	D'' -
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		0.042	0.0053	mg/Kg	☼	10/24/24 12:37	10/25/24 01:21	•
sec-Butylbenzene	ND		0.042	0.0091	mg/Kg	☼	10/24/24 12:37	10/25/24 01:21	1
Styrene	ND		0.042	0.013	mg/Kg	₩	10/24/24 12:37	10/25/24 01:21	1
t-Butylbenzene	ND		0.042	0.0081	mg/Kg	☆	10/24/24 12:37	10/25/24 01:21	1
Tetrachloroethene	ND		0.042	0.0056	mg/Kg	☆	10/24/24 12:37	10/25/24 01:21	1
Toluene	ND		0.063	0.014	mg/Kg	☼	10/24/24 12:37	10/25/24 01:21	1
trans-1,2-Dichloroethene	ND		0.063	0.015	mg/Kg	☆	10/24/24 12:37	10/25/24 01:21	1
trans-1,3-Dichloropropene	ND		0.042	0.0074	mg/Kg	☆	10/24/24 12:37	10/25/24 01:21	1
Trichloroethene	ND		0.042	0.011	mg/Kg	☆	10/24/24 12:37	10/25/24 01:21	1
Trichlorofluoromethane	ND		0.084	0.027	mg/Kg	☆	10/24/24 12:37	10/25/24 01:21	1
Vinyl chloride	ND		0.11	0.020	mg/Kg	≎	10/24/24 12:37	10/25/24 01:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		80 - 121				10/24/24 12:37	10/25/24 01:21	
4-Bromofluorobenzene (Surr)	99		80 - 120				10/24/24 12:37	10/25/24 01:21	1
Dibromofluoromethane (Surr)	100		80 - 120				10/24/24 12:37	10/25/24 01:21	1
Toluene-d8 (Surr)	102		80 - 120				10/24/24 12:37	10/25/24 01:21	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	85.6		0.1	0.1	%			10/28/24 19:02	
Percent Moisture (SM22 2540G)	14.4		0.1	0.1	%			10/28/24 19:02	1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-52-SO-35.7-20241018

Lab Sample ID: 580-145045-11 Date Collected: 10/18/24 13:50 **Matrix: Solid** Date Received: 10/22/24 12:29 Percent Solids: 74.7

Analyte	Result Qu	ualifier RL	MDI	Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND ND	0.025	0.0063		— -	10/24/24 12:37	10/25/24 01:42	
1,1,1-Trichloroethane	ND	0.051	0.0058	0 0			10/25/24 01:42	
1,1,2,2-Tetrachloroethane	ND	0.025	0.0096				10/25/24 01:42	
1,1,2-Trichloroethane	ND	0.025	0.0094				10/25/24 01:42	
1,1-Dichloroethane	ND	0.051		mg/Kg	☆		10/25/24 01:42	
1.1-Dichloroethene	ND	0.051		mg/Kg	☆		10/25/24 01:42	
1,1-Dichloropropene	ND	0.051	0.0067				10/25/24 01:42	
1,2,3-Trichlorobenzene	ND	0.10		mg/Kg	₩		10/25/24 01:42	
1,2,3-Trichloropropane	ND	0.051		mg/Kg	₩		10/25/24 01:42	
1,2,4-Trichlorobenzene	ND	0.031		mg/Kg	¥. ☆		10/25/24 01:42	
1,2,4-Trimethylbenzene	ND	0.051		mg/Kg	<u></u>		10/25/24 01:42	
1,2-Dibromo-3-Chloropropane	ND	0.076		mg/Kg	· · · · ·		10/25/24 01:42	
1,2-Dibromoethane	ND	0.025	0.0048		*		10/25/24 01:42	
1,2-Dichlorobenzene	ND	0.051		mg/Kg	*		10/25/24 01:42	
1,2-Dichloroethane	ND	0.025	0.0070		.		10/25/24 01:42	
1,2-Dichloropropane	ND	0.025	0.0084		₩		10/25/24 01:42	
1,3,5-Trimethylbenzene	ND	0.051	0.0096	0 0	☆		10/25/24 01:42	
1,3-Dichlorobenzene	ND	0.076	0.017				10/25/24 01:42	
1,3-Dichloropropane	ND	0.076	0.0071	mg/Kg	₩	10/24/24 12:37	10/25/24 01:42	
1,4-Dichlorobenzene	ND	0.076	0.014	0 0	☆	10/24/24 12:37	10/25/24 01:42	
2,2-Dichloropropane	ND	0.051		mg/Kg	₩	10/24/24 12:37	10/25/24 01:42	
2-Chlorotoluene	ND	0.051	0.011	mg/Kg	₩	10/24/24 12:37	10/25/24 01:42	
4-Chlorotoluene	ND	0.051	0.012	mg/Kg	₩	10/24/24 12:37	10/25/24 01:42	
4-Isopropyltoluene	0.037 J	0.051		mg/Kg	☆	10/24/24 12:37	10/25/24 01:42	
Benzene	ND	0.025	0.0048	mg/Kg	₩	10/24/24 12:37	10/25/24 01:42	
Bromobenzene	ND	0.051	0.0053	mg/Kg	☼	10/24/24 12:37	10/25/24 01:42	
Bromochloromethane	ND	0.051	0.0079	mg/Kg	₩	10/24/24 12:37	10/25/24 01:42	
3romodichloromethane	ND	0.051	0.0070	mg/Kg	☆	10/24/24 12:37	10/25/24 01:42	
3romoform	ND	0.051	0.0057	mg/Kg	☆	10/24/24 12:37	10/25/24 01:42	
3romomethane	ND	0.13	0.048	mg/Kg	☆	10/24/24 12:37	10/25/24 01:42	
Carbon tetrachloride	ND	0.025	0.0056	mg/Kg	₩	10/24/24 12:37	10/25/24 01:42	
Chlorobenzene	0.11 B	0.051	0.0061	mg/Kg	₩	10/24/24 12:37	10/25/24 01:42	
Chloroethane	ND	0.10	0.027	mg/Kg	₩	10/24/24 12:37	10/25/24 01:42	
Chloroform	ND	0.025	0.0053		≎	10/24/24 12:37	10/25/24 01:42	
Chloromethane	ND	0.076	0.013	mg/Kg	₩	10/24/24 12:37	10/25/24 01:42	
cis-1,2-Dichloroethene	0.17	0.076		mg/Kg	₩	10/24/24 12:37	10/25/24 01:42	
cis-1,3-Dichloropropene	ND	0.025	0.0051				10/25/24 01:42	
Dibromochloromethane	ND	0.025	0.0062		☼		10/25/24 01:42	
Dibromomethane	ND	0.051	0.0094		☆		10/25/24 01:42	
Dichlorodifluoromethane	ND	0.32		mg/Kg	∴		10/25/24 01:42	
Ethylbenzene	ND	0.051		mg/Kg	~ ☆		10/25/24 01:42	
Hexachlorobutadiene	ND	0.13		mg/Kg	₩		10/25/24 01:42	
sopropylbenzene	ND	0.051		mg/Kg	¥ \$		10/25/24 01:42	
Sopropyiberizene Methyl tert-butyl ether	ND ND	0.051	0.011				10/25/24 01:42	
Methylene Chloride	ND ND	0.051			ф ж		10/25/24 01:42	
				mg/Kg				
m-Xylene & p-Xylene	ND	0.051	0.0090		ψ.		10/25/24 01:42	
Naphthalene	ND	0.19		mg/Kg	*		10/25/24 01:42	
n-Butylbenzene N-Propylbenzene	ND ND	0.051 0.051		mg/Kg mg/Kg			10/25/24 01:42 10/25/24 01:42	

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-52-SO-35.7-20241018

Lab Sample ID: 580-145045-11 Date Collected: 10/18/24 13:50 **Matrix: Solid**

Date Received: 10/22/24 12:29 Percent Solids: 74.7

Method: SW846 8260D - Volat Analyte	_	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		0.051	0.0063	mg/Kg	— <u>-</u>	10/24/24 12:37	10/25/24 01:42	1
sec-Butylbenzene	ND		0.051		mg/Kg	₩	10/24/24 12:37	10/25/24 01:42	1
Styrene	ND		0.051		mg/Kg		10/24/24 12:37	10/25/24 01:42	1
t-Butylbenzene	ND		0.051			₩	10/24/24 12:37	10/25/24 01:42	1
Tetrachloroethene	ND		0.051	0.0067	mg/Kg	☼	10/24/24 12:37	10/25/24 01:42	1
Toluene	0.030	J	0.076	0.017	mg/Kg	₩	10/24/24 12:37	10/25/24 01:42	1
trans-1,2-Dichloroethene	ND		0.076	0.019	mg/Kg	☼	10/24/24 12:37	10/25/24 01:42	1
trans-1,3-Dichloropropene	ND		0.051	0.0089	mg/Kg	☆	10/24/24 12:37	10/25/24 01:42	1
Trichloroethene	ND		0.051	0.013	mg/Kg	₩	10/24/24 12:37	10/25/24 01:42	1
Trichlorofluoromethane	ND		0.10		mg/Kg	☆	10/24/24 12:37	10/25/24 01:42	1
Vinyl chloride	ND		0.13	0.024	mg/Kg	☼	10/24/24 12:37	10/25/24 01:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		80 - 121				10/24/24 12:37	10/25/24 01:42	
4-Bromofluorobenzene (Surr)	100		80 - 120				10/24/24 12:37	10/25/24 01:42	1
Dibromofluoromethane (Surr)	102		80 - 120				10/24/24 12:37	10/25/24 01:42	1
Toluene-d8 (Surr)	100		80 - 120				10/24/24 12:37	10/25/24 01:42	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	74.7		0.1	0.1	%			10/28/24 19:02	1
Percent Moisture (SM22 2540G)	25.3		0.1	0.1	%			10/28/24 19:02	1

Eurofins Seattle

12/13/2024 (Rev. 1)

QC Sample Results

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-475802/3-A

Matrix: Solid

Analysis Batch: 475804

Client Sample ID: Method Blank

Prep Type: Total/NA Prep Batch: 475802

Result Qualifier ND ND ND ND ND ND ND ND ND N	RL 0.020 0.040 0.020 0.020 0.040 0.040 0.080 0.040 0.080 0.040 0.060 0.020 0.040	0.0053 0.040 0.012 0.043 0.014 0.015	mg/Kg mg/Kg mg/Kg mg/Kg mg/Kg mg/Kg mg/Kg mg/Kg mg/Kg	<u>D</u>	10/24/24 12:37 10/24/24 12:37 10/24/24 12:37 10/24/24 12:37 10/24/24 12:37	10/24/24 21:14 10/24/24 21:14 10/24/24 21:14 10/24/24 21:14 10/24/24 21:14 10/24/24 21:14 10/24/24 21:14	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
ND ND ND ND ND ND ND ND ND ND ND ND ND N	0.040 0.020 0.020 0.040 0.040 0.080 0.040 0.080 0.040 0.060	0.0046 0.0076 0.0074 0.0092 0.012 0.0053 0.040 0.012 0.043 0.014 0.015	mg/Kg mg/Kg mg/Kg mg/Kg mg/Kg mg/Kg mg/Kg mg/Kg		10/24/24 12:37 10/24/24 12:37 10/24/24 12:37 10/24/24 12:37 10/24/24 12:37 10/24/24 12:37	10/24/24 21:14 10/24/24 21:14 10/24/24 21:14 10/24/24 21:14 10/24/24 21:14 10/24/24 21:14 10/24/24 21:14	1 1 1
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ND ND ND ND ND ND	0.080 0.040 0.060 0.020	0.043 0.014 0.015	mg/Kg		10/24/24 12.37		1
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	0.020	0.0057				10/24/24 21:14	1
ND	0.020	0.0066				10/24/24 21:14	 1
ND	0.020	0.0006				10/24/24 21:14	1
ND	0.040		mg/Kg			10/24/24 21:14	1
ND	0.060	0.0056				10/24/24 21:14	
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Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-475802/3-A

Matrix: Solid

Analysis Batch: 475804

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 475802

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND		0.040	0.015	mg/Kg		10/24/24 12:37	10/24/24 21:14	1
o-Xylene	ND		0.040	0.0050	mg/Kg		10/24/24 12:37	10/24/24 21:14	1
sec-Butylbenzene	ND		0.040	0.0086	mg/Kg		10/24/24 12:37	10/24/24 21:14	1
Styrene	ND		0.040	0.013	mg/Kg		10/24/24 12:37	10/24/24 21:14	1
t-Butylbenzene	ND		0.040	0.0077	mg/Kg		10/24/24 12:37	10/24/24 21:14	1
Tetrachloroethene	ND		0.040	0.0053	mg/Kg		10/24/24 12:37	10/24/24 21:14	1
Toluene	ND		0.060	0.014	mg/Kg		10/24/24 12:37	10/24/24 21:14	
trans-1,2-Dichloroethene	ND		0.060	0.015	mg/Kg		10/24/24 12:37	10/24/24 21:14	•
trans-1,3-Dichloropropene	ND		0.040	0.0070	mg/Kg		10/24/24 12:37	10/24/24 21:14	1
Trichloroethene	ND		0.040	0.010	mg/Kg		10/24/24 12:37	10/24/24 21:14	1
Trichlorofluoromethane	ND		0.080	0.026	mg/Kg		10/24/24 12:37	10/24/24 21:14	1
Vinyl chloride	ND		0.10	0.019	mg/Kg		10/24/24 12:37	10/24/24 21:14	1

MB MB

Surrogate	%Recovery 0	Qualifier Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	114	80 - 12	1 10/24/24 12:37	10/24/24 21:14	1
4-Bromofluorobenzene (Surr)	99	80 - 12	0 10/24/24 12:37	10/24/24 21:14	1
Dibromofluoromethane (Surr)	111	80 - 12	0 10/24/24 12:37	10/24/24 21:14	1
Toluene-d8 (Surr)	102	80 - 12	0 10/24/24 12:37	10/24/24 21:14	1

Lab Sample ID: LCS 580-475802/1-A

Matrix: Solid

Analysis Batch: 475804

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 475802

	Spike	LCS	LCS				%Rec
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1,1,2-Tetrachloroethane	0.800	0.819		mg/Kg		102	79 - 128
1,1,1-Trichloroethane	0.800	0.838		mg/Kg		105	78 ₋ 135
1,1,2,2-Tetrachloroethane	0.800	0.816		mg/Kg		102	77 - 122
1,1,2-Trichloroethane	0.800	0.830		mg/Kg		104	80 - 123
1,1-Dichloroethane	0.800	0.825		mg/Kg		103	78 - 126
1,1-Dichloroethene	0.800	0.880		mg/Kg		110	73 - 134
1,1-Dichloropropene	0.800	0.805		mg/Kg		101	76 - 140
1,2,3-Trichlorobenzene	0.800	0.730		mg/Kg		91	58 - 146
1,2,3-Trichloropropane	0.800	0.888		mg/Kg		111	77 - 127
1,2,4-Trichlorobenzene	0.800	0.740		mg/Kg		92	74 - 131
1,2,4-Trimethylbenzene	0.800	0.789		mg/Kg		99	73 - 138
1,2-Dibromo-3-Chloropropane	0.800	0.810		mg/Kg		101	64 - 129
1,2-Dibromoethane	0.800	0.847		mg/Kg		106	77 - 123
1,2-Dichlorobenzene	0.800	0.798		mg/Kg		100	78 - 126
1,2-Dichloroethane	0.800	0.812		mg/Kg		102	76 - 124
1,2-Dichloropropane	0.800	0.838		mg/Kg		105	73 - 130
1,3,5-Trimethylbenzene	0.800	0.783		mg/Kg		98	72 - 134
1,3-Dichlorobenzene	0.800	0.758		mg/Kg		95	78 - 132
1,3-Dichloropropane	0.800	0.844		mg/Kg		105	80 - 120
1,4-Dichlorobenzene	0.800	0.702		mg/Kg		88	77 - 123
2,2-Dichloropropane	0.800	0.697		mg/Kg		87	75 - 134
2-Chlorotoluene	0.800	0.777		mg/Kg		97	77 - 134
4-Chlorotoluene	0.800	0.796		mg/Kg		99	71 - 137
4-Isopropyltoluene	0.800	0.761		mg/Kg		95	71 - 142

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12/13/2024 (Rev. 1)

QC Sample Results

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-475802/1-A

Matrix: Solid

Bromodichloromethane

Bromoform

Bromomethane

Chlorobenzene

Chloromethane

Dibromomethane

Ethylbenzene

Naphthalene

o-Xylene

cis-1,2-Dichloroethene

cis-1,3-Dichloropropene

Dibromochloromethane

Dichlorodifluoromethane

Hexachlorobutadiene

Methyl tert-butyl ether

Methylene Chloride

Toluene-d8 (Surr)

m-Xylene & p-Xylene

Isopropylbenzene

Chloroethane

Chloroform

Carbon tetrachloride

Analysis Batch: 475804

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Pre

p	Batch:	475802
C		
ts		

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	0.800	0.816		mg/Kg		102	79 - 135	
Bromobenzene	0.800	0.804		mg/Kg		101	78 - 126	
Bromochloromethane	0.800	0.814		ma/Ka		102	76 - 131	

0.841

0.667

0.754

0.800

0.800

0.800

mg/Kg 105 78 - 125 71 - 130 mg/Kg 83 mg/Kg 94 55 - 150 mg/Kg 101 76 - 140

0.800 0.809 0.800 0.791 mg/Kg 99 80 - 125 0.800 0.898 mg/Kg 112 26 - 1500.800 105 74 - 133 0.837 mg/Kg

0.800 0.756 95 mg/Kg 52 - 142 0.800 103 0.822 80 - 125 mg/Kg 0.800 0.783 98 80 - 122 mg/Kg 0.800 75 - 125 0.831 mg/Kg 104 0.800 0.831 mg/Kg 104 72 - 130

0.800 0.814 102 mg/Kg 33 - 1500.800 0.798 100 80 - 135 mg/Kg 0.800 0.701 88 mg/Kg 65 - 145 0.800 0.891 mg/Kg 111 80 - 131 0.800 0.858 107 71 - 126 mg/Kg 0.800 0.663 mg/Kg 83 56 - 140 0.800 0.809 mg/Kg 101 80 - 132

0.800 0.784 mg/Kg 98 56 - 145 n-Butylbenzene 0.800 0.739 92 69 - 143 mg/Kg 0.800 mg/Kg 101 N-Propylbenzene 0.806 78 - 133 0.800 0.825 103 80 - 132 mg/Kg 0.800 99 71 - 143 sec-Butylbenzene 0.789 mg/Kg

Styrene 0.800 0.840 mg/Kg 105 79 - 129 t-Butylbenzene 0.800 0.775 mg/Kg 97 72 - 144 75 - 141 Tetrachloroethene 0.800 0.792 mg/Kg 99 Toluene 0.800 0.785 98 75 - 125 mg/Kg trans-1,2-Dichloroethene 0.800 0.791 mg/Kg 99 77 - 134

trans-1,3-Dichloropropene 0.800 0.842 mg/Kg 105 80 - 121 Trichloroethene 0.800 0.772 mg/Kg 96 80 - 134 Trichlorofluoromethane 0.800 0.861 108 mg/Kg 71 - 150

Vinyl chloride 0.800 0.850 mg/Kg 106 62 - 144

80 - 120

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	104		80 - 121
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120

LCS LCS

100

QC Sample Results

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-475802/2-A

Matrix: Solid

Analysis Batch: 475804

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analysis Batch: 4/5804					Prep Ba	itcn: 4	75802		
	Spike	LCSD LC	SD			%Rec		RPD	
Analyte	Added	Result Qu	alifier Unit	D	%Rec	Limits	RPD	Limit	ı
1,1,1,2-Tetrachloroethane	0.800	0.823	mg/Kg		103	79 - 128	1	20	
1,1,1-Trichloroethane	0.800	0.865	mg/Kg		108	78 - 135	3	20	
1,1,2,2-Tetrachloroethane	0.800	0.809	mg/Kg		101	77 - 122	1	20	
1,1,2-Trichloroethane	0.800	0.829	mg/Kg		104	80 - 123	0	20	
1,1-Dichloroethane	0.800	0.858	mg/Kg		107	78 - 126	4	20	
1,1-Dichloroethene	0.800	0.916	mg/Kg		115	73 - 134	4	25	
1,1-Dichloropropene	0.800	0.838	mg/Kg		105	76 - 140	4	20	
1,2,3-Trichlorobenzene	0.800	0.740	mg/Kg		93	58 - 146	1	28	
1,2,3-Trichloropropane	0.800	0.865	mg/Kg		108	77 - 127	3	20	
1,2,4-Trichlorobenzene	0.800	0.743	mg/Kg		93	74 - 131	0	26	
1,2,4-Trimethylbenzene	0.800	0.780	mg/Kg		97	73 - 138	1	22	
1,2-Dibromo-3-Chloropropane	0.800	0.811	mg/Kg		101	64 - 129	0	40	
1,2-Dibromoethane	0.800	0.848	mg/Kg		106	77 - 123	0	20	

1,1,1,2-Tetrachloroethane	0.800	0.823	mg/Kg	103	79 - 128	1	20
1,1,1-Trichloroethane	0.800	0.865	mg/Kg	108	78 - 135	3	20
1,1,2,2-Tetrachloroethane	0.800	0.809	mg/Kg	101	77 - 122	1	20
1,1,2-Trichloroethane	0.800	0.829	mg/Kg	104	80 - 123	0	20
1,1-Dichloroethane	0.800	0.858	mg/Kg	107	78 - 126	4	20
1,1-Dichloroethene	0.800	0.916	mg/Kg	115	73 - 134	4	25
1,1-Dichloropropene	0.800	0.838	mg/Kg	105	76 - 140	4	20
1,2,3-Trichlorobenzene	0.800	0.740	mg/Kg	93	58 - 146	1	28
1,2,3-Trichloropropane	0.800	0.865	mg/Kg	108	77 - 127	3	20
1,2,4-Trichlorobenzene	0.800	0.743	mg/Kg	93	74 - 131	0	26
1,2,4-Trimethylbenzene	0.800	0.780	mg/Kg	97	73 - 138	1	22
1,2-Dibromo-3-Chloropropane	0.800	0.811	mg/Kg	101	64 - 129	0	40
1,2-Dibromoethane	0.800	0.848	mg/Kg	106	77 - 123	0	20
1,2-Dichlorobenzene	0.800	0.804	mg/Kg	100	77 - 125 78 - 126	1	20
1,2-Dichloroethane	0.800	0.863	mg/Kg	108	76 - 124	6	20
1,2-Dichloropropane	0.800	0.843	mg/Kg	105	73 - 130	1	20
1,3,5-Trimethylbenzene	0.800	0.643	mg/Kg	99	73 - 130 72 - 134	1	24
1,3-Dichlorobenzene	0.800	0.794		99 98	72 - 134 78 - 132	3	20
	0.800		mg/Kg		78 - 132 80 - 120		
1,3-Dichloropropane		0.843	mg/Kg	105		0	20
1,4-Dichlorobenzene	0.800	0.717	mg/Kg	90	77 - 123	2	20
2,2-Dichloropropane	0.800	0.741	mg/Kg	93	75 - 134	6	20
2-Chlorotoluene	0.800	0.788	mg/Kg	98	77 - 134	1	21
4-Chlorotoluene	0.800	0.812	mg/Kg	102	71 - 137	2	21
4-Isopropyltoluene	0.800	0.783	mg/Kg	98	71 - 142	3	29
Benzene	0.800	0.841	mg/Kg	105	79 - 135	3	20
Bromobenzene	0.800	0.802	mg/Kg	100	78 - 126	0	20
Bromochloromethane	0.800	0.835	mg/Kg	104	76 - 131	2	20
Bromodichloromethane	0.800	0.870	mg/Kg	109	78 - 125	3	20
Bromoform	0.800	0.647	mg/Kg	81	71 - 130	3	20
Bromomethane	0.800	0.825	mg/Kg	103	55 - 150	9	26
Carbon tetrachloride	0.800	0.844	mg/Kg	106	76 - 140	4	20
Chlorobenzene	0.800	0.791	mg/Kg	99	80 - 125	0	20
Chloroethane	0.800	0.900	mg/Kg	113	26 - 150	0	40
Chloroform	0.800	0.877	mg/Kg	110	74 - 133	5	20
Chloromethane	0.800	0.791	mg/Kg	99	52 - 142	5	40
cis-1,2-Dichloroethene	0.800	0.862	mg/Kg	108	80 - 125	5	20
cis-1,3-Dichloropropene	0.800	0.789	mg/Kg	99	80 - 122	1	20
Dibromochloromethane	0.800	0.857	mg/Kg	107	75 - 125	3	20
Dibromomethane	0.800	0.859	mg/Kg	107	72 - 130	3	40
Dichlorodifluoromethane	0.800	0.832	mg/Kg	104	33 - 150	2	31
Ethylbenzene	0.800	0.804	mg/Kg	100	80 - 135	1	20
Hexachlorobutadiene	0.800	0.724	mg/Kg	90	65 - 145	3	36
Isopropylbenzene	0.800	0.913	mg/Kg	114	80 - 131	2	20
Methyl tert-butyl ether	0.800	0.861	mg/Kg	108	71 - 126	0	20
Methylene Chloride	0.800	0.700	mg/Kg	87	56 - 140	5	20
m-Xylene & p-Xylene	0.800	0.700	mg/Kg	102	80 - 132	1	20
	0.800	0.820		95	56 - 145		20 25
Naphthalene			mg/Kg			4	
n-Butylbenzene	0.800	0.739	mg/Kg	92	69 - 143	0	31

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-475802/2-A

Matrix: Solid

Analysis Batch: 475804

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 475802

	Бріке	LC2D	LC2D				%Rec		KPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
N-Propylbenzene	0.800	0.811		mg/Kg		101	78 - 133	1	24
o-Xylene	0.800	0.854		mg/Kg		107	80 - 132	3	20
sec-Butylbenzene	0.800	0.796		mg/Kg		100	71 - 143	1	29
Styrene	0.800	0.857		mg/Kg		107	79 - 129	2	20
t-Butylbenzene	0.800	0.777		mg/Kg		97	72 - 144	0	27
Tetrachloroethene	0.800	0.811		mg/Kg		101	75 - 141	2	20
Toluene	0.800	0.798		mg/Kg		100	75 - 125	2	20
trans-1,2-Dichloroethene	0.800	0.825		mg/Kg		103	77 - 134	4	20
trans-1,3-Dichloropropene	0.800	0.862		mg/Kg		108	80 - 121	2	20
Trichloroethene	0.800	0.774		mg/Kg		97	80 - 134	0	20
Trichlorofluoromethane	0.800	0.922		mg/Kg		115	71 - 150	7	30
Vinyl chloride	0.800	0.874		mg/Kg		109	62 - 144	3	20

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	107		80 - 121
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	105		80 - 120
Toluene-d8 (Surr)	100		80 - 120

Lab Sample ID: MB 580-476432/5-A

Matrix: Solid

Analysis Batch: 476436

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 476432

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.020	0.0050	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,1,1-Trichloroethane	ND		0.040	0.0046	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,1,2,2-Tetrachloroethane	ND		0.020	0.0076	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,1,2-Trichloroethane	ND		0.020	0.0074	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,1-Dichloroethane	ND		0.040	0.0092	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,1-Dichloroethene	ND		0.040	0.012	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,1-Dichloropropene	ND		0.040	0.0053	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,2,3-Trichlorobenzene	ND		0.080	0.040	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,2,3-Trichloropropane	ND		0.040	0.012	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,2,4-Trichlorobenzene	ND		0.080	0.043	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,2,4-Trimethylbenzene	ND		0.040	0.014	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,2-Dibromo-3-Chloropropane	ND		0.060	0.015	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,2-Dibromoethane	ND		0.020	0.0038	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,2-Dichlorobenzene	ND		0.040	0.0087	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,2-Dichloroethane	ND		0.020	0.0055	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,2-Dichloropropane	ND		0.020	0.0066	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,3,5-Trimethylbenzene	ND		0.040	0.0076	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,3-Dichlorobenzene	ND		0.060	0.013	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,3-Dichloropropane	ND		0.060	0.0056	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
1,4-Dichlorobenzene	ND		0.060	0.011	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
2,2-Dichloropropane	ND		0.040	0.012	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
2-Chlorotoluene	ND		0.040	0.0088	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
4-Chlorotoluene	ND		0.040	0.0098	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
4-Isopropyltoluene	ND		0.040	0.010	mg/Kg		10/31/24 08:53	10/31/24 11:34	1

Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-476432/5-A

Matrix: Solid

Client: ERM-West

Analysis Batch: 476436

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 476432

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020	0.0038	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Bromobenzene	ND		0.040	0.0042	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Bromochloromethane	ND		0.040	0.0062	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Bromodichloromethane	ND		0.040	0.0055	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Bromoform	ND		0.040	0.0045	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Carbon tetrachloride	ND		0.020	0.0044	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Chloroform	ND		0.020	0.0042	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Chloromethane	ND		0.060	0.010	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
cis-1,2-Dichloroethene	ND		0.060	0.013	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
cis-1,3-Dichloropropene	ND		0.020	0.0040	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Dibromochloromethane	ND		0.020	0.0049	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Dibromomethane	ND		0.040	0.0074	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Ethylbenzene	ND		0.040	0.0091	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Hexachlorobutadiene	ND		0.10	0.024	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Isopropylbenzene	ND		0.040	0.0086	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Methyl tert-butyl ether	ND		0.040	0.0060	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Methylene Chloride	ND		0.25	0.026	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
m-Xylene & p-Xylene	ND		0.040	0.0071	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Naphthalene	ND		0.15	0.039	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
n-Butylbenzene	ND		0.040	0.019	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
N-Propylbenzene	ND		0.040	0.015	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
o-Xylene	ND		0.040	0.0050	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
sec-Butylbenzene	ND		0.040	0.0086	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Styrene	ND		0.040	0.013	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
t-Butylbenzene	ND		0.040	0.0077	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Tetrachloroethene	ND		0.040	0.0053	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Toluene	ND		0.060	0.014	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
trans-1,2-Dichloroethene	ND		0.060	0.015	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
trans-1,3-Dichloropropene	ND		0.040	0.0070	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Trichloroethene	ND		0.040	0.010	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Trichlorofluoromethane	ND		0.080	0.026	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
Vinyl chloride	ND		0.10	0.019	mg/Kg		10/31/24 08:53	10/31/24 11:34	1
	140	140							

IVID	IVID
	_

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99	80 - 121	10/31/24 08:53	10/31/24 11:34	1
4-Bromofluorobenzene (Surr)	101	80 - 120	10/31/24 08:53	10/31/24 11:34	1
Dibromofluoromethane (Surr)	103	80 - 120	10/31/24 08:53	10/31/24 11:34	1
Toluene-d8 (Surr)	105	80 - 120	10/31/24 08:53	10/31/24 11:34	1

Lab Sample ID: LCS 580-476432/1-A

Matrix: Solid

Analysis Batch: 476436

Client Sample	ID: La	b Control	Sample
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Prep Type: Total/NA Prep Batch: 476432

, , , , , , , , , , , , , , , , , , , ,	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1,1,2-Tetrachloroethane	0.800	0.912		mg/Kg		114	79 - 128	
1,1,1-Trichloroethane	0.800	0.774		mg/Kg		97	78 - 135	
1,1,2,2-Tetrachloroethane	0.800	0.925		mg/Kg		116	77 - 122	
1,1,2-Trichloroethane	0.800	0.916		mg/Kg		114	80 - 123	

QC Sample Results

Spike

Client: ERM-West Job ID: 580-145045-1

LCS LCS

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-476432/1-A

Matrix: Solid

Analysis Batch: 476436

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

	tch: 476432
%Rec	

Analyte	Added	Result Q	ualifier Unit	D %Rec	Limits	
1,1-Dichloroethane	0.800	0.799	mg/Kg	100	78 - 126	
1,1-Dichloroethene	0.800	0.861	mg/Kg	108	73 - 134	
1,1-Dichloropropene	0.800	0.813	mg/Kg	102	76 - 140	
1,2,3-Trichlorobenzene	0.800	0.895	mg/Kg	112	58 - 146	
1,2,3-Trichloropropane	0.800	0.874	mg/Kg	109	77 - 127	
1,2,4-Trichlorobenzene	0.800	0.908	mg/Kg	113	74 - 131	
1,2,4-Trimethylbenzene	0.800	0.888	mg/Kg	111	73 - 138	
1,2-Dibromo-3-Chloropropane	0.800	0.870	mg/Kg	109	64 - 129	
1,2-Dibromoethane	0.800	0.896	mg/Kg	112	77 - 123	
1,2-Dichlorobenzene	0.800	0.913	mg/Kg	114	78 - 126	
1,2-Dichloroethane	0.800	0.766	mg/Kg	96	76 - 124	
1,2-Dichloropropane	0.800	0.817	mg/Kg	102	73 - 130	
1,3,5-Trimethylbenzene	0.800	0.882	mg/Kg	110	72 - 134	
1.2 Diablerahanzena	0.000	0.046	m = /1/ =	100	70 120	

1,1-Dichloroethene	0.800	0.861	mg/Kg	108	73 - 134	
1,1-Dichloropropene	0.800	0.813	mg/Kg	102	76 - 140	
1,2,3-Trichlorobenzene	0.800	0.895	mg/Kg	112	58 - 146	
1,2,3-Trichloropropane	0.800	0.874	mg/Kg	109	77 - 127	
1,2,4-Trichlorobenzene	0.800	0.908	mg/Kg	113	74 - 131	
1,2,4-Trimethylbenzene	0.800	0.888	mg/Kg	111	73 - 138	
1,2-Dibromo-3-Chloropropane	0.800	0.870	mg/Kg	109	64 - 129	
1,2-Dibromoethane	0.800	0.896	mg/Kg	112	77 - 123	
1,2-Dichlorobenzene	0.800	0.913	mg/Kg	114	78 - 126	
1,2-Dichloroethane	0.800	0.766	mg/Kg	96	76 - 124	
1,2-Dichloropropane	0.800	0.817	mg/Kg	102	73 - 130	
1,3,5-Trimethylbenzene	0.800	0.882	mg/Kg	110	72 - 134	
1,3-Dichlorobenzene	0.800	0.816	mg/Kg	102	78 ₋ 132	
1,3-Dichloropropane	0.800	0.844	mg/Kg	105	80 - 120	
1,4-Dichlorobenzene	0.800	0.893	mg/Kg	112	77 - 123	
2,2-Dichloropropane	0.800	0.777	mg/Kg	97	75 - 134	
2-Chlorotoluene	0.800	0.849	mg/Kg	106	77 - 134	
4-Chlorotoluene	0.800	0.822	mg/Kg	103	71 - 137	
4-Isopropyltoluene	0.800	0.921	mg/Kg	115	71 - 142	
Benzene	0.800	0.864	mg/Kg	108	79 ₋ 135	
Bromobenzene	0.800	0.881	mg/Kg	110	78 - 126	
Bromochloromethane	0.800	0.855	mg/Kg	107	76 - 131	
Bromodichloromethane	0.800	0.850	mg/Kg	106	78 - 125	
Bromoform	0.800	0.912	mg/Kg	114	71 - 130	
Carbon tetrachloride	0.800	0.832	mg/Kg	104	76 - 140	
Chloroform	0.800	0.778	mg/Kg	97	74 - 133	
Chloromethane	0.800	0.792	mg/Kg	99	52 - 142	
cis-1,2-Dichloroethene	0.800	0.815	mg/Kg	102	80 - 125	
cis-1,3-Dichloropropene	0.800	0.847	mg/Kg	106	80 - 122	
Dibromochloromethane	0.800	0.931	mg/Kg	116	75 ₋ 125	
Dibromomethane	0.800	0.842	mg/Kg	105	72 - 130	
Ethylbenzene	0.800	0.840	mg/Kg	105	80 - 135	
Hexachlorobutadiene	0.800	0.942	mg/Kg	118	65 - 145	
Isopropylbenzene	0.800	0.995	mg/Kg	124	80 - 131	
Methyl tert-butyl ether	0.800	0.831	mg/Kg	104	71 - 126	
Methylene Chloride	0.800	0.859	mg/Kg	107	56 - 140	
m-Xylene & p-Xylene	0.800	0.845	mg/Kg	106	80 - 132	
Naphthalene	0.800	0.920	mg/Kg	115	56 - 145	
n-Butylbenzene	0.800	0.860	mg/Kg	107	69 - 143	
N-Propylbenzene	0.800	0.859	mg/Kg	107	78 ₋ 133	
o-Xylene	0.800	0.896	mg/Kg	112	80 - 132	
sec-Butylbenzene	0.800	0.888	mg/Kg	111	71 - 143	
Styrene	0.800	0.919	mg/Kg	115	79 - 129	
t-Butylbenzene	0.800	0.887	mg/Kg	111	72 - 144	
Tetrachloroethene	0.800	0.833	mg/Kg	104	75 - 141	
Toluene	0.800	0.917	mg/Kg	115	75 - 125	
trans-1,2-Dichloroethene	0.800	0.797	mg/Kg	100	77 - 134	
trans-1,3-Dichloropropene	0.800	0.925	mg/Kg			

Client: ERM-West

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-476432/1-A

Lab Sample ID: LCSD 580-476432/2-A

Matrix: Solid

Analysis Batch: 476436

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Job ID: 580-145045-1

Prep Batch: 476432

	Spike	LCS	LCS			%Rec	
Analyte	Added	Result	Qualifier	Unit I	D %Rec	Limits	
Trichloroethene	0.800	0.811		mg/Kg	101	80 - 134	
Trichlorofluoromethane	0.800	0.784		mg/Kg	98	71 - 150	
Vinyl chloride	0.800	0.895		mg/Kg	112	62 - 144	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		80 - 121
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	105		80 - 120

Client Sample ID: Lab Control Sample Dup

Matrix: Solid Prep Type: Total/NA **Analysis Batch: 476436 Prep Batch: 476432** Spike LCSD LCSD %Rec **RPD** Analyte Added Result Qualifier Unit %Rec Limits RPD Limit 1,1,1,2-Tetrachloroethane 0.800 0.940 mg/Kg 118 79 - 128 20 0.800 78 - 135 20 1,1,1-Trichloroethane 0.782 mg/Kg 98 0.800 1.1.2.2-Tetrachloroethane 0.933 117 77 - 12220 mg/Kg 1,1,2-Trichloroethane 0.800 0.917 mg/Kg 115 80 - 123 20 1,1-Dichloroethane 0.800 0.810 101 78 - 126 20 mg/Kg 1,1-Dichloroethene 0.800 0.873 mg/Kg 109 73 - 134 25 0.800 0.833 104 76 - 140 20 1,1-Dichloropropene mg/Kg 1,2,3-Trichlorobenzene 0.800 0.971 mg/Kg 121 58 - 146 28 1,2,3-Trichloropropane 0.800 0.867 108 77 - 127 20 mg/Kg 26 1,2,4-Trichlorobenzene 0.800 0.945 mg/Kg 118 74 - 131 1,2,4-Trimethylbenzene 0.800 0.877 mg/Kg 110 73 - 138 22 0.800 40 1,2-Dibromo-3-Chloropropane 0.881 mg/Kg 110 64 - 1290.800 20 1,2-Dibromoethane 0.890 mg/Kg 111 77 - 123 1.2-Dichlorobenzene 0.800 0.907 mg/Kg 113 78 - 126 20 1,2-Dichloroethane 0.800 0.774 mg/Kg 97 76 - 124 20 20 1,2-Dichloropropane 0.800 0.802 100 73 - 130 2 mg/Kg 0.800 0.869 109 72 - 134 24 1,3,5-Trimethylbenzene mg/Kg 102 20 1,3-Dichlorobenzene 0.800 0.818 mg/Kg 78 - 132 n 1,3-Dichloropropane 0.800 0.842 105 80 - 120 20 mg/Kg 1,4-Dichlorobenzene 0.800 0.891 mg/Kg 111 77 - 123 20 O 0.800 2,2-Dichloropropane 0.780 mg/Kg 97 75 - 134 20 2-Chlorotoluene 0.800 0.862 mg/Kg 108 77 - 13421 0.800 71 - 137 4-Chlorotoluene 0.822 mg/Kg 103 21 4-Isopropyltoluene 0.800 0.922 mg/Kg 115 71 - 142 29 Benzene 0.800 0.877 mg/Kg 110 79 - 135 20 Bromobenzene 0.800 0.864 108 78 - 126 20 mg/Kg 106 20 Bromochloromethane 0.800 0.845 76 - 131 mg/Kg Bromodichloromethane 0.800 107 78 - 125 20 0.857 mg/Kg Bromoform 0.800 0.892 112 71 - 1302 20 mg/Kg Carbon tetrachloride 0.800 0.843 mg/Kg 105 76 - 140 20 0.800 74 - 133 Chloroform 0.792 99 2 20 mg/Kg Chloromethane 0.800 0.794 mg/Kg 99 52 - 142 40 cis-1,2-Dichloroethene 0.800 0.827 mg/Kg 103 80 - 12520

Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-476432/2-A

Matrix: Solid

Client: ERM-West

Analysis Batch: 476436

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA
Prep Batch: 476432
%Rec RPD
D %Rec Limits RPD Limit

Analysis Baton: 47 0400	Sniko	LCCD	LCSD				%Rec	1011. 41	RPD
Analyte	Spike Added	_	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
cis-1,3-Dichloropropene	0.800	0.844	- Cuamor	mg/Kg	_ <u>-</u>	105	80 - 122	0	20
Dibromochloromethane	0.800	0.942		mg/Kg		118	75 - 125	1	20
Dibromomethane	0.800	0.850		mg/Kg		106	72 - 130	1	40
Ethylbenzene	0.800	0.847		mg/Kg		106	80 - 135	1	20
Hexachlorobutadiene	0.800	0.961		mg/Kg		120	65 - 145	2	36
Isopropylbenzene	0.800	0.995		mg/Kg		124	80 - 131	0	20
Methyl tert-butyl ether	0.800	0.848		mg/Kg		106	71 - 126	2	20
Methylene Chloride	0.800	0.874		mg/Kg		109	56 - 140	2	20
m-Xylene & p-Xylene	0.800	0.851		mg/Kg		106	80 - 132	1	20
Naphthalene	0.800	0.983		mg/Kg		123	56 - 145	7	25
n-Butylbenzene	0.800	0.868		mg/Kg		109	69 - 143	1	31
N-Propylbenzene	0.800	0.867		mg/Kg		108	78 - 133	1	24
o-Xylene	0.800	0.889		mg/Kg		111	80 - 132	1	20
sec-Butylbenzene	0.800	0.895		mg/Kg		112	71 - 143	1	29
Styrene	0.800	0.939		mg/Kg		117	79 - 129	2	20
t-Butylbenzene	0.800	0.891		mg/Kg		111	72 - 144	1	27
Tetrachloroethene	0.800	0.828		mg/Kg		104	75 - 141	1	20
Toluene	0.800	0.903		mg/Kg		113	75 - 125	2	20
trans-1,2-Dichloroethene	0.800	0.799		mg/Kg		100	77 - 134	0	20
trans-1,3-Dichloropropene	0.800	0.936		mg/Kg		117	80 - 121	1	20
Trichloroethene	0.800	0.801		mg/Kg		100	80 - 134	1	20
Trichlorofluoromethane	0.800	0.800		mg/Kg		100	71 - 150	2	30
Vinyl chloride	0.800	0.894		mg/Kg		112	62 - 144	0	20

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		80 - 121
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	102		80 - 120
Toluene-d8 (Surr)	103		80 - 120

Lab Sample ID: MB 580-476539/5-A

Matrix: Solid

Analysis Batch: 476544

Client Sample ID: Method Blank Prep Type: Total/NA Prep Batch: 476539

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	ND		0.040	0.014	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
1,2-Dichlorobenzene	ND		0.040	0.0087	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
1,3-Dichlorobenzene	ND		0.060	0.013	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
1,4-Dichlorobenzene	ND		0.060	0.011	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
4-Isopropyltoluene	ND		0.040	0.010	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
Chlorobenzene	ND		0.040	0.0048	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
Chloroform	ND		0.020	0.0042	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
Ethylbenzene	ND		0.040	0.0091	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
Naphthalene	ND		0.15	0.039	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
o-Xylene	ND		0.040	0.0050	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
Tetrachloroethene	ND		0.040	0.0053	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
Trichloroethene	ND		0.040	0.010	mg/Kg		11/01/24 07:30	11/01/24 10:47	1

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Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-476539/5-A

Matrix: Solid

Client: ERM-West

Analysis Batch: 476544

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 476539

	MB MB				
Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98	80 - 121	11/01/24 07:30	11/01/24 10:47	1
4-Bromofluorobenzene (Surr)	100	80 - 120	11/01/24 07:30	11/01/24 10:47	1
Dibromofluoromethane (Surr)	103	80 - 120	11/01/24 07:30	11/01/24 10:47	1
Toluene-d8 (Surr)	107	80 - 120	11/01/24 07:30	11/01/24 10:47	1

Lab Sample ID: LCS 580-476539/1-A

Matrix: Solid

Analysis Batch: 476544

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 476539

	Spike	LCS I	LCS				%Rec	
Analyte	Added	Result (Qualifier	Unit	D	%Rec	Limits	
1,2,4-Trimethylbenzene	0.800	0.848		mg/Kg		106	73 - 138	
1,2-Dichlorobenzene	0.800	0.875		mg/Kg		109	78 - 126	
1,3-Dichlorobenzene	0.800	0.786		mg/Kg		98	78 - 132	
1,4-Dichlorobenzene	0.800	0.863		mg/Kg		108	77 - 123	
4-Isopropyltoluene	0.800	0.873		mg/Kg		109	71 - 142	
Chlorobenzene	0.800	0.880		mg/Kg		110	80 - 125	
Chloroform	0.800	0.743		mg/Kg		93	74 - 133	
Ethylbenzene	0.800	0.812		mg/Kg		102	80 - 135	
Naphthalene	0.800	0.835		mg/Kg		104	56 - 145	
o-Xylene	0.800	0.845		mg/Kg		106	80 - 132	
Tetrachloroethene	0.800	0.791		mg/Kg		99	75 - 141	
Trichloroethene	0.800	0.765		mg/Kg		96	80 - 134	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		80 - 121
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	103		80 - 120

Lab Sample ID: LCSD 580-476539/2-A

Matrix: Solid

Analysis Batch: 476544

Client Sample	ID: L	.ab	Control	Sample	Dup

Prep Type: Total/NA

Prep Batch: 476539

Allalysis Batoli. 47 0044								1 Top Buton, 47 000		
•	Spike	LCSD	LCSD				%Rec		RPD	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
1,2,4-Trimethylbenzene	0.800	0.876		mg/Kg		109	73 - 138	3	22	
1,2-Dichlorobenzene	0.800	0.922		mg/Kg		115	78 - 126	5	20	
1,3-Dichlorobenzene	0.800	0.808		mg/Kg		101	78 - 132	3	20	
1,4-Dichlorobenzene	0.800	0.897		mg/Kg		112	77 - 123	4	20	
4-Isopropyltoluene	0.800	0.920		mg/Kg		115	71 - 142	5	29	
Chlorobenzene	0.800	0.913		mg/Kg		114	80 - 125	4	20	
Chloroform	0.800	0.778		mg/Kg		97	74 - 133	5	20	
Ethylbenzene	0.800	0.847		mg/Kg		106	80 - 135	4	20	
Naphthalene	0.800	0.920		mg/Kg		115	56 - 145	10	25	
o-Xylene	0.800	0.886		mg/Kg		111	80 - 132	5	20	
Tetrachloroethene	0.800	0.823		mg/Kg		103	75 - 141	4	20	
Trichloroethene	0.800	0.796		mg/Kg		99	80 - 134	4	20	

Limits

80 - 121

Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

LCSD LCSD

Lab Sample ID: LCSD 580-476539/2-A

Matrix: Solid

Client: ERM-West

Analysis Batch: 476544

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 476539

%Recovery Qualifier Surrogate 1,2-Dichloroethane-d4 (Surr) 95

4-Bromofluorobenzene (Surr) 98 80 - 120 101 80 - 120 Dibromofluoromethane (Surr) Toluene-d8 (Surr) 103 80 - 120

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 476540

Lab Sample ID: MB 580-476540/3-A **Matrix: Solid**

Analysis Batch: 476546

MB MB

Analyte Result Qualifier RL MDL Unit Prepared Analyzed Dil Fac Chlorobenzene ND 0.040 0.0048 mg/Kg 11/01/24 08:13 11/01/24 12:41

MB MB

Qualifier Limits Dil Fac Surrogate Prepared Analyzed %Recovery 1,2-Dichloroethane-d4 (Surr) 117 80 - 121 11/01/24 08:13 11/01/24 12:41 105 80 - 120 11/01/24 08:13 11/01/24 12:41 4-Bromofluorobenzene (Surr) 80 - 120 Dibromofluoromethane (Surr) 117 11/01/24 08:13 11/01/24 12:41 Toluene-d8 (Surr) 100 80 - 120 11/01/24 08:13 11/01/24 12:41

Lab Sample ID: LCS 580-476540/1-A

Matrix: Solid

Analysis Batch: 476546

Client Sample ID: Lab Control Sample Prep Type: Total/NA

Prep Batch: 476540

Spike LCS LCS %Rec Added %Rec Limits Result Qualifier Unit

Analyte 0.800 90 80 - 125 Chlorobenzene 0.720 mg/Kg

LCS LCS

Surrogate %Recovery Qualifier Limits 1,2-Dichloroethane-d4 (Surr) 103 80 - 121 104 80 - 120 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) 101 80 - 120 80 - 120 Toluene-d8 (Surr) 97

Lab Sample ID: LCSD 580-476540/2-A

Matrix: Solid

Analysis Batch: 476546

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA Prep Batch: 476540

%Rec **RPD**

LCSD LCSD Spike Limit Analyte Added Result Qualifier Unit %Rec Limits RPD 0.800 0.784 Chlorobenzene 98 80 - 125 20 mg/Kg

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	110		80 - 121
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	107		80 - 120
Toluene-d8 (Surr)	100		80 - 120

QC Sample Results

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

MB MB

Lab Sample ID: MB 580-476692/3-A

Matrix: Solid

N-Propylbenzene

sec-Butylbenzene

o-Xylene

Analysis Batch: 476696

Client Sample ID: Method Blank Prep Type: Total/NA

Prep Batch: 476692

Analyte	Result Qua	lifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND	0.020	0.0050	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
1,1,1-Trichloroethane	ND	0.040	0.0046	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
1,1,2,2-Tetrachloroethane	ND	0.020	0.0076	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
1,1,2-Trichloroethane	ND	0.020	0.0074	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
1,1-Dichloroethane	ND	0.040	0.0092	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
1,1-Dichloroethene	ND	0.040	0.012	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
1,1-Dichloropropene	ND	0.040	0.0053	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
1,2,3-Trichlorobenzene	ND	0.080	0.040	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
1,2,3-Trichloropropane	ND	0.040	0.012	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
1,2,4-Trichlorobenzene	ND	0.080	0.043	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
1,2,4-Trimethylbenzene	ND	0.040	0.014	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
1,2-Dibromo-3-Chloropropane	ND	0.060	0.015	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
1,2-Dibromoethane	ND	0.020	0.0038	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
1,2-Dichlorobenzene	ND	0.040	0.0087	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
1,2-Dichloroethane	ND	0.020	0.0055			11/04/24 08:44	11/04/24 10:12	1
1,2-Dichloropropane	ND	0.020	0.0066	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
1,3,5-Trimethylbenzene	ND	0.040	0.0076			11/04/24 08:44	11/04/24 10:12	1
1,3-Dichlorobenzene	ND	0.060		mg/Kg		11/04/24 08:44	11/04/24 10:12	1
1,3-Dichloropropane	ND	0.060	0.0056			11/04/24 08:44	11/04/24 10:12	1
1,4-Dichlorobenzene	ND	0.060		mg/Kg		11/04/24 08:44	11/04/24 10:12	1
2,2-Dichloropropane	ND	0.040		mg/Kg		11/04/24 08:44	11/04/24 10:12	1
2-Chlorotoluene	ND	0.040	0.0088			11/04/24 08:44	11/04/24 10:12	1
4-Chlorotoluene	ND	0.040	0.0098			11/04/24 08:44	11/04/24 10:12	1
4-Isopropyltoluene	ND	0.040		mg/Kg		11/04/24 08:44	11/04/24 10:12	1
Benzene	ND	0.020	0.0038			11/04/24 08:44	11/04/24 10:12	1
Bromobenzene	ND	0.040	0.0042			11/04/24 08:44	11/04/24 10:12	1
Bromochloromethane	ND	0.040	0.0062			11/04/24 08:44	11/04/24 10:12	1
Bromodichloromethane	ND	0.040	0.0055			11/04/24 08:44	11/04/24 10:12	1
Bromoform	ND	0.040	0.0045			11/04/24 08:44	11/04/24 10:12	1
Carbon tetrachloride	ND	0.020	0.0044			11/04/24 08:44	11/04/24 10:12	1
Chlorobenzene	ND	0.040	0.0048			11/04/24 08:44	11/04/24 10:12	1
Chloroform	ND	0.020	0.0042			11/04/24 08:44	11/04/24 10:12	1
Chloromethane	ND	0.060		mg/Kg		11/04/24 08:44	11/04/24 10:12	1
cis-1,2-Dichloroethene	ND	0.060		mg/Kg		11/04/24 08:44	11/04/24 10:12	1
cis-1,3-Dichloropropene	ND	0.020	0.0040			11/04/24 08:44	11/04/24 10:12	1
Dibromochloromethane	ND	0.020	0.0049			11/04/24 08:44	11/04/24 10:12	1
Dibromomethane	ND	0.040	0.0074			11/04/24 08:44	11/04/24 10:12	
Ethylbenzene	ND	0.040	0.0091			11/04/24 08:44	11/04/24 10:12	1
Hexachlorobutadiene	0.0321 J	0.10		mg/Kg		11/04/24 08:44	11/04/24 10:12	1
Isopropylbenzene	ND	0.040	0.0086			11/04/24 08:44	11/04/24 10:12	· · · · · · · · 1
Methyl tert-butyl ether	ND	0.040	0.0060			11/04/24 08:44	11/04/24 10:12	1
Methylene Chloride	ND	0.25		mg/Kg		11/04/24 08:44	11/04/24 10:12	1
m-Xylene & p-Xylene	ND	0.040	0.0071			11/04/24 08:44	11/04/24 10:12	
Naphthalene	ND	0.040		mg/Kg		11/04/24 08:44	11/04/24 10:12	1
n-Butylbenzene	ND	0.040		mg/Kg		11/04/24 08:44	11/04/24 10:12	1
N. D II	יייי	0.040	0.019	my/rxy		11/04/24 00.44	11/04/24 10.12	

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11/04/24 08:44 11/04/24 10:12

11/04/24 08:44 11/04/24 10:12

11/04/24 08:44 11/04/24 10:12

0.040

0.040

0.040

0.015 mg/Kg

0.0050 mg/Kg

0.0086 mg/Kg

ND

ND

ND

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Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-476692/3-A

Matrix: Solid

Analysis Batch: 476696

Client Sample ID: Method Blank

Prep Type: Total/NA **Prep Batch: 476692**

	IVID IV	VID.							
Analyte	Result C	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND ND		0.040	0.013	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
t-Butylbenzene	ND		0.040	0.0077	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
Tetrachloroethene	0.00754 J	J	0.040	0.0053	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
Toluene	ND		0.060	0.014	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
trans-1,2-Dichloroethene	ND		0.060	0.015	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
trans-1,3-Dichloropropene	ND		0.040	0.0070	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
Trichloroethene	ND		0.040	0.010	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
Trichlorofluoromethane	ND		0.080	0.026	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
Vinyl chloride	ND		0.10	0.019	mg/Kg		11/04/24 08:44	11/04/24 10:12	1

MB MB

Surrogate	%Recovery (Qualifier	Limits	Prepared	Analyzed	Dil Fac	
1,2-Dichloroethane-d4 (Surr)	97		80 - 121	11/04/24 08:44	11/04/24 10:12	1	
4-Bromofluorobenzene (Surr)	98		80 - 120	11/04/24 08:44	11/04/24 10:12	1	
Dibromofluoromethane (Surr)	104		80 - 120	11/04/24 08:44	11/04/24 10:12	1	
Toluene-d8 (Surr)	106		80 - 120	11/04/24 08:44	11/04/24 10:12	1	

Lab Sample ID: LCS 580-476692/1-A

Matrix: Solid

Analysis Batch: 476696

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 476692

Analysis Baton. 470000	Spike	LCS	LCS				%Rec
Analyte	Added	Result	Qualifier U	nit	D	%Rec	Limits
1,1,1,2-Tetrachloroethane	0.800	0.838		g/Kg	_	105	79 - 128
1,1,1-Trichloroethane	0.800	0.695	m	g/Kg		87	78 - 135
1,1,2,2-Tetrachloroethane	0.800	0.839	m	g/Kg		105	77 - 122
1,1,2-Trichloroethane	0.800	0.848	m	g/Kg		106	80 - 123
1,1-Dichloroethane	0.800	0.759	m	g/Kg		95	78 - 126
1,1-Dichloroethene	0.800	0.778	m	g/Kg		97	73 - 134
1,1-Dichloropropene	0.800	0.738	m	g/Kg		92	76 - 140
1,2,3-Trichlorobenzene	0.800	0.843	m	g/Kg		105	58 - 146
1,2,3-Trichloropropane	0.800	0.782	m	g/Kg		98	77 - 127
1,2,4-Trichlorobenzene	0.800	0.768	m	g/Kg		96	74 - 131
1,2,4-Trimethylbenzene	0.800	0.775	m	g/Kg		97	73 - 138
1,2-Dibromo-3-Chloropropane	0.800	0.759	m	g/Kg		95	64 - 129
1,2-Dibromoethane	0.800	0.817	m	g/Kg		102	77 - 123
1,2-Dichlorobenzene	0.800	0.829	m	g/Kg		104	78 - 126
1,2-Dichloroethane	0.800	0.709	m	g/Kg		89	76 - 124
1,2-Dichloropropane	0.800	0.750	m	g/Kg		94	73 - 130
1,3,5-Trimethylbenzene	0.800	0.768	m	g/Kg		96	72 - 134
1,3-Dichlorobenzene	0.800	0.761	m	g/Kg		95	78 - 132
1,3-Dichloropropane	0.800	0.785	m	g/Kg		98	80 - 120
1,4-Dichlorobenzene	0.800	0.822	m	g/Kg		103	77 - 123
2,2-Dichloropropane	0.800	0.713	m	g/Kg		89	75 - 134
2-Chlorotoluene	0.800	0.755	m	g/Kg		94	77 - 134
4-Chlorotoluene	0.800	0.730	m	g/Kg		91	71 - 137
4-Isopropyltoluene	0.800	0.800	m	g/Kg		100	71 - 142
Benzene	0.800	0.819	m	g/Kg		102	79 - 135
Bromobenzene	0.800	0.780	m	g/Kg		98	78 - 126
Bromochloromethane	0.800	0.783	m	g/Kg		98	76 - 131

Spike

Added

LCS LCS

Result Qualifier Unit

Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-476692/1-A

Matrix: Solid

Analyte

Client: ERM-West

Analysis Batch: 476696

Client Sample ID: Lab Control Sample

Limits

D %Rec

Prep Type: Total/NA

Prep Batch: 476692

%Rec

, many to	714404	modult qualifier	•	2 /0.100		
Bromodichloromethane	0.800	0.764	mg/Kg	95	78 - 125	
Bromoform	0.800	0.783	mg/Kg	98	71 - 130	
Carbon tetrachloride	0.800	0.725	mg/Kg	91	76 - 140	
Chlorobenzene	0.800	0.847	mg/Kg	106	80 - 125	
Chloroform	0.800	0.723	mg/Kg	90	74 - 133	
Chloromethane	0.800	0.810	mg/Kg	101	52 - 142	
cis-1,2-Dichloroethene	0.800	0.757	mg/Kg	95	80 - 125	
cis-1,3-Dichloropropene	0.800	0.764	mg/Kg	95	80 - 122	
Dibromochloromethane	0.800	0.847	mg/Kg	106	75 - 125	
Dibromomethane	0.800	0.793	mg/Kg	99	72 - 130	
Ethylbenzene	0.800	0.768	mg/Kg	96	80 - 135	
Hexachlorobutadiene	0.800	0.786	mg/Kg	98	65 - 145	
Isopropylbenzene	0.800	0.874	mg/Kg	109	80 - 131	
Methyl tert-butyl ether	0.800	0.766	mg/Kg	96	71 - 126	
Methylene Chloride	0.800	0.830	mg/Kg	104	56 - 140	
m-Xylene & p-Xylene	0.800	0.741	mg/Kg	93	80 - 132	
Naphthalene	0.800	0.758	mg/Kg	95	56 - 145	
n-Butylbenzene	0.800	0.772	mg/Kg	96	69 - 143	
N-Propylbenzene	0.800	0.751	mg/Kg	94	78 - 133	
o-Xylene	0.800	0.788	mg/Kg	99	80 - 132	

0.800

0.800

0.800

0.800

0.800

0.800

0.800

0.800

0.800

0.800

0.766

0.839

0.755

0.740

0.820

0.735

0.826

0.713

0.759

0.884

mg/Kg

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		80 - 121
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	105		80 - 120

Lab Sample ID: LCSD 580-476692/2-A

Matrix: Solid

sec-Butylbenzene

Tetrachloroethene

trans-1,2-Dichloroethene

Trichlorofluoromethane

trans-1,3-Dichloropropene

t-Butylbenzene

Trichloroethene

Vinyl chloride

Styrene

Toluene

Analysis Batch: 476696

Client Sample	ID: Lab	Control	Sam	ple Dup
		Prep Ty	/pe: T	otal/NA

96

105

94

92

102

92

103

89

95

111

71 - 143

79 - 129

72 - 144

75 - 141

75 - 125

77 - 134

80 - 121

80 - 134

71 - 150

62 - 144

Prep Batch: 476692

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1,1,2-Tetrachloroethane	0.800	0.828		mg/Kg		103	79 - 128	1	20
1,1,1-Trichloroethane	0.800	0.688		mg/Kg		86	78 - 135	1	20
1,1,2,2-Tetrachloroethane	0.800	0.865		mg/Kg		108	77 - 122	3	20
1,1,2-Trichloroethane	0.800	0.860		mg/Kg		107	80 - 123	1	20
1,1-Dichloroethane	0.800	0.696		mg/Kg		87	78 - 126	9	20
1,1-Dichloroethene	0.800	0.675		mg/Kg		84	73 - 134	14	25

QC Sample Results

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-476692/2-A

Matrix: Solid

Analysis Batch: 476696

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA Prep Batch: 476692

Analyte	Spike	LCSD				%Rec	RPD		
	Added		Qualifier	Unit	D %	Rec	Limits	RPD	Limit
1,1-Dichloropropene	0.800	0.740		mg/Kg	_ = -	93	76 - 140	0	20
1,2,3-Trichlorobenzene	0.800	0.825		mg/Kg		103	58 - 146	2	28
1,2,3-Trichloropropane	0.800	0.817		mg/Kg		102	77 - 127	4	20
1,2,4-Trichlorobenzene	0.800	0.793		mg/Kg		99	74 - 131	3	26
1,2,4-Trimethylbenzene	0.800	0.785		mg/Kg		98	73 - 138	1	22
1,2-Dibromo-3-Chloropropane	0.800	0.781		mg/Kg		98	64 - 129	3	40
1,2-Dibromoethane	0.800	0.815		mg/Kg		102	77 - 123	0	20
1,2-Dichlorobenzene	0.800	0.844		mg/Kg		105	78 - 126	2	20
1,2-Dichloroethane	0.800	0.706		mg/Kg		88	76 - 124	0	20
1,2-Dichloropropane	0.800	0.775		mg/Kg		97	73 - 130	3	20
1,3,5-Trimethylbenzene	0.800	0.786		mg/Kg		98	72 - 134	2	24
1,3-Dichlorobenzene	0.800	0.764		mg/Kg		95	78 - 132	0	20
1,3-Dichloropropane	0.800	0.799		mg/Kg		100	80 - 120	2	20
1,4-Dichlorobenzene	0.800	0.843		mg/Kg		105	77 - 123	3	20
2,2-Dichloropropane	0.800	0.701		mg/Kg		88	75 - 134	2	20
2-Chlorotoluene	0.800	0.758		mg/Kg		95	77 - 134	0	21
4-Chlorotoluene	0.800	0.744		mg/Kg		93	71 - 137	2	21
4-Isopropyltoluene	0.800	0.808		mg/Kg		101	71 - 142	1	29
Benzene	0.800	0.816		mg/Kg		102	79 - 135	0	20
Bromobenzene	0.800	0.793		mg/Kg		99	78 - 126	2	20
Bromochloromethane	0.800	0.786		mg/Kg		98	76 - 131	0	20
Bromodichloromethane	0.800	0.765		mg/Kg		96	78 - 125	0	20
Bromoform	0.800	0.795		mg/Kg		99	71 - 130	1	20
Carbon tetrachloride	0.800	0.734		mg/Kg		92	76 - 140	1	20
Chlorobenzene	0.800	0.852		mg/Kg		106	80 - 125	1	20
Chloroform	0.800	0.722		mg/Kg		90	74 - 133	0	20
Chloromethane	0.800	0.793		mg/Kg		99	52 - 142	2	40
cis-1,2-Dichloroethene	0.800	0.744		mg/Kg		93	80 - 125	2	20
cis-1,3-Dichloropropene	0.800	0.752		mg/Kg		94	80 - 122	1	20
Dibromochloromethane	0.800	0.847		mg/Kg		106	75 - 125	0	20
Dibromomethane	0.800	0.788		mg/Kg		98	72 - 130	1	40
Ethylbenzene	0.800	0.759		mg/Kg		95	80 - 135	1	20
Hexachlorobutadiene	0.800	0.820		mg/Kg		102	65 - 145	4	36
Isopropylbenzene	0.800	0.876		mg/Kg		110	80 - 131	0	20
Methyl tert-butyl ether	0.800	0.697		mg/Kg		87	71 - 126	9	20
Methylene Chloride	0.800	0.709		mg/Kg		89	56 - 140	16	20
m-Xylene & p-Xylene	0.800	0.739		mg/Kg		92	80 - 132	0	20
Naphthalene	0.800	0.765		mg/Kg		96	56 - 145	1	25
n-Butylbenzene	0.800	0.777		mg/Kg		97	69 - 143	1	31
N-Propylbenzene	0.800	0.771		mg/Kg		96	78 - 133	3	24
o-Xylene	0.800	0.793		mg/Kg		99	80 - 132	1	20
sec-Butylbenzene	0.800	0.787		mg/Kg		98	71 - 143	3	29
Styrene	0.800	0.852		mg/Kg		106	79 - 129	1	20
t-Butylbenzene	0.800	0.784		mg/Kg		98	72 - 144	4	27
Tetrachloroethene	0.800	0.773		mg/Kg		97	75 - 141	4	20
Toluene	0.800	0.828		mg/Kg		103	75 - 125	1	20
trans-1,2-Dichloroethene	0.800	0.669		mg/Kg		84	77 - 134	9	20
trans-1,3-Dichloropropene	0.800	0.840		mg/Kg		105	80 - 121	2	20
Trichloroethene	0.800	0.713		mg/Kg		89	80 - 134	0	20

Eurofins Seattle

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Job ID: 580-145045-1

Client: ERM-West

Project/Site: Arkema PDI Sampling

Lab Sample ID: LCSD 580-476692/2-A

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Client Sample ID: Lab Control Sample Dup

Matrix: Solid

Analysis Batch: 476696

Prep Type: Total/NA **Prep Batch: 476692**

LCSD LCSD **RPD** Spike %Rec Added Result Qualifier Unit %Rec Limits RPD Limit Trichlorofluoromethane 0.800 0.720 mg/Kg 90 71 - 150 5 30 Vinyl chloride 0.800 0.871 mg/Kg 109 62 - 1442 20

QC Sample Results

LCSD LCSD

Surrogate %Recovery Qualifier Limits 1,2-Dichloroethane-d4 (Surr) 94 80 - 121 4-Bromofluorobenzene (Surr) 96 80 - 120 Dibromofluoromethane (Surr) 101 80 - 120 Toluene-d8 (Surr) 103 80 - 120

Lab Sample ID: MB 580-476708/3-A **Client Sample ID: Method Blank**

Matrix: Solid

Analysis Batch: 476722

Prep Type: Total/NA

Prep Batch: 476708

	MBI	MR							
Analyte	Result (Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		0.10	0.038	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
Chloroethane	ND		0.080	0.021	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
Dichlorodifluoromethane	ND		0.25	0.046	mg/Kg		11/04/24 09:34	11/04/24 12:42	1

MB MB Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 1,2-Dichloroethane-d4 (Surr) 115 80 - 121 11/04/24 09:34 11/04/24 12:42 4-Bromofluorobenzene (Surr) 106 80 - 120 11/04/24 09:34 11/04/24 12:42 Dibromofluoromethane (Surr) 80 - 120 11/04/24 09:34 11/04/24 12:42 114 Toluene-d8 (Surr) 99 80 - 120 11/04/24 09:34 11/04/24 12:42

Lab Sample ID: LCS 580-476708/1-A

Matrix: Solid

Analysis Batch: 476722

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 476708

Spike LCS LCS %Rec Analyte Added Result Qualifier Unit D %Rec Limits Bromomethane 0.800 0.925 mg/Kg 116 55 - 150 Chloroethane 0.800 0.934 mg/Kg 117 26 - 150 Dichlorodifluoromethane 0.800 0.752 mg/Kg 33 - 150

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	105		80 - 121
4-Bromofluorobenzene (Surr)	103		80 - 120
Dibromofluoromethane (Surr)	102		80 - 120
Toluene-d8 (Surr)	99		80 - 120

Lab Sample ID: LCSD 580-476708/2-A

Matrix: Solid

Analysis Batch: 476722

Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

Prep Batch: 476708

/ mary or Datom marz									
-	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Bromomethane	0.800	0.969		mg/Kg		121	55 - 150	5	26
Chloroethane	0.800	1.01		mg/Kg		127	26 - 150	8	40
Dichlorodifluoromethane	0.800	0.870		mg/Kg		109	33 - 150	15	31

QC Sample Results

80 - 120

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

LCSD LCSD

Lab Sample ID: LCSD 580-476708/2-A

Matrix: Solid

Toluene-d8 (Surr)

Analysis Batch: 476722

Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

Prep Batch: 476708

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	111		80 - 121
4-Bromofluorobenzene (Surr)	105		80 - 120
Dibromofluoromethane (Surr)	109		80 - 120

Client: ERM-West Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-54-SO-44.9-20241021

Date Collected: 10/21/24 09:20

Lab Sample ID: 580-145045-1

Matrix: Solid

Date Received: 10/22/24 12:29

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476140	SCS	EET SEA	10/28/24 19:02

Client Sample ID: PDI-54-SO-44.9-20241021

Date Collected: 10/21/24 09:20

Date Received: 10/22/24 12:29

Lab Sample ID: 580-145045-1

Matrix: Solid Percent Solids: 78.6

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475802	BYM	EET SEA	10/24/24 12:37
Total/NA	Analysis	8260D		1	475804	TL1	EET SEA	10/24/24 22:36

Client Sample ID: PDI-54-SO-33.5-20241018

Date Collected: 10/18/24 16:45

Date Received: 10/22/24 12:29

Lab Sample ID: 580-145045-2

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G			476140	SCS	EET SEA	10/28/24 19:02

Client Sample ID: PDI-54-SO-33.5-20241018

Date Collected: 10/18/24 16:45

Date Received: 10/22/24 12:29

Lab Sample ID: 580-145045-2 **Matrix: Solid**

Percent Solids: 82.8

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476708	BYM	EET SEA	11/04/24 09:34
Total/NA	Analysis	8260D		1	476722	BYM	EET SEA	11/04/24 13:03
Total/NA	Prep	5035	DL		476432	BYM	EET SEA	10/31/24 08:53
Total/NA	Analysis	8260D	DL	1	476436	BYM	EET SEA	10/31/24 15:43
Total/NA	Prep	5035			476692	BYM	EET SEA	11/04/24 08:44
Total/NA	Analysis	8260D		1	476696	BYM	EET SEA	11/04/24 10:33

Client Sample ID: PDI-53-SO-28.3-20241018

Lab Sample ID: 580-145045-3 Date Collected: 10/18/24 16:40 **Matrix: Solid** Date Received: 10/22/24 12:29

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476137	SCS	EET SEA	10/28/24 17:55

Client Sample ID: PDI-53-SO-28.3-20241018

Date Collected: 10/18/24 16:40

Lab Sample ID: 580-145045-3 **Matrix: Solid** Date Received: 10/22/24 12:29 Percent Solids: 75.3

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	DL2		476540	BYM	EET SEA	11/01/24 08:13
Total/NA	Analysis	8260D	DL2	1	476546	BYM	EET SEA	11/01/24 19:12
Total/NA	Prep	5035			476708	BYM	EET SEA	11/04/24 09:34
Total/NA	Analysis	8260D		1	476722	BYM	EET SEA	11/04/24 15:08

Project/Site: Arkema PDI Sampling

Client: ERM-West

Client Sample ID: PDI-53-SO-28.3-20241018

Date Collected: 10/18/24 16:40 Date Received: 10/22/24 12:29

Lab Sample ID: 580-145045-3

Matrix: Solid

Matrix: Solid

Percent Solids: 75.3

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476432	BYM	EET SEA	10/31/24 08:53
Total/NA	Analysis	8260D		1	476436	BYM	EET SEA	10/31/24 15:02
Total/NA	Prep	5035	DL		476539	BYM	EET SEA	11/01/24 08:11
Total/NA	Analysis	8260D	DL	1	476544	BYM	EET SEA	11/01/24 11:08

Lab Sample ID: 580-145045-4 Client Sample ID: PDI-52-SO-39.9-20241018

Date Collected: 10/18/24 13:55

Date Received: 10/22/24 12:29 Batch Batch Dilution Batch Prepared

Method Number Analyst or Analyzed **Prep Type** Type Run **Factor** Lab 2540G 476140 SCS 10/28/24 19:02 Total/NA Analysis EET SEA

Client Sample ID: PDI-52-SO-39.9-20241018

Date Collected: 10/18/24 13:55 Date Received: 10/22/24 12:29

Lab Sample ID: 580-145045-4 Matrix: Solid Percent Solids: 77.9

Lab Sample ID: 580-145045-5

_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476708	BYM	EET SEA	11/04/24 09:34
Total/NA	Analysis	8260D		1	476722	BYM	EET SEA	11/04/24 13:24
Total/NA	Prep	5035	DL		476432	BYM	EET SEA	10/31/24 08:53
Total/NA	Analysis	8260D	DL	1	476436	BYM	EET SEA	10/31/24 16:04
Total/NA	Prep	5035			476692	BYM	EET SEA	11/04/24 08:44
Total/NA	Analysis	8260D		1	476696	BYM	EET SEA	11/04/24 10:54

Client Sample ID: PDI-48a-SO-34.2-20241018

Date Collected: 10/18/24 12:10	Matrix: Solid
Date Received: 10/22/24 12:29	

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476140	SCS	EET SEA	10/28/24 19:02

Client Sample ID: PDI-48a-SO-34.2-20241018

Lab Sample ID: 580-145045-5 Date Collected: 10/18/24 12:10 **Matrix: Solid** Date Received: 10/22/24 12:29 Percent Solids: 79.5

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476708	BYM	EET SEA	11/04/24 09:34
Total/NA	Analysis	8260D		1	476722	BYM	EET SEA	11/04/24 15:29
Total/NA	Prep	5035			476432	BYM	EET SEA	10/31/24 08:53
Total/NA	Analysis	8260D		1	476436	BYM	EET SEA	10/31/24 15:22
Total/NA	Prep	5035	DL		476539	BYM	EET SEA	11/01/24 08:11
Total/NA	Analysis	8260D	DL	1	476544	BYM	EET SEA	11/01/24 11:29

Job ID: 580-145045-1

Client: ERM-West

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-SO-20241021

Date Collected: 10/21/24 00:01 Date Received: 10/22/24 12:29

Lab Sample ID: 580-145045-6

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475802	BYM	EET SEA	10/24/24 12:37
Total/NA	Analysis	8260D		1	475804	TL1	EET SEA	10/24/24 21:34

Client Sample ID: PDI-53-SO-44.9-20241021

Date Collected: 10/21/24 11:40

Date Received: 10/22/24 12:29

Lab Sample ID: 580-145045-7

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476140	SCS	EET SEA	10/28/24 19:02

Client Sample ID: PDI-53-SO-44.9-20241021

Date Collected: 10/21/24 11:40

Date Received: 10/22/24 12:29

Lab Sample ID: 580-145045-7

Matrix: Solid Percent Solids: 70.6

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475802	BYM	EET SEA	10/24/24 12:37
Total/NA	Analysis	8260D		1	475804	TL1	EET SEA	10/25/24 00:19

Run

Dilution

Factor

Client Sample ID: PDI-55-SO-44.9-20241021

Date Collected: 10/21/24 16:20

Date Received: 10/22/24 12:29

Prep Type

Total/NA

Lab Sample	ID: 580-145045-8
	Matrix: Solid

Batch			Prepared
Number	Analyst	Lab	or Analyzed
476140	SCS	EET SEA	10/28/24 19:02

Client Sample ID: PDI-55-SO-44.9-20241021

Batch

Method

2540G

Date Collected: 10/21/24 16:20

Date Received: 10/22/24 12:29

Batch

Type

Analysis

Lab Sample ID: 580-145045-8 **Matrix: Solid**

Lab Sample ID: 580-145045-9

Percent Solids: 83.5

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475802	BYM	EET SEA	10/24/24 12:37
Total/NA	Analysis	8260D		1	475804	TL1	EET SEA	10/25/24 00:40

Client Sample ID: PDI-55-SO-9.9-20241021

Date Collected: 10/21/24 16:25

Date Received: 10/22/24 12:29

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476140	SCS	EET SEA	10/28/24 19:02

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-55-SO-9.9-20241021

Lab Sample ID: 580-145045-9 Date Collected: 10/21/24 16:25 **Matrix: Solid** Date Received: 10/22/24 12:29 Percent Solids: 73.1

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475802	BYM	EET SEA	10/24/24 12:37
Total/NA	Analysis	8260D		1	475804	TL1	EET SEA	10/25/24 01:00

Client Sample ID: PDI-48a-SO-49.9-20241018

2540G

Analysis

Lab Sample ID: 580-145045-10

Date Collected: 10/18/24 12:15 Matrix: Solid Date Received: 10/22/24 12:29

Batch Dilution Batch Prepared Method **Prep Type** Type **Factor** Number Analyst or Analyzed Run Lab 10/28/24 19:02

Client Sample ID: PDI-48a-SO-49.9-20241018 Lab Sample ID: 580-145045-10

Date Collected: 10/18/24 12:15 **Matrix: Solid**

Date Received: 10/22/24 12:29 Percent Solids: 85.6

476140 SCS

EET SEA

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475802	BYM	EET SEA	10/24/24 12:37
Total/NA	Analysis	8260D		1	475804	TL1	EET SEA	10/25/24 01:21

Client Sample ID: PDI-52-SO-35.7-20241018 Lab Sample ID: 580-145045-11

Date Collected: 10/18/24 13:50 **Matrix: Solid**

Date Received: 10/22/24 12:29

Total/NA

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476140	SCS	EET SEA	10/28/24 19:02

Client Sample ID: PDI-52-SO-35.7-20241018 Lab Sample ID: 580-145045-11

Date Collected: 10/18/24 13:50 **Matrix: Solid**

Date Received: 10/22/24 12:29 Percent Solids: 74.7

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			475802	BYM	EET SEA	10/24/24 12:37
Total/NA	Analysis	8260D		1	475804	TL1	EET SEA	10/25/24 01:42

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: ERM-West Job ID: 580-145045-1

Project/Site: Arkema PDI Sampling

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Progra	am	Identification Number	Expiration Date
Oregon	NELA	ס	4167	07-07-25
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Sample Summary

Client: ERM-West

580-145045-11

Project/Site: Arkema PDI Sampling

PDI-52-SO-35.7-20241018

Lab Sample ID **Client Sample ID** Matrix Collected Received 580-145045-1 PDI-54-SO-44.9-20241021 10/21/24 09:20 10/22/24 12:29 Solid 580-145045-2 PDI-54-SO-33.5-20241018 Solid 10/18/24 16:45 10/22/24 12:29 580-145045-3 PDI-53-SO-28.3-20241018 10/18/24 16:40 10/22/24 12:29 Solid 580-145045-4 PDI-52-SO-39.9-20241018 Solid 10/18/24 13:55 10/22/24 12:29 580-145045-5 PDI-48a-SO-34.2-20241018 Solid 10/18/24 12:10 10/22/24 12:29 580-145045-6 TB-01-SO-20241021 Solid 10/21/24 00:01 10/22/24 12:29 580-145045-7 PDI-53-SO-44.9-20241021 Solid 10/21/24 11:40 10/22/24 12:29 10/21/24 16:20 10/22/24 12:29 580-145045-8 PDI-55-SO-44.9-20241021 Solid 580-145045-9 PDI-55-SO-9.9-20241021 Solid 10/21/24 16:25 10/22/24 12:29 580-145045-10 PDI-48a-SO-49.9-20241018 Solid 10/18/24 12:15 10/22/24 12:29

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Job ID: 580-145045-1

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12/913/2024 (Rev. 1)

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Client: ERM-West Job Number: 580-145045-1

Login Number: 145045 List Source: Eurofins Seattle

List Number: 1

Creator: Silva, Shawn 1

Grouter: Growth F		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

PREPARED FOR

Attn: Avery Soplata ERM-West 1050 SW 6th Avenue Suite 1650 Portland, Oregon 97204

ANALYTICAL REPORT

Generated 11/20/2024 3:24:54 PM Revision 1

JOB DESCRIPTION

Arkema PDI Sampling

JOB NUMBER

580-145160-1

Eurofins Seattle 5755 8th Street East Tacoma WA 98424



Eurofins Seattle

Job Notes

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Authorization

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Authorized for release by Sheri Cruz, Project Manager I Sheri.Cruz@et.eurofinsus.com (253)922-2310

Shuid ony

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Client: ERM-West

Project/Site: Arkema PDI Sampling

Laboratory Job ID: 580-145160-1

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Case Narrative

Client: ERM-West Job ID: 580-145160-1

Project: Arkema PDI Sampling

Job ID: 580-145160-1 Eurofins Seattle

Job Narrative 580-145160-1

Revised report 11/20/24 to fix sample ID PDI-55b-SO-19.0-20241022 should be PDI-55b-SO-9.0-20241022.

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these
 situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise
 specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 10/25/2024 12:30 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 8.9°C.

GC/MS VOA

Method 8260D: The following sample was analyzed at reduced volume due to high concentrations of target analytes: PDI-55b-SO-19.0-20241022 (580-145160-4). The calculation was performed using a dilution factor. The reporting limits have been elevated by the appropriate factor.

Method 8260D: The following samples were analyzed at reduced volume due to high concentrations of target analytes: PDI-55a-SO-8.7-20241022 (580-145160-2) and PDI-55b-SO-19.0-20241022 (580-145160-4). The calculation was performed using an initial volume adjustment rather than a dilution factor. The reporting limits have been elevated by the appropriate factor.

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-476046 recovered outside acceptance criteria, low biased, for Bromoform and Methylene Chloride. A reporting limit (RL) standard was analyzed, and the target analytes are detected. Since the associated samples were non-detect for the analyte(s), the data are reported.

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-476085 recovered outside acceptance criteria, low biased, for 1,2,3-Trichlorobenzene, 1,4-Dichlorobenzene, Bromoform, Hexachlorobutadiene, Methylene Chloride and n-Butylbenzene. A reporting limit (RL) standard was analyzed, and the target analytes are detected. Since the associated samples were non-detect for the analyte(s), the data are reported.

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-476323 recovered outside acceptance criteria, low biased, for 1,4-Dichlorobenzene. A reporting limit (RL) standard was analyzed, and the target analytes are detected. Since the associated samples were non-detect for the analyte(s), the data are reported.

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-476155 recovered outside acceptance criteria, low biased, for Methylene Chloride. A reporting limit (RL) standard was analyzed, and the target analytes are detected. Since the associated samples were non-detect for the analyte(s), the data are reported.

Method 8260D: The method blank for analytical batch 580-476720 contained Methylene Chloride above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or reanalysis of samples was not performed.

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-476720 recovered above the upper control limit for Methylene Chloride, 2,2-Dichloropropane, 1,1,1-Trichloroethane, Carbon tetrachloride and Bromodichloromethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: RB-01-WQ-20241023 (580-145160-6), TB-01-WQ-20241023 (580-145160-7) and (CCVIS 580-476720/3).

Method 8260D: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for analytical batch 580-476720 recovered outside control limits for the following analytes: Methylene Chloride, 2,2-Dichloropropane and Bromodichloromethane. These analytes were biased high in the LCS and were not detected in the associated samples; therefore,

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Case Narrative

Client: ERM-West Job ID: 580-145160-1

Project: Arkema PDI Sampling

Job ID: 580-145160-1 (Continued)

Eurofins Seattle

the data have been reported.

Method 8260D: Surrogate recovery for the following sample was outside the upper control limit: PDI-55b-SO-19.0-20241022 (580-145160-4). This sample did not contain any chemically associated target analytes; therefore, re-extraction and/or re-analysis was not performed.

Method 8260D: The following sample was diluted to bring the concentration of target analytes within the calibration range: PDI-49a-SO-31.85-20241023 (580-145160-9). Elevated reporting limits (RLs) are provided.

Method 8260D: Reanalysis of the following sample was performed outside of the analytical holding time: PDI-49a-SO-31.85-20241023 (580-145160-9).

Method 8260D: The following samples were diluted to bring the concentration of target analytes within the calibration range: PDI-55a-SO-8.7-20241022 (580-145160-2), PDI-55b-SO-19.0-20241022 (580-145160-4), PDI-48b-SO-32.85-20241023 (580-145160-12) and PDI-46a-SO-37.15-10202424 (580-145160-14). Elevated reporting limits (RLs) are provided.

Method 8260D: The following samples were provided to the laboratory with a significantly different initial weight than that required by the reference method: PDI-43a-SO-34.2-10202424 (580-145160-16). Deviations in the weight by more than 20% may affect reporting limits and potentially method performance. The method specifies 10g. The amount provided was above this range.

Method 8260D: The following samples were provided to the laboratory with a significantly different initial weight than that required by the reference method: PDI-55a-SO-44.7-20241022 (580-145160-1), PDI-55a-SO-8.7-20241022 (580-145160-2), PDI-55c-SO-44.3-20241023 (580-145160-8[MSD]), PDI-49a-SO-48.1-20241023 (580-145160-10) and PDI-48b-SO-49.9-20241024 (580-145160-13). Deviations in the weight by more than 20% may affect reporting limits and potentially method performance. The method specifies 10g. The amount provided was above this range.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

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Definitions/Glossary

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Qualifiers

G	C	M	IS	V	O	Δ
•	•		•	•	•	_

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
Н	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1+	Surrogate recovery exceeds control limits, high biased.

Glossary

DL, RA, RE, IN

DLC EDL

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Abbreviation	These commonly used abbreviations may or may not be present in this report.
☆	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)

Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

LOD Limit of Detection (DoD/DOE)

LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum C

MDA Minimum Detectable Activity (Pa

MCL EPA recommended "Maximum Contaminant Level"

MDA Minimum Detectable Activity (Radiochemistry)

MDC Minimum Detectable Concentration (Radiochemistry)

Estimated Detection Limit (Dioxin)

Decision Level Concentration (Radiochemistry)

MDL Method Detection Limit
ML Minimum Level (Dioxin)
MPN Most Probable Number
MQL Method Quantitation Limit

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent
POS Positive / Present
PQL Practical Quantitation Limit

PRES Presumptive

QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

TNTC Too Numerous To Count

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Analyte	Dagu!4	Qualifier	RL	MDL	Unit	_ P	Dropored	Analyzed	Dil Fa
<u> </u>	ND	Qualifier	0.028 -	0.0071		<u>D</u>	Prepared	Analyzed	DII Fa
1,1,1,2-Tetrachloroethane	ND ND		0.028		mg/Kg	*	10/28/24 08:38	10/28/24 17:59 10/28/24 17:59	
1,1,1-Trichloroethane	ND ND		0.057	0.0065 0.011	mg/Kg	\$		10/28/24 17:59	
1,1,2,2-Tetrachloroethane									
1,1,2-Trichloroethane	ND		0.028		mg/Kg	*	10/28/24 08:38	10/28/24 17:59	
I,1-Dichloroethane	ND		0.057		mg/Kg	*	10/28/24 08:38	10/28/24 17:59	
1,1-Dichloroethene	ND		0.057		mg/Kg	.	10/28/24 08:38	10/28/24 17:59	
1,1-Dichloropropene	ND		0.057	0.0075		*		10/28/24 17:59	
I,2,3-Trichlorobenzene	ND		0.11		mg/Kg	*	10/28/24 08:38	10/28/24 17:59	
,2,3-Trichloropropane	ND		0.057		mg/Kg	. .	10/28/24 08:38	10/28/24 17:59	
,2,4-Trichlorobenzene	ND		0.11		mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
I,2,4-Trimethylbenzene	ND		0.057	0.019	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
,2-Dibromo-3-Chloropropane	ND		0.085		mg/Kg		10/28/24 08:38	10/28/24 17:59	
,2-Dibromoethane	ND		0.028	0.0054	0 0	₩	10/28/24 08:38	10/28/24 17:59	
1,2-Dichlorobenzene	ND		0.057		mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
I,2-Dichloroethane	ND		0.028	0.0078			10/28/24 08:38	10/28/24 17:59	
,2-Dichloropropane	ND		0.028	0.0094	0 0	☼		10/28/24 17:59	
,3,5-Trimethylbenzene	ND		0.057	0.011	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
,3-Dichlorobenzene	ND		0.085	0.019	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
,3-Dichloropropane	ND		0.085	0.0079	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
,4-Dichlorobenzene	ND		0.085	0.015	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
,2-Dichloropropane	ND		0.057	0.017	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
-Chlorotoluene	ND		0.057	0.012	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
-Chlorotoluene	ND		0.057	0.014	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
l-Isopropyltoluene	0.016	J	0.057	0.014	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
Benzene	ND		0.028	0.0054	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
Bromobenzene	ND		0.057	0.0060	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
Bromochloromethane	ND		0.057	0.0088	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
Bromodichloromethane	ND		0.057	0.0078	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
Bromoform	ND		0.057	0.0064	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
Bromomethane	ND		0.14		mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
Carbon tetrachloride	ND		0.028	0.0062	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
Chlorobenzene	0.010	J	0.057	0.0068		₩	10/28/24 08:38	10/28/24 17:59	
Chloroethane	ND		0.11		mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
Chloroform	ND		0.028	0.0060			10/28/24 08:38	10/28/24 17:59	
Chloromethane	ND		0.085		mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
is-1,2-Dichloroethene	ND		0.085		mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
is-1,3-Dichloropropene	ND		0.028	0.0057			10/28/24 08:38	10/28/24 17:59	
Dibromochloromethane	ND		0.028	0.0069		₩	10/28/24 08:38	10/28/24 17:59	
Dibromomethane	ND		0.057		mg/Kg		10/28/24 08:38	10/28/24 17:59	
Dichlorodifluoromethane	ND		0.35		mg/Kg	T ☆		10/28/24 17:59	
Ethylbenzene	ND		0.057		mg/Kg	~ ☆		10/28/24 17:59	
lexachlorobutadiene	ND		0.037		mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	
sopropylbenzene	ND		0.057		mg/Kg	¥		10/28/24 17:59	
,	ND ND		0.057				10/28/24 08:38		
lethyl tert-butyl ether				0.0085		☆			
lethylene Chloride	ND		0.35		mg/Kg	<u>.</u> .	10/28/24 08:38		
n-Xylene & p-Xylene	ND		0.057		mg/Kg	ψ.	10/28/24 08:38		
Naphthalene	ND		0.21		mg/Kg	*	10/28/24 08:38		
n-Butylbenzene	ND		0.057	0.026	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	

Eurofins Seattle

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Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Percent Moisture (SM22 2540G)

Date Collected: 10/22/24 11:10

Matrix: Solid
Date Received: 10/25/24 12:30

Metrix: Solid
Percent Solids: 70.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		0.057	0.0071	mg/Kg	— <u></u>	10/28/24 08:38	10/28/24 17:59	1
sec-Butylbenzene	ND		0.057	0.012	mg/Kg	₽	10/28/24 08:38	10/28/24 17:59	1
Styrene	ND		0.057	0.018	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	1
t-Butylbenzene	ND		0.057	0.011	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	1
Tetrachloroethene	ND		0.057	0.0075	mg/Kg	₽	10/28/24 08:38	10/28/24 17:59	1
Toluene	ND		0.085	0.019	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	1
trans-1,2-Dichloroethene	ND		0.085	0.021	mg/Kg	₽	10/28/24 08:38	10/28/24 17:59	1
trans-1,3-Dichloropropene	ND		0.057	0.0099	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	1
Trichloroethene	ND		0.057	0.015	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	1
Trichlorofluoromethane	ND		0.11	0.037	mg/Kg	₩	10/28/24 08:38	10/28/24 17:59	1
Vinyl chloride	ND		0.14	0.027	mg/Kg	≎	10/28/24 08:38	10/28/24 17:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		80 - 121				10/28/24 08:38	10/28/24 17:59	1
4-Bromofluorobenzene (Surr)	104		80 - 120				10/28/24 08:38	10/28/24 17:59	1
Dibromofluoromethane (Surr)	102		80 - 120				10/28/24 08:38	10/28/24 17:59	1
Toluene-d8 (Surr)	99		80 - 120				10/28/24 08:38	10/28/24 17:59	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	70.7		0.1	0.1	%			10/30/24 14:28	1

0.1

29.3

0.1 %

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4 4

10/30/24 14:28

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-55a-SO-8.7-20241022

Lab Sample ID: 580-145160-2 Date Collected: 10/22/24 11:15 **Matrix: Solid**

Percent Solids: 69.6 Date Received: 10/25/24 12:30

Analyte	Result Qualifier	RL _	MDL		D	Prepared	Analyzed	Dil F
1,1,1,2-Tetrachloroethane	ND	0.32	0.079	mg/Kg	☼	10/28/24 08:39	10/28/24 22:26	
1,1,1-Trichloroethane	ND	0.63	0.073	mg/Kg	☼	10/28/24 08:39	10/28/24 22:26	
1,1,2,2-Tetrachloroethane	ND	0.32	0.12	mg/Kg	☼	10/28/24 08:39	10/28/24 22:26	
1,1,2-Trichloroethane	ND	0.32	0.12	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
1,1-Dichloroethane	ND	0.63	0.15	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
1,1-Dichloroethene	ND	0.63	0.19	mg/Kg	☼	10/28/24 08:39	10/28/24 22:26	
1,1-Dichloropropene	ND	0.63	0.084	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
1,2,3-Trichlorobenzene	ND	1.3	0.63	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
I,2,3-Trichloropropane	ND	0.63	0.18	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
,2,4-Trichlorobenzene	ND	1.3	0.67	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
I,2,4-Trimethylbenzene	ND	0.63	0.21	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
,2-Dibromo-3-Chloropropane	ND	0.95	0.24	mg/Kg	₽	10/28/24 08:39	10/28/24 22:26	
,2-Dibromoethane	ND	0.32		mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
I,2-Dichlorobenzene	10	0.63		mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
,2-Dichloroethane	ND	0.32		mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
I,2-Dichloropropane	ND	0.32		mg/Kg	∴	10/28/24 08:39	10/28/24 22:26	
,3,5-Trimethylbenzene	ND	0.63		mg/Kg	⊅	10/28/24 08:39	10/28/24 22:26	
,3-Dichlorobenzene	2.2	0.95	0.21	mg/Kg	₩.	10/28/24 08:39	10/28/24 22:26	
,3-Dichloropropane	ND	0.95		mg/Kg		10/28/24 08:39		
2-Chlorotoluene	ND	0.63		mg/Kg	₩.		10/28/24 22:26	
-Chlorotoluene	0.31 J	0.63		mg/Kg		10/28/24 08:39	10/28/24 22:26	
-Isopropyltoluene	0.36 J	0.63		mg/Kg		10/28/24 08:39		
Benzene	ND	0.32		mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
Bromobenzene	0.62 J	0.63		mg/Kg	☆	10/28/24 08:39	10/28/24 22:26	
Bromochloromethane	0.62 J ND	0.63		mg/Kg	¥ \$	10/28/24 08:39		
Bromodichloromethane	ND	0.63		mg/Kg		10/28/24 08:39	10/28/24 22:26	
Bromoform	ND ND	0.63		0 0	*	10/28/24 08:39	10/28/24 22:26	
					<u></u> .			
Bromomethane	ND	1.6		mg/Kg	ψ.	10/28/24 08:39	10/28/24 22:26	
Carbon tetrachloride	ND	0.32		mg/Kg	*	10/28/24 08:39	10/28/24 22:26	
Chloroethane	ND	1.3		mg/Kg	<u>.</u> .	10/28/24 08:39	10/28/24 22:26	
Chloroform	ND	0.32		mg/Kg	*	10/28/24 08:39	10/28/24 22:26	
Chloromethane	ND	0.95		mg/Kg	*	10/28/24 08:39	10/28/24 22:26	
is-1,2-Dichloroethene	ND	0.95		mg/Kg		10/28/24 08:39	10/28/24 22:26	
is-1,3-Dichloropropene	ND	0.32		mg/Kg	₽		10/28/24 22:26	
Dibromochloromethane	ND	0.32		mg/Kg	₩	10/28/24 08:39		
Dibromomethane	ND	0.63		mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
Dichlorodifluoromethane	ND	3.9		mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
Ethylbenzene	ND	0.63	0.14	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
lexachlorobutadiene	ND	1.6		mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
sopropylbenzene	ND	0.63	0.14	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
Nethyl tert-butyl ether	ND	0.63	0.095	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
lethylene Chloride	ND	3.9	0.41	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
n-Xylene & p-Xylene	ND	0.63	0.11	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
laphthalene	ND	2.4	0.62	mg/Kg	☼	10/28/24 08:39	10/28/24 22:26	
-Butylbenzene	ND	0.63	0.29	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
l-Propylbenzene	ND	0.63	0.24	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	
-Xylene	ND	0.63		mg/Kg	☼		10/28/24 22:26	
sec-Butylbenzene	ND	0.63		mg/Kg	₽		10/28/24 22:26	
Styrene	ND	0.63		mg/Kg	∴		10/28/24 22:26	

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-55a-SO-8.7-20241022

Date Collected: 10/22/24 11:15 Date Received: 10/25/24 12:30

Percent Solids (SM22 2540G)

Percent Moisture (SM22 2540G)

Lab Sample ID: 580-145160-2

Matrix: Solid Percent Solids: 69.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	ND		0.63	0.12	mg/Kg	<u></u>	10/28/24 08:39	10/28/24 22:26	1
Tetrachloroethene	12		0.63	0.084	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	1
Toluene	ND		0.95	0.21	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	1
trans-1,2-Dichloroethene	ND		0.95	0.23	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	1
trans-1,3-Dichloropropene	ND		0.63	0.11	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	1
Trichloroethene	ND		0.63	0.16	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	1
Trichlorofluoromethane	ND		1.3	0.41	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	1
Vinyl chloride	ND		1.6	0.30	mg/Kg	₩	10/28/24 08:39	10/28/24 22:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		80 - 121				10/28/24 08:39	10/28/24 22:26	1
4-Bromofluorobenzene (Surr)	99		80 - 120				10/28/24 08:39	10/28/24 22:26	1
Dibromofluoromethane (Surr)	100		80 - 120				10/28/24 08:39	10/28/24 22:26	1
Toluene-d8 (Surr)	103		80 - 120				10/28/24 08:39	10/28/24 22:26	

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	63		19	3.4	mg/Kg	-	10/29/24 08:14	10/29/24 13:57	1
2,2-Dichloropropane	ND		13	3.8	mg/Kg	₩	10/29/24 08:14	10/29/24 13:57	1
Chlorobenzene	2900		13	1.5	mg/Kg	☼	10/29/24 08:14	10/29/24 13:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		80 - 121				10/29/24 08:14	10/29/24 13:57	1
4-Bromofluorobenzene (Surr)	97		80 - 120				10/29/24 08:14	10/29/24 13:57	1
Dibromofluoromethane (Surr)	108		80 - 120				10/29/24 08:14	10/29/24 13:57	1
Toluene-d8 (Surr)	99		80 - 120				10/29/24 08:14	10/29/24 13:57	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac

0.1

0.1

69.6

30.4

0.1 %

0.1 %

11/20/2024 (Rev. 1)

10/30/24 14:28

10/30/24 14:28

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-SO-20241022

Lab Sample ID: 580-145160-3 Date Collected: 10/22/24 00:01 **Matrix: Solid**

Date Received: 10/25/24 12:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil F
I,1,1,2-Tetrachloroethane	ND		0.020	0.0050	mg/Kg		10/28/24 08:38	10/28/24 13:10	
I,1,1-Trichloroethane	ND		0.040	0.0046			10/28/24 08:38	10/28/24 13:10	
I,1,2,2-Tetrachloroethane	ND		0.020	0.0076			10/28/24 08:38	10/28/24 13:10	
I,1,2-Trichloroethane	ND		0.020	0.0074			10/28/24 08:38	10/28/24 13:10	
I,1-Dichloroethane	ND		0.040	0.0092			10/28/24 08:38	10/28/24 13:10	
I,1-Dichloroethene	ND		0.040		mg/Kg		10/28/24 08:38	10/28/24 13:10	
I,1-Dichloropropene	ND		0.040	0.0053			10/28/24 08:38	10/28/24 13:10	
I,2,3-Trichlorobenzene	ND		0.080		mg/Kg			10/28/24 13:10	
I,2,3-Trichloropropane	ND		0.040		mg/Kg		10/28/24 08:38	10/28/24 13:10	
1,2,4-Trichlorobenzene	ND		0.080		mg/Kg		10/28/24 08:38	10/28/24 13:10	
I,2,4-Trimethylbenzene	ND		0.040		mg/Kg			10/28/24 13:10	
I,2-Dibromo-3-Chloropropane	ND		0.060		mg/Kg		10/28/24 08:38	10/28/24 13:10	
1,2-Dibromoethane	ND		0.020	0.0038				10/28/24 13:10	
1,2-Dichlorobenzene	ND		0.040	0.0087			10/28/24 08:38	10/28/24 13:10	
I,2-Dichloroethane	ND		0.020	0.0055			10/28/24 08:38	10/28/24 13:10	
,,2-Dichloropropane	ND		0.020	0.0066			10/28/24 08:38	10/28/24 13:10	
1,3,5-Trimethylbenzene	ND		0.040	0.0076			10/28/24 08:38	10/28/24 13:10	
I,3-Dichlorobenzene	ND		0.060		mg/Kg		10/28/24 08:38	10/28/24 13:10	
1,3-Dichloropropane	ND		0.060	0.0056			10/28/24 08:38	10/28/24 13:10	
I,4-Dichlorobenzene	ND		0.060	0.0030	mg/Kg			10/28/24 13:10	
2,2-Dichloropropane	ND		0.040		mg/Kg			10/28/24 13:10	
2-Chlorotoluene	ND		0.040	0.0088				10/28/24 13:10	
I-Chlorotoluene	ND		0.040	0.0008				10/28/24 13:10	
I-Isopropyltoluene	ND ND		0.040		mg/Kg			10/28/24 13:10	
Benzene	ND		0.040	0.0038				10/28/24 13:10	
Bromobenzene	ND ND		0.020					10/28/24 13:10	
Bromochloromethane	ND ND		0.040	0.0042				10/28/24 13:10	
Bromodichloromethane				0.0062					
Bromoform	ND ND		0.040 0.040	0.0055 0.0045				10/28/24 13:10	
Bromomethane	ND ND		0.040		mg/Kg		10/28/24 08:38 10/28/24 08:38		
Carbon tetrachloride	ND		0.020	0.0044				10/28/24 13:10	
Chlorobenzene Chloroethane	ND		0.040	0.0048			10/28/24 08:38		
	ND		0.080	0.021	mg/Kg			10/28/24 13:10	
Chloroform	ND		0.020	0.0042				10/28/24 13:10	
Chloromethane	ND		0.060		mg/Kg			10/28/24 13:10	
cis-1,2-Dichloroethene	ND		0.060		mg/Kg		10/28/24 08:38	10/28/24 13:10	
sis-1,3-Dichloropropene	ND		0.020	0.0040				10/28/24 13:10	
Dibromochloromethane	ND		0.020	0.0049	0 0			10/28/24 13:10	
Dibromomethane	ND		0.040	0.0074				10/28/24 13:10	
Dichlorodifluoromethane	ND		0.25		mg/Kg			10/28/24 13:10	
Ethylbenzene	ND		0.040	0.0091			10/28/24 08:38		
Hexachlorobutadiene	ND		0.10		mg/Kg		10/28/24 08:38		
sopropylbenzene	ND		0.040	0.0086			10/28/24 08:38		
Methyl tert-butyl ether	ND		0.040	0.0060			10/28/24 08:38		
Methylene Chloride	ND		0.25		mg/Kg		10/28/24 08:38		
n-Xylene & p-Xylene	ND		0.040	0.0071			10/28/24 08:38		
Naphthalene	ND		0.15		mg/Kg			10/28/24 13:10	
n-Butylbenzene	ND		0.040	N N1Q	mg/Kg		10/28/24 08:38	10/28/24 13:10	

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-SO-20241022

Lab Sample ID: 580-145160-3 Date Collected: 10/22/24 00:01 **Matrix: Solid**

Date Received: 10/25/24 12:30

Method: SW846 8260D - Vo	olatile Organic	Compoun	ds by GC/MS	(Conti	inued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		0.040	0.0050	mg/Kg		10/28/24 08:38	10/28/24 13:10	1
sec-Butylbenzene	ND		0.040	0.0086	mg/Kg		10/28/24 08:38	10/28/24 13:10	1
Styrene	ND		0.040	0.013	mg/Kg		10/28/24 08:38	10/28/24 13:10	1
t-Butylbenzene	ND		0.040	0.0077	mg/Kg		10/28/24 08:38	10/28/24 13:10	1
Tetrachloroethene	ND		0.040	0.0053	mg/Kg		10/28/24 08:38	10/28/24 13:10	1
Toluene	ND		0.060	0.014	mg/Kg		10/28/24 08:38	10/28/24 13:10	1
trans-1,2-Dichloroethene	ND		0.060	0.015	mg/Kg		10/28/24 08:38	10/28/24 13:10	1
trans-1,3-Dichloropropene	ND		0.040	0.0070	mg/Kg		10/28/24 08:38	10/28/24 13:10	1
Trichloroethene	ND		0.040	0.010	mg/Kg		10/28/24 08:38	10/28/24 13:10	1
Trichlorofluoromethane	ND		0.080	0.026	mg/Kg		10/28/24 08:38	10/28/24 13:10	1
Vinyl chloride	ND		0.10	0.019	mg/Kg		10/28/24 08:38	10/28/24 13:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		80 - 121				10/28/24 08:38	10/28/24 13:10	1
4-Bromofluorobenzene (Surr)	103		80 - 120				10/28/24 08:38	10/28/24 13:10	1
Dibromofluoromethane (Surr)	103		80 - 120				10/28/24 08:38	10/28/24 13:10	1
Toluene-d8 (Surr)	97		80 - 120				10/28/24 08:38	10/28/24 13:10	1

Client Sample ID: PDI-55b-SO-9.0-20241022

Date Collected: 10/22/24 14:15 Date Received: 10/25/24 12:30 Lab Sample ID: 580-145160-4

Matrix: Solid

Percent Solids: 68.0

Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND ND	0.38	0.095	mg/Kg	<u></u>	10/28/24 08:39	10/28/24 22:47	1
1,1,1-Trichloroethane	ND	0.76	0.088	mg/Kg	☆	10/28/24 08:39	10/28/24 22:47	1
1,1,2,2-Tetrachloroethane	ND	0.38	0.14	mg/Kg	₩	10/28/24 08:39	10/28/24 22:47	1
1,1,2-Trichloroethane	ND	0.38	0.14	mg/Kg	☼	10/28/24 08:39	10/28/24 22:47	1
1,1-Dichloroethane	ND	0.76	0.18	mg/Kg	☼	10/28/24 08:39	10/28/24 22:47	1
1,1-Dichloroethene	ND	0.76	0.23	mg/Kg	₩	10/28/24 08:39	10/28/24 22:47	
1,1-Dichloropropene	ND	0.76	0.10	mg/Kg	::::::::::::::::::::::::::::::::::::::	10/28/24 08:39	10/28/24 22:47	1
1,2,3-Trichlorobenzene	ND	1.5		mg/Kg	☆	10/28/24 08:39	10/28/24 22:47	1
1,2,3-Trichloropropane	ND	0.76	0.22	mg/Kg	₩	10/28/24 08:39	10/28/24 22:47	
1,2,4-Trichlorobenzene	ND	1.5		mg/Kg	₩	10/28/24 08:39	10/28/24 22:47	
1,2,4-Trimethylbenzene	ND	0.76		mg/Kg	₩	10/28/24 08:39	10/28/24 22:47	
1,2-Dibromo-3-Chloropropane	ND	1.1		mg/Kg	÷	10/28/24 08:39	10/28/24 22:47	
1,2-Dibromoethane	ND	0.38		mg/Kg	∴	10/28/24 08:39	10/28/24 22:47	
1,2-Dichloropropane	ND	0.38		mg/Kg	÷	10/28/24 08:39	10/28/24 22:47	1
1,3-Dichloropropane	ND	1.1		mg/Kg	₩	10/28/24 08:39	10/28/24 22:47	
Benzene	ND	0.38		mg/Kg		10/28/24 08:39	10/28/24 22:47	
Bromochloromethane	ND	0.76		mg/Kg	☆	10/28/24 08:39	10/28/24 22:47	
Bromodichloromethane	ND	0.76		mg/Kg	☆	10/28/24 08:39	10/28/24 22:47	
Bromoform	ND	0.76		mg/Kg		10/28/24 08:39	10/28/24 22:47	
Bromomethane	ND	1.9		mg/Kg		10/28/24 08:39	10/28/24 22:47	
Carbon tetrachloride	ND	0.38		mg/Kg	~ ☆	10/28/24 08:39	10/28/24 22:47	
Chloroethane	ND	1.5		mg/Kg		10/28/24 08:39	10/28/24 22:47	
Chloroform	ND	0.38		mg/Kg	₩	10/28/24 08:39	10/28/24 22:47	
Chloromethane	ND ND	1.1		mg/Kg	₩	10/28/24 08:39	10/28/24 22:47	
cis-1,2-Dichloroethene	ND	1.1		mg/Kg		10/28/24 08:39	10/28/24 22:47	· · · · · · .
cis-1,3-Dichloropropene	ND	0.38		mg/Kg	☆	10/28/24 08:39	10/28/24 22:47	
Dibromochloromethane	ND ND	0.38		mg/Kg		10/28/24 08:39	10/28/24 22:47	
Dibromomethane	ND				· · · · · · · · · · · · · · · · · · ·			
	ND ND	0.76		mg/Kg	ф Ф	10/28/24 08:39	10/28/24 22:47	
Dichlorodifluoromethane	ND	4.8 0.76		mg/Kg	ф Ф	10/28/24 08:39	10/28/24 22:47	
Ethylbenzene				mg/Kg			10/28/24 22:47	
Hexachlorobutadiene	ND	1.9		mg/Kg	ф.	10/28/24 08:39	10/28/24 22:47	
Isopropylbenzene	ND	0.76		mg/Kg	ф.		10/28/24 22:47	
Methyl tert-butyl ether	ND	0.76		mg/Kg	<u>.</u> .	10/28/24 08:39	10/28/24 22:47	
Methylene Chloride	ND	4.8		mg/Kg	*	10/28/24 08:39	10/28/24 22:47	
m-Xylene & p-Xylene	ND	0.76		mg/Kg	‡	10/28/24 08:39		
n-Butylbenzene	ND	0.76		mg/Kg		10/28/24 08:39	10/28/24 22:47	
N-Propylbenzene	ND	0.76		mg/Kg	☼	10/28/24 08:39	10/28/24 22:47	
o-Xylene	ND	0.76		mg/Kg	☼	10/28/24 08:39	10/28/24 22:47	
sec-Butylbenzene	ND	0.76		mg/Kg		10/28/24 08:39		
Styrene	ND	0.76		mg/Kg	₩	10/28/24 08:39		
t-Butylbenzene	ND	0.76		mg/Kg	₩		10/28/24 22:47	
Toluene	ND	1.1		mg/Kg			10/28/24 22:47	
trans-1,2-Dichloroethene	ND	1.1		mg/Kg	☼	10/28/24 08:39	10/28/24 22:47	
trans-1,3-Dichloropropene	ND	0.76		mg/Kg	₩	10/28/24 08:39		
Trichloroethene	ND	0.76		mg/Kg	*	10/28/24 08:39		
Trichlorofluoromethane	ND	1.5	0.50	mg/Kg	₩	10/28/24 08:39		
Vinyl chloride	ND	1.9	0.36	mg/Kg	₽	10/28/24 08:39	10/28/24 22:47	
Surrogate	%Recovery Qualifier	Limits				Prepared	Analyzed	Dil Fa
1,2-Dichloroethane-d4 (Surr)	97	80 - 121					10/28/24 22:47	

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-55b-SO-9.0-20241022

Lab Sample ID: 580-145160-4 Date Collected: 10/22/24 14:15 **Matrix: Solid**

Date Received: 10/25/24 12:30 Percent Solids: 68.0

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	120		80 - 120	10/28/24 08:39	10/28/24 22:47	1
Dibromofluoromethane (Surr)	97		80 - 120	10/28/24 08:39	10/28/24 22:47	1
Toluene-d8 (Surr)	129	S1+	80 - 120	10/28/24 08:39	10/28/24 22:47	1

Analyte	Result Qualifie	er RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichlorobenzene	34		3.3	mg/Kg	<u></u>	10/29/24 08:14	10/29/24 14:18	1
1,2-Dichloroethane	ND	7.6	2.1	mg/Kg	☼	10/29/24 08:14	10/29/24 14:18	1
1,3,5-Trimethylbenzene	ND	15	2.9	mg/Kg	☼	10/29/24 08:14	10/29/24 14:18	1
1,3-Dichlorobenzene	8.1 J	23	5.1	mg/Kg	⊅	10/29/24 08:14	10/29/24 14:18	1
1,4-Dichlorobenzene	190	23	4.1	mg/Kg	☼	10/29/24 08:14	10/29/24 14:18	1
2,2-Dichloropropane	ND	15	4.6	mg/Kg	₩	10/29/24 08:14	10/29/24 14:18	1
2-Chlorotoluene	ND	15	3.4	mg/Kg	⊅	10/29/24 08:14	10/29/24 14:18	1
4-Chlorotoluene	ND	15	3.7	mg/Kg	☼	10/29/24 08:14	10/29/24 14:18	1
4-Isopropyltoluene	ND	15	3.9	mg/Kg	☼	10/29/24 08:14	10/29/24 14:18	1
Bromobenzene	ND	15	1.6	mg/Kg	⊅	10/29/24 08:14	10/29/24 14:18	1
Chlorobenzene	300	35	4.3	mg/Kg	☼	11/05/24 10:17	11/05/24 17:33	500
Naphthalene	ND	57	15	mg/Kg	☼	10/29/24 08:14	10/29/24 14:18	1
Tetrachloroethene	37	15	2.0	mg/Kg	₩	10/29/24 08:14	10/29/24 14:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)			80 - 121	10/29/24 08:14	10/29/24 14:18	1
1,2-Dichloroethane-d4 (Surr)	109		80 - 121	11/05/24 10:17	11/05/24 17:33	500
4-Bromofluorobenzene (Surr)	97		80 - 120	10/29/24 08:14	10/29/24 14:18	1
4-Bromofluorobenzene (Surr)	98		80 - 120	11/05/24 10:17	11/05/24 17:33	500
Dibromofluoromethane (Surr)	114		80 - 120	10/29/24 08:14	10/29/24 14:18	1
Dibromofluoromethane (Surr)	110		80 - 120	11/05/24 10:17	11/05/24 17:33	500
Toluene-d8 (Surr)	100		80 - 120	10/29/24 08:14	10/29/24 14:18	1
Toluene-d8 (Surr)	96		80 - 120	11/05/24 10:17	11/05/24 17:33	500

General Chemistry

Concrat Chamber,							
Analyte	Result Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	68.0	0.1	0.1 %			10/30/24 14:28	1
Percent Moisture (SM22 2540G)	32.0	0.1	0.1 %			10/30/24 14:28	1

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Date Collected: 10/22/24 15:55

Matrix: Solid

Date Received: 10/25/24 12:30

Percent Solids: 74.3

Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
,1,1,2-Tetrachloroethane	ND ND	0.030	0.0075		— <u>-</u>	10/28/24 08:38	10/28/24 18:19	
,1,1-Trichloroethane	ND	0.060	0.0069		₩	10/28/24 08:38	10/28/24 18:19	
,1,2,2-Tetrachloroethane	ND	0.030		mg/Kg	₩	10/28/24 08:38	10/28/24 18:19	
,1,2-Trichloroethane	ND	0.030		mg/Kg	∴		10/28/24 18:19	
,1-Dichloroethane	ND	0.060		mg/Kg	₩	10/28/24 08:38		
, ,1-Dichloroethene	ND	0.060		mg/Kg	₩		10/28/24 18:19	
,1-Dichloropropene	ND	0.060	0.0080				10/28/24 18:19	
,2,3-Trichlorobenzene	ND	0.12		mg/Kg			10/28/24 18:19	
,2,3-Trichloropropane	ND	0.060		mg/Kg			10/28/24 18:19	
,2,4-Trichlorobenzene	ND	0.12		mg/Kg	∵ ∵		10/28/24 18:19	
,2,4-Trimethylbenzene	ND	0.060		mg/Kg	₩		10/28/24 18:19	
,2-Dibromo-3-Chloropropane	ND	0.000		mg/Kg	₩		10/28/24 18:19	
,2-Dibromoethane	ND	0.030	0.0057				10/28/24 18:19	
.2-Dichlorobenzene	ND ND	0.030		mg/Kg			10/28/24 18:19	
,	ND ND			0 0	*		10/28/24 18:19	
,2-Dichloroethane		0.030	0.0083		<u> </u>			
,2-Dichloropropane	ND	0.030	0.0099	0 0	₩.		10/28/24 18:19	
,3,5-Trimethylbenzene	ND	0.060		mg/Kg	*		10/28/24 18:19	
,3-Dichlorobenzene	ND	0.090		mg/Kg	.	10/28/24 08:38		
3-Dichloropropane	ND	0.090	0.0084		₩		10/28/24 18:19	
4-Dichlorobenzene	ND	0.090		mg/Kg	☼		10/28/24 18:19	
2-Dichloropropane	ND	0.060		mg/Kg	.	10/28/24 08:38	10/28/24 18:19	
-Chlorotoluene	ND	0.060		mg/Kg	₩		10/28/24 18:19	
-Chlorotoluene	ND	0.060		mg/Kg	₩		10/28/24 18:19	
-Isopropyltoluene	ND	0.060		mg/Kg	₩	10/28/24 08:38	10/28/24 18:19	
enzene	ND	0.030	0.0057		₩	10/28/24 08:38	10/28/24 18:19	
romobenzene	ND	0.060	0.0063	0 0	₩	10/28/24 08:38	10/28/24 18:19	
romochloromethane	ND	0.060	0.0093	mg/Kg	₩	10/28/24 08:38	10/28/24 18:19	
romodichloromethane	ND	0.060	0.0083		☼	10/28/24 08:38	10/28/24 18:19	
romoform	ND	0.060	0.0068	mg/Kg	☼	10/28/24 08:38	10/28/24 18:19	
romomethane	ND	0.15	0.057	mg/Kg	☼	10/28/24 08:38	10/28/24 18:19	
arbon tetrachloride	ND	0.030	0.0066	mg/Kg	₩	10/28/24 08:38	10/28/24 18:19	
hlorobenzene	0.11	0.060	0.0072	mg/Kg	₩	10/28/24 08:38	10/28/24 18:19	
hloroethane	ND	0.12	0.031	mg/Kg	₩	10/28/24 08:38	10/28/24 18:19	
hloroform	ND	0.030	0.0063	mg/Kg	₩	10/28/24 08:38	10/28/24 18:19	
hloromethane	ND	0.090	0.015	mg/Kg	₩	10/28/24 08:38	10/28/24 18:19	
s-1,2-Dichloroethene	ND	0.090	0.019	mg/Kg	₩	10/28/24 08:38	10/28/24 18:19	
s-1,3-Dichloropropene	ND	0.030	0.0060	mg/Kg		10/28/24 08:38	10/28/24 18:19	
ibromochloromethane	ND	0.030	0.0074		₩	10/28/24 08:38	10/28/24 18:19	
ibromomethane	ND	0.060		mg/Kg	₩		10/28/24 18:19	
ichlorodifluoromethane	ND	0.38		mg/Kg	₩.	10/28/24 08:38	10/28/24 18:19	
thylbenzene	ND	0.060		mg/Kg	₩		10/28/24 18:19	
exachlorobutadiene	ND	0.15		mg/Kg			10/28/24 18:19	
opropylbenzene	ND	0.060		mg/Kg			10/28/24 18:19	
ethyl tert-butyl ether	ND	0.060	0.0090		₩		10/28/24 18:19	
ethylene Chloride	ND ND	0.000		mg/Kg	₩		10/28/24 18:19	
							10/28/24 18:19	
-Xylene & p-Xylene	ND ND	0.060		mg/Kg	*			
aphthalene Butulbanzana	ND	0.23		mg/Kg	₩.		10/28/24 18:19	
-Butylbenzene I-Propylbenzene	ND ND	0.060		mg/Kg mg/Kg	 ф		10/28/24 18:19 10/28/24 18:19	

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Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Percent Moisture (SM22 2540G)

25.7

Date Collected: 10/22/24 15:55

Matrix: Solid

Date Received: 10/25/24 12:30

Percent Solids: 74.3

Method: SW846 8260D - Vola Analyte	_	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		0.060	0.0075	mg/Kg	— <u>-</u>	10/28/24 08:38	10/28/24 18:19	1
sec-Butylbenzene	ND		0.060		mg/Kg	₩	10/28/24 08:38	10/28/24 18:19	1
Styrene	ND		0.060	0.019			10/28/24 08:38	10/28/24 18:19	1
t-Butylbenzene	ND		0.060	0.012	mg/Kg	☆	10/28/24 08:38	10/28/24 18:19	1
Tetrachloroethene	ND		0.060	0.0080	mg/Kg	₩	10/28/24 08:38	10/28/24 18:19	1
Toluene	ND		0.090	0.020	mg/Kg	₩	10/28/24 08:38	10/28/24 18:19	1
trans-1,2-Dichloroethene	ND		0.090	0.022	mg/Kg	☼	10/28/24 08:38	10/28/24 18:19	1
trans-1,3-Dichloropropene	ND		0.060	0.011	mg/Kg	☼	10/28/24 08:38	10/28/24 18:19	1
Trichloroethene	ND		0.060	0.015	mg/Kg	₽	10/28/24 08:38	10/28/24 18:19	1
Trichlorofluoromethane	ND		0.12	0.039	mg/Kg	☼	10/28/24 08:38	10/28/24 18:19	1
Vinyl chloride	ND		0.15	0.028	mg/Kg	₩	10/28/24 08:38	10/28/24 18:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		80 - 121				10/28/24 08:38	10/28/24 18:19	1
4-Bromofluorobenzene (Surr)	102		80 - 120				10/28/24 08:38	10/28/24 18:19	1
Dibromofluoromethane (Surr)	110		80 - 120				10/28/24 08:38	10/28/24 18:19	1
Toluene-d8 (Surr)	102		80 - 120				10/28/24 08:38	10/28/24 18:19	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	74.3		0.1	0.1	%			10/30/24 14:28	1
the state of the s									

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0.1 %

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10/30/24 14:28

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: RB-01-WQ-20241023

Lab Sample ID: 580-145160-6

Date Collected: 10/23/24 08:05 **Matrix: Water** Date Received: 10/25/24 12:30

Analyte	Result Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
Dichlorodifluoromethane	ND	1.0	0.53	ug/L			11/04/24 14:23	
Chloromethane	ND	1.0	0.28	ug/L			11/04/24 14:23	
Vinyl chloride	ND	1.0	0.22	ug/L			11/04/24 14:23	
Bromomethane	ND	1.0	0.21	ug/L			11/04/24 14:23	
Chloroethane	ND	1.0	0.35	ug/L			11/04/24 14:23	
Trichlorofluoromethane	ND	1.0	0.36	ug/L			11/04/24 14:23	
1,1-Dichloroethene	ND	1.0	0.28	ug/L			11/04/24 14:23	
Methylene Chloride	ND *+	5.0	1.4	ug/L			11/04/24 14:23	
trans-1,2-Dichloroethene	ND	1.0	0.39	ug/L			11/04/24 14:23	
1,1-Dichloroethane	ND	1.0	0.22	ug/L			11/04/24 14:23	
2,2-Dichloropropane	ND *+	1.0	0.32	ug/L			11/04/24 14:23	
cis-1,2-Dichloroethene	ND	1.0	0.35	ug/L			11/04/24 14:23	
Bromochloromethane	ND	1.0		ug/L			11/04/24 14:23	
Chloroform	ND	1.0		ug/L			11/04/24 14:23	
1,1,1-Trichloroethane	ND	1.0		ug/L			11/04/24 14:23	
Carbon tetrachloride	ND	1.0		ug/L			11/04/24 14:23	
1,1-Dichloropropene	ND	1.0		ug/L			11/04/24 14:23	
Benzene	0.25 J	1.0		ug/L			11/04/24 14:23	
1,2-Dichloroethane	ND	1.0		ug/L			11/04/24 14:23	
Trichloroethene	ND	1.0		ug/L			11/04/24 14:23	
1,2-Dichloropropane	ND	1.0		ug/L			11/04/24 14:23	
Dibromomethane	ND	1.0		ug/L			11/04/24 14:23	
Bromodichloromethane	ND *+	1.0		ug/L			11/04/24 14:23	
cis-1,3-Dichloropropene	ND ND	1.0		ug/L			11/04/24 14:23	
Toluene	ND ND	1.0		ug/L ug/L			11/04/24 14:23	
	ND	1.0		ug/L			11/04/24 14:23	
trans-1,3-Dichloropropene 1,1,2-Trichloroethane	ND ND	1.0		ug/L ug/L			11/04/24 14:23	
Tetrachloroethene								
	ND	1.0		ug/L			11/04/24 14:23	
1,3-Dichloropropane	ND	1.0		ug/L			11/04/24 14:23	
Dibromochloromethane	ND	1.0		ug/L			11/04/24 14:23	
1,2-Dibromoethane	ND	1.0		ug/L			11/04/24 14:23	
Chlorobenzene	ND	1.0		ug/L			11/04/24 14:23	
Ethylbenzene	ND	1.0		ug/L			11/04/24 14:23	
1,1,1,2-Tetrachloroethane	ND	1.0		ug/L			11/04/24 14:23	
1,1,2,2-Tetrachloroethane	ND	1.0		ug/L			11/04/24 14:23	
m-Xylene & p-Xylene	ND	2.0		ug/L			11/04/24 14:23	
o-Xylene	ND	1.0		ug/L			11/04/24 14:23	
Styrene	ND	1.0		ug/L			11/04/24 14:23	
Bromoform	ND	1.0		ug/L			11/04/24 14:23	
Isopropylbenzene	ND	1.0	0.44	ug/L			11/04/24 14:23	
Bromobenzene	ND	1.0	0.43	ug/L			11/04/24 14:23	
N-Propylbenzene	ND	1.0		ug/L			11/04/24 14:23	
1,2,3-Trichloropropane	ND	1.0	0.41	ug/L			11/04/24 14:23	
2-Chlorotoluene	ND	1.0	0.51	ug/L			11/04/24 14:23	
1,3,5-Trimethylbenzene	ND	1.0	0.55	ug/L			11/04/24 14:23	
4-Chlorotoluene	ND	1.0	0.38	ug/L			11/04/24 14:23	
t-Butylbenzene	ND	2.0	0.58	ug/L			11/04/24 14:23	
1,2,4-Trimethylbenzene	ND	3.0		ug/L			11/04/24 14:23	
sec-Butylbenzene	ND	1.0		ug/L			11/04/24 14:23	

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11/20/2024 (Rev. 1)

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: RB-01-WQ-20241023

Lab Sample ID: 580-145160-6 Date Collected: 10/23/24 08:05

Matrix: Water

Date Received: 10/25/24 12:30

Method: SW846 8260D - Vo		-	-		,	_	D	A I	D11 E
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			11/04/24 14:23	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			11/04/24 14:23	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			11/04/24 14:23	1
n-Butylbenzene	ND		1.0	0.44	ug/L			11/04/24 14:23	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			11/04/24 14:23	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			11/04/24 14:23	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			11/04/24 14:23	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			11/04/24 14:23	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			11/04/24 14:23	1
Naphthalene	ND		3.0	0.93	ug/L			11/04/24 14:23	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			11/04/24 14:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	91		80 - 120			•		11/04/24 14:23	1
4-Bromofluorobenzene (Surr)	102		80 - 120					11/04/24 14:23	1
Dibromofluoromethane (Surr)	111		80 - 120					11/04/24 14:23	1
1.2-Dichloroethane-d4 (Surr)	114		80 - 120					11/04/24 14:23	1

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-WQ-20241023

Lab Sample ID: 580-145160-7

Date Collected: 10/23/24 00:01 **Matrix: Water** Date Received: 10/25/24 12:30

Analyte	Result Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
Dichlorodifluoromethane	ND	1.0	0.53	ug/L			11/04/24 14:46	
Chloromethane	ND	1.0	0.28	ug/L			11/04/24 14:46	
Vinyl chloride	ND	1.0	0.22	ug/L			11/04/24 14:46	
Bromomethane	ND	1.0	0.21	ug/L			11/04/24 14:46	
Chloroethane	ND	1.0	0.35	ug/L			11/04/24 14:46	
Trichlorofluoromethane	ND	1.0	0.36	ug/L			11/04/24 14:46	
1,1-Dichloroethene	ND	1.0	0.28	ug/L			11/04/24 14:46	
Methylene Chloride	ND *+	5.0	1.4	ug/L			11/04/24 14:46	
trans-1,2-Dichloroethene	ND	1.0	0.39	ug/L			11/04/24 14:46	
1,1-Dichloroethane	ND	1.0	0.22	ug/L			11/04/24 14:46	
2,2-Dichloropropane	ND *+	1.0	0.32	ug/L			11/04/24 14:46	
cis-1,2-Dichloroethene	ND	1.0	0.35	ug/L			11/04/24 14:46	
Bromochloromethane	ND	1.0		ug/L			11/04/24 14:46	
Chloroform	ND	1.0		ug/L			11/04/24 14:46	
1,1,1-Trichloroethane	ND	1.0		ug/L			11/04/24 14:46	
Carbon tetrachloride	ND	1.0		ug/L			11/04/24 14:46	
1,1-Dichloropropene	ND	1.0		ug/L			11/04/24 14:46	
Benzene	ND	1.0		ug/L			11/04/24 14:46	
1,2-Dichloroethane	ND	1.0		ug/L			11/04/24 14:46	
Trichloroethene	ND	1.0		ug/L			11/04/24 14:46	
1,2-Dichloropropane	ND	1.0		ug/L			11/04/24 14:46	
Dibromomethane	ND	1.0		ug/L			11/04/24 14:46	
Bromodichloromethane	ND *+	1.0		ug/L			11/04/24 14:46	
cis-1,3-Dichloropropene	ND	1.0		ug/L			11/04/24 14:46	
Toluene	ND	1.0		ug/L			11/04/24 14:46	
trans-1,3-Dichloropropene	ND	1.0		ug/L			11/04/24 14:46	
1,1,2-Trichloroethane	ND	1.0		ug/L			11/04/24 14:46	
Tetrachloroethene	ND	1.0		ug/L			11/04/24 14:46	
1,3-Dichloropropane	ND	1.0		ug/L			11/04/24 14:46	
Dibromochloromethane	ND	1.0		ug/L			11/04/24 14:46	
1,2-Dibromoethane	ND	1.0		ug/L			11/04/24 14:46	
Chlorobenzene	ND	1.0		ug/L			11/04/24 14:46	
Ethylbenzene	ND	1.0		ug/L			11/04/24 14:46	
1,1,1,2-Tetrachloroethane	ND	1.0		ug/L ug/L			11/04/24 14:46	
1,1,2,2-Tetrachloroethane	ND	1.0		ug/L ug/L			11/04/24 14:46	
m-Xylene & p-Xylene	ND	2.0		ug/L			11/04/24 14:46	
							11/04/24 14:46	
o-Xylene Styrono	ND	1.0		ug/L				
Styrene	ND	1.0		ug/L			11/04/24 14:46	
Bromoform	ND	1.0		ug/L			11/04/24 14:46	
Isopropylbenzene	ND	1.0		ug/L			11/04/24 14:46	
Bromobenzene	ND	1.0		ug/L			11/04/24 14:46	
N-Propylbenzene	ND	1.0		ug/L			11/04/24 14:46	
1,2,3-Trichloropropane	ND	1.0		ug/L			11/04/24 14:46	
2-Chlorotoluene	ND	1.0		ug/L			11/04/24 14:46	
1,3,5-Trimethylbenzene	ND	1.0		ug/L			11/04/24 14:46	
4-Chlorotoluene	ND	1.0		ug/L			11/04/24 14:46	
t-Butylbenzene	ND	2.0		ug/L			11/04/24 14:46	
1,2,4-Trimethylbenzene	ND	3.0	0.61	ug/L			11/04/24 14:46	

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-WQ-20241023

Lab Sample ID: 580-145160-7

Date Collected: 10/23/24 00:01 **Matrix: Water** Date Received: 10/25/24 12:30

Method: SW846 8260D - Vo		-	-	-	,	_	Duamanad	A a l a al	D:: F
Analyte		Qualifier	RL		Unit	<u>D</u> .	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			11/04/24 14:46	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			11/04/24 14:46	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			11/04/24 14:46	1
n-Butylbenzene	ND		1.0	0.44	ug/L			11/04/24 14:46	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			11/04/24 14:46	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			11/04/24 14:46	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			11/04/24 14:46	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			11/04/24 14:46	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			11/04/24 14:46	1
Naphthalene	ND		3.0	0.93	ug/L			11/04/24 14:46	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			11/04/24 14:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	90		80 - 120			•		11/04/24 14:46	1
4-Bromofluorobenzene (Surr)	103		80 - 120					11/04/24 14:46	1
Dibromofluoromethane (Surr)	111		80 - 120					11/04/24 14:46	1
1.2-Dichloroethane-d4 (Surr)	114		80 - 120					11/04/24 14:46	1

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

N-Propylbenzene

sec-Butylbenzene

o-Xylene

Client Sample ID: PDI-55c-SO-44.3-20241023

Lab Sample ID: 580-145160-8 Date Collected: 10/23/24 09:10 Matrix: Solid Date Received: 10/25/24 12:30 Percent Solids: 71.8

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 1,1,1,2-Tetrachloroethane ND 0.031 0.0078 mg/Kg 10/29/24 08:14 10/29/24 12:15 ND 1.1.1-Trichloroethane 0.063 0.0072 mg/Kg 10/29/24 08:14 10/29/24 12:15 1,1,2,2-Tetrachloroethane ND 0.031 0.012 mg/Kg 10/29/24 08:14 10/29/24 12:15 10/29/24 12:15 1,1,2-Trichloroethane ND 0.031 0.012 mg/Kg 10/29/24 08:14 0.063 0.014 mg/Kg 10/29/24 08:14 10/29/24 12:15 1.1-Dichloroethane ND 1,1-Dichloroethene ND 0.063 0.019 mg/Kg 10/29/24 08:14 10/29/24 12:15 1,1-Dichloropropene ND 0.063 0.0083 10/29/24 08:14 10/29/24 12:15 mg/Kg ND 0.062 10/29/24 08:14 10/29/24 12:15 1,2,3-Trichlorobenzene 0.13 mg/Kg 1,2,3-Trichloropropane ND 0.063 0.018 mg/Kg 10/29/24 08:14 10/29/24 12:15 1,2,4-Trichlorobenzene ND 0.13 0.067 mg/Kg 10/29/24 08:14 10/29/24 12:15 1,2,4-Trimethylbenzene ND 0.063 0.021 mg/Kg 10/29/24 08:14 10/29/24 12:15 mg/Kg 1.2-Dibromo-3-Chloropropane ND 0.094 0.024 10/29/24 08:14 10/29/24 12:15 1 1,2-Dibromoethane ND 0.031 0.0060 mg/Kg 10/29/24 08:14 10/29/24 12:15 1,2-Dichlorobenzene ND 0.063 0.014 mg/Kg 10/29/24 08:14 10/29/24 12:15 0.0086 ND 0.031 mg/Kg 10/29/24 08:14 10/29/24 12:15 1.2-Dichloroethane 0.010 1,2-Dichloropropane NΩ 0.031 mg/Kg 10/29/24 08:14 10/29/24 12:15 0.012 10/29/24 12:15 1,3,5-Trimethylbenzene ND 0.063 mg/Kg 10/29/24 08:14 1,3-Dichlorobenzene ND 0.094 0.021 mg/Kg 10/29/24 08:14 10/29/24 12:15 ND 0.094 8800.0 10/29/24 08:14 10/29/24 12:15 1,3-Dichloropropane mg/Kg 1,4-Dichlorobenzene ND 0.094 0.017 mg/Kg 10/29/24 08:14 10/29/24 12:15 2,2-Dichloropropane ND 0.063 0.019 mg/Kg ÷ 10/29/24 08:14 10/29/24 12:15 2-Chlorotoluene ND 0.063 0.014 mg/Kg 10/29/24 08:14 10/29/24 12:15 4-Chlorotoluene ND 0.015 10/29/24 08:14 10/29/24 12:15 0.063 mg/Kg 4-Isopropyltoluene ND 0.063 0.016 mg/Kg 10/29/24 08:14 10/29/24 12:15 Benzene ND 0.031 0.0060 mg/Kg 10/29/24 08:14 10/29/24 12:15 Bromobenzene ND 0.063 0.0066 mg/Kg 10/29/24 08:14 10/29/24 12:15 Bromochloromethane ND 0.063 0.0097 mg/Kg 10/29/24 08:14 10/29/24 12:15 Bromodichloromethane 0.0086 10/29/24 12:15 ND 0.063 mg/Kg 10/29/24 08:14 Bromomethane ND 0.16 0.059 mg/Kg 10/29/24 08:14 10/29/24 12:15 Carbon tetrachloride ND 10/29/24 12:15 0.031 0.0069 mg/Kg 10/29/24 08:14 Chlorobenzene ND 0.063 0.0075 mg/Kg 10/29/24 08:14 10/29/24 12:15 Chloroethane ND 0.033 mg/Kg 10/29/24 08:14 10/29/24 12:15 0.13 Chloroform 0.031 0.0066 10/29/24 08:14 10/29/24 12:15 ND mg/Kg 0.016 Chloromethane ND 10/29/24 12:15 0.094 mg/Kg 10/29/24 08:14 cis-1,2-Dichloroethene ND 0.094 0.020 mg/Kg 10/29/24 08:14 10/29/24 12:15 cis-1.3-Dichloropropene ND 0.031 0.0063 mg/Kg 10/29/24 08:14 10/29/24 12:15 Dibromochloromethane ND 0.031 0.0077 mg/Kg 10/29/24 08:14 10/29/24 12:15 Dibromomethane ND 0.063 0.012 mg/Kg 10/29/24 08:14 10/29/24 12:15 Dichlorodifluoromethane ND 0.072 0.39 mg/Kg 10/29/24 08:14 10/29/24 12:15 Ethylbenzene ND 0.063 0.014 mg/Kg 10/29/24 08:14 10/29/24 12:15 Hexachlorobutadiene ND 0.16 0.037 mg/Kg 10/29/24 08:14 10/29/24 12:15 Isopropylbenzene ND 0.063 0.013 mg/Kg 10/29/24 08:14 10/29/24 12:15 0.0094 10/29/24 12:15 Methyl tert-butyl ether ND 0.063 mg/Kg 10/29/24 08:14 m-Xylene & p-Xylene 0.011 10/29/24 08:14 10/29/24 12:15 ND 0.063 mg/Kg 10/29/24 12:15 Naphthalene ND 0.24 0.061 mg/Kg 10/29/24 08:14 n-Butylbenzene ND 0.063 0.029 mg/Kg 10/29/24 08:14 10/29/24 12:15

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10/29/24 12:15

10/29/24 12:15

10/29/24 12:15

10/29/24 08:14

10/29/24 08:14

10/29/24 08:14

0.063

0.063

0.063

0.024

0.0078

mg/Kg

mg/Kg

0.013 mg/Kg

ND

ND

ND

Client: ERM-West

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-55c-SO-44.3-20241023

Date Collected: 10/23/24 09:10 Date Received: 10/25/24 12:30 Lab Sample ID: 580-145160-8

Matrix: Solid Percent Solids: 71.8

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		0.063	0.020	mg/Kg	— <u></u>	10/29/24 08:14	10/29/24 12:15	1
t-Butylbenzene	ND		0.063	0.012	mg/Kg	₩	10/29/24 08:14	10/29/24 12:15	1
Tetrachloroethene	ND		0.063	0.0083	mg/Kg	₩	10/29/24 08:14	10/29/24 12:15	1
Toluene	ND		0.094	0.021	mg/Kg	₩	10/29/24 08:14	10/29/24 12:15	1
trans-1,2-Dichloroethene	ND		0.094	0.023	mg/Kg	₩	10/29/24 08:14	10/29/24 12:15	1
trans-1,3-Dichloropropene	ND		0.063	0.011	mg/Kg	₩	10/29/24 08:14	10/29/24 12:15	1
Trichloroethene	ND		0.063	0.016	mg/Kg	₩	10/29/24 08:14	10/29/24 12:15	1
Trichlorofluoromethane	ND		0.13	0.041	mg/Kg	₩	10/29/24 08:14	10/29/24 12:15	1
Vinyl chloride	ND		0.16	0.029	mg/Kg	₩	10/29/24 08:14	10/29/24 12:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		80 - 121				10/28/24 08:38	10/28/24 13:31	1
1,2-Dichloroethane-d4 (Surr)	108		80 - 121				10/29/24 08:14	10/29/24 12:15	1
4-Bromofluorobenzene (Surr)	102		80 - 120				10/28/24 08:38	10/28/24 13:31	1
4-Bromofluorobenzene (Surr)	100		80 - 120				10/29/24 08:14	10/29/24 12:15	1
Dibromofluoromethane (Surr)	101		80 - 120				10/28/24 08:38	10/28/24 13:31	1
Dibromofluoromethane (Surr)	105		80 - 120				10/29/24 08:14	10/29/24 12:15	1
Toluene-d8 (Surr)	99		80 - 120				10/28/24 08:38	10/28/24 13:31	1
Toluene-d8 (Surr)	99		80 - 120				10/29/24 08:14	10/29/24 12:15	1
Method: SW846 8260D - Vo	olatile Organic	Compoun	ds by GC/MS	- RA					
Analyte	_	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromoform	ND	F1 F2	0.063	0.0071	mg/Kg	— <u></u>	11/04/24 08:44	11/04/24 12:59	1
					mg/Kg		11/04/24 08:44	11/04/24 12:59	

<i>'</i>	Analyte	Result	Qualifier	KL	MDL	Unit	ט	Prepared	Analyzeu	DII Fac
Ē	Bromoform	ND	F1 F2	0.063	0.0071	mg/Kg	<u></u>	11/04/24 08:44	11/04/24 12:59	1
N	Methylene Chloride	ND	F1 F2	0.39	0.041	mg/Kg	₩	11/04/24 08:44	11/04/24 12:59	1
5	Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1	,2-Dichloroethane-d4 (Surr)	95		80 - 121				11/04/24 08:44	11/04/24 12:59	1
4	l-Bromofluorobenzene (Surr)	98		80 - 120				11/04/24 08:44	11/04/24 12:59	1
L	Dibromofluoromethane (Surr)	101		80 - 120				11/04/24 08:44	11/04/24 12:59	1
_7	Toluene-d8 (Surr)	106		80 - 120				11/04/24 08:44	11/04/24 12:59	1

General Chemistry Analyte	Result Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	71.8	0.1	0.1 %			10/30/24 14:28	1
Percent Moisture (SM22 2540G)	28.2	0.1	0.1 %			10/30/24 14:28	1

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

m-Xylene & p-Xylene

Naphthalene

o-Xylene

n-Butylbenzene

N-Propylbenzene

Client Sample ID: PDI-49a-SO-31.85-20241023

Lab Sample ID: 580-145160-9 Date Collected: 10/23/24 13:35 Matrix: Solid Date Received: 10/25/24 12:30 Percent Solids: 69.1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 1,1,1,2-Tetrachloroethane ND 0.034 0.0085 mg/Kg 10/28/24 08:38 10/28/24 18:40 ND 0.068 1.1.1-Trichloroethane 0.0078 mg/Kg 10/28/24 08:38 10/28/24 18:40 10/28/24 18:40 1,1,2,2-Tetrachloroethane ND 0.034 0.013 mg/Kg 10/28/24 08:38 1,1,2-Trichloroethane ND 0.034 0.013 mg/Kg 10/28/24 08:38 10/28/24 18:40 0.068 0.016 mg/Kg 10/28/24 08:38 10/28/24 18:40 1.1-Dichloroethane ND 10/28/24 18:40 1,1-Dichloroethene ND 0.068 0.021 mg/Kg 10/28/24 08:38 1,1-Dichloropropene ND 0.068 0.0090 10/28/24 08:38 10/28/24 18:40 mg/Kg ND 0.067 10/28/24 08:38 10/28/24 18:40 1,2,3-Trichlorobenzene 0 14 mg/Kg 1,2,3-Trichloropropane ND 0.068 0.020 mg/Kg 10/28/24 08:38 10/28/24 18:40 1,2,4-Trichlorobenzene ND 0.14 0.072 mg/Kg 10/28/24 08:38 10/28/24 18:40 1,2,4-Trimethylbenzene ND 0.068 0.023 mg/Kg 10/28/24 08:38 10/28/24 18:40 1.2-Dibromo-3-Chloropropane ND 0.10 0.026 mg/Kg 10/28/24 08:38 10/28/24 18:40 1 1,2-Dibromoethane ND 0.034 0.0065 mg/Kg 10/28/24 08:38 10/28/24 18:40 1,2-Dichlorobenzene ND 0.068 0.015 mg/Kg 10/28/24 08:38 10/28/24 18:40 0.0093 ND 0.034 mg/Kg 10/28/24 08:38 10/28/24 18:40 1.2-Dichloroethane 1,2-Dichloropropane NΩ 0.034 0.011 mg/Kg 10/28/24 08:38 10/28/24 18:40 10/28/24 18:40 1,3,5-Trimethylbenzene ND 0.068 0.013 mg/Kg 10/28/24 08:38 1,3-Dichlorobenzene ND 0.10 0.023 mg/Kg 10/28/24 08:38 10/28/24 18:40 ND 0.0095 mg/Kg 10/28/24 08:38 10/28/24 18:40 1,3-Dichloropropane 0.10 1,4-Dichlorobenzene ND 0.10 0.018 mg/Kg 10/28/24 08:38 10/28/24 18:40 2,2-Dichloropropane ND 0.068 0.021 mg/Kg 10/28/24 08:38 10/28/24 18:40 ť 2-Chlorotoluene ND 0.068 0.015 mg/Kg 10/28/24 08:38 10/28/24 18:40 4-Chlorotoluene ND 10/28/24 08:38 10/28/24 18:40 0.068 0.017 mg/Kg 4-Isopropyltoluene ND 0.068 0.017 mg/Kg 10/28/24 08:38 10/28/24 18:40 Benzene ND 0.034 0.0065 mg/Kg 10/28/24 08:38 10/28/24 18:40 0.0071 Bromobenzene ND 0.068 mg/Kg 10/28/24 08:38 10/28/24 18:40 Bromochloromethane ND 0.068 0.011 mg/Kg 10/28/24 08:38 10/28/24 18:40 Bromodichloromethane 0.0093 ND 0.068 mg/Kg 10/28/24 08:38 10/28/24 18:40 0.0076 Bromoform ND 0.068 mg/Kg 10/28/24 08:38 10/28/24 18:40 0.064 ND Bromomethane 0.17 mg/Kg 10/28/24 08:38 10/28/24 18:40 Carbon tetrachloride ND 0.034 0.0075 mg/Kg 10/28/24 08:38 10/28/24 18:40 Chloroethane ND 0.035 mg/Kg 10/28/24 08:38 10/28/24 18:40 0.14 Chloroform ND 0.034 0.0071 10/28/24 08:38 10/28/24 18:40 mg/Kg 0.017 ND 10/28/24 08:38 10/28/24 18:40 Chloromethane 0.10 mg/Kg cis-1,2-Dichloroethene 0.10 0.021 mg/Kg 10/28/24 08:38 10/28/24 18:40 0.17 ND 0.034 0.0068 mg/Kg 10/28/24 08:38 10/28/24 18:40 cis-1,3-Dichloropropene Dibromochloromethane ND 0.034 0.0083 mg/Kg 10/28/24 08:38 10/28/24 18:40 Dibromomethane ND 0.068 0.013 mg/Kg 10/28/24 08:38 10/28/24 18:40 Dichlorodifluoromethane ND 0.078 0.42 mg/Kg Ö 10/28/24 08:38 10/28/24 18:40 Ethylbenzene ND 0.068 0.015 mg/Kg 10/28/24 08:38 10/28/24 18:40 Hexachlorobutadiene ND 0.17 0.041 mg/Kg 10/28/24 08:38 10/28/24 18:40 Isopropylbenzene ND 0.068 0.015 mg/Kg 10/28/24 08:38 10/28/24 18:40 0.010 10/28/24 18:40 Methyl tert-butyl ether ND 0.068 mg/Kg 10/28/24 08:38 Methylene Chloride 0.044 10/28/24 08:38 10/28/24 18:40 ND 0.42 mg/Kg

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11/20/2024 (Rev. 1)

10/28/24 18:40

10/28/24 18:40

10/28/24 18:40

10/28/24 18:40

10/28/24 18:40

0.068

0.25

0.068

0.068

0.068

0.012 mg/Kg

0.031 mg/Kg

0.0085 mg/Kg

mg/Kg

mg/Kg

0.066

0.025

10/28/24 08:38

10/28/24 08:38

10/28/24 08:38

10/28/24 08:38

10/28/24 08:38

₩

ND

ND

ND

ND

0.097

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Percent Moisture (SM22 2540G)

30.9

Client Sample ID: PDI-49a-SO-31.85-20241023

Lab Sample ID: 580-145160-9 Date Collected: 10/23/24 13:35 **Matrix: Solid**

Date Received: 10/25/24 12:30 Percent Solids: 69.1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
sec-Butylbenzene	ND		0.068	0.015	mg/Kg	— <u></u>	10/28/24 08:38	10/28/24 18:40	1
Styrene	ND		0.068	0.022	mg/Kg	☆	10/28/24 08:38	10/28/24 18:40	1
t-Butylbenzene	ND		0.068	0.013	mg/Kg	₩	10/28/24 08:38	10/28/24 18:40	1
Tetrachloroethene	ND		0.068	0.0090	mg/Kg	☆	10/28/24 08:38	10/28/24 18:40	1
Toluene	ND		0.10	0.023	mg/Kg	₩	10/28/24 08:38	10/28/24 18:40	1
trans-1,2-Dichloroethene	ND		0.10	0.025	mg/Kg	₩	10/28/24 08:38	10/28/24 18:40	1
trans-1,3-Dichloropropene	ND		0.068	0.012	mg/Kg	☆	10/28/24 08:38	10/28/24 18:40	1
Trichloroethene	ND		0.068	0.017	mg/Kg	₩	10/28/24 08:38	10/28/24 18:40	1
Trichlorofluoromethane	ND		0.14	0.044	mg/Kg	₩	10/28/24 08:38	10/28/24 18:40	1
Vinyl chloride	ND		0.17	0.032	mg/Kg	₩	10/28/24 08:38	10/28/24 18:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		80 - 121				10/28/24 08:38	10/28/24 18:40	1
4-Bromofluorobenzene (Surr)	99		80 - 120				10/28/24 08:38	10/28/24 18:40	1
Dibromofluoromethane (Surr)	103		80 - 120				10/28/24 08:38	10/28/24 18:40	1
Toluene-d8 (Surr)	100		80 - 120				10/28/24 08:38	10/28/24 18:40	1
_									
Method: SW846 8260D - Vola	atile Organic	Compound	ds by GC/MS	- DL					
	•	Compound Qualifier	ds by GC/MS RL	- DL MDL	Unit	D	Prepared	Analyzed	Dil Fac
Analyte	Result		•	MDL	Unit mg/Kg	<u>D</u>	Prepared 11/07/24 10:06	Analyzed 11/08/24 00:30	Dil Fac
Analyte Chlorobenzene	Result	Qualifier H	RL	MDL					Dil Fac
Analyte Chlorobenzene Surrogate	Result 58	Qualifier H	RL 0.73	MDL			11/07/24 10:06	11/08/24 00:30	1
Analyte Chlorobenzene Surrogate 1,2-Dichloroethane-d4 (Surr)	Result 58 %Recovery	Qualifier H	RL	MDL			11/07/24 10:06 Prepared	11/08/24 00:30 Analyzed	1 Dil Fac
Analyte Chlorobenzene Surrogate 1,2-Dichloroethane-d4 (Surr) 4-Bromofluorobenzene (Surr)	Result 58 %Recovery 114	Qualifier H	RL 0.73 <i>Limits</i> 80 - 121	MDL			11/07/24 10:06 Prepared 11/07/24 10:06	11/08/24 00:30 Analyzed 11/08/24 00:30	Dil Fac
Analyte Chlorobenzene Surrogate 1,2-Dichloroethane-d4 (Surr) 4-Bromofluorobenzene (Surr)	Result 58 %Recovery 114 99	Qualifier H	RL 0.73 Limits 80 - 121 80 - 120	MDL			11/07/24 10:06 Prepared 11/07/24 10:06 11/07/24 10:06	11/08/24 00:30 Analyzed 11/08/24 00:30 11/08/24 00:30	1 Dil Fac
Method: SW846 8260D - Vola Analyte Chlorobenzene Surrogate 1,2-Dichloroethane-d4 (Surr) 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) General Chemistry	Result 58 %Recovery 114 99 115	Qualifier H	RL 0.73 Limits 80 - 121 80 - 120 80 - 120	MDL			11/07/24 10:06 Prepared 11/07/24 10:06 11/07/24 10:06 11/07/24 10:06	11/08/24 00:30 Analyzed 11/08/24 00:30 11/08/24 00:30 11/08/24 00:30	1 Dil Fac
Analyte Chlorobenzene Surrogate 1,2-Dichloroethane-d4 (Surr) 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) General Chemistry	Result 58 %Recovery 114 99 115 99	Qualifier H	RL 0.73 Limits 80 - 121 80 - 120 80 - 120	MDL			11/07/24 10:06 Prepared 11/07/24 10:06 11/07/24 10:06 11/07/24 10:06	11/08/24 00:30 Analyzed 11/08/24 00:30 11/08/24 00:30 11/08/24 00:30	1 Dil Fac
Analyte Chlorobenzene Surrogate 1,2-Dichloroethane-d4 (Surr) 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr)	Result 58 %Recovery 114 99 115 99	Qualifier H Qualifier	RL 0.73 Limits 80 - 121 80 - 120 80 - 120 80 - 120	MDL 0.088	mg/Kg	<u></u>	11/07/24 10:06 Prepared 11/07/24 10:06 11/07/24 10:06 11/07/24 10:06 11/07/24 10:06	11/08/24 00:30 Analyzed 11/08/24 00:30 11/08/24 00:30 11/08/24 00:30 11/08/24 00:30	1 Dil Fac

0.1

0.1 %

10/30/24 14:28

Project/Site: Arkema PDI Sampling

Date Received: 10/25/24 12:30

Client Sample ID: PDI-49a-SO-48.1-20241023

Date Collected: 10/23/24 13:45

Lab Sample ID: 580-145160-10

Matrix: Solid Percent Solids: 72.3

Method: SW846 8260D - Volati Analyte	_	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND	Qualifier	0.030			— -	10/28/24 08:38	10/28/24 19:00	DII Fa
,1,1-Trichloroethane	ND ND		0.030		0 0	₩		10/28/24 19:00	
,1,2,2-Tetrachloroethane	ND		0.030	0.0009	mg/Kg	₩		10/28/24 19:00	
,1,2-Trichloroethane	ND		0.030		mg/Kg	ψ.		10/28/24 19:00	
,1-Dichloroethane .1-Dichloroethene	ND		0.060		mg/Kg	☆		10/28/24 19:00	
.	ND		0.060		mg/Kg			10/28/24 19:00	
,1-Dichloropropene	ND		0.060	0.0080	0 0	*		10/28/24 19:00	
,2,3-Trichlorobenzene	ND		0.12		mg/Kg	*		10/28/24 19:00	
,2,3-Trichloropropane	ND		0.060		mg/Kg	. .		10/28/24 19:00	
,2,4-Trichlorobenzene	ND		0.12		mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	
,2,4-Trimethylbenzene	ND		0.060	0.020	mg/Kg	₽	10/28/24 08:38	10/28/24 19:00	
,2-Dibromo-3-Chloropropane	ND		0.090		mg/Kg		10/28/24 08:38	10/28/24 19:00	
,2-Dibromoethane	ND		0.030	0.0057	0 0	₩		10/28/24 19:00	
,2-Dichlorobenzene	ND		0.060		mg/Kg	₩		10/28/24 19:00	
,2-Dichloroethane	ND		0.030	0.0083				10/28/24 19:00	
,2-Dichloropropane	ND		0.030	0.0099	0 0	☼		10/28/24 19:00	
,3,5-Trimethylbenzene	ND		0.060	0.011	mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	
,3-Dichlorobenzene	ND		0.090	0.020	mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	
,3-Dichloropropane	ND		0.090	0.0084	mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	
,4-Dichlorobenzene	ND		0.090	0.016	mg/Kg	☼	10/28/24 08:38	10/28/24 19:00	
2,2-Dichloropropane	ND		0.060	0.018	mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	
2-Chlorotoluene	ND		0.060	0.013	mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	
l-Chlorotoluene	ND		0.060	0.015	mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	
l-Isopropyltoluene	ND		0.060	0.015	mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	
Benzene	ND		0.030	0.0057	mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	
Bromobenzene	ND		0.060	0.0063	mg/Kg	☼	10/28/24 08:38	10/28/24 19:00	
Bromochloromethane	ND		0.060	0.0093	mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	
Bromodichloromethane	ND		0.060	0.0083	mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	
Bromoform	ND		0.060	0.0068	mg/Kg	₽	10/28/24 08:38	10/28/24 19:00	
Bromomethane	ND		0.15	0.057	mg/Kg	₽	10/28/24 08:38	10/28/24 19:00	
Carbon tetrachloride	ND		0.030	0.0066		 ☆	10/28/24 08:38	10/28/24 19:00	
Chlorobenzene	0.16		0.060	0.0072	mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	
Chloroethane	ND		0.12		mg/Kg	⊅		10/28/24 19:00	
Chloroform	ND		0.030	0.0063		 ☆		10/28/24 19:00	
Chloromethane	ND		0.090		mg/Kg	☆		10/28/24 19:00	
sis-1,2-Dichloroethene	ND		0.090		mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	
sis-1,3-Dichloropropene	ND		0.030	0.0060			10/28/24 08:38	10/28/24 19:00	
Dibromochloromethane	ND		0.030	0.0074		~ ☆		10/28/24 19:00	
Dibromomethane	ND		0.060		mg/Kg	~ ☆		10/28/24 19:00	
Dichlorodifluoromethane	ND		0.38		mg/Kg			10/28/24 19:00	
Ethylbenzene	ND		0.060		mg/Kg			10/28/24 19:00	
Hexachlorobutadiene	ND		0.000		0 0	*		10/28/24 19:00	
					mg/Kg	. .			
sopropylbenzene Methyl tert-butyl ether	ND ND		0.060		mg/Kg	*		10/28/24 19:00	
, ,	ND		0.060	0.0090		*		10/28/24 19:00	
Methylene Chloride	ND		0.38		mg/Kg	<u></u> .		10/28/24 19:00	
n-Xylene & p-Xylene	ND		0.060		mg/Kg	☼		10/28/24 19:00	
Naphthalene	ND		0.23		mg/Kg	₩		10/28/24 19:00	
n-Butylbenzene	ND		0.060	0.028	mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Percent Moisture (SM22 2540G)

Client Sample ID: PDI-49a-SO-48.1-20241023 Lab Sample ID: 580-145160-10

Date Collected: 10/23/24 13:45

Date Received: 10/25/24 12:30

Matrix: Solid
Percent Solids: 72.3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		0.060	0.0075	mg/Kg	<u></u>	10/28/24 08:38	10/28/24 19:00	1
sec-Butylbenzene	ND		0.060	0.013	mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	1
Styrene	ND		0.060	0.019	mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	1
t-Butylbenzene	ND		0.060	0.012	mg/Kg	☼	10/28/24 08:38	10/28/24 19:00	1
Tetrachloroethene	ND		0.060	0.0080	mg/Kg	☼	10/28/24 08:38	10/28/24 19:00	1
Toluene	ND		0.090	0.020	mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	1
trans-1,2-Dichloroethene	ND		0.090	0.022	mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	1
trans-1,3-Dichloropropene	ND		0.060	0.011	mg/Kg	☼	10/28/24 08:38	10/28/24 19:00	1
Trichloroethene	ND		0.060	0.015	mg/Kg	₩	10/28/24 08:38	10/28/24 19:00	1
Trichlorofluoromethane	ND		0.12	0.039	mg/Kg	☼	10/28/24 08:38	10/28/24 19:00	1
Vinyl chloride	ND		0.15	0.028	mg/Kg	₽	10/28/24 08:38	10/28/24 19:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		80 - 121				10/28/24 08:38	10/28/24 19:00	1
4-Bromofluorobenzene (Surr)	102		80 - 120				10/28/24 08:38	10/28/24 19:00	1
Dibromofluoromethane (Surr)	102		80 - 120				10/28/24 08:38	10/28/24 19:00	1
Toluene-d8 (Surr)	100		80 - 120				10/28/24 08:38	10/28/24 19:00	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	72.3		0.1	0.1	%			10/30/24 14:28	1

0.1

27.7

0.1 %

9

10

Eurofins Seattle

10/30/24 14:28

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: DUP-02-SQ-20241023 Lab Sample ID: 580-145160-11

Date Collected: 10/23/24 00:00 **Matrix: Solid** Percent Solids: 68.9 Date Received: 10/25/24 12:30

Method: SW846 8260D - Vola			•						
Analyte		Qualifier	RL _	MDL		D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND		0.037	0.0092		₩	10/28/24 08:38	10/28/24 19:21	
1,1,1-Trichloroethane	ND		0.073	0.0084		₩		10/28/24 19:21	
1,1,2,2-Tetrachloroethane	ND		0.037		mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
1,1,2-Trichloroethane	ND		0.037		mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
1,1-Dichloroethane	ND		0.073	0.017	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
1,1-Dichloroethene	ND		0.073	0.023	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
1,1-Dichloropropene	ND		0.073	0.0097	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
1,2,3-Trichlorobenzene	ND		0.15	0.073	mg/Kg	☼	10/28/24 08:38	10/28/24 19:21	
1,2,3-Trichloropropane	ND		0.073	0.021	mg/Kg	☼	10/28/24 08:38	10/28/24 19:21	
I,2,4-Trichlorobenzene	ND		0.15	0.078	mg/Kg	₽	10/28/24 08:38	10/28/24 19:21	
1,2,4-Trimethylbenzene	ND		0.073	0.025	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
I,2-Dibromo-3-Chloropropane	ND		0.11	0.028	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
1,2-Dibromoethane	ND		0.037	0.0070	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
I,2-Dichlorobenzene	ND		0.073	0.016	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
l,2-Dichloroethane	ND		0.037	0.010	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
I,2-Dichloropropane	ND		0.037	0.012	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
I,3,5-Trimethylbenzene	ND		0.073	0.014	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
,3-Dichlorobenzene	ND		0.11		mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
,3-Dichloropropane	ND		0.11		mg/Kg	∴	10/28/24 08:38	10/28/24 19:21	
,4-Dichlorobenzene	ND		0.11		mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
2,2-Dichloropropane	ND		0.073		mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
2-Chlorotoluene	ND		0.073		mg/Kg			10/28/24 19:21	
-Chlorotoluene	ND		0.073		mg/Kg			10/28/24 19:21	
-Isopropyltoluene	ND		0.073		mg/Kg			10/28/24 19:21	
Benzene	ND		0.037	0.0070				10/28/24 19:21	
Bromobenzene	ND		0.073	0.0077		₩	10/28/24 08:38		
Bromochloromethane	ND		0.073	0.0077	mg/Kg	₩	10/28/24 08:38		
Bromodichloromethane	ND		0.073		mg/Kg			10/28/24 19:21	
Bromoform	ND ND		0.073	0.010	0 0	*	10/28/24 08:38	10/28/24 19:21	
Bromomethane	ND ND		0.073		mg/Kg	*		10/28/24 19:21	
						<u></u>			
Carbon tetrachloride	ND		0.037	0.0081	0 0	₩.		10/28/24 19:21	
Chlorobenzene	0.077		0.073	0.0088	0 0	*		10/28/24 19:21	
Chloroethane	ND		0.15		mg/Kg	<u>.</u> .		10/28/24 19:21	
Chloroform	ND		0.037	0.0077	0 0	*		10/28/24 19:21	
Chloromethane	ND		0.11		mg/Kg	☼		10/28/24 19:21	
sis-1,2-Dichloroethene	ND		0.11		mg/Kg	.		10/28/24 19:21	
cis-1,3-Dichloropropene	ND		0.037	0.0073		₩	10/28/24 08:38	10/28/24 19:21	
Dibromochloromethane	ND		0.037	0.0090		₩		10/28/24 19:21	
Dibromomethane	ND		0.073		mg/Kg			10/28/24 19:21	
Dichlorodifluoromethane	ND		0.46		mg/Kg	₩		10/28/24 19:21	
Ethylbenzene	ND		0.073	0.017	mg/Kg	₩		10/28/24 19:21	
Hexachlorobutadiene	ND		0.18		mg/Kg	₽		10/28/24 19:21	
sopropylbenzene	ND		0.073		mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
Methyl tert-butyl ether	ND		0.073	0.011	mg/Kg	☼		10/28/24 19:21	
Methylene Chloride	ND		0.46	0.048	mg/Kg	☼	10/28/24 08:38	10/28/24 19:21	
n-Xylene & p-Xylene	ND		0.073	0.013	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
Naphthalene	ND		0.27	0.072	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
n-Butylbenzene	ND		0.073	0.034	mg/Kg	☼	10/28/24 08:38	10/28/24 19:21	
N-Propylbenzene	ND		0.073		mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: DUP-02-SQ-20241023

Lab Sample ID: 580-145160-11 Date Collected: 10/23/24 00:00 **Matrix: Solid**

Date Received: 10/25/24 12:30 Percent Solids: 68.9

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		0.073	0.0092	mg/Kg	— <u></u>	10/28/24 08:38	10/28/24 19:21	1
sec-Butylbenzene	ND		0.073	0.016	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	1
Styrene	ND		0.073	0.023	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	1
t-Butylbenzene	ND		0.073	0.014	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	1
Tetrachloroethene	ND		0.073	0.0097	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	1
Toluene	ND		0.11	0.025	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	1
trans-1,2-Dichloroethene	ND		0.11	0.027	mg/Kg	≎	10/28/24 08:38	10/28/24 19:21	1
trans-1,3-Dichloropropene	ND		0.073	0.013	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	•
Trichloroethene	ND		0.073	0.019	mg/Kg	₩	10/28/24 08:38	10/28/24 19:21	
Trichlorofluoromethane	ND		0.15	0.048	mg/Kg	≎	10/28/24 08:38	10/28/24 19:21	
Vinyl chloride	ND		0.18	0.034	mg/Kg	₽	10/28/24 08:38	10/28/24 19:21	•
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
1,2-Dichloroethane-d4 (Surr)	106		80 - 121				10/28/24 08:38	10/28/24 19:21	-
4-Bromofluorobenzene (Surr)	99		80 - 120				10/28/24 08:38	10/28/24 19:21	
Dibromofluoromethane (Surr)	100		80 - 120				10/28/24 08:38	10/28/24 19:21	
Toluene-d8 (Surr)	100		80 - 120				10/28/24 08:38	10/28/24 19:21	
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fa
Percent Solids (SM22 2540G)	68.9		0.1	0.1	%			10/30/24 14:28	
Percent Moisture (SM22 2540G)	31.1		0.1	0.1	%			10/30/24 14:28	

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Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-48b-SO-32.85-20241023

Date Collected: 10/23/24 17:05
Date Received: 10/25/24 12:30

Lab Sample ID: 580-145160-12

Matrix: Solid Percent Solids: 76.6

Method: SW846 8260D - Vola ^{Analyte}	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND	<u> </u>	0.030	0.0075	mg/Kg	— <u>=</u>	10/28/24 08:39	10/28/24 23:07	Diria
1,1,1-Trichloroethane	ND		0.060	0.0073	mg/Kg	₩	10/28/24 08:39	10/28/24 23:07	
1,1,2,2-Tetrachloroethane	ND		0.030	0.011	mg/Kg	~ ☆	10/28/24 08:39	10/28/24 23:07	
1,1,2-Trichloroethane	ND		0.030	0.011	mg/Kg		10/28/24 08:39	10/28/24 23:07	
1,1-Dichloroethane	ND		0.060		mg/Kg	₩	10/28/24 08:39	10/28/24 23:07	
1,1-Dichloroethene	ND		0.060		mg/Kg	☆	10/28/24 08:39	10/28/24 23:07	
1,1-Dichloropropene	ND		0.060	0.0080				10/28/24 23:07	
1,2,3-Trichlorobenzene	ND		0.12		mg/Kg	₩	10/28/24 08:39	10/28/24 23:07	
1,2,3-Trichloropropane	ND		0.060		mg/Kg	☆	10/28/24 08:39	10/28/24 23:07	
1,2,4-Trichlorobenzene	ND		0.12		mg/Kg	~ . ☆	10/28/24 08:39	10/28/24 23:07	
1,2,4-Trimethylbenzene	ND		0.060		mg/Kg	₩	10/28/24 08:39	10/28/24 23:07	
1,2-Dibromo-3-Chloropropane	ND ND		0.000		mg/Kg	☆	10/28/24 08:39	10/28/24 23:07	
1,2-Dibromoethane	ND		0.030	0.023		¥ ≎	10/28/24 08:39	10/28/24 23:07	
			0.030		0 0		10/28/24 08:39	10/28/24 23:07	
1,2-Dichlorobenzene 1.2-Dichloroethane	0.10 ND		0.080	0.013	mg/Kg	☆	10/28/24 08:39	10/28/24 23:07	
1,2-Dichloroemane	ND		0.030	0.0083			10/28/24 08:39	10/28/24 23:07	
1,3,5-Trimethylbenzene	ND ND		0.030	0.0099	mg/Kg		10/28/24 08:39	10/28/24 23:07	
•	ND ND					*			
1,3-Dichlorobenzene			0.090	0.020	mg/Kg		10/28/24 08:39	10/28/24 23:07	
1,3-Dichloropropane	ND		0.090	0.0084	0 0	ψ.	10/28/24 08:39	10/28/24 23:07	
2-Chlorotoluene	ND		0.060		mg/Kg	*	10/28/24 08:39	10/28/24 23:07	
I-Chlorotoluene	ND		0.060		mg/Kg	.		10/28/24 23:07	
1-Isopropyltoluene	ND		0.060		mg/Kg	*	10/28/24 08:39	10/28/24 23:07	
Benzene -	ND	_	0.030	0.0057	0 0	*	10/28/24 08:39	10/28/24 23:07	
3romobenzene	0.0068	J	0.060	0.0063		<u>.</u> .		10/28/24 23:07	
Bromochloromethane	ND		0.060	0.0093		*		10/28/24 23:07	
Bromodichloromethane	ND		0.060		mg/Kg	₩		10/28/24 23:07	
Bromoform	ND		0.060	0.0068		☆		10/28/24 23:07	
Bromomethane	ND		0.15		mg/Kg	☆		10/28/24 23:07	
Carbon tetrachloride	ND		0.030		mg/Kg	☆	10/28/24 08:39	10/28/24 23:07	
Chloroethane	ND		0.12	0.031	mg/Kg		10/28/24 08:39	10/28/24 23:07	
Chloroform	0.091		0.030	0.0063		₩	10/28/24 08:39	10/28/24 23:07	
Chloromethane	ND		0.090		mg/Kg	₩	10/28/24 08:39	10/28/24 23:07	
cis-1,2-Dichloroethene	0.053	J	0.090		mg/Kg	₩	10/28/24 08:39	10/28/24 23:07	
cis-1,3-Dichloropropene	ND		0.030	0.0060	0 0	☆	10/28/24 08:39	10/28/24 23:07	
Dibromochloromethane	ND		0.030	0.0074	0 0	☆	10/28/24 08:39	10/28/24 23:07	
Dibromomethane	ND		0.060	0.011	mg/Kg	₩	10/28/24 08:39	10/28/24 23:07	
Dichlorodifluoromethane	ND		0.38	0.069	mg/Kg	₩	10/28/24 08:39	10/28/24 23:07	
Ethylbenzene	ND		0.060	0.014	mg/Kg	☼	10/28/24 08:39	10/28/24 23:07	
Hexachlorobutadiene	ND		0.15	0.036	mg/Kg	☼	10/28/24 08:39	10/28/24 23:07	
sopropylbenzene	ND		0.060	0.013	mg/Kg	₩	10/28/24 08:39	10/28/24 23:07	
Methyl tert-butyl ether	ND		0.060	0.0090	mg/Kg	₩	10/28/24 08:39	10/28/24 23:07	
Methylene Chloride	ND		0.38	0.039	mg/Kg	₩	10/28/24 08:39	10/28/24 23:07	
n-Xylene & p-Xylene	ND		0.060	0.011	mg/Kg	₩	10/28/24 08:39	10/28/24 23:07	
Naphthalene	ND		0.23	0.059	mg/Kg	₩	10/28/24 08:39	10/28/24 23:07	
n-Butylbenzene	ND		0.060		mg/Kg	≎	10/28/24 08:39	10/28/24 23:07	
N-Propylbenzene	ND		0.060		mg/Kg	₩	10/28/24 08:39	10/28/24 23:07	
o-Xylene	ND		0.060	0.0075		≎	10/28/24 08:39	10/28/24 23:07	
sec-Butylbenzene	ND		0.060		mg/Kg	₩		10/28/24 23:07	
Styrene	ND		0.060		mg/Kg			10/28/24 23:07	

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-48b-SO-32.85-20241023 Lab Sample ID: 580-145160-12

Date Collected: 10/23/24 17:05 **Matrix: Solid** Date Received: 10/25/24 12:30 Percent Solids: 76.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	ND		0.060	0.012	mg/Kg	— <u>~</u>	10/28/24 08:39	10/28/24 23:07	1
Tetrachloroethene	0.099		0.060	0.0080	mg/Kg	☼	10/28/24 08:39	10/28/24 23:07	1
Toluene	ND		0.090	0.020	mg/Kg	₩	10/28/24 08:39	10/28/24 23:07	1
trans-1,2-Dichloroethene	ND		0.090	0.022	mg/Kg	☼	10/28/24 08:39	10/28/24 23:07	1
trans-1,3-Dichloropropene	ND		0.060	0.011	mg/Kg	☼	10/28/24 08:39	10/28/24 23:07	1
Trichloroethene	0.025	J	0.060	0.015	mg/Kg	₩	10/28/24 08:39	10/28/24 23:07	1
Trichlorofluoromethane	ND		0.12	0.039	mg/Kg	☼	10/28/24 08:39	10/28/24 23:07	1
Vinyl chloride	ND		0.15	0.028	mg/Kg	☼	10/28/24 08:39	10/28/24 23:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		80 - 121				10/28/24 08:39	10/28/24 23:07	1
4-Bromofluorobenzene (Surr)	98		80 - 120				10/28/24 08:39	10/28/24 23:07	1
Dibromofluoromethane (Surr)	102		80 - 120				10/28/24 08:39	10/28/24 23:07	1
Toluene-d8 (Surr)	101		80 - 120				10/28/24 08:39	10/28/24 23:07	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	0.45	J	0.97	0.17	mg/Kg	— <u></u>	10/29/24 08:14	10/29/24 14:39	1
2,2-Dichloropropane	ND		0.65	0.20	mg/Kg	₩	10/29/24 08:14	10/29/24 14:39	1
Chlorobenzene	160		0.65	0.078	mg/Kg	₩	10/29/24 08:14	10/29/24 14:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		80 - 121				10/29/24 08:14	10/29/24 14:39	1
4-Bromofluorobenzene (Surr)	100		80 - 120				10/29/24 08:14	10/29/24 14:39	1
Dibromofluoromethane (Surr)	115		80 - 120				10/29/24 08:14	10/29/24 14:39	1
Dibrofficiliation (Suff)							10/29/24 08:14	10/29/24 14:39	

General Chemistry							
Analyte	Result Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	76.6	0.1	0.1 %			10/30/24 14:28	1
Percent Moisture (SM22 2540G)	23.4	0.1	0.1 %			10/30/24 14:28	1

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-48b-SO-49.9-20241024

Lab Sample ID: 580-145160-13 Date Collected: 10/24/24 08:55 Matrix: Solid Date Received: 10/25/24 12:30 Percent Solids: 75.8

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 1,1,1,2-Tetrachloroethane ND 0.027 0.0068 mg/Kg 10/28/24 08:38 10/28/24 19:41 ND 0.054 1.1.1-Trichloroethane 0.0062 mg/Kg 10/28/24 08:38 10/28/24 19:41 10/28/24 19:41 1,1,2,2-Tetrachloroethane ND 0.027 0.010 mg/Kg 10/28/24 08:38 1,1,2-Trichloroethane ND 0.027 0.010 mg/Kg 10/28/24 08:38 10/28/24 19:41 0.054 0.012 mg/Kg 10/28/24 08:38 10/28/24 19:41 1.1-Dichloroethane ND 10/28/24 19:41 1,1-Dichloroethene ND 0.054 0.017 mg/Kg 10/28/24 08:38 1,1-Dichloropropene ND 0.054 0.0072 10/28/24 08:38 10/28/24 19:41 mg/Kg ND 0.054 10/28/24 08:38 10/28/24 19:41 1,2,3-Trichlorobenzene 0 11 mg/Kg 1,2,3-Trichloropropane ND 0.054 0.016 mg/Kg 10/28/24 08:38 10/28/24 19:41 1,2,4-Trichlorobenzene ND 0.11 0.058 mg/Kg 10/28/24 08:38 10/28/24 19:41 1,2,4-Trimethylbenzene ND 0.054 0.018 mg/Kg 10/28/24 08:38 10/28/24 19:41 1 mg/Kg 1.2-Dibromo-3-Chloropropane ND 0.081 0.021 10/28/24 08:38 10/28/24 19:41 1 1,2-Dibromoethane ND 0.027 0.0051 mg/Kg 10/28/24 08:38 10/28/24 19:41 1,2-Dichlorobenzene ND 0.054 0.012 mg/Kg 10/28/24 08:38 10/28/24 19:41 ND 0.027 0.0074 mg/Kg 10/28/24 08:38 10/28/24 19:41 1.2-Dichloroethane 0.0089 1,2-Dichloropropane NΩ 0.027 mg/Kg 10/28/24 08:38 10/28/24 19:41 1,3,5-Trimethylbenzene ND 0.054 0.010 mg/Kg 10/28/24 08:38 10/28/24 19:41 1,3-Dichlorobenzene ND 0.081 0.018 mg/Kg 10/28/24 08:38 10/28/24 19:41 0.0076 ND 0.081 mg/Kg 10/28/24 08:38 10/28/24 19:41 1,3-Dichloropropane 1,4-Dichlorobenzene ND 0.081 0.015 mg/Kg 10/28/24 08:38 10/28/24 19:41 2,2-Dichloropropane ND 0.054 0.016 mg/Kg 10/28/24 08:38 10/28/24 19:41 ť 2-Chlorotoluene ND 0.054 0.012 mg/Kg 10/28/24 08:38 10/28/24 19:41 4-Chlorotoluene ND 10/28/24 08:38 10/28/24 19:41 0.054 0.013 mg/Kg 4-Isopropyltoluene ND 0.054 0.014 mg/Kg 10/28/24 08:38 10/28/24 19:41 Benzene ND 0.027 0.0051 mg/Kg 10/28/24 08:38 10/28/24 19:41 Bromobenzene ND 0.054 0.0057 mg/Kg 10/28/24 08:38 10/28/24 19:41 Bromochloromethane ND 0.054 0.0084 mg/Kg 10/28/24 08:38 10/28/24 19:41 Bromodichloromethane 0.0074 ND 0.054 mg/Kg 10/28/24 08:38 10/28/24 19:41 0.0061 Bromoform ND 0.054 mg/Kg 10/28/24 08:38 10/28/24 19:41 ND 0.051 Bromomethane 0.14 mg/Kg 10/28/24 08:38 10/28/24 19:41 Carbon tetrachloride ND 0.027 0.0060 mg/Kg 10/28/24 08:38 10/28/24 19:41 0.054 0.0065 mg/Kg 10/28/24 08:38 10/28/24 19:41 Chlorobenzene 2.6 Chloroethane 0.028 10/28/24 08:38 10/28/24 19:41 ND 0.11 mg/Kg ND Chloroform 0.027 0.0057 mg/Kg 10/28/24 08:38 10/28/24 19:41 Chloromethane ND 0.081 0.014 mg/Kg 10/28/24 08:38 10/28/24 19:41 cis-1.2-Dichloroethene ND 0.081 0.017 10/28/24 08:38 10/28/24 19:41 mg/Kg cis-1,3-Dichloropropene ND 0.027 0.0054 mg/Kg 10/28/24 08:38 10/28/24 19:41 Dibromochloromethane ND 0.027 0.0066 mg/Kg 10/28/24 08:38 10/28/24 19:41 Dibromomethane ND 0.010 0.054 mg/Kg ₩ 10/28/24 08:38 10/28/24 19:41 Dichlorodifluoromethane ND 0.34 0.062 mg/Kg 10/28/24 08:38 10/28/24 19:41 Ethylbenzene ND 0.054 0.012 mg/Kg 10/28/24 08:38 10/28/24 19:41 Hexachlorobutadiene ND 0 14 0.032 mg/Kg 10/28/24 08:38 10/28/24 19:41 0.012 mg/Kg 10/28/24 19:41 Isopropylbenzene ND 0.054 10/28/24 08:38 Methyl tert-butyl ether 0.054 0.0081 10/28/24 08:38 10/28/24 19:41 ND mg/Kg ND Methylene Chloride 0.34 0.035 mg/Kg 10/28/24 08:38 10/28/24 19:41 m-Xylene & p-Xylene ND 0.054 0.0096 mg/Kg 10/28/24 08:38 10/28/24 19:41 Naphthalene ND 0.20 0.053 mg/Kg 10/28/24 08:38 10/28/24 19:41 n-Butylbenzene ND 0.054 0.025 mg/Kg ₩ 10/28/24 08:38 10/28/24 19:41 0.020 mg/Kg N-Propylbenzene ND 0.054 10/28/24 08:38 10/28/24 19:41

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-48b-SO-49.9-20241024

Lab Sample ID: 580-145160-13 Date Collected: 10/24/24 08:55 **Matrix: Solid**

Date Received: 10/25/24 12:30 Percent Solids: 75.8

Method: SW846 8260D - Volat	_	•	•	(Conti	,	ь.	Duamanad	A malumad	Dil E-
Analyte		Qualifier	RL			_ D	Prepared	Analyzed	Dil Fa
o-Xylene	ND		0.054	0.0068	mg/Kg	₩	10/28/24 08:38	10/28/24 19:41	•
sec-Butylbenzene	ND		0.054	0.012	mg/Kg	₩	10/28/24 08:38	10/28/24 19:41	•
Styrene	ND		0.054	0.017	mg/Kg	☆	10/28/24 08:38	10/28/24 19:41	•
t-Butylbenzene	ND		0.054	0.010	mg/Kg	≎	10/28/24 08:38	10/28/24 19:41	•
Tetrachloroethene	ND		0.054	0.0072	mg/Kg	≎	10/28/24 08:38	10/28/24 19:41	•
Toluene	ND		0.081	0.018	mg/Kg	₩	10/28/24 08:38	10/28/24 19:41	
trans-1,2-Dichloroethene	ND		0.081	0.020	mg/Kg	≎	10/28/24 08:38	10/28/24 19:41	•
trans-1,3-Dichloropropene	ND		0.054	0.0095	mg/Kg	≎	10/28/24 08:38	10/28/24 19:41	•
Trichloroethene	ND		0.054	0.014	mg/Kg	☆	10/28/24 08:38	10/28/24 19:41	
Trichlorofluoromethane	ND		0.11	0.035	mg/Kg	₩	10/28/24 08:38	10/28/24 19:41	•
Vinyl chloride	ND		0.14	0.025	mg/Kg	☼	10/28/24 08:38	10/28/24 19:41	,
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
1,2-Dichloroethane-d4 (Surr)	117		80 - 121				10/28/24 08:38	10/28/24 19:41	
4-Bromofluorobenzene (Surr)	104		80 - 120				10/28/24 08:38	10/28/24 19:41	
Dibromofluoromethane (Surr)	113		80 - 120				10/28/24 08:38	10/28/24 19:41	
Toluene-d8 (Surr)	101		80 - 120				10/28/24 08:38	10/28/24 19:41	
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fa
Percent Solids (SM22 2540G)	75.8		0.1	0.1	%			10/30/24 14:28	
Percent Moisture (SM22 2540G)	24.2		0.1	0.1	%			10/30/24 14:28	

11/20/2024 (Rev. 1)

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-46a-SO-37.15-10202424

Lab Sample ID: 580-145160-14 Date Collected: 10/24/24 13:50 Matrix: Solid Date Received: 10/25/24 12:30 Percent Solids: 71.1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 1,1,1,2-Tetrachloroethane ND 0.032 0.0081 mg/Kg 10/28/24 08:39 10/28/24 23:28 ND 1.1.1-Trichloroethane 0.065 0.0074 mg/Kg 10/28/24 08:39 10/28/24 23:28 1,1,2,2-Tetrachloroethane ND 0.032 0.012 mg/Kg 10/28/24 08:39 10/28/24 23:28 0.012 mg/Kg 1,1,2-Trichloroethane ND 0.032 10/28/24 08:39 10/28/24 23:28 0.065 0.015 mg/Kg 10/28/24 08:39 10/28/24 23:28 1.1-Dichloroethane ND 1,1-Dichloroethene ND 0.065 0.020 mg/Kg 10/28/24 08:39 10/28/24 23:28 1,1-Dichloropropene ND 0.065 0.0086 mg/Kg 10/28/24 08:39 10/28/24 23:28 ND 0.064 10/28/24 08:39 10/28/24 23:28 1,2,3-Trichlorobenzene 0.13 mg/Kg 1,2,3-Trichloropropane ND 0.065 0.019 mg/Kg 10/28/24 08:39 10/28/24 23:28 1,2,4-Trichlorobenzene ND 0.13 0.069 mg/Kg 10/28/24 08:39 10/28/24 23:28 1,2,4-Trimethylbenzene ND 0.065 0.022 mg/Kg 10/28/24 08:39 10/28/24 23:28 1.2-Dibromo-3-Chloropropane ND 0.097 0.025 mg/Kg 10/28/24 08:39 10/28/24 23:28 1 1,2-Dibromoethane ND 0.032 0.0061 mg/Kg 10/28/24 08:39 10/28/24 23:28 0.064 0.065 0.014 mg/Kg 10/28/24 08:39 10/28/24 23:28 1,2-Dichlorobenzene 0.0089 ND 0.032 mg/Kg 10/28/24 08:39 10/28/24 23:28 1.2-Dichloroethane 0.011 1,2-Dichloropropane ND 0.032 mg/Kg 10/28/24 08:39 10/28/24 23:28 1,3,5-Trimethylbenzene ND 0.065 0.012 mg/Kg 10/28/24 08:39 10/28/24 23:28 1,3-Dichlorobenzene ND 0.097 0.021 mg/Kg 10/28/24 08:39 10/28/24 23:28 1,3-Dichloropropane ND 0.097 0.0090 mg/Kg 10/28/24 08:39 10/28/24 23:28 2-Chlorotoluene ND 0.065 0.014 mg/Kg 10/28/24 08:39 10/28/24 23:28 4-Chlorotoluene ND 0.065 0.016 mg/Kg 10/28/24 08:39 10/28/24 23:28 ť 4-Isopropyltoluene ND 0.065 0.016 mg/Kg 10/28/24 08:39 10/28/24 23:28 Benzene ND 0.0061 10/28/24 08:39 10/28/24 23:28 0.032 mg/Kg Bromobenzene ND 0.065 0.0068 mg/Kg 10/28/24 08:39 10/28/24 23:28 Bromochloromethane ND 0.065 0.010 mg/Kg 10/28/24 08:39 10/28/24 23:28 0.0089 Bromodichloromethane ND 0.065 mg/Kg 10/28/24 08:39 10/28/24 23:28 **Bromoform** ND 0.065 0.0073 mg/Kg 10/28/24 08:39 10/28/24 23:28 Bromomethane 0.061 ND 0.16 mg/Kg 10/28/24 08:39 10/28/24 23:28 0.0071 Carbon tetrachloride NΩ 0.032 mg/Kg 10/28/24 08:39 10/28/24 23:28 0.034 10/28/24 23:28 Chloroethane ND 0.13 mg/Kg 10/28/24 08:39 Chloroform 0.018 J 0.032 0.0068 mg/Kg 10/28/24 08:39 10/28/24 23:28 Chloromethane ND 0.097 0.016 mg/Kg 10/28/24 08:39 10/28/24 23:28 cis-1,2-Dichloroethene ND 0.097 0.020 mg/Kg 10/28/24 08:39 10/28/24 23:28 ND 10/28/24 23:28 cis-1,3-Dichloropropene 0.032 0.0065 mg/Kg 10/28/24 08:39 Dibromochloromethane ND 0.032 0.0079 mg/Kg 10/28/24 08:39 10/28/24 23:28 0.012 Dibromomethane ND 0.065 mg/Kg 10/28/24 08:39 10/28/24 23:28 Dichlorodifluoromethane ND 0.40 0.074 mg/Kg 10/28/24 08:39 10/28/24 23:28 Ethylbenzene ND 0.065 0.015 mg/Kg 10/28/24 08:39 10/28/24 23:28 ND 0.039 mg/Kg Hexachlorobutadiene 0.16 ₩ 10/28/24 08:39 10/28/24 23:28 Isopropylbenzene ND 0.065 0.014 mg/Kg 10/28/24 08:39 10/28/24 23:28 Methyl tert-butyl ether ND 0.065 0.0097 mg/Kg 10/28/24 08:39 10/28/24 23:28 Methylene Chloride ND 0.40 0.042 mg/Kg 10/28/24 08:39 10/28/24 23:28 ND 10/28/24 23:28 m-Xylene & p-Xylene 0.065 0.011 mg/Kg 10/28/24 08:39 Naphthalene 0.063 10/28/24 08:39 10/28/24 23:28 ND 0.24 mg/Kg ND 10/28/24 23:28 n-Butylbenzene 0.065 0.030 mg/Kg 10/28/24 08:39 N-Propylbenzene ND 0.065 0.024 mg/Kg 10/28/24 08:39 10/28/24 23:28 ND 0.0081 o-Xylene 0.065 mg/Kg 10/28/24 08:39 10/28/24 23:28 sec-Butylbenzene ND 0.065 0.014 mg/Kg ₩ 10/28/24 08:39 10/28/24 23:28 Styrene ND 0.065 0.021 mg/Kg 10/28/24 08:39 10/28/24 23:28

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Percent Moisture (SM22 2540G)

Client Sample ID: PDI-46a-SO-37.15-10202424

Lab Sample ID: 580-145160-14 Date Collected: 10/24/24 13:50 **Matrix: Solid** Date Received: 10/25/24 12:30 Percent Solids: 71.1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	ND		0.065	0.012	mg/Kg	<u></u>	10/28/24 08:39	10/28/24 23:28	1
Tetrachloroethene	0.088		0.065	0.0086	mg/Kg	₩	10/28/24 08:39	10/28/24 23:28	1
Toluene	ND		0.097	0.022	mg/Kg	₩	10/28/24 08:39	10/28/24 23:28	1
trans-1,2-Dichloroethene	ND		0.097	0.024	mg/Kg	₩	10/28/24 08:39	10/28/24 23:28	1
trans-1,3-Dichloropropene	ND		0.065	0.011	mg/Kg	₩	10/28/24 08:39	10/28/24 23:28	1
Trichloroethene	ND		0.065	0.017	mg/Kg	₩	10/28/24 08:39	10/28/24 23:28	1
Trichlorofluoromethane	ND		0.13	0.042	mg/Kg	₩	10/28/24 08:39	10/28/24 23:28	1
Vinyl chloride	ND		0.16	0.030	mg/Kg	☼	10/28/24 08:39	10/28/24 23:28	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		80 - 121				10/28/24 08:39	10/28/24 23:28	1
4-Bromofluorobenzene (Surr)	99		80 - 120				10/28/24 08:39	10/28/24 23:28	1
Dibromofluoromethane (Surr)	108		80 - 120				10/28/24 08:39	10/28/24 23:28	1
Toluene-d8 (Surr)	101		80 - 120				10/28/24 08:39	10/28/24 23:28	1

101		80 - 120				10/28/24 08:39	10/28/24 23:28	
atile Organic	Compoun	ds by GC/MS	- DL					
	-	RL		Unit	D	Prepared	Analyzed	Dil Fac
ND		1.0	0.19	mg/Kg	<u></u>	10/29/24 08:14	10/29/24 14:59	1
ND		0.69	0.21	mg/Kg	₩	10/29/24 08:14	10/29/24 14:59	1
41		0.69	0.083	mg/Kg	☼	10/29/24 08:14	10/29/24 14:59	1
%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
110		80 - 121				10/29/24 08:14	10/29/24 14:59	
100		80 - 120				10/29/24 08:14	10/29/24 14:59	1
112		80 - 120				10/29/24 08:14	10/29/24 14:59	1
98		80 - 120				10/29/24 08:14	10/29/24 14:59	1
Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
71.1		0.1	0.1	%			10/30/24 14:28	1
	Result ND ND 41 %Recovery 110 100 112 98	Result Qualifier ND ND 41 %Recovery 110 100 112 98 Result Qualifier Qualifier	Result Qualifier RL	Result Qualifier RL MDL	Result Qualifier RL MDL Unit	Result Qualifier RL MDL Unit D mg/Kg MDL Unit MDL Result Qualifier RL MDL Unit D Prepared	Result Qualifier RL MDL Unit D Prepared Analyzed	

0.1

0.1 %

28.9

10/30/24 14:28

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-46a-SO-47.4-10202424

Date Collected: 10/24/24 13:55 Date Received: 10/25/24 12:30 Lab Sample ID: 580-145160-15

Matrix: Solid Percent Solids: 68.2

Analyte	Result Qualifier	RL	MDL		D	Prepared	Analyzed	Dil F
1,1,1,2-Tetrachloroethane	ND	0.035	0.0087		₩	10/28/24 08:39	10/28/24 23:48	
1,1,1-Trichloroethane	ND	0.070	0.0080	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
1,1,2,2-Tetrachloroethane	ND	0.035	0.013	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
1,1,2-Trichloroethane	ND	0.035	0.013	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
1,1-Dichloroethane	ND	0.070	0.016	mg/Kg	☼	10/28/24 08:39	10/28/24 23:48	
1,1-Dichloroethene	ND	0.070	0.021	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
1,1-Dichloropropene	ND	0.070	0.0092	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
1,2,3-Trichlorobenzene	ND	0.14	0.069	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
1,2,3-Trichloropropane	ND	0.070	0.020	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
I,2,4-Trichlorobenzene	ND	0.14	0.074	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
1,2,4-Trimethylbenzene	ND	0.070	0.023	mg/Kg	☼	10/28/24 08:39	10/28/24 23:48	
1,2-Dibromo-3-Chloropropane	ND	0.10	0.026	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
1,2-Dibromoethane	ND	0.035	0.0066	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
I,2-Dichlorobenzene	ND	0.070	0.015	mg/Kg	₽	10/28/24 08:39	10/28/24 23:48	
,2-Dichloroethane	ND	0.035	0.0096	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
,2-Dichloropropane	ND	0.035		mg/Kg		10/28/24 08:39	10/28/24 23:48	
,3,5-Trimethylbenzene	ND	0.070		mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
,3-Dichlorobenzene	ND	0.10		mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
,3-Dichloropropane	ND	0.10	0.0097		∴ ☆	10/28/24 08:39		
,4-Dichlorobenzene	0.063 J	0.10		mg/Kg	₩.	10/28/24 08:39	10/28/24 23:48	
-Chlorotoluene	ND	0.070		mg/Kg		10/28/24 08:39	10/28/24 23:48	
-Chlorotoluene	ND	0.070		mg/Kg		10/28/24 08:39	10/28/24 23:48	
-Isopropyltoluene	ND	0.070		mg/Kg		10/28/24 08:39	10/28/24 23:48	
Benzene	ND	0.076	0.0066	0 0	~ ☆	10/28/24 08:39	10/28/24 23:48	
Bromobenzene	ND	0.033	0.0073			10/28/24 08:39		
Bromochloromethane	ND	0.070		mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
Bromodichloromethane	ND ND	0.070	0.0096	0 0	☆	10/28/24 08:39	10/28/24 23:48	
Bromoform	ND	0.070	0.0098			10/28/24 08:39	10/28/24 23:48	
				0 0	1.tr			
Bromomethane	ND	0.17		mg/Kg	ψ.	10/28/24 08:39	10/28/24 23:48	
Carbon tetrachloride	ND	0.035	0.0076		.	10/28/24 08:39	10/28/24 23:48	
Chlorobenzene	17 ND	0.070	0.0083		ψ.	10/28/24 08:39	10/28/24 23:48	
Chloroethane	ND	0.14		mg/Kg	:D:	10/28/24 08:39	10/28/24 23:48	
Chloroform	ND	0.035	0.0073		.	10/28/24 08:39	10/28/24 23:48	
Chloromethane	ND	0.10		mg/Kg	.		10/28/24 23:48	
sis-1,2-Dichloroethene	ND	0.10		mg/Kg	₩	10/28/24 08:39		
sis-1,3-Dichloropropene	ND	0.035	0.0070		☆		10/28/24 23:48	
Dibromochloromethane	ND	0.035	0.0085		☼	10/28/24 08:39		
Dibromomethane	ND	0.070		mg/Kg	₩		10/28/24 23:48	
Dichlorodifluoromethane	ND	0.43		mg/Kg			10/28/24 23:48	
Ethylbenzene	ND	0.070		mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
lexachlorobutadiene	ND	0.17		mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
sopropylbenzene	ND	0.070		mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
Methyl tert-butyl ether	ND	0.070	0.010	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
Methylene Chloride	ND	0.43	0.045	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
n-Xylene & p-Xylene	ND	0.070	0.012	mg/Kg	☼	10/28/24 08:39	10/28/24 23:48	
Naphthalene	ND	0.26	0.068	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
-Butylbenzene	ND	0.070	0.032	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
N-Propylbenzene	ND	0.070	0.026	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	
o-Xylene	ND	0.070	0.0087			10/28/24 08:39	10/28/24 23:48	

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-46a-SO-47.4-10202424

Lab Sample ID: 580-145160-15 Date Collected: 10/24/24 13:55 **Matrix: Solid**

Date Received: 10/25/24 12:30 Percent Solids: 68.2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
sec-Butylbenzene	ND		0.070	0.015	mg/Kg	-	10/28/24 08:39	10/28/24 23:48	1
Styrene	ND		0.070	0.022	mg/Kg	☼	10/28/24 08:39	10/28/24 23:48	1
t-Butylbenzene	ND		0.070	0.013	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	1
Tetrachloroethene	ND		0.070	0.0092	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	1
Toluene	ND		0.10	0.023	mg/Kg	₽	10/28/24 08:39	10/28/24 23:48	1
trans-1,2-Dichloroethene	ND		0.10	0.025	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	1
trans-1,3-Dichloropropene	ND		0.070	0.012	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	1
Trichloroethene	ND		0.070	0.018	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	1
Trichlorofluoromethane	ND		0.14	0.045	mg/Kg	₩	10/28/24 08:39	10/28/24 23:48	1
Vinyl chloride	ND		0.17	0.032	mg/Kg	₽	10/28/24 08:39	10/28/24 23:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		80 - 121				10/28/24 08:39	10/28/24 23:48	1
4-Bromofluorobenzene (Surr)	97		80 - 120				10/28/24 08:39	10/28/24 23:48	1
Dibromofluoromethane (Surr)	105		80 - 120				10/28/24 08:39	10/28/24 23:48	1
Toluene-d8 (Surr)	99		80 - 120				10/28/24 08:39	10/28/24 23:48	1
Method: SW846 8260D - Vola	tile Organic	Compound	ds by GC/MS	- RA					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,2-Dichloropropane	ND		0.070	0.021	mg/Kg	*	10/30/24 10:19	10/30/24 12:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	113		80 - 121				10/30/24 10:19	10/30/24 12:39	1
4-Bromofluorobenzene (Surr)	100		80 - 120				10/30/24 10:19	10/30/24 12:39	1
Dibromofluoromethane (Surr)	110		80 - 120				10/30/24 10:19	10/30/24 12:39	1
Toluene-d8 (Surr)	99		80 - 120				10/30/24 10:19	10/30/24 12:39	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	68.2		0.1	0.1	%			10/30/24 14:28	1
Percent Johns (SWIZZ Z540G)	00.2		0.1	0.1	70			10/00/21 11.20	

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-43a-SO-34.2-10202424 Lab Sample ID: 580-145160-16

Date Collected: 10/24/24 17:15

Matrix: Solid

Date Received: 10/25/24 12:30

Percent Solids: 75.6

Method: SW846 8260D - Vola		-	•				_		
Analyte		Qualifier	RL _	MDL		D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND		0.028	0.0070		₩	10/28/24 08:39	10/29/24 00:09	
1,1,1-Trichloroethane	ND		0.056	0.0064	0 0	₩	10/28/24 08:39	10/29/24 00:09	
1,1,2,2-Tetrachloroethane	ND		0.028		mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
1,1,2-Trichloroethane	ND		0.028		mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
1,1-Dichloroethane	ND		0.056	0.013	mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
1,1-Dichloroethene	ND		0.056	0.017	mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
1,1-Dichloropropene	ND		0.056	0.0074	mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
1,2,3-Trichlorobenzene	ND		0.11	0.056	mg/Kg	☼	10/28/24 08:39	10/29/24 00:09	
I,2,3-Trichloropropane	ND		0.056	0.016	mg/Kg	☼	10/28/24 08:39	10/29/24 00:09	
,2,4-Trichlorobenzene	ND		0.11	0.060	mg/Kg	₽	10/28/24 08:39	10/29/24 00:09	
1,2,4-Trimethylbenzene	ND		0.056	0.019	mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
,2-Dibromo-3-Chloropropane	ND		0.084	0.021	mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
,2-Dibromoethane	ND		0.028	0.0053	mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
I,2-Dichlorobenzene	ND		0.056	0.012	mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
,2-Dichloroethane	ND		0.028	0.0077	mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
I,2-Dichloropropane	ND		0.028	0.0093			10/28/24 08:39	10/29/24 00:09	
,3,5-Trimethylbenzene	ND		0.056	0.011	mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
,3-Dichlorobenzene	ND		0.084		mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
,3-Dichloropropane	ND		0.084	0.0079		∴	10/28/24 08:39	10/29/24 00:09	
2-Chlorotoluene	ND		0.056		mg/Kg		10/28/24 08:39	10/29/24 00:09	
-Chlorotoluene	ND		0.056		mg/Kg	₩.	10/28/24 08:39	10/29/24 00:09	
-Isopropyltoluene	ND		0.056		mg/Kg		10/28/24 08:39		
Benzene	ND		0.028	0.0053		☆	10/28/24 08:39		
Bromobenzene	ND		0.026	0.0059		₩	10/28/24 08:39	10/29/24 00:09	
Bromochloromethane	ND		0.056	0.0039			10/28/24 08:39	10/29/24 00:09	
Bromodichloromethane	ND ND		0.056	0.0087			10/28/24 08:39	10/29/24 00:09	
					0 0	φ.			
Bromoform	ND		0.056	0.0063		· · · · · · · · · · · · · · · · · · ·	10/28/24 08:39	10/29/24 00:09	
Bromomethane	ND		0.14		mg/Kg	₩.	10/28/24 08:39	10/29/24 00:09	
Carbon tetrachloride	ND		0.028	0.0062	0 0	*	10/28/24 08:39	10/29/24 00:09	
Chlorobenzene	17		0.056	0.0067			10/28/24 08:39	10/29/24 00:09	
Chloroethane	ND		0.11		mg/Kg	*	10/28/24 08:39	10/29/24 00:09	
Chloroform	0.055		0.028	0.0059		₩		10/29/24 00:09	
Chloromethane	ND		0.084		mg/Kg	.		10/29/24 00:09	
cis-1,2-Dichloroethene	ND		0.084		mg/Kg	₩		10/29/24 00:09	
sis-1,3-Dichloropropene	ND		0.028	0.0056		₩		10/29/24 00:09	
Dibromochloromethane	ND		0.028	0.0069			10/28/24 08:39	10/29/24 00:09	
Dibromomethane	ND		0.056		mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
Dichlorodifluoromethane	ND		0.35		mg/Kg	₩		10/29/24 00:09	
Ethylbenzene	ND		0.056		mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
Hexachlorobutadiene	ND		0.14	0.034	mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
sopropylbenzene	ND		0.056	0.012	mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
Methyl tert-butyl ether	ND		0.056	0.0084		₩	10/28/24 08:39	10/29/24 00:09	
Methylene Chloride	ND		0.35	0.036	mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
n-Xylene & p-Xylene	ND		0.056	0.010	mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
Naphthalene	ND		0.21	0.055	mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	
-Butylbenzene	ND		0.056	0.026	mg/Kg	₽	10/28/24 08:39	10/29/24 00:09	
N-Propylbenzene	ND		0.056		mg/Kg	₽	10/28/24 08:39	10/29/24 00:09	
o-Xylene	ND		0.056	0.0070		₩	10/28/24 08:39	10/29/24 00:09	
sec-Butylbenzene	ND		0.056		mg/Kg			10/29/24 00:09	

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Project/Site: Arkema PDI Sampling

Client: ERM-West

Client Sample ID: PDI-43a-SO-34.2-10202424

Date Collected: 10/24/24 17:15

Method: SW846 8260D - Volatile Organic Compounds by GC/MS - RA

Lab Sample ID: 580-145160-16

Percent Solids: 75.6

Matrix: Solid Date Received: 10/25/24 12:30

Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	(Conti	nued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	MD		0.056	0.018	mg/Kg	⊅	10/28/24 08:39	10/29/24 00:09	1
t-Butylbenzene	ND		0.056	0.011	mg/Kg	☼	10/28/24 08:39	10/29/24 00:09	1
Tetrachloroethene	0.024	J	0.056	0.0074	mg/Kg	₽	10/28/24 08:39	10/29/24 00:09	1
Toluene	ND		0.084	0.019	mg/Kg	☼	10/28/24 08:39	10/29/24 00:09	1
trans-1,2-Dichloroethene	ND		0.084	0.020	mg/Kg	☼	10/28/24 08:39	10/29/24 00:09	1
trans-1,3-Dichloropropene	ND		0.056	0.0098	mg/Kg	₽	10/28/24 08:39	10/29/24 00:09	1
Trichloroethene	ND		0.056	0.014	mg/Kg	☼	10/28/24 08:39	10/29/24 00:09	1
Trichlorofluoromethane	ND		0.11	0.036	mg/Kg	☼	10/28/24 08:39	10/29/24 00:09	1
Vinyl chloride	ND		0.14	0.026	mg/Kg	₩	10/28/24 08:39	10/29/24 00:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		80 - 121				10/28/24 08:39	10/29/24 00:09	1
4-Bromofluorobenzene (Surr)	98		80 - 120				10/28/24 08:39	10/29/24 00:09	1
Dibromofluoromethane (Surr)	102		80 - 120				10/28/24 08:39	10/29/24 00:09	1
Toluene-d8 (Surr)	102		80 - 120				10/28/24 08:39	10/29/24 00:09	1

Analyte	Result	Qualifier	KL	MDL	Unit	ט	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	0.053	J	0.084	0.015	mg/Kg	<u></u>	10/30/24 10:19	10/30/24 13:00	1
2,2-Dichloropropane	ND		0.056	0.017	mg/Kg	₩	10/30/24 10:19	10/30/24 13:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		80 - 121				10/30/24 10:19	10/30/24 13:00	1
4-Bromofluorobenzene (Surr)	96		80 - 120				10/30/24 10:19	10/30/24 13:00	1
Dibromofluoromethane (Surr)	102		80 - 120				10/30/24 10:19	10/30/24 13:00	1
Toluene-d8 (Surr)	98		80 - 120				10/30/24 10:19	10/30/24 13:00	1

General Chemistry								
Analyte	Result Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	75.6	0.1	0.1	%			10/30/24 14:28	1
Percent Moisture (SM22 2540G)	24.4	0.1	0.1	%			10/30/24 14:28	1

Client: ERM-West Job ID: 580-145160-1

RL

0.040

MDL Unit

0.012 mg/Kg

mg/Kg

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS

MB MB Result Qualifier

ND

ND

ND

Lab Sample ID: MB 580-476038/3-A

Matrix: Solid

1,1-Dichloroethene

Analyte

Bromoform

1,3-Dichlorobenzene

Analysis Batch: 476046

Client Sample ID: Method Blank **Prep Type: Total/NA**

Analyzed

10/28/24 12:29

10/28/24 12:29

10/28/24 12:29

Prepared

10/28/24 08:38

10/28/24 08:38

10/28/24 08:38

Prep Batch: 476038

Dil Fac

1,1-Dichloroethane ND 0.040 0.0092 mg/Kg 10/28/24 08:38 10/28/24 12:29 1,1,1-Trichloroethane ND 0.040 0.0046 mg/Kg 10/28/24 12:29 10/28/24 08:38 1,1-Dichloropropene ND 0.040 0.0053 mg/Kg 10/28/24 08:38 10/28/24 12:29 1,2-Dichloroethane ND 0.020 0.0055 mg/Kg 10/28/24 08:38 10/28/24 12:29 ND 0.0066 10/28/24 08:38 10/28/24 12:29 1,2-Dichloropropane 0.020 mg/Kg 0.012 ND 0.040 10/28/24 08:38 10/28/24 12:29 2,2-Dichloropropane mg/Kg Benzene ND 0.020 0.0038 mg/Kg 10/28/24 08:38 10/28/24 12:29 1 1 2-Trichloroethane ND 0.020 0.0074 mg/Kg 10/28/24 08:38 10/28/24 12:29 Bromochloromethane ND 0.040 0.0062 mg/Kg 10/28/24 08:38 10/28/24 12:29 ND 1,3-Dichloropropane 0.060 0.0056 mg/Kg 10/28/24 08:38 10/28/24 12:29 1 Bromodichloromethane ND 0.040 0.0055 mg/Kg 10/28/24 08:38 10/28/24 12:29 1.2-Dibromoethane ND 0.020 0.0038 mg/Kg 10/28/24 08:38 10/28/24 12:29 Bromomethane ND 0.10 0.038 mg/Kg 10/28/24 08:38 10/28/24 12:29 Carbon tetrachloride ND 0.020 0.0044 mg/Kg 10/28/24 08:38 10/28/24 12:29 ND 0.040 0.0048 10/28/24 12:29 Chlorobenzene mg/Kg 10/28/24 08:38 10/28/24 12:29 1,1,1,2-Tetrachloroethane ND 0.020 0.0050 mg/Kg 10/28/24 08:38 Chloroethane ND 0.080 0.021 mg/Kg 10/28/24 08:38 10/28/24 12:29 10/28/24 08:38 10/28/24 12:29 1.1.2.2-Tetrachloroethane ND 0.020 0.0076 mg/Kg Chloroform ND 0.0042 mg/Kg 10/28/24 08:38 10/28/24 12:29 0.020 Chloromethane 0.060 0.010 mg/Kg 10/28/24 08:38 10/28/24 12:29 ND 10/28/24 12:29 cis-1,2-Dichloroethene ND 0.060 0.013 mg/Kg 10/28/24 08:38 cis-1,3-Dichloropropene ND 0.020 0.0040 mg/Kg 10/28/24 08:38 10/28/24 12:29 0.0045

Dibromochloromethane ND 0.020 0.0049 mg/Kg 10/28/24 08:38 10/28/24 12:29 Bromobenzene ND 0.040 0.0042 mg/Kg 10/28/24 08:38 10/28/24 12:29 0.0074 mg/Kg Dibromomethane ND 0.040 10/28/24 08:38 10/28/24 12:29 Dichlorodifluoromethane ND 0.25 0.046 mg/Kg 10/28/24 08:38 10/28/24 12:29 1,2,3-Trichloropropane ND 0.040 0.012 mg/Kg 10/28/24 08:38 10/28/24 12:29 Ethylbenzene ND 0.040 0.0091 mg/Kg 10/28/24 08:38 10/28/24 12:29 2-Chlorotoluene ND 0.040 0.0088 mg/Kg 10/28/24 08:38 10/28/24 12:29 1,3,5-Trimethylbenzene ND 0.040 0.0076 10/28/24 08:38 10/28/24 12:29 mg/Kg 0.0086 Isopropylbenzene ND 0.040 mg/Kg 10/28/24 08:38 10/28/24 12:29 4-Chlorotoluene 0.040 0.0098 mg/Kg 10/28/24 08:38 10/28/24 12:29 ND ND 0.026 10/28/24 08:38 10/28/24 12:29 Methylene Chloride 0.25 mg/Kg 1,2,4-Trimethylbenzene ND 0.040 0.014 mg/Kg 10/28/24 08:38 10/28/24 12:29 m-Xylene & p-Xylene ND 0.040 0.0071 mg/Kg 10/28/24 08:38 10/28/24 12:29

0.040

4-Isopropyltoluene ND 0.040 0.010 mg/Kg 10/28/24 08:38 10/28/24 12:29 N-Propylbenzene ND 0.040 0.015 mg/Kg 10/28/24 08:38 10/28/24 12:29 1,4-Dichlorobenzene ND 0.060 0.011 mg/Kg 10/28/24 08:38 10/28/24 12:29 o-Xylene ND 0.0050 0.040 mg/Kg 10/28/24 08:38 10/28/24 12:29 n-Butylbenzene NΩ 0.040 0.019 mg/Kg 10/28/24 08:38 10/28/24 12:29 10/28/24 08:38 10/28/24 12:29 sec-Butylbenzene ND 0.040 0.0086 mg/Kg

0.060

0.013

mg/Kg

1,2-Dichlorobenzene ND 0.040 0.0087 mg/Kg 10/28/24 08:38 10/28/24 12:29 ND 0.040 0.013 mg/Kg 10/28/24 12:29 Styrene 10/28/24 08:38 1,2-Dibromo-3-Chloropropane ND 0.060 0.015 mg/Kg 10/28/24 08:38 10/28/24 12:29 t-Butylbenzene ND 0.040 0.0077 mg/Kg 10/28/24 08:38 10/28/24 12:29

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Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-476038/3-A

Matrix: Solid

Analysis Batch: 476046

Client Sample ID: Method Blank

Prep Type: Total/NA Prep Batch: 476038

MR M	В						
Result Q	ualifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
ND ND	0.080	0.043	mg/Kg		10/28/24 08:38	10/28/24 12:29	
ND	0.040	0.0053	mg/Kg		10/28/24 08:38	10/28/24 12:29	
ND	0.080	0.040	mg/Kg		10/28/24 08:38	10/28/24 12:29	•
ND	0.060	0.014	mg/Kg		10/28/24 08:38	10/28/24 12:29	
ND	0.10	0.024	mg/Kg		10/28/24 08:38	10/28/24 12:29	•
ND	0.15	0.039	mg/Kg		10/28/24 08:38	10/28/24 12:29	•
ND	0.060	0.015	mg/Kg		10/28/24 08:38	10/28/24 12:29	
ND	0.040	0.0070	mg/Kg		10/28/24 08:38	10/28/24 12:29	•
ND	0.040	0.010	mg/Kg		10/28/24 08:38	10/28/24 12:29	•
ND	0.080	0.026	mg/Kg		10/28/24 08:38	10/28/24 12:29	
ND	0.040	0.0060	mg/Kg		10/28/24 08:38	10/28/24 12:29	•
ND	0.10	0.019	mg/Kg		10/28/24 08:38	10/28/24 12:29	•
	Result Q	ND 0.080 ND 0.040 ND 0.080 ND 0.060 ND 0.15 ND 0.060 ND 0.040 ND 0.040 ND 0.080 ND 0.040 ND 0.080 ND 0.040	Result Qualifier RL MDL ND 0.080 0.043 ND 0.040 0.0053 ND 0.080 0.040 ND 0.060 0.014 ND 0.10 0.024 ND 0.055 0.039 ND 0.060 0.015 ND 0.040 0.0070 ND 0.040 0.010 ND 0.080 0.026 ND 0.040 0.0060	Result Qualifier RL MDL mg/Kg ND 0.080 0.043 mg/Kg ND 0.040 0.0053 mg/Kg ND 0.080 0.040 mg/Kg ND 0.060 0.014 mg/Kg ND 0.10 0.024 mg/Kg ND 0.15 0.039 mg/Kg ND 0.060 0.015 mg/Kg ND 0.040 0.0070 mg/Kg ND 0.040 0.010 mg/Kg ND 0.080 0.026 mg/Kg ND 0.040 0.0060 mg/Kg	Result Qualifier RL MDL Unit D ND 0.080 0.043 mg/Kg mg/Kg ND 0.040 0.053 mg/Kg ND 0.080 0.040 mg/Kg ND 0.060 0.014 mg/Kg ND 0.15 0.039 mg/Kg ND 0.060 0.015 mg/Kg ND 0.040 0.0070 mg/Kg ND 0.040 0.010 mg/Kg ND 0.080 0.026 mg/Kg ND 0.080 0.026 mg/Kg ND 0.040 0.0060 mg/Kg	Result Qualifier RL MDL Unit D Prepared ND 0.080 0.043 mg/Kg 10/28/24 08:38 ND 0.040 0.0053 mg/Kg 10/28/24 08:38 ND 0.080 0.040 mg/Kg 10/28/24 08:38 ND 0.060 0.014 mg/Kg 10/28/24 08:38 ND 0.10 0.024 mg/Kg 10/28/24 08:38 ND 0.15 0.039 mg/Kg 10/28/24 08:38 ND 0.060 0.015 mg/Kg 10/28/24 08:38 ND 0.040 0.0070 mg/Kg 10/28/24 08:38 ND 0.040 0.010 mg/Kg 10/28/24 08:38 ND 0.040 0.010 mg/Kg 10/28/24 08:38 ND 0.080 0.026 mg/Kg 10/28/24 08:38 ND 0.080 0.026 mg/Kg 10/28/24 08:38 ND 0.080 0.026 mg/Kg 10/28/24 08:38 ND 0.080	Result Qualifier RL MDL Unit D Prepared Analyzed ND 0.080 0.043 mg/Kg 10/28/24 08:38 10/28/24 12:29 ND 0.040 0.0053 mg/Kg 10/28/24 08:38 10/28/24 12:29 ND 0.080 0.040 mg/Kg 10/28/24 08:38 10/28/24 12:29 ND 0.060 0.014 mg/Kg 10/28/24 08:38 10/28/24 12:29 ND 0.10 0.024 mg/Kg 10/28/24 08:38 10/28/24 12:29 ND 0.15 0.039 mg/Kg 10/28/24 08:38 10/28/24 12:29 ND 0.060 0.015 mg/Kg 10/28/24 08:38 10/28/24 12:29 ND 0.040 0.0070 mg/Kg 10/28/24 08:38 10/28/24 12:29 ND 0.040 0.0070 mg/Kg 10/28/24 08:38 10/28/24 12:29 ND 0.040 0.010 mg/Kg 10/28/24 08:38 10/28/24 12:29 ND 0.040 0.007 mg/Kg 10/28/24

MB MB

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	102	80 - 120	10/28/24 08:38	10/28/24 12:29	1
4-Bromofluorobenzene (Surr)	106	80 - 120	10/28/24 08:38	10/28/24 12:29	1
Dibromofluoromethane (Surr)	119	80 - 120	10/28/24 08:38	10/28/24 12:29	1
1,2-Dichloroethane-d4 (Surr)	115	80 - 121	10/28/24 08:38	10/28/24 12:29	1

Lab Sample ID: LCS 580-476038/1-A

Matrix: Solid

Analysis Batch: 476046

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 476038

	Spike	LCS	LCS				%Rec
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1-Dichloroethene	0.800	0.814		mg/Kg		102	73 - 134
1,1-Dichloroethane	0.800	0.775		mg/Kg		97	78 - 126
1,1,1-Trichloroethane	0.800	0.747		mg/Kg		93	78 - 135
1,1-Dichloropropene	0.800	0.753		mg/Kg		94	76 - 140
1,2-Dichloroethane	0.800	0.734		mg/Kg		92	76 - 124
1,2-Dichloropropane	0.800	0.792		mg/Kg		99	73 - 130
2,2-Dichloropropane	0.800	0.699		mg/Kg		87	75 - 134
Benzene	0.800	0.776		mg/Kg		97	79 - 135
1,1,2-Trichloroethane	0.800	0.772		mg/Kg		96	80 - 123
Bromochloromethane	0.800	0.763		mg/Kg		95	76 - 131
1,3-Dichloropropane	0.800	0.781		mg/Kg		98	80 - 120
Bromodichloromethane	0.800	0.772		mg/Kg		96	78 - 125
1,2-Dibromoethane	0.800	0.793		mg/Kg		99	77 - 123
Bromomethane	0.800	0.773		mg/Kg		97	55 - 150
Carbon tetrachloride	0.800	0.732		mg/Kg		92	76 - 140
Chlorobenzene	0.800	0.703		mg/Kg		88	80 - 125
1,1,1,2-Tetrachloroethane	0.800	0.755		mg/Kg		94	79 - 128
Chloroethane	0.800	0.836		mg/Kg		104	26 - 150
1,1,2,2-Tetrachloroethane	0.800	0.736		mg/Kg		92	77 - 122
Chloroform	0.800	0.782		mg/Kg		98	74 - 133
Chloromethane	0.800	0.706		mg/Kg		88	52 - 142
cis-1,2-Dichloroethene	0.800	0.788		mg/Kg		98	80 - 125
cis-1,3-Dichloropropene	0.800	0.733		mg/Kg		92	80 - 122
Bromoform	0.800	0.594		mg/Kg		74	71 - 130

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-476038/1-A

Matrix: Solid

Analysis Batch: 476046

Client Sample ID: Lab Control Sample

Prep Type: Total/NA Prep Batch: 476038

Prep ba	lCI	11.	4/	U	U	SO	
%Rec							
Limits							
75 - 125							

Spike	LCS LCS	%Rec
	esult Qualifier Unit D %Rec	Limits
Dibromochloromethane 0.800	0.761 mg/Kg 95	75 - 125
Bromobenzene 0.800	0.726 mg/Kg 91	78 - 126
Dibromomethane 0.800	0.745 mg/Kg 93	72 - 130
Dichlorodifluoromethane 0.800	0.709 mg/Kg 89	33 - 150
1,2,3-Trichloropropane 0.800	0.732 mg/Kg 92	77 - 127
Ethylbenzene 0.800	0.752 mg/Kg 94	80 - 135
2-Chlorotoluene 0.800	0.713 mg/Kg 89	77 - 134
1,3,5-Trimethylbenzene 0.800	0.699 mg/Kg 87	72 - 134
Isopropylbenzene 0.800	0.841 mg/Kg 105	80 - 131
4-Chlorotoluene 0.800	0.697 mg/Kg 87	71 - 137
Methylene Chloride 0.800	0.575 mg/Kg 72	56 - 140
1,2,4-Trimethylbenzene 0.800	0.693 mg/Kg 87	73 - 138
m-Xylene & p-Xylene 0.800	0.777 mg/Kg 97	80 - 132
1,3-Dichlorobenzene 0.800	0.757 mg/Kg 95	78 - 132
4-Isopropyltoluene 0.800	0.696 mg/Kg 87	71 - 142
N-Propylbenzene 0.800	0.714 mg/Kg 89	78 - 133
1,4-Dichlorobenzene 0.800	0.648 mg/Kg 81	77 - 123
o-Xylene 0.800	0.780 mg/Kg 98	80 - 132
n-Butylbenzene 0.800	0.666 mg/Kg 83	69 - 143
sec-Butylbenzene 0.800	0.705 mg/Kg 88	71 - 143
1,2-Dichlorobenzene 0.800	0.704 mg/Kg 88	78 - 126
Styrene 0.800	0.794 mg/Kg 99	79 - 129
1,2-Dibromo-3-Chloropropane 0.800	0.688 mg/Kg 86	64 - 129
t-Butylbenzene 0.800	0.696 mg/Kg 87	72 - 144
1,2,4-Trichlorobenzene 0.800	0.748 mg/Kg 94	74 - 131
Tetrachloroethene 0.800	0.767 mg/Kg 96	75 - 141
1,2,3-Trichlorobenzene 0.800	0.699 mg/Kg 87	58 - 146
Toluene 0.800	0.749 mg/Kg 94	75 - 125
Hexachlorobutadiene 0.800	0.689 mg/Kg 86	65 - 145
Naphthalene 0.800	0.693 mg/Kg 87	56 - 145
trans-1,2-Dichloroethene 0.800	0.774 mg/Kg 97	77 - 134
trans-1,3-Dichloropropene 0.800	0.782 mg/Kg 98	80 - 121
Trichloroethene 0.800	0.708 mg/Kg 89	80 - 134
Trichlorofluoromethane 0.800	0.778 mg/Kg 97	71 - 150
Methyl tert-butyl ether 0.800	0.771 mg/Kg 96	71 - 126
Vinyl chloride 0.800	0.803 mg/Kg 100	62 - 144

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	97		80 - 120
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120
1,2-Dichloroethane-d4 (Surr)	100		80 - 121

Spike

Added

0.800

Client: ERM-West Job ID: 580-145160-1

LCSD LCSD

0.706

Result Qualifier

Unit

mg/Kg

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-476038/2-A

Matrix: Solid

1,1-Dichloroethene

1,2,4-Trimethylbenzene

m-Xylene & p-Xylene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

4-Isopropyltoluene

N-Propylbenzene

n-Butylbenzene

t-Butylbenzene

sec-Butylbenzene

1,2-Dichlorobenzene

1,2-Dibromo-3-Chloropropane

o-Xylene

Styrene

Analyte

Analysis Batch: 476046

Client Sample ID: Lab Control Sample Dup

D %Rec

88

%Rec

Limits

73 - 134

RPD

14

Prep Type: Total/NA Prep Batch: 476038

1,1 2101110100110	0.000	011 00	9,9				
1,1-Dichloroethane	0.800	0.803	mg/Kg	100	78 - 126	3	20
1,1,1-Trichloroethane	0.800	0.796	mg/Kg	100	78 - 135	6	20
1,1-Dichloropropene	0.800	0.812	mg/Kg	101	76 - 140	7	20
1,2-Dichloroethane	0.800	0.795	mg/Kg	99	76 - 124	8	20
1,2-Dichloropropane	0.800	0.830	mg/Kg	104	73 - 130	5	20
2,2-Dichloropropane	0.800	0.733	mg/Kg	92	75 - 134	5	20
Benzene	0.800	0.804	mg/Kg	100	79 - 135	3	20
1,1,2-Trichloroethane	0.800	0.853	mg/Kg	107	80 - 123	10	20
Bromochloromethane	0.800	0.830	mg/Kg	104	76 - 131	8	20
1,3-Dichloropropane	0.800	0.847	mg/Kg	106	80 - 120	8	20
Bromodichloromethane	0.800	0.818	mg/Kg	102	78 - 125	6	20
1,2-Dibromoethane	0.800	0.850	mg/Kg	106	77 - 123	7	20
Bromomethane	0.800	0.751	mg/Kg	94	55 - 150	3	26
Carbon tetrachloride	0.800	0.763	mg/Kg	95	76 - 140	4	20
Chlorobenzene	0.800	0.766	mg/Kg	96	80 - 125	9	20
1,1,1,2-Tetrachloroethane	0.800	0.822	mg/Kg	103	79 - 128	8	20
Chloroethane	0.800	0.791	mg/Kg	99	26 - 150	5	40
1,1,2,2-Tetrachloroethane	0.800	0.808	mg/Kg	101	77 - 122	9	20
Chloroform	0.800	0.830	mg/Kg	104	74 - 133	6	20
Chloromethane	0.800	0.767	mg/Kg	96	52 - 142	8	40
cis-1,2-Dichloroethene	0.800	0.816	mg/Kg	102	80 - 125	4	20
cis-1,3-Dichloropropene	0.800	0.848	mg/Kg	106	80 - 122	14	20
Bromoform	0.800	0.641	mg/Kg	80	71 - 130	8	20
Dibromochloromethane	0.800	0.822	mg/Kg	103	75 - 125	8	20
Bromobenzene	0.800	0.758	mg/Kg	95	78 - 126	4	20
Dibromomethane	0.800	0.828	mg/Kg	103	72 - 130	10	40
Dichlorodifluoromethane	0.800	0.741	mg/Kg	93	33 - 150	4	31
1,2,3-Trichloropropane	0.800	0.854	mg/Kg	107	77 - 127	15	20
Ethylbenzene	0.800	0.802	mg/Kg	100	80 - 135	6	20
2-Chlorotoluene	0.800	0.794	mg/Kg	99	77 - 134	11	21
1,3,5-Trimethylbenzene	0.800	0.770	mg/Kg	96	72 - 134	10	24
Isopropylbenzene	0.800	0.835	mg/Kg	104	80 - 131	1	20
4-Chlorotoluene	0.800	0.778	mg/Kg	97	71 - 137	11	21
Methylene Chloride	0.800	0.543	mg/Kg	68	56 - 140	6	20

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0.786

0.786

0.847

0.758

0.765

mg/Kg

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104

95

97

97

89

93

98

98

106

95

96

107

73 - 138

80 - 132

78 - 132

71 - 142

78 - 133

77 - 123

80 - 132

69 - 143

71 - 143

78 - 126

79 - 129

64 - 129

72 - 144

RPD

Limit

25

6

Job ID: 580-145160-1

Client: ERM-West

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-476038/2-A

Matrix: Solid

Analysis Batch: 476046

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 476038

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,2,4-Trichlorobenzene	0.800	0.789		mg/Kg		99	74 - 131	5	26
Tetrachloroethene	0.800	0.801		mg/Kg		100	75 - 141	4	20
1,2,3-Trichlorobenzene	0.800	0.784		mg/Kg		98	58 - 146	11	28
Toluene	0.800	0.814		mg/Kg		102	75 - 125	8	20
Hexachlorobutadiene	0.800	0.720		mg/Kg		90	65 - 145	4	36
Naphthalene	0.800	0.785		mg/Kg		98	56 - 145	12	25
trans-1,2-Dichloroethene	0.800	0.751		mg/Kg		94	77 - 134	3	20
trans-1,3-Dichloropropene	0.800	0.827		mg/Kg		103	80 - 121	6	20
Trichloroethene	0.800	0.757		mg/Kg		95	80 - 134	7	20
Trichlorofluoromethane	0.800	0.789		mg/Kg		99	71 - 150	1	30
Methyl tert-butyl ether	0.800	0.805		mg/Kg		101	71 - 126	4	20
Vinyl chloride	0.800	0.757		mg/Kg		95	62 - 144	6	20

LCSD LCSD

MS MS

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	99		80 - 120
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	99		80 - 120
1,2-Dichloroethane-d4 (Surr)	99		80 - 121

Lab Sample ID: 580-145160-8 MS

Matrix: Solid

Analysis Batch: 476046

Client Sample ID: PDI-55c-SO-44.3-20241023

Prep Type: Total/NA

Prep Batch: 476038

Surrogate	%Recovery	Quaimer	Limits
1,2-Dichloroethane-d4 (Surr)	112		80 - 121
4-Bromofluorobenzene (Surr)	106		80 - 120
Dibromofluoromethane (Surr)	112		80 - 120
Toluene-d8 (Surr)	103		80 - 120

Lab Sample ID: 580-145160-8 MSD

Matrix: Solid

Analysis Batch: 476046

Client Sample ID: PDI-55c-SO-44.3-20241023

Prep Type: Total/NA **Prep Batch: 476038**

MSD MSD %Recovery Qualifier Limits Surrogate 80 - 121 1,2-Dichloroethane-d4 (Surr) 103 4-Bromofluorobenzene (Surr) 80 - 120 105 Dibromofluoromethane (Surr) 102 80 - 120 80 - 120 Toluene-d8 (Surr) 99

Lab Sample ID: MB 580-476039/3-A

Matrix: Solid

Analysis Batch: 476085

Client Sample ID: Method Blank Prep Type: Total/NA

Prep Batch: 476039

	IVID	IVID							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.040	0.012	mg/Kg		10/28/24 08:39	10/28/24 22:06	1
1,1-Dichloroethane	ND		0.040	0.0092	mg/Kg		10/28/24 08:39	10/28/24 22:06	1
1,1,1-Trichloroethane	ND		0.040	0.0046	mg/Kg		10/28/24 08:39	10/28/24 22:06	1
1,1-Dichloropropene	ND		0.040	0.0053	mg/Kg		10/28/24 08:39	10/28/24 22:06	1

Client: ERM-West Job ID: 580-145160-1

RL

0.020

MDL Unit

ma/Ka

0.0055

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

MB MB Result Qua

ND

Qualifier

Lab Sample ID: MB 580-476039/3-A

Matrix: Solid

1 2-Dichloroethane

1,3,5-Trimethylbenzene

1,2,4-Trimethylbenzene

m-Xylene & p-Xylene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

4-Isopropyltoluene

N-Propylbenzene

n-Butylbenzene

t-Butylbenzene

Tetrachloroethene

sec-Butylbenzene

1,2-Dichlorobenzene

1.2.4-Trichlorobenzene

1,2,3-Trichlorobenzene

Hexachlorobutadiene

1,2-Dibromo-3-Chloropropane

o-Xylene

Styrene

Toluene

Naphthalene

Isopropylbenzene

Methylene Chloride

4-Chlorotoluene

Analysis Batch: 476085

Client Sample ID: Method Blank

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10/28/24 08:39

Prepared

Prep Type: Total/NA Prep Batch: 476039

Analyzed

1,2-Dichioroethane	ND	0.020	0.0055 mg/kg	10/20/24 00:39 10/20/24 22:00	- 1
1,2-Dichloropropane	ND	0.020	0.0066 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
Benzene	ND	0.020	0.0038 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
1,1,2-Trichloroethane	ND	0.020	0.0074 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
Bromochloromethane	ND	0.040	0.0062 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
1,3-Dichloropropane	ND	0.060	0.0056 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
Bromodichloromethane	ND	0.040	0.0055 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
1,2-Dibromoethane	ND	0.020	0.0038 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
Bromomethane	ND	0.10	0.038 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
Carbon tetrachloride	ND	0.020	0.0044 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
Chlorobenzene	ND	0.040	0.0048 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
1,1,1,2-Tetrachloroethane	ND	0.020	0.0050 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
Chloroethane	ND	0.080	0.021 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
1,1,2,2-Tetrachloroethane	ND	0.020	0.0076 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
Chloroform	ND	0.020	0.0042 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
Chloromethane	ND	0.060	0.010 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
cis-1,2-Dichloroethene	ND	0.060	0.013 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
cis-1,3-Dichloropropene	ND	0.020	0.0040 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
Bromoform	ND	0.040	0.0045 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
Dibromochloromethane	ND	0.020	0.0049 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
Bromobenzene	ND	0.040	0.0042 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
Dibromomethane	ND	0.040	0.0074 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
Dichlorodifluoromethane	ND	0.25	0.046 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
1,2,3-Trichloropropane	ND	0.040	0.012 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
Ethylbenzene	ND	0.040	0.0091 mg/Kg	10/28/24 08:39 10/28/24 22:06	1
2-Chlorotoluene	ND	0.040	0.0088 mg/Kg	10/28/24 08:39 10/28/24 22:06	1

0.040

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0.0076 mg/Kg

0.0086 mg/Kg

0.0098 mg/Kg

0.026 mg/Kg

0.014 mg/Kg

0.0071 mg/Kg

0.013 mg/Kg

0.010 mg/Kg

0.015 mg/Kg

0.011 mg/Kg

0.019 mg/Kg

0.0086 mg/Kg

0.0087 mg/Kg

0.013 mg/Kg

0.015 mg/Kg

0.0077 mg/Kg

0.043 mg/Kg

0.0053 mg/Kg

0.040 mg/Kg

0.014 mg/Kg

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0.039 mg/Kg

mg/Kg

0.0050

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Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-476039/3-A

Matrix: Solid

Analysis Batch: 476085

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 476039

MB	MB						•	
Analyte Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,2-Dichloroethene ND		0.060	0.015	mg/Kg		10/28/24 08:39	10/28/24 22:06	1
trans-1,3-Dichloropropene ND		0.040	0.0070	mg/Kg		10/28/24 08:39	10/28/24 22:06	1
Trichloroethene ND		0.040	0.010	mg/Kg		10/28/24 08:39	10/28/24 22:06	1
Trichlorofluoromethane ND		0.080	0.026	mg/Kg		10/28/24 08:39	10/28/24 22:06	1
Methyl tert-butyl ether ND		0.040	0.0060	mg/Kg		10/28/24 08:39	10/28/24 22:06	1
Vinyl chloride ND		0.10	0.019	mg/Kg		10/28/24 08:39	10/28/24 22:06	1

MB MB

Surrogate	%Recovery Qual	alifier Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100	80 - 120	10/28/24 08:39	10/28/24 22:06	1
4-Bromofluorobenzene (Surr)	102	80 - 120	10/28/24 08:39	10/28/24 22:06	1
Dibromofluoromethane (Surr)	110	80 - 120	10/28/24 08:39	10/28/24 22:06	1
1,2-Dichloroethane-d4 (Surr)	110	80 - 121	10/28/24 08:39	10/28/24 22:06	1

Lab Sample ID: LCS 580-476039/1-A

Matrix: Solid

Analysis Batch: 476085

Client Sample ID: Lab Control Sample Prep Type: Total/NA

Prep Batch: 476039

Analysis Batch: 476085	<u> </u>						Prep Batch: 476039
Ameliate	Spike	_	LCS	1114	_	0/ 🗖	%Rec
Analyte	Added		Qualifier	Unit	_ D	%Rec	Limits
1,1-Dichloroethene	0.800	0.695		mg/Kg		87	73 - 134
1,1-Dichloroethane	0.800	0.738		mg/Kg		92	78 - 126
1,1,1-Trichloroethane	0.800	0.727		mg/Kg		91	78 - 135
1,1-Dichloropropene	0.800	0.768		mg/Kg		96	76 - 140
1,2-Dichloroethane	0.800	0.744		mg/Kg		93	76 - 124
1,2-Dichloropropane	0.800	0.796		mg/Kg		100	73 - 130
Benzene	0.800	0.774		mg/Kg		97	79 - 135
1,1,2-Trichloroethane	0.800	0.803		mg/Kg		100	80 - 123
Bromochloromethane	0.800	0.788		mg/Kg		99	76 - 131
1,3-Dichloropropane	0.800	0.796		mg/Kg		99	80 - 120
Bromodichloromethane	0.800	0.733		mg/Kg		92	78 - 125
1,2-Dibromoethane	0.800	0.813		mg/Kg		102	77 - 123
Bromomethane	0.800	0.768		mg/Kg		96	55 - 150
Carbon tetrachloride	0.800	0.712		mg/Kg		89	76 - 140
Chlorobenzene	0.800	0.745		mg/Kg		93	80 - 125
1,1,1,2-Tetrachloroethane	0.800	0.761		mg/Kg		95	79 - 128
Chloroethane	0.800	0.906		mg/Kg		113	26 - 150
1,1,2,2-Tetrachloroethane	0.800	0.780		mg/Kg		97	77 - 122
Chloroform	0.800	0.787		mg/Kg		98	74 - 133
Chloromethane	0.800	0.768		mg/Kg		96	52 - 142
cis-1,2-Dichloroethene	0.800	0.780		mg/Kg		98	80 - 125
cis-1,3-Dichloropropene	0.800	0.765		mg/Kg		96	80 - 122
Bromoform	0.800	0.571		mg/Kg		71	71 - 130
Dibromochloromethane	0.800	0.745		mg/Kg		93	75 - 125
Bromobenzene	0.800	0.758		mg/Kg		95	78 - 126
Dibromomethane	0.800	0.776		mg/Kg		97	72 - 130
Dichlorodifluoromethane	0.800	0.741		mg/Kg		93	33 - 150
1,2,3-Trichloropropane	0.800	0.805		mg/Kg		101	77 - 127
Ethylbenzene	0.800	0.767		mg/Kg		96	80 - 135
2-Chlorotoluene	0.800	0.740		mg/Kg		92	77 - 134

Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-476039/1-A

Matrix: Solid

Client: ERM-West

Analysis Batch: 476085

Client Samp	e ID:	Lab	Control	Samp	le
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Prep Type: Total/NA Prep Batch: 476039

Analyte Added Result 1,3,5-Trimethylbenzene Qualifier 1,3,5-Trimethylbenzene Unit 1,3,5-Trimethylbenzene D %Rec 1,3,4 mg/Kg Limits Isopropylbenzene 0.800 0.772 mg/Kg 96 80 - 131 4-Chlorotoluene 0.800 0.762 mg/Kg 95 71 - 137 Methylene Chloride 0.800 0.543 mg/Kg 68 56 - 140 1,2,4-Trimethylbenzene 0.800 0.725 mg/Kg 91 73 - 138 m-Xylene & p-Xylene 0.800 0.757 mg/Kg 97 80 - 132 1,3-Dichlorobenzene 0.800 0.757 mg/Kg 95 78 - 132 4-Isopropyltoluene 0.800 0.734 mg/Kg 92 71 - 142 N-Propylbenzene 0.800 0.745 mg/Kg 93 78 - 132 1,4-Dichlorobenzene 0.800 0.671 mg/Kg 93 78 - 133 1,4-Dichlorobenzene 0.800 0.687 mg/Kg 90 71 - 143 sec-Butylbenzene 0.800 <	
Isopropylbenzene 0.800 0.772 mg/kg 96 80 - 131	
4-Chlorotoluene 0.800 0.762 mg/Kg 95 71 - 137 Methylene Chloride 0.800 0.543 mg/Kg 68 56 - 140 1,2,4-Trimethylbenzene 0.800 0.725 mg/Kg 91 73 - 138 m-Xylene & p-Xylene 0.800 0.779 mg/Kg 97 80 - 132 1,3-Dichlorobenzene 0.800 0.757 mg/Kg 95 78 - 132 4-Isopropyltoluene 0.800 0.734 mg/Kg 92 71 - 142 N-Propylbenzene 0.800 0.745 mg/Kg 93 78 - 133 1,4-Dichlorobenzene 0.800 0.671 mg/Kg 84 77 - 123 o-Xylene 0.800 0.671 mg/Kg 84 77 - 123 o-Xylene 0.800 0.800 mg/Kg 100 80 - 132 n-Butylbenzene 0.800 0.687 mg/Kg 86 69 - 143 sec-Butylbenzene 0.800 0.752 mg/Kg 94 71 - 143 1,2-Dichlorobenzene 0.800 0.761 mg/Kg 95 78 - 126	
Methylene Chloride 0.800 0.543 mg/Kg 68 56 - 140 1,2,4-Trimethylbenzene 0.800 0.725 mg/Kg 91 73 - 138 m-Xylene & p-Xylene 0.800 0.779 mg/Kg 97 80 - 132 1,3-Dichlorobenzene 0.800 0.757 mg/Kg 95 78 - 132 4-Isopropyltoluene 0.800 0.734 mg/Kg 92 71 - 142 N-Propylbenzene 0.800 0.745 mg/Kg 93 78 - 133 1,4-Dichlorobenzene 0.800 0.671 mg/Kg 84 77 - 123 o-Xylene 0.800 0.800 mg/Kg 100 80 - 132 n-Butylbenzene 0.800 0.687 mg/Kg 86 69 - 143 sec-Butylbenzene 0.800 0.752 mg/Kg 94 71 - 143 1,2-Dichlorobenzene 0.800 0.761 mg/Kg 95 78 - 126 Styrene 0.800 0.816 mg/Kg 102 79 - 129 1,2	
1,2,4-Trimethylbenzene 0.800 0.725 mg/Kg 91 73 - 138 m-Xylene & p-Xylene 0.800 0.779 mg/Kg 97 80 - 132 1,3-Dichlorobenzene 0.800 0.757 mg/Kg 95 78 - 132 4-Isopropyltoluene 0.800 0.734 mg/Kg 92 71 - 142 N-Propylbenzene 0.800 0.745 mg/Kg 93 78 - 133 1,4-Dichlorobenzene 0.800 0.671 mg/Kg 84 77 - 123 o-Xylene 0.800 0.800 mg/Kg 100 80 - 132 n-Butylbenzene 0.800 0.687 mg/Kg 86 69 - 143 sec-Butylbenzene 0.800 0.752 mg/Kg 94 71 - 143 1,2-Dichlorobenzene 0.800 0.761 mg/Kg 95 78 - 126 Styrene 0.800 0.816 mg/Kg 95 78 - 126 Styrene 0.800 0.714 mg/Kg 89 64 - 129 1,2-Dibromo-3-Chloropropane 0.800 0.726 mg/Kg 91 72 - 144	
m-Xylene & p-Xylene 0.800 0.779 mg/Kg 97 80 - 132 1,3-Dichlorobenzene 0.800 0.757 mg/Kg 95 78 - 132 4-Isopropyltoluene 0.800 0.734 mg/Kg 92 71 - 142 N-Propylbenzene 0.800 0.745 mg/Kg 93 78 - 133 1,4-Dichlorobenzene 0.800 0.671 mg/Kg 84 77 - 123 o-Xylene 0.800 0.800 mg/Kg 100 80 - 132 n-Butylbenzene 0.800 0.687 mg/Kg 100 80 - 132 n-Butylbenzene 0.800 0.687 mg/Kg 86 69 - 143 sec-Butylbenzene 0.800 0.752 mg/Kg 94 71 - 143 1,2-Dichlorobenzene 0.800 0.761 mg/Kg 95 78 - 126 Styrene 0.800 0.816 mg/Kg 102 79 - 129 1,2-Dibromo-3-Chloropropane 0.800 0.714 mg/Kg 89 64 - 129 t	
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Tetrachloroethene 0.800 0.750 mg/Kg 94 75 - 141 1,2,3-Trichlorobenzene 0.800 0.730 mg/Kg 91 58 - 146	
1,2,3-Trichlorobenzene 0.800 0.730 mg/Kg 91 58 - 146	
Toluene 0.800 0.770 mg/Kg 96 75 - 125	
Hexachlorobutadiene 0.800 0.647 mg/Kg 81 65 - 145	
Naphthalene 0.800 0.751 mg/Kg 94 56 ₋ 145	
trans-1,2-Dichloroethene 0.800 0.735 mg/Kg 92 77 - 134	
trans-1,3-Dichloropropene 0.800 0.746 mg/Kg 93 80 - 121	
Trichloroethene 0.800 0.723 mg/Kg 90 80 - 134	
Trichlorofluoromethane 0.800 0.776 mg/Kg 97 71 - 150	
Methyl tert-butyl ether 0.800 0.748 mg/Kg 93 71 - 126	
Vinyl chloride 0.800 0.753 mg/Kg 94 62 - 144	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	99		80 - 120
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120
1.2-Dichloroethane-d4 (Surr)	101		80 - 121

Lab Sample ID: LCSD 580-476039/2-A

Matrix: Solid

Analysis Batch: 476085

Client Sample ID: Lab	Control	San	iple Dup
	Prep T	ype:	Total/NA
	_		

Prep Batch: 476039

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1-Dichloroethene	0.800	0.767		mg/Kg		96	73 - 134	10	25
1,1-Dichloroethane	0.800	0.792		mg/Kg		99	78 - 126	7	20
1,1,1-Trichloroethane	0.800	0.758		mg/Kg		95	78 - 135	4	20
1,1-Dichloropropene	0.800	0.773		mg/Kg		97	76 - 140	1	20
1,2-Dichloroethane	0.800	0.740		mg/Kg		93	76 - 124	0	20
1,2-Dichloropropane	0.800	0.812		mg/Kg		101	73 - 130	2	20
Benzene	0.800	0.800		mg/Kg		100	79 - 135	3	20

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-476039/2-A

Matrix: Solid

Analysis Batch: 476085

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 476039

Analysis Batch. 470005	Spike LCSD LCSD		LCSD				%Rec RPD			
Analyte	Added		Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
1,1,2-Trichloroethane	0.800	0.801		mg/Kg	_ =	100	80 - 123	0	20	
Bromochloromethane	0.800	0.770		mg/Kg		96	76 - 131	2	20	
1,3-Dichloropropane	0.800	0.819		mg/Kg		102	80 - 120	3	20	
Bromodichloromethane	0.800	0.769		mg/Kg		96	78 ₋ 125	5	20	
1,2-Dibromoethane	0.800	0.815		mg/Kg		102	77 - 123	0	20	
Bromomethane	0.800	0.787		mg/Kg		98	55 - 150	2	26	
Carbon tetrachloride	0.800	0.721		mg/Kg		90	76 - 140	1	20	
Chlorobenzene	0.800	0.751		mg/Kg		94	80 ₋ 125	1	20	
1,1,1,2-Tetrachloroethane	0.800	0.778		mg/Kg		97	79 - 128	2	20	
Chloroethane	0.800	0.846		mg/Kg		106	26 - 150	7	40	
1,1,2,2-Tetrachloroethane	0.800	0.802		mg/Kg		100	77 ₋ 122	3	20	
Chloroform	0.800	0.802		mg/Kg		100	74 - 133	2	20	
Chloromethane	0.800	0.718				90	74 - 133 52 ₋ 142	7	40	
cis-1,2-Dichloroethene	0.800	0.718		mg/Kg		99	32 - 142 80 - 125	2	20	
				mg/Kg			80 - 122			
cis-1,3-Dichloropropene Bromoform	0.800	0.721		mg/Kg		90	71 - 130	6 4	20	
	0.800	0.593		mg/Kg		74 07		4	20	
Dibromochloromethane	0.800	0.772		mg/Kg		97	75 - 125		20	
Bromobenzene	0.800	0.789		mg/Kg		99	78 ₋ 126	4	20	
Dibromomethane	0.800	0.789		mg/Kg		99	72 - 130	2	40	
Dichlorodifluoromethane	0.800	0.720		mg/Kg		90	33 - 150	3	31	
1,2,3-Trichloropropane	0.800	0.847		mg/Kg		106	77 - 127	5	20	
Ethylbenzene	0.800	0.796		mg/Kg		100	80 - 135	4	20	
2-Chlorotoluene	0.800	0.774		mg/Kg		97	77 - 134	4	21	
1,3,5-Trimethylbenzene	0.800	0.752		mg/Kg		94	72 - 134	5	24	
Isopropylbenzene	0.800	0.867		mg/Kg		108	80 - 131	12	20	
4-Chlorotoluene	0.800	0.768		mg/Kg		96	71 - 137	1	21	
Methylene Chloride	0.800	0.563		mg/Kg		70	56 - 140	4	20	
1,2,4-Trimethylbenzene	0.800	0.749		mg/Kg		94	73 - 138	3	22	
m-Xylene & p-Xylene	0.800	0.778		mg/Kg		97	80 - 132	0	20	
1,3-Dichlorobenzene	0.800	0.751		mg/Kg		94	78 - 132	1	20	
4-Isopropyltoluene	0.800	0.748		mg/Kg		94	71 - 142	2	29	
N-Propylbenzene	0.800	0.759		mg/Kg		95	78 - 133	2	24	
1,4-Dichlorobenzene	0.800	0.694		mg/Kg		87	77 - 123	3	20	
o-Xylene	0.800	0.811		mg/Kg		101	80 - 132	1	20	
n-Butylbenzene	0.800	0.717		mg/Kg		90	69 - 143	4	31	
sec-Butylbenzene	0.800	0.768		mg/Kg		96	71 - 143	2	29	
1,2-Dichlorobenzene	0.800	0.783		mg/Kg		98	78 - 126	3	20	
Styrene	0.800	0.815		mg/Kg		102	79 - 129	0	20	
1,2-Dibromo-3-Chloropropane	0.800	0.743		mg/Kg		93	64 - 129	4	40	
t-Butylbenzene	0.800	0.751		mg/Kg		94	72 - 144	3	27	
1,2,4-Trichlorobenzene	0.800	0.741		mg/Kg		93	74 - 131	7	26	
Tetrachloroethene	0.800	0.757		mg/Kg		95	75 - 141	1	20	
1,2,3-Trichlorobenzene	0.800	0.759		mg/Kg		95	58 - 146	4	28	
Toluene	0.800	0.784		mg/Kg		98	75 - 125	2	20	
Hexachlorobutadiene	0.800	0.676		mg/Kg		85	65 - 145	4	36	
Naphthalene	0.800	0.776		mg/Kg		97	56 - 145	3	25	
trans-1,2-Dichloroethene	0.800	0.776		mg/Kg		97	77 - 134	5	20	
trans-1,3-Dichloropropene	0.800	0.767		mg/Kg		96	80 - 121	3	20	
Trichloroethene	0.800	0.735		mg/Kg		92	80 - 134	2	20	

Client: ERM-West

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-476039/2-A

Matrix: Solid

Analysis Batch: 476085

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Job ID: 580-145160-1

Prep Batch: 476039

Spike	LCSD	LCSD				%Rec		RPD
Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
0.800	0.818		mg/Kg		102	71 - 150	5	30
0.800	0.790		mg/Kg		99	71 - 126	5	20
0.800	0.811		mg/Kg		101	62 - 144	7	20
	Added 0.800 0.800	Added Result 0.800 0.818 0.800 0.790	Added Result Qualifier 0.800 0.818 0.800 0.790	Added Result Qualifier Unit 0.800 0.818 mg/Kg 0.800 0.790 mg/Kg	Added Result Qualifier Unit D 0.800 0.818 mg/Kg 0.800 0.790 mg/Kg	Added Result 0.800 Qualifier 0.818 Unit mg/Kg D mg/Kg %Rec mg/Kg 0.800 0.790 mg/Kg 99	Added Result 0.800 Qualifier 0.818 Unit mg/Kg D value of the control of the cont	Added Result 0.800 Qualifier 0.818 Unit mg/Kg D %Rec 10.800 Limits RPD 71 - 150 RPD 75 - 55 0.800 0.790 mg/Kg 99 71 - 126 5

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	98		80 - 120
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	98		80 - 120
1,2-Dichloroethane-d4 (Surr)	99		80 - 121

Client Sample ID: Method Blank

Prep Type: Total/NA Prep Batch: 476149

Lab Sample ID: MB 580-476149/3-A

Matrix: Solid

Analysis Batch: 476155

Analysis Batch: 476155	MB	МВ						Prep Batch:	476149
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.040	0.012	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
1,1-Dichloroethane	ND		0.040	0.0092	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
1,1,1-Trichloroethane	ND		0.040	0.0046	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
1,1-Dichloropropene	ND		0.040	0.0053	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
1,2-Dichloroethane	ND		0.020	0.0055	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
1,2-Dichloropropane	ND		0.020	0.0066	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
2,2-Dichloropropane	ND		0.040	0.012	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Benzene	ND		0.020	0.0038	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
1,1,2-Trichloroethane	ND		0.020	0.0074	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Bromochloromethane	ND		0.040	0.0062	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
1,3-Dichloropropane	ND		0.060	0.0056	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Bromodichloromethane	ND		0.040	0.0055	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
1,2-Dibromoethane	ND		0.020	0.0038	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Bromomethane	ND		0.10	0.038	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Carbon tetrachloride	ND		0.020	0.0044	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Chlorobenzene	ND		0.040	0.0048	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
1,1,1,2-Tetrachloroethane	ND		0.020	0.0050	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Chloroethane	ND		0.080	0.021	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
1,1,2,2-Tetrachloroethane	ND		0.020	0.0076	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Chloroform	ND		0.020	0.0042	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Chloromethane	ND		0.060	0.010	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
cis-1,2-Dichloroethene	ND		0.060	0.013	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
cis-1,3-Dichloropropene	ND		0.020	0.0040	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Dibromochloromethane	ND		0.020	0.0049	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Bromobenzene	ND		0.040	0.0042	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Dibromomethane	ND		0.040	0.0074	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Dichlorodifluoromethane	ND		0.25	0.046	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
1,2,3-Trichloropropane	ND		0.040		mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Ethylbenzene	ND		0.040	0.0091	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
2-Chlorotoluene	ND		0.040	0.0088			10/29/24 08:14	10/29/24 11:54	1
1,3,5-Trimethylbenzene	ND		0.040	0.0076			10/29/24 08:14	10/29/24 11:54	1
Isopropylbenzene	ND		0.040	0.0086			10/29/24 08:14	10/29/24 11:54	1
4-Chlorotoluene	ND		0.040	0.0098			10/29/24 08:14	10/29/24 11:54	1

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-476149/3-A

Matrix: Solid

Analysis Batch: 476155

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 476149

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	ND		0.040	0.014	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
m-Xylene & p-Xylene	ND		0.040	0.0071	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
1,3-Dichlorobenzene	ND		0.060	0.013	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
4-Isopropyltoluene	ND		0.040	0.010	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
N-Propylbenzene	ND		0.040	0.015	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
1,4-Dichlorobenzene	ND		0.060	0.011	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
o-Xylene	ND		0.040	0.0050	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
n-Butylbenzene	ND		0.040	0.019	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
sec-Butylbenzene	ND		0.040	0.0086	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
1,2-Dichlorobenzene	ND		0.040	0.0087	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Styrene	ND		0.040	0.013	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
1,2-Dibromo-3-Chloropropane	ND		0.060	0.015	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
t-Butylbenzene	ND		0.040	0.0077	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
1,2,4-Trichlorobenzene	ND		0.080	0.043	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Tetrachloroethene	ND		0.040	0.0053	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
1,2,3-Trichlorobenzene	ND		0.080	0.040	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Toluene	ND		0.060	0.014	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Hexachlorobutadiene	ND		0.10	0.024	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Naphthalene	ND		0.15	0.039	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
trans-1,2-Dichloroethene	ND		0.060	0.015	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
trans-1,3-Dichloropropene	ND		0.040	0.0070	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Trichloroethene	ND		0.040	0.010	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Trichlorofluoromethane	ND		0.080	0.026	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Methyl tert-butyl ether	ND		0.040	0.0060	mg/Kg		10/29/24 08:14	10/29/24 11:54	1
Vinyl chloride	ND		0.10	0.019	mg/Kg		10/29/24 08:14	10/29/24 11:54	1

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100	80 - 120	10/29/24 08:14	10/29/24 11:54	1
4-Bromofluorobenzene (Surr)	104	80 - 120	10/29/24 08:14	10/29/24 11:54	1
Dibromofluoromethane (Surr)	118	80 - 120	10/29/24 08:14	10/29/24 11:54	1
1,2-Dichloroethane-d4 (Surr)	112	80 - 121	10/29/24 08:14	10/29/24 11:54	1

Lab Sample ID: LCS 580-476149/1-A

Matrix: Solid

Analysis Batch: 476155

Cilent Sample iD:	Lab Control Sample
	Prep Type: Total/NA

Prep Batch: 476149

•	Spike	LCS	LCS				%Rec
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1-Dichloroethene	0.800	0.711		mg/Kg		89	73 - 134
1,1-Dichloroethane	0.800	0.772		mg/Kg		97	78 - 126
1,1,1-Trichloroethane	0.800	0.763		mg/Kg		95	78 - 135
1,1-Dichloropropene	0.800	0.780		mg/Kg		97	76 - 140
1,2-Dichloroethane	0.800	0.762		mg/Kg		95	76 - 124
1,2-Dichloropropane	0.800	0.808		mg/Kg		101	73 - 130
2,2-Dichloropropane	0.800	0.703		mg/Kg		88	75 - 134
Benzene	0.800	0.801		mg/Kg		100	79 - 135
1,1,2-Trichloroethane	0.800	0.788		mg/Kg		98	80 - 123
Bromochloromethane	0.800	0.800		mg/Kg		100	76 - 131
1,3-Dichloropropane	0.800	0.817		ma/Ka		102	80 - 120

Client: ERM-West Job ID: 580-145160-1

LCS LCS

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-476149/1-A

Matrix: Solid

Analysis Batch: 476155

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Pre

Prep Batch: 476149	
%Rec	
Limits	

Analyte	Added	Result Qualifie	r Unit	D %Rec	Limits	
Bromodichloromethane	0.800	0.778	mg/Kg	97	78 - 125	
1,2-Dibromoethane	0.800	0.828	mg/Kg	103	77 - 123	
Bromomethane	0.800	0.784	mg/Kg	98	55 - 150	
Carbon tetrachloride	0.800	0.743	mg/Kg	93	76 - 140	
Chlorobenzene	0.800	0.781	mg/Kg	98	80 - 125	
1,1,1,2-Tetrachloroethane	0.800	0.758	mg/Kg	95	79 - 128	
Chloroethane	0.800	0.962	mg/Kg	120	26 - 150	
1,1,2,2-Tetrachloroethane	0.800	0.757	mg/Kg	95	77 - 122	
Chloroform	0.800	0.817	mg/Kg	102	74 - 133	
Chloromethane	0.800	0.785	mg/Kg	98	52 - 142	
cis-1,2-Dichloroethene	0.800	0.782	mg/Kg	98	80 - 125	
cis-1,3-Dichloropropene	0.800	0.803	mg/Kg	100	80 - 122	

Spike

Diditioniciliorometrarie	0.000	0.776	mg/Kg	91	10-123	
1,2-Dibromoethane	0.800	0.828	mg/Kg	103	77 - 123	
Bromomethane	0.800	0.784	mg/Kg	98	55 - 150	
Carbon tetrachloride	0.800	0.743	mg/Kg	93	76 - 140	
Chlorobenzene	0.800	0.781	mg/Kg	98	80 - 125	
1,1,1,2-Tetrachloroethane	0.800	0.758	mg/Kg	95	79 - 128	
Chloroethane	0.800	0.962	mg/Kg	120	26 - 150	
1,1,2,2-Tetrachloroethane	0.800	0.757	mg/Kg	95	77 - 122	
Chloroform	0.800	0.817	mg/Kg	102	74 - 133	
Chloromethane	0.800	0.785	mg/Kg	98	52 - 142	
cis-1,2-Dichloroethene	0.800	0.782	mg/Kg	98	80 - 125	
cis-1,3-Dichloropropene	0.800	0.803	mg/Kg	100	80 - 122	
Dibromochloromethane	0.800	0.769	mg/Kg	96	75 - 125	
Bromobenzene	0.800	0.764	mg/Kg	95	78 - 126	
Dibromomethane	0.800	0.788	mg/Kg	98	72 - 130	
Dichlorodifluoromethane	0.800	0.798	mg/Kg	100	33 - 150	
1,2,3-Trichloropropane	0.800	0.751	mg/Kg	94	77 - 127	
Ethylbenzene	0.800	0.782	mg/Kg	98	80 - 135	
2-Chlorotoluene	0.800	0.750	mg/Kg	94	77 - 134	
1,3,5-Trimethylbenzene	0.800	0.700	mg/Kg	88	72 - 134	
Isopropylbenzene	0.800	0.805	mg/Kg	101	80 - 131	
4-Chlorotoluene	0.800	0.751	mg/Kg	94	71 - 137	
1,2,4-Trimethylbenzene	0.800	0.705	mg/Kg	88	73 - 138	
m-Xylene & p-Xylene	0.800	0.802	mg/Kg	100	80 - 132	
1,3-Dichlorobenzene	0.800	0.775	mg/Kg	97	78 - 132	
4-Isopropyltoluene	0.800	0.727	mg/Kg	91	71 - 142	
N-Propylbenzene	0.800	0.744	mg/Kg	93	78 - 133	
1,4-Dichlorobenzene	0.800	0.667	mg/Kg	83	77 - 123	
o-Xylene	0.800	0.839	mg/Kg	105	80 - 132	
n-Butylbenzene	0.800	0.694	mg/Kg	87	69 - 143	
sec-Butylbenzene	0.800	0.744	mg/Kg	93	71 - 143	
1,2-Dichlorobenzene	0.800	0.767	mg/Kg	96	78 - 126	
Styrene	0.800	0.837	mg/Kg	105	79 - 129	
1,2-Dibromo-3-Chloropropane	0.800	0.706	mg/Kg	88	64 - 129	
t-Butylbenzene	0.800	0.721	mg/Kg	90	72 - 144	
1,2,4-Trichlorobenzene	0.800	0.744	mg/Kg	93	74 - 131	
Tetrachloroethene	0.800	0.767	mg/Kg	96	75 - 141	
1,2,3-Trichlorobenzene	0.800	0.725	mg/Kg	91	58 - 146	
Toluene	0.800	0.788	mg/Kg	98	75 - 125	
Hexachlorobutadiene	0.800	0.680	mg/Kg	85	65 - 145	
Naphthalene	0.800	0.716	mg/Kg	89	56 - 145	
trans-1,2-Dichloroethene	0.800	0.738	mg/Kg	92	77 - 134	
trans-1,3-Dichloropropene	0.800	0.785	mg/Kg	98	80 - 121	
Trichloroethene	0.800	0.732	mg/Kg	91	80 - 134	
Trichlorofluoromethane	0.800	0.854	mg/Kg	107	71 - 150	
Methyl tert-butyl ether	0.800	0.759	mg/Kg	95	71 - 126	
Vinyl chloride	0.800	0.771	mg/Kg	96	62 - 144	
			- -			

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-476149/1-A

Lab Sample ID: LCSD 580-476149/2-A

Matrix: Solid

Matrix: Solid

Analysis Batch: 476155

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 476149

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	100		80 - 120
4-Bromofluorobenzene (Surr)	103		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120
1,2-Dichloroethane-d4 (Surr)	100		80 - 121

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analysis Batch: 476155							Prep Ba	atch: 47	
	Spike		LCSD				%Rec		RPD
Analyte	Added		Qualifier	Unit	_ D	%Rec	Limits	RPD	Limit
1,1-Dichloroethene	0.800	0.808		mg/Kg		101	73 - 134	13	25
1,1-Dichloroethane	0.800	0.825		mg/Kg		103	78 - 126	7	20
1,1,1-Trichloroethane	0.800	0.784		mg/Kg		98	78 - 135	3	20
1,1-Dichloropropene	0.800	0.793		mg/Kg		99	76 - 140	2	20
1,2-Dichloroethane	0.800	0.776		mg/Kg		97	76 - 124	2	20
1,2-Dichloropropane	0.800	0.846		mg/Kg		106	73 - 130	5	20
2,2-Dichloropropane	0.800	0.694		mg/Kg		87	75 - 134	1	20
Benzene	0.800	0.814		mg/Kg		102	79 - 135	2	20
1,1,2-Trichloroethane	0.800	0.789		mg/Kg		99	80 - 123	0	20
Bromochloromethane	0.800	0.809		mg/Kg		101	76 - 131	1	20
1,3-Dichloropropane	0.800	0.803		mg/Kg		100	80 - 120	2	20
Bromodichloromethane	0.800	0.795		mg/Kg		99	78 - 125	2	20
1,2-Dibromoethane	0.800	0.794		mg/Kg		99	77 - 123	4	20
Bromomethane	0.800	0.810		mg/Kg		101	55 - 150	3	26
Carbon tetrachloride	0.800	0.743		mg/Kg		93	76 - 140	0	20
Chlorobenzene	0.800	0.763		mg/Kg		95	80 - 125	2	20
1,1,1,2-Tetrachloroethane	0.800	0.758		mg/Kg		95	79 - 128	0	20
Chloroethane	0.800	0.937		mg/Kg		117	26 - 150	3	40
1,1,2,2-Tetrachloroethane	0.800	0.713		mg/Kg		89	77 - 122	6	20
Chloroform	0.800	0.825		mg/Kg		103	74 - 133	1	20
Chloromethane	0.800	0.758		mg/Kg		95	52 - 142	3	40
cis-1,2-Dichloroethene	0.800	0.837		mg/Kg		105	80 - 125	7	20
cis-1,3-Dichloropropene	0.800	0.744		mg/Kg		93	80 - 122	8	20
Dibromochloromethane	0.800	0.761		mg/Kg		95	75 - 125	1	20
Bromobenzene	0.800	0.742		mg/Kg		93	78 - 126	3	20
Dibromomethane	0.800	0.806		mg/Kg		101	72 - 130	2	40
Dichlorodifluoromethane	0.800	0.751		mg/Kg		94	33 - 150	6	31
1,2,3-Trichloropropane	0.800	0.755		mg/Kg		94	77 - 127	0	20
Ethylbenzene	0.800	0.794		mg/Kg		99	80 - 135	2	20
2-Chlorotoluene	0.800	0.743		mg/Kg		93	77 - 134	1	21
1,3,5-Trimethylbenzene	0.800	0.713		mg/Kg		89	72 - 134	2	24
Isopropylbenzene	0.800	0.881		mg/Kg		110	80 - 131	9	20
4-Chlorotoluene	0.800	0.753		mg/Kg		94	71 - 137	0	21
1,2,4-Trimethylbenzene	0.800	0.712		mg/Kg		89	73 - 138	1	22
m-Xylene & p-Xylene	0.800	0.803		mg/Kg		100	80 - 132	0	20
1,3-Dichlorobenzene	0.800	0.745		mg/Kg		93	78 - 132	4	20
4-Isopropyltoluene	0.800	0.738		mg/Kg		92	71 - 142	1	29
N-Propylbenzene	0.800	0.759		mg/Kg		95	78 - 133	2	24

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-476149/2-A

Matrix: Solid

Analysis Batch: 476155

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA Prep Batch: 476149

7									
	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,4-Dichlorobenzene	0.800	0.702		mg/Kg		88	77 - 123	5	20
o-Xylene	0.800	0.835		mg/Kg		104	80 - 132	0	20
n-Butylbenzene	0.800	0.689		mg/Kg		86	69 - 143	1	31
sec-Butylbenzene	0.800	0.758		mg/Kg		95	71 - 143	2	29
1,2-Dichlorobenzene	0.800	0.766		mg/Kg		96	78 - 126	0	20
Styrene	0.800	0.830		mg/Kg		104	79 - 129	1	20
1,2-Dibromo-3-Chloropropane	0.800	0.622		mg/Kg		78	64 - 129	13	40
t-Butylbenzene	0.800	0.726		mg/Kg		91	72 - 144	1	27
1,2,4-Trichlorobenzene	0.800	0.759		mg/Kg		95	74 - 131	2	26
Tetrachloroethene	0.800	0.765		mg/Kg		96	75 - 141	0	20
1,2,3-Trichlorobenzene	0.800	0.719		mg/Kg		90	58 - 146	1	28
Toluene	0.800	0.764		mg/Kg		95	75 - 125	3	20
Hexachlorobutadiene	0.800	0.705		mg/Kg		88	65 - 145	4	36
Naphthalene	0.800	0.710		mg/Kg		89	56 - 145	1	25
trans-1,2-Dichloroethene	0.800	0.794		mg/Kg		99	77 - 134	7	20
trans-1,3-Dichloropropene	0.800	0.774		mg/Kg		97	80 - 121	1	20
Trichloroethene	0.800	0.744		mg/Kg		93	80 - 134	2	20
Trichlorofluoromethane	0.800	0.838		mg/Kg		105	71 - 150	2	30
Methyl tert-butyl ether	0.800	0.768		mg/Kg		96	71 - 126	1	20
Vinyl chloride	0.800	0.832		mg/Kg		104	62 - 144	8	20

LCSD LCSD

ND

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	100		80 - 120
4-Bromofluorobenzene (Surr)	103		80 - 120
Dibromofluoromethane (Surr)	102		80 - 120
1,2-Dichloroethane-d4 (Surr)	101		80 - 121

Lab Sample ID: 580-145160-8 MS

Matrix: Solid

1,2-Dichloropropane

Analysis Batch: 476155

Client Sample ID: PDI-55c-SO-44.3-20241023 Prep Type: Total/NA

105

73 - 130

Prep Batch: 476149

Spike MS MS %Rec Sample Sample Qualifier Added Limits Analyte Result Result Qualifier Unit D %Rec ND 1.25 1.24 100 79 - 128 1,1,1,2-Tetrachloroethane mg/Kg ₩ 1,1,1-Trichloroethane ND 1.25 1.28 mg/Kg ₩ 102 78 - 135 1,1,2,2-Tetrachloroethane ND 1.25 1.22 98 77 - 122 mg/Kg Ö 1,1,2-Trichloroethane ND 1.25 1.31 mg/Kg 105 80 - 123 1,1-Dichloroethane ND 1.25 1.29 mg/Kg ₩ 103 78 - 126 ND 1.25 73 - 134 1,1-Dichloroethene 1.18 mg/Kg ₩ 94 1,1-Dichloropropene ND 1.25 1.35 mg/Kg ₩ 108 76 - 1401,2,3-Trichlorobenzene ND 1.25 1.18 mg/Kg ₩ 95 58 - 146 1,2,3-Trichloropropane ND 1.25 1.28 mg/Kg ₩ 103 77 - 127 74 - 131 ND 92 1,2,4-Trichlorobenzene 1.25 1.15 mg/Kg ₩ 1,2,4-Trimethylbenzene ND 1.25 1.24 ₩ 99 73 - 138 mg/Kg 1,2-Dibromo-3-Chloropropane ND 1.25 1.13 mg/Kg ₩ 91 64 - 129 1,2-Dibromoethane ND 1.25 1.29 104 77 - 123 mg/Kg ND 1.2-Dichlorobenzene 1.25 1.25 mg/Kg 100 78 - 126 ₩ 1,2-Dichloroethane ND 1.25 1.21 mg/Kg 97 76 - 124

Eurofins Seattle

1.31

mg/Kg

1.25

Spike

Added

Client: ERM-West Job ID: 580-145160-1

MS MS

Qualifier

Unit

mg/Kg

mg/Kg

mg/Kg

D

%Rec

98

104

105

Ö

₩

₩

52 - 142

80 - 125

80 - 122

Result

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Qualifier

Sample Sample

Result

ND

ND

ND

Lab Sample ID: 580-145160-8 MS

Matrix: Solid

Chloromethane

cis-1,2-Dichloroethene

cis-1,3-Dichloropropene

Dibromochloromethane

Dichlorodifluoromethane

Hexachlorobutadiene

Isopropylbenzene

Dibromomethane

Ethylbenzene

Analyte

Analysis Batch: 476155

Client Sample ID: PDI-55c-SO-44.3-20241023

%Rec

Limits

Prep Type: Total/NA **Prep Batch: 476149**

1,3,5-Trimethylbenzene ND 1.25 1.22 mg/Kg 97 72 - 134 ά 1,3-Dichlorobenzene ND 1.25 1.20 mg/Kg ₩ 96 78 - 132ND 1,3-Dichloropropane 1.25 1.29 mg/Kg ÷Ċ÷ 104 80 120 1,4-Dichlorobenzene ND 1.25 1.12 mg/Kg ☼ 90 77 - 123 ND 1.25 99 75 - 134 2,2-Dichloropropane 1 24 mg/Kg Ö 2-Chlorotoluene ND 1.25 1.25 mg/Kg ₩ 100 77 - 1344-Chlorotoluene ND 1.25 1.27 mg/Kg ₩ 102 71 - 137 101 4-Isopropyltoluene ND 1.25 1.26 mg/Kg ₩ 71 - 142mg/Kg 105 Benzene ND 1.25 1.31 ₩ 79 - 135ND 1.25 99 Bromobenzene 1.23 mg/Kg ₩ 78 - 126 103 Bromochloromethane ND 1.25 1.29 mg/Kg Ö 76 - 131 ND 100 Bromodichloromethane 1.25 1.25 Ö 78 - 125 mg/Kg Bromomethane ND 1.25 1.39 mg/Kg ₩ 111 55 - 150 1.25 Carbon tetrachloride ND mg/Kg 1.24 Ö 99 76 - 140 Chlorobenzene ND 1.25 1.24 ₩ 99 80 - 125mg/Kg Chloroethane NΠ 1.25 1 45 mg/Kg ∜ 116 26 - 150Chloroform ND 1.25 1.32 mg/Kg 106 74 - 133

> ND 1.25 1.22 mg/Kg ☼ 98 75 - 125 ND 1.25 1.24 ₩ 99 72 - 130mg/Kg 1.29 ND 1.25 mg/Kg ₩ 103 33 - 150ND 1.25 1.34 108 mg/Kg Ö 80 - 135 ND 1.25 94 1.18 mg/Kg 24 65 - 145ND 1.25 106 80 - 131 1.32 mg/Kg ₩ 71 - 126 ND 1.25 96 1.19 mg/Kg ₩

1.22

1.30

1.31

Methyl tert-butyl ether m-Xylene & p-Xylene ND 1.25 1.32 mg/Kg ☼ 106 80 - 132 Naphthalene ND 1.25 1.18 mg/Kg ₩ 94 56 - 145n-Butylbenzene ND 1.25 1.22 mg/Kg ₩ 98 69 - 143 N-Propylbenzene ND 1.25 1.30 104 78 - 133 mg/Kg Ö o-Xylene ND 1.25 1.33 mg/Kg ☼ 107 80 - 132 sec-Butylbenzene ND 1.25 1.29 ₩ 104 71 - 143 mg/Kg

1.25

1.25

1.25

Styrene ND 1.25 107 79 - 129 1.33 mg/Kg Ö 100 t-Butylbenzene ND 1.25 1.25 mg/Kg ☼ 72 - 144 Tetrachloroethene ND 1.25 106 75 - 141 1.32 mg/Kg ₩ Toluene ND 1.25 1.31 mg/Kg ₩ 105 75 - 125 trans-1.2-Dichloroethene ND 1.25 ٩R 1 23 mg/Kg Ö 77 - 134

trans-1,3-Dichloropropene ND 1.25 1.23 99 80 - 121 mg/Kg Ö Trichloroethene NΠ 1.25 1.25 100 80 - 134 mg/Kg ₩ Trichlorofluoromethane ND 1.25 1.35 mg/Kg ₩ 108 71 - 150 Vinyl chloride ND 1.25 1.25 100 mg/Kg 62 - 144

MS MS %Recovery Qualifier Surrogate Limits 1,2-Dichloroethane-d4 (Surr) 99 80 - 121

4-Bromofluorobenzene (Surr) 101 80 - 120 Dibromofluoromethane (Surr) 99 80 - 120 80 - 120 Toluene-d8 (Surr) 99

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 580-145160-8 MSD

Matrix: Solid

Client Sample ID: PDI-55c-SO-44.3-20241023

Prep Type: Total/NA

Analysis Batch: 476155									Prep Ba	-	
	•	Sample	Spike		MSD		_	a. –	%Rec		RPD
Analyte		Qualifier	Added		Qualifier	Unit	_ <u>D</u>	%Rec	Limits	RPD	Limit
1,1,1,2-Tetrachloroethane	ND		1.21	1.19		mg/Kg	₩	98	79 - 128	4	20
1,1,1-Trichloroethane	ND		1.21	1.33		mg/Kg	₽	109	78 - 135	4	20
1,1,2,2-Tetrachloroethane	ND		1.21	1.06		mg/Kg		88	77 - 122	14	20
1,1,2-Trichloroethane	ND		1.21	1.21		mg/Kg	₩	100	80 - 123	8	20
1,1-Dichloroethane	ND		1.21	1.34		mg/Kg	₩	110	78 - 126	4	20
1,1-Dichloroethene	ND		1.21	1.31		mg/Kg		108	73 - 134	10	25
1,1-Dichloropropene	ND		1.21	1.35		mg/Kg	☼	111	76 - 140	0	20
1,2,3-Trichlorobenzene	ND		1.21	1.07		mg/Kg	₩	88	58 - 146	10	28
1,2,3-Trichloropropane	ND		1.21	1.07		mg/Kg		88	77 - 127	18	20
1,2,4-Trichlorobenzene	ND		1.21	1.16		mg/Kg	₩	96	74 - 131	1	26
1,2,4-Trimethylbenzene	ND		1.21	1.11		mg/Kg	₩	91	73 - 138	11	22
1,2-Dibromo-3-Chloropropane	ND		1.21	0.987		mg/Kg	₩	81	64 - 129	14	40
1,2-Dibromoethane	ND		1.21	1.27		mg/Kg	₩	105	77 - 123	2	20
1,2-Dichlorobenzene	ND		1.21	1.18		mg/Kg	₩	97	78 - 126	6	20
1,2-Dichloroethane	ND		1.21	1.23		mg/Kg	₩	101	76 - 124	1	20
1,2-Dichloropropane	ND		1.21	1.33		mg/Kg	₩	110	73 - 130	2	20
1,3,5-Trimethylbenzene	ND		1.21	1.11		mg/Kg	₩	92	72 - 134	9	24
1,3-Dichlorobenzene	ND		1.21	1.30		mg/Kg	☼	107	78 - 132	9	20
1,3-Dichloropropane	ND		1.21	1.26		mg/Kg		104	80 - 120	3	20
1,4-Dichlorobenzene	ND		1.21	1.06		mg/Kg	☼	87	77 - 123	5	20
2,2-Dichloropropane	ND		1.21	1.32		mg/Kg	₩	109	75 - 134	6	20
2-Chlorotoluene	ND		1.21	1.21		mg/Kg		100	77 - 134	3	21
4-Chlorotoluene	ND		1.21	1.21		mg/Kg	☼	99	71 - 137	5	21
4-Isopropyltoluene	ND		1.21	1.20		mg/Kg	☼	99	71 - 142	6	29
Benzene	ND		1.21	1.29		mg/Kg	∴	106	79 - 135	2	20
Bromobenzene	ND		1.21	1.17		mg/Kg	☼	96	78 - 126	5	20
Bromochloromethane	ND		1.21	1.37		mg/Kg	☼	113	76 - 131	7	20
Bromodichloromethane	ND		1.21	1.27		mg/Kg	∴	105	78 - 125	2	20
Bromomethane	ND		1.21	1.47		mg/Kg	₽	121	55 - 150	5	26
Carbon tetrachloride	ND		1.21	1.31		mg/Kg	₽	108	76 - 140	6	20
Chlorobenzene	ND		1.21	1.23		mg/Kg	 	102	80 - 125	0	20
Chloroethane	ND		1.21	1.66		mg/Kg	₽	137	26 - 150	14	40
Chloroform	ND		1.21	1.37		mg/Kg	₽	113	74 - 133	4	20
Chloromethane	ND		1.21	1.40		mg/Kg		116	52 - 142	14	40
cis-1,2-Dichloroethene	ND		1.21	1.36		mg/Kg	⊅	112	80 - 125	4	20
cis-1,3-Dichloropropene	ND		1.21	1.28		mg/Kg	☆	105	80 - 122	3	20
Dibromochloromethane	ND		1.21	1.19		mg/Kg	· · · · ·	98	75 - 125	2	20
Dibromomethane	ND ND		1.21	1.19				106	73 - 123 72 - 130	4	40
						mg/Kg	‡				
Dichlorodifluoromethane	ND		1.21	1.47		mg/Kg		121	33 - 150	13	31
Ethylbenzene	ND		1.21	1.29		mg/Kg	₩	106	80 - 135	5	20
Hexachlorobutadiene	ND		1.21	1.14		mg/Kg	‡	94	65 - 145	3	36
Isopropylbenzene	ND		1.21	1.33		mg/Kg		110	80 - 131	1	20
Methyl tert-butyl ether	ND		1.21	1.16		mg/Kg	#	96	71 - 126	3	20
m-Xylene & p-Xylene	ND		1.21	1.34		mg/Kg	#	110	80 - 132	1	20
Naphthalene	ND		1.21	1.04		mg/Kg		86	56 - 145	12	25
n-Butylbenzene	ND		1.21	1.14		mg/Kg	₩	94	69 - 143	7	31
N-Propylbenzene	ND		1.21	1.21		mg/Kg	₩	99	78 - 133	7	24
o-Xylene	ND		1.21	1.35		mg/Kg	₩	112	80 - 132	2	20

Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 580-145160-8 MSD

Matrix: Solid

Client: ERM-West

Analysis Batch: 476155

Client Sample ID: PDI-55c-SO-44.3-20241023

Prep Type: Total/NA

Prep Batch: 476149

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
sec-Butylbenzene	ND		1.21	1.23		mg/Kg	₩	102	71 - 143	5	29
Styrene	ND		1.21	1.36		mg/Kg	☆	112	79 - 129	2	20
t-Butylbenzene	ND		1.21	1.17		mg/Kg	₩	97	72 - 144	6	27
Tetrachloroethene	ND		1.21	1.29		mg/Kg	☆	106	75 - 141	2	20
Toluene	ND		1.21	1.27		mg/Kg	₩	104	75 - 125	4	20
trans-1,2-Dichloroethene	ND		1.21	1.33		mg/Kg	≎	110	77 - 134	8	20
trans-1,3-Dichloropropene	ND		1.21	1.22		mg/Kg	☆	100	80 - 121	1	20
Trichloroethene	ND		1.21	1.21		mg/Kg	≎	99	80 - 134	3	20
Trichlorofluoromethane	ND		1.21	1.60		mg/Kg	≎	132	71 - 150	17	30
Vinyl chloride	ND		1.21	1.43		mg/Kg	₽	118	62 - 144	14	20

MSD MSD

MD MD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	104		80 - 121
4-Bromofluorobenzene (Surr)	105		80 - 120
Dibromofluoromethane (Surr)	105		80 - 120
Toluene-d8 (Surr)	97		80 - 120

Lab Sample ID: MB 580-476322/3-A

Matrix: Solid

Analysis Batch: 476323

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 476322

Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,2-Dichloropropane	ND ND	0.040	0.012	mg/Kg		10/30/24 10:19	10/30/24 12:18	1
1,4-Dichlorobenzene	ND	0.060	0.011	mg/Kg		10/30/24 10:19	10/30/24 12:18	1

	MB MB				
Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101	80 - 120	10/30/24 10:19	10/30/24 12:18	1
4-Bromofluorobenzene (Surr)	101	80 - 120	10/30/24 10:19	10/30/24 12:18	1
Dibromofluoromethane (Surr)	107	80 - 120	10/30/24 10:19	10/30/24 12:18	1
1,2-Dichloroethane-d4 (Surr)	107	80 - 121	10/30/24 10:19	10/30/24 12:18	1

Lab Sample ID: LCS 580-476322/1-A

Matrix: Solid

Analysis Batch: 476323

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 476322

	Spil	te LCS	LCS			%Rec	
Analyte	Adde	d Result	Qualifier Uni	t D	%Rec	Limits	
2,2-Dichloropropane	0.80	0.665	mg	/Kg	83	75 - 134	
1,4-Dichlorobenzene	0.80	0.628	mg	/Kg	79	77 - 123	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	97		80 - 120
4-Bromofluorobenzene (Surr)	105		80 - 120
Dibromofluoromethane (Surr)	99		80 - 120
1.2-Dichloroethane-d4 (Surr)	100		80 - 121

Job ID: 580-145160-1

Client: ERM-West

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-476322/2-A

Matrix: Solid

Analysis Batch: 476323

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 476322 %Rec **RPD** Limit

LCSD LCSD Spike RPD Analyte Added Result Qualifier Unit D %Rec Limits 2,2-Dichloropropane 75 - 134 0.800 0.702 mg/Kg 88 5 20 1,4-Dichlorobenzene 0.800 0.709 mg/Kg 89 77 - 123 12 20

QC Sample Results

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	102		80 - 120
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	98		80 - 120
1,2-Dichloroethane-d4 (Surr)	98		80 - 121

Lab Sample ID: MB 580-476692/3-A Client Sample ID: Method Blank

Matrix: Solid

Prep Type: Total/NA **Prep Batch: 476692**

Analysis Batch: 476696

MB MB

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromoform	ND		0.040	0.0045	mg/Kg		11/04/24 08:44	11/04/24 10:12	1
Methylene Chloride	ND		0.25	0.026	mg/Kg		11/04/24 08:44	11/04/24 10:12	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	106		80 - 120	11/04/24 08:44	11/04/24 10:12	1
4-Bromofluorobenzene (Surr)	98		80 - 120	11/04/24 08:44	11/04/24 10:12	1
Dibromofluoromethane (Surr)	104		80 - 120	11/04/24 08:44	11/04/24 10:12	1
1,2-Dichloroethane-d4 (Surr)	97		80 - 121	11/04/24 08:44	11/04/24 10:12	1

Lab Sample ID: LCS 580-476692/1-A

Lab Sample ID: LCSD 580-476692/2-A

Matrix: Solid

Analysis Batch: 476696

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 476692

	Spike	LCS LCS	i			%Rec	
Analyte	Added	Result Qua	lifier Unit	D	%Rec	Limits	
Bromoform	0.800	0.783	mg/Kg		98	71 - 130	
Methylene Chloride	0.800	0.830	mg/Kg		104	56 - 140	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	105		80 - 120
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	97		80 - 121

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Matrix: Solid

Analysis Batch: 476696

Prep Batch: 476692

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Bromoform	0.800	0.795		mg/Kg		99	71 - 130	1	20
Methylene Chloride	0.800	0.709		mg/Kg		89	56 - 140	16	20

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	103		80 - 120

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-476692/2-A

Matrix: Solid

Analysis Batch: 476696

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 476692

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	94		80 - 121

Lab Sample ID: MB 580-476720/7 **Client Sample ID: Method Blank**

Matrix: Water

Analysis Batch: 476720

Prep Type: Total/NA

-	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		1.0	0.28	ug/L			11/04/24 13:12	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			11/04/24 13:12	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			11/04/24 13:12	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			11/04/24 13:12	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			11/04/24 13:12	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			11/04/24 13:12	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			11/04/24 13:12	1
Benzene	ND		1.0	0.24	ug/L			11/04/24 13:12	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			11/04/24 13:12	1
Bromochloromethane	ND		1.0	0.29	ug/L			11/04/24 13:12	1
1,3-Dichloropropane	ND		1.0	0.35				11/04/24 13:12	1
Bromodichloromethane	ND		1.0	0.29	ug/L			11/04/24 13:12	1
1,2-Dibromoethane	ND		1.0	0.40	ug/L			11/04/24 13:12	1
Bromomethane	ND		1.0	0.21	ug/L			11/04/24 13:12	1
Carbon tetrachloride	ND		1.0	0.30	-			11/04/24 13:12	1
Chlorobenzene	ND		1.0	0.44	ug/L			11/04/24 13:12	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18				11/04/24 13:12	1
Chloroethane	ND		1.0	0.35	ug/L			11/04/24 13:12	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			11/04/24 13:12	1
Chloroform	ND		1.0	0.26	ug/L			11/04/24 13:12	1
Chloromethane	ND		1.0	0.28	ug/L			11/04/24 13:12	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			11/04/24 13:12	1
cis-1,3-Dichloropropene	ND		1.0	0.42	ug/L			11/04/24 13:12	1
Bromoform	ND		1.0	0.51	ug/L			11/04/24 13:12	1
Dibromochloromethane	ND		1.0	0.43	ug/L			11/04/24 13:12	1
Bromobenzene	ND		1.0	0.43	ug/L			11/04/24 13:12	1
Dibromomethane	ND		1.0	0.34	ug/L			11/04/24 13:12	1
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			11/04/24 13:12	1
1,2,3-Trichloropropane	ND		1.0	0.41				11/04/24 13:12	1
Ethylbenzene	ND		1.0	0.50	ug/L			11/04/24 13:12	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			11/04/24 13:12	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	-			11/04/24 13:12	1
Isopropylbenzene	ND		1.0	0.44	•			11/04/24 13:12	1
4-Chlorotoluene	ND		1.0	0.38				11/04/24 13:12	1
Methylene Chloride	2.23	J	5.0		ug/L			11/04/24 13:12	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	Ū			11/04/24 13:12	1
m-Xylene & p-Xylene	ND		2.0		ug/L			11/04/24 13:12	1
1,3-Dichlorobenzene	ND		1.0	0.48	-			11/04/24 13:12	1
4-Isopropyltoluene	ND		1.0		ug/L			11/04/24 13:12	1

Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-476720/7

Matrix: Water

Client: ERM-West

Analysis Batch: 476720

Client Sample ID: Method Blank

Prep Type: Total/NA

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac N-Propylbenzene ND 1.0 0.50 ug/L 11/04/24 13:12 1,4-Dichlorobenzene ND 1.0 0.46 ug/L 11/04/24 13:12 ND o-Xylene 1.0 0.39 ug/L 11/04/24 13:12 n-Butylbenzene ND 1.0 0.44 ug/L 11/04/24 13:12 sec-Butylbenzene ND 0.49 ug/L 1.0 11/04/24 13:12 1,2-Dichlorobenzene ND 1.0 0.46 ug/L 11/04/24 13:12 Styrene ND 1.0 0.53 ug/L 11/04/24 13:12 0.57 ug/L 1,2-Dibromo-3-Chloropropane ND 3.0 11/04/24 13:12 t-Butylbenzene ND 2.0 0.58 ug/L 11/04/24 13:12 1,2,4-Trichlorobenzene ND 1.0 0.33 ug/L 11/04/24 13:12 Tetrachloroethene ND 1.0 0.41 ug/L 11/04/24 13:12 ND 1,2,3-Trichlorobenzene 2.0 0.43 ug/L 11/04/24 13:12 Toluene ND 1.0 0.39 ug/L 11/04/24 13:12 ND Hexachlorobutadiene 3.0 0.79 ug/L 11/04/24 13:12 Naphthalene ND 3.0 0.93 ug/L 11/04/24 13:12 ND 1.0 trans-1,2-Dichloroethene 0.39 ug/L 11/04/24 13:12 trans-1,3-Dichloropropene ND 1.0 0.41 ug/L 11/04/24 13:12 Trichloroethene ND 1.0 0.26 ug/L 11/04/24 13:12 ND Trichlorofluoromethane 1.0 0.36 ug/L 11/04/24 13:12 Methyl tert-butyl ether ND 1.0 0.44 ug/L 11/04/24 13:12 0.22 ug/L

MB MB

ND

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac	
Toluene-d8 (Surr)	91		80 - 120		11/04/24 13:12	1	
4-Bromofluorobenzene (Surr)	103		80 - 120		11/04/24 13:12	1	
Dibromofluoromethane (Surr)	109		80 - 120		11/04/24 13:12	1	
1,2-Dichloroethane-d4 (Surr)	114		80 - 120		11/04/24 13:12	1	

1.0

Lab Sample ID: LCS 580-476720/4

Matrix: Water

Vinyl chloride

Analysis Batch: 476720

Client Sample	ID: Lab Control Sample
	Prep Type: Total/NA

11/04/24 13:12

7a., 5.15a.to 11 5.15							
	Spike	LCS	LCS				%Rec
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1-Dichloroethene	5.00	5.30		ug/L		106	70 - 129
1,1-Dichloroethane	5.00	5.62		ug/L		112	80 - 120
1,1,1-Trichloroethane	5.00	5.90		ug/L		118	74 - 130
1,1-Dichloropropene	5.00	5.53		ug/L		111	74 - 120
1,2-Dichloroethane	5.00	5.59		ug/L		112	69 - 126
1,2-Dichloropropane	5.00	5.51		ug/L		110	80 - 120
2,2-Dichloropropane	5.00	6.21		ug/L		124	66 - 126
Benzene	5.00	5.45		ug/L		109	80 - 122
1,1,2-Trichloroethane	5.00	4.55		ug/L		91	80 - 121
Bromochloromethane	5.00	5.72		ug/L		114	78 - 120
1,3-Dichloropropane	5.00	4.64		ug/L		93	79 - 120
Bromodichloromethane	5.00	5.83		ug/L		117	75 - 124
1,2-Dibromoethane	5.00	4.73		ug/L		95	79 - 126
Bromomethane	5.00	5.45		ug/L		109	36 - 150
Carbon tetrachloride	5.00	6.01		ug/L		120	72 - 129

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Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-476720/4

Matrix: Water

Analysis Batch: 476720

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added		LCS Qualifier	l lni4	D	%Rec	%Rec Limits
Chlorobenzene	5.00	4.40	Qualifier	Unit ug/L	D	88	80 - 120
1,1,1,2-Tetrachloroethane	5.00	4.40				97	79 - 120
Chloroethane	5.00	5.39		ug/L ug/L		108	79 - 120 38 - 150
1,1,2,2-Tetrachloroethane	5.00	4.35				87	74 - 124
	5.00	5.58		ug/L			
Chloroform Chloromethane	5.00	4.66		ug/L		112	78 - 127
				ug/L		93	25 - 150
cis-1,2-Dichloroethene	5.00	5.34		ug/L		107	76 - 120
cis-1,3-Dichloropropene	5.00	4.46		ug/L		89	77 ₋ 120
Bromoform	5.00	4.72		ug/L		94	56 - 139
Dibromochloromethane	5.00	4.87		ug/L		97	73 - 125
Bromobenzene	5.00	4.22		ug/L		84	80 - 120
Dibromomethane	5.00	5.60		ug/L		112	80 - 120
Dichlorodifluoromethane	5.00	4.55		ug/L		91	20 - 150
1,2,3-Trichloropropane	5.00	4.53		ug/L		91	76 - 124
Ethylbenzene	5.00	4.60		ug/L		92	80 - 120
2-Chlorotoluene	5.00	4.49		ug/L		90	80 - 120
1,3,5-Trimethylbenzene	5.00	4.57		ug/L		91	80 - 122
Isopropylbenzene	5.00	5.01		ug/L		100	80 - 123
4-Chlorotoluene	5.00	4.51		ug/L		90	73 - 129
Methylene Chloride	5.00	7.59	*+	ug/L		152	77 - 125
1,2,4-Trimethylbenzene	5.00	4.54		ug/L		91	80 - 120
m-Xylene & p-Xylene	5.00	4.49		ug/L		90	80 - 120
1,3-Dichlorobenzene	5.00	4.42		ug/L		88	77 - 127
4-Isopropyltoluene	5.00	4.35		ug/L		87	77 - 126
N-Propylbenzene	5.00	4.42		ug/L		88	80 - 122
1,4-Dichlorobenzene	5.00	4.36		ug/L		87	80 - 120
o-Xylene	5.00	4.54		ug/L		91	80 - 120
n-Butylbenzene	5.00	4.48		ug/L		90	57 - 133
sec-Butylbenzene	5.00	4.48		ug/L		90	78 - 122
1,2-Dichlorobenzene	5.00	4.27		ug/L		85	80 - 120
Styrene	5.00	4.49		ug/L		90	76 - 122
1,2-Dibromo-3-Chloropropane	5.00	4.46		ug/L		89	65 - 133
t-Butylbenzene	5.00	4.36		ug/L		87	75 - 123
1,2,4-Trichlorobenzene	5.00	4.27		ug/L		85	61 - 148
Tetrachloroethene	5.00	4.14		ug/L		83	76 - 125
1,2,3-Trichlorobenzene	5.00	4.24		ug/L		85	65 - 150
Toluene	5.00	4.41		ug/L		88	80 - 120
Hexachlorobutadiene	5.00	4.41		ug/L		88	74 - 131
Naphthalene	5.00	3.82		ug/L		76	63 - 150
trans-1,2-Dichloroethene	5.00	5.40		ug/L		108	75 - 120
trans-1,3-Dichloropropene	5.00	4.85		ug/L ug/L		97	76 - 122
Trichloroethene	5.00	5.44		ug/L ug/L		109	80 - 125
Trichlorofluoromethane	5.00						45 - 148
		5.35		ug/L		107	
Methyl tert-butyl ether	5.00	5.53		ug/L		111	72 - 120
Vinyl chloride	5.00	5.18		ug/L		104	31 - 150

Surrogate %Recovery Qualifier Limits Toluene-d8 (Surr) 92 80 - 120

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-476720/4

Lab Sample ID: LCSD 580-476720/5

Matrix: Water

Analysis Batch: 476720

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	111		80 - 120
1,2-Dichloroethane-d4 (Surr)	112		80 - 120

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Matrix: Water

Analysis Batch: 476720

-	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1-Dichloroethene	5.00	6.00		ug/L		120	70 - 129	12	23
1,1-Dichloroethane	5.00	5.79		ug/L		116	80 - 120	3	15
1,1,1-Trichloroethane	5.00	6.20		ug/L		124	74 - 130	5	19
1,1-Dichloropropene	5.00	5.95		ug/L		119	74 - 120	7	14
1,2-Dichloroethane	5.00	5.85		ug/L		117	69 - 126	4	11
1,2-Dichloropropane	5.00	5.85		ug/L		117	80 - 120	6	14
2,2-Dichloropropane	5.00	6.55	*+	ug/L		131	66 - 126	5	22
Benzene	5.00	5.86		ug/L		117	80 - 122	7	14
1,1,2-Trichloroethane	5.00	4.74		ug/L		95	80 - 121	4	14
Bromochloromethane	5.00	6.00		ug/L		120	78 - 120	5	13
1,3-Dichloropropane	5.00	4.89		ug/L		98	79 - 120	5	19
Bromodichloromethane	5.00	6.32	*+	ug/L		126	75 - 124	8	13
1,2-Dibromoethane	5.00	4.83		ug/L		97	79 - 126	2	12
Bromomethane	5.00	5.87		ug/L		117	36 - 150	7	33
Carbon tetrachloride	5.00	6.35		ug/L		127	72 - 129	6	19
Chlorobenzene	5.00	4.82		ug/L		96	80 - 120	9	10
1,1,1,2-Tetrachloroethane	5.00	5.27		ug/L		105	79 - 120	8	16
Chloroethane	5.00	5.48		ug/L		110	38 - 150	2	28
1,1,2,2-Tetrachloroethane	5.00	4.39		ug/L		88	74 - 124	1	25
Chloroform	5.00	6.06		ug/L		121	78 - 127	8	14
Chloromethane	5.00	4.88		ug/L		98	25 - 150	5	26
cis-1,2-Dichloroethene	5.00	5.78		ug/L		116	76 - 120	8	20
cis-1,3-Dichloropropene	5.00	4.70		ug/L		94	77 - 120	5	35
Bromoform	5.00	5.14		ug/L		103	56 - 139	9	21
Dibromochloromethane	5.00	5.08		ug/L		102	73 - 125	4	13
Bromobenzene	5.00	4.52		ug/L		90	80 - 120	7	24
Dibromomethane	5.00	5.72		ug/L		114	80 - 120	2	11
Dichlorodifluoromethane	5.00	4.74		ug/L		95	20 - 150	4	33
1,2,3-Trichloropropane	5.00	4.59		ug/L		92	76 - 124	1	26
Ethylbenzene	5.00	4.94		ug/L		99	80 - 120	7	14
2-Chlorotoluene	5.00	4.56		ug/L		91	80 - 120	2	20
1,3,5-Trimethylbenzene	5.00	4.78		ug/L		96	80 - 122	4	21
Isopropylbenzene	5.00	5.39		ug/L		108	80 - 123	7	19
4-Chlorotoluene	5.00	4.55		ug/L		91	73 - 129	1	29
Methylene Chloride	5.00	7.89	*+	ug/L		158	77 - 125	4	18
1,2,4-Trimethylbenzene	5.00	4.66		ug/L		93	80 - 120	3	16
m-Xylene & p-Xylene	5.00	4.80		ug/L		96	80 - 120	7	14
1,3-Dichlorobenzene	5.00	4.57		ug/L		91	77 - 127	3	35
4-Isopropyltoluene	5.00	4.49		ug/L		90	77 - 126	3	20

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Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-476720/5

Matrix: Water

Analysis Batch: 476720

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
N-Propylbenzene	5.00	4.65		ug/L		93	80 - 122	5	22
1,4-Dichlorobenzene	5.00	4.40		ug/L		88	80 - 120	1	17
o-Xylene	5.00	4.83		ug/L		97	80 - 120	6	16
n-Butylbenzene	5.00	4.57		ug/L		91	57 - 133	2	14
sec-Butylbenzene	5.00	4.72		ug/L		94	78 - 122	5	15
1,2-Dichlorobenzene	5.00	4.42		ug/L		88	80 - 120	3	15
Styrene	5.00	4.90		ug/L		98	76 - 122	9	16
1,2-Dibromo-3-Chloropropane	5.00	4.21		ug/L		84	65 - 133	6	25
t-Butylbenzene	5.00	4.59		ug/L		92	75 - 123	5	21
1,2,4-Trichlorobenzene	5.00	4.34		ug/L		87	61 - 148	1	27
Tetrachloroethene	5.00	4.56		ug/L		91	76 - 125	10	13
1,2,3-Trichlorobenzene	5.00	4.39		ug/L		88	65 - 150	3	33
Toluene	5.00	4.62		ug/L		92	80 - 120	5	13
Hexachlorobutadiene	5.00	4.46		ug/L		89	74 - 131	1	22
Naphthalene	5.00	3.85		ug/L		77	63 - 150	1	33
trans-1,2-Dichloroethene	5.00	5.73		ug/L		115	75 - 120	6	21
trans-1,3-Dichloropropene	5.00	5.14		ug/L		103	76 - 122	6	20
Trichloroethene	5.00	5.86		ug/L		117	80 - 125	7	13
Trichlorofluoromethane	5.00	5.58		ug/L		112	45 - 148	4	35
Methyl tert-butyl ether	5.00	5.60		ug/L		112	72 - 120	1	18
Vinyl chloride	5.00	5.79		ug/L		116	31 - 150	11	26

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	91		80 - 120
4-Bromofluorobenzene (Surr)	106		80 - 120
Dibromofluoromethane (Surr)	111		80 - 120
1,2-Dichloroethane-d4 (Surr)	111		80 - 120

Lab Sample ID: MB 580-476848/3-A

Matrix: Solid

Analysis Batch: 476849

MB MB

RL Analyte Result Qualifier MDL Unit Prepared Analyzed Dil Fac Chlorobenzene ND 0.040 0.0048 mg/Kg 11/05/24 09:00 11/05/24 12:03

	MB MB				
Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	103	80 - 120	11/05/24 09:00	11/05/24 12:03	1
4-Bromofluorobenzene (Surr)	103	80 - 120	11/05/24 09:00	11/05/24 12:03	1
Dibromofluoromethane (Surr)	109	80 - 120	11/05/24 09:00	11/05/24 12:03	1
1.2-Dichloroethane-d4 (Surr)	106	80 - 121	11/05/24 09:00	11/05/24 12:03	1

Lab Sample ID: LCS 580-476848/1-A

Matrix: Solid

Matrix: Solid							Prep Type: Total/NA	L
Analysis Batch: 476849							Prep Batch: 476848	
	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chlorobenzene	0.800	0.784		mg/Kg		98	80 - 125	

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Client Sample ID: Method Blank

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 476848

Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 476848

Prep Type: Total/NA

Prep Type: Total/NA

Lab Sample ID: LCS 580-476848/1-A

Lab Sample ID: LCSD 580-476848/2-A

Matrix: Solid

Client: ERM-West

Analysis Batch: 476849

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	102		80 - 120
4-Bromofluorobenzene (Surr)	103		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	100		80 - 121

Client Sample ID: Lab Control Sample Dup

Matrix: Solid

Analysis batch: 470049							Prep B	aten: 4	0040
	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chlorobenzene	0.800	0.811		ma/Ka		101	80 - 125	3	20

LCSD LCSD %Recovery Qualifier Surrogate Limits Toluene-d8 (Surr) 103 80 - 120 4-Bromofluorobenzene (Surr) 102 80 - 120 80 - 120 Dibromofluoromethane (Surr) 109 1,2-Dichloroethane-d4 (Surr) 104 80 - 121

Lab Sample ID: MB 580-477163/3-A **Client Sample ID: Method Blank**

Matrix: Solid

Analysis Batch: 477213								Prep Batch:	477163
	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	ND		0.040	0.0048	ma/Ka		11/07/24 10:06	11/07/24 20:23	1

	MB MB				
Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101	80 - 120	11/07/24 10:06	11/07/24 20:23	1
4-Bromofluorobenzene (Surr)	106	80 - 120	11/07/24 10:06	11/07/24 20:23	1
Dibromofluoromethane (Surr)	114	80 - 120	11/07/24 10:06	11/07/24 20:23	1
1,2-Dichloroethane-d4 (Surr)	115	80 - 121	11/07/24 10:06	11/07/24 20:23	1

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Lab Sample ID: LCS 580-477163/1-A	Client Sample ID: Lab Control Sample
Matrix: Solid	Prep Type: Total/NA
Analysis Batch: 477213	Prep Batch: 477163

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chlorobenzene	0.800	0.758		mg/Kg		95	80 - 125	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	101		80 - 120
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	96		80 - 120
1.2-Dichloroethane-d4 (Surr)	97		80 - 121

Spike

Added

0.800

LCSD LCSD

0.767

Result Qualifier

Unit

mg/Kg

Client: ERM-West

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-477163/2-A

Matrix: Solid

Chlorobenzene

Analyte

Analysis Batch: 477213

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Job ID: 580-145160-1

Prep Batch: 477163

%Rec **RPD** D %Rec Limits RPD Limit 96

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80 - 125

LCSD LCSD Surrogate %Recovery Qualifier Limits Toluene-d8 (Surr) 102 80 - 120 4-Bromofluorobenzene (Surr) 103 80 - 120 Dibromofluoromethane (Surr) 97 80 - 120 1,2-Dichloroethane-d4 (Surr) 98 80 - 121

Method: 8260D - Volatile Organic Compounds by GC/MS - RA

Lab Sample ID: 580-145160-8 MS

Matrix: Solid

Analysis Batch: 476696

Client Sample ID: PDI-55c-SO-44.3-20241023

Prep Type: Total/NA

Prep Batch: 476692

MS MS Sample Sample Spike %Rec Result Qualifier Added Analyte Result Qualifier Unit D %Rec Limits 1.25 0.248 F1 Bromoform - RA ND F1 F2 20 71 - 130 mg/Kg ₿ Methylene Chloride - RA ND F1F2 1.25 0.369 JF1 30 mg/Kg ₩ 56 - 140

Spike

Added

1.21

1.21

MS MS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr) -	98		80 - 121
RA			
4-Bromofluorobenzene (Surr) -	96		80 - 120
RA			
Dibromofluoromethane (Surr) -	102		80 - 120
RA			
Toluene-d8 (Surr) - RA	104		80 - 120

Client Sample ID: PDI-55c-SO-44.3-20241023

Matrix: Solid

Bromoform - RA

Methylene Chloride - RA

Analyte

Analysis Batch: 476696

Lab Sample ID: 580-145160-8 MSD

Prep Type: Total/NA **Prep Batch: 476692**

MSD MSD %Rec **RPD** Result Qualifier Unit %Rec Limits **RPD** Limit 0.865 F2 mg/Kg ∜ 71 71 - 130 111 20 0.976 F2 mg/Kg Ö 80 56 - 140 90 20

ND F1F2 MSD MSD

Sample Sample

Result Qualifier

ND F1 F2

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr) -	84		80 - 121
RA			
4-Bromofluorobenzene (Surr) -	94		80 - 120
RA			
Dibromofluoromethane (Surr) -	88		80 - 120
RA			
Toluene-d8 (Surr) - RA	113		80 - 120
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QC Sample Results

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Method: 2540G - SM 2540G

Lab Sample ID: 580-145160-12 DU Client Sample ID: PDI-48b-SO-32.85-20241023

Matrix: Solid

Analysis Batch: 476376

,	Sample	Sample	DU	DU				RPD
Analyte	Result	Qualifier	Result	Qualifier	Unit	D	RPD	Limit
Percent Solids	76.6		76.1		%		 0.6	20
Percent Moisture	23.4		23.9		%		2	20

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Prep Type: Total/NA

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Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-55a-SO-44.7-20241022

Lab Sample ID: 580-145160-1 Date Collected: 10/22/24 11:10

Matrix: Solid

Date Received: 10/25/24 12:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476376	SCS	EET SEA	10/30/24 14:28

Client Sample ID: PDI-55a-SO-44.7-20241022

Lab Sample ID: 580-145160-1

Matrix: Solid

Date Collected: 10/22/24 11:10 Date Received: 10/25/24 12:30 Percent Solids: 70.7

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476038	BYM	EET SEA	10/28/24 08:38
Total/NA	Analysis	8260D		1	476046	K1K	EET SEA	10/28/24 17:59

Client Sample ID: PDI-55a-SO-8.7-20241022

Lab Sample ID: 580-145160-2

Matrix: Solid

Date Collected: 10/22/24 11:15 Date Received: 10/25/24 12:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476376	SCS	EET SEA	10/30/24 14:28

Client Sample ID: PDI-55a-SO-8.7-20241022

Lab Sample ID: 580-145160-2 Date Collected: 10/22/24 11:15

Matrix: Solid

Date Received: 10/25/24 12:30 Percent Solids: 69.6

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476039	BYM	EET SEA	10/28/24 08:39
Total/NA	Analysis	8260D		1	476085	K1K	EET SEA	10/28/24 22:26
Total/NA	Prep	5035	DL		476149	BYM	EET SEA	10/29/24 08:14
Total/NA	Analysis	8260D	DL	1	476155	BYM	EET SEA	10/29/24 13:57

Client Sample ID: TB-01-SO-20241022

Lab Sample ID: 580-145160-3 Date Collected: 10/22/24 00:01

Matrix: Solid

Date Received: 10/25/24 12:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476038	BYM	EET SEA	10/28/24 08:38
Total/NA	Analysis	8260D		1	476046	K1K	EET SEA	10/28/24 13:10

Client Sample ID: PDI-55b-SO-9.0-20241022

Lab Sample ID: 580-145160-4 Date Collected: 10/22/24 14:15 Matrix: Solid

Date Received: 10/25/24 12:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476376	SCS	EET SEA	10/30/24 14:28

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-55b-SO-9.0-20241022

Date Collected: 10/22/24 14:15

Lab Sample ID: 580-145160-4 **Matrix: Solid** Percent Solids: 68.0

Date Received: 10/25/24 12:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476039	BYM	EET SEA	10/28/24 08:39
Total/NA	Analysis	8260D		1	476085	K1K	EET SEA	10/28/24 22:47
Total/NA	Prep	5035	DL		476149	BYM	EET SEA	10/29/24 08:14
Total/NA	Analysis	8260D	DL	1	476155	BYM	EET SEA	10/29/24 14:18
Total/NA	Prep	5035	DL		476848	BYM	EET SEA	11/05/24 10:17
Total/NA	Analysis	8260D	DL	500	476849	BYM	EET SEA	11/05/24 17:33

Client Sample ID: PDI-55c-SO-11.2-20241022

Date Collected: 10/22/24 15:55 Date Received: 10/25/24 12:30

Lab Sample ID: 580-145160-5

Matrix: Solid

Batch Dilution Batch Prepared Batch Method **Prep Type** Type Run **Factor Number Analyst** Lab or Analyzed 10/30/24 14:28 Total/NA Analysis 2540G 476376 SCS **EET SEA**

Client Sample ID: PDI-55c-SO-11.2-20241022

Date Collected: 10/22/24 15:55

Date Received: 10/25/24 12:30

Lab Sample ID: 580-145160-5

Matrix: Solid Percent Solids: 74.3

Batch Batch Dilution Batch Prepared **Prep Type** Type Method Run **Factor** Number Analyst Lab or Analyzed 476038 10/28/24 08:38 Total/NA Prep 5035 BYM EET SEA Total/NA Analysis 8260D 1 476046 K1K EET SEA 10/28/24 18:19

Client Sample ID: RB-01-WQ-20241023

Date Collected: 10/23/24 08:05

Date Received: 10/25/24 12:30

Lab Sample ID: 580-145160-6 **Matrix: Water**

Batch **Batch** Dilution Batch **Prepared Prep Type** Method Run Factor **Number Analyst** or Analyzed Type Lab 11/04/24 14:23 Total/NA Analysis 8260D 476720 K1K EET SEA

Client Sample ID: TB-01-WQ-20241023

Date Collected: 10/23/24 00:01

Date Received: 10/25/24 12:30

Lab Sample ID: 580-145160-7

Matrix: Water

Batch Batch Dilution Batch Prepared Prep Type Туре Method Factor **Number Analyst** or Analyzed Run Lab 11/04/24 14:46 Total/NA 8260D 476720 K1K EET SEA Analysis

Client Sample ID: PDI-55c-SO-44.3-20241023

Date Collected: 10/23/24 09:10

Lab Sample ID: 580-145160-8

Matrix: Solid

Date Received: 10/25/24 12:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number A	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G			476376 S	SCS	EET SEA	10/30/24 14:28

Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client: ERM-West

Client Sample ID: PDI-55c-SO-44.3-20241023

Date Collected: 10/23/24 09:10 Date Received: 10/25/24 12:30

Lab Sample ID: 580-145160-8

Matrix: Solid Percent Solids: 71.8

Jale Receive	u. 10/25/24	12.30						Perceri	t Solius. I
_	Batch	Batch		Dilution	Batch			Prepared	
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed	
Total/NA	Prep	5035			476038	BYM	EET SEA	10/28/24 08:38	

	Datell	Datell		Dilution	Daten			Prepareu
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476038	BYM	EET SEA	10/28/24 08:38
Total/NA	Analysis	8260D		1	476046	K1K	EET SEA	10/28/24 13:31
Total/NA	Prep	5035			476149	BYM	EET SEA	10/29/24 08:14
Total/NA	Analysis	8260D		1	476155	BYM	EET SEA	10/29/24 12:15
Total/NA	Prep	5035	RA		476692	BYM	EET SEA	11/04/24 08:44
Total/NA	Analysis	8260D	RA	1	476696	BYM	EET SEA	11/04/24 12:59

Client Sample ID: PDI-49a-SO-31.85-20241023

Date Collected: 10/23/24 13:35 Date Received: 10/25/24 12:30

Lab Sample ID: 580-145160-9

Matrix: Solid

Batch Batch Dilution Batch **Prepared** Method **Prep Type** Type Run **Factor** Number Analyst Lab or Analyzed 10/30/24 14:28 Total/NA Analysis 2540G 476376 SCS EET SEA

Client Sample ID: PDI-49a-SO-31.85-20241023

Date Collected: 10/23/24 13:35 Date Received: 10/25/24 12:30

Lab Sample ID: 580-145160-9

Matrix: Solid Percent Solids: 69.1

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476038	BYM	EET SEA	10/28/24 08:38
Total/NA	Analysis	8260D		1	476046	K1K	EET SEA	10/28/24 18:40
Total/NA	Prep	5035	DL		477163	BYM	EET SEA	11/07/24 10:06
Total/NA	Analysis	8260D	DL	1	477213	K1K	EET SEA	11/08/24 00:30

Client Sample ID: PDI-49a-SO-48.1-20241023

Date Collected: 10/23/24 13:45

Date Received: 10/25/24 12:30

Lab Sample	ID:	580-1451	60-10
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Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476376	SCS	EET SEA	10/30/24 14:28

Client Sample ID: PDI-49a-SO-48.1-20241023

Date Collected: 10/23/24 13:45 Date Received: 10/25/24 12:30

Lab Sample ID: 580-145160-10

Matrix: Solid Percent Solids: 72.3

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476038	BYM	EET SEA	10/28/24 08:38
Total/NA	Analysis	8260D		1	476046	K1K	EET SEA	10/28/24 19:00

Client Sample ID: DUP-02-SQ-20241023

Date Collected: 10/23/24 00:00

Date Received: 10/25/24 12:30

Lab Sample	e ID: 580-1	45160-11
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Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476376	SCS	EET SEA	10/30/24 14:28

Eurofins Seattle

Client: ERM-West

Client Sample ID: DUP-02-SQ-20241023

Date Collected: 10/23/24 00:00 Date Received: 10/25/24 12:30

Lab Sample ID: 580-145160-11

Matrix: Solid

Percent Solids: 68.9

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476038	BYM	EET SEA	10/28/24 08:38
Total/NA	Analysis	8260D		1	476046	K1K	EET SEA	10/28/24 19:21

Client Sample ID: PDI-48b-SO-32.85-20241023

Date Collected: 10/23/24 17:05

Date Received: 10/25/24 12:30

Lah Sample	ID: 580-145160-12)
Lab Sample	ID. 300-143 100-12	-

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476376	SCS	EET SEA	10/30/24 14:28

Client Sample ID: PDI-48b-SO-32.85-20241023

Date Collected: 10/23/24 17:05

Date Received: 10/25/24 12:30

Lab Sample ID: 580-145160-12

Matrix: Solid Percent Solids: 76.6

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476039	BYM	EET SEA	10/28/24 08:39
Total/NA	Analysis	8260D		1	476085	K1K	EET SEA	10/28/24 23:07
Total/NA	Prep	5035	DL		476149	BYM	EET SEA	10/29/24 08:14
Total/NA	Analysis	8260D	DL	1	476155	BYM	EET SEA	10/29/24 14:39

Client Sample ID: PDI-48b-SO-49.9-20241024

Date Collected: 10/24/24 08:55 Date Received: 10/25/24 12:30

Prep Type

Total/NA

Total/NA

Batch

Type

Analysis

Lab Sample ID: 580-145160-13 **Matrix: Solid**

Dilution Batch Prepared **Factor** Number Analyst or Analyzed Lab 476376 SCS EET SEA 10/30/24 14:28

EET SEA

Client Sample ID: PDI-48b-SO-49.9-20241024

Batch

Method

2540G

Date Collected: 10/24/24 08:55

Date Received: 10/25/24 12:30

Lab Sample ID: 580-145160-13

Lab Sample ID: 580-145160-14

10/30/24 14:28

Matrix: Solid Percent Solids: 75.8

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476038	BYM	EET SEA	10/28/24 08:38
Total/NA	Analysis	8260D		1	476046	K1K	EET SEA	10/28/24 19:41

Run

Client Sample ID: PDI-46a-SO-37.15-10202424

2540G

Date Collected: 10/24/24 13:50

Analysis

Date Receive	d: 10/25/24 ²	12:30						
	Batch	Batch		Dilution	Batch		Prepared	
Prep Type	Type	Method	Run	Factor	Number Analyst	Lab	or Analyzed	

476376 SCS

Eurofins Seattle

Matrix: Solid

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-46a-SO-37.15-10202424

Lab Sample ID: 580-145160-14 Date Collected: 10/24/24 13:50 Matrix: Solid Date Received: 10/25/24 12:30

Percent Solids: 71.1

Batch Dilution Batch Batch Prepared Number Analyst Method or Analyzed **Prep Type** Type Run **Factor** Lab Total/NA 5035 476039 BYM EET SEA 10/28/24 08:39 Prep Total/NA 8260D 476085 K1K EET SEA 10/28/24 23:28 Analysis 1 Total/NA Prep 5035 DL 476149 BYM **EET SEA** 10/29/24 08:14 Total/NA **EET SEA** 10/29/24 14:59 Analysis 8260D DL 1 476155 BYM

Client Sample ID: PDI-46a-SO-47.4-10202424

Lab Sample ID: 580-145160-15

Matrix: Solid

Date Collected: 10/24/24 13:55 Date Received: 10/25/24 12:30

Batch Dilution Batch Batch Prepared Method or Analyzed **Factor** Number Analyst **Prep Type** Type Run Lab 10/30/24 14:28 Total/NA Analysis 2540G 476376 SCS EET SEA

Client Sample ID: PDI-46a-SO-47.4-10202424

Lab Sample ID: 580-145160-15

Date Collected: 10/24/24 13:55 Date Received: 10/25/24 12:30

Matrix: Solid Percent Solids: 68.2

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476039	BYM	EET SEA	10/28/24 08:39
Total/NA	Analysis	8260D		1	476085	K1K	EET SEA	10/28/24 23:48
Total/NA	Prep	5035	RA		476322	BYM	EET SEA	10/30/24 10:19
Total/NA	Analysis	8260D	RA	1	476323	BYM	EET SEA	10/30/24 12:39

Client Sample ID: PDI-43a-SO-34.2-10202424

Lab Sample ID: 580-145160-16

Matrix: Solid

Date Collected: 10/24/24 17:15 Date Received: 10/25/24 12:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476376	SCS	EET SEA	10/30/24 14:28

Client Sample ID: PDI-43a-SO-34.2-10202424

Lab Sample ID: 580-145160-16

Matrix: Solid

Date Collected: 10/24/24 17:15 Date Received: 10/25/24 12:30

Percent Solids: 75.6

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476039	BYM	EET SEA	10/28/24 08:39
Total/NA	Analysis	8260D		1	476085	K1K	EET SEA	10/29/24 00:09
Total/NA	Prep	5035	RA		476322	BYM	EET SEA	10/30/24 10:19
Total/NA	Analysis	8260D	RA	1	476323	BYM	EET SEA	10/30/24 13:00

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: ERM-West Job ID: 580-145160-1

Project/Site: Arkema PDI Sampling

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Progra	am	Identification Number	Expiration Date
Oregon	NELAF	D	4167	07-07-25
The following englyte	a are included in this rene	rt but the laboratory is r	not cortified by the governing outbor	ity. This list may include an
,	•		not certified by the governing author	ity. This list may include an
,	s are included in this repo does not offer certification		not certified by the governing author	ity. This list may include an
,	•		not certified by the governing author Analyte	ity. This list may include an

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Sample Summary

Client: ERM-West

580-145160-16

Project/Site: Arkema PDI Sampling

PDI-43a-SO-34.2-10202424

Lab Sample ID Client Sample ID Matrix Collected Received 580-145160-1 PDI-55a-SO-44.7-20241022 Solid 10/22/24 11:10 10/25/24 12:30 580-145160-2 PDI-55a-SO-8.7-20241022 Solid 10/22/24 11:15 10/25/24 12:30 580-145160-3 TB-01-SO-20241022 Solid 10/22/24 00:01 10/25/24 12:30 580-145160-4 PDI-55b-SO-9.0-20241022 Solid 10/22/24 14:15 10/25/24 12:30 580-145160-5 PDI-55c-SO-11.2-20241022 Solid 10/22/24 15:55 10/25/24 12:30 RB-01-WQ-20241023 Water 10/23/24 08:05 10/25/24 12:30 580-145160-6 580-145160-7 TB-01-WQ-20241023 Water 10/23/24 00:01 10/25/24 12:30 580-145160-8 PDI-55c-SO-44.3-20241023 Solid 10/23/24 09:10 10/25/24 12:30 580-145160-9 PDI-49a-SO-31.85-20241023 Solid 10/23/24 13:35 10/25/24 12:30 580-145160-10 PDI-49a-SO-48.1-20241023 Solid 10/23/24 13:45 10/25/24 12:30 580-145160-11 DUP-02-SQ-20241023 Solid 10/23/24 00:00 10/25/24 12:30 580-145160-12 PDI-48b-SO-32.85-20241023 Solid 10/23/24 17:05 10/25/24 12:30 580-145160-13 PDI-48b-SO-49.9-20241024 Solid 10/24/24 08:55 10/25/24 12:30 580-145160-14 PDI-46a-SO-37.15-10202424 Solid 10/24/24 13:50 10/25/24 12:30 Solid 580-145160-15 PDI-46a-SO-47.4-10202424 10/24/24 13:55 10/25/24 12:30

Solid

10/24/24 17:15 10/25/24 12:30

Job ID: 580-145160-1

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Chain of Custody Record

Eurofins Seattle 5755 8th Street East Tacoma, WA 98424 Phone (253) 922-2310

Environment Testing

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	Sampler:	Circles	Lab PM:	Carrier Tracking No(s):	COC No:
Client Information			Cruz, Sheri L		580-62781-19269.12
Client Contact. Avery Soplata	7110116		E-Mail: Sheri.Cruz@et.eurofinsus.com	State of Origin:	Page: 1
Company: FRM-IM-est		PWSID:			rage or -
Address:	Die Date Reguestad:		Analysis Requested		
1050 SW 6th Avenue Suite 1650					Preservation Codes: F - MeOH
City: Portland	TAT Requested (days):				E - NaHSO4 A - HCL
State, Zip: OR, 97204		NO NO	olanks		-
Phone:	PO#: 0732436.301		ŀ		
Email: avery.soplata@erm.com	WO#:		TTT F WeO!	1	
Project Name: Arkema - PDI Investigation	Project #: 58020754		ell bns	eredia	
Sites	SSOW#:		bnate ,		Other:
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	Sample Date Time	Gagrab) BT-Tissue, A-Air) Preservation Code:	1 85 1 85 1 1 85	101	Special Instructions/Note:
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DUP-02-5Q-7071023	10/23/24	6 5	У.		6 b L - (
Possible Hazard Identification	X		ee may	sessed if samples are retained	1 month)
Other (specify)	UNKNOWN	Kadiological	Special Instructions/OC Requirements:	Disposal By Lab Archive For	For Months
Empty Kit Relinquished by:	-				
	Detertime:	c	l ime:	Method of Shipment:	
David Sture ERM	10/24/24 184	S Company	Received by:	Date/Time: Date/Time:	150 Company 6
JUNION W	122 124 122 Date-rime:	Company	B. Received By MINE	Date/Time:	130 Company
Custody Seals Infact: Custody Seal No					Company
			Cooler Temperature(s) °C and Other Remarks	ırks;	
		C	A.1 10 \$1 C & 01.4	0/00/00/00/00/00/00/00/00/00/00/00/00/0	Ver: 04/02/2024

Eurofins Seattle

5755 8th Street East Tacoma, WA 98424

Chain of Custody Record

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•		Environment	Testing

Part Property Pr	none (253) 922-2310	Sampler:	-1		Lab PM						Carrier	Fracking No	(s):		OC No: 80-62781-19269	.12	
POT - 48 - 50 - 32.85 - 20.24 0.24 12.4 13.55 G S X S S S S S S S S	lient Information	Day	of Sto	ne			<u></u>				State of	Origin:					
Preservation Pres	ent Contact:	Phone:			Sheri	.Cruz@	get.eu	urofin	sus.com								
Market Substitute Substit	very Soplata			PWSID:						alveie P	omuesta	nd		ľ	00 #:		
Second S	ompany:								AI	lalysis in	Equeste		T			es:	
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Special Instructions/Note: Special Instru	ty.	A. C	المرحم			- 1			90							-9	1
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Sample Identification Sample Date Sample Date Sample Date Dat	ite:	SSOW#:					at .	8	e, a					D			
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## PDT - 48b - 50 - 32 . 85 - 2024 02 3 0/23/24 1705 G S X F E A Freservation Code: X F E A F F A F F A F F A F F					S=solid.		ė	ė	9					3			
## PDT - 48b - 50 - 32 . 85 - 2024 02 3 0/23/24 1705 G S X F E A Freservation Code: X F E A F F A F F A F F A F F		- 1. D-4		(C=comp,	O=waste/oil,	9	9260	8260	926(P	Special In	structions/Not	9:
PDI - 48b - 50 - 32 . 85 - 20 24 0 23 10 23 / 24 1705 G S X	ample Identification	Sample Date	Tillia	Preserva	tion Code:			-	A					X			
POT-48b-50-49.9-20.24(0.24) 0/24/24 i350 G S X PDT-46a-50-37.15-20.24(0.24) 0/24/24 i355 G S X PDT-46a-50-37.15-20.24(0.24) 0/24/24 i355 G S X PDT-47a-50-34.2-20.24(0.24) 0/24/24 i115 G S X PDT-47a-50-34.2-20.24(0.24) 0/24/24 i115 G S X POT-47a-50-34.2-20.24(0.24) 0/24/24 i115 G S X POT-47a-50-34.2-20.24(0.24) 0/24/24 i115 G S X Potential dentification Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Return 70.0 Client Disposal By Lab	N. C.						17							17			
POT-48b-50-49.9-20.24(0.24) 0/24/24 i350 G S X PDT-46a-50-37.15-20.24(0.24) 0/24/24 i355 G S X PDT-46a-50-37.15-20.24(0.24) 0/24/24 i355 G S X PDT-47a-50-34.2-20.24(0.24) 0/24/24 i115 G S X PDT-47a-50-34.2-20.24(0.24) 0/24/24 i115 G S X POT-47a-50-34.2-20.24(0.24) 0/24/24 i115 G S X POT-47a-50-34.2-20.24(0.24) 0/24/24 i115 G S X Potential dentification Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Return 70.0 Client Disposal By Lab	DIT-486-50-32.85-2024/023	10/23/24	1705	(5)	2		X				-	++	-+-+				
Possible Hazard Identification Non-Hazard Flammable Skin Imitant Poison B Unknown Radiological Septial Instructions/QC Requirements:	101-102-50-50-50-50-50-50-50-50-50-50-50-50-50-	shuhu	0255	G	S		X							4.4			
Possible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological Semple Disposal (A fee may be assessed if samples are retained longer than 1 month) Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological Semple Disposal By Lab Archive For Month's	701-486-50-49.9-2029102	10/29/29	120	6		H	+							2			
Possible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological Semple Disposal (A fee may be assessed if samples are retained longer than 1 month) Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological Semple Disposal By Lab Archive For Month's	ODT-411-50-3715-20241024	10/24/24	1350	6			X			\Box		+		in in			
Possible Hazard Identification Non-Hazard Flammable Skin Imitant Poison B Unknown Radiological Septial Instructions/QC Requirements:	701 100 50 11711 - 20711571	in landair	1355	6	5	Н	X	-						1			
Possible Hazard Identification Non-Hazard Flammable Skin Imitant Poison B Unknown Radiological Septial Instructions/QC Requirements:	PUI-460-50-41-9-20241029	10/29/29	1000	-				1						2			
Possible Hazard Identification Non-Hazard Flammable Skin Initiant Poison B Unknown Radiological Non-Hazard Flammable Skin Initiant Poison B Unknown Radiological Deliverable Requested: I Unit, V, Other (specify) Empty Kit Relinquished by: Empty Kit Relinquished by: Date Time:	PMT. 432 -50-34.2-2024/024	10/24/24	1715	6	5	Ш	×			++		-		1			
Possible Razard Identification Non-Hazard Flammable Skin Imitant Poison B Unknown Radiological Special Instructions/QC Requirements: Empty Kit Relinquished by: Empty Kit Relinquished by: Date/Time: Date/Ti	101-120-90-91					П		1						4.			
Possible Razard Identification Non-Hazard Flammable Skin Imitant Poison B Unknown Radiological Special Instructions/QC Requirements: Empty Kit Relinquished by: Empty Kit Relinquished by: Date/Time: Date/Ti			-			++	1	1									
Possible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological Special Instructions/QC Requirements: Deliverable Requested: I, (II) III, IV, Other (specify) Empty Kit Relinquished by: Date: Time: Date: Time: Date: Time: Date: Time: Date: Date: Time: Date: Date: Time: Date: Time: Date: Date: Time: Date:					Ш	_	_					-	1.5				
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Possible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological Special Instructions/QC Requirements: Deliverable Requested: I, III III, IV, Other (specify) Empty Kit Relinquished by: Date: Time: Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: Company Resinquished by: Date/Time: Company Received by: Date/Time: Company		ļ	-			++	+-	+	+								
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Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological Reductions/QC Requirements: Deliverable Requested: I,(II) III, IV, Other (specify) Empty Kit Relinquished by: Date: Time: Date/Time: Date/Ti	Possible Hazard Identification					S	ampl	e Dis	sposal (A fee may	De asses	sea II sa			ivo For	Months	
Deliverable Requested: I,(II) III, IV, Other (specify) Empty Kit Relinquished by: Date: Date: Time:	Skin Irritant Pois	son B Dunki	nown	Radiologica	l			Retur	m To Clie			sal By Lai)	AIG	live roi		
Empty Kit Relinquished by: Date: Time: Method of Simplifier.	Politycrable Requested: I/II III IV Other (specify)					S	pecia	ıl Inst	tructions/	QC Require	ements:						
Empty Kit Relinquished by: Relinquished by: Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: Company Received by: Date/Time: Company Received by: Received by: Date/Time: Company Received by: Comp	Deliverable Reduested: 1,113.111, 117, exist (speets)					Time					1	Method of	Shipment:				
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ReInquished by: Date/Time: Company Recely@f/by:	Relinquished by:	Date/Inne:	74	1225	7.1	5.		1	11/1/14	Nuc			10179	1/1/	16:50		
Cooler Temperature(s) S and Other Remarks: Cooler Temperature(s) S and Other Remarks: Cooler Temperature(s) S and Other Remarks:	JUNIA / VI		<u></u>				Re	ceive	by:				Date/Time	r.			
Custody Seals Intact: Custody Seal No.: A Yes A No. Page 73 of 76	Reinquisnea by:▼										. Domini						
A Yes A No. Page 73 of 76	Custody Seals Intact: Custody Seal No.:						Co	oler T	emperature	(s) C and Of	ner keman	1 11 19/	anc.	Pli	ce/h	oble	
	Δ Yes Δ No			P	age 73 c	f 76	P	UX	7/110	DIL	0-11	9	3	-		11/9/09/02/2	POZA RAV

Job Number: 580-145160-1

Client: ERM-West

Login Number: 145160 List Source: Eurofins Seattle

List Number: 1

Creator: Pasion, Christopher 1

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Avery Soplata ERM-West 1050 SW 6th Avenue Suite 1650 Portland, Oregon 97204 Generated 11/7/2024 9:43:18 PM

JOB DESCRIPTION

Arkema PDI Sampling

JOB NUMBER

580-145241-1

Eurofins Seattle 5755 8th Street East Tacoma WA 98424



Eurofins Seattle

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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Authorization

Generated 11/7/2024 9:43:18 PM

Authorized for release by Sheri Cruz, Project Manager I Sheri.Cruz@et.eurofinsus.com (253)922-2310

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Client: ERM-West

Project/Site: Arkema PDI Sampling

Laboratory Job ID: 580-145241-1

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Case Narrative

Client: ERM-West Job ID: 580-145241-1

Project: Arkema PDI Sampling

Job Narrative 580-145241-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these
 situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise
 specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 10/29/2024 1:50 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.4°C.

GC/MS VOA

Job ID: 580-145241-1

Method 8260D: The following samples were provided to the laboratory with a significantly different initial weight than that required by the reference method: PDI-58-SO-35.75-20241025 (580-145241-2), PDI-37a-SO-28.5-20241028 (580-145241-4), PDI-37a-SO-49.9-20241028 (580-145241-5) and PDI-44a-SO-36.8-20241028 (580-145241-6). Deviations in the weight by more than 20% may affect reporting limits and potentially method performance. The method specifies 10g. The amount provided was above this range.

Method 8260D: The following samples were provided to the laboratory with a significantly different initial weight than that required by the reference method: PDI-58-SO-49.9-20241025 (580-145241-3) and PDI-44a-SO-49.9-20241029 (580-145241-7). Deviations in the weight by more than 20% may affect reporting limits and potentially method performance. The method specifies 10g. The amount provided was above this range.

Method 8260D: The following samples were analyzed at reduced volume due to high concentrations of target analytes: PDI-37a-SO-28.5-20241028 (580-145241-4) and PDI-44a-SO-36.8-20241028 (580-145241-6). The calculation was performed using an initial volume adjustment rather than a dilution factor. The reporting limits have been elevated by the appropriate factor.

Method 8260D: Surrogate 1,2-Dichloroethane-d4 (Surr) recovery for the following sample was outside the upper control limit: PDI-58-SO-49.9-20241025 (580-145241-3). This sample did not contain any target analytes; therefore, re-extraction and/or reanalysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

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Definitions/Glossary

Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Qualifiers

GC/MS VOA

Qualifier Qualifier Description

J Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

S1+ Surrogate recovery exceeds control limits, high biased.

Glossary

Abbreviation These commonly used abbreviations may or may not be present in this report.

Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery
CFL Contains Free Liquid
CFU Colony Forming Unit
CNF Contains No Free Liquid

DER Duplicate Error Ratio (normalized absolute difference)

Dil Fac Dilution Factor

DL Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

EDL Estimated Detection Limit (Dioxin)

LOD Limit of Detection (DoD/DOE)

LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level"

MDA Minimum Detectable Activity (Radiochemistry)

MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit
ML Minimum Level (Dioxin)
MPN Most Probable Number
MQL Method Quantitation Limit

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive
QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

TNTC Too Numerous To Count

Eurofins Seattle

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Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-SO-20241025

Lab Sample ID: 580-145241-1 Date Collected: 10/25/24 00:01 **Matrix: Solid**

Date Received: 10/29/24 13:50

Analyte	Result Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND	0.020	0.0050	0 0		11/01/24 09:52	11/01/24 16:21	
1,1,1-Trichloroethane	ND	0.040	0.0046	mg/Kg		11/01/24 09:52	11/01/24 16:21	
1,1,2,2-Tetrachloroethane	ND	0.020	0.0076	mg/Kg		11/01/24 09:52	11/01/24 16:21	
1,1,2-Trichloroethane	ND	0.020	0.0074	mg/Kg		11/01/24 09:52	11/01/24 16:21	
1,1-Dichloroethane	ND	0.040	0.0092	mg/Kg		11/01/24 09:52	11/01/24 16:21	
1,1-Dichloroethene	ND	0.040	0.012	mg/Kg		11/01/24 09:52	11/01/24 16:21	
1,1-Dichloropropene	ND	0.040	0.0053	mg/Kg		11/01/24 09:52	11/01/24 16:21	
1,2,3-Trichlorobenzene	ND	0.080	0.040	mg/Kg		11/01/24 09:52	11/01/24 16:21	
1,2,3-Trichloropropane	ND	0.040	0.012	mg/Kg		11/01/24 09:52	11/01/24 16:21	
1,2,4-Trichlorobenzene	ND	0.080	0.043	mg/Kg		11/01/24 09:52	11/01/24 16:21	
1,2,4-Trimethylbenzene	0.016 J	0.040	0.014	mg/Kg		11/01/24 09:52	11/01/24 16:21	
1,2-Dibromo-3-Chloropropane	ND	0.060	0.015	mg/Kg		11/01/24 09:52	11/01/24 16:21	
1,2-Dibromoethane	ND	0.020	0.0038	mg/Kg		11/01/24 09:52	11/01/24 16:21	
1,2-Dichlorobenzene	ND	0.040	0.0087	mg/Kg		11/01/24 09:52	11/01/24 16:21	
1,2-Dichloroethane	ND	0.020	0.0055			11/01/24 09:52	11/01/24 16:21	
1,2-Dichloropropane	ND	0.020	0.0066			11/01/24 09:52	11/01/24 16:21	
1,3,5-Trimethylbenzene	0.022 J	0.040	0.0076			11/01/24 09:52	11/01/24 16:21	
1,3-Dichlorobenzene	ND	0.060		mg/Kg			11/01/24 16:21	
1,3-Dichloropropane	ND	0.060	0.0056				11/01/24 16:21	
1,4-Dichlorobenzene	ND	0.060		mg/Kg			11/01/24 16:21	
2,2-Dichloropropane	ND	0.040		mg/Kg			11/01/24 16:21	
2-Chlorotoluene	ND	0.040	0.0088				11/01/24 16:21	
4-Chlorotoluene	ND	0.040	0.0098				11/01/24 16:21	
4-Isopropyltoluene	ND	0.040		mg/Kg			11/01/24 16:21	
Benzene	ND	0.020	0.0038				11/01/24 16:21	
Bromobenzene	ND	0.040	0.0030				11/01/24 16:21	
Bromochloromethane	ND	0.040	0.0042	0 0			11/01/24 16:21	
Bromodichloromethane	ND	0.040	0.0055				11/01/24 16:21	
Bromoform	ND ND	0.040	0.0035				11/01/24 16:21	
Carbon tetrachloride	ND	0.020	0.0043				11/01/24 16:21	
Chloroform	ND	0.040	0.0048				11/01/24 16:21	
Chloromothono	ND	0.020	0.0042				11/01/24 16:21	
Chloromethane	ND ND	0.060		mg/Kg			11/01/24 16:21	
cis-1,2-Dichloroethene	ND	0.060		mg/Kg			11/01/24 16:21	
cis-1,3-Dichloropropene	ND	0.020	0.0040				11/01/24 16:21	
Dibromochloromethane	ND	0.020	0.0049				11/01/24 16:21	
Dibromomethane	ND	0.040	0.0074				11/01/24 16:21	
Ethylbenzene	ND	0.040	0.0091				11/01/24 16:21	
Hexachlorobutadiene	ND	0.10		mg/Kg			11/01/24 16:21	
Isopropylbenzene	ND	0.040	0.0086				11/01/24 16:21	
Methyl tert-butyl ether	ND	0.040	0.0060			11/01/24 09:52	11/01/24 16:21	
Methylene Chloride	ND	0.25		mg/Kg		11/01/24 09:52	11/01/24 16:21	
m-Xylene & p-Xylene	0.013 J	0.040	0.0071	mg/Kg		11/01/24 09:52	11/01/24 16:21	
Naphthalene	ND	0.15	0.039	mg/Kg			11/01/24 16:21	
n-Butylbenzene	ND	0.040	0.019	mg/Kg		11/01/24 09:52	11/01/24 16:21	
N-Propylbenzene	ND	0.040	0.015	mg/Kg		11/01/24 09:52	11/01/24 16:21	
o-Xylene	ND	0.040	0.0050	mg/Kg		11/01/24 09:52	11/01/24 16:21	
sec-Butylbenzene	ND	0.040	0.0086	mg/Kg		11/01/24 09:52	11/01/24 16:21	
Styrene	ND	0.040	0.013	mg/Kg		11/01/24 09:52	11/01/24 16:21	

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Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-SO-20241025

Lab Sample ID: 580-145241-1

Date Collected: 10/25/24 00:01 **Matrix: Solid** Date Received: 10/29/24 13:50

Method: SW846 8260D - Vo	latile Organic	Compound	ds by GC/MS	(Conti	nued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	MD		0.040	0.0077	mg/Kg		11/01/24 09:52	11/01/24 16:21	1
Tetrachloroethene	ND		0.040	0.0053	mg/Kg		11/01/24 09:52	11/01/24 16:21	1
Toluene	ND		0.060	0.014	mg/Kg		11/01/24 09:52	11/01/24 16:21	1
trans-1,2-Dichloroethene	ND		0.060	0.015	mg/Kg		11/01/24 09:52	11/01/24 16:21	1
trans-1,3-Dichloropropene	ND		0.040	0.0070	mg/Kg		11/01/24 09:52	11/01/24 16:21	1
Trichloroethene	ND		0.040	0.010	mg/Kg		11/01/24 09:52	11/01/24 16:21	1
Trichlorofluoromethane	ND		0.080	0.026	mg/Kg		11/01/24 09:52	11/01/24 16:21	1
Vinyl chloride	ND		0.10	0.019	mg/Kg		11/01/24 09:52	11/01/24 16:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				11/01/24 09:52	11/01/24 16:21	1
4-Bromofluorobenzene (Surr)	101		80 - 120				11/01/24 09:52	11/01/24 16:21	1
Dibromofluoromethane (Surr)	102		80 - 120				11/01/24 09:52	11/01/24 16:21	1
Toluene-d8 (Surr)	104		80 - 120				11/01/24 09:52	11/01/24 16:21	1

Method: SW846 8260D - Vo	olatile Organic	Compoun	ds by GC/MS	- RA					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	MD		0.10	0.038	mg/Kg		11/01/24 08:13	11/01/24 13:01	1
Chloroethane	0.079	J	0.080	0.021	mg/Kg		11/01/24 08:13	11/01/24 13:01	1
Dichlorodifluoromethane	ND		0.25	0.046	mg/Kg		11/01/24 08:13	11/01/24 13:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	113		80 - 121				11/01/24 08:13	11/01/24 13:01	1
4-Bromofluorobenzene (Surr)	103		80 - 120				11/01/24 08:13	11/01/24 13:01	1
Dibromofluoromethane (Surr)	103		80 - 120				11/01/24 08:13	11/01/24 13:01	1

Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-58-SO-35.75-20241025

Lab Sample ID: 580-145241-2 Date Collected: 10/25/24 14:05 Matrix: Solid Date Received: 10/29/24 13:50 Percent Solids: 71.1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 0.034 mg/Kg 1,1,1,2-Tetrachloroethane ND 0.0084 11/01/24 09:52 11/01/24 16:42 ND 0.067 1.1.1-Trichloroethane 0.0077 mg/Kg 11/01/24 09:52 11/01/24 16:42 1,1,2,2-Tetrachloroethane ND 0.034 0.013 mg/Kg 11/01/24 09:52 11/01/24 16:42 ND 0.012 mg/Kg 11/01/24 16:42 1,1,2-Trichloroethane 0.034 11/01/24 09:52 ND 0.067 0.015 mg/Kg 11/01/24 09:52 11/01/24 16:42 1.1-Dichloroethane 1,1-Dichloroethene ND 0.067 0.021 mg/Kg 11/01/24 09:52 11/01/24 16:42 1,1-Dichloropropene ND 0.067 0.0089 mg/Kg 11/01/24 09:52 11/01/24 16:42 ND 0.067 11/01/24 09:52 11/01/24 16:42 1,2,3-Trichlorobenzene 0.13 mg/Kg 1,2,3-Trichloropropane ND 0.067 0.019 mg/Kg 11/01/24 09:52 11/01/24 16:42 0.072 1,2,4-Trichlorobenzene ND 0.13 mg/Kg 11/01/24 09:52 11/01/24 16:42 1,2,4-Trimethylbenzene ND 0.067 0.023 mg/Kg 11/01/24 09:52 11/01/24 16:42 mg/Kg 1.2-Dibromo-3-Chloropropane ND 0.10 0.026 11/01/24 09:52 11/01/24 16:42 1 1,2-Dibromoethane ND 0.034 0.0064 mg/Kg 11/01/24 09:52 11/01/24 16:42 0.067 0.015 mg/Kg 11/01/24 09:52 11/01/24 16:42 1,2-Dichlorobenzene 0.18 0.0093 ND 0.034 mg/Kg 11/01/24 09:52 11/01/24 16:42 1.2-Dichloroethane 0.011 1,2-Dichloropropane ND 0.034 mg/Kg 11/01/24 09:52 11/01/24 16:42 1,3,5-Trimethylbenzene 0.018 0.067 0.013 mg/Kg 11/01/24 09:52 11/01/24 16:42 1,3-Dichlorobenzene ND 0.10 0.022 mg/Kg 11/01/24 09:52 11/01/24 16:42 1,3-Dichloropropane NΩ 0.0094 mg/Kg 11/01/24 09:52 11/01/24 16:42 0.10 mg/Kg 1,4-Dichlorobenzene 0.44 0.10 0.018 11/01/24 09:52 11/01/24 16:42 2,2-Dichloropropane ND 0.067 0.020 mg/Kg 11/01/24 09:52 11/01/24 16:42 2-Chlorotoluene ND 0.067 0.015 mg/Kg 11/01/24 09:52 11/01/24 16:42 0.017 4-Chlorotoluene ND 0.067 mg/Kg 11/01/24 09:52 11/01/24 16:42 4-Isopropyltoluene 0.040 0.067 0.017 mg/Kg 11/01/24 09:52 11/01/24 16:42 Benzene ND 0.034 0.0064 mg/Kg 11/01/24 09:52 11/01/24 16:42 ND 0.0071 11/01/24 09:52 11/01/24 16:42 Bromobenzene 0.067 mg/Kg Bromochloromethane ND 0.067 0.010 mg/Kg 11/01/24 09:52 11/01/24 16:42 Bromodichloromethane ND 0.0093 11/01/24 16:42 0.067 mg/Kg 11/01/24 09:52 0.0076 Bromoform NΩ 0.067 mg/Kg 11/01/24 09:52 11/01/24 16:42 0.0074 Carbon tetrachloride ND 11/01/24 16:42 0.034 mg/Kg 11/01/24 09:52 Chloroform 0.045 0.034 0.0071 mg/Kg 11/01/24 09:52 11/01/24 16:42 Chloromethane ND 0.017 mg/Kg 11/01/24 09:52 11/01/24 16:42 0.10 cis-1,2-Dichloroethene ND 0.021 11/01/24 09:52 11/01/24 16:42 0.10 mg/Kg ND 11/01/24 09:52 11/01/24 16:42 cis-1,3-Dichloropropene 0.034 0.0067 mg/Kg Dibromochloromethane ND 0.034 0.0083 mg/Kg 11/01/24 09:52 11/01/24 16:42 Dibromomethane ND 0.067 0.012 mg/Kg 11/01/24 09:52 11/01/24 16:42 Ethylbenzene ND 0.067 0.015 mg/Kg 11/01/24 09:52 11/01/24 16:42 Hexachlorobutadiene ND 0.17 0.040 mg/Kg 11/01/24 09:52 11/01/24 16:42 ND 0.067 0.014 mg/Kg 11/01/24 16:42 Isopropylbenzene 11/01/24 09:52 Methyl tert-butyl ether ND 0.067 0.010 mg/Kg 11/01/24 09:52 11/01/24 16:42 Methylene Chloride ND 0.42 0.044 mg/Kg 11/01/24 09:52 11/01/24 16:42 m-Xylene & p-Xylene ND 0.067 0.012 mg/Kg 11/01/24 09:52 11/01/24 16:42 0.066 11/01/24 09:52 11/01/24 16:42 **Naphthalene** 0.25 mg/Kg 0.24 n-Butylbenzene 0.067 0.031 11/01/24 09:52 11/01/24 16:42 ND mg/Kg 11/01/24 09:52 11/01/24 16:42 N-Propylbenzene ND 0.067 0.025 mg/Kg o-Xylene ND 0.067 0.0084 mg/Kg 11/01/24 09:52 11/01/24 16:42 sec-Butylbenzene ND 0.014 mg/Kg 11/01/24 16:42 0.067 11/01/24 09:52 Styrene ND 0.067 0.021 mg/Kg 11/01/24 09:52 11/01/24 16:42 11/01/24 09:52 11/01/24 16:42 t-Butylbenzene ND 0.067 0.013 mg/Kg

Eurofins Seattle

Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-58-SO-35.75-20241025

Date Collected: 10/25/24 14:05

Date Received: 10/29/24 13:50

Lab Sample ID: 580-145241-2

Matrix: Solid Percent Solids: 71.1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	0.13		0.067	0.0089	mg/Kg	<u></u>	11/01/24 09:52	11/01/24 16:42	1
Toluene	ND		0.10	0.023	mg/Kg	₩	11/01/24 09:52	11/01/24 16:42	1
rans-1,2-Dichloroethene	ND		0.10	0.025	mg/Kg	₩	11/01/24 09:52	11/01/24 16:42	1
trans-1,3-Dichloropropene	ND		0.067	0.012	mg/Kg	₩	11/01/24 09:52	11/01/24 16:42	1
Trichloroethene	ND		0.067	0.017	mg/Kg	₩	11/01/24 09:52	11/01/24 16:42	1
Trichlorofluoromethane	ND		0.13	0.044	mg/Kg	₩	11/01/24 09:52	11/01/24 16:42	1
Vinyl chloride	ND		0.17	0.032	mg/Kg	≎	11/01/24 09:52	11/01/24 16:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				11/01/24 09:52	11/01/24 16:42	1
4-Bromofluorobenzene (Surr)	102		80 - 120				11/01/24 09:52	11/01/24 16:42	1
Dibromofluoromethane (Surr)	101		80 - 120				11/01/24 09:52	11/01/24 16:42	1
Toluene-d8 (Surr)	105		80 - 120				11/01/24 09:52	11/01/24 16:42	1

Method: SW846 8260D - Vo Analyte		Qualifier	RL	- DL MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	120		1.4	0.17	mg/Kg	<u></u>	11/04/24 08:44	11/04/24 17:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		80 - 121				11/04/24 08:44	11/04/24 17:56	1
4-Bromofluorobenzene (Surr)	99		80 - 120				11/04/24 08:44	11/04/24 17:56	1
Dibromofluoromethane (Surr)	90		80 - 120				11/04/24 08:44	11/04/24 17:56	1
Toluene-d8 (Surr)	114		80 - 120				11/04/24 08:44	11/04/24 17:56	

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	MD		0.17	0.064	mg/Kg	*	11/01/24 08:13	11/01/24 13:22	1
Chloroethane	ND		0.13	0.035	mg/Kg	₩	11/01/24 08:13	11/01/24 13:22	1
Dichlorodifluoromethane	ND		0.42	0.077	mg/Kg	☼	11/01/24 08:13	11/01/24 13:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		80 - 121				11/01/24 08:13	11/01/24 13:22	1
			00 100				11/01/24 08:13	11/01/24 13:22	1
4-Bromofluorobenzene (Surr)	94		80 - 120				11/01/24 00.13	11/01/24 13.22	,
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr)	94 102		80 - 120 80 - 120				11/01/24 08:13	11/01/24 13:22	1

General Chemistry Analyte	Result Qualifier	RL	RL I	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	71.1	0.1	0.1	%			11/04/24 17:54	1
Percent Moisture (SM22 2540G)	28.9	0.1	0.1	%			11/04/24 17:54	1

Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-58-SO-49.9-20241025

Date Collected: 10/25/24 14:10
Date Received: 10/29/24 13:50

Lab Sample ID: 580-145241-3

Matrix: Solid Percent Solids: 72.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND	Qualifier	0.030	0.0075		— -	11/01/24 09:52	11/01/24 17:02	חוום
1,1,1-Trichloroethane	ND		0.060		mg/Kg	₩		11/01/24 17:02	
1,1,2,2-Tetrachloroethane	ND		0.030	0.011	mg/Kg	~ ☆		11/01/24 17:02	
1,1,2-Trichloroethane	ND		0.030		mg/Kg	[~] .		11/01/24 17:02	
1,1-Dichloroethane	ND		0.060		mg/Kg	₩	11/01/24 09:52	11/01/24 17:02	
1,1-Dichloroethene	ND		0.060		mg/Kg	*		11/01/24 17:02	
1,1-Dichloropropene	ND		0.060	0.0079				11/01/24 17:02	
1, 1-Dictiloroproperie 1,2,3-Trichlorobenzene	ND		0.000		mg/Kg	₩	11/01/24 09:52	11/01/24 17:02	
1,2,3-Trichloropropane	ND		0.060		mg/Kg	☆		11/01/24 17:02	
1,2,4-Trichlorobenzene	ND		0.12		mg/Kg		11/01/24 09:52		
1,2,4-Trimethylbenzene	ND		0.060	0.020	mg/Kg	☆	11/01/24 09:52	11/01/24 17:02	
1,2-Dibromo-3-Chloropropane	ND ND		0.089		mg/Kg	*	11/01/24 09:52	11/01/24 17:02	
1,2-Dibromoethane	ND		0.039			 	11/01/24 09:52	11/01/24 17:02	
1,2-Dichlorobenzene	ND ND		0.030	0.0057	mg/Kg	₩	11/01/24 09:52		
,	ND ND				0 0	*			
1,2-Dichloroethane			0.030	0.0082		<u></u> .		11/01/24 17:02	
1,2-Dichloropropane	ND		0.030	0.0098	0 0	ψ.		11/01/24 17:02	
1,3,5-Trimethylbenzene	ND		0.060		mg/Kg			11/01/24 17:02	
1,3-Dichlorobenzene	ND		0.089		mg/Kg	.	11/01/24 09:52		
1,3-Dichloropropane	ND		0.089	0.0084		*		11/01/24 17:02	
1,4-Dichlorobenzene	ND		0.089		mg/Kg	*	11/01/24 09:52		
2,2-Dichloropropane	ND		0.060		mg/Kg	<u>.</u> .	11/01/24 09:52		
2-Chlorotoluene	ND		0.060		mg/Kg	*	11/01/24 09:52		
I-Chlorotoluene	ND		0.060		mg/Kg	*	11/01/24 09:52	11/01/24 17:02	
l-Isopropyltoluene	ND		0.060		mg/Kg	. .	11/01/24 09:52		
Benzene	ND		0.030	0.0057		₩	11/01/24 09:52	11/01/24 17:02	
Bromobenzene	ND		0.060		mg/Kg	☆	11/01/24 09:52	11/01/24 17:02	
Bromochloromethane	ND		0.060	0.0092		☆		11/01/24 17:02	
Bromodichloromethane	ND		0.060	0.0082		₩		11/01/24 17:02	
Bromoform	ND		0.060	0.0067		₩		11/01/24 17:02	
Carbon tetrachloride	ND		0.030	0.0066				11/01/24 17:02	
Chloroform	ND		0.030	0.0063		☆		11/01/24 17:02	
Chloromethane	ND		0.089	0.015	mg/Kg	☆	11/01/24 09:52	11/01/24 17:02	
cis-1,2-Dichloroethene	ND		0.089		mg/Kg	₩	11/01/24 09:52	11/01/24 17:02	
cis-1,3-Dichloropropene	ND		0.030	0.0060		☆	11/01/24 09:52	11/01/24 17:02	
Dibromochloromethane	ND		0.030	0.0073		☆	11/01/24 09:52	11/01/24 17:02	
Dibromomethane	ND		0.060	0.011	mg/Kg	₩	11/01/24 09:52	11/01/24 17:02	
Ethylbenzene	ND		0.060	0.014	mg/Kg	₩	11/01/24 09:52	11/01/24 17:02	
Hexachlorobutadiene	ND		0.15	0.036	mg/Kg	☆	11/01/24 09:52	11/01/24 17:02	
sopropylbenzene	ND		0.060	0.013	mg/Kg	☆	11/01/24 09:52	11/01/24 17:02	
Methyl tert-butyl ether	ND		0.060	0.0089	mg/Kg	₩	11/01/24 09:52	11/01/24 17:02	
Methylene Chloride	ND		0.37	0.039	mg/Kg	₩	11/01/24 09:52	11/01/24 17:02	
n-Xylene & p-Xylene	ND		0.060	0.011	mg/Kg	₩	11/01/24 09:52	11/01/24 17:02	
laphthalene	ND		0.22	0.058	mg/Kg	₩	11/01/24 09:52	11/01/24 17:02	
n-Butylbenzene	ND		0.060	0.028	mg/Kg	₩	11/01/24 09:52	11/01/24 17:02	
N-Propylbenzene	ND		0.060	0.022	mg/Kg	☆	11/01/24 09:52	11/01/24 17:02	
o-Xylene	ND		0.060	0.0075	mg/Kg	≎	11/01/24 09:52	11/01/24 17:02	
ec-Butylbenzene	ND		0.060		mg/Kg	☆	11/01/24 09:52	11/01/24 17:02	
Styrene	ND		0.060		mg/Kg	₩		11/01/24 17:02	
-Butylbenzene	ND		0.060		mg/Kg			11/01/24 17:02	

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11/7/2024

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Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-58-SO-49.9-20241025

Lab Sample ID: 580-145241-3 Date Collected: 10/25/24 14:10 **Matrix: Solid** Date Received: 10/29/24 13:50

Percent Solids: 72.0

Analyte	Result	Compound Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND		0.060	0.0079	mg/Kg	— <u></u>	11/01/24 09:52	11/01/24 17:02	1
Toluene	ND		0.089	0.020	mg/Kg	₩	11/01/24 09:52	11/01/24 17:02	1
trans-1,2-Dichloroethene	ND		0.089	0.022	mg/Kg	₩	11/01/24 09:52	11/01/24 17:02	1
trans-1,3-Dichloropropene	ND		0.060	0.010	mg/Kg	₩	11/01/24 09:52	11/01/24 17:02	1
Trichloroethene	ND		0.060	0.015	mg/Kg	₩	11/01/24 09:52	11/01/24 17:02	1
Trichlorofluoromethane	ND		0.12	0.039	mg/Kg	₩	11/01/24 09:52	11/01/24 17:02	1
Vinyl chloride	ND		0.15	0.028	mg/Kg	₽	11/01/24 09:52	11/01/24 17:02	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		80 - 121				11/01/24 09:52	11/01/24 17:02	1
4-Bromofluorobenzene (Surr)	101		80 - 120				11/01/24 09:52	11/01/24 17:02	1
Dibromofluoromethane (Surr)	99		80 - 120				11/01/24 09:52	11/01/24 17:02	1
Toluene-d8 (Surr)	92		80 - 120				11/01/24 09:52	11/01/24 17:02	1

Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND ND	0.15	0.056	mg/Kg	*	11/01/24 08:13	11/01/24 13:43	1
Chlorobenzene	1.2	0.060	0.0072	mg/Kg	₩	11/01/24 08:13	11/01/24 13:43	1
Chloroethane	ND	0.12	0.031	mg/Kg	₩	11/01/24 08:13	11/01/24 13:43	1
Dichlorodifluoromethane	ND	0.37	0.068	mg/Kg	₩	11/01/24 08:13	11/01/24 13:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	122	S1+	80 - 121	11/01/24 08:13	11/01/24 13:43	1
4-Bromofluorobenzene (Surr)	103		80 - 120	11/01/24 08:13	11/01/24 13:43	1
Dibromofluoromethane (Surr)	112		80 - 120	11/01/24 08:13	11/01/24 13:43	1
Toluene-d8 (Surr)	98		80 - 120	11/01/24 08:13	11/01/24 13:43	1

General Chemistry Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	72.0		0.1	0.1	%			11/04/24 17:54	1
Percent Moisture (SM22 2540G)	28.0		0.1	0.1	%			11/04/24 17:54	1

Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-37a-SO-28.5-20241028

Lab Sample ID: 580-145241-4 Date Collected: 10/28/24 14:10 Matrix: Solid Date Received: 10/29/24 13:50 Percent Solids: 76.3

Method: SW846 8260D - Volatile Organic Compounds by GC/MS **MDL** Unit Dil Fac Analyte Result Qualifier D Prepared Analyzed 1,1,1,2-Tetrachloroethane ND 0.29 0.073 mg/Kg 11/01/24 09:52 11/01/24 18:05 ND 0.58 1.1.1-Trichloroethane 0.067 mg/Kg 11/01/24 09:52 11/01/24 18:05 1,1,2,2-Tetrachloroethane ND 0.29 0.11 mg/Kg 11/01/24 09:52 11/01/24 18:05 ND 0.29 11/01/24 18:05 1,1,2-Trichloroethane 0.11 mg/Kg 11/01/24 09:52 ND 0.58 mg/Kg 11/01/24 09:52 11/01/24 18:05 1.1-Dichloroethane 0.13 1,1-Dichloroethene ND 0.58 0.18 mg/Kg 11/01/24 09:52 11/01/24 18:05 1,1-Dichloropropene ND 0.58 0.077 11/01/24 09:52 11/01/24 18:05 mg/Kg ND 11/01/24 09:52 11/01/24 18:05 1,2,3-Trichlorobenzene 12 0.58 mg/Kg 1,2,3-Trichloropropane ND 0.58 0.17 mg/Kg 11/01/24 09:52 11/01/24 18:05 1,2,4-Trichlorobenzene ND 1.2 0.62 mg/Kg 11/01/24 09:52 11/01/24 18:05 1,2,4-Trimethylbenzene ND 0.58 0.20 mg/Kg 11/01/24 09:52 11/01/24 18:05 1.2-Dibromo-3-Chloropropane ND 0.87 0.22 mg/Kg 11/01/24 09:52 11/01/24 18:05 1 1,2-Dibromoethane ND 0.29 0.055 mg/Kg 11/01/24 09:52 11/01/24 18:05 0.58 0.13 mg/Kg 11/01/24 09:52 11/01/24 18:05 1,2-Dichlorobenzene 1.2 ND 0.29 0.080 mg/Kg 11/01/24 09:52 11/01/24 18:05 1.2-Dichloroethane ND 1,2-Dichloropropane 0.29 0.096 mg/Kg 11/01/24 09:52 11/01/24 18:05 ND 1,3,5-Trimethylbenzene 0.58 0.11 mg/Kg 11/01/24 09:52 11/01/24 18:05 0.87 0.19 mg/Kg 11/01/24 09:52 11/01/24 18:05 1.3-Dichlorobenzene 0.40 ND 0.87 11/01/24 09:52 11/01/24 18:05 1,3-Dichloropropane 0.081 mg/Kg 0.16 1,4-Dichlorobenzene 11 0.87 mg/Kg 11/01/24 09:52 11/01/24 18:05 2,2-Dichloropropane ND 0.58 0.18 mg/Kg 11/01/24 09:52 11/01/24 18:05 2-Chlorotoluene ND 0.58 0.13 mg/Kg 11/01/24 09:52 11/01/24 18:05 4-Chlorotoluene ND 0.58 11/01/24 09:52 11/01/24 18:05 0.14 mg/Kg 4-Isopropyltoluene ND 0.58 0.15 mg/Kg 11/01/24 09:52 11/01/24 18:05 Benzene ND 0.29 0.055 mg/Kg 11/01/24 09:52 11/01/24 18:05 ND 11/01/24 18:05 Bromobenzene 0.58 0.061 mg/Kg 11/01/24 09:52 Bromochloromethane ND 0.58 0.090 mg/Kg 11/01/24 09:52 11/01/24 18:05 Bromodichloromethane ND 0.080 0.58 mg/Kg 11/01/24 09:52 11/01/24 18:05 Bromoform ND 0.58 0.065 mg/Kg 11/01/24 09:52 11/01/24 18:05 Carbon tetrachloride ND 0.29 11/01/24 18:05 0.064 mg/Kg 11/01/24 09:52 Chloroform ND 0.29 0.061 mg/Kg 11/01/24 09:52 11/01/24 18:05 Chloromethane ND 0.87 0.15 mg/Kg 11/01/24 09:52 11/01/24 18:05 0.18 cis-1,2-Dichloroethene ND 0.87 11/01/24 09:52 11/01/24 18:05 mg/Kg ND 11/01/24 09:52 11/01/24 18:05 cis-1,3-Dichloropropene 0.290.058 mg/Kg Dibromochloromethane ND 0.29 0.071 mg/Kg 11/01/24 09:52 11/01/24 18:05 Dibromomethane ND 0.58 11/01/24 09:52 11/01/24 18:05 0 11 mg/Kg Ethylbenzene ND 0.58 0.13 mg/Kg 11/01/24 09:52 11/01/24 18:05 Hexachlorobutadiene ND 1.5 0.35 mg/Kg 11/01/24 09:52 11/01/24 18:05 ND 0.58 11/01/24 18:05 Isopropylbenzene 0.12 mg/Kg 11/01/24 09:52 Methyl tert-butyl ether ND 0.58 0.087 mg/Kg 11/01/24 09:52 11/01/24 18:05 Methylene Chloride ND 3.6 0.38 mg/Kg 11/01/24 09:52 11/01/24 18:05 m-Xylene & p-Xylene ND 0.58 0.10 mg/Kg 11/01/24 09:52 11/01/24 18:05 11/01/24 09:52 2.2 11/01/24 18:05 **Naphthalene** 3.4 0.57 mg/Kg n-Butylbenzene 0.58 11/01/24 09:52 11/01/24 18:05 ND 0.27 mg/Kg ND 0.58 N-Propylbenzene 0.22 mg/Kg 11/01/24 09:52 11/01/24 18:05 o-Xylene ND 0.58 0.073 mg/Kg 11/01/24 09:52 11/01/24 18:05 sec-Butylbenzene ND 0.58 0.12 mg/Kg 11/01/24 09:52 11/01/24 18:05 Styrene ND 0.58 0.18 mg/Kg 11/01/24 09:52 11/01/24 18:05 t-Butylbenzene 11/01/24 09:52 ND 0.58 0.11 mg/Kg 11/01/24 18:05

Eurofins Seattle

Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-37a-SO-28.5-20241028

Lab Sample ID: 580-145241-4 Date Collected: 10/28/24 14:10 **Matrix: Solid**

Date Received: 10/29/24 13:50 Percent Solids: 76.3

Method: SW846 8260D - Vo	olatile Organic	Compoun	ds by GC/MS	(Conti	inued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	2.9		0.58	0.077	mg/Kg	<u></u>	11/01/24 09:52	11/01/24 18:05	1
Toluene	ND		0.87	0.20	mg/Kg	≎	11/01/24 09:52	11/01/24 18:05	1
trans-1,2-Dichloroethene	ND		0.87	0.21	mg/Kg	⊅	11/01/24 09:52	11/01/24 18:05	1
trans-1,3-Dichloropropene	ND		0.58	0.10	mg/Kg	☼	11/01/24 09:52	11/01/24 18:05	1
Trichloroethene	0.16	J	0.58	0.15	mg/Kg	≎	11/01/24 09:52	11/01/24 18:05	1
Trichlorofluoromethane	ND		1.2	0.38	mg/Kg	₽	11/01/24 09:52	11/01/24 18:05	1
Vinyl chloride	ND		1.5	0.27	mg/Kg	₩	11/01/24 09:52	11/01/24 18:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		80 - 121				11/01/24 09:52	11/01/24 18:05	1
4-Bromofluorobenzene (Surr)	99		80 - 120				11/01/24 09:52	11/01/24 18:05	1
Dibromofluoromethane (Surr)	102		80 - 120				11/01/24 09:52	11/01/24 18:05	1
Toluene-d8 (Surr)	115		80 - 120				11/01/24 09:52	11/01/24 18:05	1
_ Method: SW846 8260D - Vo	olatile Organic	Compound	ds by GC/MS	- DL					
Analyte	_	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		1.5	0.55	mg/Kg	-	11/01/24 08:13	11/01/24 14:44	1
Chloroethane	ND		1.2	0.30	mg/Kg	₩	11/01/24 08:13	11/01/24 14:44	1
Dichlorodifluoromethane	ND		3.6	0.67	mg/Kg	₩	11/01/24 08:13	11/01/24 14:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1.2 Dichloroothana d4 (Surr)	104		90 121				11/01/24 09:12	11/01/24 14:44	

Dictiorodificoroffictriarie	ND	3.0	0.07 Hig/Rg	× 11/01/24 00.13	11/01/24 14.44	'
Surrogate	%Recovery Qualifier	Limits		Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104	80 - 121		11/01/24 08:13	11/01/24 14:44	1
4-Bromofluorobenzene (Surr)	97	80 - 120		11/01/24 08:13	11/01/24 14:44	1
Dibromofluoromethane (Surr)	100	80 - 120		11/01/24 08:13	11/01/24 14:44	1
Toluene-d8 (Surr)	100	80 - 120		11/01/24 08:13	11/01/24 14:44	1
	Surrogate 1,2-Dichloroethane-d4 (Surr) 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr)	Surrogate%RecoveryQualifier1,2-Dichloroethane-d4 (Surr)1044-Bromofluorobenzene (Surr)97Dibromofluoromethane (Surr)100	Surrogate %Recovery Qualifier Limits 1,2-Dichloroethane-d4 (Surr) 104 80 - 121 4-Bromofluorobenzene (Surr) 97 80 - 120 Dibromofluoromethane (Surr) 100 80 - 120	Surrogate %Recovery Qualifier Limits 1,2-Dichloroethane-d4 (Surr) 104 80 - 121 4-Bromofluorobenzene (Surr) 97 80 - 120 Dibromofluoromethane (Surr) 100 80 - 120	Surrogate %Recovery Qualifier Limits Prepared 1,2-Dichloroethane-d4 (Surr) 104 80 - 121 11/01/24 08:13 4-Bromofluorobenzene (Surr) 97 80 - 120 11/01/24 08:13 Dibromofluoromethane (Surr) 100 80 - 120 11/01/24 08:13	Surrogate %Recovery 1,2-Dichloroethane-d4 (Surr) Qualifier 1 Limits 2 Prepared 11/01/24 08:13 Analyzed 11/01/24 08:13 11/01/24 14:44 4-Bromofluorobenzene (Surr) 1 97 80 - 120 11/01/24 08:13 11/01/24 14:44 Dibromofluoromethane (Surr) 1 100 80 - 120 11/01/24 08:13 11/01/24 14:44

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	3800		58	7.0	mg/Kg	*	11/04/24 08:44	11/04/24 18:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		80 - 121				11/04/24 08:44	11/04/24 18:17	1
4-Bromofluorobenzene (Surr)	102		80 - 120				11/04/24 08:44	11/04/24 18:17	1
Dibromofluoromethane (Surr)	91		80 - 120				11/04/24 08:44	11/04/24 18:17	1
Toluene-d8 (Surr)	113		80 - 120				11/04/24 08:44	11/04/24 18:17	1

General Chemistry							
Analyte	Result Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	76.3	0.1	0.1 %			11/04/24 17:54	1
Percent Moisture (SM22 2540G)	23.7	0.1	0.1 %			11/04/24 17:54	1

Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-37a-SO-49.9-20241028

Lab Sample ID: 580-145241-5 Date Collected: 10/28/24 14:15 **Matrix: Solid** Date Received: 10/29/24 13:50

Percent Solids: 78.1

Method: SW846 8260D - Volat Analyte	_	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND		0.026	0.0064	mg/Kg	— <u>=</u>	11/01/24 09:52	11/01/24 17:24	
1,1,1-Trichloroethane	ND		0.051		mg/Kg	☆	11/01/24 09:52	11/01/24 17:24	
1,1,2,2-Tetrachloroethane	ND		0.026	0.0097		☆	11/01/24 09:52	11/01/24 17:24	
1,1,2-Trichloroethane	ND		0.026	0.0095		∷ ☆		11/01/24 17:24	
1,1-Dichloroethane	ND		0.051		mg/Kg	₩	11/01/24 09:52	11/01/24 17:24	
1,1-Dichloroethene	ND		0.051		mg/Kg		11/01/24 09:52	11/01/24 17:24	
1,1-Dichloropropene	ND		0.051	0.0068				11/01/24 17:24	
1,2,3-Trichlorobenzene	ND		0.10		mg/Kg			11/01/24 17:24	
1,2,3-Trichloropropane	ND		0.051		mg/Kg			11/01/24 17:24	
1,2,4-Trichlorobenzene	ND		0.10		mg/Kg			11/01/24 17:24	
1,2,4-Trimethylbenzene	ND		0.051		mg/Kg			11/01/24 17:24	
1,2-Dibromo-3-Chloropropane	ND		0.077		mg/Kg	~ ☆		11/01/24 17:24	
1,2-Dibromoethane	ND		0.026	0.0049				11/01/24 17:24	
1,2-Dichlorobenzene	ND		0.020		mg/Kg	~ ☆		11/01/24 17:24	
1,2-Dichlorobertzerie	ND		0.026	0.0071	mg/Kg	₩		11/01/24 17:24	
1,2-Dichloropropane	ND		0.026	0.0071		¥ ₩		11/01/24 17:24	
1,3,5-Trimethylbenzene	ND ND		0.020	0.0083		₩	11/01/24 09:52	11/01/24 17:24	
1,3-Dichlorobenzene	ND ND		0.031		mg/Kg	₩		11/01/24 17:24	
1,3-Dichloropropane	ND ND		0.077	0.0072		# #		11/01/24 17:24	
I,4-Dichlorobenzene			0.077		mg/Kg			11/01/24 17:24	
2,2-Dichloropropane	ND		0.051		mg/Kg	<u></u> .		11/01/24 17:24	
2-Chlorotoluene	ND		0.051		mg/Kg			11/01/24 17:24	
4-Chlorotoluene	ND		0.051		mg/Kg	*		11/01/24 17:24	
I-Isopropyltoluene	ND		0.051		mg/Kg	<u>.</u> .		11/01/24 17:24	
Benzene	ND		0.026	0.0049		*		11/01/24 17:24	
Bromobenzene	ND		0.051	0.0054	0 0	*		11/01/24 17:24	
Bromochloromethane	ND		0.051		mg/Kg	. .		11/01/24 17:24	
Bromodichloromethane	ND		0.051	0.0071	mg/Kg	₩		11/01/24 17:24	
Bromoform	ND		0.051		mg/Kg	☼		11/01/24 17:24	
Carbon tetrachloride	ND		0.026	0.0056				11/01/24 17:24	
Chloroform	ND		0.026	0.0054		₩		11/01/24 17:24	
Chloromethane	ND		0.077		mg/Kg	₩	11/01/24 09:52	11/01/24 17:24	
cis-1,2-Dichloroethene	ND		0.077	0.016	mg/Kg	₩	11/01/24 09:52	11/01/24 17:24	
cis-1,3-Dichloropropene	ND		0.026	0.0051	0 0	₩	11/01/24 09:52	11/01/24 17:24	
Dibromochloromethane	ND		0.026	0.0063	0 0	₩	11/01/24 09:52	11/01/24 17:24	
Dibromomethane	ND		0.051	0.0095	mg/Kg	₩	11/01/24 09:52	11/01/24 17:24	
Ethylbenzene	ND		0.051	0.012	mg/Kg	₩	11/01/24 09:52	11/01/24 17:24	
Hexachlorobutadiene	ND		0.13	0.031	mg/Kg	☼	11/01/24 09:52	11/01/24 17:24	
sopropylbenzene	ND		0.051	0.011	mg/Kg	☼	11/01/24 09:52	11/01/24 17:24	
Methyl tert-butyl ether	ND		0.051	0.0077	mg/Kg	₽	11/01/24 09:52	11/01/24 17:24	
Methylene Chloride	ND		0.32	0.033	mg/Kg	₩	11/01/24 09:52	11/01/24 17:24	
n-Xylene & p-Xylene	ND		0.051	0.0091	mg/Kg	₩	11/01/24 09:52	11/01/24 17:24	
Naphthalene	ND		0.19	0.050	mg/Kg	☼	11/01/24 09:52	11/01/24 17:24	
n-Butylbenzene	ND		0.051	0.024	mg/Kg	☼	11/01/24 09:52	11/01/24 17:24	
N-Propylbenzene	ND		0.051	0.019	mg/Kg	₩	11/01/24 09:52	11/01/24 17:24	
o-Xylene	ND		0.051	0.0064		₩	11/01/24 09:52	11/01/24 17:24	
sec-Butylbenzene	ND		0.051		mg/Kg	₩	11/01/24 09:52	11/01/24 17:24	
Styrene	ND		0.051		mg/Kg	₩		11/01/24 17:24	
-Butylbenzene	ND		0.051	0.0099			11/01/24 09:52		

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Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-37a-SO-49.9-20241028

Date Collected: 10/28/24 14:15

Date Received: 10/29/24 13:50

Lab Sample ID: 580-145241-5

Matrix: Solid Percent Solids: 78.1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND		0.051	0.0068	mg/Kg	— <u>—</u>	11/01/24 09:52	11/01/24 17:24	1
Toluene	ND		0.077	0.017	mg/Kg	₩	11/01/24 09:52	11/01/24 17:24	1
rans-1,2-Dichloroethene	ND		0.077	0.019	mg/Kg	₩	11/01/24 09:52	11/01/24 17:24	1
rans-1,3-Dichloropropene	ND		0.051	0.0090	mg/Kg	₩	11/01/24 09:52	11/01/24 17:24	1
Trichloroethene	ND		0.051	0.013	mg/Kg	₩	11/01/24 09:52	11/01/24 17:24	1
Trichlorofluoromethane	ND		0.10	0.033	mg/Kg	₩	11/01/24 09:52	11/01/24 17:24	1
√inyl chloride	ND		0.13	0.024	mg/Kg	₽	11/01/24 09:52	11/01/24 17:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		80 - 121				11/01/24 09:52	11/01/24 17:24	1
4-Bromofluorobenzene (Surr)	101		80 - 120				11/01/24 09:52	11/01/24 17:24	1
Dibromofluoromethane (Surr)	101		80 - 120				11/01/24 09:52	11/01/24 17:24	1
Toluene-d8 (Surr)	102		80 - 120				11/01/24 09:52	11/01/24 17:24	1
Method: SW846 8260D - Vo	olatile Organic	Compoun	ds by GC/MS	- DL					
Analyte	_	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	25		0.55	0.066	mg/Kg	— <u></u>	11/04/24 08:44	11/04/24 17:36	

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	25		0.55	0.066	mg/Kg	*	11/04/24 08:44	11/04/24 17:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		80 - 121				11/04/24 08:44	11/04/24 17:36	1
4-Bromofluorobenzene (Surr)	99		80 - 120				11/04/24 08:44	11/04/24 17:36	1
Dibromofluoromethane (Surr)	90		80 - 120				11/04/24 08:44	11/04/24 17:36	1
Toluene-d8 (Surr)	116		80 - 120				11/04/24 08:44	11/04/24 17:36	1

Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	- RA					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		0.13	0.048	mg/Kg	<u></u>	11/01/24 08:13	11/01/24 14:03	1
Chloroethane	ND		0.10	0.027	mg/Kg	₩	11/01/24 08:13	11/01/24 14:03	1
Dichlorodifluoromethane	ND		0.32	0.059	mg/Kg	₽	11/01/24 08:13	11/01/24 14:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	114		80 - 121				11/01/24 08:13	11/01/24 14:03	1
4-Bromofluorobenzene (Surr)	100		80 - 120				11/01/24 08:13	11/01/24 14:03	1
Dibromofluoromethane (Surr)	105		80 - 120				11/01/24 08:13	11/01/24 14:03	1
Toluene-d8 (Surr)	99		80 - 120				11/01/24 08:13	11/01/24 14:03	1

General Chemistry Analyte	Result Qualifier	RL	RL U	Jnit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	78.1	0.1	0.1 9	%			11/04/24 17:54	1
Percent Moisture (SM22 2540G)	21.9	0.1	0.1 %	%			11/04/24 17:54	1

Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-44a-SO-36.8-20241028

Lab Sample ID: 580-145241-6 Date Collected: 10/28/24 16:45 **Matrix: Solid** Date Received: 10/29/24 13:50 Percent Solids: 73.1

Method: SW846 8260D - Vola Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.19		0.35		mg/Kg	— <u>-</u>	11/01/24 09:52	11/01/24 18:26	1
1,1,1-Trichloroethane	ND		0.71		mg/Kg	₩	11/01/24 09:52	11/01/24 18:26	1
1,1,2,2-Tetrachloroethane	0.28	J	0.35		mg/Kg	₩	11/01/24 09:52	11/01/24 18:26	1
1,1,2-Trichloroethane	ND		0.35		mg/Kg	∴	11/01/24 09:52	11/01/24 18:26	1
1,1-Dichloroethane	ND		0.71		mg/Kg	☆	11/01/24 09:52	11/01/24 18:26	1
1,1-Dichloroethene	ND		0.71		mg/Kg	₩.	11/01/24 09:52	11/01/24 18:26	1
, 1,1-Dichloropropene	ND		0.71		mg/Kg	∷ ☆		11/01/24 18:26	1
1,2,3-Trichlorobenzene	ND		1.4		mg/Kg	☆		11/01/24 18:26	1
1,2,3-Trichloropropane	ND		0.71		mg/Kg	₩		11/01/24 18:26	1
1,2,4-Trichlorobenzene	ND		1.4		mg/Kg			11/01/24 18:26	1
1,2,4-Trimethylbenzene	ND		0.71		mg/Kg	₩		11/01/24 18:26	1
1,2-Dibromo-3-Chloropropane	ND		1.1		mg/Kg	₹75-		11/01/24 18:26	1
1,2-Dibromoethane	ND		0.35		mg/Kg	∴		11/01/24 18:26	
1,2-Dichlorobenzene	0.53	1	0.71		mg/Kg			11/01/24 18:26	
1,2-Dichloroethane	ND	•	0.35		mg/Kg	₩		11/01/24 18:26	
1,2-Dichloropropane	ND		0.35		mg/Kg			11/01/24 18:26	
1,3,5-Trimethylbenzene	ND		0.71		mg/Kg	₩		11/01/24 18:26	
1,3-Dichlorobenzene	ND ND		1.1		mg/Kg	*	11/01/24 09:52		4
1,3-Dichloropropane	ND				mg/Kg			11/01/24 18:26	,
·	0.85		1.1		mg/Kg	₩		11/01/24 18:26	,
1,4-Dichlorobenzene	0.65 ND	J	0.71	0.19	mg/Kg			11/01/24 18:26	
2,2-Dichloropropane 2-Chlorotoluene	ND		0.71		mg/Kg	. .		11/01/24 18:26	
						ψ.			1
4-Chlorotoluene	ND		0.71		mg/Kg			11/01/24 18:26	1
4-Isopropyltoluene	ND		0.71		mg/Kg			11/01/24 18:26	
Benzene -	ND		0.35		mg/Kg	*	11/01/24 09:52		1
Bromobenzene	ND		0.71		mg/Kg	*		11/01/24 18:26	1
Bromochloromethane	ND		0.71		mg/Kg	<u>.</u> .		11/01/24 18:26	1
3romodichloromethane	ND		0.71		mg/Kg	*		11/01/24 18:26	1
Bromoform	ND		0.71		mg/Kg	*	11/01/24 09:52		1
Carbon tetrachloride	5.3		0.35		mg/Kg	<u>.</u> .	11/01/24 09:52		
Chloroform	1.5		0.35		mg/Kg	₩	11/01/24 09:52		1
Chloromethane	ND		1.1		mg/Kg	₩	11/01/24 09:52	11/01/24 18:26	1
cis-1,2-Dichloroethene	ND		1.1		mg/Kg		11/01/24 09:52	11/01/24 18:26	
cis-1,3-Dichloropropene	ND		0.35	0.071	mg/Kg	☼		11/01/24 18:26	,
Dibromochloromethane	ND		0.35		mg/Kg	₩	11/01/24 09:52	11/01/24 18:26	•
Dibromomethane	ND		0.71		mg/Kg	₩	11/01/24 09:52		
Ethylbenzene	ND		0.71		mg/Kg	₩		11/01/24 18:26	•
sopropylbenzene	ND		0.71	0.15	mg/Kg	₩	11/01/24 09:52	11/01/24 18:26	•
Methyl tert-butyl ether	ND		0.71		mg/Kg	₩	11/01/24 09:52	11/01/24 18:26	
Methylene Chloride	ND		4.4	0.46	mg/Kg	₩	11/01/24 09:52	11/01/24 18:26	•
m-Xylene & p-Xylene	ND		0.71	0.13	mg/Kg	₩	11/01/24 09:52	11/01/24 18:26	•
Naphthalene	0.90	J	2.7	0.69	mg/Kg	☆	11/01/24 09:52	11/01/24 18:26	•
n-Butylbenzene	ND		0.71	0.33	mg/Kg	₩	11/01/24 09:52	11/01/24 18:26	
N-Propylbenzene	ND		0.71	0.27	mg/Kg	₩	11/01/24 09:52	11/01/24 18:26	
o-Xylene	ND		0.71	0.088	mg/Kg	₩	11/01/24 09:52	11/01/24 18:26	
sec-Butylbenzene	ND		0.71	0.15	mg/Kg	₩	11/01/24 09:52	11/01/24 18:26	
Styrene	ND		0.71	0.22	mg/Kg	☼	11/01/24 09:52	11/01/24 18:26	1
t-Butylbenzene	ND		0.71	0.14	mg/Kg	₩	11/01/24 09:52	11/01/24 18:26	1
Tetrachloroethene	170		0.71		mg/Kg		11/01/24 09:52	11/01/24 18:26	1

Eurofins Seattle

Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-44a-SO-36.8-20241028

Lab Sample ID: 580-145241-6 Date Collected: 10/28/24 16:45 **Matrix: Solid** Date Received: 10/29/24 13:50 Percent Solids: 73.1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	ND		1.1	0.24	mg/Kg	-	11/01/24 09:52	11/01/24 18:26	1
trans-1,2-Dichloroethene	ND		1.1	0.26	mg/Kg	₩	11/01/24 09:52	11/01/24 18:26	1
trans-1,3-Dichloropropene	ND		0.71	0.12	mg/Kg	₽	11/01/24 09:52	11/01/24 18:26	1
Trichloroethene	2.8		0.71	0.18	mg/Kg	☼	11/01/24 09:52	11/01/24 18:26	1
Trichlorofluoromethane	ND		1.4	0.46	mg/Kg	₩	11/01/24 09:52	11/01/24 18:26	1
Vinyl chloride	ND		1.8	0.33	mg/Kg	☼	11/01/24 09:52	11/01/24 18:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		80 - 121				11/01/24 09:52	11/01/24 18:26	1
4-Bromofluorobenzene (Surr)	100		80 - 120				11/01/24 09:52	11/01/24 18:26	1
Dibromofluoromethane (Surr)	103		80 - 120				11/01/24 09:52	11/01/24 18:26	1
Toluene-d8 (Surr)	99		80 - 120				11/01/24 09:52	11/01/24 18:26	1

Wethod: 5W846 8260D - V	Diatile Organic Compo	unas by GC/MS	- DL					
Analyte	Result Qualifie	r RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND ND	1.8	0.67	mg/Kg	<u></u>	11/01/24 08:13	11/01/24 15:05	1
Chloroethane	ND	1.4	0.37	mg/Kg	₩	11/01/24 08:13	11/01/24 15:05	1
Dichlorodifluoromethane	ND	4.4	0.81	mg/Kg	₩	11/01/24 08:13	11/01/24 15:05	1
Hexachlorobutadiene	110	1.8	0.42	mg/Kg	₩	11/01/24 08:13	11/01/24 15:05	1
Surrogate	%Recovery Qualifie	er Limits				Prepared	Analyzed	Dil Fac
1.2-Dichloroethane-d4 (Surr)		80 - 121				11/01/24 08:13	11/01/24 15:05	

	,	-,			·,	
1,2-Dichloroethane-d4 (Surr)	113		80 - 121	11/01/24 08:13	11/01/24 15:05	1
4-Bromofluorobenzene (Surr)	97		80 - 120	11/01/24 08:13	11/01/24 15:05	1
Dibromofluoromethane (Surr)	113		80 - 120	11/01/24 08:13	11/01/24 15:05	1
Toluene-d8 (Surr)	100		80 - 120	11/01/24 08:13	11/01/24 15:05	1
Г., .,						
Method: SW846 8260D - Volat	ile Organic	Compound	is by GC/I	NS - DL2		

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	580		71	8.5	mg/Kg	₩	11/04/24 08:44	11/04/24 18:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87	-	80 - 121				11/04/24 08:44	11/04/24 18:38	1
4-Bromofluorobenzene (Surr)	99		80 - 120				11/04/24 08:44	11/04/24 18:38	1
Dibromofluoromethane (Surr)	91		80 - 120				11/04/24 08:44	11/04/24 18:38	1
Toluene-d8 (Surr)	116		80 - 120				11/04/24 08:44	11/04/24 18:38	1

General Chemistry Analyte	Result Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	73.1	0.1	0.1	%			11/04/24 17:54	1
Percent Moisture (SM22 2540G)	26.9	0.1	0.1	%			11/04/24 17:54	1

Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-44a-SO-49.9-20241029

Date Collected: 10/29/24 09:10
Date Received: 10/29/24 13:50

Lab Sample ID: 580-145241-7

Matrix: Solid Percent Solids: 74.6

Method: SW846 8260D - Vola ^{Analyte}	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.028	0.0071	mg/Kg	— <u></u>	11/01/24 09:52	11/01/24 17:44	1
I,1,1-Trichloroethane	ND		0.056	0.0065		₩	11/01/24 09:52	11/01/24 17:44	1
,1,2,2-Tetrachloroethane	ND		0.028	0.011	mg/Kg	₩	11/01/24 09:52	11/01/24 17:44	1
,1,2-Trichloroethane	ND		0.028	0.010	mg/Kg		11/01/24 09:52	11/01/24 17:44	1
,1-Dichloroethane	ND		0.056		mg/Kg	₩		11/01/24 17:44	1
, I,1-Dichloroethene	ND		0.056		mg/Kg	₩		11/01/24 17:44	1
1,1-Dichloropropene	ND		0.056	0.0075			11/01/24 09:52	11/01/24 17:44	1
I,2,3-Trichlorobenzene	ND		0.11		mg/Kg	₩		11/01/24 17:44	1
I,2,3-Trichloropropane	ND		0.056		mg/Kg	₩		11/01/24 17:44	1
,2,4-Trichlorobenzene	ND		0.11		mg/Kg	∴	11/01/24 09:52		1
,2,4-Trimethylbenzene	ND		0.056		mg/Kg	₩	11/01/24 09:52	11/01/24 17:44	1
1,2-Dibromo-3-Chloropropane	ND		0.085	0.021	mg/Kg	₩	11/01/24 09:52		1
1,2-Dibromoethane	ND		0.028	0.0054				11/01/24 17:44	· · · · · · · · · · · · · · · · · · ·
1,2-Dichlorobenzene	ND		0.056		mg/Kg	₹75	11/01/24 09:52	11/01/24 17:44	1
1,2-Dichloroethane	ND		0.028	0.0078		~ ☆		11/01/24 17:44	1
1,2-Dichloropropane	ND		0.028	0.0073				11/01/24 17:44	· · · · · · · · · · · · · · · · · · ·
1,3,5-Trimethylbenzene	ND		0.056		mg/Kg	~ ☆		11/01/24 17:44	1
,3-Dichlorobenzene	ND		0.085		mg/Kg	~ ☆		11/01/24 17:44	1
1,3-Dichloropropane	ND		0.085	0.0079				11/01/24 17:44	
,4-Dichlorobenzene	ND		0.085		mg/Kg	₩		11/01/24 17:44	1
2,2-Dichloropropane	ND		0.056		mg/Kg	Υ Υ		11/01/24 17:44	1
P-Chlorotoluene	ND		0.056		mg/Kg			11/01/24 17:44	· · · · · · · · · · · · · · · · · · ·
-Chlorotoluene	ND ND		0.056		mg/Kg	₩		11/01/24 17:44	1
I-Isopropyltoluene	ND ND		0.056		mg/Kg	☆		11/01/24 17:44	1
			0.030	0.0054		¥. ≄		11/01/24 17:44	
Benzene Bromobenzene	0.035 ND		0.026					11/01/24 17:44	
Bromochloromethane	ND ND		0.056	0.0059 0.0087		*	11/01/24 09:52	11/01/24 17:44	1
Bromodichloromethane	ND		0.056			¥ ☆		11/01/24 17:44	
Bromoform	ND ND		0.056	0.0078 0.0063				11/01/24 17:44	1
Carbon tetrachloride	ND ND		0.036	0.0063	0 0	*		11/01/24 17:44	1
				0.0062		· · · · · · · · · · · · · · · · · · ·			
Chlorobenzene	9.4		0.056		0 0	ψ.		11/01/24 17:44	1
Chloroform	ND		0.028	0.0059		ψ.		11/01/24 17:44	1
Chloromethane	ND		0.085		mg/Kg			11/01/24 17:44	
cis-1,2-Dichloroethene	ND		0.085		mg/Kg		11/01/24 09:52		1
cis-1,3-Dichloropropene	ND		0.028	0.0056		*	11/01/24 09:52		1
Dibromochloromethane	ND		0.028	0.0069		₽	11/01/24 09:52		1
Dibromomethane	ND		0.056		mg/Kg	*	11/01/24 09:52	11/01/24 17:44	1
Ethylbenzene	ND		0.056		mg/Kg	*	11/01/24 09:52		1
Hexachlorobutadiene	ND		0.14		mg/Kg	. .		11/01/24 17:44	1
sopropylbenzene	ND		0.056		mg/Kg	.		11/01/24 17:44	1
Methyl tert-butyl ether	ND		0.056	0.0085		₩	11/01/24 09:52	11/01/24 17:44	1
Methylene Chloride	ND		0.35		mg/Kg			11/01/24 17:44	1
n-Xylene & p-Xylene	ND		0.056		mg/Kg	☼	11/01/24 09:52		1
Naphthalene	ND		0.21		mg/Kg	≎		11/01/24 17:44	1
n-Butylbenzene	ND		0.056		mg/Kg			11/01/24 17:44	1
N-Propylbenzene	ND		0.056		mg/Kg	₩	11/01/24 09:52		1
o-Xylene	ND		0.056	0.0071		₩		11/01/24 17:44	1
sec-Butylbenzene	ND		0.056	0.012	mg/Kg	₩	11/01/24 09:52	11/01/24 17:44	1

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3

6

8

10

1

Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Percent Solids (SM22 2540G)

Percent Moisture (SM22 2540G)

Client Sample ID: PDI-44a-SO-49.9-20241029

Lab Sample ID: 580-145241-7 Date Collected: 10/29/24 09:10

74.6

25.4

Matrix: Solid Date Received: 10/29/24 13:50 Percent Solids: 74.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butylbenzene	ND		0.056	0.011	mg/Kg	— <u></u>	11/01/24 09:52	11/01/24 17:44	1
Tetrachloroethene	0.023	J	0.056	0.0075	mg/Kg	₽	11/01/24 09:52	11/01/24 17:44	1
Toluene	ND		0.085	0.019	mg/Kg	₩	11/01/24 09:52	11/01/24 17:44	1
trans-1,2-Dichloroethene	ND		0.085	0.021	mg/Kg	₽	11/01/24 09:52	11/01/24 17:44	1
trans-1,3-Dichloropropene	ND		0.056	0.0099	mg/Kg	₽	11/01/24 09:52	11/01/24 17:44	1
Trichloroethene	ND		0.056	0.015	mg/Kg	₩	11/01/24 09:52	11/01/24 17:44	1
Trichlorofluoromethane	ND		0.11	0.037	mg/Kg	₩	11/01/24 09:52	11/01/24 17:44	1
Vinyl chloride	ND		0.14	0.026	mg/Kg	₩	11/01/24 09:52	11/01/24 17:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		80 - 121				11/01/24 09:52	11/01/24 17:44	1
4-Bromofluorobenzene (Surr)	101		80 - 120				11/01/24 09:52	11/01/24 17:44	1
Dibromofluoromethane (Surr)	101		80 - 120				11/01/24 09:52	11/01/24 17:44	1
Toluene-d8 (Surr)	103		80 - 120				11/01/24 09:52	11/01/24 17:44	1

Method: SW846 8260D - Vo	olatile Organic (Compound	ds by GC/MS	- RA					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		0.14	0.053	mg/Kg	-	11/01/24 08:13	11/01/24 14:24	1
Chloroethane	ND		0.11	0.029	mg/Kg	☼	11/01/24 08:13	11/01/24 14:24	1
Dichlorodifluoromethane	ND		0.35	0.065	mg/Kg	₩	11/01/24 08:13	11/01/24 14:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		80 - 121				11/01/24 08:13	11/01/24 14:24	1
4-Bromofluorobenzene (Surr)	103		80 - 120				11/01/24 08:13	11/01/24 14:24	1
Dibromofluoromethane (Surr)	104		80 - 120				11/01/24 08:13	11/01/24 14:24	1
Toluene-d8 (Surr)	101		80 - 120				11/01/24 08:13	11/01/24 14:24	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac

0.1

0.1

0.1 %

0.1 %

11/7/2024

11/04/24 17:54

11/04/24 17:54

QC Sample Results

Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-476539/5-A

Matrix: Solid

Analyte

Analysis Batch: 476544

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 476539

MB	MB						•		 5
Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
ND		0.020	0.0050	mg/Kg		11/01/24 07:30	11/01/24 10:47	1	6
ND		0.040	0.0046	mg/Kg		11/01/24 07:30	11/01/24 10:47	1	
ND		0.020	0.0076	mg/Kg		11/01/24 07:30	11/01/24 10:47	1	
ND		0.020	0.0074	mg/Kg		11/01/24 07:30	11/01/24 10:47	1	
ND		0.040	0.0092	mg/Kg		11/01/24 07:30	11/01/24 10:47	1	R
ND		0.040	0.012	mg/Kg		11/01/24 07:30	11/01/24 10:47	1	
ND		0.040	0.0053	mg/Kg		11/01/24 07:30	11/01/24 10:47	1	a
ND		0.080	0.040	mg/Kg		11/01/24 07:30	11/01/24 10:47	1	J
ND		0.040	0.012	mg/Kg		11/01/24 07:30	11/01/24 10:47	1	
ND		0.080	0.043	mg/Kg		11/01/24 07:30	11/01/24 10:47	1	
ND		0.040	0.014	mg/Kg		11/01/24 07:30	11/01/24 10:47	1	

1,1,1,2-Tetrachloroethane ND 1,1,1-Trichloroethane ND 1,1,2,2-Tetrachloroethane ND 1,1,2-Trichloroethane ND 1 1-Dichloroethane ND 1,1-Dichloroethene ND ND 1,1-Dichloropropene 1,2,3-Trichlorobenzene ND 1,2,3-Trichloropropane ND 1,2,4-Trichlorobenzene ND ND 1,2,4-Trimethylbenzene 1,2-Dibromo-3-Chloropropane ND 0.060 0.015 mg/Kg 11/01/24 07:30 11/01/24 10:47 1.2-Dibromoethane ND 0.020 0.0038 mg/Kg 11/01/24 07:30 11/01/24 10:47 0.0087 mg/Kg 1,2-Dichlorobenzene ND 0.040 11/01/24 07:30 11/01/24 10:47 1,2-Dichloroethane ND 0.020 0.0055 mg/Kg 11/01/24 07:30 11/01/24 10:47 ND 0.020 0.0066 mg/Kg 11/01/24 07:30 11/01/24 10:47 1,2-Dichloropropane 1,3,5-Trimethylbenzene ND 0.040 0.0076 mg/Kg 11/01/24 07:30 11/01/24 10:47 ND 0.060 0.013 mg/Kg 11/01/24 07:30 11/01/24 10:47 1.3-Dichlorobenzene 1,3-Dichloropropane ND 0.060 0.0056 mg/Kg 11/01/24 07:30 11/01/24 10:47 ND 0.011 mg/Kg 11/01/24 07:30 11/01/24 10:47 1.4-Dichlorobenzene 0.060 0.040 0.012 11/01/24 07:30 11/01/24 10:47 2,2-Dichloropropane ND mg/Kg 2-Chlorotoluene ND 0.0088 0.040 mg/Kg 11/01/24 07:30 11/01/24 10:47 4-Chlorotoluene ND 0.040 0.0098 mg/Kg 11/01/24 07:30 11/01/24 10:47 ND 0.040 0.010 11/01/24 07:30 11/01/24 10:47 4-Isopropyltoluene mg/Kg 11/01/24 10:47 Benzene ND 0.020 0.0038 mg/Kg 11/01/24 07:30 Bromobenzene ND 0.040 0.0042 mg/Kg 11/01/24 07:30 11/01/24 10:47 0.0062 mg/Kg Bromochloromethane ND 0.040 11/01/24 07:30 11/01/24 10:47 Bromodichloromethane ND 0.040 0.0055 mg/Kg 11/01/24 07:30 11/01/24 10:47 Bromoform ND 0.040 0.0045 mg/Kg 11/01/24 07:30 11/01/24 10:47 Carbon tetrachloride ND 0.020 0.0044 mg/Kg 11/01/24 07:30 11/01/24 10:47 ND 0.040 0.0048 mg/Kg 11/01/24 07:30 11/01/24 10:47 Chlorobenzene Chloroform ND 0.020 0.0042 mg/Kg 11/01/24 07:30 11/01/24 10:47 Chloromethane 0.010 mg/Kg ND 0.060 11/01/24 07:30 11/01/24 10:47 cis-1,2-Dichloroethene 0.060 0.013 mg/Kg 11/01/24 07:30 11/01/24 10:47 ND cis-1,3-Dichloropropene ND 11/01/24 07:30 11/01/24 10:47 0.020 0.0040 mg/Kg Dibromochloromethane ND 0.020 0.0049 mg/Kg 11/01/24 07:30 11/01/24 10:47 Dibromomethane ND 0.040 0.0074 mg/Kg 11/01/24 07:30 11/01/24 10:47 Ethylbenzene ND 0.040 0.0091 mg/Kg 11/01/24 07:30 11/01/24 10:47 Hexachlorobutadiene ND 0.10 0.024 mg/Kg 11/01/24 07:30 11/01/24 10:47 Isopropylbenzene ND 0.040 0.0086 mg/Kg 11/01/24 07:30 11/01/24 10:47 Methyl tert-butyl ether ND 0.040 0.0060 mg/Kg 11/01/24 07:30 11/01/24 10:47 ND 0.25 Methylene Chloride 0.026 mg/Kg 11/01/24 07:30 11/01/24 10:47 m-Xylene & p-Xylene ND 0.040 0.0071 mg/Kg 11/01/24 07:30 11/01/24 10:47 Naphthalene ND 0.15 0.039 mg/Kg 11/01/24 07:30 11/01/24 10:47 n-Butylbenzene ND 0.040 0.019 mg/Kg 11/01/24 07:30 11/01/24 10:47 N-Propylbenzene ND 0.040 0.015 mg/Kg 11/01/24 07:30 11/01/24 10:47 o-Xylene ND 0.040 0.0050 mg/Kg 11/01/24 07:30 11/01/24 10:47 sec-Butylbenzene ND 0.040 0.0086 mg/Kg 11/01/24 07:30 11/01/24 10:47

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QC Sample Results

Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-476539/5-A

Matrix: Solid

Analysis Batch: 476544

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 476539

	IVID	IVID							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		0.040	0.013	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
t-Butylbenzene	ND		0.040	0.0077	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
Tetrachloroethene	ND		0.040	0.0053	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
Toluene	ND		0.060	0.014	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
trans-1,2-Dichloroethene	ND		0.060	0.015	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
trans-1,3-Dichloropropene	ND		0.040	0.0070	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
Trichloroethene	ND		0.040	0.010	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
Trichlorofluoromethane	ND		0.080	0.026	mg/Kg		11/01/24 07:30	11/01/24 10:47	1
Vinyl chloride	ND		0.10	0.019	mg/Kg		11/01/24 07:30	11/01/24 10:47	1

MB MB

Surrogate	%Recovery Qualifi	ier Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98	80 - 121	11/01/24 07:30	11/01/24 10:47	1
4-Bromofluorobenzene (Surr)	100	80 - 120	11/01/24 07:30	11/01/24 10:47	1
Dibromofluoromethane (Surr)	103	80 - 120	11/01/24 07:30	11/01/24 10:47	1
Toluene-d8 (Surr)	107	80 - 120	11/01/24 07:30	11/01/24 10:47	1

Lab Sample ID: LCS 580-476539/1-A

Matrix: Solid

Analysis Batch: 476544

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 476539

Analysis Datch. 470344	Spike	LCS	LCS			%Rec
Analyte	Added	Result	Qualifier Un	it [O %Rec	Limits
1,1,1,2-Tetrachloroethane	0.800	0.860	mg	/Kg -	108	79 - 128
1,1,1-Trichloroethane	0.800	0.736	mg	/Kg	92	78 ₋ 135
1,1,2,2-Tetrachloroethane	0.800	0.885	mg	/Kg	111	77 - 122
1,1,2-Trichloroethane	0.800	0.884	mg	/Kg	111	80 - 123
1,1-Dichloroethane	0.800	0.770	mg	/Kg	96	78 - 126
1,1-Dichloroethene	0.800	0.810	mg	/Kg	101	73 - 134
1,1-Dichloropropene	0.800	0.786	mg	/Kg	98	76 - 140
1,2,3-Trichlorobenzene	0.800	0.808	mg	/Kg	101	58 - 146
1,2,3-Trichloropropane	0.800	0.860	mg	/Kg	107	77 - 127
1,2,4-Trichlorobenzene	0.800	0.829	mg	/Kg	104	74 - 131
1,2,4-Trimethylbenzene	0.800	0.848	mg	/Kg	106	73 - 138
1,2-Dibromo-3-Chloropropane	0.800	0.785	mg	/Kg	98	64 - 129
1,2-Dibromoethane	0.800	0.847	mg	/Kg	106	77 - 123
1,2-Dichlorobenzene	0.800	0.875	mg	/Kg	109	78 ₋ 126
1,2-Dichloroethane	0.800	0.737	mg	/Kg	92	76 - 124
1,2-Dichloropropane	0.800	0.784	mg	/Kg	98	73 - 130
1,3,5-Trimethylbenzene	0.800	0.839	mg	/Kg	105	72 - 134
1,3-Dichlorobenzene	0.800	0.786	mg	/Kg	98	78 - 132
1,3-Dichloropropane	0.800	0.810	mg	/Kg	101	80 - 120
1,4-Dichlorobenzene	0.800	0.863	mg	/Kg	108	77 - 123
2,2-Dichloropropane	0.800	0.749	mg	/Kg	94	75 - 134
2-Chlorotoluene	0.800	0.817	mg	/Kg	102	77 - 134
4-Chlorotoluene	0.800	0.787	mg	/Kg	98	71 - 137
4-Isopropyltoluene	0.800	0.873	mg	/Kg	109	71 - 142
Benzene	0.800	0.833	mg	/Kg	104	79 - 135
Bromobenzene	0.800	0.839	mg	/Kg	105	78 ₋ 126
Bromochloromethane	0.800	0.807	mg	/Kg	101	76 - 131

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Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-476539/1-A

Matrix: Solid

cis-1,2-Dichloroethene

cis-1,3-Dichloropropene

Dibromochloromethane

trans-1,2-Dichloroethene

Analysis Batch: 476544

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 476539

LCS LCS Spike %Rec Added Result Qualifier Unit %Rec Limits Bromodichloromethane 0.800 0.797 mg/Kg 100 78 - 125 **Bromoform** 0.800 0.834 mg/Kg 104 71 - 130 Carbon tetrachloride 0.800 0.778 mg/Kg 97 76 - 140 Chlorobenzene 0.800 0.880 mg/Kg 110 80 - 125 Chloroform 0.800 0.743 93 74 - 133 mg/Kg Chloromethane 0.800

0.768 mg/Kg 96 52 - 142 0.775 mg/Kg 97 80 - 125 102 0.815 mg/Kg 80 - 122 0.889 mg/Kg 111 75 - 125

mg/Kg

Dibromomethane 0.800 101 72 - 130 0.810 mg/Kg 0.800 102 Ethylbenzene 0.812 mg/Kg 80 - 135 0.800 109 Hexachlorobutadiene 0.870 65 - 145 mg/Kg Isopropylbenzene 0.800 0.938 117 80 - 131 mg/Kg 0.800 0.799 71 - 126 Methyl tert-butyl ether mg/Kg 100

0.800

0.800

0.800

Methylene Chloride 0.800 0.839 mg/Kg 105 56 - 140 0.800 0.803 100 m-Xylene & p-Xylene mg/Kg 80 - 132 Naphthalene 0.800 0.835 104 56 - 145 mg/Kg n-Butylbenzene 0.800 0.820 103 69 - 143 mg/Kg 105 N-Propylbenzene 0.800 0.839 mg/Kg 78 - 133 o-Xylene 0.800 0.845 106 80 - 132 mg/Kg sec-Butylbenzene 0.800 0.831 mg/Kg 104 71 - 143

Styrene 0.800 0.890 mg/Kg 111 79 - 129t-Butylbenzene 105 0.800 0.840 mg/Kg 72 - 144 Tetrachloroethene 0.800 0.791 99 75 - 141 mg/Kg 0.800 0.855 107 Toluene mg/Kg 75 - 125

0.800

0.767

trans-1,3-Dichloropropene 0.800 0.894 112 80 - 121 mg/Kg Trichloroethene 0.800 0.765 mg/Kg 96 80 - 134 Trichlorofluoromethane 0.800 0.763 mg/Kg 95 71 - 150

Vinyl chloride 0.800 0.794 mg/Kg 99 62 - 144LCS LCS

Surrogate %Recovery Qualifier Limits 1,2-Dichloroethane-d4 (Surr) 80 - 121 95 4-Bromofluorobenzene (Surr) 98 80 - 120 Dibromofluoromethane (Surr) 101 80 - 120 Toluene-d8 (Surr) 103 80 - 120

Lab Sample ID: LCSD 580-476539/2-A

Matrix: Solid

Analysis Batch: 476544

Client Sample ID: Lab Control Sample Dup

96

77 - 134

Prep Type: Total/NA **Prep Batch: 476539**

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1,1,2-Tetrachloroethane	0.800	0.904		mg/Kg		113	79 - 128	5	20
1,1,1-Trichloroethane	0.800	0.767		mg/Kg		96	78 - 135	4	20
1,1,2,2-Tetrachloroethane	0.800	0.911		mg/Kg		114	77 - 122	3	20
1,1,2-Trichloroethane	0.800	0.934		mg/Kg		117	80 - 123	5	20
1,1-Dichloroethane	0.800	0.798		mg/Kg		100	78 - 126	3	20
1,1-Dichloroethene	0.800	0.852		mg/Kg		106	73 - 134	5	25

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QC Sample Results

Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-476539/2-A

Matrix: Solid

Analysis Batch: 476544

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA Prep Batch: 476539

Analysis Batch: 476544							Prep Ba	atch: 4	
Amelyda	Spike Added	_	LCSD Qualifier	l lmi4	_	%Rec	%Rec Limits	RPD	RPD Limit
Analyte 1,1-Dichloropropene		0.817	Qualifier	Unit mg/Kg	_ D	102	76 ₋ 140	4	20
1,2,3-Trichlorobenzene	0.800	0.953		mg/Kg		119	58 - 146	16	28
1,2,3-Trichloropropane	0.800	0.866		mg/Kg		108	77 ₋ 127	10	20
1,2,4-Trichlorobenzene	0.800	0.933		mg/Kg		117	74 - 131	12	26
1,2,4-Trimethylbenzene	0.800	0.933				109	73 - 138	3	22
1,2-Dibromo-3-Chloropropane	0.800	0.834		mg/Kg		109	64 ₋ 129	5 6	40
1,2-Dibromoethane	0.800	0.897		mg/Kg		112	77 - 123	6	20
1,2-Dichlorobenzene	0.800	0.897		mg/Kg		115	77 - 123 78 - 126	5	20
	0.800	0.922		mg/Kg		97	76 - 120 76 - 124	5 5	20
1,2-Dichloroethane				mg/Kg					
1,2-Dichloropropane	0.800	0.814		mg/Kg		102	73 ₋ 130	4	20
1,3,5-Trimethylbenzene	0.800	0.872		mg/Kg		109	72 - 134	4	24
1,3-Dichlorobenzene	0.800	0.808		mg/Kg		101	78 - 132	3	20
1,3-Dichloropropane	0.800	0.845		mg/Kg		106	80 - 120	4	20
1,4-Dichlorobenzene	0.800	0.897		mg/Kg		112	77 ₋ 123	4	20
2,2-Dichloropropane	0.800	0.763		mg/Kg		95	75 - 134	2	20
2-Chlorotoluene	0.800	0.857		mg/Kg		107	77 - 134	5	21
4-Chlorotoluene	0.800	0.813		mg/Kg		102	71 - 137	3	21
4-Isopropyltoluene	0.800	0.920		mg/Kg		115	71 - 142	5	29
Benzene	0.800	0.868		mg/Kg		108	79 - 135	4	20
Bromobenzene	0.800	0.868		mg/Kg		109	78 - 126	3	20
Bromochloromethane	0.800	0.841		mg/Kg		105	76 - 131	4	20
Bromodichloromethane	0.800	0.834		mg/Kg		104	78 - 125	4	20
Bromoform	0.800	0.866		mg/Kg		108	71 - 130	4	20
Carbon tetrachloride	0.800	0.823		mg/Kg		103	76 - 140	6	20
Chlorobenzene	0.800	0.913		mg/Kg		114	80 - 125	4	20
Chloroform	0.800	0.778		mg/Kg		97	74 - 133	5	20
Chloromethane	0.800	0.814		mg/Kg		102	52 - 142	6	40
cis-1,2-Dichloroethene	0.800	0.812		mg/Kg		102	80 - 125	5	20
cis-1,3-Dichloropropene	0.800	0.839		mg/Kg		105	80 - 122	3	20
Dibromochloromethane	0.800	0.930		mg/Kg		116	75 - 125	5	20
Dibromomethane	0.800	0.830		mg/Kg		104	72 - 130	2	40
Ethylbenzene	0.800	0.847		mg/Kg		106	80 - 135	4	20
Hexachlorobutadiene	0.800	0.930		mg/Kg		116	65 - 145	7	36
Isopropylbenzene	0.800	0.997		mg/Kg		125	80 - 131	6	20
Methyl tert-butyl ether	0.800	0.832		mg/Kg		104	71 - 126	4	20
Methylene Chloride	0.800	0.864		mg/Kg		108	56 - 140	3	20
m-Xylene & p-Xylene	0.800	0.838		mg/Kg		105	80 - 132	4	20
Naphthalene	0.800	0.920		mg/Kg		115	56 - 145	10	25
n-Butylbenzene	0.800	0.878		mg/Kg		110	69 - 143	7	31
N-Propylbenzene	0.800	0.849		mg/Kg		106	78 - 133	1	24
o-Xylene	0.800	0.886		mg/Kg		111	80 - 132	5	20
sec-Butylbenzene	0.800	0.872		mg/Kg		109	71 - 143	5	29
Styrene	0.800	0.928		mg/Kg		116	79 - 129	4	20
t-Butylbenzene	0.800	0.875		mg/Kg		109	72 - 144	4	27
Tetrachloroethene	0.800	0.823		mg/Kg		103	75 - 141	4	20
Toluene	0.800	0.900		mg/Kg		112	75 - 125	5	20
trans-1,2-Dichloroethene	0.800	0.809		mg/Kg		101	77 - 134	5	20
trans-1,3-Dichloropropene	0.800	0.928		mg/Kg		116	80 - 121	4	20
Trichloroethene	0.800	0.796		mg/Kg		99	80 - 134	4	20

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Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-476539/2-A

Matrix: Solid

Analysis Batch: 476544

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 476539

LCSD LCSD Spike %Rec **RPD** Added Result Qualifier Unit D %Rec Limits RPD Limit Trichlorofluoromethane 0.800 0.796 mg/Kg 100 71 - 150 4 30 Vinyl chloride 0.800 20 0.874 mg/Kg 109 62 - 144 10

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95	-	80 - 121
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	103		80 - 120

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 476540

Lab Sample ID: MB 580-476540/3-A

Matrix: Solid

Analysis Batch: 476546

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		0.10	0.038	mg/Kg		11/01/24 08:13	11/01/24 12:41	1
Chlorobenzene	ND		0.040	0.0048	mg/Kg		11/01/24 08:13	11/01/24 12:41	1
Chloroethane	ND		0.080	0.021	mg/Kg		11/01/24 08:13	11/01/24 12:41	1
Dichlorodifluoromethane	ND		0.25	0.046	mg/Kg		11/01/24 08:13	11/01/24 12:41	1
Hexachlorobutadiene	ND		0.10	0.024	mg/Kg		11/01/24 08:13	11/01/24 12:41	1
	Bromomethane Chlorobenzene Chloroethane Dichlorodifluoromethane	Analyte Result Bromomethane ND Chlorobenzene ND Chloroethane ND Dichlorodifluoromethane ND	Bromomethane ND Chlorobenzene ND Chloroethane ND Dichlorodifluoromethane ND	Analyte Result Qualifier RL Bromomethane ND 0.10 Chlorobenzene ND 0.040 Chloroethane ND 0.080 Dichlorodifluoromethane ND 0.25	Analyte Result Dualifier Qualifier RL RL RL RL RL RL RL RL RL RL RL RL RL R	Analyte Result Dualifier RL Qualifier RL RL RL RL RL RL RL RL RL RL RL RL RL R	Analyte Result Bromomethane Qualifier RL ND MDL Unit Unit Meg/Kg D Chlorobenzene ND 0.040 0.048 mg/Kg Chloroethane ND 0.080 0.021 mg/Kg Dichlorodifluoromethane ND 0.25 0.046 mg/Kg	Analyte Result Dulifier RL Qualifier RL RL RL RL RL RL RL RL RL RL RL RL RL R	Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Bromomethane ND 0.10 0.038 mg/Kg 11/01/24 08:13 11/01/24 12:41 Chlorobenzene ND 0.040 0.004 mg/Kg 11/01/24 08:13 11/01/24 12:41 Chloroethane ND 0.080 0.021 mg/Kg 11/01/24 08:13 11/01/24 12:41 Dichlorodifluoromethane ND 0.25 0.046 mg/Kg 11/01/24 08:13 11/01/24 12:41

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		80 - 121	11/01/24 08:13	11/01/24 12:41	1
4-Bromofluorobenzene (Surr)	105		80 - 120	11/01/24 08:13	11/01/24 12:41	1
Dibromofluoromethane (Surr)	117		80 - 120	11/01/24 08:13	11/01/24 12:41	1
Toluene-d8 (Surr)	100		80 - 120	11/01/24 08:13	11/01/24 12:41	1

Lab Sample ID: LCS 580-476540/1-A

Matrix: Solid

Analysis Batch: 476546

Client Sample ID: Lab Control Sample Prep Type: Total/NA

Prep Batch: 476540

•	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Bromomethane	0.800	0.872		mg/Kg		109	55 - 150	
Chlorobenzene	0.800	0.720		mg/Kg		90	80 - 125	
Chloroethane	0.800	1.01		mg/Kg		126	26 - 150	
Dichlorodifluoromethane	0.800	0.765		mg/Kg		96	33 - 150	
Hexachlorobutadiene	0.800	0.689		mg/Kg		86	65 - 145	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	103		80 - 121
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	97		80 - 120

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Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-476540/2-A **Client Sample ID: Lab Control Sample Dup**

Matrix: Solid

Client: ERM-West

Analysis Batch: 476546

Prep Type: Total/NA **Prep Batch: 476540**

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Bromomethane	0.800	1.01		mg/Kg		127	55 - 150	15	26
Chlorobenzene	0.800	0.784		mg/Kg		98	80 - 125	9	20
Chloroethane	0.800	1.05		mg/Kg		131	26 - 150	4	40
Dichlorodifluoromethane	0.800	0.845		mg/Kg		106	33 - 150	10	31
Hexachlorobutadiene	0.800	0.759		mg/Kg		95	65 - 145	10	36

LCSD LCSD

Surrogate %Recovery Qualifier Limits 1,2-Dichloroethane-d4 (Surr) 80 - 121 110 104 80 - 120 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) 107 80 - 120 100 80 - 120 Toluene-d8 (Surr)

Client Sample ID: Method Blank Lab Sample ID: MB 580-476692/3-A **Matrix: Solid** Prep Type: Total/NA

Analysis Batch: 476696 **Prep Batch: 476692**

MB MB Analyte Result Qualifier RL **MDL** Unit D Prepared Analyzed Dil Fac 0.040 11/04/24 08:44 11/04/24 10:12 Chlorobenzene ND 0.0048 mg/Kg

MB MB Qualifier Limits Surrogate %Recovery Prepared Analyzed Dil Fac 1,2-Dichloroethane-d4 (Surr) 97 80 - 121 11/04/24 08:44 11/04/24 10:12 4-Bromofluorobenzene (Surr) 98 80 - 120 11/04/24 08:44 11/04/24 10:12 Dibromofluoromethane (Surr) 104 80 - 120 11/04/24 08:44 11/04/24 10:12 Toluene-d8 (Surr) 106 80 - 120 11/04/24 08:44 11/04/24 10:12

Lab Sample ID: LCS 580-476692/1-A **Client Sample ID: Lab Control Sample Matrix: Solid** Prep Type: Total/NA

Analysis Batch: 476696

Spike LCS LCS %Rec Added Limits Analyte Result Qualifier Unit %Rec Chlorobenzene 0.800 0.847 mg/Kg 106 80 - 125

LCS LCS Surrogate %Recovery Qualifier Limits 1,2-Dichloroethane-d4 (Surr) 80 - 121 97 4-Bromofluorobenzene (Surr) 95 80 - 120 Dibromofluoromethane (Surr) 101 80 - 120 Toluene-d8 (Surr) 105 80 - 120

Lab Sample ID: LCSD 580-476692/2-A Client Sample ID: Lab Control Sample Dup **Matrix: Solid** Prep Type: Total/NA

Analysis Batch: 476696

Prep Batch: 476692 LCSD LCSD %Rec **RPD** Spike Analyte Added Result Qualifier Limits Unit %Rec **RPD** Limit Chlorobenzene 0.800 0.852 106 80 - 125 mg/Kg

LCSD LCSD %Recovery Qualifier Limits Surrogate 1,2-Dichloroethane-d4 (Surr) 80 - 121 94

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Prep Batch: 476692

11/7/2024

QC Sample Results

Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-476692/2-A

Matrix: Solid

Analysis Batch: 476696

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 476692

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	103		80 - 120

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Client: ERM-West

Client Sample ID: TB-01-SO-20241025

Date Collected: 10/25/24 00:01 Date Received: 10/29/24 13:50 Lab Sample ID: 580-145241-1

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		476540	BYM	EET SEA	11/01/24 08:13
Total/NA	Analysis	8260D	RA	1	476546	BYM	EET SEA	11/01/24 13:01
Total/NA	Prep	5035			476539	BYM	EET SEA	11/01/24 09:52
Total/NA	Analysis	8260D		1	476544	BYM	EET SEA	11/01/24 16:21

Client Sample ID: PDI-58-SO-35.75-20241025

Date Collected: 10/25/24 14:05

Date Received: 10/29/24 13:50

Lab Sample ID: 580-145241-2

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476814	SCS	EET SEA	11/04/24 17:54

Client Sample ID: PDI-58-SO-35.75-20241025

Date Collected: 10/25/24 14:05

Date Received: 10/29/24 13:50

Lab Sample	e ID: 580-145241-2
_	Matrix: Solid
	Percent Solids: 71.1

Lab Sample ID: 580-145241-3

_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		476540	BYM	EET SEA	11/01/24 08:13
Total/NA	Analysis	8260D	RA	1	476546	BYM	EET SEA	11/01/24 13:22
Total/NA	Prep	5035			476539	BYM	EET SEA	11/01/24 09:52
Total/NA	Analysis	8260D		1	476544	BYM	EET SEA	11/01/24 16:42
Total/NA	Prep	5035	DL		476692	BYM	EET SEA	11/04/24 08:44
Total/NA	Analysis	8260D	DL	1	476696	BYM	EET SEA	11/04/24 17:56

Date Received: 10/29/24 13:50

Client Sample ID: PDI-58-SO-49.9-20241025	Lab Sample ID: 580-145241-3
Date Collected: 10/25/24 14:10	Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476814	SCS	EET SEA	11/04/24 17:54

Client Sample ID: PDI-58-SO-49.9-20241025

Date Collected: 10/25/24 14:10

Date Received: 10/29/24 13:50

_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		476540	BYM	EET SEA	11/01/24 08:13
Total/NA	Analysis	8260D	RA	1	476546	BYM	EET SEA	11/01/24 13:43
Total/NA	Prep	5035			476539	BYM	EET SEA	11/01/24 09:52
Total/NA	Analysis	8260D		1	476544	BYM	EET SEA	11/01/24 17:02

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Matrix: Solid

Percent Solids: 72.0

Project/Site: Arkema PDI Sampling

Client: ERM-West

Client Sample ID: PDI-37a-SO-28.5-20241028

Date Collected: 10/28/24 14:10

Lab Sample ID: 580-145241-4 **Matrix: Solid**

Date Received: 10/29/24 13:50

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476814	SCS	EET SEA	11/04/24 17:54

Client Sample ID: PDI-37a-SO-28.5-20241028

Lab Sample ID: 580-145241-4

Matrix: Solid

Date Collected: 10/28/24 14:10 Date Received: 10/29/24 13:50 Percent Solids: 76.3

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	DL		476540	BYM	EET SEA	11/01/24 08:13
Total/NA	Analysis	8260D	DL	1	476546	BYM	EET SEA	11/01/24 14:44
Total/NA	Prep	5035			476539	BYM	EET SEA	11/01/24 09:52
Total/NA	Analysis	8260D		1	476544	BYM	EET SEA	11/01/24 18:05
Total/NA	Prep	5035	DL2		476692	BYM	EET SEA	11/04/24 08:44
Total/NA	Analysis	8260D	DL2	1	476696	BYM	EET SEA	11/04/24 18:17

Client Sample ID: PDI-37a-SO-49.9-20241028

Lab Sample ID: 580-145241-5

Matrix: Solid

Date Collected: 10/28/24 14:15 Date Received: 10/29/24 13:50

Date Collected: 10/28/24 14:15

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476814	SCS	EET SEA	11/04/24 17:54

Client Sample ID: PDI-37a-SO-49.9-20241028

Lab Sample ID: 580-145241-5

Matrix: Solid

Date Received: 10/29/24 13:50 Percent Solids: 78.1

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		476540	BYM	EET SEA	11/01/24 08:13
Total/NA	Analysis	8260D	RA	1	476546	BYM	EET SEA	11/01/24 14:03
Total/NA	Prep	5035			476539	BYM	EET SEA	11/01/24 09:52
Total/NA	Analysis	8260D		1	476544	BYM	EET SEA	11/01/24 17:24
Total/NA	Prep	5035	DL		476692	BYM	EET SEA	11/04/24 08:44
Total/NA	Analysis	8260D	DL	1	476696	BYM	EET SEA	11/04/24 17:36

Client Sample ID: PDI-44a-SO-36.8-20241028

Lab Sample ID: 580-145241-6 Date Collected: 10/28/24 16:45

Matrix: Solid

Date Received: 10/29/24 13:50

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	476814	SCS	EET SEA	11/04/24 17:54

Lab Chronicle

Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-44a-SO-36.8-20241028

Lab Sample ID: 580-145241-6 Date Collected: 10/28/24 16:45

Matrix: Solid Percent Solids: 73.1

Date Received: 10/29/24 13:50

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	DL		476540	BYM	EET SEA	11/01/24 08:13
Total/NA	Analysis	8260D	DL	1	476546	BYM	EET SEA	11/01/24 15:05
Total/NA	Prep	5035			476539	BYM	EET SEA	11/01/24 09:52
Total/NA	Analysis	8260D		1	476544	BYM	EET SEA	11/01/24 18:26
Total/NA	Prep	5035	DL2		476692	BYM	EET SEA	11/04/24 08:44
Total/NA	Analysis	8260D	DL2	1	476696	BYM	EET SEA	11/04/24 18:38

Client Sample ID: PDI-44a-SO-49.9-20241029

Lab Sample ID: 580-145241-7 Date Collected: 10/29/24 09:10 **Matrix: Solid**

Date Received: 10/29/24 13:50

Batch Batch Dilution Batch Prepared Method or Analyzed **Prep Type** Type Run **Factor** Number Analyst Lab 11/04/24 17:54 Total/NA Analysis 2540G 476814 SCS EET SEA

Client Sample ID: PDI-44a-SO-49.9-20241029 Lab Sample ID: 580-145241-7 Date Collected: 10/29/24 09:10 **Matrix: Solid** Date Received: 10/29/24 13:50 Percent Solids: 74.6

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035	RA		476540	BYM	EET SEA	11/01/24 08:13
Total/NA	Analysis	8260D	RA	1	476546	BYM	EET SEA	11/01/24 14:24
Total/NA	Prep	5035			476539	BYM	EET SEA	11/01/24 09:52
Total/NA	Analysis	8260D		1	476544	BYM	EET SEA	11/01/24 17:44

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

11/7/2024

Accreditation/Certification Summary

Client: ERM-West Job ID: 580-145241-1

Project/Site: Arkema PDI Sampling

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Progra	am	Identification Number	Expiration Date
Oregon	NELAF)	4167	07-07-25
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Sample Summary

Client: ERM-West

Job ID: 580-145241-1 Project/Site: Arkema PDI Sampling

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-145241-1	TB-01-SO-20241025	Solid	10/25/24 00:01	10/29/24 13:50
580-145241-2	PDI-58-SO-35.75-20241025	Solid	10/25/24 14:05	10/29/24 13:50
580-145241-3	PDI-58-SO-49.9-20241025	Solid	10/25/24 14:10	10/29/24 13:50
580-145241-4	PDI-37a-SO-28.5-20241028	Solid	10/28/24 14:10	10/29/24 13:50
580-145241-5	PDI-37a-SO-49.9-20241028	Solid	10/28/24 14:15	10/29/24 13:50
580-145241-6	PDI-44a-SO-36.8-20241028	Solid	10/28/24 16:45	10/29/24 13:50
580-145241-7	PDI-44a-SO-49.9-20241029	Solid	10/29/24 09:10	10/29/24 13:50

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Page of 1	State of Origin:	et.eurofinsus.com	E-Mail: Sheri.Cruz@			pyoue:	Slient Information
Page:	State of Origin:	•	Cruz, Sheri L	1175	1300	Sampler: M.C.	
COC No:	Camier Tracking No(s):		:Mq dgJ			,	acoma, WA 98424 hone (253) 922-2310
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Robert Remondent

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Chain of Custody Record

Page 32 of 34

Eurofins Seattle

11/7/2024

Phone (253) 922-2310		70 de 11.		Carrier Tracking No(s):	No(s): COC No:	No:
nt Information	Sampler Michael	Scoll Cruz, S	Cruz, Sheri L	oh oh oh		580-62781-19269.12
Client Contact: Avery Sopliate	Phone:		E-Mall: Sheri.Cruz@et.eurofinsus.com	State of Origin		Page of
Company: ERM-West		PWSID:	Ana	Analysis Requested	300	
Address: 1050 SW 6th Avenue Suite 1650	Due Date Requested:				M 71 7	F - MeOH E - NaHSO4
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Phone:	PO#: 0732436.301		он			
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	Sample	Sample Matrix Type (w-mater, B-solid, C=Comp. Organization	0D - Volatil 0D - Volatil 0D - Volatil		tal Numbe	
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dentification	KI .		Sample Disposal (A fee may be		assessed if samples are retained longer than 1 month)	onger than 1 month)
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Empty Kit Relinquished by:	Date:		Time:	/ Method o	Method of Shipment:	
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Custody Seat No.: Custody Seat No.:			Cgoler Temperature(s) °C	Cardonar Bamarka		

Client: ERM-West Job Number: 580-145241-1

Login Number: 145241 List Source: Eurofins Seattle

List Number: 1

Creator: Pasion, Christopher 1

ordator: r doron, omnotophor r		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
s the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Avery Soplata ERM-West 1050 SW 6th Avenue Suite 1650 Portland, Oregon 97204

Generated 11/20/2024 3:34:29 PM Revision 1

JOB DESCRIPTION

Arkema PDI Sampling

JOB NUMBER

580-145395-1

Eurofins Seattle 5755 8th Street East Tacoma WA 98424



Eurofins Seattle

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization

Generated 11/20/2024 3:34:29 PM Revision 1

Authorized for release by Sheri Cruz, Project Manager I Sheri.Cruz@et.eurofinsus.com (253)922-2310

Shuid ony

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Client: ERM-West

Project/Site: Arkema PDI Sampling

Laboratory Job ID: 580-145395-1

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Case Narrative

Client: ERM-West Job ID: 580-145395-1

Project: Arkema PDI Sampling

Job ID: 580-145395-1 Eurofins Seattle

Job Narrative 580-145395-1

Revised report 11/20/24 to change sample IDs PDI-59-SO-44.9-20241029 should be PDI-59-SO-49.9-20241029. For all PDI-40a samples (including MS/MSDs), IDs should say PDI-40a instead of PDI-40A.

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these
 situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise
 specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed
 unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 11/1/2024 12:15 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.2°C.

GC/MS VOA

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-476722 recovered outside acceptance criteria, low biased, for 1,4-Dichlorobenzene, Bromoform and Methylene Chloride. A reporting limit (RL) standard was analyzed, and the target analytes are detected. Since the associated samples were non-detect for the analyte(s), the data are reported.

Method 8260D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 580-476708 and analytical batch 580-476722 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

Method 8260D: The matrix spike / matrix spike duplicate / sample duplicate (MS/MSD/DUP) precision for preparation batch 580-476708 and analytical batch 580-476722 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 8260D: The method blank for preparation batch analytical batch 580-477337 contained Methylene Chloride above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, reextraction and/or re-analysis of samples were not performed.

Method 8260D: The following samples were provided to the laboratory with a significantly different initial weight than that required by the reference method: PDI-60-SO-44.9-20241029 (580-145395-5), DUP-01-SQ-20241030 (580-145395-6), PDI-40A-SO-54.9-20241030 (580-145395-8) and PDI-40A-SO-54.9-20241030 (580-145395-8[MSD]). Deviations in the weight by more than 20% may affect reporting limits and potentially method performance. The method specifies 10g. The amount provided was above this range.

Method 8260D: The following samples were diluted to bring the concentration of target analytes within the calibration range: PDI-59-SO-33.7-20241029 (580-145395-1), PDI-60-SO-32.7-20241029 (580-145395-4) and PDI-40A-SO-38.4-20241030 (580-145395-7). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

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Definitions/Glossary

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Qualifiers

GC/MS VOA

Qualifier Qualifier Description

F1 MS and/or MSD recovery exceeds control limits.

J Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation These commonly used abbreviations may or may not be present in this report.

Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery
CFL Contains Free Liquid
CFU Colony Forming Unit
CNF Contains No Free Liquid

DER Duplicate Error Ratio (normalized absolute difference)

Dil Fac Dilution Factor

DL Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

EDL Estimated Detection Limit (Dioxin)

LOD Limit of Detection (DoD/DOE)

LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level"

MDA Minimum Detectable Activity (Radiochemistry)

MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit
ML Minimum Level (Dioxin)
MPN Most Probable Number
MQL Method Quantitation Limit

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive
QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

TNTC Too Numerous To Count

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Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-59-SO-33.7-20241029 Lab Sample ID: 580-145395-1

Date Collected: 10/29/24 13:40

Date Received: 11/01/24 12:15

Matrix: Solid
Percent Solids: 70.7

Method: SW846 8260D - Vola Analyte	_	Qualifier		L Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND .			B mg/Kg	— -	11/04/24 09:35	11/04/24 17:53	
I,1,1-Trichloroethane	ND	0	.062 0.007	2 mg/Kg	₽	11/04/24 09:35	11/04/24 17:53	
,1,2,2-Tetrachloroethane	ND	0	.031 0.01	2 mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	
,1,2-Trichloroethane	ND	0	.031 0.01	2 mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	
,1-Dichloroethane	ND	0	.062 0.01	4 mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	
,1-Dichloroethene	ND	0	.062 0.01	9 mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	
,1-Dichloropropene	ND	0		2 mg/Kg		11/04/24 09:35	11/04/24 17:53	
,2,3-Trichlorobenzene	ND		0.12 0.06	2 mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	
,2,3-Trichloropropane	ND	0		8 mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	
,2,4-Trichlorobenzene	ND			6 mg/Kg	∴		11/04/24 17:53	
,2,4-Trimethylbenzene	ND	0		1 mg/Kg	☆	11/04/24 09:35	11/04/24 17:53	
,2-Dibromo-3-Chloropropane	ND			4 mg/Kg	☆		11/04/24 17:53	
,2-Dibromoethane	ND	0		9 mg/Kg	∴		11/04/24 17:53	
,2-Dichlorobenzene	0.080			4 mg/Kg	☆	11/04/24 09:35	11/04/24 17:53	
,2-Dichloroethane	ND			6 mg/Kg		11/04/24 09:35	11/04/24 17:53	
,2-Dichloropropane	ND			0 mg/Kg		11/04/24 09:35	11/04/24 17:53	
,3,5-Trimethylbenzene	ND			2 mg/Kg	☆	11/04/24 09:35	11/04/24 17:53	
,3-Dichlorobenzene	ND		.093 0.02		☆	11/04/24 09:35	11/04/24 17:53	
,3-Dichloropropane	ND			7 mg/Kg		11/04/24 09:35	11/04/24 17:53	
2-Dichloropropane	ND			9 mg/Kg	~ ☆	11/04/24 09:35	11/04/24 17:53	
-Chlorotoluene	ND			4 mg/Kg	☆	11/04/24 09:35	11/04/24 17:53	
Chlorotoluene	ND			5 mg/Kg		11/04/24 09:35	11/04/24 17:53	
Isopropyltoluene	ND ND			6 mg/Kg	☆	11/04/24 09:35	11/04/24 17:53	
enzene	ND ND			9 mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	
romobenzene	ND			5 mg/Kg 5 mg/Kg			11/04/24 17:53	
romochloromethane	ND ND			6 mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	
romodichloromethane	ND ND			6 mg/Kg	₩ ₩		11/04/24 17:53	
romoform	ND			0 mg/Kg			11/04/24 17:53	
romomethane	ND ND			9 mg/Kg	*	11/04/24 09:35	11/04/24 17:53	
arbon tetrachloride	ND ND			8 mg/Kg	‡ ‡	11/04/24 09:35	11/04/24 17:53	
hloroethane	ND			3 mg/Kg			11/04/24 17:53	
					*	11/04/24 09:35	11/04/24 17:53	
hloroform hloromethane		_		5 mg/Kg	*			
	ND	<u>.</u>		6 mg/Kg		11/04/24 09:35	11/04/24 17:53	
is-1,2-Dichloroethene		_		0 mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	
s-1,3-Dichloropropene	ND			2 mg/Kg	₩		11/04/24 17:53	
ibromochloromethane	ND			6 mg/Kg	.	11/04/24 09:35	11/04/24 17:53	
ibromomethane	ND			2 mg/Kg	₩		11/04/24 17:53	
ichlorodifluoromethane	ND			1 mg/Kg	☆		11/04/24 17:53	
thylbenzene	ND			4 mg/Kg	. .		11/04/24 17:53	
exachlorobutadiene 	ND			7 mg/Kg	₩		11/04/24 17:53	
opropylbenzene	ND			3 mg/Kg	☼		11/04/24 17:53	
lethyl tert-butyl ether	ND			3 mg/Kg	. .	11/04/24 09:35	11/04/24 17:53	
ethylene Chloride	ND			0 mg/Kg	≎		11/04/24 17:53	
-Xylene & p-Xylene	ND			1 mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	
aphthalene	0.18			1 mg/Kg		11/04/24 09:35	11/04/24 17:53	
-Butylbenzene	ND			9 mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	
-Propylbenzene	ND			3 mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	
-Xylene	ND	0		8 mg/Kg	₽	11/04/24 09:35	11/04/24 17:53	
sec-Butylbenzene	ND	0	.062 0.01	3 mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	

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Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-59-SO-33.7-20241029 Lab Sample ID: 580-145395-1

Date Collected: 10/29/24 13:40 **Matrix: Solid** Percent Solids: 70.7 Date Received: 11/01/24 12:15

Method: SW846 8260D - Vo Analyte	_	Qualifier	RL	•	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		0.062	0.020		— <u>-</u>	11/04/24 09:35	11/04/24 17:53	1
t-Butylbenzene	ND		0.062	0.012	mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	1
Tetrachloroethene	0.049	J	0.062	0.0082	mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	1
Toluene	ND		0.093	0.021	mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	1
trans-1,2-Dichloroethene	ND		0.093	0.023	mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	1
trans-1,3-Dichloropropene	ND		0.062	0.011	mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	1
Trichloroethene	ND		0.062	0.016	mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	1
Trichlorofluoromethane	ND		0.12	0.040	mg/Kg	₩	11/04/24 09:35	11/04/24 17:53	1
Vinyl chloride	ND		0.16	0.029	mg/Kg	₽	11/04/24 09:35	11/04/24 17:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		80 - 121				11/04/24 09:35	11/04/24 17:53	1
4-Bromofluorobenzene (Surr)	99		80 - 120				11/04/24 09:35	11/04/24 17:53	1
Dibromofluoromethane (Surr)	101		80 - 120				11/04/24 09:35	11/04/24 17:53	1
Toluene-d8 (Surr)	96		80 - 120				11/04/24 09:35	11/04/24 17:53	1
	letile Ouwenie	0	da la constant	D.					
Method: SW846 8260D - Vo	_	•	•		1114	_	Burner	A I	D'' E
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		2.0	0.36	mg/Kg	≎	11/05/24 10:17	11/05/24 12:24	1
Chlorobenzene	140		1.3	0.40	mg/Kg	÷	11/05/24 10:17	11/05/24 12:24	

Chlorobenzene	140	1.3	0.16 mg/Kg	☼ 11/05/24 10:17	11/05/24 12:24	1
Surrogate	%Recovery Qualifier	Limits		Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107	80 - 121		11/05/24 10:17	11/05/24 12:24	1
4-Bromofluorobenzene (Surr)	98	80 - 120		11/05/24 10:17	11/05/24 12:24	1
Dibromofluoromethane (Surr)	110	80 - 120		11/05/24 10:17	11/05/24 12:24	1
Toluene-d8 (Surr)	100	80 - 120		11/05/24 10:17	11/05/24 12:24	1

General Chemistry	Bassili Ossilii	D.	D	114	_	B	A l	D". E
Analyte	Result Qualifier	RL	RL U	Init	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	70.7	0.1	0.1 %	, 0			11/06/24 12:44	1
Percent Moisture (SM22 2540G)	29.3	0.1	0.1 %	6			11/06/24 12:44	1

11/20/2024 (Rev. 1)

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-SO-20241029

Lab Sample ID: 580-145395-2 Date Collected: 10/29/24 13:15 **Matrix: Solid**

Date Received: 11/01/24 12:15

Analyte	Result Qualifier	RL _	MDL	Unit	D	Prepared	Analyzed	Dil F
1,1,1,2-Tetrachloroethane	ND	0.020	0.0050			11/04/24 09:35	11/04/24 16:10	
1,1,1-Trichloroethane	ND	0.040	0.0046			11/04/24 09:35	11/04/24 16:10	
1,1,2,2-Tetrachloroethane	ND	0.020	0.0076	mg/Kg		11/04/24 09:35	11/04/24 16:10	
1,1,2-Trichloroethane	ND	0.020	0.0074	mg/Kg		11/04/24 09:35	11/04/24 16:10	
1,1-Dichloroethane	ND	0.040	0.0092	mg/Kg		11/04/24 09:35	11/04/24 16:10	
1,1-Dichloroethene	ND	0.040	0.012	mg/Kg		11/04/24 09:35	11/04/24 16:10	
1,1-Dichloropropene	ND	0.040	0.0053	mg/Kg		11/04/24 09:35	11/04/24 16:10	
,2,3-Trichlorobenzene	ND	0.080	0.040	mg/Kg		11/04/24 09:35	11/04/24 16:10	
,2,3-Trichloropropane	ND	0.040	0.012	mg/Kg		11/04/24 09:35	11/04/24 16:10	
,2,4-Trichlorobenzene	ND	0.080	0.043	mg/Kg		11/04/24 09:35	11/04/24 16:10	
1,2,4-Trimethylbenzene	ND	0.040	0.014	mg/Kg		11/04/24 09:35	11/04/24 16:10	
I,2-Dibromo-3-Chloropropane	ND	0.060	0.015	mg/Kg		11/04/24 09:35	11/04/24 16:10	
1,2-Dibromoethane	ND	0.020	0.0038	mg/Kg		11/04/24 09:35	11/04/24 16:10	
1,2-Dichlorobenzene	ND	0.040	0.0087	mg/Kg		11/04/24 09:35	11/04/24 16:10	
,2-Dichloroethane	ND	0.020	0.0055			11/04/24 09:35	11/04/24 16:10	
,2-Dichloropropane	ND	0.020	0.0066	mg/Kg		11/04/24 09:35	11/04/24 16:10	
,3,5-Trimethylbenzene	ND	0.040	0.0076			11/04/24 09:35	11/04/24 16:10	
,3-Dichlorobenzene	ND	0.060		mg/Kg		11/04/24 09:35	11/04/24 16:10	
,3-Dichloropropane	ND	0.060	0.0056			11/04/24 09:35	11/04/24 16:10	
,4-Dichlorobenzene	ND	0.060		mg/Kg		11/04/24 09:35	11/04/24 16:10	
z,2-Dichloropropane	ND	0.040		mg/Kg		11/04/24 09:35	11/04/24 16:10	
-Chlorotoluene	ND	0.040	0.0088			11/04/24 09:35	11/04/24 16:10	
-Chlorotoluene	ND	0.040	0.0098			11/04/24 09:35	11/04/24 16:10	
-Isopropyltoluene	ND	0.040		mg/Kg		11/04/24 09:35	11/04/24 16:10	
Benzene	ND	0.020	0.0038			11/04/24 09:35	11/04/24 16:10	
Bromobenzene	ND	0.040	0.0042			11/04/24 09:35	11/04/24 16:10	
Bromochloromethane	ND	0.040	0.0062	0 0		11/04/24 09:35	11/04/24 16:10	
Bromodichloromethane	ND	0.040	0.0055			11/04/24 09:35	11/04/24 16:10	
Bromoform	ND	0.040	0.0045			11/04/24 09:35	11/04/24 16:10	
Bromomethane	ND	0.10		mg/Kg		11/04/24 09:35	11/04/24 16:10	
Carbon tetrachloride	ND	0.020	0.0044			11/04/24 09:35	11/04/24 16:10	
Chlorobenzene	0.032 J	0.020	0.0044			11/04/24 09:35	11/04/24 16:10	
Chloroethane	0.032 3 ND	0.040	0.021	mg/Kg		11/04/24 09:35	11/04/24 16:10	
Chloroform	ND	0.020	0.0042			11/04/24 09:35	11/04/24 16:10	
Chloromethane	ND	0.020		mg/Kg			11/04/24 16:10	
cis-1,2-Dichloroethene	ND	0.060		mg/Kg			11/04/24 16:10	
sis-1,3-Dichloropropene		0.020	0.0040			11/04/24 09:35	11/04/24 16:10	
Dibromochloromethane	ND ND	0.020				11/04/24 09:35	11/04/24 16:10	
Dibromomethane	ND ND	0.020	0.0049 0.0074				11/04/24 16:10	
Dichlorodifluoromethane				mg/Kg		11/04/24 09:35	11/04/24 16:10	
	ND ND	0.25				11/04/24 09:35		
Ethylbenzene	ND	0.040	0.0091			11/04/24 09:35	11/04/24 16:10	
Hexachlorobutadiene	ND	0.10		mg/Kg		11/04/24 09:35	11/04/24 16:10	
sopropylbenzene	ND	0.040	0.0086			11/04/24 09:35	11/04/24 16:10	
Methyl tert-butyl ether	ND	0.040	0.0060			11/04/24 09:35	11/04/24 16:10	
Methylene Chloride	ND ND	0.25		mg/Kg		11/04/24 09:35	11/04/24 16:10	
n-Xylene & p-Xylene	ND	0.040	0.0071			11/04/24 09:35	11/04/24 16:10	
Naphthalene	ND	0.15		mg/Kg		11/04/24 09:35	11/04/24 16:10	
n-Butylbenzene	ND	0.040	0.019	mg/Kg		11/04/24 09:35	11/04/24 16:10	

Eurofins Seattle

11/20/2024 (Rev. 1)

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-SO-20241029

Lab Sample ID: 580-145395-2 Date Collected: 10/29/24 13:15 **Matrix: Solid**

Date Received: 11/01/24 12:15

Method: SW846 8260D - Vo	olatile Organic	Compoun	ds by GC/MS	(Conti	nued)				
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		0.040	0.0050	mg/Kg		11/04/24 09:35	11/04/24 16:10	1
sec-Butylbenzene	ND		0.040	0.0086	mg/Kg		11/04/24 09:35	11/04/24 16:10	1
Styrene	ND		0.040	0.013	mg/Kg		11/04/24 09:35	11/04/24 16:10	1
t-Butylbenzene	ND		0.040	0.0077	mg/Kg		11/04/24 09:35	11/04/24 16:10	1
Tetrachloroethene	ND		0.040	0.0053	mg/Kg		11/04/24 09:35	11/04/24 16:10	1
Toluene	ND		0.060	0.014	mg/Kg		11/04/24 09:35	11/04/24 16:10	1
trans-1,2-Dichloroethene	ND		0.060	0.015	mg/Kg		11/04/24 09:35	11/04/24 16:10	1
trans-1,3-Dichloropropene	ND		0.040	0.0070	mg/Kg		11/04/24 09:35	11/04/24 16:10	1
Trichloroethene	ND		0.040	0.010	mg/Kg		11/04/24 09:35	11/04/24 16:10	1
Trichlorofluoromethane	ND		0.080	0.026	mg/Kg		11/04/24 09:35	11/04/24 16:10	1
Vinyl chloride	ND		0.10	0.019	mg/Kg		11/04/24 09:35	11/04/24 16:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	114		80 - 121				11/04/24 09:35	11/04/24 16:10	1
4-Bromofluorobenzene (Surr)	107		80 - 120				11/04/24 09:35	11/04/24 16:10	1
Dibromofluoromethane (Surr)	107		80 - 120				11/04/24 09:35	11/04/24 16:10	1
Toluene-d8 (Surr)	99		80 - 120				11/04/24 09:35	11/04/24 16:10	1

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PD-59-SO-49.9-20241029

Date Collected: 10/29/24 13:45

Matrix: Solid Date Received: 11/01/24 12:15 Percent Solids: 72.6

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 1,1,1,2-Tetrachloroethane ND 0.032 0.0079 mg/Kg 11/04/24 09:35 11/04/24 18:13 ND 1.1.1-Trichloroethane 0.063 0.0073 mg/Kg 11/04/24 09:35 11/04/24 18:13 1,1,2,2-Tetrachloroethane ND 0.032 0.012 mg/Kg 11/04/24 09:35 11/04/24 18:13 1,1,2-Trichloroethane ND 0.032 0.012 mg/Kg 11/04/24 09:35 11/04/24 18:13 0.063 0.015 mg/Kg 11/04/24 09:35 11/04/24 18:13 1.1-Dichloroethane ND 11/04/24 18:13 1,1-Dichloroethene ND 0.063 0.020 mg/Kg 11/04/24 09:35 1,1-Dichloropropene ND 0.063 0.0084 11/04/24 09:35 11/04/24 18:13 mg/Kg ND 0.063 11/04/24 09:35 11/04/24 18:13 1,2,3-Trichlorobenzene 0.13 mg/Kg 1,2,3-Trichloropropane ND 0.063 0.018 mg/Kg 11/04/24 09:35 11/04/24 18:13 0.068 1,2,4-Trichlorobenzene ND 0.13 mg/Kg 11/04/24 09:35 11/04/24 18:13 1,2,4-Trimethylbenzene ND 0.063 0.021 mg/Kg 11/04/24 09:35 11/04/24 18:13 mg/Kg 1.2-Dibromo-3-Chloropropane ND 0.095 0.024 11/04/24 09:35 11/04/24 18:13 1 1,2-Dibromoethane ND 0.032 0.0060 mg/Kg 11/04/24 09:35 11/04/24 18:13 1,2-Dichlorobenzene ND 0.063 0.014 mg/Kg 11/04/24 09:35 11/04/24 18:13 ND 0.032 0.0087 mg/Kg 11/04/24 09:35 11/04/24 18:13 1.2-Dichloroethane 0.010 1,2-Dichloropropane NΩ 0.032 mg/Kg 11/04/24 09:35 11/04/24 18:13 0.012 1,3,5-Trimethylbenzene ND 0.063 mg/Kg 11/04/24 09:35 11/04/24 18:13 1,3-Dichlorobenzene ND 0.095 0.021 mg/Kg 11/04/24 09:35 11/04/24 18:13 ND 0.095 0.0089 11/04/24 09:35 11/04/24 18:13 1,3-Dichloropropane mg/Kg 1,4-Dichlorobenzene ND 0.095 0.017 mg/Kg 11/04/24 09:35 11/04/24 18:13 2,2-Dichloropropane ND 0.063 0.019 mg/Kg 11/04/24 09:35 11/04/24 18:13 2-Chlorotoluene ND 0.063 0.014 mg/Kg 11/04/24 09:35 11/04/24 18:13 4-Chlorotoluene ND 11/04/24 09:35 11/04/24 18:13 0.063 0.016 mg/Kg 4-Isopropyltoluene ND 0.063 0.016 mg/Kg 11/04/24 09:35 11/04/24 18:13 Benzene ND 0.032 0.0060 mg/Kg 11/04/24 09:35 11/04/24 18:13 Bromobenzene ND 0.063 0.0067 mg/Kg 11/04/24 09:35 11/04/24 18:13 Bromochloromethane ND 0.063 0.0098 mg/Kg 11/04/24 09:35 11/04/24 18:13 Bromodichloromethane 0.0087 ND 0.063 mg/Kg 11/04/24 09:35 11/04/24 18:13 0.0071 Bromoform ND 0.063 mg/Kg 11/04/24 09:35 11/04/24 18:13 0.060 ND Bromomethane 0.16 mg/Kg 11/04/24 09:35 11/04/24 18:13 Carbon tetrachloride ND 0.032 0.0070 mg/Kg 11/04/24 09:35 11/04/24 18:13 0.063 0.0076 mg/Kg 11/04/24 09:35 11/04/24 18:13 Chlorobenzene 1.5 Chloroethane 0.033 11/04/24 09:35 11/04/24 18:13 ND 0.13 mg/Kg ND 11/04/24 09:35 11/04/24 18:13 Chloroform 0.032 0.0067 mg/Kg Chloromethane ND 0.095 0.016 mg/Kg 11/04/24 09:35 11/04/24 18:13 cis-1.2-Dichloroethene ND 0.095 0.020 11/04/24 09:35 11/04/24 18:13 mg/Kg cis-1,3-Dichloropropene ND 0.032 0.0063 mg/Kg 11/04/24 09:35 11/04/24 18:13 Dibromochloromethane ND 0.032 0.0078 mg/Kg 11/04/24 09:35 11/04/24 18:13 Dibromomethane ND 0.012 0.063 mg/Kg 11/04/24 09:35 11/04/24 18:13 Dichlorodifluoromethane ND 0.40 0.073 mg/Kg 11/04/24 09:35 11/04/24 18:13 Ethylbenzene ND 0.063 0.014 mg/Kg 11/04/24 09:35 11/04/24 18:13 Hexachlorobutadiene ND 0.16 0.038 mg/Kg 11/04/24 09:35 11/04/24 18:13 0.014 11/04/24 18:13 Isopropylbenzene ND 0.063 mg/Kg 11/04/24 09:35 Methyl tert-butyl ether 0.063 0.0095 11/04/24 09:35 11/04/24 18:13 ND mg/Kg ND Methylene Chloride 0.40 0.041 mg/Kg 11/04/24 09:35 11/04/24 18:13 m-Xylene & p-Xylene ND 0.063 0.011 mg/Kg 11/04/24 09:35 11/04/24 18:13 Naphthalene ND 0.24 0.062 mg/Kg 11/04/24 09:35 11/04/24 18:13 n-Butylbenzene ND 0.063 0.029 mg/Kg 11/04/24 09:35 11/04/24 18:13 0.024 mg/Kg N-Propylbenzene ND 0.063 11/04/24 09:35 11/04/24 18:13

Eurofins Seattle

Lab Sample ID: 580-145395-3

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PD-59-SO-49.9-20241029

Lab Sample ID: 580-145395-3 Date Collected: 10/29/24 13:45 **Matrix: Solid**

Date Received: 11/01/24 12:15 Percent Solids: 72.6

Method: SW846 8260D - Vola	tile Organic	Compound	ds by GC/MS	(Conti	inued)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
o-Xylene	ND		0.063	0.0079	mg/Kg	₩	11/04/24 09:35	11/04/24 18:13	
sec-Butylbenzene	ND		0.063	0.014	mg/Kg	☼	11/04/24 09:35	11/04/24 18:13	
Styrene	ND		0.063	0.020	mg/Kg	₩	11/04/24 09:35	11/04/24 18:13	
t-Butylbenzene	ND		0.063	0.012	mg/Kg	☼	11/04/24 09:35	11/04/24 18:13	
Tetrachloroethene	ND		0.063	0.0084	mg/Kg	☼	11/04/24 09:35	11/04/24 18:13	
Toluene	ND		0.095	0.021	mg/Kg	₩	11/04/24 09:35	11/04/24 18:13	
trans-1,2-Dichloroethene	ND		0.095	0.023	mg/Kg	☼	11/04/24 09:35	11/04/24 18:13	
trans-1,3-Dichloropropene	ND		0.063	0.011	mg/Kg	☆	11/04/24 09:35	11/04/24 18:13	
Trichloroethene	ND		0.063	0.016	mg/Kg	₩	11/04/24 09:35	11/04/24 18:13	
Trichlorofluoromethane	ND		0.13	0.041	mg/Kg	☆	11/04/24 09:35	11/04/24 18:13	
Vinyl chloride	ND		0.16	0.030	mg/Kg	≎	11/04/24 09:35	11/04/24 18:13	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
1,2-Dichloroethane-d4 (Surr)	111		80 - 121				11/04/24 09:35	11/04/24 18:13	
4-Bromofluorobenzene (Surr)	107		80 - 120				11/04/24 09:35	11/04/24 18:13	
Dibromofluoromethane (Surr)	105		80 - 120				11/04/24 09:35	11/04/24 18:13	
Toluene-d8 (Surr)	101		80 - 120				11/04/24 09:35	11/04/24 18:13	
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fa
Percent Solids (SM22 2540G)	72.6		0.1	0.1	%			11/06/24 12:44	
Percent Moisture (SM22 2540G)	27.4		0.1	0.1	%			11/06/24 12:44	

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-60-SO-32.7-20241029

Lab Sample ID: 580-145395-4 Date Collected: 10/29/24 16:20 **Matrix: Solid** Percent Solids: 69.9 Date Received: 11/01/24 12:15

Method: SW846 8260D - Vola Analyte	Result (•		Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND	·		mg/Kg	<u>¤</u>	11/04/24 09:35	11/04/24 19:15	
1,1,1-Trichloroethane	ND		71 0.081			11/04/24 09:35	11/04/24 19:15	
1,1,2,2-Tetrachloroethane	ND			mg/Kg	~ ☆	11/04/24 09:35	11/04/24 19:15	
1,1,2-Trichloroethane	ND			mg/Kg		11/04/24 09:35	11/04/24 19:15	
1,1-Dichloroethane	ND			mg/Kg mg/Kg		11/04/24 09:35	11/04/24 19:15	
1,1-Dichloroethene	ND			mg/Kg	₩ ₩	11/04/24 09:35	11/04/24 19:15	
1,1-Dichloropropene	ND			mg/Kg	.∵ ∵	11/04/24 09:35	11/04/24 19:15	
1, 1-Dictiloroproperie 1,2,3-Trichlorobenzene	ND		1.4 0.70		₩	11/04/24 09:35	11/04/24 19:15	
1,2,3-Trichloropropane	ND		71 0.20			11/04/24 09:35	11/04/24 19:15	
1,2,4-Trichlorobenzene	ND			mg/Kg	.∵ ☆	11/04/24 09:35	11/04/24 19:15	
1,2,4-Trimethylbenzene	ND			mg/Kg		11/04/24 09:35	11/04/24 19:15	
1,2-Dibromo-3-Chloropropane	ND ND			mg/Kg	Ψ Φ	11/04/24 09:35	11/04/24 19:15	
1,2-Dibromoethane	ND				¥ 	11/04/24 09:35	11/04/24 19:15	
1.2-Dichlorobenzene				mg/Kg mg/Kg		11/04/24 09:35	11/04/24 19:15	
,	3.8 ND			0 0	*			
1,2-Dichloroethane				mg/Kg	· · · · · · ·	11/04/24 09:35	11/04/24 19:15	
1,2-Dichloropropane	ND			mg/Kg	\$	11/04/24 09:35	11/04/24 19:15	
1,3,5-Trimethylbenzene	ND			mg/Kg	₩.	11/04/24 09:35	11/04/24 19:15	
1,3-Dichlorobenzene	ND			mg/Kg		11/04/24 09:35	11/04/24 19:15	
1,3-Dichloropropane	ND			mg/Kg	₽	11/04/24 09:35	11/04/24 19:15	
2,2-Dichloropropane	ND			mg/Kg	₽.	11/04/24 09:35	11/04/24 19:15	
2-Chlorotoluene	ND			mg/Kg	. .	11/04/24 09:35	11/04/24 19:15	
4-Chlorotoluene	ND			mg/Kg	₽.	11/04/24 09:35	11/04/24 19:15	
4-Isopropyltoluene	0.54 J			mg/Kg	₽	11/04/24 09:35	11/04/24 19:15	
Benzene Service de la companya de la companya de la companya de la companya de la companya de la companya de la companya	ND			mg/Kg	. .	11/04/24 09:35	11/04/24 19:15	
Bromobenzene	ND			mg/Kg	.	11/04/24 09:35	11/04/24 19:15	
Bromochloromethane	ND		71 0.11	0 0	**	11/04/24 09:35	11/04/24 19:15	
Bromodichloromethane	ND			mg/Kg	.	11/04/24 09:35	11/04/24 19:15	
Bromoform	ND			mg/Kg	☼	11/04/24 09:35	11/04/24 19:15	
Bromomethane	ND			mg/Kg	☼	11/04/24 09:35	11/04/24 19:15	
Carbon tetrachloride	ND			mg/Kg	.	11/04/24 09:35	11/04/24 19:15	
Chloroethane	ND			mg/Kg	≎	11/04/24 09:35	11/04/24 19:15	
Chloroform	0.50			mg/Kg	≎	11/04/24 09:35	11/04/24 19:15	
Chloromethane	ND			mg/Kg		11/04/24 09:35	11/04/24 19:15	
cis-1,2-Dichloroethene	ND			mg/Kg	₽	11/04/24 09:35	11/04/24 19:15	
cis-1,3-Dichloropropene	ND			mg/Kg	₽	11/04/24 09:35	11/04/24 19:15	
Dibromochloromethane	ND			mg/Kg		11/04/24 09:35	11/04/24 19:15	
Dibromomethane	ND			mg/Kg	☼	11/04/24 09:35	11/04/24 19:15	
Dichlorodifluoromethane	ND		1.4 0.81	mg/Kg	₽	11/04/24 09:35	11/04/24 19:15	
Ethylbenzene	ND	0	71 0.16	mg/Kg	₽	11/04/24 09:35	11/04/24 19:15	
Hexachlorobutadiene	ND		1.8 0.42	mg/Kg	₽	11/04/24 09:35	11/04/24 19:15	
sopropylbenzene	ND	0	71 0.15	mg/Kg	☼	11/04/24 09:35	11/04/24 19:15	
Methyl tert-butyl ether	ND	0	71 0.11	mg/Kg	☼	11/04/24 09:35	11/04/24 19:15	
Methylene Chloride	ND	•	1.4 0.46	mg/Kg	₽	11/04/24 09:35	11/04/24 19:15	
n-Xylene & p-Xylene	ND	0	71 0.13	mg/Kg	☼	11/04/24 09:35	11/04/24 19:15	
Naphthalene	ND	:	2.7 0.69	mg/Kg	≎	11/04/24 09:35	11/04/24 19:15	
n-Butylbenzene	ND	0	71 0.33	mg/Kg	₽	11/04/24 09:35	11/04/24 19:15	
N-Propylbenzene	ND	0	71 0.27	mg/Kg	₽	11/04/24 09:35	11/04/24 19:15	
o-Xylene	ND	0	71 0.088	mg/Kg	≎	11/04/24 09:35	11/04/24 19:15	
sec-Butylbenzene	ND	0		mg/Kg		11/04/24 09:35	11/04/24 19:15	

Eurofins Seattle

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-60-SO-32.7-20241029

Date Collected: 10/29/24 16:20

Date Received: 11/01/24 12:15

Lab Sample ID: 580-145395-4 **Matrix: Solid**

Percent Solids: 69.9

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		0.71	0.22	mg/Kg	-	11/04/24 09:35	11/04/24 19:15	1
t-Butylbenzene	ND		0.71	0.14	mg/Kg	≎	11/04/24 09:35	11/04/24 19:15	1
Tetrachloroethene	3.1		0.71	0.094	mg/Kg	₽	11/04/24 09:35	11/04/24 19:15	1
Toluene	ND		1.1	0.24	mg/Kg	☼	11/04/24 09:35	11/04/24 19:15	1
trans-1,2-Dichloroethene	ND		1.1	0.26	mg/Kg	≎	11/04/24 09:35	11/04/24 19:15	1
trans-1,3-Dichloropropene	ND		0.71	0.12	mg/Kg	☼	11/04/24 09:35	11/04/24 19:15	1
Trichloroethene	ND		0.71	0.18	mg/Kg	☼	11/04/24 09:35	11/04/24 19:15	1
Trichlorofluoromethane	ND		1.4	0.46	mg/Kg	☼	11/04/24 09:35	11/04/24 19:15	1
Vinyl chloride	ND		1.8	0.33	mg/Kg	₩	11/04/24 09:35	11/04/24 19:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		80 - 121				11/04/24 09:35	11/04/24 19:15	1
4-Bromofluorobenzene (Surr)	98		80 - 120				11/04/24 09:35	11/04/24 19:15	1
Dibromofluoromethane (Surr)	104		80 - 120				11/04/24 09:35	11/04/24 19:15	1
Toluene-d8 (Surr)	102		80 - 120				11/04/24 09:35	11/04/24 19:15	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		110	19	mg/Kg	<u></u>	11/05/24 10:17	11/05/24 13:05	1
Chlorobenzene	4900		71	8.5	mg/Kg	₩	11/05/24 10:17	11/05/24 13:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		80 - 121				11/05/24 10:17	11/05/24 13:05	1
4-Bromofluorobenzene (Surr)	98		80 - 120				11/05/24 10:17	11/05/24 13:05	1
Dibromofluoromethane (Surr)	109		80 - 120				11/05/24 10:17	11/05/24 13:05	1
Toluene-d8 (Surr)	98		80 - 120				11/05/24 10:17	11/05/24 13:05	1

General Chemistry								
Analyte	Result Qua	lifier RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	69.9	0.1	0.1	%			11/06/24 12:44	1
Percent Moisture (SM22 2540G)	30.1	0.1	0.1	%			11/06/24 12:44	1

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-60-SO-44.9-20241029 Lab Sample ID: 580-145395-5

Date Collected: 10/29/24 16:40

Matrix: Solid

Date Received: 11/01/24 12:15

Matrix: Solids: 72.7

Method: SW846 8260D - Vola	_	•	•				_		
Analyte		Qualifier	RL _	MDL		D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND		0.030	0.0076		☼	11/04/24 09:35	11/04/24 18:34	
1,1,1-Trichloroethane	ND		0.061	0.0070		₩	11/04/24 09:35	11/04/24 18:34	
1,1,2,2-Tetrachloroethane	ND		0.030		mg/Kg	*	11/04/24 09:35	11/04/24 18:34	
1,1,2-Trichloroethane	ND		0.030		mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	
1,1-Dichloroethane	ND		0.061	0.014	mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	
1,1-Dichloroethene	ND		0.061	0.019	mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	
1,1-Dichloropropene	ND		0.061	0.0081	mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	
1,2,3-Trichlorobenzene	ND		0.12	0.060	mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	
1,2,3-Trichloropropane	ND		0.061	0.018	mg/Kg	☼	11/04/24 09:35	11/04/24 18:34	
I,2,4-Trichlorobenzene	ND		0.12	0.065	mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	
1,2,4-Trimethylbenzene	ND		0.061	0.021	mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	
I,2-Dibromo-3-Chloropropane	ND		0.091	0.023	mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	
1,2-Dibromoethane	ND		0.030	0.0058	mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	
I,2-Dichlorobenzene	ND		0.061	0.013	mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	
l,2-Dichloroethane	ND		0.030	0.0084	mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	
I,2-Dichloropropane	ND		0.030	0.010	mg/Kg		11/04/24 09:35	11/04/24 18:34	
I,3,5-Trimethylbenzene	ND		0.061	0.012	mg/Kg	☼	11/04/24 09:35	11/04/24 18:34	
,3-Dichlorobenzene	ND		0.091	0.020	mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	
,3-Dichloropropane	ND		0.091	0.0085		∴	11/04/24 09:35	11/04/24 18:34	
,4-Dichlorobenzene	ND		0.091		mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	
2,2-Dichloropropane	ND		0.061		mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	
P-Chlorotoluene	ND		0.061		mg/Kg	∴		11/04/24 18:34	
-Chlorotoluene	ND		0.061		mg/Kg	.∵	11/04/24 09:35	11/04/24 18:34	
-Isopropyltoluene	ND		0.061		mg/Kg		11/04/24 09:35	11/04/24 18:34	
Benzene	ND		0.030	0.0058		∵	11/04/24 09:35	11/04/24 18:34	
Bromobenzene	ND		0.061	0.0064		~ ☆	11/04/24 09:35	11/04/24 18:34	
Bromochloromethane	ND ND		0.061	0.0004	0 0	₩	11/04/24 09:35	11/04/24 18:34	
Bromodichloromethane	ND		0.061	0.0094			11/04/24 09:35	11/04/24 18:34	
Bromoform	ND ND		0.061	0.0068	0 0	*	11/04/24 09:35		
Bromomethane	ND ND		0.061		mg/Kg	*		11/04/24 18:34 11/04/24 18:34	
						<u></u>			
Carbon tetrachloride	ND		0.030	0.0067				11/04/24 18:34	
Chlorobenzene	0.12		0.061	0.0073	0 0	*		11/04/24 18:34	
Chloroethane	ND		0.12		mg/Kg	<u>.</u> .		11/04/24 18:34	
Chloroform	ND		0.030	0.0064	0 0	*		11/04/24 18:34	
Chloromethane	ND		0.091		mg/Kg	☼		11/04/24 18:34	
cis-1,2-Dichloroethene	ND		0.091		mg/Kg			11/04/24 18:34	
sis-1,3-Dichloropropene	ND		0.030	0.0061		₩	11/04/24 09:35	11/04/24 18:34	
Dibromochloromethane	ND		0.030	0.0075		₩		11/04/24 18:34	
Dibromomethane	ND		0.061		mg/Kg	₩		11/04/24 18:34	
Dichlorodifluoromethane	ND		0.38		mg/Kg	₩		11/04/24 18:34	
Ethylbenzene	ND		0.061		mg/Kg	☼	11/04/24 09:35	11/04/24 18:34	
Hexachlorobutadiene	ND		0.15	0.036	mg/Kg	*	11/04/24 09:35	11/04/24 18:34	
sopropylbenzene	ND		0.061	0.013	mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	
Methyl tert-butyl ether	ND		0.061	0.0091	mg/Kg	₩		11/04/24 18:34	
Methylene Chloride	ND		0.38	0.040	mg/Kg	☼	11/04/24 09:35	11/04/24 18:34	
n-Xylene & p-Xylene	ND		0.061	0.011	mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	
Naphthalene	ND		0.23	0.060	mg/Kg	☼	11/04/24 09:35	11/04/24 18:34	
n-Butylbenzene	ND		0.061		mg/Kg	☼		11/04/24 18:34	
N-Propylbenzene	ND		0.061		mg/Kg			11/04/24 18:34	

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Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Percent Moisture (SM22 2540G)

27.3

Client Sample ID: PDI-60-SO-44.9-20241029 Lab Sample ID: 580-145395-5

Date Collected: 10/29/24 16:40

Matrix: Solid

Date Received: 11/01/24 12:15

Percent Solids: 72.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		0.061	0.0076	mg/Kg	— <u></u>	11/04/24 09:35	11/04/24 18:34	1
sec-Butylbenzene	ND		0.061		mg/Kg	☆	11/04/24 09:35	11/04/24 18:34	1
Styrene	ND		0.061		mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	1
t-Butylbenzene	ND		0.061	0.012	mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	1
Tetrachloroethene	ND		0.061	0.0081	mg/Kg	☼	11/04/24 09:35	11/04/24 18:34	1
Toluene	ND		0.091	0.021	mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	1
trans-1,2-Dichloroethene	ND		0.091	0.022	mg/Kg	☼	11/04/24 09:35	11/04/24 18:34	1
trans-1,3-Dichloropropene	ND		0.061	0.011	mg/Kg	☆	11/04/24 09:35	11/04/24 18:34	1
Trichloroethene	ND		0.061	0.016	mg/Kg	₩	11/04/24 09:35	11/04/24 18:34	1
Trichlorofluoromethane	ND		0.12	0.040	mg/Kg	☆	11/04/24 09:35	11/04/24 18:34	1
Vinyl chloride	ND		0.15	0.028	mg/Kg	☼	11/04/24 09:35	11/04/24 18:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		80 - 121				11/04/24 09:35	11/04/24 18:34	1
4-Bromofluorobenzene (Surr)	103		80 - 120				11/04/24 09:35	11/04/24 18:34	1
Dibromofluoromethane (Surr)	103		80 - 120				11/04/24 09:35	11/04/24 18:34	1
Toluene-d8 (Surr)	98		80 - 120				11/04/24 09:35	11/04/24 18:34	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	72.7		0.1	0.1	%			11/06/24 12:44	1

0.1

0.1 %

11/06/24 12:44

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client Sample ID: DUP-01-SQ-20241030

Lab Sample ID: 580-145395-6 Date Collected: 10/30/24 12:00 **Matrix: Solid**

Date Received: 11/01/24 12:15 Percent Solids: 67.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil F
1,1,1,2-Tetrachloroethane	ND	<u> </u>	0.36	0.091	mg/Kg	— <u></u>	11/04/24 09:35	11/04/24 19:36	
1,1,1-Trichloroethane	ND		0.73		mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
1,1,2,2-Tetrachloroethane	ND		0.36		mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
1,1,2-Trichloroethane	ND		0.36		mg/Kg		11/04/24 09:35	11/04/24 19:36	
1,1-Dichloroethane	ND		0.73	0.17		₩	11/04/24 09:35	11/04/24 19:36	
1,1-Dichloroethene	ND		0.73	0.22	mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
1,1-Dichloropropene	ND		0.73		mg/Kg		11/04/24 09:35	11/04/24 19:36	
1,2,3-Trichlorobenzene	ND		1.5		mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
1,2,3-Trichloropropane	ND		0.73	0.21	mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
1,2,4-Trichlorobenzene	ND		1.5		mg/Kg		11/04/24 09:35	11/04/24 19:36	
1,2,4-Trimethylbenzene	ND		0.73		mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
1,2-Dibromo-3-Chloropropane	ND		1.1		mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
1,2-Dibromoethane	ND		0.36		mg/Kg		11/04/24 09:35	11/04/24 19:36	
1,2-Dichlorobenzene	ND		0.73		mg/Kg		11/04/24 09:35	11/04/24 19:36	
1.2-Dichloroethane	ND		0.36		mg/Kg	☆	11/04/24 09:35	11/04/24 19:36	
1,2-Dichloropropane	ND		0.36		mg/Kg		11/04/24 09:35	11/04/24 19:36	
,3,5-Trimethylbenzene	ND		0.73		mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
,3-Dichlorobenzene	ND		1.1		mg/Kg	☆	11/04/24 09:35	11/04/24 19:36	
,3-Dichloropropane	ND		1.1		mg/Kg		11/04/24 09:35	11/04/24 19:36	
,4-Dichlorobenzene	ND		1.1		mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
,4-Dichloropropane	ND		0.73		mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
-Chlorotoluene	ND		0.73		mg/Kg	¥	11/04/24 09:35	11/04/24 19:36	
-Chlorotoluene	ND ND		0.73			₩	11/04/24 09:35	11/04/24 19:36	
	ND ND		0.73		mg/Kg mg/Kg		11/04/24 09:35	11/04/24 19:36	
-Isopropyltoluene Benzene	ND		0.73		mg/Kg	 ∴ \$	11/04/24 09:35	11/04/24 19:36	
Bromobenzene	ND ND		0.30				11/04/24 09:35	11/04/24 19:36	
Bromochloromethane	ND ND		0.73	0.076	mg/Kg	₽	11/04/24 09:35	11/04/24 19:36	
Bromodichloromethane					mg/Kg				
	ND ND		0.73		mg/Kg	*	11/04/24 09:35	11/04/24 19:36	
Bromoform Bromomethane	ND ND		0.73 1.8		mg/Kg	ψ.	11/04/24 09:35	11/04/24 19:36	
					mg/Kg	<u></u>	11/04/24 09:35	11/04/24 19:36	
Carbon tetrachloride	ND		0.36	0.080	mg/Kg	ψ.	11/04/24 09:35	11/04/24 19:36	
Chlorobenzene	57		0.73	0.087	0 0	₩	11/04/24 09:35	11/04/24 19:36	
Chloroethane	ND		1.5		mg/Kg		11/04/24 09:35	11/04/24 19:36	
Chloroform	ND		0.36		mg/Kg	*	11/04/24 09:35	11/04/24 19:36	
Chloromethane	ND		1.1		mg/Kg	*		11/04/24 19:36	
is-1,2-Dichloroethene	ND		1.1		mg/Kg	<u>.</u> .	11/04/24 09:35	11/04/24 19:36	
is-1,3-Dichloropropene	ND		0.36		mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
Dibromochloromethane	ND		0.36		mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
Dibromomethane	ND		0.73		mg/Kg		11/04/24 09:35	11/04/24 19:36	
Dichlorodifluoromethane	ND		4.6		mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
thylbenzene	ND		0.73		mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
lexachlorobutadiene	ND		1.8		mg/Kg		11/04/24 09:35	11/04/24 19:36	
sopropylbenzene	ND		0.73		mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
Methyl tert-butyl ether	ND		0.73		mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
Methylene Chloride	ND		4.6		mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
n-Xylene & p-Xylene	ND		0.73		mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
laphthalene	ND		2.7	0.71	mg/Kg	₽	11/04/24 09:35	11/04/24 19:36	
-Butylbenzene	ND		0.73	0.34	mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	
N-Propylbenzene	ND		0.73	0.27	mg/Kg	≎	11/04/24 09:35	11/04/24 19:36	

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Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client Sample ID: DUP-01-SQ-20241030

Lab Sample ID: 580-145395-6 Date Collected: 10/30/24 12:00 **Matrix: Solid**

Date Received: 11/01/24 12:15 Percent Solids: 67.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		0.73	0.091	mg/Kg	— <u></u>	11/04/24 09:35	11/04/24 19:36	1
sec-Butylbenzene	ND		0.73	0.16	mg/Kg	☼	11/04/24 09:35	11/04/24 19:36	1
Styrene	ND		0.73	0.23	mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	1
t-Butylbenzene	ND		0.73	0.14	mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	1
Tetrachloroethene	ND		0.73	0.096	mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	1
Toluene	ND		1.1	0.25	mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	1
trans-1,2-Dichloroethene	ND		1.1	0.27	mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	1
trans-1,3-Dichloropropene	ND		0.73	0.13	mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	1
Trichloroethene	ND		0.73	0.19	mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	1
Trichlorofluoromethane	ND		1.5	0.47	mg/Kg	₩	11/04/24 09:35	11/04/24 19:36	1
Vinyl chloride	ND		1.8	0.34	mg/Kg	₽	11/04/24 09:35	11/04/24 19:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		80 - 121				11/04/24 09:35	11/04/24 19:36	1
4-Bromofluorobenzene (Surr)	102		80 - 120				11/04/24 09:35	11/04/24 19:36	1
Dibromofluoromethane (Surr)	113		80 - 120				11/04/24 09:35	11/04/24 19:36	1
Toluene-d8 (Surr)	99		80 - 120				11/04/24 09:35	11/04/24 19:36	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	67.7		0.1	0.1	%			11/06/24 12:44	1
Percent Moisture (SM22 2540G)	32.3		0.1	0.1	%			11/06/24 12:44	1

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-40a-SO-38.4-20241030 Lab Sample ID: 580-145395-7

Date Collected: 10/30/24 12:20

Matrix: Solid

Date Received: 11/01/24 12:15

Percent Solids: 68.6

Method: SW846 8260D - Vola		•	•				_		
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND		0.034	0.0085		₩	11/04/24 09:35	11/04/24 18:54	
1,1,1-Trichloroethane	ND		0.068	0.0078		₩	11/04/24 09:35	11/04/24 18:54	
1,1,2,2-Tetrachloroethane	ND		0.034		mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
1,1,2-Trichloroethane	ND		0.034		mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
1,1-Dichloroethane	ND		0.068	0.016	mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
1,1-Dichloroethene	ND		0.068		mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
1,1-Dichloropropene	ND		0.068	0.0090	mg/Kg	☼	11/04/24 09:35	11/04/24 18:54	
1,2,3-Trichlorobenzene	ND		0.14	0.068	mg/Kg	☼	11/04/24 09:35	11/04/24 18:54	
1,2,3-Trichloropropane	ND		0.068	0.020	mg/Kg	☼	11/04/24 09:35	11/04/24 18:54	
I,2,4-Trichlorobenzene	ND		0.14	0.073	mg/Kg	₽	11/04/24 09:35	11/04/24 18:54	
1,2,4-Trimethylbenzene	ND		0.068	0.023	mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
I,2-Dibromo-3-Chloropropane	ND		0.10	0.026	mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
1,2-Dibromoethane	ND		0.034	0.0065	mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
1,2-Dichlorobenzene	ND		0.068	0.015	mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
I,2-Dichloroethane	ND		0.034	0.0094	mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
1,2-Dichloropropane	ND		0.034	0.011	mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
I,3,5-Trimethylbenzene	ND		0.068	0.013	mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
I,3-Dichlorobenzene	ND		0.10		mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
,3-Dichloropropane	ND		0.10	0.0096		∴	11/04/24 09:35	11/04/24 18:54	
2,2-Dichloropropane	ND		0.068		mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
2-Chlorotoluene	ND		0.068		mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
-Chlorotoluene	ND		0.068		mg/Kg			11/04/24 18:54	
-Isopropyltoluene	ND		0.068		mg/Kg			11/04/24 18:54	
Benzene	ND		0.034	0.0065			11/04/24 09:35	11/04/24 18:54	
Bromobenzene	ND		0.068	0.0072			11/04/24 09:35	11/04/24 18:54	
Bromochloromethane	ND		0.068		mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
Bromodichloromethane	ND		0.068	0.0094	0 0	₩	11/04/24 09:35	11/04/24 18:54	
Bromoform	ND		0.068	0.0034			11/04/24 09:35	11/04/24 18:54	
Bromomethane	ND ND		0.008		mg/Kg	*	11/04/24 09:35	11/04/24 18:54	
	ND ND		0.17	0.005	0 0	*		11/04/24 18:54	
Carbon tetrachloride						<u></u>			
Chloroethane	ND		0.14		mg/Kg	₩.		11/04/24 18:54	
Chloroform	ND		0.034	0.0072		*		11/04/24 18:54	
Chloromethane	ND		0.10		mg/Kg	. .		11/04/24 18:54	
sis-1,2-Dichloroethene	ND		0.10		mg/Kg	*		11/04/24 18:54	
cis-1,3-Dichloropropene	ND		0.034	0.0068		☼		11/04/24 18:54	
Dibromochloromethane	ND		0.034	0.0084		.		11/04/24 18:54	
Dibromomethane	ND		0.068		mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
Dichlorodifluoromethane	ND		0.43		mg/Kg	₩		11/04/24 18:54	
Ethylbenzene	ND		0.068		mg/Kg	₩		11/04/24 18:54	
-lexachlorobutadiene	ND		0.17	0.041	mg/Kg	₩		11/04/24 18:54	
sopropylbenzene	ND		0.068	0.015	mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
Methyl tert-butyl ether	ND		0.068	0.010	mg/Kg	☼	11/04/24 09:35	11/04/24 18:54	
Methylene Chloride	ND		0.43	0.044	mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
n-Xylene & p-Xylene	ND		0.068	0.012	mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
Naphthalene	ND		0.26	0.067	mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
n-Butylbenzene	ND		0.068	0.032	mg/Kg	₽	11/04/24 09:35	11/04/24 18:54	
N-Propylbenzene	ND		0.068		mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	
o-Xylene	ND		0.068	0.0085		₩		11/04/24 18:54	
sec-Butylbenzene	ND		0.068		mg/Kg			11/04/24 18:54	

Eurofins Seattle

3

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9

10

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Percent Moisture (SM22 2540G)

Client Sample ID: PDI-40a-SO-38.4-20241030

Lab Sample ID: 580-145395-7 Date Collected: 10/30/24 12:20 **Matrix: Solid**

Date Received: 11/01/24 12:15 Percent Solids: 68.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		0.068	0.022	mg/Kg	— <u></u>	11/04/24 09:35	11/04/24 18:54	1
t-Butylbenzene	ND		0.068	0.013	mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	1
Tetrachloroethene	ND		0.068	0.0090	mg/Kg	₽	11/04/24 09:35	11/04/24 18:54	1
Toluene	ND		0.10	0.023	mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	1
trans-1,2-Dichloroethene	ND		0.10	0.025	mg/Kg	☼	11/04/24 09:35	11/04/24 18:54	1
trans-1,3-Dichloropropene	ND		0.068	0.012	mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	1
Trichloroethene	ND		0.068	0.018	mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	1
Trichlorofluoromethane	ND		0.14	0.044	mg/Kg	₩	11/04/24 09:35	11/04/24 18:54	1
Vinyl chloride	ND		0.17	0.032	mg/Kg	₽	11/04/24 09:35	11/04/24 18:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)			80 - 121				11/04/24 09:35	11/04/24 18:54	1
4-Bromofluorobenzene (Surr)	102		80 - 120				11/04/24 09:35	11/04/24 18:54	1
Dibromofluoromethane (Surr)	113		80 - 120				11/04/24 09:35	11/04/24 18:54	1
Toluene-d8 (Surr)	99		80 - 120				11/04/24 09:35	11/04/24 18:54	1
Method: SW846 8260D - Vol.	atile Organic	Compound	de by GC/MS	- DL					
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		1.1	0.20	mg/Kg	— <u>-</u>	11/05/24 10:17	11/05/24 12:45	1
Chlorobenzene	26		0.73	0.088	mg/Kg	☼	11/05/24 10:17	11/05/24 12:45	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		80 - 121				11/05/24 10:17	11/05/24 12:45	1
4-Bromofluorobenzene (Surr)	98		80 - 120				11/05/24 10:17	11/05/24 12:45	1
Dibromofluoromethane (Surr)	108		80 - 120				11/05/24 10:17	11/05/24 12:45	1
Toluene-d8 (Surr)	101		80 - 120				11/05/24 10:17	11/05/24 12:45	1
General Chemistry									
General Chemistry Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac

0.1

0.1 %

31.4

11/20/2024 (Rev. 1)

11/06/24 12:44

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-40a-SO-54.9-20241030

Lab Sample ID: 580-145395-8 Date Collected: 10/30/24 12:25 Matrix: Solid Date Received: 11/01/24 12:15 Percent Solids: 70.4

Method: SW846 8260D - Volatile Organic Compounds by GC/MS Dil Fac Analyte Result Qualifier **MDL** Unit D Prepared Analyzed 1,1,1,2-Tetrachloroethane ND 0.030 0.0076 mg/Kg 11/04/24 09:35 11/04/24 16:30 ND 1.1.1-Trichloroethane 0.060 0.0070 mg/Kg 11/04/24 09:35 11/04/24 16:30 11/04/24 16:30 1,1,2,2-Tetrachloroethane ND 0.030 0.011 mg/Kg 11/04/24 09:35 1,1,2-Trichloroethane ND 0.030 0.011 mg/Kg 11/04/24 09:35 11/04/24 16:30 0.060 0.014 mg/Kg 11/04/24 09:35 11/04/24 16:30 1 1-Dichloroethane ND 1,1-Dichloroethene ND 0.060 0.019 mg/Kg 11/04/24 09:35 11/04/24 16:30 1,1-Dichloropropene ND 0.060 0.0080 11/04/24 09:35 11/04/24 16:30 mg/Kg ND 0.060 11/04/24 09:35 11/04/24 16:30 1,2,3-Trichlorobenzene 0.12 mg/Kg 1,2,3-Trichloropropane ND 0.060 0.017 mg/Kg 11/04/24 09:35 11/04/24 16:30 1,2,4-Trichlorobenzene ND 0.12 0.064 mg/Kg 11/04/24 09:35 11/04/24 16:30 1,2,4-Trimethylbenzene ND 0.060 0.020 mg/Kg 11/04/24 09:35 11/04/24 16:30 1.2-Dibromo-3-Chloropropane ND 0.091 0.023 mg/Kg 11/04/24 09:35 11/04/24 16:30 1 1,2-Dibromoethane ND 0.030 0.0057 mg/Kg 11/04/24 09:35 11/04/24 16:30 1,2-Dichlorobenzene ND 0.060 0.013 mg/Kg 11/04/24 09:35 11/04/24 16:30 ND 0.030 0.0083 mg/Kg 11/04/24 09:35 11/04/24 16:30 1.2-Dichloroethane 0.010 1,2-Dichloropropane NΩ 0.030 mg/Kg 11/04/24 09:35 11/04/24 16:30 1,3,5-Trimethylbenzene ND 0.060 0.011 mg/Kg 11/04/24 09:35 11/04/24 16:30 1,3-Dichlorobenzene ND 0.091 0.020 mg/Kg 11/04/24 09:35 11/04/24 16:30 ND 0.091 0.0085 11/04/24 09:35 11/04/24 16:30 1,3-Dichloropropane mg/Kg 1,4-Dichlorobenzene ND 0.091 0.016 mg/Kg 11/04/24 09:35 11/04/24 16:30 2,2-Dichloropropane ND 0.060 0.018 mg/Kg 11/04/24 09:35 11/04/24 16:30 ť 2-Chlorotoluene ND 0.060 0.013 mg/Kg 11/04/24 09:35 11/04/24 16:30 4-Chlorotoluene ND 0.015 mg/Kg 11/04/24 09:35 11/04/24 16:30 0.060 4-Isopropyltoluene ND 0.060 0.015 mg/Kg 11/04/24 09:35 11/04/24 16:30 Benzene ND 0.030 0.0057 mg/Kg 11/04/24 09:35 11/04/24 16:30 Bromobenzene ND 0.060 0.0064 mg/Kg 11/04/24 09:35 11/04/24 16:30 Bromochloromethane ND 0.060 0.0094 mg/Kg 11/04/24 09:35 11/04/24 16:30 Bromodichloromethane 0.0083 ND 0.060 mg/Kg 11/04/24 09:35 11/04/24 16:30 0.0068 Bromoform ND F1 0.060 mg/Kg 11/04/24 09:35 11/04/24 16:30 ND Bromomethane 0.15 0.057 mg/Kg 11/04/24 09:35 11/04/24 16:30 Carbon tetrachloride ND 0.030 0.0067 mg/Kg 11/04/24 09:35 11/04/24 16:30 0.060 0.0073 mg/Kg 11/04/24 09:35 11/04/24 16:30 Chlorobenzene 2.9 F1 Chloroethane 0.032 11/04/24 09:35 11/04/24 16:30 ND 0.12 mg/Kg 11/04/24 09:35 Chloroform ND 0.030 0.0064 mg/Kg 11/04/24 16:30 Chloromethane ND 0.091 0.015 mg/Kg 11/04/24 09:35 11/04/24 16:30 cis-1.2-Dichloroethene ND 0.091 0.019 11/04/24 09:35 11/04/24 16:30 mg/Kg cis-1,3-Dichloropropene ND 0.030 0.0060 mg/Kg 11/04/24 09:35 11/04/24 16:30 Dibromochloromethane ND 0.030 0.0074 mg/Kg 11/04/24 09:35 11/04/24 16:30 Dibromomethane ND 0.011 0.060 mg/Kg 11/04/24 09:35 11/04/24 16:30 Dichlorodifluoromethane ND 0.38 0.069 mg/Kg 11/04/24 09:35 11/04/24 16:30 Ethylbenzene ND 0.060 0.014 mg/Kg 11/04/24 09:35 11/04/24 16:30 Hexachlorobutadiene ND 0.15 0.036 mg/Kg 11/04/24 09:35 11/04/24 16:30 0.013 Isopropylbenzene ND 0.060 mg/Kg 11/04/24 09:35 11/04/24 16:30 Methyl tert-butyl ether 0.060 0.0091 11/04/24 09:35 11/04/24 16:30 ND mg/Kg ND Methylene Chloride 0.38 0.039 mg/Kg 11/04/24 09:35 11/04/24 16:30 m-Xylene & p-Xylene ND 0.060 0.011 mg/Kg 11/04/24 09:35 11/04/24 16:30 Naphthalene ND 0.23 0.059 mg/Kg 11/04/24 09:35 11/04/24 16:30 n-Butylbenzene ND 0.060 0.028 mg/Kg 11/04/24 09:35 11/04/24 16:30 N-Propylbenzene ND 0.060 0.023 mg/Kg 11/04/24 09:35 11/04/24 16:30

Eurofins Seattle

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Percent Moisture (SM22 2540G)

Client Sample ID: PDI-40a-SO-54.9-20241030 Lab Sample ID: 580-145395-8

Date Collected: 10/30/24 12:25

Date Received: 11/01/24 12:15

Matrix: Solid
Percent Solids: 70.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		0.060	0.0076	mg/Kg	<u></u>	11/04/24 09:35	11/04/24 16:30	1
sec-Butylbenzene	ND		0.060	0.013	mg/Kg	₩	11/04/24 09:35	11/04/24 16:30	1
Styrene	ND		0.060	0.019	mg/Kg	₩	11/04/24 09:35	11/04/24 16:30	1
t-Butylbenzene	ND		0.060	0.012	mg/Kg	₩	11/04/24 09:35	11/04/24 16:30	1
Tetrachloroethene	ND		0.060	0.0080	mg/Kg	₩	11/04/24 09:35	11/04/24 16:30	1
Toluene	ND		0.091	0.020	mg/Kg	₩	11/04/24 09:35	11/04/24 16:30	1
trans-1,2-Dichloroethene	ND		0.091	0.022	mg/Kg	₩	11/04/24 09:35	11/04/24 16:30	1
trans-1,3-Dichloropropene	ND		0.060	0.011	mg/Kg	₩	11/04/24 09:35	11/04/24 16:30	1
Trichloroethene	ND		0.060	0.016	mg/Kg	₩	11/04/24 09:35	11/04/24 16:30	1
Trichlorofluoromethane	ND		0.12	0.039	mg/Kg	₩	11/04/24 09:35	11/04/24 16:30	1
Vinyl chloride	ND		0.15	0.028	mg/Kg	₽	11/04/24 09:35	11/04/24 16:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		80 - 121				11/04/24 09:35	11/04/24 16:30	1
4-Bromofluorobenzene (Surr)	102		80 - 120				11/04/24 09:35	11/04/24 16:30	1
Dibromofluoromethane (Surr)	103		80 - 120				11/04/24 09:35	11/04/24 16:30	1
Toluene-d8 (Surr)	98		80 - 120				11/04/24 09:35	11/04/24 16:30	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	70.4		0.1	0.1	%			11/06/24 12:44	1

0.1

29.6

0.1 %

11/06/24 12:44

2

3

5

7

8

10

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-WQ-20241030

Lab Sample ID: 580-145395-9 Date Collected: 10/30/24 12:25

Matrix: Water

Date Received: 11/01/24 12:15

Analyte	Result Q	ualifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Dichlorodifluoromethane	ND ND	1.0	0.53	ug/L			11/08/24 17:00	
Chloromethane	ND	1.0	0.28	ug/L			11/08/24 17:00	
Vinyl chloride	ND	1.0	0.22	ug/L			11/08/24 17:00	
Bromomethane	ND	1.0	0.21	ug/L			11/08/24 17:00	
Chloroethane	ND	1.0	0.35	ug/L			11/08/24 17:00	
Trichlorofluoromethane	ND	1.0	0.36	ug/L			11/08/24 17:00	
1,1-Dichloroethene	ND	1.0		ug/L			11/08/24 17:00	
Methylene Chloride	ND	5.0		ug/L			11/08/24 17:00	
trans-1,2-Dichloroethene	ND	1.0		ug/L			11/08/24 17:00	
1,1-Dichloroethane	ND	1.0		ug/L			11/08/24 17:00	
2,2-Dichloropropane	ND	1.0		ug/L			11/08/24 17:00	
cis-1,2-Dichloroethene	ND	1.0		ug/L			11/08/24 17:00	
Bromochloromethane	ND	1.0		ug/L			11/08/24 17:00	
Chloroform	ND	1.0	0.26	-			11/08/24 17:00	
1,1,1-Trichloroethane	ND	1.0		ug/L			11/08/24 17:00	
Carbon tetrachloride	ND	1.0		ug/L			11/08/24 17:00	
1,1-Dichloropropene	ND	1.0		ug/L			11/08/24 17:00	
Benzene	ND	1.0		ug/L			11/08/24 17:00	
1,2-Dichloroethane	ND	1.0		ug/L ug/L			11/08/24 17:00	
T,2-Dictiloroethane Trichloroethene	ND ND	1.0		_			11/08/24 17:00	
	ND ND			ug/L				
1,2-Dichloropropane		1.0	0.18				11/08/24 17:00	
Dibromomethane	ND	1.0		ug/L			11/08/24 17:00	
Bromodichloromethane	ND	1.0		ug/L			11/08/24 17:00	
cis-1,3-Dichloropropene	ND	1.0		ug/L			11/08/24 17:00	
Toluene	ND	1.0		ug/L			11/08/24 17:00	
trans-1,3-Dichloropropene	ND	1.0		ug/L			11/08/24 17:00	
1,1,2-Trichloroethane	ND	1.0		ug/L			11/08/24 17:00	
Tetrachloroethene	ND	1.0		ug/L			11/08/24 17:00	
1,3-Dichloropropane	ND	1.0		ug/L			11/08/24 17:00	
Dibromochloromethane	ND	1.0		ug/L			11/08/24 17:00	
1,2-Dibromoethane	ND	1.0		ug/L			11/08/24 17:00	
Chlorobenzene	ND	1.0	0.44	ug/L			11/08/24 17:00	
Ethylbenzene	ND	1.0	0.50	ug/L			11/08/24 17:00	
1,1,1,2-Tetrachloroethane	ND	1.0	0.18	ug/L			11/08/24 17:00	
1,1,2,2-Tetrachloroethane	ND	1.0	0.52	ug/L			11/08/24 17:00	
m-Xylene & p-Xylene	ND	2.0	0.53	ug/L			11/08/24 17:00	
o-Xylene	ND	1.0	0.39	ug/L			11/08/24 17:00	
Styrene	ND	1.0	0.53	ug/L			11/08/24 17:00	
Bromoform	ND	1.0	0.51	ug/L			11/08/24 17:00	
Isopropylbenzene	ND	1.0	0.44	ug/L			11/08/24 17:00	
Bromobenzene	ND	1.0	0.43	ug/L			11/08/24 17:00	
N-Propylbenzene	ND	1.0		ug/L			11/08/24 17:00	
1,2,3-Trichloropropane	ND	1.0		ug/L			11/08/24 17:00	
2-Chlorotoluene	ND	1.0		ug/L			11/08/24 17:00	
1,3,5-Trimethylbenzene	ND	1.0		ug/L			11/08/24 17:00	
4-Chlorotoluene	ND	1.0		ug/L			11/08/24 17:00	
t-Butylbenzene	ND	2.0		ug/L			11/08/24 17:00	
1,2,4-Trimethylbenzene	ND	3.0		ug/L			11/08/24 17:00	
sec-Butylbenzene	ND	1.0		ug/L			11/08/24 17:00	

Eurofins Seattle

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client Sample ID: TB-01-WQ-20241030

Lab Sample ID: 580-145395-9

Date Collected: 10/30/24 12:25 **Matrix: Water** Date Received: 11/01/24 12:15

Method: SW846 8260D - Vo		-	-		inued)	_	D	A I	D!! E
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			11/08/24 17:00	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			11/08/24 17:00	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			11/08/24 17:00	1
n-Butylbenzene	ND		1.0	0.44	ug/L			11/08/24 17:00	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			11/08/24 17:00	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			11/08/24 17:00	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			11/08/24 17:00	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			11/08/24 17:00	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			11/08/24 17:00	1
Naphthalene	ND		3.0	0.93	ug/L			11/08/24 17:00	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			11/08/24 17:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		80 - 120			•		11/08/24 17:00	1
4-Bromofluorobenzene (Surr)	93		80 - 120					11/08/24 17:00	1
Dibromofluoromethane (Surr)	96		80 - 120					11/08/24 17:00	1
1.2-Dichloroethane-d4 (Surr)	97		80 - 120					11/08/24 17:00	1

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client Sample ID: RB-01-WQ-20241030

Lab Sample ID: 580-145395-10 Date Collected: 10/30/24 14:00

Matrix: Water

Date Received: 11/01/24 12:15

Analyte	Result Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
Dichlorodifluoromethane	ND —	1.0		ug/L			11/08/24 18:10	
Chloromethane	ND	1.0	0.28	ug/L			11/08/24 18:10	
Vinyl chloride	ND	1.0	0.22	ug/L			11/08/24 18:10	
Bromomethane	ND	1.0	0.21	ug/L			11/08/24 18:10	
Chloroethane	ND	1.0	0.35	ug/L			11/08/24 18:10	
Trichlorofluoromethane	ND	1.0	0.36	ug/L			11/08/24 18:10	
1,1-Dichloroethene	ND	1.0	0.28	ug/L			11/08/24 18:10	
Methylene Chloride	ND	5.0	1.4	ug/L			11/08/24 18:10	
trans-1,2-Dichloroethene	ND	1.0	0.39	ug/L			11/08/24 18:10	
1,1-Dichloroethane	ND	1.0	0.22	ug/L			11/08/24 18:10	
2,2-Dichloropropane	ND	1.0	0.32	ug/L			11/08/24 18:10	
cis-1,2-Dichloroethene	ND	1.0		ug/L			11/08/24 18:10	
Bromochloromethane	ND	1.0		ug/L			11/08/24 18:10	
Chloroform	ND	1.0		ug/L			11/08/24 18:10	
1,1,1-Trichloroethane	ND	1.0		ug/L			11/08/24 18:10	
Carbon tetrachloride	ND	1.0		ug/L			11/08/24 18:10	
1,1-Dichloropropene	ND	1.0		ug/L			11/08/24 18:10	
Benzene	ND	1.0		ug/L			11/08/24 18:10	
1,2-Dichloroethane	ND	1.0		ug/L			11/08/24 18:10	
Trichloroethene	ND	1.0		ug/L			11/08/24 18:10	
1,2-Dichloropropane	ND	1.0		ug/L			11/08/24 18:10	
Dibromomethane	ND	1.0		ug/L			11/08/24 18:10	
Bromodichloromethane	ND	1.0		ug/L			11/08/24 18:10	
cis-1,3-Dichloropropene	ND	1.0		ug/L			11/08/24 18:10	
Toluene	ND	1.0		ug/L			11/08/24 18:10	
trans-1,3-Dichloropropene	ND	1.0		ug/L			11/08/24 18:10	
1,1,2-Trichloroethane	ND	1.0		ug/L ug/L			11/08/24 18:10	
Tetrachloroethene	ND ND			ug/L ug/L			11/08/24 18:10	
1,3-Dichloropropane	ND ND	1.0 1.0		ug/L ug/L			11/08/24 18:10	
•	ND ND			_				
Dibromochloromethane		1.0		ug/L			11/08/24 18:10	
1,2-Dibromoethane	ND	1.0		ug/L			11/08/24 18:10	
Chlorobenzene	ND	1.0		ug/L			11/08/24 18:10	
Ethylbenzene	ND	1.0		ug/L			11/08/24 18:10	
1,1,1,2-Tetrachloroethane	ND	1.0		ug/L			11/08/24 18:10	
1,1,2,2-Tetrachloroethane	ND	1.0		ug/L			11/08/24 18:10	
m-Xylene & p-Xylene	ND	2.0		ug/L			11/08/24 18:10	
o-Xylene	ND	1.0		ug/L			11/08/24 18:10	
Styrene	ND	1.0		ug/L			11/08/24 18:10	
Bromoform	ND	1.0		ug/L			11/08/24 18:10	
Isopropylbenzene	ND	1.0		ug/L			11/08/24 18:10	
Bromobenzene	ND	1.0		ug/L			11/08/24 18:10	
N-Propylbenzene	ND	1.0		ug/L			11/08/24 18:10	
1,2,3-Trichloropropane	ND	1.0		ug/L			11/08/24 18:10	
2-Chlorotoluene	ND	1.0		ug/L			11/08/24 18:10	
1,3,5-Trimethylbenzene	ND	1.0	0.55	ug/L			11/08/24 18:10	
4-Chlorotoluene	ND	1.0		ug/L			11/08/24 18:10	
t-Butylbenzene	ND	2.0	0.58	ug/L			11/08/24 18:10	
1,2,4-Trimethylbenzene	ND	3.0	0.61	ug/L			11/08/24 18:10	
sec-Butylbenzene	ND	1.0	0.49	ug/L			11/08/24 18:10	

Eurofins Seattle

Client Sample Results

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client Sample ID: RB-01-WQ-20241030

Lab Sample ID: 580-145395-10 Date Collected: 10/30/24 14:00

Matrix: Water

Date Received: 11/01/24 12:15

Method: SW846 8260D - Vo	latile Organic	Compoun	ds by GC/MS	(Conti	inued)				
Analyte	_	Qualifier	RL	•	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			11/08/24 18:10	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			11/08/24 18:10	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			11/08/24 18:10	1
n-Butylbenzene	ND		1.0	0.44	ug/L			11/08/24 18:10	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			11/08/24 18:10	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			11/08/24 18:10	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			11/08/24 18:10	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			11/08/24 18:10	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			11/08/24 18:10	1
Naphthalene	ND		3.0	0.93	ug/L			11/08/24 18:10	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			11/08/24 18:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)			80 - 120					11/08/24 18:10	1
4-Bromofluorobenzene (Surr)	96		80 - 120					11/08/24 18:10	1
Dibromofluoromethane (Surr)	96		80 - 120					11/08/24 18:10	1
1,2-Dichloroethane-d4 (Surr)	98		80 - 120					11/08/24 18:10	1

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-476708/3-A

Matrix: Solid

Analysis Batch: 476722

Client Sample ID: Method Blank

Prep Type: Total/NA Prep Batch: 476708

•	MB	MB						•	
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.040	0.012	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
1,1-Dichloroethane	ND		0.040	0.0092	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
1,1,1-Trichloroethane	ND		0.040	0.0046	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
1,1-Dichloropropene	ND		0.040	0.0053	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
1,2-Dichloroethane	ND		0.020	0.0055	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
1,2-Dichloropropane	ND		0.020	0.0066	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
2,2-Dichloropropane	ND		0.040	0.012	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
Benzene	ND		0.020	0.0038	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
1,1,2-Trichloroethane	ND		0.020	0.0074	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
Bromochloromethane	ND		0.040	0.0062	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
1,3-Dichloropropane	ND		0.060	0.0056	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
Bromodichloromethane	ND		0.040	0.0055	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
1,2-Dibromoethane	ND		0.020	0.0038			11/04/24 09:34	11/04/24 12:42	1
Bromomethane	ND		0.10		mg/Kg		11/04/24 09:34	11/04/24 12:42	1
Carbon tetrachloride	ND		0.020	0.0044			11/04/24 09:34	11/04/24 12:42	1
Chlorobenzene	ND		0.040	0.0048			11/04/24 09:34	11/04/24 12:42	1
1,1,1,2-Tetrachloroethane	ND		0.020	0.0050			11/04/24 09:34	11/04/24 12:42	1
Chloroethane	ND		0.080	0.021			11/04/24 09:34	11/04/24 12:42	1
1,1,2,2-Tetrachloroethane	ND		0.020	0.0076			11/04/24 09:34	11/04/24 12:42	1
Chloroform	ND		0.020	0.0042			11/04/24 09:34	11/04/24 12:42	1
Chloromethane	ND		0.060		mg/Kg		11/04/24 09:34	11/04/24 12:42	1
cis-1,2-Dichloroethene	ND		0.060		mg/Kg		11/04/24 09:34	11/04/24 12:42	· · · · · · 1
cis-1,3-Dichloropropene	ND		0.020	0.0040	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
Bromoform	ND		0.040	0.0045			11/04/24 09:34	11/04/24 12:42	1
Dibromochloromethane	ND		0.020	0.0049			11/04/24 09:34	11/04/24 12:42	1
Bromobenzene	ND		0.040	0.0042			11/04/24 09:34	11/04/24 12:42	1
Dibromomethane	ND		0.040	0.0074			11/04/24 09:34	11/04/24 12:42	1
Dichlorodifluoromethane	ND		0.25		mg/Kg		11/04/24 09:34	11/04/24 12:42	
1,2,3-Trichloropropane	ND		0.040		mg/Kg		11/04/24 09:34	11/04/24 12:42	1
Ethylbenzene	ND		0.040	0.0091			11/04/24 09:34	11/04/24 12:42	1
2-Chlorotoluene	ND		0.040	0.0088			11/04/24 09:34	11/04/24 12:42	
1,3,5-Trimethylbenzene	ND		0.040	0.0076			11/04/24 09:34	11/04/24 12:42	1
Isopropylbenzene	ND		0.040	0.0086			11/04/24 09:34	11/04/24 12:42	1
4-Chlorotoluene	ND		0.040	0.0098			11/04/24 09:34	11/04/24 12:42	1
Methylene Chloride	ND		0.25				11/04/24 09:34	11/04/24 12:42	1
1,2,4-Trimethylbenzene	ND		0.040		mg/Kg				1
m-Xylene & p-Xylene	ND		0.040	0.0071			11/04/24 09:34	11/04/24 12:42	1
1,3-Dichlorobenzene	ND		0.040		mg/Kg		11/04/24 09:34	11/04/24 12:42	1
4-Isopropyltoluene	ND ND		0.000		mg/Kg		11/04/24 09:34	11/04/24 12:42	1
N-Propylbenzene	ND		0.040		mg/Kg		11/04/24 09:34	11/04/24 12:42	1
									1
1,4-Dichlorobenzene	ND ND		0.060 0.040	0.011	mg/Kg		11/04/24 09:34	11/04/24 12:42 11/04/24 12:42	1
o-Xylene							11/04/24 09:34		
n-Butylbenzene	ND		0.040		mg/Kg		11/04/24 09:34	11/04/24 12:42	1
sec-Butylbenzene	ND		0.040	0.0086			11/04/24 09:34	11/04/24 12:42	1
1,2-Dichlorobenzene	ND		0.040	0.0087			11/04/24 09:34	11/04/24 12:42	1
Styrene	ND		0.040		mg/Kg		11/04/24 09:34	11/04/24 12:42	1
1,2-Dibromo-3-Chloropropane	ND		0.060		mg/Kg		11/04/24 09:34	11/04/24 12:42	1
t-Butylbenzene	ND		0.040	0.0077	mg/Kg		11/04/24 09:34	11/04/24 12:42	1

Client: ERM-West

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-476708/3-A

Matrix: Solid

Analysis Batch: 476722

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 476708

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		0.080	0.043	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
Tetrachloroethene	ND		0.040	0.0053	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
1,2,3-Trichlorobenzene	ND		0.080	0.040	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
Toluene	ND		0.060	0.014	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
Hexachlorobutadiene	ND		0.10	0.024	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
Naphthalene	ND		0.15	0.039	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
trans-1,2-Dichloroethene	ND		0.060	0.015	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
trans-1,3-Dichloropropene	ND		0.040	0.0070	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
Trichloroethene	ND		0.040	0.010	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
Trichlorofluoromethane	ND		0.080	0.026	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
Methyl tert-butyl ether	ND		0.040	0.0060	mg/Kg		11/04/24 09:34	11/04/24 12:42	1
Vinyl chloride	ND		0.10	0.019	mg/Kg		11/04/24 09:34	11/04/24 12:42	1

MB MB

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99	80 - 120	11/04/24 09:34	11/04/24 12:42	1
4-Bromofluorobenzene (Surr)	106	80 - 120	11/04/24 09:34	11/04/24 12:42	1
Dibromofluoromethane (Surr)	114	80 - 120	11/04/24 09:34	11/04/24 12:42	1
1,2-Dichloroethane-d4 (Surr)	115	80 - 121	11/04/24 09:34	11/04/24 12:42	1

Lab Sample ID: LCS 580-476708/1-A

Matrix: Solid

Analysis Batch: 476722

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 476708

Analyte Added Result Q Q 1,1-Dichloroethene 0.800 0.873 1,1-Dichloroethane 0.800 0.843 1,1,1-Trichloroethane 0.800 0.819 1,1-Dichloropropene 0.800 0.822 1,2-Dichloroethane 0.800 0.815 1,2-Dichloropropane 0.800 0.774 Benzene 0.800 0.817	mg/Kg mg/Kg mg/Kg mg/Kg	D %Rec 109 105 102 103	Limits 73 - 134 78 - 126 78 - 135
1,1-Dichloroethane 0.800 0.843 1,1,1-Trichloroethane 0.800 0.819 1,1-Dichloropropene 0.800 0.822 1,2-Dichloroethane 0.800 0.815 1,2-Dichloropropane 0.800 0.841 2,2-Dichloropropane 0.800 0.774	mg/Kg mg/Kg mg/Kg	105 102	78 - 126
1,1,1-Trichloroethane 0.800 0.819 1,1-Dichloropropene 0.800 0.822 1,2-Dichloroethane 0.800 0.815 1,2-Dichloropropane 0.800 0.841 2,2-Dichloropropane 0.800 0.774	mg/Kg mg/Kg	102	
1,1-Dichloropropene 0.800 0.822 1,2-Dichloroethane 0.800 0.815 1,2-Dichloropropane 0.800 0.841 2,2-Dichloropropane 0.800 0.774	mg/Kg		78 - 135
1,2-Dichloroethane 0.800 0.815 1,2-Dichloropropane 0.800 0.841 2,2-Dichloropropane 0.800 0.774		103	
1,2-Dichloropropane 0.800 0.841 2,2-Dichloropropane 0.800 0.774		100	76 - 140
2,2-Dichloropropane 0.800 0.774	mg/Kg	102	76 - 124
,	mg/Kg	105	73 - 130
Benzene 0.800 0.817	mg/Kg	97	75 - 134
	mg/Kg	102	79 - 135
1,1,2-Trichloroethane 0.800 0.834	mg/Kg	104	80 - 123
Bromochloromethane 0.800 0.821	mg/Kg	103	76 - 131
1,3-Dichloropropane 0.800 0.846	mg/Kg	106	80 - 120
Bromodichloromethane 0.800 0.827	mg/Kg	103	78 ₋ 125
1,2-Dibromoethane 0.800 0.853	mg/Kg	107	77 - 123
Bromomethane 0.800 0.925	mg/Kg	116	55 - 150
Carbon tetrachloride 0.800 0.775	mg/Kg	97	76 - 140
Chlorobenzene 0.800 0.764	mg/Kg	96	80 - 125
1,1,1,2-Tetrachloroethane 0.800 0.809	mg/Kg	101	79 - 128
Chloroethane 0.800 0.934	mg/Kg	117	26 - 150
1,1,2,2-Tetrachloroethane 0.800 0.744	mg/Kg	93	77 - 122
Chloroform 0.800 0.855	mg/Kg	107	74 - 133
Chloromethane 0.800 0.734	mg/Kg	92	52 - 142
cis-1,2-Dichloroethene 0.800 0.837	mg/Kg	105	80 - 125
cis-1,3-Dichloropropene 0.800 0.783	mg/Kg	98	80 - 122
Bromoform 0.800 0.627	mg/Kg	78	71 - 130

Spike

Added

Client: ERM-West Job ID: 580-145395-1

LCS LCS

Result Qualifier Unit

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-476708/1-A

Matrix: Solid

Trichlorofluoromethane

Methyl tert-butyl ether

Vinyl chloride

Analyte

Analysis Batch: 476722

Client Sample ID: Lab Control Sample

Limits

D %Rec

108

106

106

mg/Kg

mg/Kg

mg/Kg

71 - 150

71 - 126

62 - 144

Prep Type: Total/NA

Prep Batch: 476708 %Rec

Dibromochloromethane	0.800	0.807	mg/Kg	101	75 - 125	
Bromobenzene	0.800	0.744	mg/Kg	93	78 - 126	
Dibromomethane	0.800	0.847	mg/Kg	106	72 - 130	
Dichlorodifluoromethane	0.800	0.752	mg/Kg	94	33 - 150	
1,2,3-Trichloropropane	0.800	0.792	mg/Kg	99	77 - 127	
Ethylbenzene	0.800	0.793	mg/Kg	99	80 - 135	
2-Chlorotoluene	0.800	0.748	mg/Kg	94	77 - 134	
1,3,5-Trimethylbenzene	0.800	0.722	mg/Kg	90	72 - 134	
Isopropylbenzene	0.800	0.897	mg/Kg	112	80 - 131	
4-Chlorotoluene	0.800	0.774	mg/Kg	97	71 - 137	
Methylene Chloride	0.800	0.577	mg/Kg	72	56 - 140	
1,2,4-Trimethylbenzene	0.800	0.713	mg/Kg	89	73 - 138	
m-Xylene & p-Xylene	0.800	0.826	mg/Kg	103	80 - 132	
1,3-Dichlorobenzene	0.800	0.764	mg/Kg	95	78 - 132	
4-Isopropyltoluene	0.800	0.732	mg/Kg	92	71 - 142	
N-Propylbenzene	0.800	0.771	mg/Kg	96	78 - 133	
1,4-Dichlorobenzene	0.800	0.675	mg/Kg	84	77 - 123	
o-Xylene	0.800	0.860	mg/Kg	107	80 - 132	
n-Butylbenzene	0.800	0.700	mg/Kg	88	69 - 143	
sec-Butylbenzene	0.800	0.756	mg/Kg	95	71 - 143	
1,2-Dichlorobenzene	0.800	0.762	mg/Kg	95	78 - 126	
Styrene	0.800	0.841	mg/Kg	105	79 - 129	
1,2-Dibromo-3-Chloropropane	0.800	0.710	mg/Kg	89	64 - 129	
t-Butylbenzene	0.800	0.725	mg/Kg	91	72 - 144	
1,2,4-Trichlorobenzene	0.800	0.815	mg/Kg	102	74 - 131	
Tetrachloroethene	0.800	0.780	mg/Kg	98	75 - 141	
1,2,3-Trichlorobenzene	0.800	0.755	mg/Kg	94	58 - 146	
Toluene	0.800	0.787	mg/Kg	98	75 - 125	
Hexachlorobutadiene	0.800	0.704	mg/Kg	88	65 - 145	
Naphthalene	0.800	0.783	mg/Kg	98	56 - 145	
trans-1,2-Dichloroethene	0.800	0.788	mg/Kg	98	77 - 134	
trans-1,3-Dichloropropene	0.800	0.849	mg/Kg	106	80 - 121	
Trichloroethene	0.800	0.772	mg/Kg	97	80 - 134	

0.800

0.800

0.800

0.867

0.844

0.847

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	99		80 - 120
4-Bromofluorobenzene (Surr)	103		80 - 120
Dibromofluoromethane (Surr)	102		80 - 120
1,2-Dichloroethane-d4 (Surr)	105		80 - 121

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-476708/2-A

Matrix: Solid

Analysis Batch: 476722

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA Prep Batch: 476708

-	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1-Dichloroethene	0.800	0.830		mg/Kg		104	73 - 134	5	25
1,1-Dichloroethane	0.800	0.840		mg/Kg		105	78 - 126	0	20
1,1,1-Trichloroethane	0.800	0.825		mg/Kg		103	78 - 135	1	20
1,1-Dichloropropene	0.800	0.813		mg/Kg		102	76 - 140	1	20
1,2-Dichloroethane	0.800	0.833		mg/Kg		104	76 - 124	2	20
1,2-Dichloropropane	0.800	0.824		mg/Kg		103	73 - 130	2	20
2,2-Dichloropropane	0.800	0.771		mg/Kg		96	75 - 134	0	20
Benzene	0.800	0.792		mg/Kg		99	79 - 135	3	20
1,1,2-Trichloroethane	0.800	0.798		mg/Kg		100	80 - 123	4	20
Bromochloromethane	0.800	0.832		ma/Ka		104	76 131	1	20

Analyte	Added	Result	Qualifier Unit	D	%Rec	Limits	RPD	Limi
1,1-Dichloroethene	0.800	0.830	mg/Kg		104	73 - 134	5	25
1,1-Dichloroethane	0.800	0.840	mg/Kg		105	78 - 126	0	20
1,1,1-Trichloroethane	0.800	0.825	mg/Kg		103	78 - 135	1	20
1,1-Dichloropropene	0.800	0.813	mg/Kg		102	76 - 140	1	20
1,2-Dichloroethane	0.800	0.833	mg/Kg		104	76 - 124	2	20
1,2-Dichloropropane	0.800	0.824	mg/Kg		103	73 - 130	2	20
2,2-Dichloropropane	0.800	0.771	mg/Kg		96	75 - 134	0	20
Benzene	0.800	0.792	mg/Kg		99	79 - 135	3	20
1,1,2-Trichloroethane	0.800	0.798	mg/Kg		100	80 - 123	4	20
Bromochloromethane	0.800	0.832	mg/Kg		104	76 - 131	1	20
1,3-Dichloropropane	0.800	0.827	mg/Kg		103	80 - 120	2	20
Bromodichloromethane	0.800	0.850	mg/Kg		106	78 - 125	3	20
1,2-Dibromoethane	0.800	0.797	mg/Kg		100	77 - 123	7	20
Bromomethane	0.800	0.969	mg/Kg		121	55 - 150	5	26
Carbon tetrachloride	0.800	0.804	mg/Kg		100	76 - 140	4	20
Chlorobenzene	0.800	0.742	mg/Kg		93	80 - 125	3	20
1,1,1,2-Tetrachloroethane	0.800	0.757	mg/Kg		95	79 - 128	7	20
Chloroethane	0.800	1.01	mg/Kg		127	26 - 150	8	40
1,1,2,2-Tetrachloroethane	0.800	0.692	mg/Kg		87	77 - 122	7	20
Chloroform	0.800	0.881	mg/Kg		110	74 - 133	3	20
Chloromethane	0.800	0.865	mg/Kg		108	52 - 142	16	40
cis-1,2-Dichloroethene	0.800	0.847	mg/Kg		106	80 - 125	1	20
cis-1,3-Dichloropropene	0.800	0.828	mg/Kg		104	80 - 122	6	20
Bromoform	0.800	0.570	mg/Kg		71	71 - 130	9	20
Dibromochloromethane	0.800	0.779	mg/Kg		97	75 - 125	4	20
Bromobenzene	0.800	0.739	mg/Kg		92	78 - 126	1	20
Dibromomethane	0.800	0.846	mg/Kg		106	72 - 130	0	40
Dichlorodifluoromethane	0.800	0.870	mg/Kg		109	33 - 150	15	31
1,2,3-Trichloropropane	0.800	0.733	mg/Kg		92	77 - 127	8	20
Ethylbenzene	0.800	0.789	mg/Kg		99	80 - 135	1	20
2-Chlorotoluene	0.800	0.758	mg/Kg		95	77 - 134	1	21
1,3,5-Trimethylbenzene	0.800	0.696	mg/Kg		87	72 - 134	4	24
Isopropylbenzene	0.800	0.810	mg/Kg		101	80 - 131	10	20
4-Chlorotoluene	0.800	0.776	mg/Kg		97	71 - 137	0	21
Methylene Chloride	0.800	0.603	mg/Kg		75	56 - 140	4	20
1,2,4-Trimethylbenzene	0.800	0.685	mg/Kg		86	73 - 138	4	22
m-Xylene & p-Xylene	0.800	0.826	mg/Kg		103	80 - 132	0	20
1,3-Dichlorobenzene	0.800	0.790	mg/Kg		99	78 - 132	3	20
4-Isopropyltoluene	0.800	0.736	mg/Kg		92	71 - 142	1	29
N-Propylbenzene	0.800	0.744	mg/Kg		93	78 - 133	4	24
1,4-Dichlorobenzene	0.800	0.684	mg/Kg		85	77 ₋ 123	1	20
o-Xylene	0.800	0.851	mg/Kg		106	80 ₋ 132	1	20
n-Butylbenzene	0.800	0.682	mg/Kg		85	69 - 143	3	31
sec-Butylbenzene	0.800	0.763	mg/Kg		95	71 - 143	1	29
1,2-Dichlorobenzene	0.800	0.763			95 95	71 - 143 78 - 126	0	20
			mg/Kg					
Styrene 1,2-Dibromo-3-Chloropropane	0.800 0.800	0.850	mg/Kg		106	79 ₋ 129	1	20
' '		0.676	mg/Kg		85	64 - 129	5	40
t-Butylbenzene	0.800	0.745	mg/Kg		93	72 - 144	3	27

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-476708/2-A

Matrix: Solid

Analysis Batch: 476722

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 476708

Spike	LCSD	LCSD				%Rec		RPD
Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
0.800	0.766		mg/Kg		96	74 - 131	6	26
0.800	0.736		mg/Kg		92	75 - 141	6	20
0.800	0.751		mg/Kg		94	58 - 146	0	28
0.800	0.750		mg/Kg		94	75 - 125	5	20
0.800	0.704		mg/Kg		88	65 - 145	0	36
0.800	0.745		mg/Kg		93	56 - 145	5	25
0.800	0.816		mg/Kg		102	77 - 134	4	20
0.800	0.799		mg/Kg		100	80 - 121	6	20
0.800	0.747		mg/Kg		93	80 - 134	3	20
0.800	0.951		mg/Kg		119	71 - 150	9	30
0.800	0.794		mg/Kg		99	71 - 126	6	20
0.800	0.841		mg/Kg		105	62 - 144	1	20
	Added 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800	Added Result 0.800 0.766 0.800 0.736 0.800 0.751 0.800 0.750 0.800 0.704 0.800 0.745 0.800 0.816 0.800 0.799 0.800 0.747 0.800 0.951 0.800 0.794	Added Result Qualifier 0.800 0.766 0.800 0.736 0.800 0.751 0.800 0.750 0.800 0.704 0.800 0.745 0.800 0.816 0.800 0.799 0.800 0.747 0.800 0.951 0.800 0.794	Added Result Qualifier Unit 0.800 0.766 mg/Kg 0.800 0.736 mg/Kg 0.800 0.751 mg/Kg 0.800 0.750 mg/Kg 0.800 0.704 mg/Kg 0.800 0.745 mg/Kg 0.800 0.816 mg/Kg 0.800 0.799 mg/Kg 0.800 0.747 mg/Kg 0.800 0.951 mg/Kg 0.800 0.794 mg/Kg	Added Result Qualifier Unit D 0.800 0.766 mg/Kg mg/Kg 0.800 0.736 mg/Kg 0.800 0.751 mg/Kg 0.800 0.750 mg/Kg 0.800 0.704 mg/Kg 0.800 0.745 mg/Kg 0.800 0.816 mg/Kg 0.800 0.799 mg/Kg 0.800 0.747 mg/Kg 0.800 0.951 mg/Kg 0.800 0.794 mg/Kg	Added Result Qualifier Unit D %Rec 0.800 0.766 mg/Kg 96 0.800 0.736 mg/Kg 92 0.800 0.751 mg/Kg 94 0.800 0.750 mg/Kg 88 0.800 0.704 mg/Kg 93 0.800 0.745 mg/Kg 102 0.800 0.816 mg/Kg 100 0.800 0.799 mg/Kg 93 0.800 0.747 mg/Kg 93 0.800 0.951 mg/Kg 119 0.800 0.794 mg/Kg 99	Added Result Qualifier Unit D %Rec Limits 0.800 0.766 mg/Kg 96 74 - 131 0.800 0.736 mg/Kg 92 75 - 141 0.800 0.751 mg/Kg 94 58 - 146 0.800 0.750 mg/Kg 94 75 - 125 0.800 0.704 mg/Kg 88 65 - 145 0.800 0.745 mg/Kg 93 56 - 145 0.800 0.816 mg/Kg 102 77 - 134 0.800 0.799 mg/Kg 100 80 - 121 0.800 0.747 mg/Kg 93 80 - 134 0.800 0.951 mg/Kg 119 71 - 150 0.800 0.794 mg/Kg 99 71 - 126	Added Result Qualifier Unit D %Rec Limits RPD 0.800 0.766 mg/Kg 96 74 - 131 6 0.800 0.736 mg/Kg 92 75 - 141 6 0.800 0.751 mg/Kg 94 58 - 146 0 0.800 0.750 mg/Kg 94 75 - 125 5 0.800 0.704 mg/Kg 88 65 - 145 0 0.800 0.745 mg/Kg 93 56 - 145 5 0.800 0.816 mg/Kg 102 77 - 134 4 0.800 0.799 mg/Kg 100 80 - 121 6 0.800 0.747 mg/Kg 93 80 - 134 3 0.800 0.951 mg/Kg 119 71 - 150 9 0.800 0.794 mg/Kg 99 71 - 126 6

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	97		80 - 120
4-Bromofluorobenzene (Surr)	105		80 - 120
Dibromofluoromethane (Surr)	109		80 - 120
1,2-Dichloroethane-d4 (Surr)	111		80 - 121

Lab Sample ID: 580-145395-8 MS

Analysis Batch: 476722

Matrix: Solid

Client Sample ID: PDI-40a-SO-54.9-20241030

Prep Type: Total/NA

Prep Batch: 476708

7 maryolo Batom 47 07 22	Sample	Sample	Spike	MS	MS				%Rec
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1,1,2-Tetrachloroethane	ND		1.28	1.04		mg/Kg	— <u></u>	81	79 - 128
1,1,1-Trichloroethane	ND		1.28	1.17		mg/Kg	₩	91	78 - 135
1,1,2,2-Tetrachloroethane	ND		1.28	1.00		mg/Kg	₩	78	77 - 122
1,1,2-Trichloroethane	ND		1.28	1.14		mg/Kg	₩	89	80 - 123
1,1-Dichloroethane	ND		1.28	1.22		mg/Kg	₩	95	78 - 126
1,1-Dichloroethene	ND		1.28	1.31		mg/Kg	₩	102	73 - 134
1,1-Dichloropropene	ND		1.28	1.17		mg/Kg	₩	91	76 - 140
1,2,3-Trichlorobenzene	ND		1.28	0.941		mg/Kg	₩	73	58 - 146
1,2,3-Trichloropropane	ND		1.28	1.02		mg/Kg	₩	80	77 - 127
1,2,4-Trichlorobenzene	ND		1.28	1.02		mg/Kg	₩	79	74 - 131
1,2,4-Trimethylbenzene	ND		1.28	0.967		mg/Kg	₩	75	73 - 138
1,2-Dibromo-3-Chloropropane	ND		1.28	0.897		mg/Kg	₩	70	64 - 129
1,2-Dibromoethane	ND		1.28	1.12		mg/Kg	₩	87	77 - 123
1,2-Dichlorobenzene	ND		1.28	1.02		mg/Kg	₩	79	78 - 126
1,2-Dichloroethane	ND		1.28	1.16		mg/Kg	₩	90	76 - 124
1,2-Dichloropropane	ND		1.28	1.20		mg/Kg	₩	94	73 - 130
1,3,5-Trimethylbenzene	ND		1.28	0.968		mg/Kg	₩	75	72 - 134
1,3-Dichlorobenzene	ND		1.28	1.10		mg/Kg	₩	86	78 - 132
1,3-Dichloropropane	ND		1.28	1.16		mg/Kg	₩	90	80 - 120
1,4-Dichlorobenzene	ND		1.28	1.02		mg/Kg	₩	80	77 - 123
2,2-Dichloropropane	ND		1.28	1.09		mg/Kg	₩	85	75 - 134
2-Chlorotoluene	ND		1.28	1.05		mg/Kg	₩	82	77 - 134
4-Chlorotoluene	ND		1.28	1.08		mg/Kg	₩	84	71 - 137
4-Isopropyltoluene	ND		1.28	0.997		mg/Kg	₩	78	71 - 142

Spike

Client: ERM-West Job ID: 580-145395-1

MS MS

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Sample Sample

Lab Sample ID: 580-145395-8 MS

Matrix: Solid

Analysis Batch: 476722

Client Sample ID: PDI-40a-SO-54.9-20241030

%Rec

Prep Type: Total/NA

Prep Batch: 476708

Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	ND		1.28	1.18		mg/Kg	☆	92	79 - 135	
Bromobenzene	ND		1.28	0.995		mg/Kg	☆	78	78 - 126	
Bromochloromethane	ND		1.28	1.17		mg/Kg	₩	91	76 - 131	
Bromodichloromethane	ND		1.28	1.11		mg/Kg	≎	87	78 - 125	
Bromoform	ND	F1	1.28	0.746	F1	mg/Kg	₩	58	71 - 130	
Bromomethane	ND		1.28	1.64		mg/Kg	₩	128	55 - 150	
Carbon tetrachloride	ND		1.28	1.13		mg/Kg	₩	88	76 - 140	
Chlorobenzene	2.9	F1	1.28	3.85	F1	mg/Kg	₩	73	80 - 125	
Chloroethane	ND	F1	1.28	1.75		mg/Kg	₩	136	26 - 150	
Chloroform	ND		1.28	1.21		mg/Kg	₩	94	74 - 133	
Chloromethane	ND		1.28	1.17		mg/Kg	₩	91	52 - 142	
cis-1,2-Dichloroethene	ND		1.28	1.20		mg/Kg	₩	93	80 - 125	
cis-1,3-Dichloropropene	ND		1.28	1.03		mg/Kg	₩	81	80 - 122	
Dibromochloromethane	ND		1.28	1.04		mg/Kg	₩	81	75 - 125	
Dibromomethane	ND		1.28	1.19		mg/Kg	₩	92	72 - 130	
Dichlorodifluoromethane	ND		1.28	1.25		mg/Kg	₩	97	33 - 150	
Ethylbenzene	ND		1.28	1.14		mg/Kg	☆	89	80 - 135	
Hexachlorobutadiene	ND		1.28	0.916		mg/Kg	₩	71	65 - 145	
Isopropylbenzene	ND		1.28	1.26		mg/Kg	≎	98	80 - 131	
Methyl tert-butyl ether	ND		1.28	1.12		mg/Kg	₩	87	71 - 126	
Methylene Chloride	ND		1.28	0.999		mg/Kg	₩	78	56 - 140	
m-Xylene & p-Xylene	ND		1.28	1.14		mg/Kg	₩	89	80 - 132	
Naphthalene	ND		1.28	1.01		mg/Kg	₩	79	56 - 145	
n-Butylbenzene	ND		1.28	0.948		mg/Kg	₩	74	69 - 143	
N-Propylbenzene	ND		1.28	1.06		mg/Kg	₩	83	78 - 133	
o-Xylene	ND		1.28	1.17		mg/Kg	₩	91	80 - 132	
sec-Butylbenzene	ND		1.28	1.04		mg/Kg	₩	81	71 - 143	
Styrene	ND		1.28	1.16		mg/Kg	₩	91	79 - 129	
t-Butylbenzene	ND		1.28	1.00		mg/Kg	☆	78	72 - 144	
Tetrachloroethene	ND		1.28	1.09		mg/Kg	₩	85	75 - 141	
Toluene	ND		1.28	1.11		mg/Kg	₩	86	75 - 125	
trans-1,2-Dichloroethene	ND		1.28	1.19		mg/Kg	≎	93	77 - 134	
trans-1,3-Dichloropropene	ND		1.28	1.09		mg/Kg	≎	85	80 - 121	
Trichloroethene	ND		1.28	1.08		mg/Kg	≎	84	80 - 134	
Trichlorofluoromethane	ND		1.28	1.47		mg/Kg	☆	115	71 - 150	
	ND		1.28	1.38		mg/Kg	₩	108	62 - 144	

MS MS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	108		80 - 121
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	105		80 - 120
Toluene-d8 (Surr)	97		80 - 120

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 580-145395-8 MSD

Matrix: Solid

Client Sample ID: PDI-40a-SO-54.9-20241030 Prep Type: Total/NA

			Prep Ba	•		
			%Rec		RPD	
it	D	%Rec	Limits	RPD	I imit	

Analysis Batch: 476722			MSD	MSD MSD	MSD			Prep B	atch: 4		
Analista	•	Sample	Spike			11	_	0/ D = =	%Rec	222	RPD
Analyte 1.1.1.2 Tetrachlereathere	ND	Qualifier	Added	1.14	Qualifier	Unit	_ D	%Rec	79 - 128	RPD	Limit 20
1,1,1,2-Tetrachloroethane						mg/Kg		92		9	
1,1,1-Trichloroethane	ND ND		1.24 1.24	1.38		mg/Kg	\$	111	78 ₋ 135 77 ₋ 122	16 2	20 20
1,1,2,2-Tetrachloroethane				1.02		mg/Kg		83			
1,1,2-Trichloroethane	ND		1.24	1.17		mg/Kg	\$	94	80 - 123	2	20
1,1-Dichloroethane	ND		1.24	1.42		mg/Kg	≎	115	78 - 126	15	20
1,1-Dichloroethene	ND		1.24	1.51		mg/Kg		122	73 - 134	14	25
1,1-Dichloropropene	ND		1.24	1.30		mg/Kg	☼	105	76 - 140	10	20
1,2,3-Trichlorobenzene	ND		1.24	1.10		mg/Kg	₩	89	58 - 146	15	28
1,2,3-Trichloropropane	ND		1.24	1.09		mg/Kg		88	77 - 127		20
1,2,4-Trichlorobenzene	ND		1.24	1.16		mg/Kg	₩	94	74 - 131	13	26
1,2,4-Trimethylbenzene	ND		1.24	1.08		mg/Kg	☼	87	73 - 138	11	22
1,2-Dibromo-3-Chloropropane	ND		1.24	0.913		mg/Kg	₩	74	64 - 129	2	40
1,2-Dibromoethane	ND		1.24	1.20		mg/Kg	≎	97	77 - 123	7	20
1,2-Dichlorobenzene	ND		1.24	1.17		mg/Kg	≎	95	78 - 126	14	20
1,2-Dichloroethane	ND		1.24	1.27		mg/Kg	☼	103	76 - 124	9	20
1,2-Dichloropropane	ND		1.24	1.33		mg/Kg	₩	107	73 - 130	10	20
1,3,5-Trimethylbenzene	ND		1.24	1.09		mg/Kg	≎	88	72 - 134	12	24
1,3-Dichlorobenzene	ND		1.24	1.27		mg/Kg	☼	103	78 - 132	15	20
1,3-Dichloropropane	ND		1.24	1.19		mg/Kg	≎	96	80 - 120	3	20
1,4-Dichlorobenzene	ND		1.24	1.16		mg/Kg	☼	94	77 - 123	13	20
2,2-Dichloropropane	ND		1.24	1.27		mg/Kg	₩	103	75 - 134	15	20
2-Chlorotoluene	ND		1.24	1.22		mg/Kg		98	77 - 134	15	21
4-Chlorotoluene	ND		1.24	1.25		mg/Kg	☼	101	71 - 137	14	21
4-Isopropyltoluene	ND		1.24	1.15		mg/Kg	≎	93	71 - 142	14	29
Benzene	ND		1.24	1.30		mg/Kg		105	79 - 135	9	20
Bromobenzene	ND		1.24	1.16		mg/Kg	☼	94	78 - 126	15	20
Bromochloromethane	ND		1.24	1.37		mg/Kg	☼	111	76 - 131	16	20
Bromodichloromethane	ND		1.24	1.29		mg/Kg		104	78 - 125	15	20
Bromoform		F1	1.24	0.784	F1	mg/Kg	☼	63	71 - 130	5	20
Bromomethane	ND		1.24	1.69		mg/Kg	☼	136	55 - 150	3	26
Carbon tetrachloride	ND		1.24	1.31		mg/Kg		106	76 - 140	15	20
Chlorobenzene	2.9	F1	1.24	3.84	F1	mg/Kg		75	80 - 125	0	20
Chloroethane		F1	1.24	1.98		mg/Kg		160	26 - 150	12	40
Chloroform	ND		1.24	1.40		mg/Kg		113	74 - 133	14	20
Chloromethane	ND		1.24	1.31		mg/Kg	☆	106	52 - 142	12	40
cis-1,2-Dichloroethene	ND		1.24	1.37		mg/Kg	≎	111	80 - 125	14	20
cis-1,3-Dichloropropene	ND		1.24	1.13		mg/Kg		91	80 - 122	9	20
Dibromochloromethane	ND ND		1.24	1.13					75 - 125	8	20
Dibromomethane						mg/Kg	≎	90 105		9	
	ND		1.24	1.30		mg/Kg	\$	105	72 - 130		40
Dichlorodifluoromethane	ND		1.24	1.34		mg/Kg	\$	108	33 - 150	7	31
Ethylbenzene	ND		1.24	1.26		mg/Kg	‡	102	80 - 135	10	20
Hexachlorobutadiene	ND		1.24	1.13		mg/Kg	\$	91	65 - 145	21	36
Isopropylbenzene	ND		1.24	1.44		mg/Kg	‡	116	80 - 131	13	20
Methyl tert-butyl ether	ND		1.24	1.18		mg/Kg	≎	95	71 - 126	5	20
Methylene Chloride	ND		1.24	1.21		mg/Kg	. .	98	56 - 140	19	20
m-Xylene & p-Xylene	ND		1.24	1.32		mg/Kg	☼	107	80 - 132	15	20
Naphthalene	ND		1.24	1.07		mg/Kg	₩	87	56 - 145	6	25
n-Butylbenzene	ND		1.24	1.07		mg/Kg	≎	86	69 - 143	12	31

Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 580-145395-8 MSD

Matrix: Solid

Client: ERM-West

Analysis Batch: 476722

Client Sample ID: PDI-40a-SO-54.9-20241030

Prep Type: Total/NA

Prep Batch: 476708

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
N-Propylbenzene	ND		1.24	1.24		mg/Kg	₩	100	78 - 133	15	24
o-Xylene	ND		1.24	1.33		mg/Kg	☆	107	80 - 132	13	20
sec-Butylbenzene	ND		1.24	1.22		mg/Kg	☆	99	71 - 143	16	29
Styrene	ND		1.24	1.31		mg/Kg	☆	106	79 - 129	12	20
t-Butylbenzene	ND		1.24	1.16		mg/Kg	☆	94	72 - 144	15	27
Tetrachloroethene	ND		1.24	1.19		mg/Kg	₩	96	75 - 141	9	20
Toluene	ND		1.24	1.24		mg/Kg	☆	100	75 - 125	11	20
trans-1,2-Dichloroethene	ND		1.24	1.40		mg/Kg	☆	113	77 - 134	16	20
trans-1,3-Dichloropropene	ND		1.24	1.17		mg/Kg	☆	94	80 - 121	7	20
Trichloroethene	ND		1.24	1.20		mg/Kg	☆	97	80 - 134	10	20
Trichlorofluoromethane	ND		1.24	1.61		mg/Kg	☆	130	71 - 150	9	30
Vinyl chloride	ND		1.24	1.51		mg/Kg	☆	122	62 - 144	9	20

MSD MSD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	109		80 - 121
4-Bromofluorobenzene (Surr)	105		80 - 120
Dibromofluoromethane (Surr)	111		80 - 120
Toluene-d8 (Surr)	100		80 - 120

Lab Sample ID: MB 580-476848/3-A

Matrix: Solid

Analysis Batch: 476849

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 476848

MB MB

Analyte	Result	Qualifier	KL	MDL	Unit	D	Prepared	Anaiyzed	DII Fac	
Chlorobenzene	ND		0.040	0.0048	mg/Kg		11/05/24 09:00	11/05/24 12:03	1	
1,4-Dichlorobenzene	ND		0.060	0.011	mg/Kg		11/05/24 09:00	11/05/24 12:03	1	
	MD	MP								

	IVID IVID				
Surrogate	%Recovery Qualif	ier Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	103	80 - 120	11/05/24 09:00	11/05/24 12:03	1
4-Bromofluorobenzene (Surr)	103	80 - 120	11/05/24 09:00	11/05/24 12:03	1
Dibromofluoromethane (Surr)	109	80 - 120	11/05/24 09:00	11/05/24 12:03	1
1,2-Dichloroethane-d4 (Surr)	106	80 - 121	11/05/24 09:00	11/05/24 12:03	1

Lab Sample ID: LCS 580-476848/1-A

Matrix: Solid

Analysis Batch: 476849

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 476848

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chlorobenzene	 0.800	0.784		mg/Kg		98	80 - 125	
1,4-Dichlorobenzene	0.800	0.845		mg/Kg		106	77 - 123	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	102		80 - 120
4-Bromofluorobenzene (Surr)	103		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
1 2-Dichloroethane-d4 (Surr)	100		80 - 121

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-476848/2-A

Matrix: Solid

Analysis Batch: 476849

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 476848 %Rec **RPD** Limit

LCSD LCSD Spike Added Limits RPD Analyte Result Qualifier Unit D %Rec Chlorobenzene 0.800 0.811 mg/Kg 101 80 - 125 3 20 1,4-Dichlorobenzene 0.800 0.930 mg/Kg 116 77 - 123 10 20

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	103		80 - 120
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	109		80 - 120
1,2-Dichloroethane-d4 (Surr)	104		80 - 121

Lab Sample ID: MB 580-477337/11 Client Sample ID: Method Blank

Matrix: Water

Analysis Batch: 477337

Prep Type: Total/NA

	MB	MB							
Analyte	Result	Qualifier	RL _		Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		1.0		ug/L			11/08/24 15:27	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			11/08/24 15:27	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			11/08/24 15:27	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			11/08/24 15:27	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			11/08/24 15:27	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			11/08/24 15:27	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			11/08/24 15:27	1
Benzene	ND		1.0	0.24	ug/L			11/08/24 15:27	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			11/08/24 15:27	1
Bromochloromethane	ND		1.0	0.29	ug/L			11/08/24 15:27	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			11/08/24 15:27	1
Bromodichloromethane	ND		1.0	0.29	ug/L			11/08/24 15:27	1
1,2-Dibromoethane	ND		1.0	0.40	ug/L			11/08/24 15:27	1
Bromomethane	ND		1.0	0.21	ug/L			11/08/24 15:27	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			11/08/24 15:27	1
Chlorobenzene	ND		1.0	0.44	ug/L			11/08/24 15:27	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			11/08/24 15:27	1
Chloroethane	ND		1.0	0.35	ug/L			11/08/24 15:27	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			11/08/24 15:27	1
Chloroform	ND		1.0	0.26	ug/L			11/08/24 15:27	1
Chloromethane	ND		1.0	0.28	ug/L			11/08/24 15:27	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			11/08/24 15:27	1
cis-1,3-Dichloropropene	ND		1.0	0.42	ug/L			11/08/24 15:27	1
Bromoform	ND		1.0	0.51	ug/L			11/08/24 15:27	1
Dibromochloromethane	ND		1.0	0.43	ug/L			11/08/24 15:27	1
Bromobenzene	ND		1.0	0.43	ug/L			11/08/24 15:27	1
Dibromomethane	ND		1.0	0.34	ug/L			11/08/24 15:27	1
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			11/08/24 15:27	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			11/08/24 15:27	1
Ethylbenzene	ND		1.0	0.50	ug/L			11/08/24 15:27	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			11/08/24 15:27	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			11/08/24 15:27	1
Isopropylbenzene	ND		1.0		ug/L			11/08/24 15:27	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			11/08/24 15:27	1

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11/20/2024 (Rev. 1)

Job ID: 580-145395-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-477337/11

Matrix: Water

Analysis Batch: 477337

Client Sample ID: Method Blank

Prep Type: Total/NA

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac Methylene Chloride 5.31 5.0 1.4 ug/L 11/08/24 15:27 1,2,4-Trimethylbenzene ND 3.0 0.61 ug/L 11/08/24 15:27 ND m-Xylene & p-Xylene 2.0 0.53 ug/L 11/08/24 15:27 1,3-Dichlorobenzene ND 1.0 0.48 ug/L 11/08/24 15:27 ND 4-Isopropyltoluene 1.0 0.28 ug/L 11/08/24 15:27 N-Propylbenzene ND 1.0 0.50 ug/L 11/08/24 15:27 1,4-Dichlorobenzene ND 1.0 0.46 ug/L 11/08/24 15:27 0.39 ug/L o-Xylene ND 1.0 11/08/24 15:27 n-Butylbenzene ND 1.0 0.44 ug/L 11/08/24 15:27 sec-Butylbenzene ND 1.0 0.49 ug/L 11/08/24 15:27 1,2-Dichlorobenzene ND 1.0 0.46 ug/L 11/08/24 15:27 ND Styrene 1.0 0.53 ug/L 11/08/24 15:27 1,2-Dibromo-3-Chloropropane ND 3.0 0.57 ug/L 11/08/24 15:27 t-Butylbenzene ND 2.0 0.58 ug/L 11/08/24 15:27 1,2,4-Trichlorobenzene ND 1.0 0.33 ug/L 11/08/24 15:27 ND Tetrachloroethene 1.0 0.41 ug/L 11/08/24 15:27 1,2,3-Trichlorobenzene ND 2.0 0.43 ug/L 11/08/24 15:27 Toluene ND 1.0 11/08/24 15:27 0.39 ug/L Hexachlorobutadiene ND 3.0 0.79 ug/L 11/08/24 15:27 Naphthalene ND 3.0 0.93 ug/L 11/08/24 15:27 trans-1,2-Dichloroethene ND 1.0 0.39 ug/L 11/08/24 15:27 trans-1,3-Dichloropropene ND 1.0 0.41 ug/L 11/08/24 15:27 Trichloroethene ND 1.0 0.26 ug/L 11/08/24 15:27 ND 1.0 0.36 ug/L Trichlorofluoromethane 11/08/24 15:27 ND 1.0 Methyl tert-butyl ether 0.44 ug/L 11/08/24 15:27 Vinyl chloride ND 1.0 0.22 ug/L 11/08/24 15:27

MB MB

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99	80 - 120		11/08/24 15:27	1
4-Bromofluorobenzene (Surr)	98	80 - 120		11/08/24 15:27	1
Dibromofluoromethane (Surr)	96	80 - 120		11/08/24 15:27	1
1,2-Dichloroethane-d4 (Surr)	95	80 - 120		11/08/24 15:27	1

Lab Sample ID: LCS 580-477337/6

Matrix: Water

Analysis Batch: 477337

Client Sample ID: Lab Control Sample Prep Type: Total/NA

	Spike	LCS	LCS				%Rec
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1-Dichloroethene	5.00	4.80		ug/L		96	70 - 129
1,1-Dichloroethane	5.00	4.67		ug/L		93	80 - 120
1,1,1-Trichloroethane	5.00	4.54		ug/L		91	74 - 130
1,1-Dichloropropene	5.00	5.01		ug/L		100	74 - 120
1,2-Dichloroethane	5.00	4.53		ug/L		91	69 - 126
1,2-Dichloropropane	5.00	4.81		ug/L		96	80 - 120
2,2-Dichloropropane	5.00	4.67		ug/L		93	66 - 126
Benzene	5.00	4.90		ug/L		98	80 - 122
1,1,2-Trichloroethane	5.00	4.91		ug/L		98	80 - 121
Bromochloromethane	5.00	4.93		ug/L		99	78 - 120

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3

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10

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-477337/6

Matrix: Water

Trichlorofluoromethane

Methyl tert-butyl ether

Analysis Batch: 477337

Client Sample ID: Lab Control Sample Prep Type: Total/NA

	Spike		LCS			%Rec	
Analyte	Added		Qualifier	Unit	D %Rec	Limits	
1,3-Dichloropropane	5.00	4.98		ug/L	100	79 - 120	
Bromodichloromethane	5.00	4.59		ug/L	92	75 - 124	
1,2-Dibromoethane	5.00	5.03		ug/L	101	79 - 126	
Bromomethane	5.00	4.72		ug/L	94	36 - 150	
Carbon tetrachloride	5.00	4.62		ug/L	92	72 - 129	
Chlorobenzene	5.00	4.98		ug/L	100	80 - 120	
1,1,1,2-Tetrachloroethane	5.00	4.77		ug/L	95	79 - 120	
Chloroethane	5.00	4.52		ug/L	90	38 - 150	
1,1,2,2-Tetrachloroethane	5.00	4.86		ug/L	97	74 - 124	
Chloroform	5.00	4.74		ug/L	95	78 - 127	
Chloromethane	5.00	4.35		ug/L	87	25 - 150	
cis-1,2-Dichloroethene	5.00	5.07		ug/L	101	76 - 120	
cis-1,3-Dichloropropene	5.00	4.68		ug/L	94	77 - 120	
Bromoform	5.00	4.31		ug/L	86	56 - 139	
Dibromochloromethane	5.00	4.59		ug/L	92	73 - 125	
Bromobenzene	5.00	4.85		ug/L	97	80 - 120	
Dibromomethane	5.00	4.82		ug/L	96	80 - 120	
Dichlorodifluoromethane	5.00	4.24		ug/L	85	20 - 150	
1,2,3-Trichloropropane	5.00	5.01		ug/L	100	76 - 124	
Ethylbenzene	5.00	5.23		ug/L	105	80 - 120	
2-Chlorotoluene	5.00	5.15		ug/L	103	80 - 120	
1,3,5-Trimethylbenzene	5.00	5.25		ug/L	105	80 - 122	
Isopropylbenzene	5.00	5.40		ug/L	108	80 - 123	
4-Chlorotoluene	5.00	5.34		ug/L	107	73 - 129	
Methylene Chloride	5.00	4.84	J	ug/L	97	77 - 125	
1,2,4-Trimethylbenzene	5.00	5.27		ug/L	105	80 - 120	
m-Xylene & p-Xylene	5.00	5.13		ug/L	103	80 - 120	
1,3-Dichlorobenzene	5.00	5.10		ug/L	102	77 - 127	
4-Isopropyltoluene	5.00	5.16		ug/L	103	77 - 126	
N-Propylbenzene	5.00	5.26		ug/L	105	80 - 122	
1,4-Dichlorobenzene	5.00	4.97		ug/L	99	80 - 120	
o-Xylene	5.00	5.16		ug/L	103	80 - 120	
n-Butylbenzene	5.00	4.89		ug/L	98	57 - 133	
sec-Butylbenzene	5.00	5.36		ug/L	107	78 - 122	
1,2-Dichlorobenzene	5.00	4.94		ug/L	99	80 - 120	
Styrene	5.00	4.94		ug/L	99	76 - 122	
1,2-Dibromo-3-Chloropropane	5.00	4.13			83	65 - 133	
t-Butylbenzene	5.00	5.17		ug/L ug/L	103	75 ₋ 123	
1,2,4-Trichlorobenzene	5.00					61 - 148	
, ,		5.03		ug/L	101		
Tetrachloroethene	5.00	4.85		ug/L	97	76 ₋ 125	
1,2,3-Trichlorobenzene	5.00	4.96		ug/L	99	65 - 150	
Toluene	5.00	4.88		ug/L	98	80 - 120 74 - 121	
Hexachlorobutadiene	5.00	4.80		ug/L	96	74 - 131	
Naphthalene	5.00	4.49		ug/L	90	63 - 150	
trans-1,2-Dichloroethene	5.00	4.88		ug/L	98	75 - 120	
trans-1,3-Dichloropropene	5.00	4.35		ug/L	87	76 - 122	
Trichloroethene	5.00	4.73		ug/L	95	80 - 125	
Trichlarafluaramathana	F 00	405		/1	0.7	45 440	

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4.35

4.86

ug/L

ug/L

87

97

45 - 148

72 - 120

5.00

5.00

3

4

6

8

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

100 100

Lab Sample ID: LCS 580-477337/6

Lab Sample ID: LCSD 580-477337/7

Matrix: Water

Analysis Batch: 477337

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

LCS LCS Spike %Rec Analyte Added Result Qualifier Unit D %Rec Vinyl chloride 5.00 4.93 ug/L 99

Limits 31 - 150

	LUS	LUS	
Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	100		80 - 120
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	95		80 - 120
1,2-Dichloroethane-d4 (Surr)	93		80 - 120

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analysis Batch: 477337

Matrix: Water

Isopropylbenzene

Methylene Chloride

4-Chlorotoluene

7 manyolo Zatom 11 root	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1-Dichloroethene	5.00	4.64		ug/L		93	70 - 129	3	23
1,1-Dichloroethane	5.00	4.82		ug/L		96	80 - 120	3	15
1,1,1-Trichloroethane	5.00	4.60		ug/L		92	74 - 130	1	19
1,1-Dichloropropene	5.00	5.16		ug/L		103	74 - 120	3	14
1,2-Dichloroethane	5.00	4.65		ug/L		93	69 - 126	3	11
1,2-Dichloropropane	5.00	5.04		ug/L		101	80 - 120	5	14
2,2-Dichloropropane	5.00	4.61		ug/L		92	66 - 126	1	22
Benzene	5.00	4.96		ug/L		99	80 - 122	1	14
1,1,2-Trichloroethane	5.00	5.01		ug/L		100	80 - 121	2	14
Bromochloromethane	5.00	4.92		ug/L		98	78 - 120	0	13
1,3-Dichloropropane	5.00	5.10		ug/L		102	79 - 120	2	19
Bromodichloromethane	5.00	4.82		ug/L		96	75 - 124	5	13
1,2-Dibromoethane	5.00	5.10		ug/L		102	79 - 126	1	12
Bromomethane	5.00	4.61		ug/L		92	36 - 150	3	33
Carbon tetrachloride	5.00	4.73		ug/L		95	72 - 129	2	19
Chlorobenzene	5.00	4.99		ug/L		100	80 - 120	0	10
1,1,1,2-Tetrachloroethane	5.00	4.82		ug/L		96	79 - 120	1	16
Chloroethane	5.00	4.68		ug/L		94	38 - 150	3	28
1,1,2,2-Tetrachloroethane	5.00	5.00		ug/L		100	74 - 124	3	25
Chloroform	5.00	4.79		ug/L		96	78 - 127	1	14
Chloromethane	5.00	4.47		ug/L		89	25 - 150	3	26
cis-1,2-Dichloroethene	5.00	5.21		ug/L		104	76 - 120	3	20
cis-1,3-Dichloropropene	5.00	4.70		ug/L		94	77 - 120	0	35
Bromoform	5.00	4.42		ug/L		88	56 - 139	2	21
Dibromochloromethane	5.00	4.69		ug/L		94	73 - 125	2	13
Bromobenzene	5.00	4.87		ug/L		97	80 - 120	0	24
Dibromomethane	5.00	4.91		ug/L		98	80 - 120	2	11
Dichlorodifluoromethane	5.00	4.51		ug/L		90	20 - 150	6	33
1,2,3-Trichloropropane	5.00	5.07		ug/L		101	76 - 124	1	26
Ethylbenzene	5.00	5.30		ug/L		106	80 - 120	1	14
2-Chlorotoluene	5.00	5.26		ug/L		105	80 - 120	2	20
1,3,5-Trimethylbenzene	5.00	5.28		ug/L		106	80 - 122	1	21

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109

107

97

80 - 123

73 - 129

77 - 125

5.47

5.37

4.86 J

ug/L

ug/L

ug/L

5.00

5.00

5.00

19

29

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-477337/7

Matrix: Water

Analysis Batch: 477337

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,2,4-Trimethylbenzene	5.00	5.39		ug/L		108	80 - 120	2	16
m-Xylene & p-Xylene	5.00	5.17		ug/L		103	80 - 120	1	14
1,3-Dichlorobenzene	5.00	5.13		ug/L		103	77 - 127	1	35
4-Isopropyltoluene	5.00	5.13		ug/L		103	77 - 126	0	20
N-Propylbenzene	5.00	5.41		ug/L		108	80 - 122	3	22
1,4-Dichlorobenzene	5.00	4.84		ug/L		97	80 - 120	3	17
o-Xylene	5.00	5.18		ug/L		104	80 - 120	0	16
n-Butylbenzene	5.00	5.06		ug/L		101	57 - 133	3	14
sec-Butylbenzene	5.00	5.41		ug/L		108	78 - 122	1	15
1,2-Dichlorobenzene	5.00	4.97		ug/L		99	80 - 120	1	15
Styrene	5.00	5.01		ug/L		100	76 - 122	1	16
1,2-Dibromo-3-Chloropropane	5.00	4.28		ug/L		86	65 - 133	4	25
t-Butylbenzene	5.00	5.17		ug/L		103	75 - 123	0	21
1,2,4-Trichlorobenzene	5.00	5.11		ug/L		102	61 - 148	2	27
Tetrachloroethene	5.00	4.80		ug/L		96	76 - 125	1	13
1,2,3-Trichlorobenzene	5.00	5.03		ug/L		101	65 - 150	1	33
Toluene	5.00	4.99		ug/L		100	80 - 120	2	13
Hexachlorobutadiene	5.00	4.91		ug/L		98	74 - 131	2	22
Naphthalene	5.00	4.44		ug/L		89	63 - 150	1	33
trans-1,2-Dichloroethene	5.00	4.92		ug/L		98	75 - 120	1	21
trans-1,3-Dichloropropene	5.00	4.48		ug/L		90	76 - 122	3	20
Trichloroethene	5.00	4.84		ug/L		97	80 - 125	2	13
Trichlorofluoromethane	5.00	4.44		ug/L		89	45 - 148	2	35
Methyl tert-butyl ether	5.00	4.99		ug/L		100	72 - 120	3	18
Vinyl chloride	5.00	4.84		ug/L		97	31 - 150	2	26

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	100		80 - 120
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	97		80 - 120
1,2-Dichloroethane-d4 (Surr)	95		80 - 120

Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client: ERM-West

Client Sample ID: PDI-59-SO-33.7-20241029

Lab Sample ID: 580-145395-1 Date Collected: 10/29/24 13:40 Date Received: 11/01/24 12:15

Matrix: Solid

Lab Sample ID: 580-145395-3

Lab Sample ID: 580-145395-3

Batch Batch Dilution Batch Prepared Method Factor Number Analyst or Analyzed **Prep Type** Type Run Lab 11/06/24 12:44 Total/NA Analysis 2540G 477057 SCS EET SEA

Client Sample ID: PDI-59-SO-33.7-20241029

Lab Sample ID: 580-145395-1 Date Collected: 10/29/24 13:40 **Matrix: Solid**

Date Received: 11/01/24 12:15 Percent Solids: 70.7

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476708	BYM	EET SEA	11/04/24 09:35
Total/NA	Analysis	8260D		1	476722	BYM	EET SEA	11/04/24 17:53
Total/NA	Prep	5035	DL		476848	BYM	EET SEA	11/05/24 10:17
Total/NA	Analysis	8260D	DL	1	476849	BYM	EET SEA	11/05/24 12:24

Client Sample ID: TB-01-SO-20241029

Lab Sample ID: 580-145395-2 Date Collected: 10/29/24 13:15 **Matrix: Solid**

Date Received: 11/01/24 12:15

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476708	BYM	EET SEA	11/04/24 09:35
Total/NA	Analysis	8260D		1	476722	BYM	EET SEA	11/04/24 16:10

Client Sample ID: PD-59-SO-49.9-20241029

Date Collected: 10/29/24 13:45 **Matrix: Solid**

Date Received: 11/01/24 12:15

	Batch	Batch		Dilution	Batch		Prepared
Prep Type	Type	Method	Run	Factor	Number Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G			477057 SCS	EET SEA	11/06/24 12:44

Client Sample ID: PD-59-SO-49.9-20241029

Date Collected: 10/29/24 13:45 **Matrix: Solid**

Percent Solids: 72.6 Date Received: 11/01/24 12:15

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476708	BYM	EET SEA	11/04/24 09:35
Total/NA	Analysis	8260D		1	476722	BYM	EET SEA	11/04/24 18:13

Client Sample ID: PDI-60-SO-32.7-20241029

Lab Sample ID: 580-145395-4 Date Collected: 10/29/24 16:20 **Matrix: Solid**

Date Received: 11/01/24 12:15

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	477057	SCS	EET SEA	11/06/24 12:44

Client: ERM-West

Project/Site: Arkema PDI Sampling

Client Sample ID: PDI-60-SO-32.7-20241029

Date Collected: 10/29/24 16:20 Date Received: 11/01/24 12:15

Lab Sample ID: 580-145395-4

Matrix: Solid

Percent Solids: 69.9

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476708	BYM	EET SEA	11/04/24 09:35
Total/NA	Analysis	8260D		1	476722	BYM	EET SEA	11/04/24 19:15
Total/NA	Prep	5035	DL		476848	BYM	EET SEA	11/05/24 10:17
Total/NA	Analysis	8260D	DL	1	476849	BYM	EET SEA	11/05/24 13:05

Client Sample ID: PDI-60-SO-44.9-20241029

Date Collected: 10/29/24 16:40 Date Received: 11/01/24 12:15

Lab Sample ID: 580-145395-5 **Matrix: Solid**

Lab Sample ID: 580-145395-5

Lab Sample ID: 580-145395-6

Lab Sample ID: 580-145395-7

Matrix: Solid

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	477057	SCS	EET SEA	11/06/24 12:44

Client Sample ID: PDI-60-SO-44.9-20241029

Date Collected: 10/29/24 16:40

Matrix: Solid Date Received: 11/01/24 12:15 Percent Solids: 72.7

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476708	BYM	EET SEA	11/04/24 09:35
Total/NA	Analysis	8260D		1	476722	BYM	EET SEA	11/04/24 18:34

Client Sample ID: DUP-01-SQ-20241030

Date Collected: 10/30/24 12:00

Date Received: 11/01/24 12:15

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	477057	SCS	EET SEA	11/06/24 12:44

Client Sample ID: DUP-01-SQ-20241030

Date Received: 11/01/24 12:15

Lab Sample ID: 580-145395-6 Date Collected: 10/30/24 12:00 **Matrix: Solid** Percent Solids: 67.7

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476708	BYM	EET SEA	11/04/24 09:35
Total/NA	Analysis	8260D		1	476722	BYM	EET SEA	11/04/24 19:36

Client Sample ID: PDI-40a-SO-38.4-20241030

Date Collected: 10/30/24 12:20

Date Received: 11/01/24 12:15

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	477057	SCS	EET SEA	11/06/24 12:44

Eurofins Seattle

Matrix: Solid

Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Client: ERM-West

Client Sample ID: PDI-40a-SO-38.4-20241030

Date Collected: 10/30/24 12:20

Matrix: Solid

Lab Sample ID: 580-145395-7

Percent Solids: 68.6

Date Received: 11/01/24 12:15

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476708	BYM	EET SEA	11/04/24 09:35
Total/NA	Analysis	8260D		1	476722	BYM	EET SEA	11/04/24 18:54
Total/NA	Prep	5035	DL		476848	BYM	EET SEA	11/05/24 10:17
Total/NA	Analysis	8260D	DL	1	476849	BYM	EET SEA	11/05/24 12:45

Client Sample ID: PDI-40a-SO-54.9-20241030 Lab Sample ID: 580-145395-8

Date Collected: 10/30/24 12:25

Matrix: Solid

Date Received: 11/01/24 12:15

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	2540G		1	477057	SCS	EET SEA	11/06/24 12:44

Client Sample ID: PDI-40a-SO-54.9-20241030

Date Collected: 10/30/24 12:25

Lab Sample ID: 580-145395-8 **Matrix: Solid**

Date Received: 11/01/24 12:15

Percent Solids: 70.4

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			476708	BYM	EET SEA	11/04/24 09:35
Total/NA	Analysis	8260D		1	476722	BYM	EET SEA	11/04/24 16:30

Client Sample ID: TB-01-WQ-20241030 Lab Sample ID: 580-145395-9

Date Collected: 10/30/24 12:25

Matrix: Water

Date Received: 11/01/24 12:15

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260D		1	477337	K1K	EET SEA	11/08/24 17:00

Client Sample ID: RB-01-WQ-20241030 Lab Sample ID: 580-145395-10

Date Collected: 10/30/24 14:00

Matrix: Water

Date Received: 11/01/24 12:15

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260D		1	477337	K1K	EET SEA	11/08/24 18:10

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: ERM-West Job ID: 580-145395-1

Project/Site: Arkema PDI Sampling

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Progra	am	Identification Number	Expiration Date
Oregon	NELAF)	4167	07-07-25
The following analyte	s are included in this repo	rt, but the laboratory is r	not certified by the governing author	ity. This list may include and
0 ,	s are included in this report does not offer certification	,	not certified by the governing author	ity. This list may include and
0 ,		,	not certified by the governing author Analyte	ity. This list may include and

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Sample Summary

Client: ERM-West

580-145395-8

580-145395-9

580-145395-10

Project/Site: Arkema PDI Sampling

PDI-40a-SO-54.9-20241030

TB-01-WQ-20241030

RB-01-WQ-20241030

Lab Sample ID **Client Sample ID** Matrix Collected Received 580-145395-1 PDI-59-SO-33.7-20241029 10/29/24 13:40 11/01/24 12:15 Solid 580-145395-2 TB-01-SO-20241029 Solid 10/29/24 13:15 11/01/24 12:15 580-145395-3 PD-59-SO-49.9-20241029 Solid 10/29/24 13:45 11/01/24 12:15 580-145395-4 PDI-60-SO-32.7-20241029 Solid 10/29/24 16:20 11/01/24 12:15 580-145395-5 PDI-60-SO-44.9-20241029 Solid 10/29/24 16:40 11/01/24 12:15 DUP-01-SQ-20241030 580-145395-6 Solid 10/30/24 12:00 11/01/24 12:15 580-145395-7 PDI-40a-SO-38.4-20241030 Solid 10/30/24 12:20 11/01/24 12:15

Solid

Water

Water

10/30/24 12:25 11/01/24 12:15

10/30/24 12:25 11/01/24 12:15

10/30/24 14:00 11/01/24 12:15

Job ID: 580-145395-1

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5755 8th Street East Tacoma, WA 98424 Phone (753) 072-7310	Chain	Chain of Custody Record	cord		Seurotins Environment Testing
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Clief Contact Aven Scriete	Phone:		E-Mail: Sheri.Cruz@et.eurofinsus.com	State of Origin:	Page: Page ∤of {
Conpany: ERM-1Vest		PWSID:	Analysis Requested		Job#:
પ્રdress: 1050 SW 6th Avenue Suite 1650	Due Date Requested:				Preservation Codes: F-MeOH
City.	TAT Requested (days):	, ooks	3		A-HCL
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avery.soplata@erm.com	Droince #-	98.1	l list		ners
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ample Identification	Sample Date Time	(C=Comp, O=wastafoli, G=Qrab) pr=Tissue, A=Air) F	8260D - 8260D -		To Special Instructions/Note:
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PDI-59-50-33.7-20241029	10/29/24 1346	6 8	X		9
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sted: I(II)III, IV, Other (specify)		c	Special Instructions/QC Requirements:	ments:	
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Client: ERM-West Job Number: 580-145395-1

Login Number: 145395 List Source: Eurofins Seattle

List Number: 1

Creator: Fenimore, Justin 1

oroator: r ommore, eactin r		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



APPENDIX D DATA VALIDATION MEMO



MEMO

ТО	Sarah Seekins
FROM	Rachel James
DATE	2024-12-16
REFERENCE	0732445
SUBJECT	Data Review of Arkema, 2024 Pre-Design Investigation Samples, Phase 2. Samples Collected October 2024: Eurofins, Data Package(s) 580-144612-1, 580-144769-1 Rev(3), 580-144838-1 Rev(2), 580-144971-1, 580-145045-1 Rev(1), 580-145160-1 Rev(2), 580-145241-1, and 580-145395-1 Rev(1).

Environmental Resources Management, Inc. (ERM) assessed the data quality and applied any necessary qualifiers following the USEPA National Functional Guidelines for Organic Superfund Methods Data Review, November 2020 and USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, November 2020. Field duplicates were assessed following Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, September 2020.

ERM performed a Stage 2A data validation on 100 percent of the laboratory data.

ERM reviewed the following items as part of the data validation.

- **Chain of Custody:** The chains of custody were reviewed for proper completion and that the laboratory performed the requested methods and reported the requested target analytes for each sample.
- Dilutions and Reanalysis: Dilutions, calibration ranges, and reanalyses were reviewed as applicable. The best result was chosen when more than one result was reported as final.
- **Case Narrative:** The case narrative was reviewed for comments and any necessary qualifiers added.
- Sample Preservation: The appropriate temperature and chemical preservation requirements were reviewed. Headspace for volatile sample analysis was reviewed.
- **Holding Times:** The period of time between collection of the sample and preparation/analysis of the sample was evaluated.



- **Laboratory Blank Samples:** The preparation and analysis of reagent (contaminant-free) water was evaluated, along with the required frequency.
- **Field Blank Samples:** The collection and analysis of field blanks was evaluated. The reviewed data package(s) included the following associated field blanks: trip and rinse.
- **Laboratory Control Spike Samples:** Laboratory control spike sample preparation frequency and recoveries were reviewed as applicable.
- **Matrix Spike Samples:** Matrix spike and post digestion spike sample preparation frequency and recoveries were reviewed as applicable.
- **Surrogate Spikes:** The addition of appropriate surrogates and their recoveries were evaluated.
- **Laboratory Duplicate Samples:** Laboratory duplicate frequencies and recoveries were reviewed as applicable.
- **Field Duplicate Samples:** Field duplicate recoveries and/or absolute differences were reviewed as applicable.

Data validation findings are summarized in the sections below. As necessary, the following data quality flags were applied during validation. Professional judgment was used when multiple flags were applied to one result; therefore, the final flag may differ from the one presented in an individual table.

- J = estimated concentration
- J+ = the result is an estimated concentration, but may be biased high
- J- = the result is an estimated concentration, but may be biased low
- UJ = estimated reporting limit
- U = evaluated to be non-detected at the reporting limit
- R = rejected, data not usable
- NJ = tentative identification and estimated concentration

Validation outliers and any necessary data qualifications are summarized in tables at the end of this memo. The table below indicates the included validation tables with findings.

List of A	ttached Tables
Table 1:	Samples with Non-Preferred Results
Table 2:	Case Narrative Evaluation
Table 3:	Preservation Evaluation



List of A	ttached Tables
Table 4:	Holding Time Evaluation
Table 5:	Laboratory Blank Evaluation
Table 6:	Field Blank Evaluation
Table 7:	Laboratory Control Spike Evaluation
Table 8:	Matrix Spike Evaluation
Table 9:	Surrogate Evaluation
Table 10	: Field Duplicate Evaluation

CHAIN-OF-CUSTODY DISCREPANCIES

The laboratory did not note discrepancies between the chains-of-custody and the received sample containers.

SAMPLES WITH NON-PREFERRED RESULTS

Samples referenced in Table 1 had more than one final result reported for a single analyte and method combination due to the following possible reasons.

- Result exceeded calibration range, lowest of two results
- Suspected carryover
- Suspected sample switch, lowest of two results, highest reporting limits

Non-preferred results are considered not reportable and should not be used for reporting or for decision making purposes. Non-preferred results have been excluded from the subsequent outlier tables in this report.

CASE NARRATIVE EVALUATION

The laboratory observed additional issues encountered during sample preparation or analysis as noted in Table 2.

PRESERVATION EVALUATION

The laboratory received the sample shipments in good condition, within the method-prescribed temperature preservation requirements of less than 6°C, with acceptable pH values, and, as applicable, all vials for volatile analysis were received with no documented headspace, with the exceptions and any necessary qualifications noted in Table 3.



HOLDING TIME EVALUATION

The samples were prepared and analyzed within the method-prescribed time period from the date of collection, with the exceptions and any necessary qualifications noted in Table 4.

Holding time situations requiring additional professional judgement are detailed below.

- Select volatile organic compounds in samples PDI-38-SO-32.9-20241008, PDI-37-SO-31.2-20241008, PDI-51-SO-39.9-20241011, PDI-45a-SO-53.9-20241011, TB-01-SO-20241011, PDI-53-SO-28.3-20241018, and PDI-49a-SO-34.2-20241018 were re-analyzed two to three days past the 14 day holding time. The original, in hold analyses for these analytes were not reportable due to the initial calibration not meeting criteria. The detected re-analysis results were qualified as estimates (J) and the non-detect results were rejected (R) due to the holding time exceedance.
- Samples PDI-54-SO-33.5-20241018 and PDI-52-SO-39.9-20241018 were analyzed for volatile organic compounds three times due to the second run (a dilution) not matching the original. The third run (also a dilution) matched the second run and the lab suspects that since both diluted runs match, the samples were switched in the original run. The first diluted runs are reported and were qualified as estimates (J) and the non-detect results were rejected (R) due to the holding time exceedance.
- The laboratory qualified the chlorobenzene re-analysis result for sample PDI-50-SO-28.5-20241009 as out of hold; however, the analysis took place on the 14th day and did not exceed the 14 day criterion by at least one day (the unit of the criterion). ERM did not qualify the result.

LABORATORY BLANK EVALUATION

The laboratory blank sample results were non-detected for each of the target analytes, with the exceptions and any necessary qualifications noted in Table 5. The following criteria were taken into consideration when assessing blank contamination and applying any necessary qualifications:

- Non-detected results or results greater than five times the blank concentration (ten times for inorganics or common laboratory contaminants) were considered not affected by contamination and were not qualified.
- If results were associated with more than one blank, the greater of the two blank concentrations was used for applying qualifications.
- Results less than the reporting limit, as adjusted for dilution, were qualified as non-detect (U) at the sample reporting limit.



- Results within five times the blank concentration (ten times for inorganics or common laboratory contaminants), greater than the reporting limit, but less than the blank concentration, as adjusted for dilution, were qualified as nondetect (U) at the sample concentration.
- Results within five times the blank concentration (ten times for inorganics or common laboratory contaminants), greater than the reporting limit, and greater than the blank concentration, as adjusted for dilution, were qualified as estimates with a high bias (J+).

FIELD BLANK EVALUATION

The trip and rinse blank sample results were non-detected for each of the target analytes, with the exceptions and any necessary qualifications noted in Table 6. Any field blank detections associated with laboratory blank contamination and qualified as non-detected (U) are not included in Table 6. The following criteria were taken into consideration when assessing blank contamination and applying any necessary qualifications:

- Non-detected results or results greater than five times the blank concentration (ten times for inorganics or common laboratory contaminants) were considered not affected by contamination and were not qualified.
- If results were associated with more than one blank, the greater of the two blank concentrations was used for applying qualifications.
- Results less than the reporting limit were qualified as non-detect (U) at the sample reporting limit.
- Results within five times the blank concentration (ten times for inorganics or common laboratory contaminants), greater than the reporting limit, but less than the blank concentration were qualified as non-detect (U) at the sample concentration.
- Results within five times the blank concentration (ten times for inorganics or common laboratory contaminants), greater than the reporting limit, and greater than the blank concentration were qualified as estimates with a high bias (J+).
- Equipment and field blank results associated with method blank contamination were attributed to and qualified for laboratory introduced contamination. No additional qualifications were made to sample results based on the equipment and/or field blanks in these instances.

Field blank situations requiring additional professional judgement are detailed below.

• A trip blank sample was not included in data package 580-144612-1. It is not possible to assess whether volatile organic compound detections in the



associated samples were potentially influenced by cross-contamination during shipment, handling, and storage.

LABORATORY CONTROL SPIKE EVALUATION

The laboratory control sample (LCS) recoveries and, if included, the laboratory control sample duplicate (LCSD) recoveries and relative percent differences (RPD) were within the laboratory's limits of acceptance, with the exceptions and any necessary qualifications noted in Table 7. Results were not qualified if the paired spiked sample recovery was acceptable, if high recoveries or RPDs were associated with non-detected results, or if the exception was not associated with reported results.

MATRIX SPIKE EVALUATION

The matrix spike (MS) recoveries and, if included, the matrix spike duplicate (MSD) recoveries and RPDs were within the laboratory's limits of acceptance for target analytes for spiked project samples, with the exceptions and any necessary qualifications noted in Table 8. MS/MSDs performed on non-project parent samples, if included, are not representative of the matrix for this project and were therefore not reviewed or presented. Results were not qualified if the paired spiked sample recovery was acceptable, if high recoveries or RPDs were associated with non-detected results, if the parent sample result was greater than four times that of the spike, if the spike was diluted out, or if the exception was not associated with reported results.

SURROGATE EVALUATION

The surrogate recoveries were within the laboratory limits of acceptance, with the exceptions and any necessary qualifications noted in Table 9. Results were not qualified if the sample dilution factor was greater than or equal to 10, if high recoveries were associated with non-detected results, if only one acid or base/neutral surrogate for semivolatiles was out, if the affected surrogate was not associated with reported analytes, or if the affected sample was laboratory quality control.

LABORATORY DUPLICATE EVALUATION

The laboratory prepared project samples as laboratory duplicates. The RPDs between the primary sample and the duplicate were within laboratory control limits, indicating acceptable laboratory precision. Laboratory duplicates performed on non-project samples, if included, are not representative of the matrix for this project and were therefore not reviewed.

FIELD DUPLICATE EVALUATION

One or more samples were submitted to the laboratory as field duplicates. RPDs or absolute differences were calculated as appropriate for detected results. When results were greater than or equal to five times the reporting limit, RPD control limits of 30 for an aqueous matrix or 50 for a non-aqueous matrix were used. When results were less



than five times the reporting limit, difference limits of \pm two times the reporting limit for an aqueous matrix or \pm four times the reporting limit for a non-aqueous matrix were used. Control limits were not applicable if both results were less than the reporting limits. If one result was greater than the reporting limit and the other was not detected, the reporting limit for the non-detect result was used when calculating differences. Additionally, if the reporting limits were not the same between the parent and field duplicate samples, professional judgment was used to determine the difference control limit or if the calculation was meaningful. The RPDs and/or absolute differences were within QAPP criteria or EPA Region 1 guidance, whichever is applicable, with any exceptions and necessary qualifications noted in Table 10.

CALIBRATION RANGE EVALUATION

All results were reported within each instrument's calibration range.

PROFESSIONAL JUDGEMENT EVALUATION

Additional qualifiers using the validator's professional judgement were not necessary.

OVERALL ASSESSMENT

Excluding rejected results, all data can be used for decision-making purposes; however, the limitation identified by the applied qualifier should be considered when using the data. The quality of the data generated during this investigation is acceptable for the preparation of technically defensible documents.

Table 1
Samples with Non-Preferred Results
2024 Pre-Design Investigation Samples, Phase 2
Arkema
Portland, Oregon

Lab Package	Sample ID	Method	Analysis Date/Time	Reason	Analyte	Result	Units
580-144769-1	PDI-50-SO-28.5-20241009	8260D	10/19/2024 3:05	Result exceeded calibration	Chlorobenzene	790	mg/kg
Rev(3)	PDI-50a-SO-29.45-20241010	02000	10/19/2024 3:26	range, lowest of two results	Cilioropenzene	890	ilig/ kg
Nev(3)	PDI-48-SO-40-20241008	8260D	10/17/2024 14:15	Suspected carryover	Chlorobenzene	0.17	mg/kg
580-145045-1	PDI-54-SO-33.5-20241018	8260D	10/31/2024 15:43	Suspected sample switch, lowest of two results, highest	All	ND	mg/kg
Rev(1)	PDI-52-SO-39.9-20241018	8260D	10/31/2024 16:04	reporting limits	All	IND	ilig/kg

Notes:

ND = not detected

mg/kg = milligrams per kilogram

Table 2
Case Narrative Evaluation
2024 Pre-Design Investigation Samples, Phase 2
Arkema
Portland, Oregon

Lab Package	Sample ID	Method	Analyte	Reason	ERM Qualifier
	DUP-01-SQ-20241010				UJ
	PDI-37-SO-42.5-20241008				UJ
	PDI-38-SO-45-20241008				UJ
	PDI-45-SO-49.9-20241010				UJ
	PDI-48-SO-33.8-20241008				UJ
	PDI-48-SO-40-20241008				UJ
580-144769-1	PDI-49-SO-30.9-20241009				UJ
	PDI-49-SO-49.9-20241009	8260D	Bromomethane	Batch 580-474979 CCV low bias	UJ
Rev(3)	PDI-50-SO-28.5-20241009	02000	Chloroethane	Dateit 300-474979 CCV low bias	UJ
	PDI-50-SO-34.9-20241009				UJ
	PDI-50a-SO-39.9-20241010				UJ
	PDI-50b-SO-29.5-20241010				UJ
	PDI-56-SO-34.7-20241009				UJ
	PDI-56-SO-39.5-20241009				UJ
	PDI-57-SO-42.4-20241009				UJ
	TB-01-SO-20241009				UJ
580-144971-1	None for qualification, samples ND	8260D	Methylene chloride	Batch 580-475492 CCV high bias	
	PDI-54-SO-33.5-20241018			Sample amount provided was	
580-145045-1	PDI-53-SO-28.3-20241018	8260D	All	significantly different than required	Detects J
Rev(1)	PDI-52-SO-39.9-20241018	0200D	All	by prep method; sample may not	Non-detects UJ
	PDI-48a-SO-34.2-20241018			have been sufficiently preserved	
	PDI-55a-SO-44.7-20241022				
	PDI-55a-SO-8.7-20241022			Sample amount provided was	
580-145160-1	PDI-55c-SO-44.3-20241023	8260D	All	significantly different than required	Detects J
Rev(2)	PDI-49a-SO-48.1-20241023	02000	All	by prep method; sample may not	Non-detects UJ
	PDI-48b-SO-49.9-20241024			have been sufficiently preserved	
	PDI-43a-SO-34.2-10202424				

Table 2
Case Narrative Evaluation
2024 Pre-Design Investigation Samples, Phase 2
Arkema
Portland, Oregon

Lab Package	Sample ID	Method	Analyte	Reason	ERM Qualifier	
	DUP-02-SQ-20241023				UJ	
	PDI-48b-SO-49.9-20241024				UJ	
	PDI-49a-SO-31.85-20241023		Bromoform		UJ	
	PDI-49a-SO-48.1-20241023	8260D	Methylene chloride	Batch 580-476046 CCV low bias	UJ	
	PDI-55a-SO-44.7-20241022		ricerryteric emoriae		UJ	
	PDI-55c-SO-11.2-20241022				UJ	
580-145160-1 Rev(2)	TB-01-SO-20241022				UJ	
	PDI-46a-SO-47.4-10202424		1,4-Dichlorobenzene		J-	
	PDI-43a-SO-34.2-10202424		1 2 2 Tricklands		UJ	
	PDI-46a-SO-37.15-10202424		1,2,3-Trichlorobenzene Bromoform		UJ	
	PDI-46a-SO-47.4-10202424	8260D	Hexachlorobutadiene	Batch 580-476085 CCV low bias	UJ	
	PDI-48b-SO-32.85-20241023		Methylene chloride		UJ	
	PDI-55a-SO-8.7-20241022		n-Butylbenzene		UJ	
	PDI-55b-SO-9.0-20241022		·		UJ	
	PDI-43a-SO-34.2-10202424	8260D	1,4-Dichlorobenzene	Batch 580-476323 CCV low bias	J-	
	None for qualification, analyte not reported from batch	8260D	Methylene chloride	Batch 580-476155 CCV low bias		
		8260D	Methylene chloride			
	None for qualification,		2,2-Dichloropropane			
	samples ND		1,1,1-Trichloroethane	Batch 580-476720 CCV high bias		
	samples ND		Carbon tetrachloride			
			Bromodichloromethane			
	PDI-58-SO-35.75-20241025					
	PDI-58-SO-49.9-20241025			Sample amount provided was		
580-145241-1	PDI-37a-SO-28.5-20241028	8260D	All	significantly different than required	Detects J	
300 143241 1	PDI-37a-SO-49.9-20241028	02000	All	by prep method; sample may not	Non-detects UJ	
	PDI-44a-SO-36.8-20241028			have been sufficiently preserved		
	PDI-44a-SO-49.9-20241029					
	PDI-60-SO-44.9-20241029			Sample amount provided was		
580-145395-1 Rev(1)	DUP-01-SQ-20241030	8260D	All	significantly different than required by prep method; sample may not	Detects J Non-detects UJ	
Nev(1)	PDI-40a-SO-54.9-20241030			have been sufficiently preserved	Non detects of	

Table 2
Case Narrative Evaluation
2024 Pre-Design Investigation Samples, Phase 2
Arkema
Portland, Oregon

Lab Package	Sample ID	Method	Analyte	Reason	ERM Qualifier
	DUP-01-SQ-20241030				UJ
	PDI-40a-SO-54.9-20241030				UJ
	PDI-59-SO-49.9-20241029		1,4-Dichlorobenzene		UJ
	PDI-60-SO-44.9-20241029				UJ
	TB-01-SO-20241029				UJ
E00 14E20E 1	DUP-01-SQ-20241030		Bromoform Methylene chloride	Batch 580-476722 CCV low bias	UJ
580-145395-1 Rev(1)	PDI-40a-SO-38.4-20241030	8260D			UJ
	PDI-40a-SO-54.9-20241030				UJ
	PDI-59-SO-33.7-20241029				UJ
	PDI-59-SO-49.9-20241029				UJ
	PDI-60-SO-32.7-20241029				UJ
	PDI-60-SO-44.9-20241029				UJ
	TB-01-SO-20241029				UJ

Notes:

-- = not applicable; associated data not affected

CCV = continuing calibration verification

J = estimated detected result

J- = detected results are estimated with a low bias

ND = not detected

TB = trip blank

UJ = non-detected, estimated report limit

Table 3 Preservation Evaluation 2024 Pre-Design Investigation Samples, Phase 2 Arkema Portland, Oregon

Lab Package	Sample ID	Method	Sample Condition	Preservation Requirement	Analyte	ERM Qualifier
580-145160-1 Rev(2)	All	All	Receipt temperature = 8.9°C	Receipt temperature ≤ 6°C	All	Detects J Non-detects UJ

Notes:

°C = degrees Celsius

 \leq = less than or equal to

J = estimated detected result

UJ = non-detected, estimated report limit

Table 4
Holding Time Evaluation
2024 Pre-Design Investigation Samples, Phase 2
Arkema
Portland, Oregon

Lab Package	Sample ID	Method	Extraction Holding Time	Total Time	Analysis Holding Time	Total Time	Analyte	ERM Qualifier
	PDI-38-SO-32.9-20241008	8260D			14 days	17 days	Bromodichloromethane Bromomethane Chloroethane	R
580-144769-1 Rev(3)	PDI-37-SO-31.2-20241008	8260D			14 days	17 days	Bromodichloromethane Bromomethane Chloroethane	R
	PDI-48-SO-40-20241008	8260D			14 days	16 days	Chlorobenzene	J
	PDI-50a-SO-29.45-20241010	8260D			14 days	15 days	Chlorobenzene	J
	PDI-51-SO-39.9-20241011	8260D			14 days	17 days	Bromodichloromethane Bromomethane Chloroethane	R
580-144838-1 Rev(2)	PDI-45a-SO-53.9-20241011	8260D			14 days	17 days	Bromodichloromethane Bromomethane Chloroethane	R
	TB-01-SO-20241011	8260D			14 days	17 days	Bromodichloromethane Bromomethane Chloroethane	R
	PDI-54-SO-33.5-20241018	8260D			14 days	16 days	All	Detects J Non-detects R
	PDI-52-SO-39.9-20241018	8260D			14 days	16-17 days	All	Detects J Non-detects R
580-145045-1 Rev(1)	PDI-53-SO-28.3-20241018	8260D			14 days	16 days	Bromomethane Chloroethane Dichlorodifluoromethane	R
	PDI-48a-SO-34.2-20241018	8260D			14 days	17 days	Bromomethane Chloroethane Dichlorodifluoromethane	Detects J Non-detects R
580-145160-1 Rev(2)	PDI-49a-SO-31.85-20241023	8260D			14 days	15 days	Chlorobenzene	J

Notes:

R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria.

^{-- =} not applicable; associated data not affected

J = estimated detected result

Table 5
Laboratory Blank Evaluation
2024 Pre-Design Investigation Samples, Phase 2
Arkema
Portland, Oregon

Lab Package	Blank ID	Analyte	Reported Blank Conc.	Blank RL	Associated Sample	Assoc. Sample Result	Assoc. Sample RL	Units	ERM Qualifier
580-144769-1	MB 580-475022/3-A	Hexachlorobutadiene	0.0487	0.10	PDI-50-SO-34.9-20241009	0.021	0.074	mg/kg	0.074 U
Rev(3)	MB 580-475029/5-A	Chlorobenzene	0.00789	0.040	None for qualification, samples > 5x blank			mg/kg	
580-144838-1	MB 580-474946/7	1,2,4-Trichlorobenzene	0.331	1.0	None for qualification,			μg/L	
Rev(2)	140 360-474940/7	1,2,3-Trichlorobenzene	0.497	2.0	samples ND			μg/L	
Rev(2)	MB 580-475029/5-A	Chlorobenzene	0.00789	0.040	PDI-51-SO-39.9-20241011	0.026	0.058	mg/kg	0.058 U
580-144971-1	MB 580-475488/5-A	Methylene Chloride	0.989	0.25	None for qualification, samples ND			mg/kg	
					PDI-52-SO-35.7-20241018	0.11	0.051	mg/kg	J+
	MB 580-475802/3-A	Chlorobenzene	0.0266	0.040	PDI-53-SO-44.9-20241021	0.11	0.060	mg/kg	J+
580-145045-1					TB-01-SO-20241021	0.022	0.040	mg/kg	0.040 U
Rev(1)		Hexachlorobutadiene	0.0321	0.10	PDI-54-SO-33.5-20241018	0.025	0.10	mg/kg	0.10 U
	MB 580-476692/3-A	Tetrachloroethene	0.00754	0.040	PDI-52-SO-39.9-20241018	0.0069	0.047	mg/kg	0.047 U
		retrachioroethene	0.00754	0.040	PDI-54-SO-33.5-20241018	0.0072	0.042	mg/kg	0.042 U
580-145160-1 Rev(2)	MB 580-476720/7	Methylene Chloride	2.23	5.0	None for qualification, samples ND			μg/L	
580-145395-1 Rev(1)	MB 580-477337/11	Methylene Chloride	5.31	5.0	None for qualification, samples ND			μg/L	

Notes:

-- = not applicable; associated data not affected

Conc. = concentration

J+ = detected results are estimated with a high bias

MB = method blank

 μ g/L = micrograms per liter

mg/kg = milligrams per kilogram

ND = not detected

RL = reporting limit

TB = trip blank

U = non-detected

Table 6
Field Blank Evaluation
2024 Pre-Design Investigation Samples, Phase 2
Arkema
Portland, Oregon

Lab Package	Blank ID	Analyte	Reported Blank Conc.	Blank RL	Associated Sample	Assoc. Sample Result	Assoc. Sample RL	Units	ERM Qualifier
					PDI-50-SO-34.9-20241009	0.023	0.18	mg/kg	0.18 U
					PDI-56-SO-34.7-20241009	0.034	0.18	mg/kg	0.18 U
					PDI-56-SO-39.5-20241009	0.029	0.20	mg/kg	0.20 U
					PDI-50b-SO-44.9-20241010	0.027	0.18	mg/kg	0.18 U
					PDI-50b-SO-29.5-20241010	0.026	0.20	mg/kg	0.20 U
					PDI-45-SO-49.9-20241010	0.029	0.19	mg/kg	0.19 U
					DUP-01-SQ-20241010	0.028	0.19	mg/kg	0.19 U
F00 1447C0 1					PDI-38-SO-45-20241008	0.025	0.19	mg/kg	0.19 U
580-144769-1 Rev(3)	TB-01-SO-20241009	Methylene Chloride	0.038	0.25	PDI-38-SO-32.9-20241008	0.025	0.20	mg/kg	0.20 U
Rev(3)					PDI-37-SO-42.5-20241008	0.029	0.18	mg/kg	0.18 U
					PDI-37-SO-31.2-20241008	0.035	0.20	mg/kg	0.20 U
					PDI-48-SO-33.8-20241008	0.024	0.18	mg/kg	0.18 U
					PDI-48-SO-40-20241008	0.024	0.18	mg/kg	0.18 U
					PDI-57-SO-35-20241008	0.030	0.21	mg/kg	0.21 U
					PDI-49-SO-30.9-20241009	0.034	0.23	mg/kg	0.23 U
					PDI-49-SO-49.9-20241009	0.029	0.18	mg/kg	0.18 U
					PDI-57-SO-42.4-20241009	0.033	0.21	mg/kg	0.21 U
580-144838-1	RB-01-WQ-20241011	Chloromethane	0.37	1.0	None for qualification, associated samples ND			μg/L	
Rev(2)	TB-01-SO-20241011	Chlorobenzene	0.042	0.040	PDI-51-SO-39.9-20241011	0.026	0.058	mg/kg	0.058 U
580-145160-1 Rev(2)	RB-01-WQ-20241023	Benzene	0.25	1.0	None for qualification, samples ND or > 5x blank in ppm equivalent			μg/L	
		1,2,4-Trimethylbenzene	0.016	0.040	None for qualification,			mg/kg	
580-145241-1	TB-01-SO-20241025	m-Xylene & p-Xylene	0.013	0.040	samples ND			mg/kg	
		1,3,5-Trimethylbenzene	0.022	0.040	PDI-58-SO-35.75-20241025	0.018	0.067	mg/kg	0.067 U

Table 6 Field Blank Evaluation 2024 Pre-Design Investigation Samples, Phase 2 Arkema Portland, Oregon

Lab Package	Blank ID	Analyte	Reported Blank Conc.	Blank RL	Associated Sample	Assoc. Sample Result	Assoc. Sample RL	Units	ERM Qualifier
580-145395-1 Rev(1)	TB-01-SO-20241029	Chloromethane	0.032	0.040	None for qualification, samples ND			mg/kg	

Notes:

-- = not applicable; associated data not affected

 ${\sf Conc.} = {\sf concentration}$

 μ g/L = micrograms per liter

mg/kg = milligrams per kilogram

ND = not detected

ppm = parts per million

RB = rinse blank

RL = reporting limit

TB = trip blank

U = non-detected

Table 7
Laboratory Control Spike Evaluation
2024 Pre-Design Investigation Samples, Phase 2
Arkema
Portland, Oregon

Lab Package	Spike Sample ID	Associated Sample	Analyte	Recovery (%)	Limit (%)	RPD	RPD Limit	Result	Units	ERM Qualifier
580-144769-1	LCS 580-474967/1-A LCSD 580-474967/2-A	None for qualification, samples ND	Bromomethane	Pass/Pass	55-150	31	26			
Rev(3)	LCS 580-475029/1-A	PDI-37-SO-31.2-20241008						0.035	mg/kg	J+
Kev(3)	LCSD 580-475029/2-A	PDI-38-SO-32.9-20241008	Methylene Chloride	173/189	56-140	Pass	20	0.025	mg/kg	J+
	LC3D 300 473023/2 A	PDI-57-SO-35-20241008						0.030	mg/kg	J+
580-144838-1	LCS 580-475029/1-A LCSD 580-475029/2-A	None for qualification, samples ND	Methylene Chloride	173/189	56-140	Pass	20			
Rev(2)	LCS 580-475697/1-A LCSD 580-475697/2-A	None for qualification, analyte not reported from batch	Methylene Chloride	Pass/Pass	56-140	23	20			
580-144971-1	LCS 580-475488/1-A LCSD 580-475488/2-A	None for qualification, samples ND	Methylene Chloride	224/223	56-140	Pass	20			
		None for qualification, one	2,2-Dichloropropane	Pass/131	66-126	Pass	22			
580-145160-1	LCS 580-476720/4	recovery passes	Bromodichloromethane	Pass/126	75-124	Pass	13			
Rev(2) LCSD 580-476720/5		None for qualification, samples ND	Methylene Chloride	152/158	77-125	Pass	18			

Notes:

-- = not applicable; associated data not affected
J+ = detected results are estimated with a high bias
LCS = laboratory control sample
LCSD = laboratory control sample duplicate
mg/kg = milligrams per kilogram
ND = not detected
RPD = relative percent difference

Table 8
Matrix Spike Evaluation
2024 Pre-Design Investigation Samples, Phase 2
Arkema
Portland, Oregon

Lab Package	Spike Sample ID	Associated Sample	Analyte	Recovery (%)	Limit (%)	RPD	RPD Limit	Result	Units	ERM Qualifier
			1,1,1,2-Tetrachloroethane	Pass/Pass	79-128	35	20			
			1,1,1-Trichloroethane	77/Pass	78-135	38	20			
			1,1,2,2-Tetrachloroethane	Pass/Pass	77-122	39	20			
			1,1,2-Trichloroethane	Pass/Pass	80-123	35	20			
			1,1-Dichloroethane	76/Pass	78-126	39	20			
			1,1-Dichloroethene	Pass/Pass	73-134	42	25			
			1,1-Dichloropropene	Pass/Pass	76-140	39	20			
			1,2,3-Trichlorobenzene	Pass/Pass	58-146	50	28			
			1,2,3-Trichloropropane	75/Pass	77-127	44	20			
			1,2,4-Trichlorobenzene	70/Pass	74-131	45	26			
			1,2,4-Trimethylbenzene	Pass/Pass	73-138	43	22			
			1,2-Dibromo-3-Chloropropane	Pass/Pass	64-129	46	40			
			1,2-Dibromoethane	76/Pass	77-123	37	20			
			1,2-Dichlorobenzene	Pass/Pass	78-126	40	20			
			1,2-Dichloroethane	71/Pass	76-124	40	20			
			1,2-Dichloropropane	Pass/Pass	73-130	42	20			
580-144769-1	PDI-50b-SO-44.9-20241010	None for qualification, parent	1,3,5-Trimethylbenzene	Pass/Pass	72-134	41	24			
Rev(3)	MS/MSD	sample ND	1,3-Dichlorobenzene	74/Pass	78-132	39	20			
			1,3-Dichloropropane	72/Pass	80-120	40	20			
			1,4-Dichlorobenzene	Pass/Pass	77-123	41	20			
			2,2-Dichloropropane	Pass/Pass	75-134	37	20			
			2-Chlorotoluene	75/Pass	77-134	41	21			
			4-Chlorotoluene	Pass/Pass	71-137	40	21			
			4-Isopropyltoluene	Pass/Pass	71-142	42	29			
			Benzene	Pass/Pass	79-135	40	20			
			Bromobenzene	76/Pass	78-126	42	20			
			Bromochloromethane	Pass/Pass	76-131	38	20			
			Bromodichloromethane	72/Pass	78-125	43	20			
			Bromoform	69/Pass	71-130		20			
			Carbon tetrachloride	Pass/Pass			20			
			Chlorobenzene	Pass/Pass			20			
			Chloroform	Pass/Pass			20			
			Chloromethane	Pass/Pass			40			
			cis-1,2-Dichloroethene	78/Pass	80-125		20			

Table 8
Matrix Spike Evaluation
2024 Pre-Design Investigation Samples, Phase 2
Arkema
Portland, Oregon

Lab Package	Spike Sample ID	Associated Sample	Analyte	Recovery (%)	Limit (%)	RPD	RPD Limit	Result	Units	ERM Qualifier
			cis-1,3-Dichloropropene	75/Pass	80-122	40	20			
			Dibromochloromethane	Pass/Pass	75-125	37	20			
		None for qualification, parent	Dichlorodifluoromethane	Pass/Pass	33-150	43	31			
		sample ND	Ethylbenzene	76/Pass	80-135	37	20			
		Sumple ND	Hexachlorobutadiene	Pass/Pass	65-145	46	36			
			Isopropylbenzene	79/Pass	80-131	38	20			
			Methyl tert-butyl ether	Pass/Pass	71-126	42	20			
		PDI-50b-SO-44.9-20241010	Methylene Chloride	Pass/Pass	56-140	37	20	0.027	mg/kg	J
			m-Xylene & p-Xylene	75/Pass	80-132	37	20			
			Naphthalene	Pass/Pass	56-145	54	25			
	PDI-50b-SO-44.9-20241010 MS/MSD		n-Butylbenzene	Pass/Pass	69-143	143 47 31				
580-144769-1			N-Propylbenzene	76/Pass	78-133	43	24			
Rev(3)	113/1132		o-Xylene	78/Pass	80-132	3 43 24 2 37 20 3 44 29				
110 (3)			sec-Butylbenzene	Pass/Pass	71-143	44	29			
		None for qualification, parent	Styrene	Pass/Pass	79-129	37	20			
		sample ND	t-Butylbenzene	Pass/Pass	72-144	42	43 24 44 29 42 27 33 20			
		Sumple NE	Tetrachloroethene	Pass/Pass	75-141	33	20			
			Toluene	Pass/Pass	75-125	37	20			
			trans-1,2-Dichloroethene	76/Pass	77-134	39	20			
			trans-1,3-Dichloropropene	75/Pass	80-121	40	20			
			Trichloroethene	74/Pass	80-134	39	20			
			Trichlorofluoromethane	67/Pass	71-150	43	30			
			Vinyl chloride	Pass/Pass	62-144	37	20			
	PDI-50b-SO-44.9-20241010	None for qualification, parent	Bromomethane	Pass/Pass	55-150	48	26			
	MS/MSD	sample ND	Chloroethane	Pass/Pass	26-150	56	40			
580-145160-1	PDI-55c-SO-44.3-20241023	None for qualification, one recovery passes and parent	Bromoform	20/Pass	71-130	111	20			
Rev(2)	MS/MSD	sample ND	Methylene Chloride	30/Pass	56-140	90	20			

Table 8 Matrix Spike Evaluation 2024 Pre-Design Investigation Samples, Phase 2 Arkema Portland, Oregon

Lab Package	Spike Sample ID	Associated Sample	Analyte	Recovery (%)	Limit (%)	RPD	RPD Limit	Result	Units	ERM Qualifier
		PDI-40a-SO-54.9-20241030	Bromoform	58/63	71-130	Pass	20	ND	mg/kg	UJ
580-145395-1	PDI-40a-SO-54.9-20241030	PD1-40a-30-34.9-20241030	Chlorobenzene	73/75	80-125	Pass	20	2.9	mg/kg	J-
Rev(1)	(1) MS/MSD	None for qualification, one	Chloroethane	Pass/160	26-150	Pass	40			
		recovery passes	Cindiocularie	1 433/100	20 130	1 433				

Notes:

-- = not applicable; associated data not affected

J = estimated detected result

J- = detected results are estimated with a low bias

MS = matrix spike

MSD = matrix spike duplicate

mg/kg = milligrams per kilogram

ND = not detected

RPD = relative percent difference

UJ = non-detected, estimated report limit

Table 9
Surrogate Evaluation
2024 Pre-Design Investigation Samples, Phase 2
Arkema
Portland, Oregon

Lab Package	Sample ID	Method	Surrogate	Recovery (%)	Limit (%)	Affected Analyte	Dilution Factor	ERM Qualifier
580-144769-1 Rev(3)	PDI-50-SO-28.5-20241009 (analyzed 10/17/2024 20:21)	8260D	4-Bromofluorobenzene	65	80-120	None for qualification, analytes not associated with surrogate	1	
580-144838-1 Rev(2)	PDI-45a-SO-38.6-20241011 (analyzed 10/25/2024 14:09)	8260D	Toluene-d8	178	80-120	None for qualification, analyte not associated with surrogate	1	
	PDI-53-SO-28.3-20241018 (analyzed 10/31/2024 15:02)	8260D	Toluene-d8	127	80-120	None for qualification, associated analytes ND	1	
580-145045-1 Rev(1)	PDI-52-SO-39.9-20241018 (analyzed 11/4/2024 13:24)	8260D	1,2-Dichloroethane-d4	125	80-121	None for qualification, associated analytes ND	1	
	PDI-48a-SO-34.2-20241018 (analyzed 11/4/2024 15:29)	8260D	1,2-Dichloroethane-d4	122	80-121	Chloroethane	1	J+
580-145160-1 Rev(2)	PDI-55b-SO-9.0-20241022 (analyzed 10/28/2024 22:47)	8260D	Toluene-d8	129	80-120	None for qualification, associated analytes ND	1	
580-145241-1	PDI-58-SO-49.9-20241025 (analyzed 11/1/2024 13:43)	8260D	1,2-Dichloroethane-d4	122	80-121	None for qualification, associated analytes ND	1	

Notes:

-- = not applicable; associated data not affected

J+ = detected results are estimated with a high bias

ND = not detected

Table 10 Field Duplicate Evaluation 2024 Pre-Design Investigation Samples, Phase 2 Arkema Portland, Oregon

			Conce	ntration	Repo	rt Limit					
Lab Package	Primary/Duplicate Sample ID	Analyte	Sample	Duplicate	Sample	Duplicate	Units	AbD	RPD	Limit	ERM Qualifier
580-144769-1	PDI-45-SO-49.9-20241010/	Chlorobenzene	1.2	1.3	0.030	0.030	mg/kg		8.0	30	
Rev(3)	DUP-01-SQ-20241010	Methylene Chloride	0.029	0.028	0.19	0.19	mg/kg			NA	
580-145160-1 Rev(2)	PDI-49a-SO-48.1-20241023/ DUP-02-SQ-20241023	Chlorobenzene	0.16	0.077	0.060	0.073	mg/kg	0.083		0.120	
580-145395-1 Rev(1)	PDI-40a-SO-38.4-20241030/ DUP-01-SQ-20241030	Chlorobenzene	26	57	0.73	0.73	mg/kg		75	30	J

Notes:

-- = not applicable; associated data not affected AbD = absolute Difference

J = estimated detected result mg/kg = milligrams per kilogram

NA = not applicable

RPD = relative percent difference



APPENDIX E GEOTECHNINCAL LABORATORY REPORT



TECHNICAL REPORT

Report To: Josh Hancock Date: 1/10/2025

Environmental Resources Management, Inc.

1201 3rd Avenue, Floor 22 Seattle, Washington 97101

Lab No.: 24-728

Project: Arkema PDI Project No.: 00-232350-0

Report of: Unconfined Compression of Cohesive Soil, Particle Size Analysis with Hydrometer,

Direct Shear, and Flexible Wall Permeability testing.

Sample Identification

As requested, NTI provided testing of tube, and bulk samples received by a NTI representative on November 1, 2024. Testing was performed in general accordance with the standards indicated. Our laboratory test results are summarized on the following tables and pages.

Laboratory Testing

Compressive Strength of Cohesive Soil Specimens (ASTM D2166)								
Sample ID Diameter (inches) Height (loading (lbs/s) Rate of Loading (lbs/s) Strength (psi)								
PDI-55c @ 35.0-37.5 Ft. 2.80 6.02 N/A >1 psi								
PDI-40a @ 40.0-42.0 Ft. 2.79 6.08 N/A >1 psi								

^{*}Specimens deformed under top plate, unconfined compressive strength less than 1 psi. Specimens were remolded to in-situ conditions from the received acetate liners.

Attachments: Laboratory Test Results

Copies: (1) Addressee

(1) Avery Soplata, Environmental Resources Management, Inc.(1) David Stone, Environmental Resources Management, Inc.

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TECHNICAL REPORT

Report To: Josh Hancock Date: 1/10/2025

Environmental Resources Management, Inc.

1201 3rd Avenue, Floor 22 **Lab No.**: 24-728

Seattle, Washington 97101

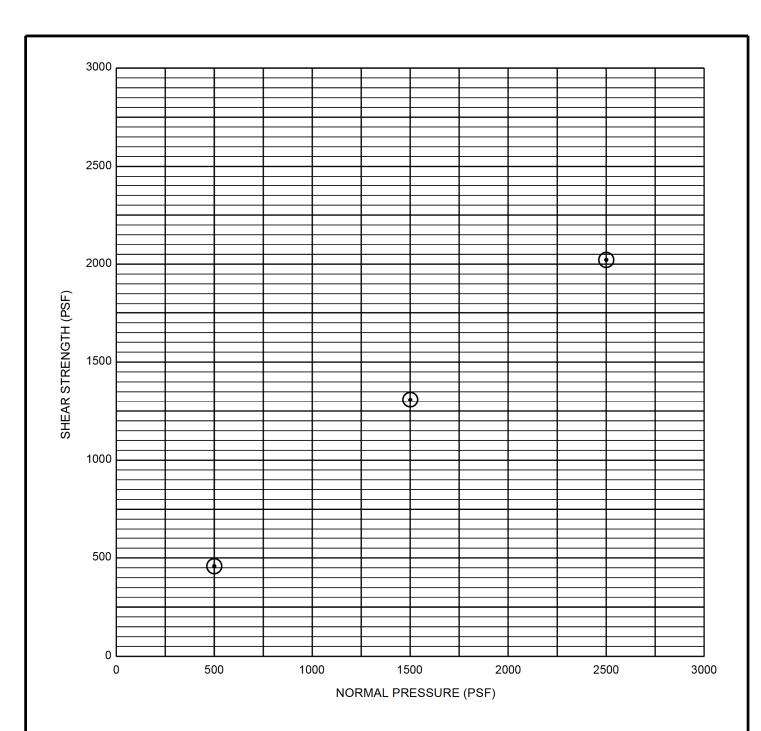
Project: Arkema PDI Project No.: 00-232350-0

Sample ID: PDI-55c, #1 @ 35.0-37.5 Ft.

Direct Shear Test of Soils Under Consolidated Drained Conditions – Sample Data (ASTM D3080)									
Test 500psf Normal Load Initial Conditions 1500psf Normal Load Initial Conditions 2500psf Normal Load Initial Conditions									
Moisture Content, (%)	34.0	34.0	34.0						
Dry Unit Weight, (pcf) 83.1 84.0 83.7									
Peak Shear Strength, (psf) 454 1310 2023									

Note: Displacement rate used during testing, 0.00417 inches/minute

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SYMBOL	SAMPLE LOCATION	COHESION (psf)	FRICTION ANGLE	REMARKS
	PDI-55C, #1 @ 35.0-37.5 FT.	1	38.1	SATURATED; REMOLDED

DIRECT SHEAR TEST RESULTS - ASTM D3080

PROJECT NO. 00-232350-0 ERM ARKEMA LAB NO. 24-728





TECHNICAL REPORT

Report To: Josh Hancock Date: 1/10/2025

Environmental Resources Management, Inc.

1201 3rd Avenue, Floor 22 **Lab No.**: 24-728

Seattle, Washington 97101

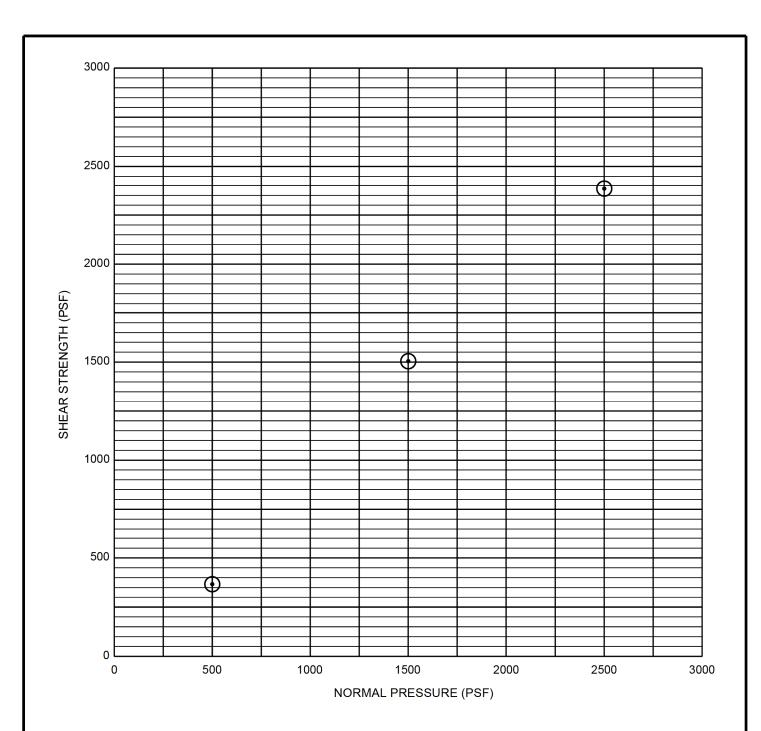
Project: Arkema PDI Project No.: 00-232350-0

Sample ID: PDI-40c, #2 @ 40.0-42.0 Ft.

Direct Shear Test of Soils Under Consolidated Drained Conditions – Sample Data (ASTM D3080)										
Test	500psf Normal Load Initial Conditions	1500psf Normal Load Initial Conditions	2500psf Normal Load Initial Conditions							
Moisture Content, (%)	11.8	11.8	11.8							
Dry Unit Weight, (pcf)	84.9	83.3	83.4							
Peak Shear Strength, (psf)	361	1502	2380							

Note: Displacement rate used during testing, 0.00417 inches/minute

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SYMBOL	SAMPLE LOCATION	COHESION (psf)	FRICTION ANGLE	REMARKS
	PDI-40A, #2 @ 40.0 - 42.0 Ft.		45.3	SATURATED; REMOLDED

DIRECT SHEAR TEST RESULTS - ASTM D3080

PROJECT NO. 00-232350-0 ERM ARKEMA LAB NO. 24-728



TECHNICAL REPORT

Report To: Josh Hancock Date: 1/10/2025

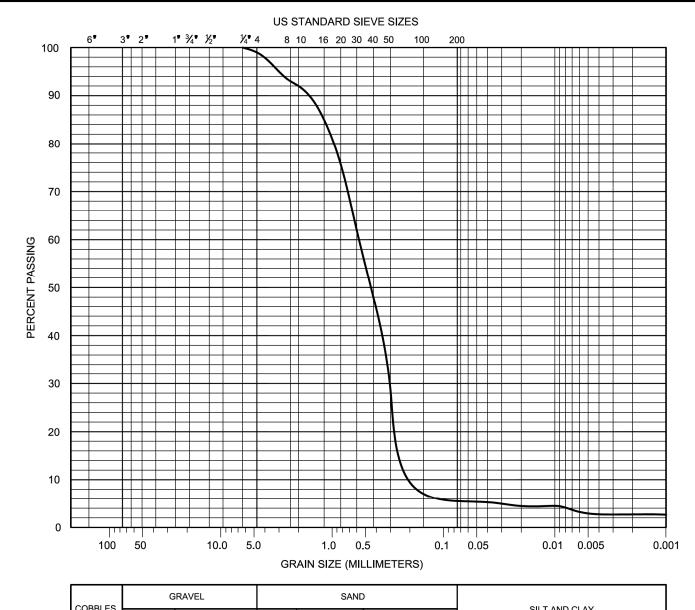
Environmental Resources Management, Inc.

1201 3rd Avenue, Floor 22 Seattle, Washington 97101

Lab No.: 24-728

Project: Arkema PDI Project No.: 00-232350-0

	Particle Size Analysis of Soil (ASTM D422)									
Sieve Size	SB-21, #1 @ 1.5-20 Ft. Percent Passing									
1/4"	100									
#4	99									
#8	93									
#10	92									
#16	85									
#30	62									
#40	48									
#50	29									
#100	7									
#200	5.5									



COBBLES	G	RAVEL		SAND)	CILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY

SYMBOL	SAMPLE IDENTIFICATION	FIELD MOISTURE (%)	% PASSING NO. 200 SIEVE	% PASSING 2 μ	ASTM D2487
	SB-21 #1 @ 1.5 - 20.0 FT.	-	5.5	2.6	

GRADATION TEST RESULTS - ASTM D422

PROJECT NO. 00-232350-0 ERM ARKEMA LAB NO. 24-728





TECHNICAL REPORT

Report To: Josh Hancock Date: 1/10/2025

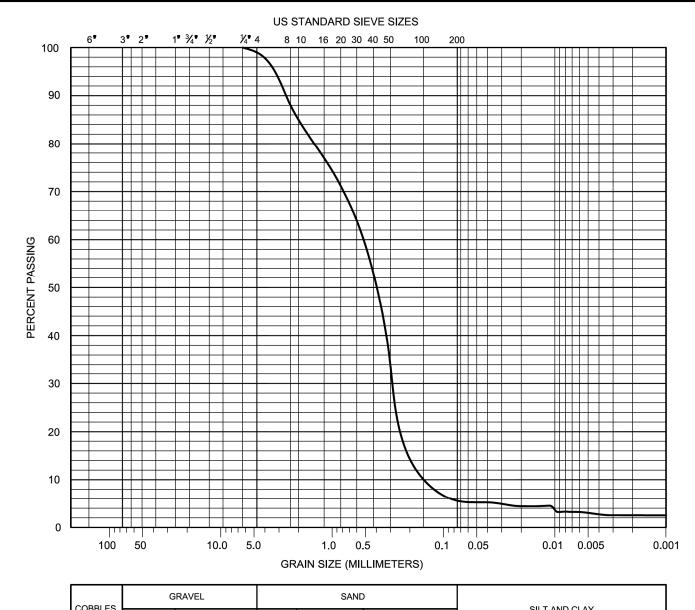
Environmental Resources Management, Inc.

1201 3rd Avenue, Floor 22 Seattle, Washington 97101

Lab No.: 24-728

Project: Arkema PDI Project No.: 00-232350-0

	Particle Size Analysis of Soil (ASTM D422)									
Sieve Size	SB-21, #3 @ 37.0-43.0 Ft. Percent Passing									
1/4"	100									
#4	99									
#8	88									
#10	85									
#16	77									
#30	64									
#40	53									
#50	34									
#100	10									
#200	5.6									



COBBLES	G	RAVEL		SAND)	CILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY

SYMBOL	SAMPLE IDENTIFICATION	FIELD MOISTURE (%)	% PASSING NO. 200 SIEVE	% PASSING 2 μ	ASTM D2487
	SB-21 #3 @ 37.0 - 43.0 FT.	-	5.6	2.5	

GRADATION TEST RESULTS - ASTM D422

PROJECT NO. 00-232350-0 ERM ARKEMA LAB NO. 24-728



TECHNICAL REPORT

Report To: Josh Hancock Date: 1/10/2025

Environmental Resources Management, Inc.

1201 3rd Avenue, Floor 22 Seattle, Washington 97101

Lab No.: 24-728

Project: Arkema PDI Project No.: 00-232350-0

Sample ID: PDI-55c, #1 @ 35.0-37.0 Ft.

	Flexible Wall Permeability – Sample Data (ASTM D5084 – Method C)												
Initial Mas (grams)	s In	Initial Length (inches)		Initial Diameter (inches)		Initial Area (sq. inches)			Moist ntent cent)		Initial Dry Density (pcf)		
224.1		1.2	50	2	2.780	6.07	0	3	2.7		84.8		
Final Mas (grams)	s F	inal L (incl	.ength nes)		Diameter nches)	Final A (sq. inc	rea hes) C		Final Moisture Content (percent)		Final Dry Density (pcf)		
207.0		1.1	60	2	2.780	6.07	0	3	4.5		84.9		
Sam	Sample Condition					Saturation at Time of Testing (percent)							
F	Remold	ed		95				0.4					
Tes	st 1			Test	2	-	Test 3	est 3			Test 4		
Initial Hydraulic Gradient	Fina Hydra Gradi	ulic	Initia Hydrau Gradie	ulic I	Final Hydraulic Gradient	Initial Hydrauli Gradien	с Ну	Final draulic radient	Hyc	nitial Iraulic adient	Final Hydraulic Gradient		
10.34	9.9	5	10.34	4	9.95	10.34		9.95	1	0.34	9.95		
			Test 2 I (cm/sec					Test 4 k cm/sec)		l	rerage k em/sec)		
1.52x10) -6		1.52x10	-6	1.46	x10 ⁻⁶	1	.54x10 ⁻⁶		1.51x10 ⁻⁶			

TECHNICAL REPORT

Report To: Josh Hancock Date: 1/10/2025

Environmental Resources Management, Inc.

1201 3rd Avenue, Floor 22 Seattle, Washington 97101

Lab No.: 24-728

Project: Arkema PDI Project No.: 00-232350-0

Sample ID: PDI-40a, #2 @ 40.0-42.0 Ft.

	Flexible Wall Permeability – Sample Data (ASTM D5084 – Method C)												
Initial Mas (grams)	s In	Initial Length (inches)		Initial Diameter (inches)		Initial Area (sq. inches)			Moist ntent cent)		Initial Dry Density (pcf)		
192.0		1.2	50	2	2.780	6.07	0	2	5.8		76.7		
Final Mas (grams)			_	Final Diameter (inches)		(sq. inches)		al Moisture Content percent)		Final Dry Density (pcf)			
198.6		1.1	07	12	2.760	5.98	3	3	33.3		85.7		
Sam	Sample Condition					Saturation at Time of Testing (percent)				Head (psi)			
F	Remold	ed		96				0.3					
Tes	st 1			Test	2	-	Test 3			Tes	Test 4		
Initial Hydraulic Gradient	Fina Hydra Gradi	ulic	Initia Hydrau Gradie	ılic H	Final Hydraulic Gradient	Initial Hydrauli Gradien	с Ну	Final draulic radient	Hyc	nitial draulic adient	Final Hydraulic Gradient		
8.75	6.2	6	8.75		6.26	8.75		6.26	8	3.75	6.26		
			Test 2 I (cm/sec					Test 4 k cm/sec)		1	erage k m/sec)		
9.25x10) -5		8.64x10	-5	8.86	x10 ⁻⁵	9	9.09x10 ⁻⁵		8.96x10 ⁻⁵			

TECHNICAL REPORT

Report To: Josh Hancock Date: 1/10/2025

Environmental Resources Management, Inc.

1201 3rd Avenue, Floor 22 Seattle, Washington 97101

Lab No.: 24-728

Project: Arkema PDI Project No.: 00-232350-0

Sample ID: SB-21, #2 @ 35.0-37.0 Ft.

	Flexible Wall Permeability – Sample Data (ASTM D5084 – Method C)												
Initial Mas (grams)	s In	Initial Length (inches)		Initial Diameter (inches)		Initial Area (sq. inches)			Moist ntent cent)		Initial Dry Density (pcf)		
224.1		1.2	00	2	2.790	6.11	4	1	1.3		104.6		
Final Mas (grams)			_	Final Diameter (inches)		(sq. inches)			Moist ntent cent)		Final Dry Density (pcf)		
242.3		1.1	47	2	2.790	6.11	4	2	22.1		107.8		
Sam	Sample Condition					Saturation at Time of Testing (percent)							
F	Remold	ed			9		0.2						
Tes	st 1			Test	2	-	Test 3			Tes	Test 4		
Initial Hydraulic Gradient	Fina Hydra Gradi	ulic	Initia Hydrau Gradie	ılic H	Final Hydraulic Gradient	Initial Hydrauli Gradien	с Ну	Final draulic radient	Hyc	nitial Iraulic adient	Final Hydraulic Gradient		
5.23	44	3	5.23		4.43	5.23		4.43	5	5.23	4.43		
1			Test 2 I (cm/sec			t 3 k /sec)		Test 4 k cm/sec)		l	erage k m/sec)		
8.03x10) -6		8.16x10	-6	8.11	x10 ⁻⁶	8	3.21x10 ⁻⁶		8.13x10 ⁻⁶			

TECHNICAL REPORT

Report To: Josh Hancock Date: 1/10/2025

Environmental Resources Management, Inc.

1201 3rd Avenue, Floor 22 Seattle, Washington 97101

Lab No.: 24-728

Project: Arkema PDI Project No.: 00-232350-0

Sample ID: SB-21 #4 @ 43.0-45.0 Ft.

	Flexible Wall Permeability – Sample Data (ASTM D5084 – Method C)												
Initial Mas (grams)	s In	Initial Length (inches)		Initial Diameter (inches)		Initial Area (sq. inches)			Moist ntent cent)		Initial Dry Density (pcf)		
224.1		1.2	00	2	2.790	6.11	4	1	9.1		97.7		
Final Mas (grams)			_	Final Diameter (inches)		Final Area Col		Moisture ontent ercent)		Final Dry Density (pcf)			
244.8		1.1	16		2.78	6.07	0	2	25.9		105.2		
Sam	Sample Condition					Saturation at Time of Testing (percent)							
F	Remold	ed		97				0.4					
Tes	st 1			Test	2	-	Test 3	est 3			Test 4		
Initial Hydraulic Gradient	Fina Hydra Gradi	ulic	Initia Hydrau Gradie	ılic l	Final Hydraulic Gradient	Initial Hydrauli Gradien	с Ну	Final draulic radient	Hyc	nitial Iraulic adient	Final Hydraulic Gradient		
9.95	9.1	5	9.95	}	9.15	9.95		9.15	9.15 9.95		9.15		
Test 1 (cm/se			Test 2 I (cm/sec			t 3 k /sec)		Test 4 k cm/sec)			rerage k :m/sec)		
1.40x10) -5		1.34x10	-5	1.39	x10 ⁻⁵	•	I.42x10 ⁻⁵		1.39x10 ⁻⁵			



APPENDIX F TREATABILITY STUDY INITIAL RESULTS

Table 1

Phase 1 In Situ Stabilization Test Conditions and Analyses

Former Arkema Site, Portland, OR

									PHASE	1 ISS, ISS/ISC																
					Mix Ratio			ucs	Perme	eability		dified SPLP		Modif	ied Tank M	lethod		Soil An	nalyses		Aqı	ieous Anal	yses		Other	
	eatability Condition		DC.	Bio	eight of d		CD	20 D	Baseline	Cylinder		ole Monolii		V0C-	(28 Day)	-11	V/OC-	DD		TOC	V005-	DOC	ODD	TOD	Curing	Volumetr
	(2)		PC	Char	Slag	С	SP	28 Day	28 Day	28 Day	VOCs	DDx	рН	VOCs	DDx	pН	VOCs	DDx	рН	TOC	VOCs	DOC	ORP	TOD	VOCs [2]	Expansio
	Baseline [3]								1		1	1	1				3	3	3	1					1	1
	Control													1	1	1									<u> </u>	
		5% PC	5%					1		1	1	1	1	1	1	1									1	1
		5% PC QC DUP	5%					1		1	1	1	1	1	1	1									1	1
		5% PC, 5% Slag	5%	5%				1		1	1	1	1													
	5% PC	5% PC, 5% Slag, 5% Biochar	5%	5%	5%			1		1	1	1	1													
		5% PC, 1% C	5%			1%		1			1	1	1												1	1
		5% PC, 4% C	5%			4%		1			1	1	1												1	1
		5% PC, 1% SP	5%				1%	1		_	1	1	1	_	_	_									1	1
Contaminated Area		5% PC, 2.5% SP	5%				2.5%	1		1	1	1	1	1	1	1									1	1
(CON)		10% PC	10%					1		1	1	1	1												1	1
(e.g., DNAPL from different lithology if	10% PC	10% PC, 5% Biochar	10%	5%				1		1	1	1	1													
encountered)		10% PC, 5% C	10%			5%		1		1	1	1	1													
		10% PC, 5% SP	10%				5%	1		1	1	1	1												1	1
		15% PC	15%	!	1			1		1	1	1	1	1	1	1				1	<u> </u>		1		1	1
		15% PC, 1% C	15%	ļ	1	1%		1			1	1	1							1	<u> </u>		1		1	1
	15% PC	15% PC, 4% C	15%	ļ		4%		1			1	1	1										1		1	1
		15% PC, 1% SP	15%				1%	1			1	1	1	1	1	1									1	1
		15% PC, 5% SP QC MS/MSD	15%				5%				2	2	2	2	2											
		15% PC, 5% SP	15%				5%	1		1	1	1	1	1	1	1									1	1
		Control					0%										1	1	1	1	1	1	1	1		
	ISCO	Alk-SP 1%					1%										1	1	1	1	1	1	1	1		
		Alk-SP 2%					2%										1	1	1	1	1	1	1	1		
	Baseline																1	1	1	1					<u> </u>	
PDI-02 (Contaminated Area)		Control					0%										1	1	1	1	1	1	1	1		
1 Di 02 (contaminated Area)	ISCO	Alk-SP 1%					1%										1	1	1	1	1	1	1	1		
		Alk-SP 2%					2%										1	1	1	1	1	1	1	1		
	Baseline [3]								1		1	1	1				3	3	3	1					1	1
	Control													1	1	1										
		5% PC	5%					1		1	1	1	1	1	1	1									1	1
		5% PC, 1% C	5%	1%		1%		1																	1	1
	5% PC	5% PC, 4% C	5%	4%		4%	1	1																	1	1
		5% PC, 1% SP	5%			+ +	1%	1			1	1	1												1	1
		5% PC, 2.5% SP	5%				2.5%	1		1	1	1	1	1	1	1									1	1
		7.5% PC	7.5%					1		1	1	1	1												1	1
Some DNAPL Contamination	7.5% PC	7.5% PC, 5% SP	7.5%				5%	1		1	1	1	1												1	1
(SDC)		10% PC	10%					1		1	1	1	1	1	1	1									1	1
		10% PC, 1% C	10%	1%		1%	1	1					_												1	1
		10 PC, 4% C	10%	4%		4%		1																	1	1
	10% PC	10% PC, 1% SP	10%				1%	1			1	1	1												1	1
		10% PC, 2.5% SP	10%				2.5%	1																	1	1
		10% PC, 5% SP	10%				5%	1		1	1	1	1	1	1	1									1	1
		Control					0%										1	1	1	1	1	1	1	1		
	ISCO	Alk-SP 1%					1%										1	1	1	1	1	1	1	1		
		Alk-SP 2%					2%										1	1	1	1	1	1	1	1		
	Baseline	•															1	1	1	1						
PDI-16		Control					0%										1	1	1	1	1	1	1	1		
(SDC Area)	ISCO	Alk-SP 1%					1%										1	1	1	1	1	1	1	1		
		Alk-SP 2%					2%										1	1	1	1	1	1	1	1		
	Baseline	-															1	1	1	1	Ī					
PDI-24		Control					0%										1	1	1	1	1	1	1	1		
(SDC Area)	ISCO	Alk-SP 1%					1%										1	1	1	1	1	1	1	1		
		Alk-SP 2%					2%										1	1	1	1	1	1	1	1		
No Evidence of DNAPL Contamination	Raseline																1	1	1	1	Ī		Ì			
(NEC)	DUJCIIIIC	Control					0%										1	1	1	1	1	1	1	1		
(0)	ICCO	Alk-SP 1%					1%										1	1	1	1	1	1	1	1		
(i.e., outside of DNAPL area, within	1500						1/0											Τ.		ı ±					1	
(i.e., outside of DNAPL area, within dissolved plume)	ISCO																1	1	1	1	1		+	1		
(i.e., outside of DNAPL area, within dissolved plume)	ISCO	Alk-SP 2%					2%	30	2	17	29	29	29	14	14	12	1 28	1 28	1 28	1 24	1 18	1 18	1 18	1 18	28	28

- 1. Synthetic Precipitation Leaching Procedure (SPLP), modified to keep the monolith whole instead of crushing.
- 2. A molded cylinder of baseline or cement-amended soil was dedicated for PID measurements. Headspace VOC concentrations were recorded immediately after preparation, after 24 hours, after 72 hours, and after 5 days.

3. Three soil samples from each of the Contaminated and Some DNAPL Contamination areas were submitted for baseline soil analysis of COCs to evaluate homogenization QC.

Alk-SP = alkaline-activated sodium persulfate C = carbon

DDx = 4,4'-DDD, -DDE, -DDTDOC = Dissolved Organic Carbon DUP = duplicate

PC = Portland cement

MS/MSD = matrix spike/matrix spike duplicate ORP = Oxidation/Reduction Potential of saturated soil PID = photoionization detector QC = quality control SP = sodium persulfate

TOC = Total Organic Carbon

TOD = Total Oxidant Demand UCS = unconfined compressive strength VOCs = volatile organic compounds x% = weight of reagent to weight of soil

Test Name UCS Permeability Testing Modified SPLP

Volumetric Expansion

Method Reference ASTM D1633

ASTM D5084 (monolith) or D2434 (baseline soil) EPA Method 1312, modified to keep the monolith whole ASTM D7263 (bulk density)

Table 2 Phase 2 In Situ Stabilization Test Conditions and Analyses

Former Arkema Site, Portland, OR

						PHAS	E 2 Test Co	ondition	s								
	Treatability Test Condition	(%	Mix F weight	Ratios of dry s	soil)	ι	ıcs	Perm	eability				LEAF 13	15 ^{[1][2][3]}			
	rest condition	PC	GBFS	AC	ВС	28 Day	56 Day [5]	28 Day	56 Day [5]	VOCs	SVOCs	DDx	Metals	рН	ORP	TOC	DOC
	Control									9	3	9	3	3	3	3	3
	Condition #1	4%	4%			1	1	1	1	9	3	9	3	3	3	3	3
Contaminated	Condition #1 QC DUP/MS/MSD [4]	4%	4%			1	1	1	1	3 [4]	3 [4]	3 [4]	3 [4]	1 [4]	1 [4]	3 [4]	3 [4]
Area	Condition #2	6%	6%			1	1	1	1	9	3	9	3	3	3	3	3
(CON)	Condition #3	4%	4%	1%		1	1	1	1	9	3	9	3	3	3	3	3
	Condition #4	4%	4%	2%		1	1	1	1	9	3	9	3	3	3	3	3
	Condition #5	4%	4%		2%	1	1	1	1	9	3	9	3	3	3	3	3
	Control									9	3	9	3	3	3	3	3
Some DNAPL	Condition #1	3%	3%			1	1	1	1	9	3	9	3	3	3	3	3
Contamination	Condition #2	5%	5%			1	1	1	1	9	3	9	3	3	3	3	3
(SDC)	Condition #3	3%	3%	1%		1	1	1	1	9	3	9	3	3	3	3	3
	Condition #4	3%	3%	2%		1	1	1	1	9	3	9	3	3	3	3	3
				Total P	hase 2	10	10	10	10	102	36	102	36	34	34	36	36

Notes:

[1] The Leaching Environmental Assessment Framework (LEAF) 1315 testing consists of 9 discrete eluate changes at 9 time points of 0.08, 1, 2, 7, 14, 28, 42, 49, and 63 days.

The control consists of distilled water in contact with untreated, unconsolidated soil.

- [2] If analytes are not observed in testing of control sample, leachability testing for these analytes likely to be eliminated.
- [3] Analytes with three analytical time points would be sampled at start, middle, and end of LEAF test (i.e., at 1, 28, and 63 days).
- [4] Lab to select one timepoint between 2 and 28 days to sample. Eluate to be changed as normal for other timepoints not tested.
- [5] If the 28-day test results are within required range, the 56-day test may be omitted at ERM's discretion.

AC = activated carbon, powdered

BC = biochar, powdered

DDx = 4,4'-DDT, -DDE, -DDD

DOC = Dissolved Organic Carbon

DUP = duplicate

GBFS = ground blast furnace slag

Metals = total recoverable metals, dissolved, target analyte list

MS/MSD = matrix spike/matrix spike duplicate

ORP = Oxidation/Reduction Potential of the saturated soil

PC = Portland cement

QC = quality control

SVOCs = semi-volatile organic compounds, target analyte list

TOC = Total Organic Carbon

UCS = unconfined compressive strength

VOCs = volatile organic compounds, target analyte list

x% = weight of reagent to weight of soil

Test NameMethod ReferenceUCSASTM D1633Permeability TestingASTM D5084LEAF 1315EPA Method 1315

Table 3 Phase 1 Curing VOCs Data

Former Arkema Site, Portland, OR

		PHASE 1 IS	S and ISS/ISCO T	Test Conditions		
	Treatabilit	:у		Curing	VOCs (1)	
Т	est Condit	ion	0 Hours	24 Hours	72 Hours	5 Days
	Baseline		3,351	3,174	3,210	3,155
		5% PC	3,306	2,376	2,083	2,168
		5% PC QC DUP	3,287	2,305	2,099	2,111
	5% PC	5% PC, 1% C	1,670	956	1,098	1,179
	3/0 FC	5% PC, 4% C	3,025	49	21	16
		5% PC, 1% SP	2,901	1,764	1,609	1,771
Contaminated Area		5% PC, 2.5% SP	3,149	1,736	1,881	1,781
(CON)	10% PC	10% PC	2,328	1,988	1,974	1,437
(55.1)	10% PC	10% PC, 5% SP	2,900	2,394	2,055	1,792
		15% PC	2,047	1,884	1,890	2,122
		15% PC, 1% C	1,618	1,566	1,432	1,725
	15% PC	15% PC, 4% C	119	29	14	14
		15% PC, 1% SP	1,465	2,151	2,198	1,964
		15% PC, 5% SP	1,904	1,283	1,662	1,621
PDI-02	Baseline		1,703	nm	nm	nm
	Baseline		503	499	485	487
		5% PC	75	25	29	22
		5% PC, 1% C	1.4	3.5	1.4	0.7
	5% PC	5% PC, 4% C	0.5	2.4	0.4	0.4
		5% PC, 1% SP	245	254	245	166
		5% PC, 2.5% SP	177	250	271	129
Some DNAPL Contamination	7.5% PC	7.5% PC	64	8.8	6.1	3.5
(SDC)	7.5% FC	7.5% PC, 5% SP	188	164	158	98
(323)		10% PC	55	4.8	5.1	1.1
		10% PC, 1% C	1.3	3.9	2.2	0.6
	10% PC	10 PC, 4% C	0.4	2.5	0.3	0.4
	10/0 FC	10% PC, 1% SP	164	149	142	99
		10% PC, 2.5% SP	288	279	274	209
		10% PC, 5% SP	56	38	27	6.0
PDI-16	Baseline		99	nm	nm	nm
PDI-24	Baseline		36	nm	nm	nm
NEC	Baseline		0.3	nm	nm	nm

Notes:

1. For each test condition, a representative aliquot of baseline or cement-amended soil was placed in individual, molds. A PID, model Tiger XL, was used to measure the headspace total VOC concentration immediately after preparation, after 24 hours, after 72 hours, and after 5 days.

C = carbon

NEC = no evidence of DNAPL contamination

nm = not measured

PC = Portland cement

PID = photoionization detector

QC DUP = quality control duplicate

SP = sodium persulfate

VOC = volatile organic compound

Table 4
Baseline Soil Data

Former Arkema Site, Portland, OR

							Baseline :	Soil Data					
Analyte	Units		Cont	aminated A	rea			Sc	me DNAPL (Contaminatio	on		NEC
		CON B1	CON B2	CON B3	Average	PDI-02 B	SDC B1	SDC B2	SDC B3	Average	PDI-16 B	PDI-24 B	NEC B
VOCs [1]													
Acetone		2.8 U	2.8 U	2.9 U	2.8 U	2.8 U	2.8 U	2.7 U	2.8 U	2.8 U	2.8 U	6.1	0.023 U
Carbon tetrachloride		110 U	330 U	350 U	263 U	0.560 U	3.3 *+	4.1 *+	3.2 *+	3.5	0.550 U	0.540 U	0.0047 U
Chlorobenzene		670	950	1,100	907	850	41	45	38	41	70	18	0.040
Chloroform	mg/Kg	0.390 J*+	0.430 J*+	0.670 *+	0.497	0.560 U	0.490 J*+	0.570 *+	0.550 J*+	0.537	0.550 U	0.540 U	0.0047 U
1,2-dichlorobenzene		1.2	1.3	1.4	1.3	1.7	0.550 U	0.540 U	0.560 U	0.550 U	0.520 J	0.540 U	0.0047 U
1,4-dichlorobenzene		110 U	330 U	350 U	263 U	340 U	0.400 J	0.540	0.450 J	0.463	0.900	0.540 U	0.0047 U
Tetrachloroethene		110 U	330 U	350 U	263 U	1.3	43	61	47	50	1.9	0.540 U	0.0047 U
DDx													
4,4'-DDD		150	160	140	150	240	13	18	12	14	0.430	2.5	0.028
4,4'-DDE	mg/Kg	35 J	38 J	33 J	35 J	46 J	3.5 J	4.8 J	5.3 p	4.5	0.110 J	0.750 J	0.0032 Jp
4,4'-DDT		3,600	3,700	3,200	3,500	3,100	290	380	450	373	10.0	55	0.400
General Chemistry													
TOC	mg/Kg	5,600	na	na	5,600	16,000 ^*	na	na	6,100	6,100	17,000 H	7,200 H	5,300 F1
рН	SU	4.7	4.7	4.7	4.7	7.9	4.9	4.5	5.1	4.8	4.6	6.1	7.4

Notes:

Bold font indicates analyte was detected at concentration above the laboratory reporting limit (RL).

F1 = matrix spike (MS) and/or MS duplicate (MSD) recovery exceeds control limits.

H = sample prepped or analyzed outside of hold time.

J = result is less than the RL but greater than or equal to the method detection limit (MDL) and the concentration is an approximate value.

mg/Kg = milligrams per kilogram

na = not analyzed

NEC = no evidence of DNAPL contamination

p = the relative percent difference (RPD) between the primary and confirmation column/detector is >40%. The lower value has been reported.

SU = standard units

TOC = total organic carbon

U = analyte was not detected above the indicated reporting limit (RL).

1. Only compounds detected in one or more samples are shown.

^{*+ =} laboratory control sample (LCS) and/or LCS duplicate (LCSD) is outside acceptance limits, high biased.

^{^+ =} continuing calibration verification (CCV) is outside acceptance limits, high biased.

Table 5 Phase 1 SPLP Results

Former Arkema Site, Portland, OR

									SPLP Dat	ta ^[1]							
									Contaminat	ed Area							
Analyte	Units	Base	eline	5%	S PC	5% Dupli		5% PC 5% Slag	5% PC 5% Slag, 5% Biochar		5 PC % C		PC 6 C		6 PC 6 SP		PC % SP
VOCs [2]																	
1,4-Dichlorobenzene		5,000 UH	500 UH	1,000 UH	110 H	20,000 UH	2,000 UH	250 U	1.0 U	1,000 UH	100 UH	50 UH	5.0 UH	2,000 UH	110 JH	1,000 UH	130 H
Acetone		25,000 UH	2,500 UH	5,000 UH	500 UH	100,000 UH	10,000 UH	1,300 U	5.0 U	5,000 UH	500 UH	250 UH	25 UH	10,000 UH	1,000 UH	5,000 UH	500 UH
Carbon tetrachloride		5,000 UH	500 UH	1,000 UH	100 UH	20,000 UH	2,000 UH	250 U	2.5	1,000 UH	100 UH	50 UH	19 H	2,000 UH	200 UH	1,000 UH	100 UH
Chlorobenzene		39,000 HB	40,000 EHB	27,000 HB	29,000 EHB	39,000 HB	35,000 HB	18,000	46	21,000 HB	22,000 EHB	530 HB	570 EHB	24,000 HB	27,000 EHB	32,000 HB	34,000 EHB
Chloroethane	μg/L	5,000 UH	500 UH	1,000 UH	100 UH	20,000 UH	2,000 UH	250 U	1.0 U	1,000 UH	100 UH	50 UH	5.0 UH	2,000 UH	200 UH	1,000 UH	100 UH
Chloroform		5,000 UH	500 UH	1,000 UH	100 UH	20,000 UH	2,000 UH	250 U	3.4	1,000 UH	100 UH	57 H	53 H	2,000 UH	200 UH	1,000 UH	100 UH
Methylene Chloride		5,000 UH	500 UH	1,400 H	220 H	20,000 UH	2,000 UH	1,100 B	11 B	1,000 UH	100 UH	50 UH	16 H	2,000 UH	200 UH	1,000 UH	100 UH
Tetrachloroethene		5,000 UH	600 H	1,000 UH	620 H	20,000 UH	2,000 UH	1,300	90	750 JH	870 H	50 UH	30 H	2,000 UH	590 H	1,000 UH	700 H
1,2,4-trichlorobenzene		5,000 UH	500 UH	1,000 UH	100 UH	20,000 UH	2,000 UH	720	1.0 U	1,000 UH	100 UH	50 UH	5.0 UH	2,000 UH	200 UH	1,000 UH	100 UH
DDx																	
4,4'-DDD		2.1 B		1.9 B		2.3 B	-	0.23 B	3.7	1.6 B		0.11 B		2.0 B		2.1 B	
4,4'-DDE	μg/L	0.10 J		0.11 JB		0.12 B		0.12 U	0.35	0.12		0.03	-	0.11 J		0.10 JpB	
4,4'-DDT		2.3 B		2.7 B		3.0 B	-	0.30 B	4.5 B	2.4 B		0.92 B	-	2.5 B		3.3 B	
General Chemistry																	
рН	SU	5.4		10.2		10.3		11.0	11.3	10.1		10.1		10.0		9.8	

Table 5 Phase 1 SPLP Results

Former Arkema Site, Portland, OR

									SPLP Da	ıta ^[1]							
									Contaminat	ted Area							
Analyte	Units	10%	6 PC	10% PC 5% Biochar	10% PC 5% C		6 PC 6 SP	15%	6 PC		6 PC 6 C		6 PC 6 C		% PC 6 SP	15% 5%	
VOCs ^[2]																	
1,4-Dichlorobenzene		2,000 UH	200 UH	1.0 U	1.0 U	2,000 UH	120 JH	1,000 UH	87 JH	1,000 UH	100 UH	100 UH	10 UH	5,000 UH	500 UH	2,000 UH	200 UH
Acetone		10,000 UH	1,000 UH	1.0 U	5.1	10,000 UH	1,000 UH	5,000 UH	500 UH	5,000 UH	500 UH	500 UH	50 UH	25,000 UH	2,500 UH	10,000 UH	1,000 UH
Carbon tetrachloride		2,000 UH	200 UH	5.3	2.6	2,000 UH	200 UH	1,000 UH	100 UH	1,000 UH	100 UH	100 UH	32 H	5,000 UH	500 UH	2,000 UH	200 UH
Chlorobenzene		34,000 HB	39,000 EHB	47	49	28,000 HB	31,000 EHB	16,000 HB	18,000 EHB	15,000 HB	15,000 EHB	800 HB	710 EHB	36,000 HB	33,000 EHB	16,000 HF1B	18,000 EHB
Chloroethane	μg/L	2,000 UH	200 UH	5.0	26	2,000 UH	200 UH	1,000 UH	100 UH	1,000 UH	100 UH	100 UH	10 UH	5,000 UH	500 UH	2,000 UH	200 UH
Chloroform		2,000 UH	200 UH	7.6	25	2,000 UH	200 UH	1,000 UH	100 UH	1,000 UH	67 JH	97 JH	72 H	5,000 UH	500 UH	2,000 UH	200 UH
Methylene Chloride		2,000 UH	200 UH	7.0 B	4.1 B	2,000 UH	200 UH	1,000 UH	100 UH	1,000 UH	370 H	160 H	28 H	5,000 UH	500 UH	2,000 UH	200 UH
Tetrachloroethene		2,000 UH	1,100 H	110	11	2,000 UH	860 H	1,000 UH	550 H	1,000 UH	230 H	48 JH	35 H	5,000 UH	870 H	2,000 UH	430 H
1,2,4-trichlorobenzene		2,000 UH	200 UH	1.0 U	1.0 U	2,000 UH	200 UH	1,000 UH	100 UH	1,000 UH	100 UH	100 UH	10 UH	5,000 UH	500 UH	2,000 UH	200 UH
DDx																	
4,4'-DDD		2.2 B		3.0	0.13 U	2.4 B		2.2 B		1.6 B		0.15 B		2.1 B		2.2 B	
4,4'-DDE	μg/L	0.24 B		0.52	0.13 U	0.13 pB		0.48		0.52		0.21		0.47 B		0.22	
4,4'-DDT		2.7 B		4.3 B	0.11 JB	3.1 B	-	2.5 B	-	2.4 B		0.76 B	1	2.6 B		3.1 B	
General Chemistry																	
рН	SU	10.8		11.3	11.7	9.8		11.2		11.0		11.1		11.1		10.3	

Table 5 Phase 1 SPLP Results

Former Arkema Site, Portland, OR

										SPLP D	ata ^[1]								
									So	me DNAPL (Contaminatio	on							
Analyte	Units	Base	eline	5%	PC	5% 1%		5% 2.5%		7.5%	6 PC	7.5% 5%		10%	PC	10% 1%			6 PC 5 SP
VOCs																			
1,4-Dichlorobenzene		100 UH	10 UH 100 UH	10 UH	25 UH	2.8 H	100 UH	10 UH	50 UH	5.0 UH	25 UH	2.2 JH							
Acetone		500 UH	50 UH	500 UH	51 HB	500 UH	59 HB	500 UH	50 UH	500 UH	370 HB	130 UH	31 HB	500 UH	50 HB	250 UH	25 UH	130 UH	13 UH
Carbon tetrachloride		100 UH	10 UH 100 UH	10 UH	25 UH	2.5 UH	100 UH	10 UH	50 UH	8.9 H	25 UH	8.4 H							
Chlorobenzene	μg/L	190 HB	180 HB	110 HB	88 HB	120 HB	110 HB	100 HB	83 HB	51 JHB	53 HB	34 HB	30 HB	300 HB	310 HB	52 HB	46 HB	41 HB	37 HB
Chloroethane	μg/ ∟	100 UH	10 UH	100 UH	10 UH	100 UH	10 UH	100 UH	10 UH	100 UH	10 UH	25 UH	2.5 UH	100 UH	10 UH	50 UH	5.0 UH	25 UH	2.5 UH
Chloroform		100 UH	10 UH 100 UH	10 UH	25 UH	2.5 UH	100 UH	10 UH	50 UH	5.0 UH	25 UH	2.5 UH							
Methylene Chloride		100 UH	26 HB	150 HB	120 HB	100 UH	27 HB	100 UH	29 HB	1,400 HB	1,500 EHB	25 UH	22 HB	130 HB	30 HB	50 UH	140 HB	75 HB	2.5 UH
Tetrachloroethene		140 H	140 H	440 H	340 H	280 H	260 H	270 H	150 H	320 H	280 H	270 H	190 EH	410 H	370 H	360 H	230 H	250 H	200 EH
1,2,4-trichlorobenzene		100 UH	10 UH 100 UH	10 UH	25 UH	2.5 UH	100 UH	10 UH	50 UH	5.0 UH	25 UH	2.5 UH							
DDx																			
4,4'-DDD		1.7 B	-	1.4 B	-	1.7 B		1.7		1.2		1.8		1.0		1.1		1.2	
4,4'-DDE	μg/L	0.11 J		0.33		0.25		0.19		0.21		0.18		0.63		0.35		0.18	
4,4'-DDT		1.4 B		1.3 B		1.5 B		1.6		1.8		1.9		0.97		1.1		1.4	
General Chemistry																			
рН	SU	10.2		11.1		11.0		10.4		11.0		10.6		11.5		11.5		10.9	

Notes:

-- = reanalysis not performed

B = compound was found in the blank and sample

Bold font indicates analyte was detected at concentration above the laboratory reporting limit (RL).

C = activated carbon

E = results exceeds the calibration range

F1 = matrix spike (MS) and/or MS duplicate (MSD) recovery exceeds control limits.

H = sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.

J = result is less than the RL but greater than or equal to the method detection limit (MDL) and the concentration is an approximate value.

p = the RPD between the primary and confirmation column/detector is >40%. The lower valuEHas been reported.

PC = Portland cement type I/II

SU = standard units

μg/L = micrograms per liter

U = analyte was not detected above the indicated RL.

VOCs = volatile organic compounds

- 1. United States Environmental Protection Agency (EPA) Synthetic Precipitation Leaching Procedure (SPLP) Method 1312, modified to keep the monolith whole instead of crushing during the extraction process. Baseline soil samples were not monoliths and therefore were extracted according to standard SPLP procedures.
- 2. Only compounds detected in one or more samples are shown.
- 3. Samples with two sets of data were analyzed at 2 different dilution factors. The results from the analysis conducted at a higher dilution factor are presented in the first column.

Table 6
Phase 1 Tank Test Results

Former Arkema Site, Portland, OR

								Tank Te	st Data: Cor	ntaminated	Area ^[1]						
Analyte	Units		Con	trol			5%	PC				S PC licate				S PC % SP	
		DAY 1	DAY 7	DAY 14	DAY 28	DAY 1	DAY 7	DAY 14	DAY 28	DAY 1	DAY 7	DAY 14	DAY 28	DAY 1	DAY 7	DAY 14	DAY 28
VOCs ^[2]																	
Acetone		2,600 U	13,000 U	13,000 U	6,300 U	4,100	13,000 U	6,300 U	2,500 U	4,700	10,000 U	2,500 U	2,500 U	1,300 U	5,000 U	2,500 U	2,500 U
2-butanone		2,500 U	13,000 U	13,000 U	6,300 U	2,500 U	13,000 U	6,300 U	2,500 U	2,500 U	10,000 U	2,500 U	2,500 U	1,300 U	5,000 U	2,500 U	2,500 U
Chlorobenzene	/1	11,000	20,000	18,000	17,000	6,900	13,000	11,000	13,000	6,300	8,200	10,000	16,000	4,100	7,100	8,300	18,000
Chloroform	μg/L	500 U	2,500 U	2,500 U	2,500 U	500 U	2,500 U	1,300 U	500 U	500 U	2,000 U	500 U	500 U	250 U	1,000 U	500 U	500 U
Styrene		500 U	2,500 U	2,500 U	2,500 U	500 U	2,500 U	1,300 U	500 U	500 U	2,000 U	500 U	500 U	250 U	1,000 U	500 U	500 U
Tetrachloroethene		500 U	2,500 U	2,500 U	2,500 U	500 U	2,500 U	1,300 U	500 U	500 U	2,000 U	500 U	250 J	250 U	1,000 U	500 U	340 J
DDx																	
4,4'-DDD		16	8.4	6.2	26	1.1	1.7	2.5	2.6	1.2	1.8	2.4	2.2	1.1	1.3	2.6	4.7
4,4'-DDE	μg/L	3.3	2.2 J	2.3 J	5.4	0.11 J	0.22	0.25	0.21	0.13 U	0.20	0.22	0.20	0.096 J	0.14	0.24	0.63 J
4,4'-DDT		290	190	210	340	13.0	19.0	5.6	16.0	7.1	17.0	9.9	7.3	6.5	11.0	17.0	34.0
General Chemistry																	
рН	SU	5.2 HF	5.0 HF	5.2 HF	5.0 HF	9.8 HF	9.8 HF	9.8 HF	9.7 HF	10 HF	9.9 HF	9.6 HF	9.8 HF	9.4 HF	9.7 HF	9.3 HF	9.7 HF

Table 6
Phase 1 Tank Test Results

Former Arkema Site, Portland, OR

						Tanl	(Test Data:	Contamina	ated Area ^{[1}	1			
Analyte	Units		15%	6 PC			15% 1%				15% I 5% S		
		DAY 1	DAY 7	DAY 14	DAY 28	DAY 1	DAY 7	DAY 14	DAY 28	DAY 1	DAY 7	DAY 14	DAY 28
VOCs [2]													
Acetone		630 U	2,500 U	2,500 U	2,500 U	5,200	2,500 U	500 U	500 U	630 UF1F2	1,300 UF2	1,300 U	1,300 UF1
2-butanone		630 U	2,500 U	2,500 U	2,500 U	1,300 U	2,500 U	500 U	500 U	630 U	1,300 U	1,300 U	1,300 U
Chlorobenzene	/1	2,300	8,500	6,800	9,500	1,800	1,600	1,700	2,600	2,200 F1	5,600	3,000	6,200 F1
Chloroform	μg/L	130 U	500 U	500 U	500 U	250 U	500 U	100 U	100 U	130 U	130 U	250 U	250 UF1
Styrene		130 U	500 U	500 U	500 U	250 U	500 U	100 U	100 U	130 U	130 U	250 U	250 U
Tetrachloroethene		130 U	500 U	500 U	500 U	250 U	500 U	100 U	100 U	130 U	130 U	250 U	250 U
DDx													
4,4'-DDD		0.91	1.5	2.1	2.3	0.72	1.7	2.8	2.9	0.88	1.4	1.9	2.4
4,4'-DDE	μg/L	0.33	0.76	1.1	0.63	0.20	0.76	1.5	1.2	0.13	0.37	0.37	0.39
4,4'-DDT		4.3	6.1	3.0	5.3	3.1	6.4	3.5	4.3	7.6	6.4	2.2	4.4
General Chemistry													
рН	SU	10.7 HF	10.9 HF	10.6 HF	10.6 HF	10.8 HF	10.9 HF	10.6 HF	10.8 HF	10.2 HF	10.4 HF	10.0 HF	10.1 HF

Table 6 Phase 1 Tank Test Results

Former Arkema Site, Portland, OR

									Tank To	est Data: S	ome DNA	PL Contarr	nination [1]								
Analyte	Units		Con	trol			5%	PC			5% 2.5%				10%	6 PC			10% 5%		
		DAY 1	DAY 7	DAY 14	DAY 28	DAY 1	DAY 7	DAY 14	DAY 28 ^[3]	DAY 1	DAY 7	DAY 14	DAY 28	DAY 1	DAY 7	DAY 14	DAY 28	DAY 1	DAY 7	DAY 14	DAY 28
VOCs [2]																					
Acetone		7,500	1,300 U	630 U	250 U	10,000	500 U	250 U	250 U	130 U	250 U	130 U	63 U	50 U	100 U	130 U	130 U	54	44 J	50 U	50 U
2-butanone		1,300 U	1,300 U	630 U	250 U	1,300 U	500 U	250 U	250 U	130 U	250 U	130 U	63 U	50 U	100 U	130 U	130 U	9.0	50 U	50 U	50 U
Chlorobenzene	/1	1,700	1,400	1,000	1,100	850	710	550	700	210	300	180	350	110	550	370	500	53	140	120	230
Chloroform	μg/L	250 U	250 U	130 U	50 U	250 U	100 U	50 U	50 U	25 U	32 J	25 U	13 U	10 U	18 J	25 U	25 U	3.9	9.0 J	10 U	10 U
Styrene		250 U	250 U	130 U	50 U	240 J	100 U	50 U	50 U	25 U	50 U	25 U	13 U	10 U	20 U	25 U	25 U	1.0 U	10 U	10 U	10 U
Tetrachloroethene		120 J	160 J	150	200	120 J	500 J	520	970	100	200	140	370	78	570	500	840	37	110	120	250
DDx																					
4,4'-DDD		0.72	0.45	0.66	0.47	0.43	0.53	0.78	0.85	0.45	0.86	1.6	1.7	0.23	0.39	0.34	0.63	0.30	0.42	0.96	1.4
4,4'-DDE	μg/L	0.10 J	0.06 J	0.071 J	0.1 U	0.19	0.43	0.59	0.59	0.099 J	0.37	0.70	0.46	0.18	0.57	0.63	1.0	0.086	0.30	0.51	0.73
4,4'-DDT		7.1	4.6	4.7	4.1	2.0	1.3	1.6	1.9	1.5	3.6	4.2	6.5	0.29	0.76	0.77	0.53	0.64	0.48	2.4	3.2
General Chemistry	_																				
рН	SU	4.8 HF	4.7 HF	4.8 HF	4.7 HF	10.8 HF	11.0 HF	11.2 HF	11.3 HF	10.9 HF	10.7 HF	10.6 HF	10.9 HF	11.5 HF	11.3 HF	11.6 HF	11.2 HF	11.2 HF	11.3 HF	10.7 HF	10.4 HF

Notes:

-- = reanalysis not performed

Bold font indicates analyte was detected at concentration above the laboratory reporting limit (RL).

F1 = matrix spike (MS) and/or MS duplicate (MSD) recovery exceeds control limits.

F2 = MS/MSD RPD exceeds control limits.

HF = parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. Sample was analyzed outside of hold time.

J = result is less than the RL but greater than or equal to the method detection limit (MDL) and the concentration is an approximate value.

PC = Portland cement type I/II

SU = standard units

μg/L = micrograms per liter

U = analyte was not detected above the indicated RL.

VOCs = volatile organic compounds

- 1. The tank test is based on the ANSI 16.1 leachability method and was conducted in-house by submerging a sample for each test condition into individual, enclosed glass vessels filled with distilled water as the leaching solution.
- 2. Only compounds detected in one or more samples are shown.
- 3. Methyl acetate was an additional compound detected in the 5% PC sample at an estimated (J qualifier) concentration of 1,300 µg/L.

Table 7
Phase 1 Tank Test Chlorobenzene Results: Concentrations, Leaching Rate, and Mass Flux

Former Arkema Site, Portland, OR	Former	Arkema	Site,	Portland,	OR
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Cumulative					Chlo	orobenzene (Concentration ((μg/L)				
Leaching Time			Co	ntaminated	Area				Some	DNAPL Conta	amination	
(days)	Control	5% PC	5% PC Dupe	5% PC, 2.5% SP	15% PC	15% PC, 1% SP	15% PC, 5% SP	Control	5% PC	5% PC, 2.5% SP	10% PC	10% PC, 5% SP
1	11,000	6,900	6,300	4,100	2,300	1,800	2,200 F1	1,700	850	210	110	53
7	20,000	13,000	8,200	7,100	8,500	1,600	5,600	1,400	710	300	550	140
14	18,000	11,000	10,000	8,300	6,800	1,700	3,000	1,000	550	180	370	120
28	17,000	13,000	16,000	18,000	9,500	2,600	6,200 F1	1,100	700	350	500	230
Total Mass (μg)	114,312	75,728	69,863	64,688	46,748	13,283	29,325	9,006	4,847	1,794	2,639	937

Cumulative Leaching Time (days)	Chlorobenzene Leaching Rate (μg/L/day)											
			Co	ntaminated	Some DNAPL Contamination							
	Control	5% PC	5% PC Dupe	5% PC, 2.5% SP	15% PC	15% PC, 1% SP	15% PC, 5% SP	Control	5% PC	5% PC, 2.5% SP	10% PC	10% PC, 5% SP
1	11,000	6,900	6,300	4,100	2,300	1,800	2,200	1,700	850	210	110	53
7	3,333	2,167	1,367	1,183	1,417	267	933	233	118	50	92	23
14	2,571	1,571	1,429	1,186	971	243	429	143	79	26	53	17
28	1,214	929	1,143	1,286	679	186	443	79	50	25	36	16

Cumulative Leaching Time (days)	Chlorobenzene Mass Flux (μg/cm²-d)												
			Co	ntaminated	Some DNAPL Contamination								
	Control	5% PC		5% PC	15% PC	15% PC	15% PC	Control	5% PC	5% PC	10% PC		
			Dupe	2.5% SP		1% SP	5% SP			2.5% SP		5% SP	
1	108	65	60	39	22	17	21	17	8.0	2.0	1.0	0.50	
7	33	20	13	11	13	2.5	8.8	2.3	1.1	0.47	0.87	0.22	
14	25	15	14	11	9.2	2.3	4.1	1.4	0.74	0.24	0.50	0.16	
28	12	8.8	11	12	6.4	1.8	4.2	0.77	0.47	0.24	0.34	0.16	

Notes:

μg/L = micrograms per liter

 μ g/cm² -d = micrograms per square centimeter per day

PC = Portland Cement Type I/II

SP = sodium persulfate

Amendment dosages were based on dry weight of soil.

F1 = matrix spike (MS) and/or MS duplicate (MSD) recovery exceeds control limits.

1. The tank test is based on the ANSI 16.1 leachability method and was conducted in-house by submerging a sample for each test condition into individual, enclosed glass vessels filled with distilled water as the leaching solution.

Table 8
Phase 1 Tank Test DDx Results: Concentrations, Leaching Rate, and Mass Flux

Former Arkema Site, Portland, OR

Cumulative Leaching Time (days)	DDx Concentration (µg/L)												
			Co	ntaminated	Some DNAPL Contamination								
	Control	5% PC	5% PC Dupe	5% PC, 2.5% SP	15% PC	15% PC, 1% SP	15% PC, 5% SP	Control	5% PC	5% PC, 2.5% SP	10% PC	10% PC, 5% SP	
1	309	14	8.4	7.7	5.5	4.0	8.6	7.9	2.6	2.0	0.70	1.0	
7	201	21	19	12	8.4	8.9	8.2	5.1	2.3	4.8	1.7	1.2	
14	219	8.4	13	20	6.2	7.8	4.5	5.4	3.0	6.5	1.7	3.9	
28	371	19	9.7	39	8.2	8.4	7.2	4.7	3.3	8.7	2.2	5.3	
Total Mass (μg)	1,905	75	86	137	49	50	49	40	19	38	11	20	

Cumulative Leaching Time (days)	DDx Leaching Rate (µg/L/day)												
			Co	ntaminated	Some DNAPL Contamination								
	Control	5% PC	5% PC Dupe	5% PC, 2.5% SP	15% PC	15% PC, 1% SP	15% PC, 5% SP	Control	5% PC	5% PC, 2.5% SP	10% PC	10% PC, 5% SP	
1	309	14	8.4	7.7	5.5	4.0	8.6	7.9	2.6	2.0	0.7	1.0	
7	33	3.5	3.2	2.1	1.4	1.5	1.4	0.85	0.38	0.81	0.29	0.20	
14	31	1.2	1.8	2.8	0.9	1.1	0.6	0.78	0.42	0.93	0.25	0.55	
28	27	1.3	0.7	2.8	0.6	0.6	0.5	0.34	0.24	0.62	0.15	0.38	

Cumulative Leaching Time (days)	DDx Mass Flux (μg/cm²-d)													
	Contaminated Area								Some DNAPL Contamination					
	Control	5% PC	5% PC	5% PC	15% PC	15% PC	15% PC	Control	5% PC 5% PC 2.5% SP	5% PC	10% PC	10% PC		
` , ,			Dupe	2.5% SP		1% SP	5% SP			2.5% SP	10,010	5% SP		
1	3.0	0.13	0.08	0.07	0.05	0.04	0.08	0.08	0.02	0.02	0.007	0.01		
7	0.33	0.03	0.03	0.02	0.013	0.01	0.01	0.008	0.004	0.008	0.003	0.002		
14	0.31	0.01	0.02	0.03	0.008	0.01	0.006	0.008	0.004	0.009	0.002	0.005		
28	0.26	0.01	0.007	0.03	0.006	0.006	0.005	0.003	0.002	0.006	0.001	0.004		

Notes:

DDx = 4,4'-DDD, -DDE, -DDT

μg/L = micrograms per liter

 μ g/cm² -d = micrograms per square centimeter per day

PC = Portland Cement Type I/II

SP = sodium persulfate

Amendment dosages were based on dry weight of soil.

1. The tank test is based on the ANSI 16.1 leachability method and was conducted in-house by submerging a sample for each test condition into individual, enclosed glass vessels filled with distilled water as the leaching solution.

Table 9 Phase 1 Geotechnical Results

Former Arkema Site, Portland, OR

	Test Co	ondition	Bulk Density	Permeability	UCS				
	1030 00	maicion	(pcf)	(cm/sec)	(psi)				
		PHASE	1						
	Baseline S	Soil	106.9	5.2E-05	nm				
		5% PC	98.6	1.0E-06	100				
		5% PC DUP	98.8	8.9E-07	100				
		5% PC, 5% Slag	102.1	1.0E-07	260				
	5% PC	5% PC, 5% Slag, 5% Biochar	90.2	2.4E-04	225				
	3/0 FC	5% PC, 1% C	108.8	nm	110				
		5% PC, 4% C	109.4	nm	115				
		5% PC, 1% SP	100.3	nm	40				
Contaminated Area		5% PC, 2.5% SP	102.4	2.1E-06	40				
(CON)		10% PC	94.5	7.8E-08	210				
(3311)	10% PC	10% PC, 5% Biochar	100.6	1.1E-06	220				
	10% FC	10% PC, 5% C	110	1.6E-07	245				
		10% PC, 5% SP	101.7	4.7E-07	170				
		15% PC	101.7	2.6E-07	365				
		15% PC, 1% C	110.2	nm	445				
	15% PC	15% PC, 4% C	109.8	nm	355				
		15% PC, 1% SP	102.6	nm	330				
		15% PC, 5% SP	103.5	8.2E-08	300				
	Baseline S	Soil	118.9	2.5E-07	nm				
		5% PC	112.3	2.6E-07	40				
		5% PC, 1% C	114.7	nm	50				
	5% PC	5% PC, 4% C	114.8	nm	50				
		5% PC, 1% SP	112.4	nm	45				
6 50451		5% PC, 2.5% SP	109.5	1.7E-06	10				
Some DNAPL Contamination	7.5% PC	7.5% PC	110	1.3E-07	100				
(SDC)	7.3/0 FC	7.5% PC, 5% SP	110.7	5.1E-07	25				
(-20)		10% PC	109.5	5.7E-08	185				
		10% PC, 1% C	113.3	nm	195				
	10% PC	10 PC, 4% C	112.7	nm	235				
	10/0 FC	10% PC, 1% SP	109.6	nm	175				
		10% PC, 2.5% SP	109.9	nm	260				
		10% PC, 5% SP	111.2	2.0E-07	100				

Notes:

C = carbon cm/sec = centimeters per second nm = not measured PC = Portland cement Type I/II pcf = pounds per cubic foot psi = pounds per square inch SP = sodium persulfate

UCS = unconfined compressive strength

Table 10
Total Oxidant Demand: Alkaline Activated Persulfate

Soil	Starting Oxidant Concentration	Final Oxdiant Concentration	Percent Oxidant Remaining	Total Oxidant Demand	рН	Oxidation Reduction Potential	
55.1	(%)	(%) (%) (%)		(g oxidant / Kg soil)	(SU)	(mV)	
Contaminated Area (CON)	1%	0.7%	73%	2.7	10.5	214	
contaminated Area (CON)	2%	1.2%	58%	8.5	10.6	201	
PDI-02	1%	0.8%	78%	2.2	10.5	179	
PDI-02	2%	1.4%	68%	6.4	10.5	214	
Some DNAPL Contamination	1%	0.2%	21%	7.9	10.4	169	
(SDC)	2%	0.4%	21%	16	10.4	170	
PDI-16 ^[1]	1%	0.4%	42%	16	10.5	162	
PDI-10	2%	0.4%	21%	36	10.6	160	
PDI-24	1%	0.3%	26%	7.4	10.6	60	
F 61-24	2%	0.4%	18%	16	10.6	62	
No Evidence of Contamination	1%	0.3%	26%	7.4	10.5	64	
(NEC)	2%	0.2%	10%	17.9	10.5	60	

Notes:

g = gram

kg = kilogram

mV = millivolts

SU = standard units

- 1. By day 11 of the test, there was no oxidant remaining in the 1% and 2% reactors; therefore, a second dose was added to the low and high AAP test conditions.
- 2. Total Oxidant Demand based on Day 48 readings.
- 2. Percent sodium persulfate based on dry weight of soil.
- 3. Alkaline activated persulfate was activated with sufficient mass of sodium hydroxide to account for soil base buffering capacity and acid formation during persulfate decomposition.
- 4. Loureiro recommends that a TOD of less than 2.5 g/Kg should not be used for field estimation purposes.

Table 11
Phase 1 Alkaline Activated Persulfate Analytical Results: Soil

						Alk	aline Activated Per	sulfate (AAP)	SOIL Data							
Analyte	Units		Contaminated Area													
Analyte	Units	CON Composite							PDI-02							
		Co	ontrol [1]	1% AAP		2% AAP		Co	ontrol [1]	1	% AAP	2% AAP				
VOCs [2]																
1,1,2,2-Tetrachloroethane		33.0 U	1.2 E*3	52.0 U	0.0 U*3	41.0 U	0.1 *3	29.0 U	0.0 U*3	30.0 U	0.0 U*3	32.0 U	0.0 U			
1,2-Dichlorobenzene		33 U	0	52 U	0 *3	41 U	0 E*3	29 U	1 E	30 U	1 E*3	32 U	0 E*3			
1,2,4-Trichlorobenzene		33 U	0 U	52 U	0 U*3	41 U	0 J*3	29 U	0 J	30 U	0 J*3	32 U	0 U*3			
1,3-Dichlorobenzene		33 U	0 *1	52 U	0 *3*1	41 U	0 *3*1	29 U	0 *1	30 U	0 *3*1	32 U	0 *3*1			
1,4-Dichlorobenzene		33 U	1 E*1	52 U	2 E*3*1	41 U	2 E*3*1	29 U	3 E*1	30 U	3 E*3*1	32 U	2 E*3*1			
2-Butanone (MEK)		170 U	0 U*3	260 U	0 U*3	210 U	0 U*3	140 U	0 U*3	150 U	0 U*3	160 U	0 U			
Acetone		170 U	0 *3B	260 U	0 U*3	210 U	0 U*3	140 U	0 U*3	150 U	0 U*3	160 U	0 B			
Bromomethane		33 U	4 U*3*1	52 U	0 U*3*1	41 U	0 *3*1	29 U	0 U*3*1	30 U	0 U*3*1	32 U	0 U*1			
Carbon disulfide	mg/kg	33 U	0 *3*1	52 U	0 *3*1	41 U	0 *3*1	29 U	0 *3*1	30 U	0 U*3*1	32 U	0 J*1			
Carbon tetrachloride	IIIg/kg	33 U	2 E*3*+*1	52 U	3 E*3*+*1	41 U	1 E*3*+*1	29 U	0 U*3*+*1	30 U	0 U*3*1	32 U	0 U*+*1			
Chlorobenzene		110	590 E*3*1	140	1,800 E*3*1	150	430 E*3*1	120	240 E*3*1	44	550 E*3*1	79	36 E*3*1			
Chloroform		33 U	0 *3*+*1	52 U	1 E*3*+*1	41 U	1 E*3*+*1	29 U	0 J*3*+*1	30 U	0 E*3*+*1	32 U	1 E*+*1			
Chloroethane		33 U	0 U*3*+	52 U	4 U*3	41 U	0 U*3*+	29 U	0 U*3*+	30 U	0 U*3*+	32 U	0 U*+			
Dichlorobromomethane		33 U	0 *3*+*1	52 U	0 J*3*+*1	41 U	0 U*3*+*1	29 U	0 U*3*+*1	30 U	0 U*3*+*1	32 U	0 U*1			
Tetrachloroethene		33 U	130 E*3*1	52 U	1,000 E*3*1	41 U	240 E*3*1	29 U	2 E*3*1	30 U	0 E*3*1	32 U	0 *3*1			
Toluene		33 U	0 *3*-*1	52 U	0 *3*-*1	41 U	0 U*3*-*1	29 U	0 *3*-*1	30 U	0 *3*-*1	32 U	0 U*3*-*1			
Trichloroethene		33 U	0 *3*1	52 U	0 *3*1	41 U	0 *3*1	29 U	0 U*3*1	30 U	0 U*3*1	32 U	0 U*1			
Xylenes, Total		66 U	0 *3*-*1	100 U	0 *3*-*1	82 U	0 U*3*-*1	58 U	0 *3*-*1	30 U	0 U*3*-*1	63 U	0.0 U*3*-*1			
DDx																
4,4'-DDD		190.0	68.0 H	200.0	110.0 H	170.0	95.0 H	440.0 H	370.0	440.0 H	290.0	410.0 H	250.0			
4,4'-DDE	mg/Kg	64	23 JH	66	35 H	57 J	29 H	160 H	97	160 JH	77	99 JH	66			
4,4'-DDT		5,600 *+B	3,500 HB	5,300 *+B	3,200 HB	3,900 *+B	2,400 HB	18,000 HB	5,900 *+B	17,000 HB	4,700 *+B	15,000 HB	4,600 *+B			
General Chemistry																
Total Organic Carbon	mg/kg	6,900		5,200		5,500		17,000	-	12,000		11,000				
pН	SU	4.8 HF		8.7 HF		10.1 HF		8.3 HF	1	10.5 HF		10.8 HF				

Table 11
Phase 1 Alkaline Activated Persulfate Analytical Results: Soil

										Alkaline Ac	tivated Per	rsulfate (AAP)	SOIL Data								
Amaluta	Units								Some DN	NAPL Contamii	nation									NEC	
Analyte	Units	SDC Composite							PDI-16						PDI-24				NEC		
		Cont	rol ^[1]	1% A	AP	2%	AAP	Conti	rol ^[1]	1% A	AP	2% A	AP	Control [1]	1% A	AAP	2% AAP		Control [1]	1% AAP	2% AAP
VOCs [2]										•		•									
1,1,2,2-Tetrachloroethane		39.0 U	0.0	3.6 UH	0.0	9.6 U	0.0 U	9.6 U	0.0 U	11.0 U	0.0 U	10 U	0.0 U	0.0 U	11.0 U	0.0 U	9.0 U	0.0 U	0.0 U	0.0 U	0.0 U
1,2-Dichlorobenzene		39 U	0	3.6 UH	0	10 U	0	10 U	0	11 U	0	10 U	0	0.0 U	11.0 U	0.0 U	9.0 U	0.0 J	0.0 U	0.0 U	0.0 U
1,2,4-Trichlorobenzene		39 U	0 U	3.6 UH	0.0 U	10 U	0.0 U	10 U	0 U	11 U	0 U	10 U	0 U	0.0 U	11.0 U	0.0 U	9.0 U	0.0 U	0.0 U	0.0 U	0.0 U
1,3-Dichlorobenzene		39 U	0 U	3.6 UH	0.0 U	10 U	0.0 U	10 U	0 U	11 U	0 U	10 U	0 U	0.0 U	11.0 U	0.0 U	9.0 U	0.0 U	0.0 U	0.0 U	0.0 U
1,4-Dichlorobenzene		16	0	3.6 UH	0	10 U	0	10 U	0	11 U	0	10 U	0	0.0 U	11.0 U	0.0	9.0 U	0.0	0.0 U	0.0 U	0.0 U
2-Butanone (MEK)		190 U	0 U	18 UH*1	0 U	48 U	0.0 U	48 U	0 U	54 U	0 J	51 U	0	0 U	54.0 U	0.0 U	45.0 U	0.0 U	0.0 U	0.0 U	0.0 U
Acetone		190 U	0 J	18 UH	0	48 U	0	48 U	0 J	54 U	0	51 U	0	0 U	54.0 U	0.0 J	45.0 U	0.0	0.0 U	0.0 J	0.1
Bromomethane		39 U	0 U	3.6 UH	0.0 U	10 U	0.0 U	10 U	0 U	11 U	0 U	10 U	0 U	0.0 U	11.0 U	0.0 U	9.0 U	0.0 U	0.0 U	0.0 U*+	0.0 U
Carbon disulfide	mg/kg	39 U	0	3.6 UH	0	10 U	0	10 U	0 J	11 U	0 J	10 U	0 J	0.0 U	11.0 U	0.0 U	9.0 U	0.0 U	0.0 U	0.0 U	0.0 U
Carbon tetrachloride	1116/ NS	39 U	0	3.6 UH	0	10 U	0	10 U	0 U	11 U	0 U	10 U	0 U	0.0 U	11.0 U	0.0 U	9.0 U	0.0 U	0.0 U*+	0.0 U	0.0 U*+
Chlorobenzene		46	2 E	58 H	2 E	18	2 E	89 H	180 E	21	2 E	28	2 E	0	15.0	1.5 E	18.0	1.5 E	0.0 U	0.1	0.1
Chloroform		39 U	0	3.6 UH	0.1	10 U	0	10 U	0 U	11 U	0	10 U	0	0 J	11.0 U	0.0	9.0 U	0.1	0.0 U*+	0.0 U	0.0 U*+
Chloroethane		39 U	0 U	3.6 UH	0.0 U	10 U	0.0 U	10 U	0 U	11 U	0 U	10 U	0 U	0.0 U	11.0 U	0.0 J	9.0 U	0.0	0.0 U	0.0 U	0.0 U
Dichlorobromomethane		39 U	0 U	3.6 UH	0.0 U	10 U	0.0 U	10 U	0 U	11 U	0 U	10 U	0 U	0.0 U	11.0 U	0.0 U	9.0 U	0.0 U	0.0 U*+	0.0 U	0.0 U*+
Tetrachloroethene		53	1 E	3.6 UH	1.8 E	33	2 E	10 U	0 J	11 U	0 U	10 U	0 U	0	11.0 U	0.0 U	9.0 U	0.0 U	0.0 U	0.0 U	0.0 U
Toluene		39 U	0 U	3.6 UH	0.0 U	10 U	0.0 U	10 U	0 U	11 U	0 U	10 U	0 U	0.0 U	11.0 U	0.0 U	9.0 U	0.0 U	0.0 U	0.0 U	0.0 U
Trichloroethene		39 U	0 J	3.6 UH	0.0	10 U	0.0	10 U	0 U	11 U	0 U	10 U	0 U	0.0 U	11.0 U	0.0 U	9.0 U	0.0 U	0.0 U	0.0 U	0.0 U
Xylenes, Total		77 U	0 U	7 UH	0 U	19 U	0 U	19 U	0 U	22 U	0 U	21 U	0 U	0.0 U	22.0 U	0.0 U	18.0 U	0.0 U	0.0 U*-	0.0 U	0.0 U*-
DDx																					
4,4'-DDD		7.0 P		13.0		16.0		0.0 J		0.0 U		0.0 J		0.7	0.6		0.5		0.0 J	0.0 J	0.0 J
4,4'-DDE	mg/Kg	4 J		3 J	-	4 J		0.1 U	-	0.0 U		0.0 J		0	0.3		0.2	1	0.0 U	0.0 U	0.0 U
4,4'-DDT		350		390		420		1		0		1		16	9.5		9.2		0.2	0.2	0.2
General Chemistry																					
Total Organic Carbon	mg/kg	6,200		6,100		4,900		18,000		48,000		16,000		6,800	8,800		6,100	-	3,200	6,700	5,700
pН	SU	4.9 HF		8.9 HF		9.7 HF		4.6 HF		8.4 HF		9.9 HF		6.3 HF	9.2 HF		9.3 HF		7.3 HF	10.2 HF	11.0 HF

Notes:

-- = reanalysis not performed

AAP = alkaline activated persulfate

B = compound was found in the blank and sample.

Bold font indicates analyte was detected at concentration above the laboratory reporting limit (RL).

E = result exceeds the calibration range

H = sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.

HF = parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. Sample was analyzed outside of hold time.

J = result is less than the RL but greater than or equal to the method detection limit (MDL) and the concentration is an approximate value.

mg/Kg = milligrams per kilogram

NEC = no evidence of DNAPL contamination

SU = standard units

U = analyte was not detected above the indicated RL.

VOCs = volatile organic compounds

- 1. The control consisted of soil in contact with tap water (no oxidant or activator).
- 2. Only compounds detected in one or more samples are shown.
- 3. Samples with two sets of data were analyzed at 2 different dilution factors. The results from the analysis conducted at a higher dilution factor are presented in the first column.

^{*+ =} laboratory control sample (LCS) and/or LCS duplicate (LCSD) is outside acceptance limits, high biased.

^{*- =} LCS and/or LCSD is outside acceptance limits, low biased.

^{*1 =} LCS/LCSD relative percent difference (RPD) exceeds control limits.

^{*3 =} Internal standard response or retention time outside acceptable limits.

Table 12
Phase 1 Alkaline Activated Persulfate Analytical Results: Aqueous

							Al	kaline Activ	ated Persu	lfate (AAP)	WATER Dat	ta							
A b . 4 -	Units	Contaminated Area							Some DNAPL Contamination								NEC		
Analyte	Units	C	ON Composite	!		PDI-02		SDC Composite			PDI-16		PDI-24			NEC			
		Control [1]	1% AAP	2% AAP	Control [1]	1% AAP	2% AAP	Control [1]	1% AAP	2% AAP	Control [1]	1% AAP	2% AAP	Control [1]	1% AAP	2% AAP	Control [1]	1% AAP	2% AAP
VOCs [2]																			
1,1,2,2-Tetrachloroethane		2,500 U	500 U	500 U	50 U	2,000 U	2,500 U	100 U	12	10 U	500 U	10 U	10 U	1 U	10 U	10 U	5 U	10 U	10 U
1,2-Dichlorobenzene		2,500 U	500 U	500 U	43 J	2,000 U	2,500 U	100 U	13	13	500 U	29	24	1 U	10 U	10 U	5 U	10 U	10 U
1,2-Dichloroethane		2,500 U	500 U	500 U	50 U	2,000 U	2,500 U	100 U	10 U	10 U	500 U	10 U	10 U	0.98 J	10 U	10 U	5 U	10 U	10 U
1,4-Dichlorobenzene		2,500 U	500 U	500 U	160.0	2,000 U	2,500 U	100.0 U	33	31	500.0 U	44	37	1.0 U	10 J	18	5.0 U	10 U	10 U
2-Butanone (MEK)		13,000.0 U	2,500 U	2,500 U	250.0 U	10,000 U	13,000 U	500.0 U	48 J	120	2,500.0 U	110	160	5.0 U	29 J	49 J	25.0 U	50 U	130
Acetone		13,000.0 U	2,500 U	2,500 U	250.0 U	10,000 U	13,000 U	500.0 U	250	630	2,500.0 U	470	690	5.0 U	100	170	25.0 U	84	900
Benzene		2,500 U	500 U	500 U	50.0 U	2,000 U	2,500 U	100.0 U	10 U	6 J	500.0 U	10 U	10 U	1.0 U	10 U	10 U	5.0 U	10 U	10 U
Carbon disulfide	μg/L	2,500 U	500 U	500 U	50.0 U	2,000 U	2,500 U	100.0 U	91	54	500.0 U	10 U	10 U	1.0 U	10 U	10 U	5.0 U	10 U	10 U
Carbon tetrachloride		2,500 U	500 U	500 U	50.0 U	2,000 U	2,500 U	230.0	230	100	500.0 U	10 U	10 U	1.0 U	10 U	10 U	5.0 U	10 U	10 U
Chlorobenzene		######	73,000	72,000	######	82,000	64,000	#####	6,200	4,600	######	6,000	3,200	9.2	5,600	5,000	8.1	210	150
Chloroethane		2,500 U	500 U	500.0 U	50.0 U	2,000 U	2,500 U	100.0 U	10 U	10 U	500.0 U	10 U	10 U	9.0	30	33	5.0 U	10 U	10 U
Chloroform		2,500 U	490 J	790	50.0 U	2,000 U	2,500 U	180.0	390	770	500.0 U	63	300	17.0	200	320	3.1 J	10 U	10 U
Chloromethane		2,500 U	500 U	500 U	50 U	2,000 U	2,500 U	100 U	10 U	10 U	500 U	19	25	1 U	10 U	10 U	5 U	10 U	10 U
Tetrachloroethene		2,100 J	910	1,300	50 U	2,000 U	2,500 U	870.0	2,700	2,600	500 U	10 U	10 U	1	10 U	10 U	5 U	10 U	10 U
Trichloroethene		2,500 U	500 U	500 U	50 U	2,000 U	2,500 U	100 U	51	30	500 U	10 U	10 U	1 U	10 U	10 U	5 U	10 U	10 U
General Chemistry	_																		
Dissolved Organic Carbon	mg/L	7.10 cnH3	5.1 cnH3	9.2 cnH3	2.50 cnH3	3.1 cnH3	4.8 cnH3	1.3	14.0	35.0	22.0	33.0	2.4	3.4	3.0	7.4	0.53 Jcn	4.7 cn	19.0 cn

Notes:

AAP = alkaline activated persulfate

Bold font indicates analyte was detected at concentration above the laboratory reporting limit (RL).

cn = sample was dated to start in 2010; this was caused by an instrument malfunction that did not affect the samples in any form.

CON = Contaminated Area

H3 = sample was analyzed outside of hold time.

J = result is less than the RL but greater than or equal to the method detection limit (MDL) and the concentration is an approximate value.

mg/L = milligrams per liter

NEC = no evidence of DNAPL contamination

SDC = Some DNAPL contamination

μg/L = micrograms per liter

U = analyte was not detected above the indicated RL.

VOCs = volatile organic compounds

- 1. The control consisted of soil in contact with tap water (no oxidant or activator).
- 2. Only compounds detected in one or more samples are shown.

Table 13

Phase 1 Alkaline Activated Persulfate Results: Chlorobenzene Mass Balance Analysis

Former Arkema Site, Portland, OR

	Chlorobenzene											
	Test Condition	Conce	ntration		Total Mass [3]		Tota	Percent				
Soil Type		Soil (μg/kg)	Water (μg/L)	Soil (µg)	Water (µg)	Soil + Water (µg)	Soil (µg)	Water (μg)	Soil + Water (µg)	Reduction ^[5] (%)		
	Control [1]	110,000	120,000	33,000	31,704	64,704						
Contaminated Area (CON)	Low AAP (1%)	140,000	73,000	42,000	19,287	61,287	-9,000	12,417	3,417	5%		
7 ii ea (ee ii)	High AAP (2%)	150,000	72,000	45,000	19,022	64,022	-12,000	12,682	682	1%		
	Control [1]	120,000	98,000	29,880	21,494	51,374						
PDI-02	Low AAP (1%)	44,000	82,000	10,956	17,984	28,940	18,924	3,509	22,433	44%		
	High AAP (2%)	79,000	64,000	19,671	14,037	33,708	10,209	7,457	17,666	34%		
Some DNAPL	Control [1]	46,000	6,800	13,147	1,712	14,859						
Contamination	Low AAP (1%)	58,000	6,200	16,576	1,561	18,137	-3,430	151	-3,279	-22%		
(SDC)	High AAP (2%)	18,000	4,600	5,144	1,158	6,302	8,002	554	8,556	58%		
	Control [1]	89,000	10,000	15,842	1,568	17,410						
PDI-16 ^[2]	Low AAP (1%)	21,000	6,000	3,738	941	4,679	12,104	627	12,731	73%		
	High AAP (2%)	28,000	3,200	4,984	502	5,486	10,858	1,066	11,924	68%		
	Control [1]	17	9.2	3	2	5						
PDI-24	Low AAP (1%)	15,000	5,600	2,978	979	3,957	-2,974	-978	-3,952	-79302%		
	High AAP (2%)	18,000	5,000	3,573	874	4,447	-3,570	-873	-4,442	-89147%		
No Evidence of	Control [1]	6.7 U	8.1	2	2	3						
Contamination		130	210	32	46	78	-30	-44	-74	-2177%		
(NEC)	High AAP (2%)	61	150	15	33	48	-13	-31	-44	-1296%		

Notes:

AAP = alkaline activated persulfate

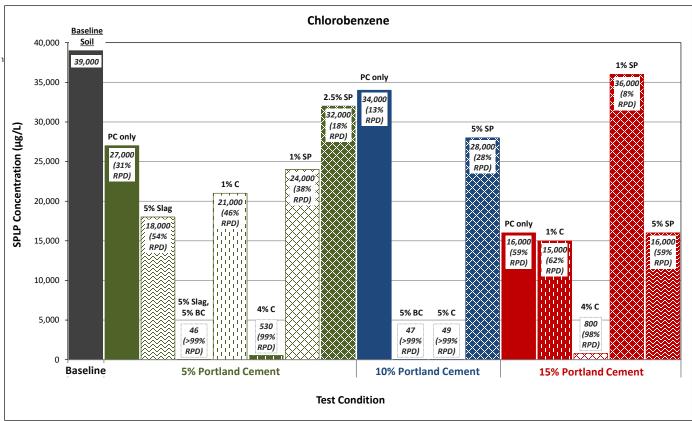
U = analyte was not detected above the indicated reporting limit

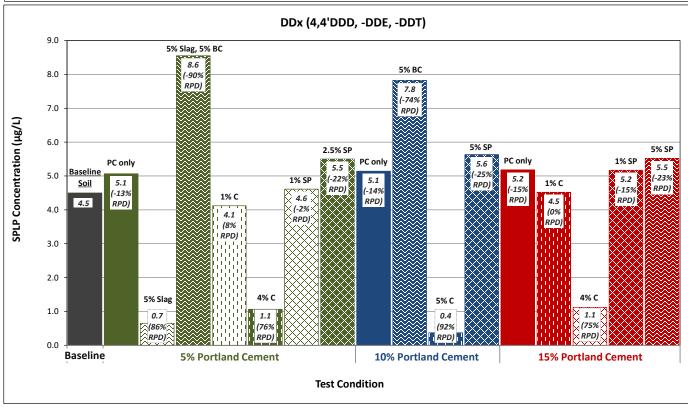
μg/kg = micrograms per kilogram μg/L = micrograms per liter μg = micrograms % = percent

- 1. Control reactors contained no oxidant.
- 2. By day 11 of the test, there was no oxidant remaining in the 1% and 2% reactors; therefore, a second dose was added to the low and high AAP test conditions.
- 3. Contaminant mass calculated using the measured contaminant concentration for each test condition and the soil mass and groundwater volume in the test reactor.
- 4. Contaminant mass degraded calculated by comparing the contaminant mass in the test reactor with the contaminant mass in the control reactor.
- 5. Percent reductions calculated by comparing the contaminant mass in the test reactor to the contaminant mass in the control reactor.

Figure 1

Phase 1 SPLP Results: Contaminated Area
Former Arkema Site, Portland, OR



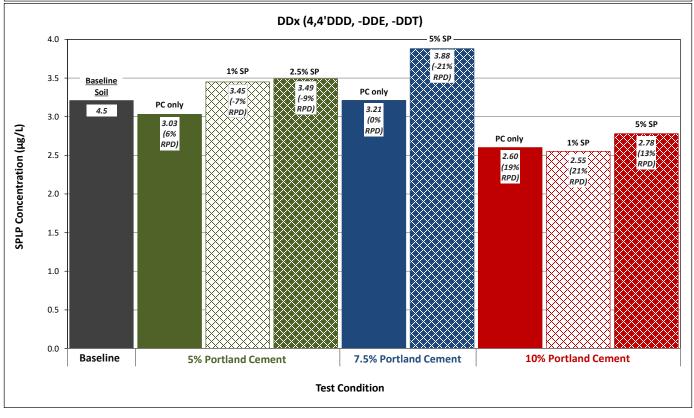


PC = Portland Cement SP = Sodium Persulfate μ g/L = micrograms per liter

Figure 2

Phase 1 SPLP Results: Some DNAPL Contamination
Former Arkema Site, Portland, OR

Chlorobenzene 350 PC only 300 305 (-65% RPD) SPLP Concentration (µg/L) 250 **Baseline** 200 <u>Soil</u> 185 150 1% SP PC only 2.5% SP 115 100 (38% 99 RPD) 92 (46% (51% RPD) PC only 5% SP 1% SP 5% SP 50 53 32 49 39 (83% (74% (79% RPD) RPD) RPD) RPD) 0 Baseline 7.5% Portland Cement **10% Portland Cement 5% Portland Cement Test Condition**



PC = Portland Cement SP = Sodium Persulfate μ g/L = micrograms per liter

Figure 3
Phase 1 Tank Test Chlorobenzene Results: Contaminated Area

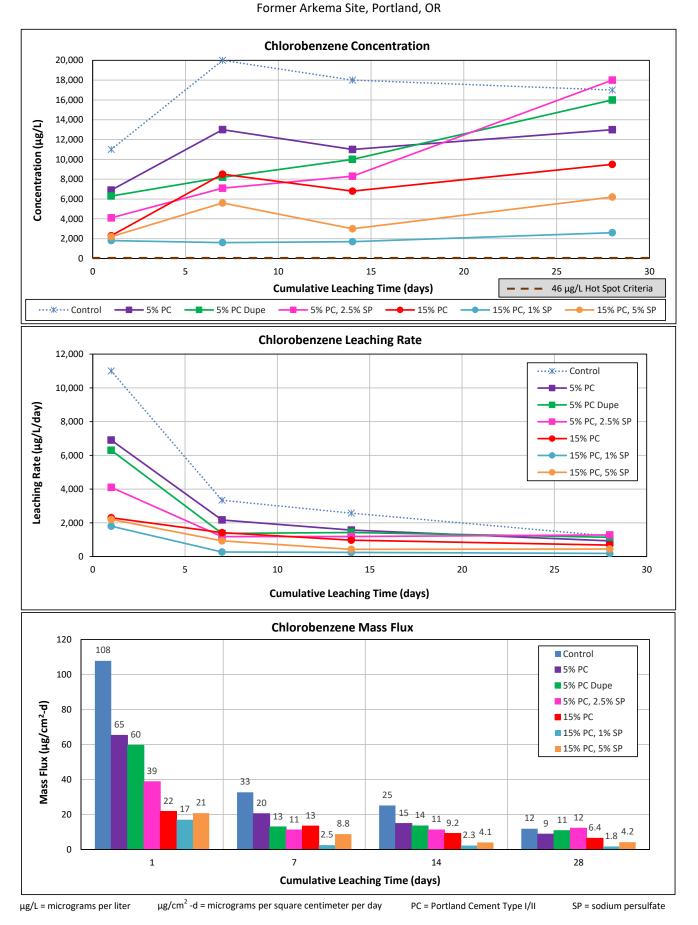


Figure 4

Phase 1 Tank Test Chlorobenzene Results: Some DNAPL Contamination
Former Arkema Site, Portland, OR

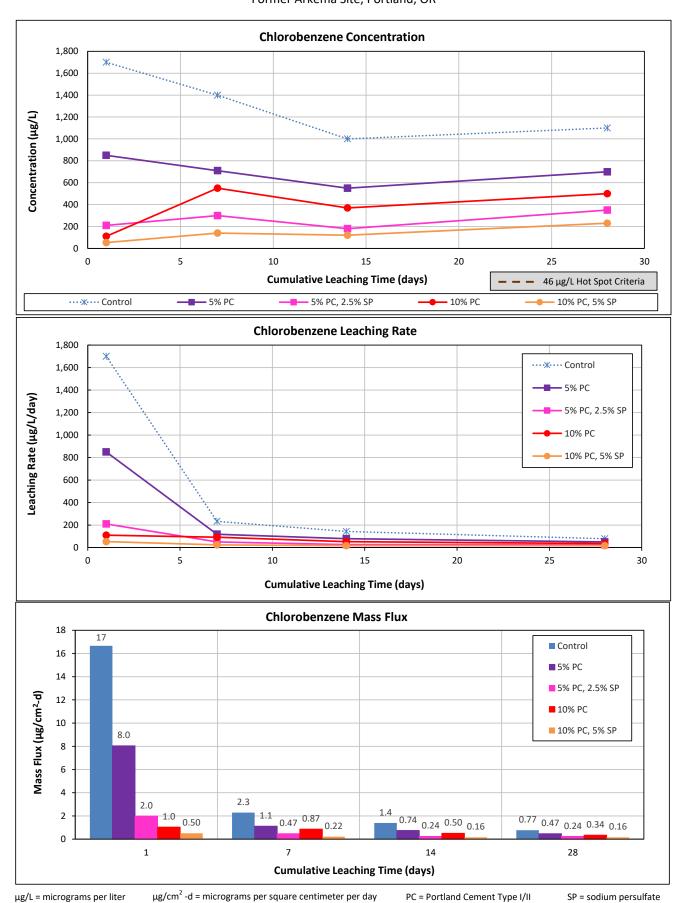


Figure 5
Phase 1 Tank Test DDx Results: Contaminated Area

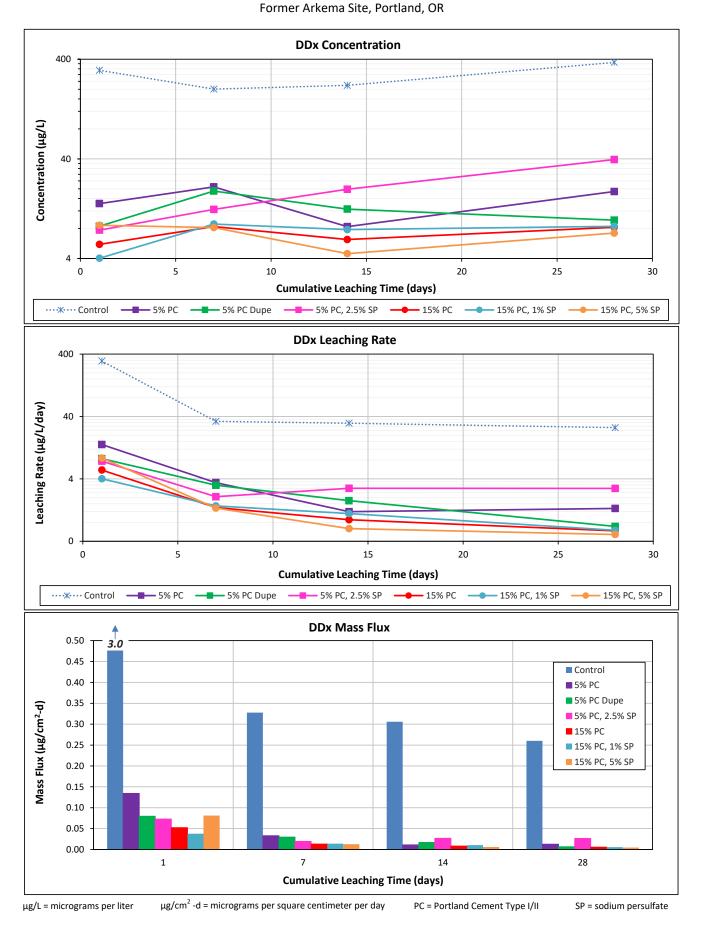


Figure 6
Phase 1 Tank Test DDx Results: Some DNAPL Contamination

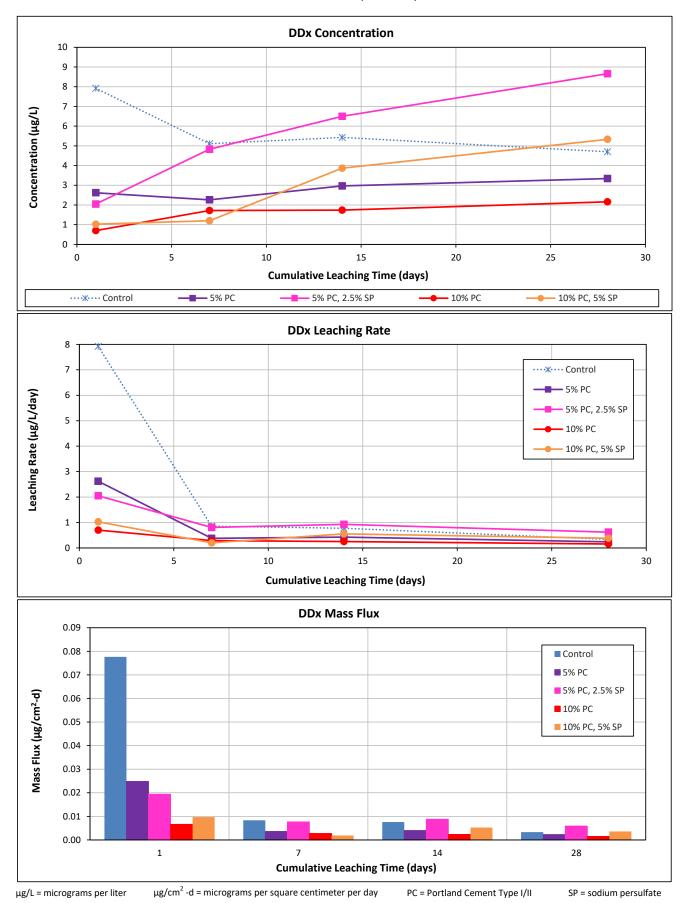
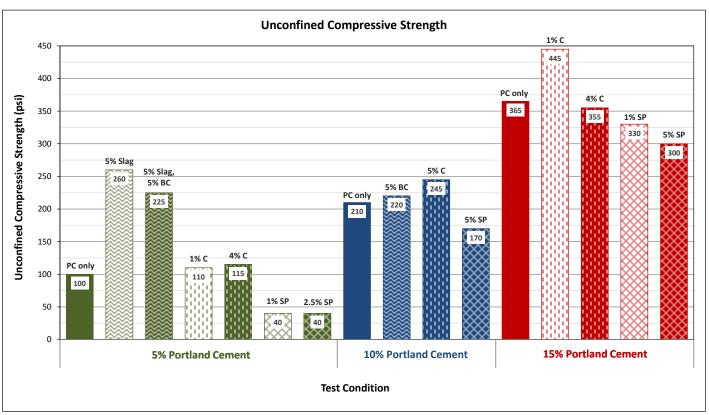
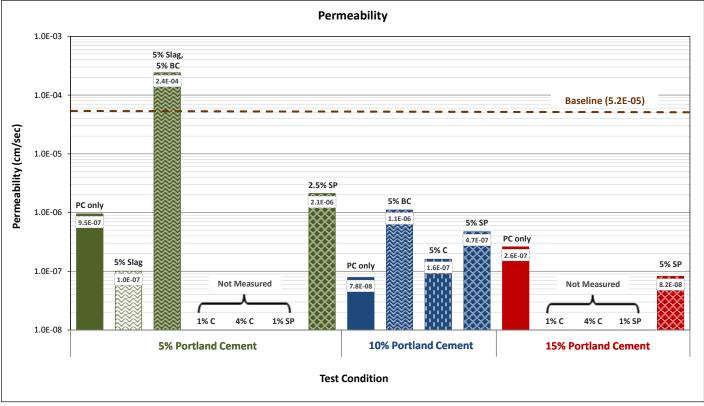


Figure 7

Phase 1 Geotechnical Results: Contaminated Area
Former Arkema Site, Portland, OR

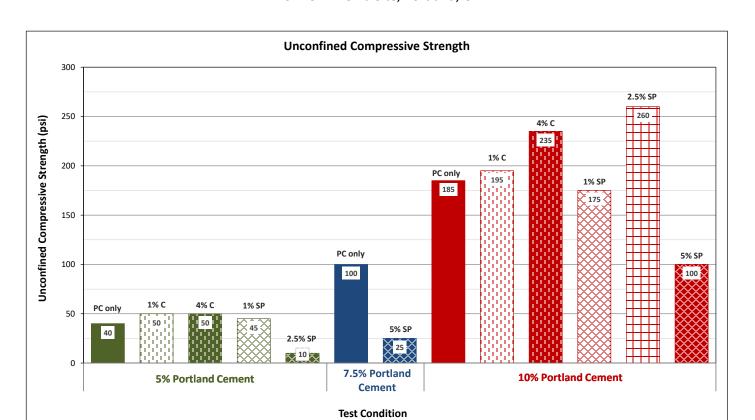


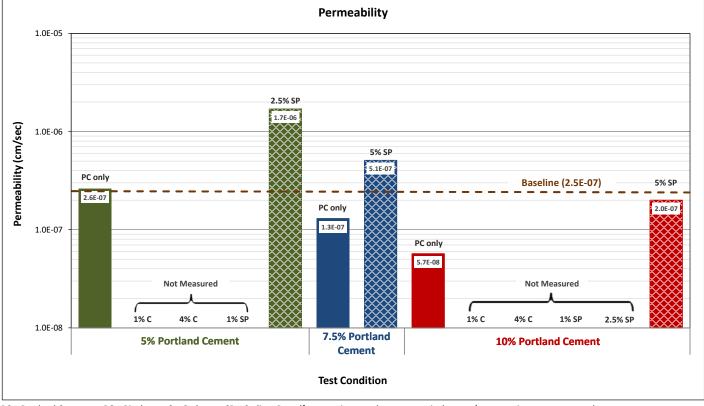


PC = Portland Cement BC = Biochar C = Carbon SP = Sodium Persulfate psi = pounds per square inch cm/sec = centimeters per second

Figure 8

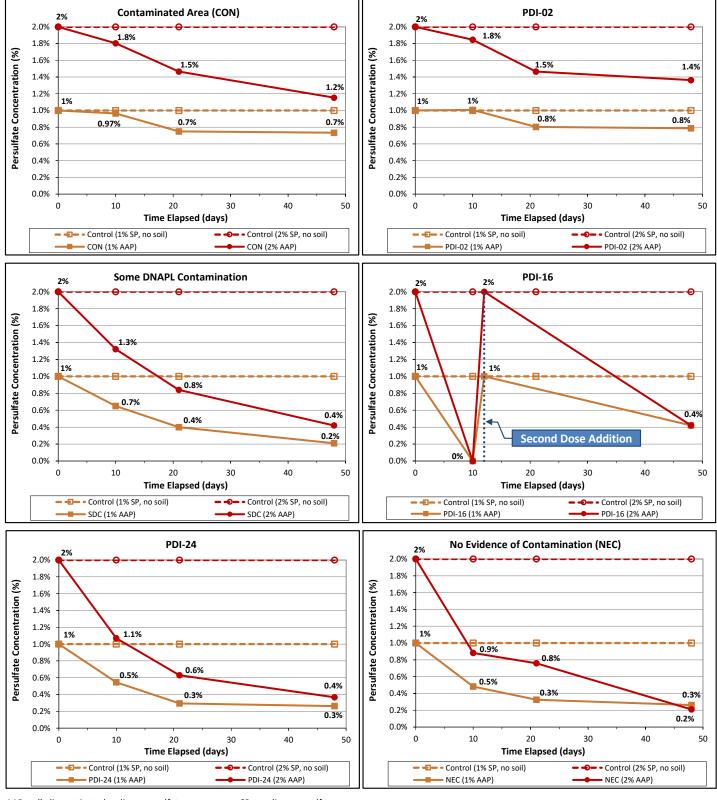
Phase 1 Geotechnical Results: Some DNAPL Contamination
Former Arkema Site, Portland, OR





PC = Portland Cement BC = Biochar C = Carbon SP = Sodium Persulfate psi = pounds per square inch cm/sec = centimeters per second

Figure 9
Alkaline Activated Persulfate Stability

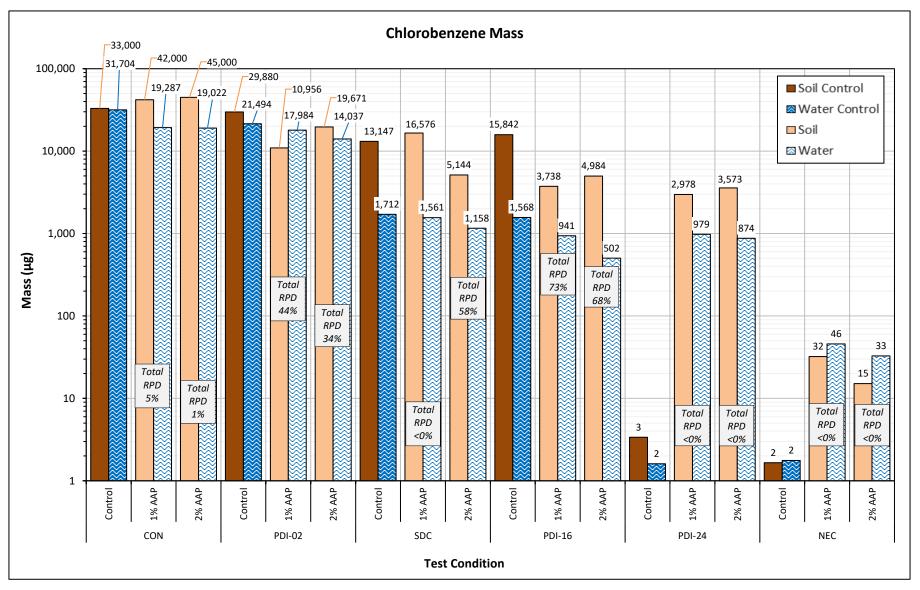


AAP = alkaline activated sodium persulfate

SP = sodium persulfate

Figure 10

Phase 1 Alkaline Activated Persulfate Results: Chlorobenzene
Former Arkema Site, Portland, OR



AAP = alkaline activated persulfate

μg = micrograms

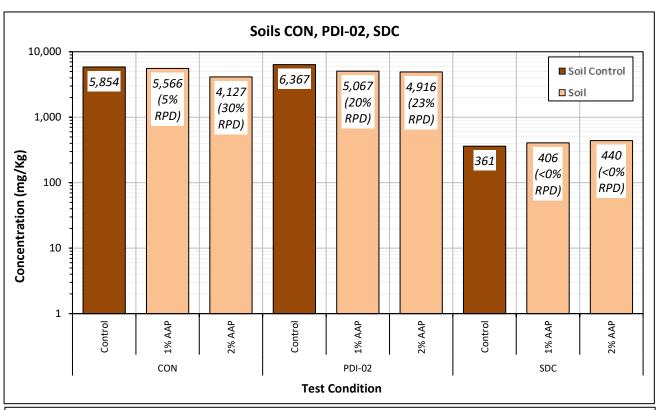
RPD = relative percent difference compared to control

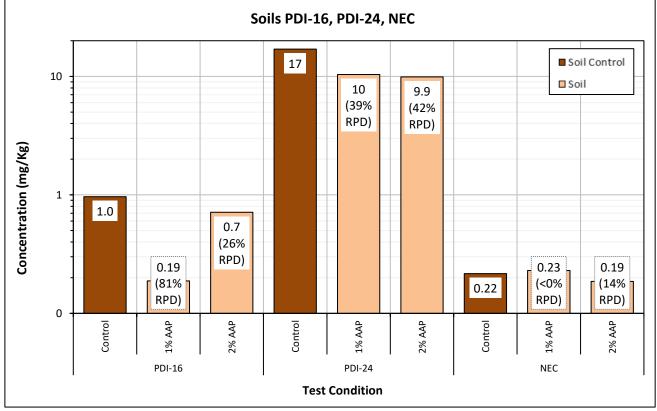
RPD = relative percent difference compared to control; <0% indicate negative RPDs (i.e., detected mass in treated test condition was greater than the control)

Figure 11

Phase 1 Alkaline Activated Persulfate Results: DDx Soil Concentrations

Former Arkema Site, Portland, OR



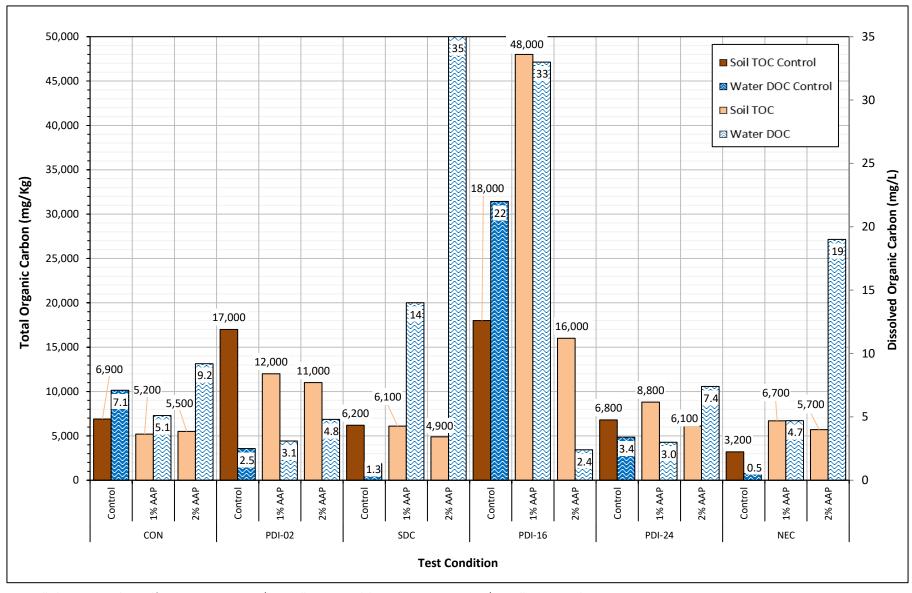


AAP = alkaline activated persulfate mg/Kg = milligrams per kilogram RPD = relative percent difference compared to control RPDs <0% indicate negative RPDs (i.e., detected concentration in treated test condition was greater than the control)

Figure 12

Phase 1 Alkaline Activated Persulfate Results: TOC and DOC

Former Arkema Site, Portland, OR



AAP = alkaline activated persulfate

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

Figure 13

Phase 1 Alkaline Activated Persulfate Results: TOC and TOD

Former Arkema Site, Portland, OR

50,000 50,000 48,000 ■ TOC 45,000 45,000 ■ TOD 40,000 40,000 35,790 Total Organic Carbon (mg/Kg) Total Oxidant Demand (mg/Kg) 35,000 35,000 30,000 30,000 25,000 15,890 25,000 20,000 20,000 18,000 17,900 17,000 16,000 16,320 15,800 15,000 15,000 12,000 11,000 8,800 6,200 7,420 10,000 7,420 10,000 8,460 7,940 6,700 \ 5,700 6,900 2,700 6,360 6,800 6,100 6,100 5,200 5,500 4,900 5,000 5,000 3,200 2,170 0 0 2% AAP 1% AAP 1% AAP 2% AAP **1% AAP** Control 1% AAP 2% AAP Control 1% AAP 2% AAP **2% AAP** Control 1% AAP 2% AAP Control CON PDI-02 SDC PDI-16 PDI-24 NEC **Test Condition**

AAP = alkaline activated persulfate

mg/kg = milligrams per kilogram



APPENDIX G SPECIFICATIONS

SECTION 01 10 00

SUMMARY OF THE WORK

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Definitions.
- B. Work by the Owner.
- C. Contractor use of the Site.
- D. Site conditions.
- E. General Work tasks.
- F. In Situ Soil Stabilization/Solidification (ISS) Work tasks.
- G. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 RELATED SECTIONS

1.03 REFERENCED DOCUMENTS

- A. ERM, 2025. Contaminated Materials Management Plan
- B. ERM, 2025. Construction Quality Assurance Plan for IRAM #1 Implementation, Pre-Final Design Report, Appendix I (CQA Plan).

1.04 DEFINITIONS

- A. <u>Additional Work</u>: Work authorized by the Owner that is to be provided by the Contractor and that is not in the scope of the Work specified in the Contract documents issued by the Engineer for construction of the Work and other Additional Work previously authorized by the Owner.
- B. <u>Attachments:</u> Any component of the *Request for Proposal: ISS Remedy for the Former Acid Plant Area* (ERM 2025) (RFP).
- C. <u>Bid</u>: The Contractor's bid (response to the RFP) for the Work as incorporated in the Contract for successful Bidder.
- D. <u>Bid Items</u>: The forms included as Attachments 1 of the RFP. The specific items of the RFP that Contractor shall provide pricing for; these items will be measured for Contract payment to the Contractor in accordance with the unit prices listed in the Bid Items and Section 01 22 00. The Bid Items are composed of base Bid Items and contingent Bid Items and together form a schedule of values for Bid comparison and quantifying total Contract cost.
- E. <u>Bidder</u>: Contractors who have been prequalified and approved by Owner to respond to the RFP for the Work described in the Contract Documents and interested in submitting a Bid.
- F. <u>Contact Water:</u> Groundwater encountered during Contract Work, specifically Platform Excavation (and maintenance), demolition, Earth Retention System (ERS) installation and maintenance, backfill, and restoration; also includes rainwater that falls directly onto the Platform Excavation (excludes stormwater run-on), or other construction-related water that contacts waste or potentially impacted materials.
- G. <u>Contract</u>: The Work authorization between the Owner and the Contractor, General Terms and Conditions, all applicable Special Terms and Conditions, RFP, General Conditions, Drawings, Technical Specifications, and Attachments= as they relate to the Work, and any and all documents referenced within or attached to the Work authorization for construction of the Work.
- H. <u>Contractor</u>: The successful Bidder and company authorized by the Owner to construct the Work.
- I. <u>CQA Acceptance Criteria</u>: The construction quality assurance (CQA) acceptance criteria for the Work described in the CQA Plan.
- J. <u>CQA Contractor</u>: The company retained under separate contract by Owner to provide CQA inspection and testing services during construction of the Work. Environmental Resources Management, Inc. (ERM) will serve as the CQA Contractor. The responsibilities of the CQA Contractor are described in Section 01 43 00 and the CQA Plan.
- K. <u>CQC Contractor:</u> The Contractor and their respective CQC Officer, personnel, and subcontractors responsible for implementing the CQC components of the Contract as described in Section 01 45 00 and in the CQA Plan.
- L. <u>Daily Construction Report</u>: An electronic report provided by the Contractor to the Engineer in .pdf or similar format via email daily with information regarding the Work activities performed

- during that day, pay quantities earned, personnel used, equipment used and staged onsite, safety information, testing/sampling performed, test results received, surveying performed, quality assurance/ quality control data, ISS column updates, import materials, export materials, deliveries, and other requirements as defined in the Contract Documents and as requested by Engineer.
- M. <u>Discharge Permit(s)</u>: Existing Property discharge permit to surface water for treated stormwater that ERM currently uses as described within the Contract Documents. The Discharge Permit and associated limits and conditions can be found in 02 83 20 Construction and Contact Water Management.
- N. <u>Drawings</u>: The final design drawings for the Work "Issued for Bidding" by the Engineer for implementation of the Work, including revisions to the Drawings issued as addenda and Change Orders agreed to by the Owner and the Contractor, *Drawings for ISS Remedy for Former Acid Plant Area (ISS RFP)*, *Arkema, Portland, Oregon*, Job No. 0732436, Environmental Resources Management, Inc. Drawings shall be updated as needed for changes in design, permitting, and "Issued for Construction." References to Drawings within the RFP shall refer to the most updated set issued by Engineer during bidding and permitting (including addenda), and the "Issued for Construction" set during and after contracting.
- O. <u>Engineer</u>: The engineering company retained under separate contract by the Owner to design the remediation Work and to provide bidding and construction phase engineering support and CQA services during construction of the Work. ERM will serve as the Engineer.
- P. <u>Engineered Design</u>: The design provided by the Geotechnical Engineer, construction requirements, limitations, restrictions, and notes as modified for acceptance by the Geotechnical Engineer and any applicable permitting agencies. Contractor to submit work plan on means and methods of accomplishing the Engineered design, including value-engineering ideas. The Engineered ERS Design shall be provided to Bidders via an RFP addendum. Langan is the Geotechnical Engineer.
- Q. <u>Extra Work:</u> Work to be performed by the Contractor that is beyond the Work initially defined in the Contract documents. Extra Work shall be authorized in writing by the Owner before the work begins. Extra Work may be performed based on established rates or contingency Bid Items established in the Bid Forms, on force account (Time and Materials) according to the rates established in the Bid Forms, or by separate proposal accepted by the Owner in writing.
- R. <u>ERS</u>: Earth Retention System; the ERS will help facilitate the Work within the site constraints and permitting requirements.
- S. <u>ERS Engineer</u>: The ERS engineering company retained under separate contract by the Owner to design the ERS portion of the Work and to provide bidding and construction phase engineering support during construction of the ERS portion of the Work. Langan Engineering will serve as the ERS Engineer.
- T. <u>Field Safety Officer (FSO)</u>: The ERM employee who will serve as the high-risk Field Safety Officer and who will be onsite continuously throughout the Work with no other job responsibilities. The FSO will be responsible for monitoring and reporting safe performance for the Work consistent with requirements of the Owner's Health and Safety Plan (HASP).
- U. <u>ISS Field Pilot</u>: The initial phase of ISS DSM to be completed within the ISS Work Area representing the initial ISS; includes a portion of the ERS. The Field Pilot will be used to evaluate the ISS reagent mix designs tested during the ISS treatability study (in addition to any Contractor-proposed ISS reagent mix designs) at the field-scale and use the results of this evaluation to identify the most cost-effective ISS reagent mix design(s) that achieve the CQA Acceptance Criteria. An increased rate of construction quality control (CQC) and

- associated CQA sampling will be conducted during the Field Pilot, which is detailed in Table 2 of the CQA Plan.
- V. <u>ISS Mix Cell</u>: The zone of native soil mixed at a single location from the top elevation designated on the Drawings (at or below the surface of the ISS Work Platform) to the bottom elevation designated on the Drawings or to refusal, if refusal is encountered above the designated bottom and confirmed and approved by the CQA Officer as the refusal bottom for that mix cell.
- W. <u>ISS Work Area</u>: The work area within the former Acid Plant Area authorized for use by the Owner to implement the ISS Work described in the Contract and authorized by the Owner. The Engineer reserves the right to change the boundary of the ISS Work Area shown on the Drawings, which may result in a smaller work area to implement the Work.
- X. <u>ISS Work Plan</u>: The primary pre-mobilization submittal that contains details, methods, sequencing, schedule, materials, equipment, diagrams, figures, product data, and other pertinent information on the Contractor's planned approach to complete the key elements of the Work. Multiple ISS and other technical specification sections contain requirements to be included in the ISS Work Plan, which shall be a more thorough and detailed plan than the Bid submittal but in general alignment with it.
- Y. <u>Notice of Intent to Award</u>: Written notice to successful Bidder of intent for Owner to contract with Contractor for completion of Work.
- Z. <u>Notice to Proceed</u>: Written notice to Contractor from Owner to proceed with the implementation of Work described in the Contract.
- AA. Owner: Legacy Site Services, LLC (LSS); the Property Owner's Agent and is the Responsible Party for conducting cleanup work of the Property under the 2008 Order on Consent No. LQVC-NWR-08-04 between the Oregon Department of Environmental Quality (ODEQ) and Arkema, Inc.
- BB. <u>Platform Excavation</u>: The excavation of overburden material over the ISS Target Treatment Zone to create a stable platform surface for ISS Work as shown on the Drawings and modified by Contractor ISS Work Plan, competent person, and/or field conditions, and approved by Engineer.
- CC. <u>Project</u>: ISS Remedy for the former Acid Plant Area as described within the RFP and Contract Documents.
- DD. <u>Project Schedule</u>: Baseline Gantt Chart schedule developed by Contractor and approved by Owner, as defined in Section 01 32 00.
- EE. <u>Property</u>: The Arkema Inc. facility in Portland, Oregon. The former Acid Plant Area is located within the Property.
- FF. Property Owner: Arkema, Inc.
- GG. Regulatory Agency: ODEQ.
- HH. Final Design Report (FDR): IRAM 1 Final Design Report (ERM 2025). The document containing the details of the engineered remedial design of the Site for submittal to and approval from ODEQ, the basis of which forms the development of the Contract Documents. Contractor is responsible for complying with the provisions of the FDR while implementing

the Work.

- II. Request for Proposal (RFP): Request for Proposal (ERM 2025). The RFP contains the Contract Documents, instructions to Bidders, and Bid Forms necessary for Bidders to submit a Bid to OR for the subject Work.
- JJ. <u>Residuals</u>: A quantity of materials remaining after the greater quantity has been removed or used.
- KK. <u>Site</u>: The former Acid Plant Area and approximate limits of construction and staging, which is located within the Property boundary, owned by the Property Owner, and approved by the Property Owner to complete the ISS remedy Work.
- LL. <u>Site Safety Officer (SSO)</u>: The Contractor employee who will serve as the Site Safety Officer and who will be onsite continuously throughout the Work with no other job responsibilities. Unless otherwise agreed by the Owner, the SSO will be responsible for planning, monitoring, and reporting safe performance for the Work consistent with requirements of the Contractor's Health and Safety Plan (HASP), accepted by the Owner.
- MM. <u>Subcontractor</u>: Any company or person engaged in the Work under subcontract with the Contractor or any lower tier subcontractor if approved in advance by the Owner to be engaged by the Contractor for an agreed part of the Work.
- NN. <u>Technical Specifications</u>: The technical specifications for the Work issued by the Owner for construction of the Work, including revisions issued as addenda and Change Orders agreed by the Owner and the Contractor. The Technical Specifications are synonymous with the Specifications defined in the Contract.
- OO. Work: All controls, equipment, fuel, labor, materials, power, services, and other work that is needed to construct the ISS remedy in the former Acid Plant Area in accordance with the Contract if authorized by the Owner. Contractor will construct the Work authorized by the Owner in accordance with the schedule for the Work proposed by the Contractor and favorably reviewed by the Owner. The Work is synonymous with the Project defined in the Contract.

1.05 WORK BY THE OWNER

- A. <u>Review of Contractor Submittals</u>: The Engineer will review, on behalf of the Owner, Contractor submittal data required by the Technical Specifications and other Contract documents.
- B. <u>City of Portland Grading Permit</u>: The Engineer will submit the initial permit application to the City of Portland Building Department. The Contractor will be responsible for preparing any remaining information required by the City to complete the permit application and to obtain the permit, using Contractor's contractor license. The Contractor will be responsible for maintaining compliance with the City grading permit and closing it out at the completion of Work.
- C. <u>ODEQ Construction Stormwater General Permit</u>: The Contractor shall prepare and submit a Construction Stormwater General Permit application package to the ODEQ for the ground disturbance associated with the Work. The Contractor will be responsible for maintaining compliance with the Construction Stormwater General Permit and associated Stormwater Pollution Prevention Plan (SWPPP) and closeout of the permit. The Engineer will provide relevant information requested by the Contractor for the purpose of completing the Permit.
- D. CQA Program: The CQA Contractor will implement, on behalf of the Owner, the CQA program

in accordance with Section 01 43 00.

- E. <u>Product Inspection</u>: The Engineer will inspect, on behalf of the Owner, products jointly with the Contractor on receipt of the products at the Site. Engineer inspection and acceptance of products will not relieve the Contractor of responsibility to comply with all Contract and regulatory requirements.
- F. <u>Limited Onsite Storage</u>: The Owner will provide limited-capacity, unimproved, open laydown and stockpile areas at the Site. See "construction staging" areas on the Drawings.

1.06 CONTRACTOR USE OF THE SITE

- A. <u>Access to the Site</u>: Use routes and methods in accordance with the as shown on the Drawings and in the CMMP included in the FDR, and as directed by Property Owner.
 - 1. <u>Permit Compliance</u>: Comply with cover, height, load, speed, traffic obstruction, and other limits in permit obtained by the Owner or Contractor from the government agency(s) having corresponding road access jurisdiction.
 - 2. <u>Permit Application and Fees</u>: Prepare, submit, obtain, and pay all permit application and processing fees at no additional Contract cost.
- B. <u>Continuous Owner Access Required</u>: Limit use of the Site to allow continuous access to, and use of, adjoining and related areas and fieldwork by employees and equipment employed by the Property Owner, the Engineer, and their subcontractors engaged in the Work, other Property Owner contractors, and other parties for which access is authorized by the Property Owner.
- C. <u>Fieldwork and Construction Operations</u>: Limit construction operations to work areas at the Site approved in advance by the Owner. Do not interfere with or impede access to other work at the Site.
- D. <u>Time Restrictions</u>: Perform no work outside of allowed work hours as described in 01 33 00 "Submittals" Section 1.04(F).

1.07 SITE CONDITIONS

- A. <u>Utilities Shown on the Drawings</u>: Currently known Site utilities are shown on Sheet03. Contractor shall perform their own subsurface investigation and clearance before ground disturbing activities may begin. Contractor shall confirm the presence, absence, or current state of use for all potentially conflicting utilities.
- B. <u>Location and Documentation of Facilities</u>: Confirm the location of (or absence of) aboveground and underground facilities as described in Section 02 41 10 "Utility Isolation, Removal, and Relocation".
- C. <u>Access</u>: Limit all access to the areas and routes shown on the Drawings and in accordance with the onsite access routes approved in advance by the Owner.

1.08 GENERAL WORK TASKS

- A. <u>General Requirements</u>: Construct the Work in accordance with the Drawings and Technical Specifications issued by the for the Work and Contractor submittals favorably reviewed by the OR.
- B. <u>Health and Safety Program</u>: Develop and implement a health and safety program consistent with the ERM Site-Specific HASP and favorably reviewed by the Engineer and Owner in accordance with Section 01 35 29 "Health and Safety Requirements".

- C. <u>Submittals</u>: Submit technical data and related information for the Work in accordance with Section 01 33 00 and related sections prior to initiating mobilization for the Work.
- D. <u>Permits</u>: Obtain and comply with each permit needed to initiate and complete the Work, including:
 - Engineer-Initiated Permits: Provide detailed design, shop drawings, and other permit
 application and reported data as needed to complete obtaining Engineer-initiated
 permits. Comply with requirements in the permits initiated by the Engineer described in
 Section 1.04 and obtained by either the Engineer or the Contractor. Obtain other permits
 if the Contractor proposes wastewater to be transported by haul truck to a disposal
 facility, favorably reviewed by the Engineer.
 - 2. <u>Contractor-Obtained Permits</u>: Apply for permits, pay permit fees, and obtain and comply with other permits needed to construct the Work, including, but not limited to, for:
 - a. Building permits for the ISS reagent slurry mixing plant pads.
 - b. Traffic control permits.
 - All other permits needed for the Work that are not otherwise obtained by Owner or Engineer.
 - 3. <u>Permit Applications and Permit Documentation</u>: Prepare and submit each permit application to the agency issuing the permit.
 - a. Prepare and submit a draft of each permit application and draft response to agency comments to the Engineer.
 - b. Make changes that are responsive to Engineer comments.
 - c. Obtain Owner approval of each final permit application and response.
 - d. Submit both the permit application and response to the agency(s) issuing the permit.
 - e. Submit a copy of each final permit to the Owner.
 - f. Maintain a file of each permit application, permit, permit report, and agency permit correspondence at the Site.
 - 4. Construction Permits: Obtain all other permits needed for the Work.
 - 5. <u>Transport Permits</u>: Obtain ODOT and local agency transport permits necessary for transport of equipment, supplies, , and other transported material via public road and related fees, plans, and services.
- E. Final Design Report: Construct the Work consistent with the FDR (ERM 2025).
- F. Pre-Mobilization Inspections: Contractor shall conduct an inspection of the Work area and applicable portions of the Property prior to and as a condition of mobilization and review the existing Site conditions with ERM. Refer to Section 01 33 00 for further details. All Site entrances, access routes, ground conditions, any existing improvements, and superstructures shall be included in inspections. Video and photographs documenting these activities shall be submitted to Engineer as a submittal and favorably reviewed by Engineer prior to site mobilization or other site disturbance.
- G. Other Work: Coordinate the Work with work done by others, including CQA inspection and testing, and with other fieldwork at the Site contracted separately by the Owner.
- H. Notification for CQA Inspection and Testing: Notify the CQA Officer as soon as each stage of the Work is considered by the Contractor to be complete and ready for CQA inspection and testing, including observation of CQC inspection, field testing, and sampling, in accordance with the CQA Plan for the Work.
 - 1. <u>CQA Access Assistance</u>: Provide access and assistance to the CQA Officer and staff in obtaining field tests and samples of the Work for CQA inspection and testing.
 - 2. <u>Achieve CQA Acceptance Criteria</u>: Achieve the corresponding CQA Acceptance Criteria described in the CQA Plan as determined by the CQA Officer.

- Field Engineering: Provide surveying and related Work and services necessary for construction of the Work to the lines and grades shown on the Drawings and in accordance with Section 01 71 23.
- J. <u>Repair and Replacement</u>: Repair or replace products determined by the to be unfit for use in the Work. Dispose of unfit materials as ordered by the Engineer at no additional Contract cost
- K. <u>Temporary Facilities and Controls</u>: Construct, maintain, and remove temporary facilities and controls needed to implement the Work in accordance with Section 01 50 00.
- L. <u>Traffic Control</u>: Implement a traffic control plan approved by the OR for the Work.
- M. <u>Products</u>: Provide products for the Work specified on the Drawings and in the Technical Specifications and in accordance with corresponding submittals favorably reviewed by the Engineer.
- N. <u>Project Record Documents</u>: Record and submit Project record documents in accordance with Section 01 77 00.
- O. <u>Construction Waste Management</u>: Manage construction waste in accordance with Section 02 81 00 or Section 02 82 10, if applicable.
- P. <u>Site Access Roads</u>: Maintain and repair existing Site access roads with identical grades, materials, quality, and thickness to the existing Site access roads, unless otherwise approved inwriting by the Owner. Improve, maintain, or repair existing Site access roads as needed for Contractor to complete the Work at no additional Contract cost.
- Q. <u>Contract Closeout</u>: If the Owner authorizes the completion of the Work, submit as-built drawings and related information after completion of the Work in accordance with Section 01 77 00 and prior to submitting the application for final payment for the Work.

1.09 ISS WORK TASKS

- A. <u>General Requirements</u>: Complete the ISS Work in the former Acid Plant Area.. Construct the Work authorized by the Owner in accordance with the schedule for the Work proposed by the Contractor and favorably reviewed by the Engineer.
- B. <u>Former Acid Plant Area Selective Demolition</u>: Demolish asphalt pavement, concrete slabs, piping, and related facilities in the former Acid Plant Area in the scope of the Work in accordance with Section 02 41 00 and the Drawings.
- C. <u>ISS Reagent Slurry</u>: Design ISS reagent slurry mix process and plant, manufacture and connect the plant, provide reagent and water, mix and convey mixed reagent slurry to the ISS Deep Soil Mixing Unit, and maintain the ISS Reagent Slurry Unit for the Work in accordance with Section 02 52 20 with configuration and at a location suitable for use for the Work in the former Acid Plant Area, as favorably reviewed by the Engineer.
- D. <u>ISS Work Platform</u>: Excavate soil at locations and depths shown on the Drawings and as outlined in the CMMP from the surface exposed after demolition and removal of concrete slabs, concrete building slabs, and asphalt pavement, and related demolition Work to the elevation of the ISS Work Platform shown on the Drawings in accordance with Section 02 61 10 prior to initiation of ISS DSM of soil.
 - 1. Reuse: Reuse excavation soil approved by the Engineer for reuse as the ISS Soil Cover

- Base Layer placed over stable ISS soil mixture in accordance with Sections 02 62 20 and 31 23 25 and the CMMP.
- 2. <u>Disposal</u>: Contain and load soil designated by the Engineer to be disposed of offsite in accordance with Sections 02 81 00, Section 02 61 10, and the CMMP. Transportation and offsite disposal will be provided by the Owner.
- E. <u>ACM Management</u>: Identify, contain, sample, and load asbestos-containing material (ACM) in accordance with Section 02 82 10 and the CMMP. Transportation and disposal will be provided by the Owner.
- F. <u>Groundwater Management</u>: Maintain a stable and safe platform excavation surface for all equipment and personnel who must access the platform. Use localized pit or trench dewatering methods to help manage perched groundwater or accumulated rainwater on the platform. Do not allow surface flow water to enter the Platform Excavation. Do not install wells for groundwater management. Manage groundwater in accordance with the provisions and requirements of the RDIP, Section 01 22 00, Section 02 83 20, the Drawings, and applicable permits.
- G. <u>Earth Retention System (ERS)</u>: Construct the engineered ERS and implement construction phase monitoring requirements as provided by the ERS Engineer, in accordance with provisions contained within the design documents (Drawings), and as modified by Contractor as detailed in Contractor work plans favorably reviewed by Engineer and ERS Engineer.
- H. <u>ISS VOC Vapor Control</u>: Monitor VOC vapor emissions from ISS Work Platform Excavation, ISS, and related Work in accordance with Section 02 61 20, and, if necessary, implement appropriate controls to suppress vapor emissions.
- I. <u>ISS Deep Soil Mixing (DSM)</u>: Mix soil identified for ISS treatment with ISS reagent slurry from the surface of the ISS Work Platform to the elevation of the bottom of the ISS mix cell in accordance with Section 02 55 10.
- J. <u>ISS Soil Mixture Grading and Cover</u>: Grade and cover solidified ISS soil mixture with <u>a reuse excavation soil base layer</u>, and a 1-foot-thick dense graded aggregate top layer in accordance with Section 31 23 25 and the CQA Plan.
- K. <u>ISS Work Area Grading and Drainage</u>: Upon ISS completion, grade the Site to drain stormwater by sheet flow to the perimeter of the ISS Work Area toward the existing storm water swale in accordance with the Drawings and Section 31 22 10.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 12 16

WORK SEQUENCE

PART 1 - GENERAL

1.01 SECTION INCLUDES

1.02 RELATED SECTIONS

Section 01 22 00	Measurement and Payment
Section 01 26 60	Change Order Procedures
Section 01 32 00	Construction Project Documentation
Section 01 33 00	Submittals

1.03 CONSTRUCTION SCHEDULE

- A. Pre-Mobilization Submittals: A committed Construction Schedule shall be submitted with the Bid for approval. The schedule shall include sequence and dates of construction operations for all major stages of Work, order and delivery of materials and equipment, and estimated milestones for substantial and final completion. The Construction Schedule shall be subject to review and acceptance by the Engineer. The Construction Schedule shall adhere to the following:
 - Incorporate and meet the Project Milestones identified in these Specifications and the Contract Documents.
 - 2. Be created using Microsoft Project (latest edition) or Primavera
 - 3. Include all appropriate task designations (Predecessor, Successor, Lag, Lead, Slack, Resources, etc.).
 - 4. Include a detailed breakdown of tasks necessary to meet the Project Milestones.
 - 5. Show progress in units of workdays. Correctly exclude holidays and other non-working days.
 - 6. Activity durations should be no longer than 30 calendar days (except for Level of Effort type activities and long lead procurement tasks).
 - 7. Earthwork tasks that exceed 30 calendar days should be broken down into excavation tiers or otherwise detailed out to meet the 30-day duration requirement.
 - 8. Schedule should contain no open ends (no missing predecessors or successors) other than start and finish milestones.
 - 9. Relationships should not use negative lag or lead.
 - 10. Schedule activities should be resource loaded wherever possible.
 - 11. Physical Percent Complete should be used on all Task Dependent activities and should be quantity driven wherever possible (i.e. backfill tasks by CY, excavation tasks by tons, etc.).
 - 12. Schedule should calculate using Retained Logic (not Progress Override).
- B. <u>Alternates:</u> The Contractor can provide alternates to the Construction Schedule in order to expedite the overall project schedule but must meet the same or earlier final completion date. Any alternates must be approved in writing by the Owner prior to formal acceptance as part of the Construction Schedule. Revisions to the Construction Sequence by the Contractor shall not be made until approved by the Owner. Changes in the approved schedule shall not be allowed without written approval. If the construction progress does not adhere to the schedule as approved or revised, measures shall be taken by the Contractor to make up for the lost time to assure completion of the Work in accordance with the schedule.

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- C. Weather: Certain aspects of the construction may be weather dependent. The Engineer may, therefore, suspend operations at any time, when in its sole judgment, the conditions are unsuitable for the proper performance of the Work. No measures, aside from those provided elsewhere in the Contract Documents, shall be provided for such suspension of Work or costs associated with them. The Contractor shall account for typical delays in the schedule associated with normal levels of inclement weather as appropriate for the region and determined by the average monthly precipitation and temperatures for the period of time specified in the proffered Construction Schedule.
- D. Responsibility to Meet the Schedule: The Contractor shall be responsible for meeting the schedule established for materials and equipment delivery, and initial dates for transportation of the waste materials. If, at any time during implementation of the Work, the Owner, Engineer or Contractor determines that the Work is behind schedule, the Contractor shall make every reasonable effort; i.e., additional manpower, equipment, or work hours, to make-up the lost time. Meeting a final completion deadline designated in the Contract Documents is critical.

1.04 WEATHER

- A. Precautions: The Contractor shall take all necessary precautions to prepare for adverse weather so that the Work may be properly performed and be satisfactory in all respects. When required, additional controls shall be provided by the Contractor such as tarpaulins or other covers, temporary shelters, silt fencing or silt sock, mulch or straw, or other approved means. During cold weather, materials shall be preheated, if required, and the materials and structure into which they are to be incorporated shall be kept sufficiently warm so that a proper bond shall take place and a proper curing, aging, or drying shall result. Heating shall be by a method approved by the Engineer and shall result in a moist or a dry atmosphere according to the particular requirements of the Work being protected. The Engineer may suspend operations at any time when, in its sole judgment, the conditions are unsuitable, or the proper precautions are not being taken.
- B. <u>Delays:</u> Delays to the schedule caused by adverse weather conditions shall be identified as a request for schedule extension submitted by the Contractor to the Engineer within one (1) day of the termination of the event. Adverse weather for which no extension of time is required shall not necessitate such a request and shall be deemed the responsibility of the Contractor to make-up the scheduled time to compensate for any lost time. No time extensions will be awarded without proper and timely notification to the Engineer. Time extensions will be awarded by Engineer at its sole discretion based on a comparison with the prior average conditions in the vicinity of the Site as defined in Part 1.01 of this Section; the Contractor shall anticipate and initially factor into its schedule normally occurring weather conditions, which are appropriate for the region, for which no time extensions shall be awarded (i.e., Contractor shall account for average precipitation). The methodology for determination of variations from the average shall be determined by the Engineer. Weather delays may be made up through extended Work times with the approval of the Owner.

1.05 WEEKLY PROGRESS REPORTS

A. The Contractor shall submit, electronically by 9 A.M. on Monday, to the Owner every week following written issuance of a Notice-to-Proceed, or more frequently if requested by the Owner, a concise summary report, in form and substance satisfactory to the Owner and Engineer, stating the progress being made in fulfillment of this Contract, and indicating the progress to date with respect to the Construction Schedule. Included with the report shall be an updated schedule indicating scheduled durations, scheduled start dates, scheduled completion dates, actual durations, actual start dates, and actual

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completion dates of construction activities identified in the initial approved Construction Schedule. If the updated Construction Schedule indicates that the Contractor is behind schedule, a written plan indicating the corrective measures to be implemented to make up lost time shall be submitted along with a Critical Path Construction Schedule.

- B. The Owner reserves the right to review and reject schedules. Any schedule failing to demonstrate a reasonable means of achieving the project deliverables and milestones, or that otherwise indicates unrealistic planning and/or performance may be rejected by the Owner, and a revised schedule will be required
- C. The Owner's review and approval of schedules does not relieve the Contractor of its responsibility for accomplishing the Work according to the Contract documents. Omissions and errors in the approved schedules do not excuse performance less than that required by the Contract documents. Approval of submitted schedules in no way makes the Owner an insurer of the success of those schedules or liable for time or cost overruns resulting from shortcomings in such schedules.

1.06 DAILY REPORTS

- A. The Contractor shall prepare and submit a Daily Report of activities and occurrences by 10:00 AM of the next business day to the Owner and Engineer. The daily report shall include, but not be limited to, the following items:
 - 1. Meetings purpose, attendees, brief discussion
 - 2. Visitors both authorized and unauthorized
 - 3. Personnel, by name, entering and leaving the site and signatures of personnel
 - 4. Special or unusual events
 - 5. Documentation of the Contractor's work activities
 - 6. Quantities removed
 - 7. Activities completed
 - 8. Activities in progress
 - 9. Problems encountered, including any differing field conditions
 - 10. Samples collected and analytical results received
 - 11. Actions implemented to address problems
 - 12. Change order conditions

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

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SECTION 01 22 00

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Work Accepted by the Owner: Procedures for measurement and payment of the Work.
- B. Work Rejected by the Owner: Defect assessment and non-payment for rejected Work.

1.02 AUTHORITY

- A. <u>Other Sections</u>: Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of this section shall prevail.
- B. <u>Acceptance</u>: Make and submit complete documentation of each measurement and computation of the associated quantities of each item of the Work in a form acceptable to the Owner.

1.03 QUANTITIES

- A. <u>Estimated Quantities</u>: The Estimated Quantities shown for unit price Bid Items on the Bid Form are approximate.
 - 1. The Estimated Quantities are for the purpose of comparing Bids.
 - 2. The Owner does not express nor imply that the Estimated Quantity of the Bid Item will be the quantity needed to construct the Work.
 - 3. The Engineer does not express nor imply that the Estimated Quantity of the Bid Item will be the quantity needed to construct the Work.
 - 4. The Estimated Quantities shown on the Bid Form for unit price Bid Items will not be used as the measurement for payment unless specifically stated.
- B. <u>Quantity Measured for Payment</u>: Payment will be based on the quantity of the Bid Item supplied or placed in the Work and favorably reviewed for payment by the Owner.
- C. <u>Variance from the Estimated Quantity</u>: If the Work requires a greater or lesser quantity than the corresponding Estimated Quantity shown for the Bid Item on the Bid Form, provide the required quantity to complete the Work at the corresponding Contract Unit Price when favorably reviewed in advance or ordered in writing by the Owner. The Owner reserves the right to increase or decrease the quantity of any Bid Item and to eliminate any Bid Item as the Owner deems necessary, as ordered in writing by the Owner.

1.04 UNIT PRICE

- A. <u>Contract Unit Price</u>: Payment for Work accepted by the Owner will be at the corresponding Unit Price Bid.
- B. <u>No Unit Price Adjustment</u>: Except as provided in the Contract, the Contract Unit Price will not be changed as result of any change in the quantity of the corresponding Bid Item needed to complete the Work as favorably reviewed by the Owner.
- C. <u>Complete Payment</u>: The complete Contract Unit Price; total compensation for each addition to, and deduction from, the Estimated Quantity for the corresponding Bid Item caused by more

accurate measurement, by any change or alteration of the Work ordered by the Owner, or for use in the calculation of the value of the Work performed for progress payments.

1.05 MEASUREMENT OF QUANTITIES

- A. <u>General Requirements</u>: Provide necessary equipment, workers, and CQC survey personnel, other services and supplies, and complete documentation necessary to accurately measure and document quantities of the Work constructed and favorably reviewed in advance by the Owner.
- B. <u>Measurement Devices</u>: Use appropriately calibrated, standard-manufacture, and commercial-precision instruments that are provided, calibrated, and maintained in good condition.
 - 1. <u>Truck Weigh Scale</u>: A public or private truck weigh scale favorably reviewed for use by the Owner that is currently certified in writing by the scale manufacturer or a company authorized by the scale manufacturer to certify that scale and producing a legible printed weigh receipt showing for each measurement of the loaded, tare, and net load weights; corresponding dates and times; and scale number, operator, and location.
 - 2. <u>Flow Metering Devices</u>: Calibrated flow meters that indicate and record instantaneous flow rate in units of gallons per minute (gpm) and total flow rate in units of gallons, and accurate to within 1.5% of the flow measured.
 - 3. <u>Linear Measurement Devices</u>: Steel or cloth tape with precision-marked lengths at intervals not greater than 0.10 foot.
 - 4. <u>Survey Devices</u>: Precision optical or GPS-RTK instruments and related devices and processing that measure elevations (vertical) and coordinate (horizontal) locations with an RMSE of 0.10 foot or less.
- C. <u>Lump Sum or Complete Unit Measurement</u>: Items measured as a completed item or unit of the Work in units of lump sum or each.
- D. <u>Linear Measurement</u>: Measured by linear dimension, at the item centerline as measured and documented by CQC staff using measurement instruments and data processing methods equivalent to measurement of digital data using a current licensed copy of Autodesk "Civil3D" software or other methods accepted in advance by the Owner.
- E. Measurement by Area: Measured by horizontal plane area using points located on the boundary shown on the Drawings or otherwise favorably reviewed in advance or ordered in writing by the Engineer. Measure each corner connecting tangents on the boundary and at 10-foot maximum-length intervals along arcs on the boundary using data processing methods equivalent to a licensed copy of current Autodesk "Civil3D" software.
- F. <u>Measurement by Time</u>: Measured as the time that complete and operable equipment, system, supply, or workers of the specified type are engaged in the Work under this Contract, unless otherwise specified in this section.
- G. <u>Measurement by Unit-Time</u>: Measured as the time that a complete and operable unit of the specified type is available for the Work under this Contract, unless otherwise specified in this section.
- H. Measurement by Volume: Measured as the volume in the area of the Work to be measured and between the top and bottom surfaces of the mass excavated, filled, or mixed for that item of the Work.
 - 1. Measurements stated bank volume will be the volume prior to initiation of the Work.
 - Measurements stated compacted volume will be the volume on completion of compaction of the Work.
 - 3. Measurements of volume will be calculated using a digital terrain model (DTM) of the top and bottom surfaces bounded by the boundary of the mass measured. Each DTM surface will be

made using each CQC survey point in the area at horizontal grid intervals specified in this section, but if not specified, at grid intervals not greater than 25 feet; plus points at each surface slope break line and boundary line at the intersection of each grid line; and, if present inside the area boundary, at the beginning, at each slope break, and at the end of each slope break line at intervals not exceeding 25 feet. Each DTM surface will be made using a licensed copy of current Autodesk "AutoCAD Civil 3D" software, except that limits on thickness and depth specified in this section or on the Drawings will prevail for the volume measurement favorably reviewed for payment.

- Measurement by Weight: Measured as the weight of the material specified as measured by a
 certified weight scale and method favorably reviewed by the Owner prior to mobilization for the
 Work.
- J. <u>Exclusion of Items Not Favorably Reviewed in Advance or Ordered by the Owner</u>: Items submitted, but not favorably reviewed in advance or ordered in writing by the Owner, and incorporated in the Work, will not be measured for payment.
- K. <u>Items Related to Bid Items but Not Specifically Called Out</u>: Contractor is responsible for providing all items of Work to complete the scope specified in the Contract Documents, whether or not such items of Work are specifically listed in the Bid Items or mentioned in other Contract Documents (such as Technical Specifications or Drawings). If items related to the Work are required to complete the Work, Contractor shall include the related items in their Bid under the most appropriate Bid Item. Items related to the Work will not be measured for payment.

1.06 PAYMENT

- A. Payment Includes: Payment for each lump sum and unit price Bid Item, as stated in the Bid Form, shall constitute complete, full compensation for all required labor, products, tools, equipment, plant, transportation, services, and incidentals; and erection, application, and installation of the item of the Work required to complete all Work specified under that particular item, including cleanup. The price bid for each lump sum and unit price stated in the itemized Bid Form shall be deemed to include allowances for Contractor's overhead and profit; fees; royalty fees; surcharges; all applicable state, federal, and local taxes; and all other costs incurred to obtain and complete the Work.
- B. <u>Patents and Royalties</u>: Determine and define each possible infringement or conflict of the proposed ISS process with each proprietary and patented process, and pay each fee and royalty payment due at no additional Contract cost.
- C. <u>Payment Amount</u>: Payment for each item of the Work governed by a unit price will be made on the basis of the quantity (including fractional quantities as defined in Part 1.05) of the Bid Item favorably reviewed for payment by the Owner multiplied by the corresponding Contract Unit Price for Work that is incorporated in, or made necessary by, the Work, unless otherwise noted. Retainage shall be held on all payments, in accordance with the requirements stipulated in the Contract Documents.
- D. Work Not Classified: Reference to relevant sections of the Specifications is provided to facilitate pricing. However, Contractor shall, using its own judgment, determine those sections of the Specifications that are relevant to each pay item, prior to submitting its comprehensive price to cover all Work identified and specified in the Contract Documents. Work not stated as a Bid Item will not be measured for payment nor paid for separately from the associated Bid Items of the Work. Include the cost of Work not otherwise stated as a Bid Item in the Contract Bid for the related Bid Items of the Work.

E. <u>Change Orders</u>: Payment for Additional Work constructed in accordance with a Change Order favorably reviewed by Owner and the Contractor will be in accordance with terms agreed in the Change Order; see Section 01 26 60.

1.07 DEFECT ASSESSMENT

- A. <u>Replacement</u>: Replace Work, or portions of the Work, not conforming to specified requirements or not achieving each corresponding CQA Acceptance Criteria, at no additional Contract cost.
- B. <u>Adjustment if Replacement Is Not Possible or Desirable</u>: If, in the opinion of the Engineer, it is not practical to remove and replace the Work, the Owner will direct one of the following remedies:
 - If the Defect Is Allowed by the Engineer: The defective Work may remain, but the Contract Unit Price will be revised to a defect-adjusted Contract Unit Price agreed by the Owner and the Contractor, as documented by Change Order in accordance with Section 01 26 60. If the Contractor is unwilling to agree to a revised defect-adjusted Contract Unit Price, the revised defect-adjusted Contract Unit Price will be zero.
 - 2. If the Defect Is Partially Repaired or Partially Replaced: Partially repair or partially replace the defective Work in accordance with the Engineer's written instructions. The corresponding Contract Unit Price will be revised to a new defect-adjusted Contract Unit Price agreed by the Owner and the Contractor, as documented by Change Order in accordance with Section 01 26 60. If the Contractor is unwilling to agree to a revised defect-adjusted Contract Unit Price, the revised defect-adjusted Contract Unit Price will be zero.
- C. <u>Other Adjustments</u>: Other sections of the Technical Specifications may modify the options stated above or may specify a formula or percentage reduction of the Contract Unit Price for the corresponding Bid Item.
- D. <u>Authority</u>: The authority of the Owner to assess the defect and identify payment adjustment is final.

1.08 NO PAYMENT FOR REJECTED PRODUCTS

- A. <u>General Requirements</u>: Borrow soil, ISS reagent, and manufactured products of every type and classification.
- B. Payment Excluded: The Owner will not pay for any of the following:
 - 1. Products wasted.
 - 2. Products disposed of in a manner that is not acceptable to the Engineer.
 - 3. Products determined to be unacceptable to the Engineer before or after placement.
 - 4. Products not completely unloaded from the transporting vehicle.
 - 5. Products placed beyond the lines and grades of the required Work.
 - 6. Products remaining on hand after completion of the Work.
 - 7. Loading, hauling, and disposing of products rejected by the Engineer.

1.09 BASE BID ITEMS ESTIMATED QUANTITIES

A. <u>Basis of Estimated Quantities</u>: Estimated quantities used for ISS Base Bid Items have been developed on Platform Excavation to as specified on the design drawings, assumed reagent injection rates and mix designs, assumed swell percentage calculations, and assumed waste disposition of soil and debris for Bid comparison purposes. Bid Item estimate units not listed as lump sum shall be paid for actual quantities performed and approved by Owner in accordance with the descriptions listed below in Part 1.10, unless indicated as a fixed quantity in the descriptions listed below in Part 1.10. Contract negotiations between Contractor and Owner shall determine the most beneficial estimated quantities for contracting the Work, factoring in Contractor's approach to the Work, Owner's considerations around cost, risk, delivery, schedule,

final product, site restrictions, regulatory requirements, and stakeholder review and approval; and modified as needed and approved in writing by Owner based on actual field conditions.

1.10 MEASUREMENT AND PAYMENT OF ISS WORK BASE BID ITEMS

- A. Item 1, Project Planning and Permitting Prior to Mobilization: Includes labor and equipment/ material procurement required to complete all Project-related pre-mobilization planning, coordination, and permitting activities, including but not limited to: preparation and submittal of pre-mobilization submittals and other long lead-time item submittals for Engineer review and Owner approval (pre-mobilization submittals defined in Section 01 33 00); obtaining Contractor-obtained permits; providing detailed design documents and shop drawings; procurement of equipment, rental items, and long lead-time items/materials; safety planning and HASP development; attendance of site orientation training; and other permit application information and labor as needed to support Owner in obtaining Owner-initiated permits, and other regulatory approval.
 - 1. <u>Measurement</u>: The quantity measured for payment will be the specified portion of the lump sum when that stage of the Work is determined complete by the Engineer.
 - 1. Measurement Units: Lump sum.
 - 2. <u>Payment</u>: The amount paid will be the Contract Unit Price lump sum paid in partial payment stages as follows:
 - a. <u>ISS Work Plan Approval</u>: The Owner will pay 50 percent of the Contract Unit Price lump sum amount following final approval of the ISS Work Plan by Owner.
 - b. <u>Mobilization</u>: The Owner will pay 50 percent of the Contract Unit Price lump sum amount upon favorable review by Owner of all pre-mobilization submittals listed in Section 01 33 00.
- B. <u>Item 2, Payment and Performance Bonds for ISS Work for Bid Items 3-27</u>: Includes payment and performance bonds in the amount of the value of the ISS Work Base Bid Amount for Bid Items 3-27, if purchase of the bonds is authorized by the Owner.
 - 1. <u>Measurement</u>: The quantity measured for payment will be the lump sum when the bonds are in the forms acceptable to the Owner and fully executed by a surety favorably reviewed by the Owner prior to initiation of the Contractor's mobilization for the Work.
 - 1. Measurement Units: Lump sum.
 - 2. Payment: The amount paid will be the Contract Unit Price lump sum amount.
- C. <u>Item 3, Mobilization for ISS</u>: Includes mobilization of all equipment, personnel, products, submittals, supplies, temporary facilities and controls; and operation incidentals; conducting onsite Project orientation training for all personnel and related Work on the Property for ISS. Provide all items fully operable as necessary to initiate ISS and render the Property usable. This item includes all relocation and transportation of equipment and personnel throughout ISS.
 - 1. <u>Measurement</u>: The quantity measured for payment will be the specified portion of the lump sum when that stage of the Work is determined complete by the Engineer.
 - 1. Measurement Units: Lump sum.
 - Payment: The amount paid will be the Contract Unit Price lump sum paid in partial payment stages as follows:
 - a. <u>Initial Mobilization</u>: The Owner will pay 50 percent of the Contract Unit Price lump sum amount after Contractor first mobilizes personnel, equipment, and materials to the Property for beneficial use.
 - b. <u>Batch Plant Mobilization</u>: The Owner will pay 25 percent of the Contract Unit Price lump sum amount after Contractor mobilizes all necessary components for a fully functioning batch plant.
 - c. <u>ISS Drill Rig Mobilization</u>: The Owner will pay 25 percent of the Contract Unit Price lump sum amount after Contractor mobilizes all necessary components for a fully functioning ISS drill rig.

- D. <u>Item 4, Health and Safety for ISS</u>: Includes all health and safety supplies, equipment, labor, and planning for ISS, including but not limited to dust meters; photoionization detectors; personnel monitoring and instrumentation; laboratory analysis; personal protective equipment (PPE); completion of readiness reviews for tools and equipment; equipment and supplies required to establish and maintain Exclusion Zone, Contamination Reduction Zone, and Support Zone areas; work zone safety stations; providing a full-time Site Safety Officer; development of safety documents not developed during pre-mobilization; updating of all safety documents throughout implementation of Work; and other health and safety-related supplies and items necessary to comply with all Owner and Contractor safety standards and applicable regulations and permit conditions.
 - 1. Measurement: The quantity measured for payment will be the percentage of the lump sum calculated by dividing one lump sum by the number of monthly billing cycles between the date scheduled as initial day of field mobilization and the date scheduled as the final day of field demobilization in the construction schedule for the ISS Work favorably reviewed by the Owner, rounded to the nearest integer percentage, when that Work is determined complete and in use by the Engineer for that application for payment period.
 - 1. Measurement Units: Lump sum.
 - 2. <u>Payment</u>: The amount paid will be the product of the Contract Unit Price lump sum amount multiplied by the percentage of the lump sum measured for payment.
- E. Item 5, QC Testing for Mixing Strength and Permeability in the Upland Area (Areas B and C): Includes all CQC equipment, materials, facilities, personnel, services, other lower-tier subcontractors, supplies, testing, and other resources necessary to implement all CQC planning, inspection, testing, and reporting in accordance with Section 01 45 00; support of CQA inspection and testing in accordance with Section 01 43 00. This item also includes CQC for the ISS Field Pilot. The Contractor shall keep a log of all samples collected and/or submitted and shall make such log available for review by the Owner, and shall include on the daily report the details of all samples collected that day.
 - Measurement: The quantity measured for payment will be the number of samples
 collected in compliance with CQC and CQA requirements in the monthly billing cycle. No
 additional payment will be authorized for submission of subsequent samples in the event
 a submitted sample fails testing, unless specifically authorized by the Owner. No
 additional payment will be authorized for undocumented samples or additional samples
 collected outside of the CQC and CQA requirements, unless specifically authorized by
 the Owner.
 - a. <u>Measurement Units</u>: Discrete sample, defined as a unique sample ID submitted for a particular test in accordance with the CQC and CQA requirements.
 - 2. <u>Payment</u>: The amount paid will be the product of the Contract Unit Price per sample multiplied by the number of discrete samples collected during the billing period in compliance with CQC and CQA.
- F. Item 6, QC Testing for Mixing Strength and Permeability in the Riverbank Area (Area A): Includes all CQC equipment, materials, facilities, personnel, services, other lower-tier subcontractors, supplies, testing, and other resources necessary to implement all CQC planning, inspection, testing, and reporting in accordance with Section 01 45 00; support of CQA inspection and testing in accordance with Section 01 43 00. This item also includes CQC for the ERS Engineered Design. The Contractor shall keep a log of all samples collected and/or submitted and shall make such log available for review by the Owner, and shall include on the daily report the details of all samples collected that day.
 - Measurement: The quantity measured for payment will be the number of samples
 collected in compliance with CQC and CQA requirements in the monthly billing cycle. No
 additional payment will be authorized for submission of subsequent samples in the event
 a submitted sample fails testing, unless specifically authorized by the Owner. No
 additional payment will be authorized for undocumented samples or additional samples

collected outside of the CQC and CQA requirements, unless specifically authorized by the Owner.

- a. <u>Measurement Units</u>: Discrete sample, defined as a unique sample ID submitted for a particular test in accordance with the CQC and CQA requirements.
- 2. <u>Payment</u>: The amount paid will be the product of the Contract Unit Price per sample multiplied by the number of samples collected during the billing period in compliance with CQC and CQA.
- G. <u>Item 7, CQC Contractor Review of QC Results for ISS Work:</u> Includes all CQC personnel, services, professional licensed services, and other resources necessary to implement all CQC results review, interpretation, and reporting in accordance with Section 01 45 00. This item also includes CQC contractor review for both the ISS Field Pilot and the ERS Engineered Design.
 - 1. Measurement: The quantity measured for payment will be the percentage of the lump sum calculated by dividing one lump sum by the number of monthly billing cycles between the date scheduled as initial day of field mobilization and the date scheduled as the final day of field demobilization in the construction schedule for the ISS Work favorably reviewed by the Owner, rounded to the nearest integer percentage, when that Work is determined complete and in use by the Engineer for that application for payment period.
 - a. Measurement Units: Lump sum
 - 2. <u>Payment</u>: The amount paid will the product of the Contract Unit Price lump sum amount multiplied by the percentage of the lump sum measured for payment.
- H. Item 8, Surveying and Grade Setting: Includes all CQC equipment, materials, facilities, personnel, services, professional licensed surveyor services, other lower-tier subcontractors, supplies, testing, and other resources necessary to implement all CQC planning, inspection, and reporting in accordance with Section 01 45 00; support of CQA inspection in accordance with Section 01 43 00; and construction surveying in accordance with Section 01 71 23 and related sections for ISS. This item also includes CQC and surveying for both the ISS Field Pilot and the ERS Engineered Design. The Contractor shall keep a log of all surveying and grade setting activity and shall make such log available for review by the Owner, and shall include on the daily report the details of all surveying and grade setting performed that day.
 - Measurement: The quantity measured for payment will be the number of days on which surveying or grading is performed in compliance with CQC and CQA requirements in the monthly billing cycle. No additional payment will be authorized for undocumented surveying or grade setting or for additional surveying or grade setting completed outside of the CQC and CQA requirements, unless specifically authorized by the Owner.
 - a. Measurement Units: Day.
 - 2. <u>Payment</u>: The amount paid will be the product of the Contract Unit Price day rate amount multiplied by the number of days during the billing period on which surveying or grade setting was performed.
- Item 9, Demolition, Transport, and Disposal of Existing Exposed Structures and Other Site Preparation in the ISS Work Area: Includes stormwater run-on and runoff controls, SWPPP permit best management practices (BMPs) and requirements including maintenance, and work to demolish the existing exposed concrete and asphalt structures, utility poles, pipe and pipe headers, hydrants, bollards, and any other improvements or debris in the ISS Area with exception to utilities used for onsite groundwater system; and to remove, stockpile if necessary, load, transport, and dispose of the demolition debris at a facility approved by the Owner in accordance with Section 02 41 00. Also includes work, materials, transport, and disposal for all other demolition and site preparation tasks to complete the Work that is not covered under another Base Bid Item, including but not limited to removal, replacement, and modification of permanent fencing, installing and removing temporary fencing and barricades, maintenance of Property access and constructions staging areas, installation of traffic control signage/barricades, and other preparation activities. Also includes all subsurface utility clearance records search, investigation, and confirmation in accordance with notes on Drawings, , construction surveying in accordance with Section 01 71 23, subsurface clearance and utility requirements for selective

demolition in accordance with Section 02 41 00, and utility isolation removal in accordance with Section 02 41 10.

- 1. <u>Measurement</u>: The quantity measured for payment will be the percentage of the lump sum calculated by dividing one lump sum by the number of monthly billing cycles between the date scheduled as initial day of field mobilization and the date scheduled as the final day of field demobilization in the construction schedule for the ISS Work favorably reviewed by the Owner, rounded to the nearest integer percentage, when that Work is determined complete and in use by the Engineer for that application for payment period.
 - 1. Measurement Units: Lump sum.
- Payment: The amount paid will be the product of the percentage of the lump sum measured for payment multiplied by the corresponding Contract Unit Price lump sum amount. The Owner will not pay any separate landfill disposal fee for disposal of waste that is a subject of this item.
- J. Item 10, Temporary Removal and Replacement of Trench 3 conveyance Including Vaults, Monument, and Utility Abandonment: Includes work to remove the Trench 3 utilities, vaults, monument, engineered backfill, and to fill/abandon the utility conduits and regrade the excavated area to establish the ISS Work Platform requirements. The monitoring well and two risers must be preserved. A sufficient amount of soil from the ISS Work Platform excavation shall be stockpiled within the excavation and used to backfill and establish the ISS Work Platform in the Trench 3 area. Also includes replacement of vaults, monuments, monitoring well, and reconnection of utilities to pre-Work condition. Note that transportation and disposal of the soil and debris is covered under Bid Items 16-17.
 - Measurement: The quantity measured for payment will be the specified portion of the lump sum at time of monthly progress billing when that stage of the Work is determined complete by the Engineer.
 - a. Measurement Units: Lump sum.
 - 2. Payment: The amount paid will be the product of the percentage of the lump sum measured for payment multiplied by the corresponding Contract Unit Price lump sum amount.
- K. Item 11, Installation and Maintenance of Specified ERS Components per the Engineered ERS Design (excludes ERS-related DSM and reagent): Includes work to install the ERS in accordance with the Engineered ERS Design and maintain the ERS throughout the duration of the Work in accordance with the requirements of the Engineered ERS Design. Also includes any excavation, placement, and/or grading of overburden soil or DSM soil above the top elevation of the ERS system in accordance with the requirements of the Engineered ERS Design as well as the Contractor's proposed approach favorably reviewed and approved by ERS Engineer and Engineer. Excludes costs associated with DSM to install the ERS columns (Bid Item 20), reagents for the ERS columns (Bid Items 21 and 22), and instrumentation and monitoring for the ERS (Bid Item 12).
 - 1. <u>Measurement</u>: The quantity measured for payment will be the specified portion of the lump sum at time of monthly progress billing when that stage of the Work is determined complete by the Engineer.
 - a. Measurement Units: Lump sum.
 - 2. <u>Payment</u>: The amount paid will be the product of the Contract Unit Price lump sum amount multiplied by the percentage of the lump sum measured for payment.
- L. <u>Item 12, Instrumentation and Monitoring Required per the Engineered ERS Design</u>: Includes labor, equipment, materials, and reporting associated with procurement and installation of ERS monitoring instrumentation and features (inclinometers, ground monitoring points, structure monitoring points, observation wells, etc.) and conducting ERS and structure monitoring in accordance with the Engineered ERS Design requirements.
 - 1. <u>Measurement</u>: The quantity measured for payment will be the percentage of the lump sum calculated by dividing one lump sum by the number of monthly billing cycles between the

date scheduled as initial day of Instrumentation and Monitoring installation and the date scheduled as the final day of Instrumentation and Monitoring in the construction schedule for the ISS Work favorably reviewed by the Owner, rounded to the nearest integer percentage, when that Work is determined complete and in use by the Engineer for that application for payment period.

- a. Measurement Units: Lump sum.
- 2. <u>Payment</u>: The amount paid will be the product of the Contract Unit Price lump sum amount multiplied by the percentage of the lump sum measured for payment.
- M. <u>Item 13, Excavation, Segregation, and Temporary Stockpiling of Soil to the Level of the ISS Work Platform</u>: Includes work to excavate soil to the level of the ISS Work Platform from existing ground surface to the level of the ISS Work Platform as indicated on the Drawings, and to place in separate temporary stockpiles suitable for reuse, onsite treatment, or offsite disposal for ISS Work in accordance with Section 02 61 10 and related sections.
 - 1. Measurement: The quantity measured for payment will be the volume of soil excavated in the interval from the existing ground surface to the elevation of the ISS Work Platform as indicated on the Drawings in the ISS Work Area shown on the Drawings and confirmed by survey measurement and approved by Engineer, after completion of placement in the separate temporary stockpiles for each class of excavation spoil and related work is determined complete by the Engineer for that application for payment period
 - 1. <u>Measurement Units</u>: The quantity measured for payment will be the volume measured and rounded to the nearest integer bcy.
 - 2. <u>Payment</u>: The amount paid will be the product of the volume measured for payment multiplied by the corresponding Contract Unit Price per bcy.
- N. Item 14, Process, Place, and Compact Overburden Reuse Material on Top of Graded Swell as Soil Cover, No Additional Handling Required: Includes work to process, transport, place, grade, and compact overburden soil that is eligible for reuse within the excavated ISS work platform area on top of the ISS graded swell material to construct the ISS Soil Cover with a minimum of 2 feet of cover over ISS swell, and then to the elevation of the final grade identified on the Drawings (and adjusted by Engineer based on field conditions) and in accordance with the requirements of Section 31 22 10, Section 31 23 25, and related sections. Includes preparation activities (e.g., soil screening and processing) required for placement within the top 2 feet of the ISS Soil Cover.
 - Measurement: The quantity measured for payment will be the volume of soil measured by survey between the top of the final ISS swell surface and final grade of placed and compacted ISS Soil Cover.
 - a. <u>Measurement Units</u>: The quantity measured for payment will be the volume measured and rounded to the nearest integer in compacted cubic yards as installed at the designated location.
 - 2. <u>Payment</u>: The amount paid will be the product of the volume measured for payment multiplied by the corresponding Contract Unit Price per compacted cubic yard.
- O. Item 15, Process, Place, and Compact Overburden Reuse Material on Top of Graded Swell as Soil Cover following Bucket Mixing with ISS Reagent at Ratios Specified for Target Zone, No Additional Handling Required: Includes work to process, transport, bucket mix, place, grade, and compact overburden soil that is eligible for reuse within the excavated ISS work platform area on top of the ISS graded swell material to construct the ISS Soil Cover with a minimum of 2 feet of cover over ISS swell, and then to the elevation of the final grade identified on the Drawings (and adjusted by Engineer based on field conditions) and in accordance with the requirements of Section 31 22 10, Section 31 23 25, and related sections. Includes preparation activities (e.g., soil screening and processing) required for placement within the top 2 feet of the ISS Soil Cover.
 - 2. Measurement: The quantity measured for payment will be the volume of soil measured by survey between the top of the final ISS swell surface and final grade of placed and compacted ISS Soil Cover.

- a. <u>Measurement Units</u>: The quantity measured for payment will be the volume measured and rounded to the nearest integer in compacted cubic yards as installed at the designated location.
- 3. <u>Payment</u>: The amount paid will be the product of the volume measured for payment multiplied by the corresponding Contract Unit Price per compacted cubic yard.
- P. Item 16, Loading of Oregon State Only Hazardous Soil and Comingled Debris from the ISS Work: Includes work to remove from the corresponding material stockpile and load ISS spoils, in accordance with the Drawings, Contaminated Material Management Plan, Section 02 61 10, Section 02 81 00, and related sections when favorably reviewed in advance or ordered in writing by the Owner. Excludes sample collection and analysis and disposal classification characterization, which will be conducted by the Engineer. Contractor shall support the waste profiling process; however, Owner will complete the profile and name Contractor as the billing party.
 - 1. <u>Measurement:</u> The quantity measured for payment will be the weight of the soil and comingled debris that is removed from the corresponding material stockpile, loaded as specified by the Owner.
 - a. <u>Measurement Units:</u> The quantity measured for payment will be the weight of loaded material measured and rounded to the nearest integer ton.
 - 2. <u>Payment:</u> The amount paid will be the product of the weight measured for payment multiplied by the corresponding Contract Unit Price per ton. The Owner will provide a copy of received weight tickets to the Contractor on a weekly basis.
- Q. Item 17, Loading of Oregon State Only Hazardous Soil and Comingled Debris from ISS Work Containing ACM: Includes work to remove from the corresponding material stockpile, and load ISS spoils in accordance with the Drawings, Contaminated Material Management Plan, Section 02 61 10, Section 02 81 00, and related sections when favorably reviewed in advance or ordered in writing by the Owner. Excludes sample collection and analysis and disposal classification characterization, which will be conducted by the Engineer. Contractor shall support the waste profiling process; however, Owner will complete the profile and name Contractor as the billing party.
 - Measurement: The quantity measured for payment will be the weight of the soil and comingled debris that is removed from the corresponding material stockpile, loaded, as specified by the Owner.
 - a. <u>Measurement Units:</u> The quantity measured for payment will be the weight of loaded material measured and rounded to the nearest integer ton.
 - 2. <u>Payment:</u> The amount paid will be the product of the weight measured for payment multiplied by the corresponding Contract Unit Price per ton. The Owner will provide a copy of received weight tickets to the Contractor on a weekly basis.
- R. <u>Item 18, ISS DSM for ISS Work Area at Target Depths</u>: Includes operating ISS DSM Unit(s) for the ISS Work in accordance with Section 02 55 10 and operation of the associated ISS Reagent Slurry Unit (batch plant) and delivery of ISS reagent slurry in accordance with Section 02 52 20 to complete ISS DSM in ISS Work Area. Excludes ISS reagent costs and ISS DSM associated with the installation of the ERS Columns.
 - Measurement: Note that this Bid Item has a fixed starting volume of 38,521 bcy that can only be adjusted for portions not fully completed per Contract requirements or for additional treatment volume added by written request of Engineer. The quantity

measured for progress payments will be the percentage of the ISS DSM boy volume completed between the start and end date of the payment period calculated as the percentage of total number of ISS mix cells completed and achieving the CQA Acceptance Criteria divided by the total number of mix cells proposed by Contractor in the column layout within the Contractor's ISS Work Plan and favorably reviewed by the Owner.

- a. <u>ISS Mix Cell Top Surface</u>: The top surface of each ISS mix cell used as basis for measurement for payment in each ISS Work Area subarea will be the elevation of the ISS Work Platform as shown on the Drawings.
- b. <u>ISS Mix Cell Bottom Surface</u>: The bottom surface of each ISS mix cell used as basis for measurement for payment in each ISS Work Area subarea will be the ISS Mix Cell Bottom Surface elevation designated for that subarea shown on the Drawings, unless otherwise approved in advance or ordered in writing by the Engineer. For ISS mix cells that span across ISS Work Area subareas with different specified ISS Mix Cell Bottom Surface elevations, the ISS Mix Cell Bottom Surface elevation for that ISS mix cell shall extend to the lower elevation.
- c. <u>Measurement Excluded:</u> The number of ISS mix cells used as a basis of measurement for progress payments will exclude the following:
 - a. <u>Partially Mixed ISS Mix Cells</u>: Exclude the portion of ISS mix cells not completely mixed from the ISS Mix Cell Top Surface to the ISS Mix Cell Bottom Surface elevations shown on the Drawings, or elevations otherwise approved in advance or ordered in writing by the Engineer.
 - b. ISS Mix Cells with Deficient ISS Reagent(s): Exclude the number of ISS mix cells in which the dry weight of each ISS reagent (Portland cement, GGBFS, activated carbon, biochar, and/or persulfate) injected in the ISS mix cell is not equal to or greater than 90% of each ISS reagent target weight calculated and proposed by the Contractor and favorably reviewed by the Engineer for that particular ISS mix cell (i.e., the weight of reagent required for the calculated weight of soil per the approved mix design in the ISS Work Plan). The soil density to use for reagent calculations will be provided to Contractor by Engineer prior to initiation of the ISS Work.
 - c. ISS Mix Cells That Fail to Achieve Any CQA Acceptance Criteria: Exclude the number of ISS mix cells for which an ISS mix cell fails to achieve a CQA Acceptance Criterion.
 - d. ISS Reagents: Exclude the cost of ISS reagents (Portland cement, GGBFS, activated carbon, biochar, and/or persulfate).
 - e. <u>Engineered ERS Columns</u>: Exclude the number of ERS columns or ISS mix cells that comprise the Engineered ERS Design.
- d. <u>Measurement Units</u>: The bcy volume measured for payment will be measured and rounded to the nearest integer bcy.
- 2. <u>Payment</u>: The amount paid will be the product of the Contract Unit Price multiplied by the percentage of the ISS DSM bcy volume measured for payment.
- S. <u>Item 19, ISS DSM for ISS Work Area at Overburden Depths</u>: Includes operating ISS DSM Unit(s) for the ISS Work in accordance with Section 02 55 10 and operation of the associated ISS Reagent Slurry Unit (batch plant) and delivery of ISS reagent slurry in accordance with Section 02 52 20 to complete ISS DSM in ISS Work Area. Excludes ISS reagent costs and ISS DSM associated with the installation of the ERS Columns.
 - Measurement: Note that this Bid Item has a fixed starting volume of 16,150 bcy that can only be adjusted for portions not fully completed per Contract requirements or for additional treatment volume added by written request of Engineer. The quantity measured for progress payments will be the percentage of the ISS DSM bcy volume

completed between the start and end date of the payment period calculated as the percentage of total number of ISS mix cells completed and achieving the CQA Acceptance Criteria divided by the total number of mix cells proposed by Contractor in the column layout within the Contractor's ISS Work Plan and favorably reviewed by the Owner.

- a. <u>ISS Mix Cell Top Surface</u>: The top surface of each ISS mix cell used as basis for measurement for payment in each ISS Work Area subarea will be the elevation of the ISS Work Platform as shown on the Drawings.
- b. <u>ISS Mix Cell Bottom Surface</u>: The bottom surface of each ISS mix cell used as basis for measurement for payment in each ISS Work Area subarea will be the ISS Mix Cell Bottom Surface elevation designated for that subarea shown on the Drawings, unless otherwise approved in advance or ordered in writing by the Engineer. For ISS mix cells that span across ISS Work Area subareas with different specified ISS Mix Cell Bottom Surface elevations, the ISS Mix Cell Bottom Surface elevation for that ISS mix cell shall extend to the lower elevation.
- c. <u>Measurement Excluded:</u> The number of ISS mix cells used as a basis of measurement for progress payments will exclude the following:
 - a. <u>Partially Mixed ISS Mix Cells</u>: Exclude the portion of ISS mix cells not completely mixed from the ISS Mix Cell Top Surface to the ISS Mix Cell Bottom Surface elevations shown on the Drawings, or elevations otherwise approved in advance or ordered in writing by the Engineer.
 - b. ISS Mix Cells with Deficient ISS Reagent(s): Exclude the number of ISS mix cells in which the dry weight of each ISS reagent (Portland cement, GGBFS, activated carbon, biochar, and/or persulfate) injected in the ISS mix cell is not equal to or greater than 90% of each ISS reagent target weight calculated and proposed by the Contractor and favorably reviewed by the Engineer for that particular ISS mix cell (i.e., the weight of reagent required for the calculated weight of soil per the approved mix design in the ISS Work Plan). The soil density to use for reagent calculations will be provided to Contractor by Engineer prior to initiation of the ISS Work.
 - c. ISS Mix Cells That Fail to Achieve Any CQA Acceptance Criteria: Exclude the number of ISS mix cells for which an ISS mix cell fails to achieve a CQA Acceptance Criterion.
 - d. ISS Reagents: Exclude the cost of ISS reagents (Portland cement, GGBFS, activated carbon, biochar, and/or persulfate).
 - e. <u>Engineered ERS Columns</u>: Exclude the number of ERS columns or ISS mix cells that comprise the Engineered ERS Design.
- d. <u>Measurement Units</u>: The bcy volume measured for payment will be measured and rounded to the nearest integer bcy.
- 2. <u>Payment</u>: The amount paid will be the product of the Contract Unit Price multiplied by the percentage of the ISS DSM bcy volume measured for payment.
- T. <u>Item 20, ISS DSM for ISS Riverbank Area:</u> Includes operating ISS DSM Unit(s) for the ISS Work in accordance with Section 02 55 10 and operation of the associated ISS Reagent Slurry Unit (batch plant) and delivery of ISS reagent slurry in accordance with Section 02 52 20 to conduct ISS DSM for installation of the ERS Columns (entire depth of column) in accordance with the requirements of the Engineered ERS Design. Excludes ISS reagent costs, ISS DSM of the first row of ISS mix cells against the Columns prior to excavation of the ISS Work Platform as specified in the Engineered ERS Design and ISS DSM of the other portions of other Areas.
 - Measurement: Note that this Bid Item has a fixed starting volume of 15,129 bcy that can only be adjusted for portions of the ERS Columns not fully completed per Contract requirements or for additional ERS Column volume added by written request of Engineer. The quantity

measured for progress payments will be the percentage of the ERS Column boy volume completed between the start and end date of the payment period calculated as the percentage of total number of ERS Columns completed and achieving the CQA Acceptance Criteria divided by the total number of ERS Columns proposed by Contractor in the column layout for ERS Columns within the Contractor's ISS Work Plan and favorably reviewed by the Owner.

- a. <u>ERS Column Top Surface</u>: The top surface of each ERS Column used as the basis for measurement for payment will be from existing grade minus any pre-excavations as shown in the Engineered ERS Design, unless otherwise approved in advance or ordered in writing by the Engineer.
- b. <u>ERS Column Bottom Surface</u>: The bottom surface of each ERS Column used as the basis for measurement for payment will be the ERS Column bottom elevation designated for that subarea as shown in the Engineered ERS Design, unless otherwise approved in advance or ordered in writing by the Engineer.
- c. <u>Measurement Excluded:</u> The number of ERS Columns used as the basis of measurement for payment will exclude the following:
 - a. <u>Partially Mixed ERS Columns</u>: Exclude the number of ERS Columns not completely mixed from the ERS Column Top Surface to the ERS Column Bottom Surface shown in the Engineered ERS Design, or elevations otherwise approved in advance or ordered in writing by the Engineer.
 - b. <u>ERS Columns with Deficient ISS Reagent(s)</u>: Exclude the number of Columns in which the dry weight of each ISS reagent (Portland cement, GGBFS, activated carbon, biochar, and/or persulfate) injected in the Column is not equal to or greater than 90% of each ISS reagent target weight calculated and proposed by the Contractor and favorably reviewed by the Engineer for that particular Column (i.e., the weight of reagent required for the calculated weight of soil per the approved mix design in the ISS Work Plan). The soil density to use for reagent calculations will be provided to Contractor by Engineer prior to initiation of the ISS Work.
 - c. <u>ERS Columns That Fail to Achieve Any CQA Acceptance Criteria:</u> Exclude the number of ERS Columns for which an ERS Column fails to achieve a CQA Acceptance Criterion.
 - d. <u>ISS Reagents</u>: Exclude the cost of ISS reagents (Portland cement, GGBFS, activated carbon, biochar, and/or persulfate).
 - e. <u>Engineered ERS Design Cantilever Wall Columns, and Cantilever Wall Buttress Mix Cells</u>: Exclude the number of Cantilever Wall Columns and Cantilever Wall Buttress Mix Cells that comprise the Engineered ERS Design.
- d. <u>Measurement Units</u>: The percentage measured for payment will be measured and rounded to the nearest integer bcy.
- 2. <u>Payment</u>: The amount paid will be the product of the Contract Unit Price multiplied by the percentage of the ERS Column bcy volume measured for payment.
- U. <u>Item 21, Unit Cost of Portland Cement Reagent Delivered to Site:</u> Includes the cost to purchase, accept delivery, store, and maintain Portland cement reagent in a dry and stable condition for subsequent transfer to the batch plant to mix ISS reagent slurry for ISS mix cells and Columns in accordance with Section 02 52 20. Excludes operation of the associated ISS Reagent Slurry Unit (batch plant) and delivery of ISS reagent slurry to the DSM rig.
 - Measurement: The quantity measured for payment will be the weight of the Portland cement reagent delivered to the Property and stored in onsite hoppers or silos confirmed by a complete and legible delivery ticket with net weight receipt for each load as submitted to and favorably reviewed by Owner.
 - a. <u>Measurement Units</u>: The quantity measured for payment will be measured and rounded to the nearest integer ton.

- b. Measurement Excluded:
 - Portland Cement Reagent Delivered without a Weight Ticket Provided to the Owner: Exclude the quantity of Portland cement for which a complete and legible delivery weight receipt provided by the supplier and favorably reviewed by the Owner is not provided.
 - ii. Portland Cement Reagent Used for ISS Mix Cells That Fail to Achieve Any CQA

 Acceptance Criteria: Exclude the weight of Portland cement used for ISS mix cells or
 Columns for which an ISS mix cell which fails to meet a CQA Acceptance Criterion.
 - iii. Portland Cement Reagent Used for ISS Mix Cells with Excessive Reagent: Exclude the excess portion of the weight of Portland cement reagent used in ISS mix cells in which the dry weight of Portland cement reagent injected in the ISS mix cell is greater than 20% above the Portland cement target weight calculated and proposed by the Contractor and favorably reviewed by the Engineer for that particular ISS mix cell or column (i.e., the weight of Portland cement required for the calculated weight of soil per the approved mix design in the ISS Work Plan); unless impacted by obstructions and approved in writing by Engineer. The soil density to use for reagent calculations will be provided to Contractor by Engineer prior to initiation of the ISS Work.
- 2. <u>Payment</u>: The amount paid will be the product of the net weight tickets for payment multiplied by the corresponding Contract Unit Price per ton.
- V. <u>Item 22, Unit Cost of GGBFS Reagent Delivered to Site</u>: Includes the cost to purchase, accept delivery, store, and maintain GGBFS reagent in a dry and stable condition for subsequent transfer to the batch plant to mix ISS reagent slurry for ISS mix cells in accordance with Section 02 52 20. Excludes operation of the associated ISS Reagent Slurry Unit (batch plant) and delivery of ISS reagent slurry to the DSM rig.
 - Measurement: The quantity measured for payment will be the weight of the GGBFS reagent delivered to the Property and stored in onsite hoppers or silos confirmed by a complete and legible delivery ticket with net weight receipt for each load as submitted to and favorably reviewed by Owner.
 - a. <u>Measurement Units</u>: The quantity measured for payment will be measured and rounded to the nearest integer ton.
 - b. Measurement Excluded:
 - i. <u>GGBFS Reagent Delivered without a Weight Ticket Provided to the Owner</u>: Exclude the quantity of GGBFS for which a complete and legible delivery weight receipt provided by the supplier and favorably reviewed by the Owner is not provided.
 - ii. GGBFS Reagent Used for ISS Mix Cells or ERS Columns That Fail to Achieve Any CQA Acceptance Criteria: Exclude the weight of GGBFS used for ISS mix cells for which an ISS mix cell or ERS Column fails to meet a CQA Acceptance Criterion.
 - iii. GGBFS Reagent Used for ISS Mix Cells or ERS Columns with Excessive Reagent: Exclude the excess portion of the weight of GGBFS reagent used in ISS mix cells in which the dry weight of GGBFS reagent injected in the ISS mix cell or ERS Column is greater than 20% above the GGBFS target weight calculated and proposed by the Contractor and favorably reviewed by the Engineer for that particular ISS mix cell (i.e., the weight of GGBFS required for the calculated weight of soil per the approved mix design in the ISS Work Plan); unless impacted by wood piles or other obstructions and approved in writing by Engineer. The soil density to use for reagent calculations will be provided to Contractor by Engineer prior to initiation of the ISS Work.
 - 2. <u>Payment</u>: The amount paid will be the product of the net weight tickets for payment multiplied by the corresponding Contract Unit Price per ton.

- W. Item 23, Clearing of Unknown Obstructions within the ISS Treatment Zone That Prevent ISS Mix Cell or ERS Completion (assume no deeper than 15 feet below ISS Work Platform grade or existing grade): Includes labor, equipment, and materials required for removal of an obstruction that prohibits the successful completion of an ISS mix cell within the top 15 feet of the current elevation of the ISS Work Platform Excavation (for ISS mix cells) or within the top 15 feet of existing grade (for the ERS Columns) by use of an excavator or other similar means, including backfill, grading, and compaction required to re-establish the previous Platform Excavation, to allow the subsequent completion of the ISS mix cell. Excludes loading, transport, and disposal of the obstruction, which will be accounted for under Bid Items 16-17.
 - 1. <u>Measurement</u>: The quantity measured for payment will be per each obstruction cleared by Contractor as ordered in writing by the Engineer.
 - a. <u>Measurement Units</u>: The quantity measured for payment will be measured per each obstruction cleared.
 - b. Exclude Other Obstructions Not Defined Above: Exclude obstructions deeper than 15 feet below the existing ISS Work Platform elevation of the DSM rig (for ISS mix cells) or deeper than 15 feet below existing grade (ERS Columns), wood piles encountered, or other obstructions not otherwise feasible to remove. Excludes removal of the abandoned stormwater pipe in the ISS treatment area, which will be accounted for under Contingent Bid Item C-12.
 - 2. <u>Payment</u>: The amount paid will be the product of each obstruction removed for payment multiplied by the corresponding Contract Unit Price per each.
- X. <u>Item 24, Disconnection, Temporary Capping of GWET Utilities</u>: Includes labor, equipment, and materials required for disconnection, temporary capping of utilities in the ISS Work Area, including moving Motor Control Center Room 1. Known utilities include extracted water buried HDPE conveyance line, 480V buried power lines, 240V overhead power lines and utility poles, 120V buried power lines, 24V buried communications lines, and fiberoptic communications line; other utilities may exist and are also the responsibility of the Contractor.
 - 1. <u>Measurement:</u> The quantity measured for payment will be the specified portion of the lump sum when that stage of the Work is determined complete by the Engineer.
 - a. Measurement Units: Lump sum
 - 2. Payment: The amount paid will be the Contract Unit Price lump sum.
 - a. <u>Utility locating, disconnection, and temporary capping</u>: The Owner will pay the Contract Unit Price lump sum amount following utility locating, disconnection, and temporary capping favorably reviewed by the Engineer.
- Y. <u>Item 25, Demobilization for ISS</u>: Includes demobilization of all equipment, personnel, products, supplies, temporary facilities and controls, construction waste and operation incidentals, and related work on the Property after all ISS Work authorized by the Owner is complete and accepted by the Owner. Includes all required closeout submittals and necessary permit closeout.
 - 1. <u>Measurement</u>: The quantity measured for payment will be the specified portion of the lump sum when that stage of the Work is determined complete by the Owner.
 - a. Measurement Units: Lump sum.
 - 2. <u>Payment</u>: The amount paid will be the Contract Unit Price lump sum paid in partial payment stages as follows:
 - a. <u>Demobilization</u>: The Owner will pay 80 percent of the Contract Unit Price lump sum amount on receipt of application for payment after completion of the ISS demobilization favorably reviewed by Owner.
 - b. <u>Contract Closeout Documentation</u>: The Owner will pay 20 percent of the Contract Unit Price lump sum amount after ISS demobilization, and Owner receipt and favorable review of all closeout documentation, submittals, and permit closeout required for completion of the ISS Work.

1.11 MEASUREMENT AND PAYMENT OF ISS WORK CONTINGENT BID ITEMS

- Z. Item C-01, Daily Standby Rate for ISS Reagent Slurry Unit(s), ISS DSM Unit(s), and Associated Components: Includes work required to retain major equipment required for ISS DSM, including but not limited to the ISS Reagent Slurry Unit(s) (batch plant[s]), ISS DSM Unit(s), reagent silos, ISS VOC Vapor Control Unit(s), and associated components, at the Property during a standby. The standby condition that is the subject of this Bid Item is exclusive to shutdown of DSM work only (while other Project Work progresses) and will only be initiated by the Engineer, Owner, or a regulatory or permitting agency and excludes any Contractor-initiated, Contractor at-fault, or any other standby conditions. Includes equipment rental rates and the minimum amount of labor that is required to maintain Project-related DSM equipment operators that otherwise cannot be reassigned to other tasks during the standby. Contractor shall identify the equipment and labor included within this Contract Unit Price on Bid Form 5a (Notes, Clarifications & Required Information column), and shall also specify whether the unit rate includes consideration for maintaining personnel as part of its workforce during the standby. Excludes all other labor and material costs not otherwise described.
 - 1. <u>Measurement</u>: The quantity measured for payment will be the number of days that the daily standby rate for ISS Reagent Slurry Unit(s), ISS DSM Unit(s), and associated components is ordered by the Owner, not to exceed 4 consecutive days (at which point Bid Item C-02 will be used for measurement and payment of the standby).
 - a. <u>Measurement Units</u>: The quantity measured for payment will be measured to the integer day with a 1-day minimum.
 - 1. <u>Payment</u>: The amount paid will be the product of the days measured for payment (not to exceed 4 consecutive days) multiplied by the corresponding Contract Unit Price per day.
- AA. Item C-02, Weekly Standby Rate for ISS Reagent Slurry Unit(s), ISS DSM Unit(s), and Associated Components: Includes work required to retain major equipment required for ISS DSM, including but not limited to the ISS Reagent Slurry Unit(s) (batch plant[s]), ISS DSM Unit(s), reagent silos, ISS VOC Vapor Control Foam Unit(s), and associated components, at the Property during a standby. The standby condition that is the subject of this Bid Item is exclusive to shutdown of DSM work only (while other Project Work progresses) and will only be initiated by the Engineer, Owner, or a regulatory or permitting agency and excludes any Contractor-initiated, Contractor at-fault, or any other standby conditions. Includes equipment rental rates and the minimum amount of labor that is required to maintain Project-related DSM equipment operators that otherwise cannot be reassigned to other tasks during the standby. Contractor shall identify the equipment and labor included within this Contract Unit Price on the Bid Form, and shall also specify whether the unit rate includes consideration for maintaining personnel as part of its workforce during the standby. Excludes all other labor and material costs not otherwise described.
 - 1. <u>Measurement</u>: The quantity measured for payment will be the number of weeks that the weekly standby rate for ISS Reagent Slurry Unit(s), ISS DSM Unit(s), and associated components is ordered by the Owner, not to exceed 3 consecutive weeks (at which point Bid Item C-03 will be used for measurement and payment of the standby).
 - a. <u>Measurement Units</u>: The quantity measured for payment will be measured to the decimal week with a 1-week minimum.
 - 2. <u>Payment</u>: The amount paid will be the product of the weeks measured for payment (not to exceed 3 consecutive weeks) multiplied by the corresponding Contract Unit Price per week.
- BB. Item C-03, Monthly Standby Rate for ISS Reagent Slurry Unit(s), ISS DSM Unit(s), and Associated Components: Includes work required to retain major equipment required for ISS DSM, including but not limited to the ISS Reagent Slurry Unit(s) (batch plant[s]), ISS DSM Unit(s), reagent silos, ISS VOC Vapor Control Foam Unit(s), and associated components, at the Property during a standby. The standby condition that is the subject of this Bid Item is exclusive to

shutdown of DSM work only (while other Project Work progresses) and will only be initiated by the Engineer, Owner, or a regulatory or permitting agency and excludes any Contractor-initiated, Contractor at-fault, or any other standby conditions. Includes equipment rental rates and the minimum amount of labor that is required to maintain Project-related DSM equipment operators that otherwise cannot be reassigned to other tasks during the standby. Contractor shall identify the equipment and labor included within this Contract Unit Price on Bid Form 5a (Notes, Clarifications & Required Information column), and shall also specify whether the unit rate includes consideration for maintaining personnel as part of its workforce during the standby. Excludes all other labor and material costs not otherwise described.

- Measurement: The quantity measured for payment will be the number of months that the monthly standby rate for ISS Reagent Slurry Unit(s), ISS DSM Unit(s), and associated components is ordered by the Owner.
 - a. <u>Measurement Units</u>: The quantity measured for payment will be measured to the decimal month with a 1-month minimum.
- 2. <u>Payment</u>: The amount paid will be the product of the months measured for payment multiplied by the corresponding Contract Unit Price per month.
- CC. Item C-04, Weekly Price for Full Project Standby (labor, equipment, and security) without Work Being Performed: Includes all labor (including security), equipment, and material costs incurred during a standby when no work associated with the ISS is being conducted. The standby condition that is the subject of this Bid Item will only be initiated by the Engineer, Owner, or a regulatory or permitting agency and excludes any Contractor-initiated, Contractor at-fault, or any other standby conditions. The Contractor shall assume that all equipment and materials associated with the ISS Work will remain at the Property during the standby under this Bid Item. Additionally, the Contractor shall assume that any costs required to keep Contractor's personnel dedicated to the Project during the standby are included in this Bid Item (i.e., temporary apartment rentals, etc.).
 - 1. <u>Measurement</u>: The quantity measured for payment will be the number of weeks that the weekly full Project standby without work being performed is ordered by the Owner.
 - a. <u>Measurement Units</u>: The quantity measured for payment will be measured to the decimal week with a 1-week minimum.
 - 2. <u>Payment</u>: The amount paid will be the product of the weeks measured for payment multiplied by the corresponding Contract Unit Price per week.
- DD. Item C-05, Weekly Price for Long-Term Full Project Standby (labor, equipment, and security), Contractor to Demobilize Personnel and Equipment as Feasible (2-week minimum): Includes all labor (including security), equipment, and material costs incurred during Project standby when no work associated with the ISS is being conducted. The standby condition that is the subject of this Bid Item will only be initiated by the Engineer, Owner, or a regulatory or permitting agency and excludes any Contractor-initiated, Contractor at-fault, or any other standby conditions. The Contractor shall assume that major equipment required for ISS DSM, including but not limited to the ISS Reagent Slurry Unit(s) (batch plant[s]), ISS DSM Unit(s), reagent silos, ISS VOC Vapor Control Unit(s)if warranted, and associated components, will remain at the Property during the standby under this Bid Item and that all other equipment that can be more readily remobilized is demobilized from the Property to minimize standby costs. Contractor shall identify the equipment that would be either retained onsite or demobilized within this Contract Unit Price on Bid Form 5a (Notes, Clarifications & Required Information column). Additionally, the Contractor shall assume that this Bid Item includes costs to demobilize personnel to the extent practical. This Bid Item excludes the cost to demobilize and remobilize any equipment from the Property and back to the Property that had been demobilized upon initiation of Project standby. The Contractor shall provide mobilization and demobilization rates for all equipment to be demobilized and remobilized under this Bid Item in Attachment 5d (Bid Form, T&M Equipment).
 - 1. <u>Measurement</u>: The quantity measured for payment will be the number of weeks that the weekly full Project standby without work being performed is ordered by the Owner.

- a. <u>Measurement Units</u>: The quantity measured for payment will be measured to the decimal week with a 2-week minimum.
- 2. <u>Payment</u>: The amount paid will be the product of the weeks measured for payment multiplied by the corresponding Contract Unit Price per week.
- 3. <u>Item C-06, Unit Cost of Carbon Reagent Delivered to Site</u>: Includes the cost to purchase, accept delivery, store, and maintain activated carbon reagent in a dry and stable condition for subsequent transfer to the batch plant to mix ISS reagent slurry for ISS mix cells or ERS Columns in accordance with Section 02 52 20. Excludes operation of the associated ISS Reagent Slurry Unit (batch plant) and delivery of ISS reagent slurry to the DSM rig.
- Measurement: The quantity measured for payment will be the weight of the activated carbon reagent delivered to the Property and stored onsite confirmed by a complete and legible delivery ticket with net weight receipt for each load as submitted to and favorably reviewed by Owner.
 - a. <u>Measurement Units</u>: The quantity measured for payment will be measured and rounded to the nearest integer ton.
 - b. Measurement Excluded:
 - Activated Carbon Reagent Delivered without a Weight Ticket Provided to the <u>Owner</u>: Exclude the quantity of activated carbon for which a complete and legible delivery weight receipt provided by the supplier and favorably reviewed by the Owner is not provided.
 - ii. Activated Carbon Reagent Used for ISS Mix Cells or ERS Columns That Fail to Achieve Any CQA Acceptance Criteria: Exclude the weight of activated carbon used for ISS mix cells or ERS Columns for which an ISS mix cell or ERS Column fails to meet a CQA Acceptance Criterion.
 - iii. Activated Carbon Reagent Used for ISS Mix Cells or ERS Columns with Excessive Reagent: Exclude the excess portion of the weight of activated carbon reagent used in ISS mix cells or ERS Columns in which the dry weight of activated carbon reagent injected in the ISS mix cell or ERS Column is greater than 20% above the carbon target weight calculated and proposed by the Contractor and favorably reviewed by the Engineer for that particular ISS mix cell or column (i.e., the weight of activated carbon required for the calculated weight of soil per the approved mix design in the ISS Work Plan); unless impacted by wood piles or other obstructions and approved in writing by Engineer. The soil density to use for reagent calculations will be provided to Contractor by Engineer prior to initiation of the ISS Work.
 - 2. <u>Payment</u>: The amount paid will be the product of the net weight tickets for payment multiplied by the corresponding Contract Unit Price per ton
- 2. <u>Item C-07, Unit Cost of Biochar Reagent Delivered to Site</u>: Includes the cost to purchase, accept delivery, store, and maintain biochar reagent in a dry and stable condition for subsequent transfer to the batch plant to mix ISS reagent slurry for ISS mix cells or ERS Columns in accordance with Section 02 52 20. Excludes operation of the associated ISS Reagent Slurry Unit (batch plant) and delivery of ISS reagent slurry to the DSM rig.
- 3. <u>Measurement</u>: The quantity measured for payment will be the weight of the biochar reagent delivered to the Property and stored onsite confirmed by a complete and legible delivery ticket with net weight receipt for each load as submitted to and favorably reviewed by Owner.
 - a. <u>Measurement Units</u>: The quantity measured for payment will be measured and rounded to the nearest integer ton.
 - b. Measurement Excluded:
 - i. <u>Biochar Reagent Delivered without a Weight Ticket Provided to the Owner</u>: Exclude the quantity of biochar for which a complete and legible delivery weight receipt provided by the supplier and favorably reviewed by the Owner is not provided.

- ii. Biochar Reagent Used for ISS Mix Cells or ERS Columns That Fail to Achieve Any CQA Acceptance Criteria: Exclude the weight of biochar used for ISS mix cells or ERS Columns for which an ISS mix cell or ERS Column fails to meet a CQA Acceptance Criterion.
- iii. Biochar Reagent Used for ISS Mix Cells or ERS Columns with Excessive Reagent: Exclude the excess portion of the weight of biochar reagent used in ISS mix cells or ERS Columns in which the dry weight of biochar reagent injected in the ISS mix cell or ERS Column is greater than 20% above the biochar target weight calculated and proposed by the Contractor and favorably reviewed by the Engineer for that particular ISS mix cell or column (i.e., the weight of biochar required for the calculated weight of soil per the approved mix design in the ISS Work Plan); unless impacted by wood piles or other obstructions and approved in writing by Engineer. The soil density to use for reagent calculations will be provided to Contractor by Engineer prior to initiation of the ISS Work.
- 2. <u>Payment</u>: The amount paid will be the product of the net weight tickets for payment multiplied by the corresponding Contract Unit Price per ton
- 4. <u>Item C-08, Unit Cost of Sodium Persulfate Delivered to Site</u>: Includes the cost to purchase, accept delivery, store, and maintain sodium persulfate reagent in a dry and stable condition for subsequent transfer to the batch plant to mix ISS reagent slurry for ISS mix cells or ERS Columns in accordance with Section 02 52 20. Excludes operation of the associated ISS Reagent Slurry Unit (batch plant) and delivery of ISS reagent slurry to the DSM rig.
- Measurement: The quantity measured for payment will be the weight of the Sodium Persulfate reagent delivered to the Property and stored onsite confirmed by a complete and legible delivery ticket with net weight receipt for each load as submitted to and favorably reviewed by Owner.
 - a. <u>Measurement Units</u>: The quantity measured for payment will be measured and rounded to the nearest integer ton.
 - b. Measurement Excluded:
 - Sodium Persulfate Reagent Delivered without a Weight Ticket Provided to the
 Owner: Exclude the quantity of Sodium Persulfate for which a complete and legible delivery weight receipt provided by the supplier and favorably reviewed by the Owner is not provided.
 - ii. Sodium Persulfate Reagent Used for ISS Mix Cells or ERS Columns That Fail to Achieve Any CQA Acceptance Criteria: Exclude the weight of Sodium Persulfate used for ISS mix cells or ERS Columns for which an ISS mix cell or ERS Column fails to meet a CQA Acceptance Criterion.
 - iii. Sodium Persulfate Reagent Used for ISS Mix Cells or ERS Columns with Excessive Reagent: Exclude the excess portion of the weight of Sodium Persulfate reagent used in ISS mix cells or ERS Columns in which the dry weight of Sodium Persulfate reagent injected in the ISS mix cell or ERS Column is greater than 20% above the Sodium Persulfate target weight calculated and proposed by the Contractor and favorably reviewed by the Engineer for that particular ISS mix cell or column (i.e., the weight of Sodium Persulfate required for the calculated weight of soil per the approved mix design in the ISS Work Plan); unless impacted by wood piles or other obstructions and approved in writing by Engineer. The soil density to use for reagent calculations will be provided to Contractor by Engineer prior to initiation of the ISS Work.
 - 2. <u>Payment</u>: The amount paid will be the product of the net weight tickets for payment multiplied by the corresponding Contract Unit Price per ton.
- 2. <u>Item C-09</u>, <u>Unit Cost of Cellulose Cover</u>: Includes the cost of furnishing, mixing, and effective application of stockpile cellulose cover including all necessary equipment in accordance with

the Erosion and Sediment Control Plan. Stockpile cellulose cover shall be applied if ordered in writing by the Engineer prior to a rain event to prevent sediment run-off. If the Engineer determines that other stormwater best management practices are effective at controlling sediment run-off, no cellulose cover shall be applied. Contractor shall remain in compliance with requirements of each applicable permit; Project plan (including HASP); and local, state, and/or federal regulations for stormwater best management practices.

- 1. <u>Measurement</u>: The quantity measured for payment will be the number of pallets of pallets of cellulose cover material wholly used, and up to one partial pallet. No additional payment shall be authorized for additional partial pallets.
 - a. Measurement Units: Pallet.
- 2. <u>Payment</u>: The amount paid will be the product of the Contract Unit Price per pallet multiplied by the number of pallets wholly used during the billing period. A partial pallet shall only be billed as a part of Project closeout.
- Item C-10. Monthly Cost of Water Pre-Treatment System: Includes the cost of operating, including consumable item costs, and analytical laboratory costs for implementing a water pre-treatment system (WPTS) in accordance with Section 02 83 20.
- 3. <u>Measurement</u>: The quantity measured for payment will be the number of months that the WPTS is on site. Mobilization and demobilization are covered in Item C-11.
 - b. <u>Measurement Units</u>: The quantity measured for payment will be measured to the integer month rounded up.
- 3. <u>Payment</u>: The amount paid will be the product of the Contract Unit Price per month multiplied by the number of months.
- 4. <u>Item C-11. Mobilization and Demobilization of Water Pre-Treatment System</u>: Includes the cost of designing and furnishing for implementing a water pre-treatment system (WPTS) in accordance with Section 02 83 20.
 - 1. <u>Measurement</u>: The quantity measured for payment will be the specified portion of the lump sum when that stage of the Work is determined complete by the Engineer.
 - i. Measurement Units: Lump sum.
 - 2. <u>Payment</u>: The amount paid will be the Contract Unit Price lump sum paid in partial stages as follows:
 - i. <u>Initial Mobilization</u>: The Owner will pay 60 percent of the contract Unit Price lump sum amount after Contractor first mobilizes the WPTS to the Property for beneficial use.
 - ii. <u>Demobilization</u>: The Owner will 40 percent of the Contract Unit Price lump sum amount after WPTS demobilization.
- 5. <u>Item C-12, Clearing of the Abandoned Stormwater Pipe</u>: Includes labor, equipment, and materials required for removal of the abandoned stormwater pipe in the ISS treatment area by use of an excavator or other similar means, including backfill, grading, and compaction required to re-establish the previous Platform Excavation, to allow the subsequent completion of the ISS mix cell. Excludes loading, transport, and disposal of the pipe and debris, which will be accounted for under Bid Items 16-17.
- 1. <u>Measurement</u>: The quantity measured for payment will be the specified portion of the lump sum when that stage of the Work is determined complete by the Engineer.

a. Measurement Units: Lump sum.

2. Payment: The amount paid will be the Contract Unit Price lump sum amount.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 32 00

CONSTRUCTION PROJECT DOCUMENTATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Project management, coordination, and meeting requirements for the Work.
- B. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 RELATED WORK

Section 01 10 00	Summary of the Work
Section 01 33 00	Submittals
Section 01 35 29	Health and Safety Requirements
Section 01 77 00	Contract Closeout

1.03 PROJECT COORDINATION

- A. General Requirements: Coordinate the schedule for mobilization, use, and demobilization of all personnel, equipment, material, safety, environmental control, Work, and submittals required by the Technical Specifications to provide efficient and orderly sequencing of interdependent construction elements, with provisions for accommodating plan modifications if approved in advance or ordered by the Owner.
- B. <u>Project Schedule</u>: Prepare a baseline Project Schedule as a Gantt chart that shows each Work task for the entire duration of the pre-mobilization period and the period between mobilization and demobilization for the fieldwork.
 - 1. <u>Format</u>: Prepare the Project Schedule, and each update, as a Gantt chart with software that is fully compatible with Microsoft "Project" software. Show task number, task name, task links (including type), task start date, and task end date.
 - 2. <u>Baseline</u>: Set the original Project Schedule approved by the Owner as the permanent baseline Project Schedule shown on each subsequent updated Project Schedule.
 - 3. <u>Updates</u>: Update the Project Schedule weekly. Issue the updated schedule to the Owner, the Engineer, the CQA Officer, and key Contractor staff at the end of the day prior to the weekly progress meeting. Show each actual, or newly projected, task start date and task end date, and each baseline task bar.
- C. <u>Use of the Site</u>: Coordinate access, clearances, drainage, escape routes, fence, laydown, stockpile, and related Work Area space requirements for the Work.
 - 1. <u>Multiple-Crew Work</u>: Locate and limit Work as needed to implement safe and efficient Work when more than one crew is present onsite.
 - 2. Other Uses: Use space efficiently to allow safe and efficient Work being performed under other contracts (or otherwise authorized by the Owner or Property Owner) and related onsite access and traffic.
- D. Completion of the Work: Coordinate completion and cleanup of the Work Area.
- E. <u>Minimum Requirements</u>: Minimum administrative and supervisory requirements necessary for coordination of Work on the Project include, but are not limited to, the following:
 - 1. Administrative and supervisory personnel.
 - 2. Weekly progress reports and meetings.
 - 3. Daily 3-day look-ahead meetings

- 4. Processing of documentation/claims arising during the Work.
- 5. Conducting safety meetings (HASP training, Site orientation, daily tailgate meetings, job hazard analysis [JHA] review) as specified in Section 01 35 29.
- 6. Conducting safety and equipment inspections.
- 7. Conducting compliance inspections and systems/controls monitoring.
- 8. Completion, documentation, and communication of each worker training and medical surveillance/exam.
- 9. Special reports required to document the work specified or ordered by the Owner.
- 10. A construction progress report submitted each day that Work is implemented at the Site to the Engineer with copy to the Field Safety Officer, the CQA Officer, and key Contractor staff.
- 11. Daily permitting and hazard review.
- 12. Daily personnel sign-in records.
- 13. Development and updates of written Work Plans.
- 14. Development of written Contingency Plans.
- 15. Utility notifications.

1.04 MEETING RESPONSIBILITIES

- A. <u>Scheduling</u>: The Engineer will schedule work coordination meetings, weekly progress meetings, and special purpose meetings throughout the Work.
- B. Administration: Make arrangements for each meeting scheduled by the Engineer.
 - 1. Comment on the meeting agenda prepared by the Engineer.
 - 2. Meeting room and facilities will be provided by the Owner.
 - 3. Preside at the meeting.
 - 4. Record minutes of the meeting, including description of each decision, action item, assignment, and due date.
 - 5. After each meeting, the Engineer will promptly distribute a copy of the meeting minutes to each person invited to the meeting, to each other meeting participant, and to each other stakeholder affected by any of the decisions, action items, assignments, and due dates agreed upon at the meeting.
 - 6. The Engineer will obtain comments, if any, from the meeting participants and stakeholders on the meeting minutes and, if necessary to address the comments, issue a corrected copy of the meeting minutes to each meeting participant and stakeholder.
- C. <u>Participant Authority Required</u>: Each Contractor, Contractor's subcontractor, and Contractor's supplier representative attending each meeting will be qualified and authorized to act on behalf of the company that person represents.

1.05 PROGRAM SAFETY PLAN CONFERENCE CALL

- A. <u>Participants</u>: The following persons must participate in a Program Safety Plan conference call at least 1 week prior to initiation of mobilization for fieldwork.
 - Owner: The Owner's Project Manager and other Owner staff invited by the Owner's Project Manager.
 - 2. <u>Engineer</u>: The Engineer's Project Manager, Construction Manager, FSO, and other Engineer staff invited by the Engineer Project Manager.
 - 3. <u>Contractor</u>: The Contractor's Project Manager, Construction Manager, Site Safety Officer, each Field Superintendent, and other Contractor staff invited by the Contractor or the owner.
- B. <u>Agenda</u>: Discuss, make decisions, and assign action items related to high hazard tasks and mitigation measures to be implemented for the Work.

1.06 PRE-CONSTRUCTION MEETINGS

A. Participants: The following persons will be invited to the Pre-Construction Meeting.

- Owner: The Owner's Project Manager and other Owner staff invited by the Owner's Project Manager.
- <u>CQA Contractor</u>: The CQA Officer and other CQA Project staff invited by the CQA Officer or the Engineer.
- 3. Engineer: The Project Engineer and other Project staff invited by the Project Engineer.
- 4. <u>Contractor</u>: The Contractor's Project Manager, Company Safety Manager, Field Project Manager, Site Safety Officer, each Field Superintendent, CQC Manager, and other Contractor staff invited by the Contractor or the Owner.
- 5. <u>Subcontractors</u>: For each of the Contractor's subcontractors assigned more than 10 percent of the value of the Work or proposed to be onsite for more than 5 full days during the Work, the subcontractor's Project Manager, onsite Site Safety Officer(s), onsite Superintendent(s), and other subcontractor staff invited by the Contractor of the Owner.
- B. <u>Agenda</u>: Include discussion of each of the following agenda items at the Pre-Construction Meeting.
 - Health and safety observations, learnings, findings, and safety discussions relevant to the Work.
 - a. This will include instructions for using Owner's *MySafety4All* safety program.
 - 2. Project Schedule.
 - 3. Critical work sequencing.
 - 4. Project coordination.
 - 5. Designation of each Owner, Engineer, Contractor, subcontractor, and other key participant responsible staff, each person's responsibilities, and each person's designated reserve staff.
 - 6. Procedures and processing of:
 - a. HASP updates.
 - b. Job hazard analysis development and modification, and Engineer review.
 - c. Technical submittals, review, and approval.
 - d. Worker documentation requirements, records depository, and access.
 - e. Requests for Information and responses.
 - f. Change Order requests, proposals, and approvals.
 - g. Applications for Payment or submittal of credit payment (monthly date of payment to be determined).
 - 7. Work control procedures.
 - 8. CQC responsibilities, documentation, review, and approval.
 - 9. CQA responsibilities, documentation, review, and approval.
 - Contractor use of the Site, including Support Zone areas available for field office and support, work areas, and laydown or stockpile areas; Contamination Reduction Zones; and Exclusion Zones.
 - 11. Project facilities, controls, and Project aids.
 - 12. Temporary utilities, including drinking water, non-potable water, sanitary sewage collection, industrial wastewater collection, non-impacted stormwater drainage, potentially impacted stormwater management, electrical power, and wired telecommunications.
 - 13. Housekeeping procedures.
 - 14. Summary of decisions, action item response assignments, and due dates.

1.07 CONSTRUCTION PROGRESS MEETINGS

- A. <u>Frequency</u>: Participate in a construction progress meeting each week throughout the Work, unless otherwise agreed or ordered by the Engineer.
- B. <u>Location</u>: Virtually via Microsoft Teams meeting or onsite at a location requested by or approved by the Engineer.
- C. Participation: The following participants must attend each construction progress meeting.
 - 1. The Engineer Field Project Manager and/or Construction Manager, FSO, and CQA Officer.

- 2. The Contractor's Field Project Manager, Site Safety Officer, Site Engineer, CQC Manager, and each onsite Superintendent. Review prior meeting minutes and be prepared to address prior action items; results of assignments; current agenda items; and other current safety, schedule, scope, and other issues related to the Work.
- 3. Each of Contractor's major subcontractor's onsite Superintendents as appropriate to the agenda.
- D. <u>Agenda</u>: Adjust the agenda as appropriate for the corresponding stage of Work, including the following subjects.
 - Health and safety observations, learnings, findings, and safety discussions relevant to the Work.
 - 2. Review and approval of minutes of the previous construction progress meeting.
 - 3. Review of safety performance and Work progress since the previous construction progress meeting.
 - 4. Field observations, problems, conflicts and, if agreed and resolved, resolution; or if not agreed and resolved, options for resolving problems.
 - 5. Review, discussion, and edits to Project Schedule maintained by the Contractor.
 - 6. Two-week schedule look-ahead to evaluate any technical issues, delivery problems, or preliminary/critical tasks that may be a problem requiring action to resolve.
 - 7. Review of CQC and CQA results.
 - 8. Resolved, pending, and anticipated Requests for Information and Change Orders.
 - 9. Review of proposed tasks and changes for:
 - a. Effect on the agreed Project Schedule and the agreed task dependencies.
 - b. Effect on other Contract terms and conditions.
 - 10. Other business.
 - 11. Action item review and assignment of new action items.

1.08 DAILY TAILGATE SAFETY MEETINGS

- A. <u>General Requirements</u>: Comply with requirement for a daily tailgate safety meeting described in the HASP accepted by the Engineer.
- B. Notice: Notify each Site worker of the location and start time of each daily tailgate safety meeting.
- C. Mandatory Participation: Require participation of each person engaged in the Work at the Site.
 - 1. No worker will be allowed to work at the Site unless that worker has attended and acknowledged, by signature on the attendance list, participation and understanding of all topics discussed at the daily pre-construction safety meeting.
 - 2. Any worker arriving late will meet with their supervisor, Site Safety Officer, and Engineer FSO to review the topics discussed during that day's tailgate safety meeting and to review each job safety analysis to be implemented that day by that worker.
- D. <u>Agenda</u>: Address each of the following Site-specific safety issues to be implemented that day, JHAs, plus any other safety issues relevant to the Work implemented that day.
 - 1. Tasks to be performed that day, general schedule of those tasks, and assigned personnel if applicable.
 - 2. Safety and health hazards.
 - 3. Review of anomalies entered into MySafety4All.
 - 4. Engineering or administrative controls to be implemented.
 - 5. Personal protective equipment requirements.
 - 6. Health and safety issues from the previous day.
 - 7. Incidents or near misses observed the previous day.
 - 8. Other safety issues suggested by any of the participants.
 - 9. JHAs to be developed, reviewed, or modified in smaller task-specific work groups.

E. <u>Documentation</u>: Prepare and maintain a summary of issues addressed and an attendance list for each meeting, including the name, signature, and company employing each worker attending the meeting. Provide a copy of each summary and attendance list to the Site Safety Officer. Attach a copy of the summary and attendance list to the daily report.

1.09 PHOTOGRAPHIC DOCUMENTATION

- A. <u>General Requirements</u>: Document work by photographs on a daily basis, including the following elements:
 - 1. Equipment and materials onsite.
 - 2. Tasks in progress (including documentation of safe work practices and materials).
 - 3. General Site conditions.
 - 4. Examples of safe or unsafe behaviors or conditions.
 - 5. Notable discoveries, conditions, or events, which shall be documented using MySafety4All.
- B. <u>Frequency and Number</u>: Take, organize, and maintain photographs that document and are representative of each activity and condition at the Site on each day that Work is accomplished, or each day that Work cannot be accomplished, regardless of cause.
- C. <u>Information</u>: Provide information with each photograph with subject and data to correlate each photograph with the subject log, daily reports, and other records.
- D. <u>Date and Time:</u> Use a camera and apply settings such that a date and time stamp appears on the digital photograph.
- E. Photo File Format: Save photographs in JPEG format.
- F. <u>Location</u>: Measure and record in the photograph file record the latitude and longitude of the camera when the photograph is taken using an on-camera Global Positioning System receiver with a nominal accuracy of 1 meter and an azimuth accuracy within 5 degrees.
- G. Focus: Produce photographs with the intended subject in clear focus.
- H. <u>Image File Size</u>: Configure the camera to produce photographs with image of at least 5.0 megapixels file size, no greater than 10.0 megabytes as needed to produce a clearly distinguishable image, and to facilitate management and communication of multiple photographs via the internet.
- File Security: Maintain, organize, and save photographs in at least two entirely separate pieces of hardware.
- J. Submittal: Submit photographs to the Engineer with the daily report prepared for that date.

1.10 REQUEST FOR INFORMATION PROCEDURES

- A. <u>RFI Form</u>: As soon as a question on the Drawings and/or Technical Specifications arises, the Contractor shall complete and sign a legible copy of the Request for Information Form, Form 01 32 00-01 (RFI Form), or other Contractor form as approved by the Owner, to obtain additional information related to the Work. For any subcontractor RFIs, the Contractor shall coordinate with the subcontractor to complete submittal of an RFI Form on the subcontractor's behalf.
- B. <u>Submittal</u>: Submit a signed and printed or .pdf-format copy of the signed RFI Form to the Engineer.

- C. <u>Review</u>: The Engineer will review each completed RFI Form that the Engineer finds complete and relevant to the Work and respond to Contractor within 3 business days of receipt of the completed RFI Form.
- D. Referral: The Engineer may refer the RFI to the Owner if considered necessary by the Engineer.
- E. <u>Response</u>: After adequate review, the Engineer will respond to and file the response to each completed RFI Form. All RFIs must be addressed before the related Work can proceed.

1.11 CHANGE ORDER PROPOSAL

- A. <u>Contractor-Initiated Change Order Proposal</u>: When the Contractor determines there is a need for a Change Order, prepare and submit one copy of the completed Form 01 32 00-02, Change Order Proposal Form, or other Contractor form as approved by the Owner, to the Owner.
- B. <u>Engineer's Request for a Change Order Proposal</u>: Within 3 business days of receipt of a request from the Engineer for a Change Order Proposal, prepare and submit one signed copy of the completed Change Order Proposal Form, or other Contractor form as approved by the Owner, to the Owner.
- C. <u>Change Order Submittal Time Requirement</u>: Submit the completed Change Order Proposal to the Owner within 24 hours of identifying the need for a Change Order, or of the date of the Owner request for a completed Change Order Proposal Form.
- D. <u>Change Order Proposal Form</u>: Submit the Change Order Proposal in writing on a copy of the Change Order Proposal Form, or other Contractor form as approved by the Owner. Include information determined by the Owner to be sufficient to assess the need for a change in the Scope of Work, the Contract Time, the Contract Amount, or the Contract Conditions.
- E. <u>Owner Review</u>: The Owner will review and respond to each completed Change Order Proposal submitted within 3 business days of receipt of the completed Change Order Proposal Form.
 - 1. <u>Accepted</u>: If the Owner accepts the Change Order Proposal as submitted, the Owner will initiate preparation of the proposed Change Order.
 - 2. Request for Additional Information: If the Owner requests additional information for the Change Order Proposal submitted, the Engineer will reply with description of the additional information requested. The Contractor must submit the requested information within 3 business days of the Owner's request for additional information.
 - 3. Request for Modification: If the Owner requests modification of the Change Order Proposal submitted, the Engineer will reply with description of the required modifications. This will require submittal of a replacement Change Order Proposal as described above within 3 business days of the Owner's request to modify the Change Order Proposal.
 - 4. <u>Rejected</u>: If the Owner rejects the Change Order Proposal submitted, the Engineer will notify the Contractor and take no further action on the Change Order Proposal.

1.12 CHANGE ORDER AGREEMENT

A. <u>Preparation</u>: When a Change Order Proposal is acceptable to the Owner, a Change Order will be prepared on a copy of Form 01 32 00-03, the Change Order Form, by the Engineer and executed between the Owner and the Contractor.

- B. <u>Approval</u>: The Owner will review each Change Order. If the Change Order is acceptable to the Owner, the Owner will sign the Change Order. Each Change Order signed by the Owner and the Contractor will be effective.
- C. <u>Conflict with the Contract Documents</u>: In the event of a conflict between a provision of a Change Order and corresponding provisions of the Contract Documents, the Drawings, the Technical Specifications, and Change Orders previously agreed to by the Owner and the Contractor, the provision of the most recent Change Order will prevail.

1.13 UNAPPROVED WORK

- A. <u>Unapproved Work Is Not Authorized</u>: Work described in a Change Order Proposal or on a Change Order Form is not authorized until the Change Order Form is accepted and signed by both the Contractor and the Owner.
- B. <u>Proposed Change Order Work Done Prior to Signature of the Change Order</u>: Work initiated by the Contractor prior to approval and signature of the Change Order Form by both the Contractor and the Owner is entirely at the Contractor's risk.
- C. <u>No Payment for Change Work Initiated Prior to Owner Authorization</u>: The Owner reserves the right to not pay for Work initiated by the Contractor in advance of approval and signature of the corresponding Change Order Form by both the Contractor and the Owner.
- D. Removal of Work Initiated Prior to Owner Authorization: If Work is initiated in the scope of a proposed Change Order prior to approval and signature by both the Contractor and the Owner, and the Owner does not approve the proposed Change Order, the Contractor will remove the Work constructed and restore the Work and/or the Site affected by the unauthorized Work at no additional Contract cost.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 32 00 CONSTRUCTION PROJECT DOCUMENTATION

FORM 01 32 00-1 REQUEST FOR INFORMATION FORM

Arkema Site Portland, Oregon

				RFI Number:	
Task Name:				Date Sent:	
INFORMATION FOR	R PERSON/EI	NTITY REQUEST	ING INFORMAT	ION	
Contact Name:				Date Required:	
Company Name:					
Contact Email:				Forwarded To:	
Request for: Inform	nation			Date Responded:	
TYPE OF REQUEST	Γ (Check One	e)			
Check one:	Clarify	Conflict	Suggest _	Other	
CONTRACT DOCUMENTS AFFECTED BY THIS RFI					
Document Reference	ce:				
Specification/Plan	Sheet No.:			Detail:	
COST EFFECT:	YES _	No		Estimate:	
INFORMATION REG	QUESTED A	dditional Sheets At	achedYI	ES Number of Pages	
PROPOSED SOLUT	ΓΙΟΝ (if appli	cable):			
PROPOSED SOLUT	ΓΙΟΝ (if applic	cable):			
PROPOSED SOLUT	ΓΙΟΝ (if applic	cable):			
PROPOSED SOLUT	ΓΙΟΝ (if applic	cable): Signatur	e:	Date:	

SECTION 01 32 00 CONSTRUCTION PROJECT DOCUMENTATION

FORM 01 32 00-2 CHANGE ORDER PROPOSAL FORM

Arkema Site					
Portland, Oregon					
CHANGE ORDER PROPOSAL NUMBER:	DATE://				
To Whom It May Concern:					
Certain changes to the Work have been found necessary that are not covered by the Contract for the above referenced Project. Therefore, we submit the following proposal for changes as the basis of compensation for such changes to the Work:					
SCOPE OF WORK ADDITIONS AND/OR DELETIONS:					
CONTRACTOR'S JUSTIFICATION FOR THE CHANGE ORDER:					
CONTRACT TIME INCREASE/DECREASE: The Contract completion time will be (increased/decreased)	calendar days.				
CONTRACT AMOUNT INCREASE/DECREASE: The Total Contract Amount of the Work included in this Change (\$	Order is (increased/decreased) by:				
By:					
Title: Contractor:					

SECTION 01 32 00 CONSTRUCTION PROJECT DOCUMENTATION

FORM 01 32 00-3 CHANGE ORDER FORM

Arkema Site Portland, Oregon

CHANGE ORDER NUMBER: □□□	DATE://
The following changes are hereby made a part of the	e Contract:
Justification: The Contract completion time will be (increased/decreased/decreased/contract completion time will be calendar days	
AMOUNT OF PREVIOUSLY APPROVED (AMOUNT OF THIS	NTRACT AMOUNT CHANGE ORDERS S CHANGE ORDER NTRACT AMOUNT \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$
Т	By: itle:ate:
	By: Project Manager Environmental Resources Management, Inc. Engineer
APPROVED BY OWNER:	By: Project Manager Legacy Site Services Owner

SECTION 01 32 19

PROJECT MEETINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Pre-Construction Conference
- B. Progress Meetings
- C. Progress Schedule
- D. Health and Safety Meetings

1.02 PRE-CONSTRUCTION CONFERENCE

- A. Before issuance of the Notice to Proceed, a Pre-Construction Conference will be held to discuss items of significance, including:
 - 1. Project schedule
 - 2. Work sequence
 - 3. Project coordination
 - 4. Responsible personnel
 - 5. Construction quality control and quality assurance
 - 6. Procedures for handling shop drawings, schedules, "as-built" drawings, and other submissions
 - 7. Processing Applications for Payment
 - 8. Procedures for field decisions and Site Work Order Requests
 - 9. Preparation of pre-construction survey
 - 10. Preparation of record documents
 - 11. Applicable safety, health, environmental, security, fire protection, and operating requirements of the facility
 - 12. Use of premises
 - 13. Office, work, and storage areas
 - 14. Temporary utilities
 - 15. Equipment and product deliveries
 - 16. Housekeeping
 - 17. Working hours
- B. Among those present at the Pre-Construction Conference shall be an executive representative for the Contractor, the Contractor's Superintendent/Foreman, major Subcontractors, as well as the Owner and Engineer.
- C. The Owner will arrange for and organize the Pre-Construction Conference.

1.03 PROGRESS MEETINGS

A. During the course of the Contract, progress meetings will be organized and conducted by the Engineer to discuss the progress of the Contract at a frequency of once per week, or more frequently at the discretion of the Engineer. The Contractor, its Superintendent, dedicated Site Safety Officer (SSO), and the Construction Quality Control (CQC) Officer shall attend these meetings. The Contractor shall be fully responsible for any and all of the Subcontractors and shall be responsible for Subcontractor attendance and/or input into the meetings. The Engineer will take the minutes of the weekly progress meetings, and a copy will be furnished to the Contractor and Owner. The frequency of these meetings may, at the Engineer's discretion, be increased if

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REQUEST FOR INFORMATION FORM

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progress is not satisfactory or if coordination problems should arise.

- B. The Construction Schedule, as submitted under Section 01 12 16 Work Sequence, shall be updated for each progress meeting. The updated schedule shall be furnished to the Engineer listing all parts of Work and providing the planned start and completion date for each part of Work. The schedule completion date shall conform to the contract completion date.
- C. A special meeting shall be held when and if a problem or deficiency is present or likely to occur. The attendees at this meeting shall be specific to the incident. The purpose of the meeting shall be to define and resolve the problem or Work deficiency.

1.04 PROGRESS SCHEDULE

A. The Contractor's Superintendent shall submit to the Operator/Owner on a weekly basis a schedule of anticipated Work for the following two weeks. This schedule shall be submitted by 9 A.M. on each Monday and shall be updated as necessary if the Contractor's anticipated Work is altered.

1.05 HEALTH AND SAFETY MEETINGS

- A. A safety tailgate meeting shall be held daily prior to commencement of any Work for that day. At the meeting, Site controls and activities scheduled for the day shall be discussed.
- B. The Contractor shall participate in the Owner's *MySafety4All* Process as described in Specification 01 35 29 Health and Safety Requirements. At a minimum, this will include participation in three or more safety meetings with Owner and Engineer throughout the project life cycle.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 33 00

SUBMITTALS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. General requirements.
- B. Pre-mobilization submittals.
- C. Work progress submittals.
- D. Request for Information submittals.
- E. Change Order submittals.
- F. Project closeout submittals.
- G. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 REFERENCES

A. OAR 437-002-0156

1.03 GENERAL REQUIREMENTS

- A. <u>General Requirements</u>: develop and submit pre-mobilization submittals shortly after the Notice to Proceed is issued, including all those required to facilitate a quick and efficient mobilization. Include at a minimum the submittals listed in the next section below and required in other Technical Specifications Sections. Obtain Engineer favorable review of the pre-mobilization submittals prior to initiating mobilization for the Work at the Site.
 - 1. <u>Revisions</u>: Revise any submittal for which a change is proposed, or ordered by the Engineer, for consistency with the Drawings and Technical Specifications during the Project.
 - a. Obtain Engineer favorable review of each revision to any submittal necessary to keep the submittal current throughout the Project.
 - b. If the Engineer does not favorably review a proposed revision, implement the Work in the original or, if previously revised and favorably reviewed by the Engineer, the most recent revision of the submittal, or as otherwise ordered by the Engineer consistent with the Drawings and Technical Specifications.
 - 2. <u>Availability Onsite</u>: Maintain at the Site a complete current, dated, and approved copy of each submittal as a printed document and as a .pdf-format electronic file.
 - 3. <u>Engineer Use of Submittal Data</u>: The Engineer reserves the right to include information in submittals prepared for the Work in information submitted to Department of Environmental Quality and other agencies having jurisdiction.
 - 4. <u>Compliance with Requirements:</u> Regardless of identification of a non-compliant subcontractor, supplier, or product in the Bid or subsequent submittal, comply with the requirements specified on the Drawings and in the Technical Specifications.
 - 5. Rejection of Proposed Subcontractor, Supplier, or Product: The Owner reserves the right to reject any subcontractor, supplier, or product proposed for the Work; to limit the scope of the Work assigned to any subcontractor or supplier; and to require that a substitute

- subcontractor, supplier, or product acceptable to the Engineer provide the scope that is not allowed by Owner, as a condition of acceptance of the Work.
- 6. <u>Substitute Subcontractor, Supplier, or Product Review</u>: If the Owner rejects a proposed subcontractor, supplier, or product, obtain Owner favorable review of the substitute subcontractor, supplier, or product prior to initiating the associated parts of the Work.
- B. <u>Consistency with the Bid</u>: Submit technical data that is consistent with the information submitted with the Bid unless otherwise accepted by the Owner in the Contract or by Change Order signed by the Owner.
- C. <u>Compliance with the Drawings and Technical Specifications</u>: Prepare and submit the submittals in accordance with requirements shown on the Drawings, as specified in the Technical Specifications, and as otherwise ordered by Engineer.
- D. <u>Scope</u>: Limit the scope of each submittal to only one borrow source, plan, process, product, or report. Submit schedules in a separate schedule submittal series identified by date issued.
- E. <u>Format</u>: Submit data in a single pdf-format file, plus each text part in .docx-format file(s), each spreadsheet in .xlsx-format file(s), and each schedule part in .mpp-format file(s) unless otherwise approved in advance or ordered by Engineer or Owner. Pre-Work Inspection documents may include video files.
- F. <u>Submittal Form</u>: Provide the following information for each submittal.
 - 1. <u>Submittal Transmittal Information</u>: Provide the following submittal identification information on the submittal transmittal.

Submittal No.: [submittal sequence number and revision number, if applicable]

Project: IRAM 1 Implementation

Location: Arkema Site

Portland, Oregon

For: Legacy Site Services Contractor: [name of Contractor]

By: [name of Contractor Project Manager]

Date Prepared: [date the submittal was prepared (the revision date, if applicable)]

 Submittal Contractor Acceptance: Include a copy of the following statement accompanied by signature of the Contractor employee (the Contractor's authorized representative) who is authorized to submit information to the Engineer and Owner on behalf of the Contractor for this Contract on the submittal transmittal.

The work described in Submittal No. [submittal sequence number and revision number, if applicable] has been reviewed and accepted as complete and accurate by the Contractor. The work described in this submittal complies with the corresponding requirements for that work specified on the Drawings, in the Technical Specifications, and in Change Orders approved by the Owner.

By: [Contractor's legal name]

[signature of the Contractor's authorized representative]

Name: [printed name of the Contractor's authorized representative]

Title: [title of the Contractor's authorized representative]

Date: [date the submittal transmittal is signed]

3. <u>Submittal Page Information</u>: Include the following information on each page of the submittal:

Submittal No.: [submittal sequence number and revision number, if applicable]

Project: IRAM 1 Implementation
By: [Contractor name]

Date: [submittal date (revision date, if applicable)]

Page [No.] of [total number of pages in the submittal]

- G. <u>Coordination with Work in this Contract</u>: Coordinate preparation and processing of submittals with the related Work to allow at least 10 working days after Engineer or Owner's receipt for Engineer or Owner review and approval in advance of shipping materials and products to the Site.
- H. Submittal Actions: Take action in response to Engineer or Owner's review of submittals.
 - 1. No Exceptions Taken: Implement the work as described in the submittal.
 - 2. <u>Make Corrections Noted</u>: Implement the work as described in the submittal with changes in accordance with Owner review comments.
 - 3. Revise and Resubmit: The submittal is not acceptable as submitted. Revise and resubmit the submittal to address Engineer or Owner's review comments. Resubmit within 5 working days or less unless otherwise approved by Owner.
 - 4. Not Reviewed: The submittal contains no information requiring review.
- I. <u>Favorable Review</u>: Favorable review approval ("No Exceptions Taken" or "Make Corrections Noted") of the equipment, materials, personnel, products, process, subcontractors, and other features described in any submittal is for general consistency with the Contract, and does not waive Contractor responsibility for safe work, compliance with all Contract documents including the Drawings and the Technical Specifications, and achievement of each of the CQA Acceptance Criteria.
- J. <u>Submittal Log</u>: Maintain a log of submittals with the submittal number, a brief description of the subject, the date submitted, action on the submittal, and the date of the action. Number submittals sequentially. Add a sequential letter suffix to the submittal number to indicate sequential revisions of the submittal.
- K. <u>Subcontractor Submittals</u>: The Contractor shall coordinate with their subcontractors to prepare a Submittal Form (as described above) and complete submittal of any subcontractor submittals to the Engineer or Owner on the subcontractor's behalf; the Contractor shall number subcontractor submittals sequentially along with Contractor's own submittals. The Contractor shall review any subcontractor submittals for conformance with the Drawings and Technical Specifications prior to submittal to the Owner.

1.04 PRE-MOBILIZATION SUBMITTALS

- A. <u>Health and Safety</u>: Submit a Site-specific HASP and technical data describing the health and safety program for the Work in accordance with Section 01 35 29. Include a job hazard analysis (JHA) to address each work task. Obtain and submit a JHA from each of the Contractor's subcontractors, including each lower-tier subcontractor, for the parts of the Work in which they are engaged at the Site.
- B. <u>ISS Work Plan:</u> Submit a detailed ISS Work Plan shortly after the Notice to Proceed is issued, including all components listed below and required in other Technical Specifications sections.
 - 1. <u>Project Organization Chart:</u> Submit a graphic Project Organization Chart.
 - a. <u>Project Staff</u>: Show each key Project staff position, the person's name, and the name of the employer of each key Project employee, subcontractor, and supplier, plus the CQC Officer. Include the following, or equivalent, Project staff, plus each of those person's relief:
 - i. <u>Project Officer</u>: The Contractor employee who is authorized by the Contractor to sign, and make changes to, the Contract for the Work.
 - ii. <u>Project Manager</u>: The Contractor employee who will manage all Work performed by Contractor and subcontractors needed to accomplish the Work. Unless otherwise agreed by the Engineer, the Project Manager will serve as the lead contact for communication with the Engineer, and communications with additional stakeholders as determined by the Owner.

- iii. <u>Superintendent</u>: The Contractor employee who will serve as the Superintendent, and who will be onsite continuously throughout the Work except during scheduled relief or when relieved due to illness. Unless otherwise agreed by the Owner, the Superintendent will be responsible for oversight of planning and onsite management of equipment, labor, materials, subcontractors, and all other resources needed for construction of the Work.
- iv. <u>Construction Foreman</u>: The Contractor employee who will serve as the field lead of the onsite crews and who will be onsite continuously throughout the Work. Unless otherwise agreed by the Owner, the Construction Foreman will be responsible for day-to-day planning and onsite management of equipment, labor, materials, subcontractors, and all other resources needed for construction of the Work.
- v. <u>Site Safety Officer</u>: The Contractor employee who will serve as the SSO and who will be onsite continuously throughout the Work. Unless otherwise agreed by the Owner, the SSO will be responsible for planning, monitoring, and reporting safe performance for the Work consistent with requirements of the Contractor's HASP accepted by the Owner.
- vi. <u>Field Engineer</u>: The Contractor employee(s) who will be responsible for planning, controlling, implementing, and documenting construction staking and confirming areas, flow rates, grades, lines, thicknesses, volumes, and related measurements in accordance with the requirements shown on the Drawings and specified in the Technical Specifications, the CQA Plan, and submittals approved by the Owner.
- vii. CQC Manager: The Contractor employee who will serve as the CQC Manager and who will be onsite continuously throughout the Work. Unless otherwise agreed by the Owner, the CQC Manager will be responsible for planning, calibration of CQC instruments, and monitoring and documentation of CQC inspection and testing of the Work consistent with requirements of the Contractor's CQC Plan approved by the Owner.
- viii. <u>Subcontractor Project Staff:</u> Each subcontractor Project Manager, Construction Superintendent, and other key subcontractor employees, including each lower-tier subcontractor, including for each subcontract:
 - CQC surveyor.
 - CQC analytical laboratory.
 - CQC construction materials testing laboratory.
 - ISS VOC Vapor Control Unit equipment supplier (if used during construction).
 - ISS VOC Vapor Control equipment supplier (if used during construction).
 - ISS Reagent Slurry Unit equipment manufacturer.
 - Imported soil fill borrow source.
 - ISS reagent suppliers.
- b. <u>Lines of Authority and Communication</u>: Show each line of authority, and if different or supplemental, each line of communication.
- c. <u>Update</u>: Update the Project Organization Chart throughout the Project.
- 2. <u>ISS Reagent Slurry</u>: Submit technical data describing the ISS reagent slurry for the Work in accordance with Section 02 52 20.
- 3. <u>ISS Deep Soil Mixing</u>: Submit technical data describing the ISS DSM for the Work in accordance with Section 02 55 10.
- 4. <u>ISS Work Platform</u>: Submit technical data describing preparation of the ISS Work Platform for the Work in accordance with Section 02 61 10.
- 5. <u>ERS Installation</u>: Submit technical data describing the approach, sequencing, layout, dimensions, auger sizes, depths, pre-clearance, excavation, DSM for ERS installation, CQC, geotechnical instrumentation plan, and mitigation measures necessary to complete ERS installation work and associated work adjacent to the ERS per the Engineered ERS Design.
- C. <u>Subcontractor Information:</u> Submit the name, address, contact information, experience, key personnel, and scope of the Work that will be provided by each corresponding subcontractor. Submit information for each consultant, laboratory (including American Association for Laboratory

Accreditation certificates applicable to the scope), specialty construction subcontractor, transport, and other subcontractor and supplier.

- D. <u>Project Personnel</u>: Describe Project personnel proposed to construct the Work.
 - 1. Key Employee and Subcontractor Employee Qualifications and Experience: Attach a professional profile with the name, the person's employer, the qualifications, and the experience of each key employee and subcontractor employee who is proposed to serve in the key positions proposed in the Project Organization Chart and each other key employee and subcontractor employee, including:
 - a. Education and degree(s).
 - b. Professional license(s).
 - c. Health and safety training and certificate(s).
 - d. Specialty training and certificate(s).
 - e. Key project experience, including scope, client name and contact, and completion date.
 - 2. Personnel List: Reference and list in an attachment:
 - a. The name of each employee and each subcontractor employee who will work on the Site.
 - b. The name of the person's employer.
 - c. Health and safety training and certificate(s) (as applicable).
 - d. Equipment Operator certificate(s) (as applicable).
 - e. The classification or title of the employee.
- E. <u>Construction Equipment Data</u>: List and attach technical data describing construction equipment used to construct the Work.
 - 1. <u>List</u>: List the purpose, capacity, weight, and static load induced contact pressure for each proposed type of construction equipment, and which of those pieces of equipment are proposed to be owned, leased, or provided by subcontractor.
 - 2. <u>Attachments</u>: Reference and attach complete manufacturer's technical data for each type of construction equipment proposed to construct the Work, clearly indicating:
 - a. The part(s) of the Work for which that equipment will be used.
 - b. Manufacturer name.
 - c. Model.
 - d. Attached tools.
 - e. Capacity.
 - f. Loaded weight.
 - g. Each contact surface area.
 - h. Each equipment option proposed, and each equipment option not proposed.
- F. Work Hours and Days: Describe the planned work hours and days.
 - Work Hours: State the planned work start and stop times proposed each day during the Work and each variation in those hours proposed throughout the Work. Include acknowledgement that the Work will include no night work (i.e., no work prior to 6:00 AM or after 6:00 PM local time) unless otherwise approved in advance or ordered in writing by the Owner. The Contractor shall provide adequate lighting for work performed prior to local sunrise or after local sunset.
 - 2. <u>Work Days</u>: State the work days proposed during each week. State each planned variation in the work days proposed during each week throughout the Work. Identify the dates of each holiday and seasonal work suspension planned.
- G. <u>Borrow Source Information</u>: List and attach borrow source information for each borrow material, such as gravel aggregate, proposed to complete the Work.
 - 1. List: List the purpose, source company name, and material description.
 - 2. Attachments: Reference and attach complete technical data stating the purpose of the borrow material, the source company name, the material description, and technical data showing compliance with the material requirements specified.
 - 3. <u>Samples</u>: Submit a representative sample of each material in a labeled, durable, resealable container for acceptance comparison with material delivered to the Site by the CQC Manager

and CQA Officer. Provide a sufficient amount of material as needed for Engineer to perform all necessary soil and analytical testing.

- H. <u>Spill Prevention, Control, and Response (SPCR)</u>: List each potentially impacted material, potentially impacted residual, and imported material and product that may be spilled. Describe SPCR equipment, products, procedures, and residuals management in accordance with the Spill Prevention and Response Plan.
 - Spill Prevention, Control, and Countermeasures (SPCC) Plan: Reference and attach an SPCC Plan in accordance with 40 Code of Federal Regulations (CFR) 112 for the Work in this Contract if the quantity of oil stored on the Site exceeds the SPCC Plan requirement criteria.
 - 2. <u>SPCR Plan</u>: If an SPCC Plan is not required in accordance with 40 CFR 112 due to the quantity of oil stored at the Site being less than the threshold requiring an SPCC Plan, submit an equivalent and appropriately simplified SPCR Plan for the Work.
- Permits: Describe each permit needed for the work, including:
 - 1. <u>Permits Obtained by the Engineer</u>: The Contractor shall assist Engineer when needed to obtain the following permits:
 - a. Grading Permits from the City of Portland.
 - b. Construction Stormwater General Permit from ODEQ.
 - Permits Obtained by the Contractor: Obtain all other permits required for the Work. Submit a plan for obtaining each of those permits, including:
 - a. The agency(s) issuing the permit.
 - b. How the permit will be obtained.
 - c. The amount of time estimated necessary to prepare, submit, and obtain the permit.
 - d. The draft permit application.
- J. <u>Access</u>: Describe the location, width, travel direction(s), equipment, and load limits; and section of each ingress, onsite, and egress access route proposed for each key component of the Work, including for delivery of equipment and supplies from offsite sources in accordance with the CMMP.
- K. Stockpile Management: Describe stockpile management for the Work.
 - 1. Describe for each stockpile:
 - a. Location(s).
 - b. Site preparation.
 - c. Material contained.
 - d. Access.
 - e. Dust controls:
 - i. Erosion and sedimentation controls.
 - ii. Material placement and removal.
 - iii. Methods to separate stockpiled materials.
 - iv. Closure of the stockpile.
 - 2. Submit a scale drawing(s) of each stockpile upon completion of the Work.
- L. <u>Decontamination</u>: Submit technical data describing decontamination for the Work in accordance with Section 01 35 43.
- M. <u>Construction Quality Control</u>: Submit CQC program, data, and reports for the Work in accordance with Section 01 45 00.
- N. <u>Temporary Facilities and Controls:</u> Describe each temporary facility and control proposed for the Work in accordance with Section 01 50 00, including for Site office, support, storage facilities, and

stormwater run-on and runoff controls. Include a site layout plan drawn to scale for all equipment, batch plant and components, field office complex, generators, portable restrooms, stockpile areas, storage areas, QC areas, traffic control, security measures, and other site setup features and controls. Include a description of:

- 1. Type and product(s).
- 2. Sizes.
- Locations.
- 4. Maintenance.
- 5. Residuals management.
- 6. Monitoring.
- 7. Operation.
- 8. Power requirements.
- 9. Staging.
- 10. Decommissioning and decontamination.
- 11. Removal.
- O. <u>Selective Demolition</u>: Submit technical data describing selective demolition for the Work in accordance with Section 02 41 00.
- 22 Material Management: Submit technical data describing non-ACM management for the Work in accordance with Section 02 81 00.
- Q. <u>ISS Work Grading</u>: Submit technical data describing ISS Work grading in accordance with Section 31 22 10. Grading plans must reference the Dust Control mitigation measures.
- R. <u>ISS Cap</u>: Submit technical data describing the ISS Soil Cover in accordance with Section 31 23 25.
- S. <u>Weather Contingency Measures</u>: Describe measures proposed to address weather contingency measures, including:
 - 1. Rain.
 - 2. Fog.
 - 3. Wildfires (and smoke-related impact).
 - 4. Lightning.
 - 5. High wind.
 - 6. High heat.
 - 7. Snow.
 - 8. Ice or freezing rain.
- T. <u>Project Schedule</u>: Submit a Gantt chart schedule as a Microsoft "Project Standard 16" .mpp-format file or equal acceptable to the Engineer describing the sequence and duration of each key task of the Work, including, but not limited to, the following activities and milestones in accordance with Section 01 32 00:
 - 1. Engineer issue of Notice to Proceed (make this milestone Day/Week/Month Zero [0] of the Project Schedule).
 - 2. Preparation and submittal of pre-mobilization submittals.
 - 3. Engineer review and approval of pre-mobilization submittals (note: while the Engineer makes no representation that it can do so, assume and show a 28-calendar-day duration for this task).
 - 4. Construction of temporary facilities and controls.
 - 5. Mobilization and startup of the ISS Reagent Slurry Unit(s).
 - 6. Installation of ERS.

- 7. Selective demolition.
- 8. Potentially impacted soil excavation of the ISS Work Platform (show each stage).
- 9. ISS DSM (show each zone of mix cells per the Contractor's proposed approach).
- 10. ISS soil mixture grading (show each stage).
- 11. ISS Soil Backfill Layer (show each stage).
- 12. ISS Soil Cap Layer (show each stage).
- 13. ISS Work Area grading (show each stage).
- 14. Decontamination and decommissioning of ISS Reagent Slurry Unit.
- 15. Decontamination and decommissioning of ISS DSM Units.
- 16. Removal of other temporary facilities and controls.
- 17. Final inspection of the Work.
- 18. Owneracceptance of the Work.
- 19. Delivery of Contract closeout submittals.
- U. Add other schedule steps material to the schedule tasks listed above necessary to describe each key task for design and construction of the Work proposed by the Contractor.

Pre-Mobilization Inspections: Contractor shall conduct a thorough inspection of the Site and applicable portions of the Property with an emphasis on Work Areas prior to mobilization to thoroughly document all existing site conditions. Contractor shall use a combination of both video and photograph evidence to document these conditions. The videos and photos shall be submitted to Owner as a pre-mobilization submittal with a written description of the findings (and areas of concern or to avoid) and favorably reviewed by the Engineer prior to Contractor site mobilization activities or any site disturbance. All Site entrances, access routes, ground conditions, any existing improvements, and superstructures shall be included in the inspection and documentation. An emphasis shall be placed on the current conditions of the onsite utilities and docks and any other items or conditions that may either be impacted by the Work or may potentially be blamed on or attributed to the Work. Existing pavement, gravel access roads, asphalt, staging areas, site fencing, storage of materials near the Work zone, and any potential access routes and wheel wash areas shall also be a focus of the inspection. Contractor shall perform a secondary inspection of the Site during the first week of mobilization to confirm that conditions have not changed since the pre-mobilization inspection. Submit a second submittal with photographs (and video if needed) and written description of the secondary inspection to Engineer for review.

1.05 WORK PROGRESS SUBMITTALS

- A. General Requirements: Submit progress submittals during the Work in this Contract.
- B. Work Schedule: Submit the initial and updated Work schedule in accordance with Section 01 32 00 and with each monthly progress billing.
- C. <u>As-Built Submittals</u>: submit to Owner upon completion of each stage of work, or as requested by Engineer, including for ERS installation, platform excavation, stockpile segregation and management, swell grading, backfill, site grading, and restoration. Submit as-built information for each ISS mix cell completed on a daily basis to Engineer.
- D. <u>Monthly Contractor and Contractor's Subcontractor(s) Labor Hours Summary</u>: Submit a summary of the monthly labor hours total for both the Contractor's and any Contractor's subcontractor personnel. The hours shall only include onsite labor hours (including work conducted in the field office trailer) and does not need to differentiate between labor categories.

1.06 REQUEST FOR INFORMATION SUBMITTALS

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A. <u>General Requirements</u>: Submit each Request for Information in accordance with Section 01 26 10.

1.07 CHANGE ORDER SUBMITTALS

A. <u>General Requirements</u>: Submit each Change Order submittal immediately upon identifying a corresponding change to the Project in accordance with Section 01 26 60.

1.08 CONTRACT CLOSEOUT SUBMITTALS

- A. <u>General Requirements</u>: Submit Project closeout submittals on completion of the Work in this Contract in accordance with Section 01 77 00.
- B. <u>Notice of Completion</u>: Submit written notice of completion as a report that documents execution of the Project in accordance with the planning documents previously approved by the Owner for the Work in this Contract.
- C. <u>As-Built Drawings</u>: Keep current, and submit upon completion of the Work, a legible annotated copy of the Drawings with accurate and complete as-built dimensions, lines, grades, and materials constructed for the Work. The As-Built Drawings shall be provided in both .pdf and .dwg-format files or equivalent acceptable to the Owner.
- D. <u>Liens and Taxes:</u> Submit documentation demonstrating that all Contractor liens, subcontractor liens, or other encumbrances have been satisfied and removed, and that relevant fees and taxes for the Work have been paid.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

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SECTION 01 35 29

HEALTH AND SAFETY REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Health and safety requirements for the Work.
- B. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 WORK BY THE OWNER'S REPRESENTATIVE

- A. The Owner will furnish personal protective equipment (PPE) and monitoring for Owner employees.
- В. .

1.03 GENERAL REQUIREMENTS

- A. <u>Contractor's Responsibility</u>: The Contractor shall hold paramount the health and safety of all personnel onsite.
- B. <u>Applicability</u>: Health and safety requirements in this section apply to each Contractor personnel and each of the Contractor's subcontractor, vendor, delivery, and any other personnel who enter the Site on behalf of the Contractor for any reason or duration. Obtain compliance with these provisions throughout the Work. Inform each person entering the Site for any reason or duration of these requirements.
- C. OSHA Compliance: Comply with Occupational Safety and Health Administration (OSHA) requirements in 29 Code of Federal Regulations (CFR) 1910, General Industry Standards; and 29 CFR 1926, Construction Industry Standards.
- D. <u>HASP</u>: Implement the Site-specific HASP favorably reviewed by the Engineer and Owner, standards in the HASP prepared by the Engineer, and consistent with each safe work practice that the Engineer requires during the Work.
- E. <u>Owner Safety Requirements</u>: Comply with all health and safety procedures, requirements, and work practices required by the Owner, including all standards listed in this RFP.
- F. <u>HAZWOPER Training</u>: Each worker engaged in the Work at the Site, unless otherwise noted, must possess a certificate stating successful completion of the Hazardous Waste Operations and Emergency Response (HAZWOPER) 40-hour training and current annual refresher in accordance with 29 CFR 1910.120.
- G. <u>General Occupational Safety and Health Rules</u>: Comply with each applicable section of the OAR chapter 437 division 2, General Occupational Safety and Health Rules, and federal and state OSHA regulations.
- H. <u>Contractor Prequalification</u>: Maintain green-flag status with Owner requirements in ISNetWorld throughout the Work.
- Contractor Site Safety Officer: Designate a full-time, dedicated Site Safety Officer (SSO) for the Work.

- 1. The SSO shall have formal training in Occupational Health and Safety and shall have met the OSHA training requirements specified in 29 CFR 1910.120.
- 2. The SSO shall have the authority to act on behalf of the Contractor in all health and safety measures and to establish new controls as needed.
- 3. The SSO shall be onsite throughout the Work.
- 4. The SSO shall conduct daily safety tailgate meetings with all Site personnel.
- 5. The SSO shall have no other job responsibilities outside of Health and Safety.
- J. Regional or Corporate Safety Officer: Provide participation of the Regional or Corporate Safety Officer in the Project safety planning meeting, the risk register meeting, each monthly safety check-in call, and investigation of, and response to, each significant near miss and incident.
- K. Other Health and Safety Resources: Provide other health and safety personnel, including as necessary, equipment, instruments, services, and supplies necessary to implement and document implementation of the HASP for the Work that is favorably reviewed by the Engineer and Owner.
- L. <u>PPE</u>: Provide, use, maintain, and dispose of PPE for each Site task or potential hazard. Comply with the PPE program in 29 CFR 1910.120, 29 CFR Subpart I, and 29 CFR 1926.
- M. <u>Transportation Safety</u>: Perform offsite and onsite transportation activities in accordance with 49 CFR 214; and the Contaminated Materials Management Plan (CMMP).
- N. <u>Daily Tailgate Safety Meeting</u>: All Site workers, including those of the Contractor, Contractor's subcontractors, Engineer, and Owner's subcontractors, shall participate in a daily tailgate safety meeting prior to commencement of Work each work day. Contractor and all Contractor personnel are expected to participate in and contribute to the meetings. The input and opinions of all onsite workers are valued and shall be considered when making safety decisions. The Owner will employ various methods to help solicit participation and feedback from all levels of Contractor and Engineer personnel (not just management). As this is the only time the entire onsite crew has together onsite each day, this time will be prioritized over other Site operations and open and meaningful dialog is expected. Work tasks shall also be described, as well as any overlap with different crews and safety considerations for adjacent operations.
- O. <u>Observational Feedback Program</u>: All Site workers are expected to participate in an Observational Feedback Program as described in Part 3 below.

1.04 REFERENCED STANDARDS

- A. Federal OSHA Regulations:
 - 1. 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response.
 - 2. 49 CFR 214, Roadway Workplace Safety.
 - 3. 29 CFR 1910.1200, Hazard Communication.
 - 4. 29 CFR 1926, Construction Industry Standards.
- B. Oregon Regulations:
 - 1. OAR chapter 437 division 2, General Occupational Safety and Health Rules.

1.05 SUBMITTALS

- A. Submittal Schedule:
 - Provide submittals described in this section to the Engineer within 20 business days prior to mobilization.
 - 2. Submit updates necessary due to the addition of new personnel at least 2 days prior to arrival of new personnel.

- 3. Submit updates necessary due to the removal of specifically qualified personnel, and proposed replacement, at least 1 week prior to departure of personnel.
- 4. Submit updates necessary due to additional work activities (i.e., job hazard analyses [JHAs]) not covered by existing documentation at least 5 days prior to proposed commencement of additional work activities.
- B. <u>HASP</u>: 20 business days prior to mobilization, submit the HASP for the Work. Agree to be bound by and follow the conditions in the HASP favorably reviewed by the Owner throughout the Work. HASP must comply with the regulations listed herein, and all Engineer safety and subsurface clearance standards.
- C. ISS Process Hazard Analysis: Submit a process hazard analysis of the ISS Work, including for:
 - 1. ISS Reagent Slurry work specified in Section 02 52 20.
 - 2. ISS DSM work specified in Section 02 55 10.
 - 3. ISS Work Platform work specified in Section 02 61 10.

4.

- 5. ISS Work Grading work specified in Section 31 22 10.
- 6. ISS Cap work specified in Section 31 23 25.
- 7. ISS Health and Safety work specified in this section.
- 8. Related work necessary to accomplish the ISS process work.
- D. <u>JHAs</u>: Submit Job Hazard Analyses (JHAs) that address each Work task. The Contractor shall also facilitate submittal of subcontractor JHAs to address each Work task performed by their subcontractor(s).
- E. Personnel Records and Roles: Submit Contractor and subcontractor personnel records and roles:
 - 1. Initial 40-hour OSHA HAZWOPER training and current 8-hour annual refresher training certification for all workers.
 - 2. Eight-hour OSHA hazardous waste supervisory training certification (required for the Construction Superintendent and the SSO).
 - 3. Certification of enrollment in a medical monitoring/surveillance program, with clearance within the previous 12 months from a licensed physician allowing each worker to participate in field activities and use respiratory protective equipment as applicable to their specific roles.
 - a. Do not submit detailed medical information for employees.
 - 4. Current respiratory fit testing certification for both half-face and full-face respirators (as applicable).
 - 5. Equipment operator training certificates for each operator.
 - 6. Current cardiopulmonary resuscitation (CPR) and first aid certification for at least two workers assigned to the Work on the Site.
 - 7. Confined Space Entry training certification for workers entering confined spaces.
 - 8. National Fire Protection Association 70E training; trainings required to satisfy OSHA's Qualified Electrical Worker; and Lockout-Tagout training for workers operating, maintaining, and/or isolating/energizing any electrical equipment associated with the Work (i.e., electrical disconnects associated with batch plant and temporary groundwater treatment system operations).
 - 9. List of workers assigned the role of a "competent person" as defined in 29 CFR 1926.31. Include documentation of sufficient and relevant training and experience to perform the assigned duties and responsibilities of that role.
 - 10. Name of the SSO, each alternate, and other key personnel responsible for health and safety including the Regional or Corporate Health and Safety Officer. Obtain Engineers approval of the SSO prior to mobilization for the Work.
- F. PPE: Submit a list of PPE to be used for each of the Site tasks and operations being conducted.

- G. <u>Lock Out Tag Out:</u> All utilities must be LOTO prior to the work on those utilities, including utilities specified to be removed. Further information is provided in Section 02 41 10 Utility Isolation, Removal, and Relocation.
- H. Respiratory Protection Plan (RPP): Submit a detailed Site-specific RPP as part of the HASP submittal covering all operations onsite and comply with Contractor's RPP for the ISS Work.
 - Submittal: Prepare Site-specific RPP per OSHA Standard 29 CFR 1910.134 (Respiratory Protection). Obtain Owner favorable review of the Contractor's Site-specific RPP prior to mobilization for the Work. Include worker and area sampling/monitoring program, action levels for each Site constituent of concern (COC) as well as total VOCs, actions to be implemented when the applicable limits are reached, and level of respiratory protection to be used for various concentrations of Site COCs and total VOCs.
 - 2. <u>Implementation</u>: Implement the Contractor's RPP throughout the Work.
- I. <u>High Heat Illness Prevention Plan:</u> provide a Site-specific High Heat Illness Prevention Plan that includes details of heat illness prevention and mitigation measures, worker monitoring, work/rest cycles, climate conditions and associated actions, precautions, heat illness symptoms, heat illness response actions, and any checklist or other means of assuring employees are safe and abiding by the plan. Contractor's procedures and training must comply with OAR 437-002-0156. Contractor's own heat illness procedures may be incorporated as part of the plan, but Sitespecific procedures, conditions, activities, PPE, monitoring, and measures must be developed and included.
- J. <u>Cold Injury Prevention Plan</u>: provide a Site-specific Cold Injury Prevention Plan that includes details of cold injury prevention and mitigation measures, worker monitoring, climate conditions and associated actions, precautions, cold injury symptoms, cold injury response actions, and any checklists or other means of assuring employees are safe and abiding by the plan. Contractor's own cold injury prevention procedures may be incorporated as part of the plan, but Site-specific procedures, conditions, activities, PPE, monitoring, and measures must be developed and included.

1.06 NOTIFICATIONS

- A. <u>Incident Notification</u>: Verbally notify the Owner immediately and when safe to do so upon obtaining knowledge of the occurrence of any health and safety incident (including equipment or property damage) or release to the environment.
- B. <u>Near-Miss and Incident Investigation</u>: Immediately report incident in Owner managed "MySafety4All" and fully investigate each health and safety incident or near-miss (including equipment and property damage), conduct a root-cause analysis, and submit to the Owner a written corrective action plan for each incident within 24 hours of the time the incident occurred.
- C. <u>Observation Reporting</u>: Report in owner managed "MySafety4All" program and during weekly progress meetings any non-incident health and safety event, such as an act, condition, or observation that could impact the health, safety, or environmental performance of the Work or a company health, safety, or environmental compliance record.
- D. <u>Monthly Summary</u>: Prepare and submit a summary spreadsheet by the fourth business day of each month, listing the total work hours (both office and field), and all safety observations for the prior month as directed by Owner.
- E. <u>Hazardous Materials Onsite</u>: Notify the Owner in writing at least 5 business days prior to bringing any hazardous material or equipment containing or affected by hazardous material to the Site.
 - 1. Include each material and equipment description, each estimated total material quantity, each container type(s), and storage location onsite.

2. Submit to the Engineer and Owner the current safety data sheet (SDS) for each chemical brought onto the Site.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Provide all equipment, temporary facilities, and personnel required to perform activities on the Site safely in accordance with all laws, regulations, standards, and the HASP accepted by the Engineer and Owner.

2.02 PERSONAL PROTECTIVE EQUIPMENT

- A. <u>General Requirements</u>: Provide health and safety equipment, first aid equipment, tools, monitoring equipment, PPE, and ancillary equipment and methods in accordance with requirements in the HASP accepted by the Owner.
- B. <u>Work Glove Requirement</u>: Work gloves specific to the task being performed are required at all times while performing work outside the field office, vehicle, or piece of equipment.
- C. Level D PPE: Level D PPE includes each of the following:
 - 1. Work clothes, including long pants and shirts with long sleeves.
 - 2. Safety-toed boots that comply with American National Standards Institute (ANSI) Z41-1991
 - 3. Type 2 hardhat (safety helmet with chinstraps) that complies with ANSI Z89.1-1986.
 - 4. Safety glasses that comply with ANSI Z87.1-1989.
 - 5. Work gloves based upon the tasks to be performed and the performance and construction characteristics of the glove material.
 - 6. High-visibility reflective safety vests that comply with ANSI 107-2010.
 - 7. Hearing protection, when needed to prevent exposure exceeding 85 decibels, that complies with OSHA Standard 29 CFR 1910.95.
- D. Level C PPE: Level C PPE consists of Level D PPE with the following modifications:
 - 1. Air purifying respirator, half-face or full-face (depending on required protection factor), with High Efficiency Particulate Air and/or Organic Vapor cartridges that comply with the corresponding National Institute for Occupational Safety and Health (NIOSH)/Mine Safety and Health Administration standards, 42 CFR 84.
 - 2. Disposable poly-coated chemical-protective coveralls based upon the tasks to be performed and the performance and construction characteristics of the coverall material.
 - 3. Disposable "Nitrile" chemical-resistant outer gloves that cover appropriately selected work gloves.
 - 4. Polyvinyl chloride (PVC), "Neoprene", or "Nitrile" chemical-resistant safety-toed, steel-shanked boots that comply with ANSI 29 CFR 1910.136, or equivalent leather boots with PVC, "Neoprene," or "Nitrile" outer boot liners.

2.03 2.03 OTHER HEALTH AND SAFETY EQUIPMENT

- A. Provide and maintain the following equipment onsite:
 - 1. <u>Field Safety Stations</u>: Maintain next to each work zone and in storage and stockpile locations. Stations shall be easily visible, readily stocked and available, and easily accessible to each work zone. Stock safety stations as applicable for the types of hazards posed by the work performed nearby, but at a minimum include fire extinguisher, first aid kit, emergency eye wash bottles, and air horn. Inspect safety stations weekly and restock as needed to keep each one fully supplied in case of need.
 - 2. Fire suppression equipment (appropriate to location and type of flammable materials present). Equipment shall be certified ready for use within the previous 12 months and shall

- be inspected each month; documentation supporting certification and inspections shall be available for review.
- 3. Emergency eyewash and shower facilities that comply with ANSI Z358.1-2014. Maintain close to reagent storage, batch plant operations, and any other chemical or powder storage areas that pose a risk of exposure to eyes or skin.
- 4. Personnel decontamination facilities and equipment that comply with 29 CFR 1910.120.
- 5. Flammable liquids storage cabinet(s) that complies with 29 CFR 1926.152.
- 6. Fall protection equipment, if necessary, that complies with ANSI Z359 and Owner's Health and Safety Rules.
- 7. Other equipment or supplies as determined to be necessary or prudent by Contractor or the Engineer, including confined space entry equipment, voltmeter (to verify electrical deenergization), and/or ventilation fans if necessary, that comply with 29 CFR 1910.146.
- B. <u>Traffic Control Equipment, Labor, Services and Signage</u>: Provide and maintain traffic control equipment, labor, services, and signage.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Furnish and maintain materials and equipment for the health and safety of each Contractor employee, subcontractor employee, supplier, and visitor authorized by the Owner.
- B. Provide all required health and safety equipment, first aid equipment, tools, monitoring equipment, PPE, and ancillary equipment and methods required to ensure worker health and safety and to comply with the HASP.
- C. Provide all equipment, temporary facilities, and personnel required to perform activities on the Site safely in accordance with all laws, regulations, standards, and the HASP.

3.02 STOP WORK AUTHORITY

- A. Responsibility: Each person working on the Site is responsible for site safety.
- B. <u>Authority</u>: Owner authorizes every person onsite to use Stop Work Authority when an unsafe condition or behavior is observed that may result in a safety incident or compliance violation or when Management of Change (MOC) is required. Contractor and Engineer shall comply with Stop Work Authority for applicable operations regardless of who exercises the authority.

3.03 WORK PLANNING AND MEETINGS

- A. <u>Project Risk Register Conference Call</u>: Participate in a mandatory <u>Project Risk Register (Risk Register)</u> conference call.
 - Schedule: Participate in the Risk Register call at a time and date acceptable to the Owner within 1 week of Owner award of the Contract.
 - 2. <u>Agenda</u>: Discuss, make decisions, and assign action items related to significant environmental, safety, and cost risks of the Work.
 - Required Participants: The Risk Register call must include each of the following personnel:
 - a. <u>Owner's Representative Participants</u>: The Engineer Project Manager, the Engineer Construction Manager, the Engineer FSO, and other Engineer staff invited by the Engineer Project Manager.
 - b. <u>Contractor Participants</u>: The Contractor's Project Manager, the Contractor's Construction Manager, the Contractor's SSO, each of the Contractor's Field Superintendents or field

leads, and other Contractor and key Contractor subcontractor staff invited by the Contractor or the Engineer.

- B. <u>Program Safety Plan Conference Call</u>: Participate in mandatory Program Safety Plan conference calls.
 - 1. <u>Schedule</u>: Participate in the Program Safety Plan call at least 1 week prior to mobilization for fieldwork.
 - 2. <u>Agenda</u>: Discuss, make decisions, and assign action items related to high hazard tasks and mitigation measures to be implemented for the Work.
 - 3. Required Participants: The Program Safety Plan call(s) must include the following personnel:
 - a. <u>Engineer's Participants</u>: The Engineer Project Manager, the Engineer Construction Manager, the Engineer FSO, and other Engineer staff invited by the Engineer Project Manager.
 - b. <u>Contractor Participants</u>: The Contractor's Project Manager, the Contractor's Construction Manager, the Contractor's SSO, each of the Contractor's Field Superintendents, and other Contractor and key Contractor subcontractor staff invited by the Contractor or the Engineer.
- C. <u>Site Orientation Training</u>: Each Site personnel must attend and complete (including sign-in sheet) the Owner's Site orientation training before that person participates in any work on the Site.
 - 1. <u>General Requirements</u>: Site orientation training session provided by the Engineer FSO is mandatory for each Contractor and Contractor subcontractor personnel who will be onsite for any duration or responsibility (with the exception of truck and delivery drivers).
- D. <u>JHA Review</u>: Each person engaged in the Work must review each JHA that applies to a defined task or hazard that person will be engaged in before starting to perform that task on the Site or being potentially subjected to that hazard on the Site.
- E. <u>JHA Review Acknowledgement</u>: Each person who will perform work in the scope of the corresponding JHA must sign acknowledgement of their review and understanding of the JHA prior to initiating the Work.
- F. <u>Daily Safety Tailgate Meeting</u>: Conduct a Daily Safety Tailgate Meeting prior to beginning work each day. Daily Safety Meetings consist of:
 - 1. The Engineer will lead each meeting with input from Contractor and Owner personnel.
 - 2. Each Owner, Engineer, Contractor, and Contractor subcontractor employee working on the Site on that day must attend the meeting.
 - 3. Review planned Work tasks and task-specific hazards, JHAs, and mitigation plans.
 - 4. Report safety observations made by the Contractor and Engineer personnel.
 - 5. Address health and safety issues and changing Site conditions, activities, and personnel.
 - 6. Document each meeting with each attendee's signature acknowledging their participation in the meeting.
 - 7. Contractor and Contractor subcontractor personnel who are not in attendance for the Daily Safety Meeting must be briefed on the meeting notes prior to commencing their work activities. Each such employee must sign an acknowledgement of the briefing prior to initiating work that day.
- G. Management of Change (MOC) Safety Meetings: Attend a topic-specific MOC safety meeting prior to the start of each major task and whenever Site conditions affecting personnel safety change. MOC safety meetings consist of:
 - 1. The Engineer will lead each MOC meeting with input from the Contractor and Owner personnel.
 - 2. Each Contractor, and applicable Contractor subcontractor employee must attend the meeting.
 - 3. Discuss new or changed hazards, and methods of hazard elimination, engineering controls, institutional controls, and PPE as applicable.

4. Confirm that JHA(s) applying to the applicable task and hazards have been reviewed and signed by all applicable personnel.

3.04 ENGINEERING CONTROLS

- A. Provide, at a minimum, the following engineering controls to reduce the hazards of equipment operation and exposure to impacted materials:
 - 1. Roll-over cages for bulldozers, backhoes, loaders, and tractors.
 - 2. Backup alarms for all trucks and moving equipment.
 - 3. Wetting of unimpacted soil and other media or other means to control dust during the Work.
 - 4. Methods of vapor control during activities where exposures may occur.
 - 5. Decontamination of personnel and equipment in accordance with Section 01 35 43.
 - 6. Barricades for open trenches and excavations, and other exclusion or high-hazard zones.
 - 7. Barricades or other effective protective devices for active aboveground facilities including, but not limited to: electrical lines, cabinets, poles, and conduit; groundwater extraction systems, conduit, and wells; and hose or conduit carrying dry or wet reagent or construction water.
 - 8. Redundant controls (e.g., appropriate hose restraints or redundant connections) on any pressurized hose or conduit.
 - 9. Sloping, benching, shoring, drainage systems, or other controls as necessary to ensure stability of excavations and embankments.
 - 10. Other measures as determined to be necessary or prudent by the Contractor or as approved in advance or ordered in writing by the Owner and the Engineer.
- B. Post ground-level warning signs at 50-linear-foot intervals below each overhead utility onsite.

3.05 MONITORING

- A. Perform heat or cold exposure monitoring activities as required by weather conditions.
- B. Perform all air monitoring activities described in the HASP and Site-specific RPP that are required to ensure protection to onsite personnel.

3.06 PERSONAL PROTECTIVE EQUIPMENT

- A. <u>General Requirements</u>: Furnish and maintain materials and equipment for the health and safety of workers, subcontractors, suppliers, and visitor personnel.
- B. <u>PPE Supplies</u>: Provide all required health and safety equipment, first aid equipment, tools, monitoring equipment, PPE, and ancillary equipment and methods required to ensure worker health and safety and to comply with the HASP.
- C. <u>Level D PPE</u>: Require Level D use at all times by employees, subcontractors, and visitors on the Site, except in the Support Zone, and if/when the HASP requires Level C PPE.
- D. <u>Level C PPE</u>: If the HASP favorably reviewed by the Owner requires Level C PPE, require Level C PPE use at all times by employees and subcontractors in the Exclusion Zone when conditions dictate.

3.07 EVALUATION OF PERFORMANCE

- A. <u>Internal Safety Inspections</u>: Conduct internal safety inspections on Contractor and Contractor's subcontractor's (including lower-tier Contractor subcontractors) employees engaged in the Work in accordance with the HASP.
 - 1. <u>Routine Inspections</u>: Conduct routine inspections monthly or more frequently. Focus routine inspections on compliance with OSHA and local occupational safety regulations.

- 2. <u>Owner's Representative Check</u>: Provide the Engineer access for periodic check of the Contractor's internal safety inspection documentation.
- B. <u>Safety Behavior Observation and Immediate Feedback</u>: Conduct and document routine behavioral observations throughout the Work. Provide and document immediate feedback during each Work activity observed.
 - Owner employs an observational feedback program called MySafety4All. This consists of workers making observations via a web-based feedback form. Entries are reviewed by the Owner. Instructions for submitting observations will be provided during Site orientation training. This program shall supplement, not replace, any observational feedback program the Contractor already has in place.

END OF SECTION

SECTION 01 35 43

DECONTAMINATION PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Equipment, material, and worker decontamination requirements and procedures.
- B. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 RELATED WORK

Section 01 35 29	Health and Safety Requirements
Section 01 43 00	Construction Quality Assurance
Section 01 45 00	Construction Quality Control
Section 02 41 00	Selective Demolition
Section 02 52 20	ISS Reagent Slurry
Section 02 55 10	ISS Deep Soil Mixing
Section 02 61 10	ISS Work Platform
Section 02 81 00	Non-ACM Material Management
Section 02 82 10	ACM Material Management
Section 31 22 10	ISS Work Grading
Section 31 23 25	ISS Soil Cap

1.03 SUBMITTALS

- A. Pre-Mobilization Submittal: Within 10 business days of the Notice of Intent, submit a Decontamination Plan to the Owner that describes each proposed decontamination procedure. Describe in detail the following:
 - 1. Each source of contamination expected on the Site.
 - 2. The dimensioned boundary and location of each Exclusion Zone (EZ).
 - 3. The dimensioned boundary and location of each Contamination Reduction Zone (CRZ).
 - 4. The dimensioned boundary and location of each Support Zone.
 - 5. Each piece of equipment, instrument, sample, tool, vehicle, and worker decontamination procedure; including equipment, methods, materials, pads/zones/stations, personnel assignments/ responsibilities, residuals management, schedule/frequency, supplies, tools, and water source(s).
 - 6. Each vehicle decontamination procedure in coordination with the CMMP.
 - 7. Worker decontamination programmatic guidelines/requirements that will reduce the potential for improper decontamination activities, including storage and labeling of Level C equipment (e.g., respirators) in accordance with Occupational Safety and Health Administration (OSHA) requirements. Include requirements for decontamination procedures based on personnel movements, such as zone entry/departure, task start/stop, and stopping for breaks/ eating/drinking.
 - 8. Decontamination general construction waste management.

PART 2 - PRODUCTS

2.01 DECONTAMINATION MATERIALS AND SUPPLIES

A. <u>General Requirements</u>: Decontamination materials/supplies shall be biodegradable and, if released, not cause soil, surface water, groundwater, and/or air emission violations in accordance with local, state, and federal laws and regulations.

- B. <u>Approval</u>: Decontamination materials/supplies shall be OSHA-approved for the intended use as a decontamination material/supply.
- Safe for Human Use: Contractor shall provide and use material and products not harmful to onsite workers.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

- A. <u>Scope</u>: Furnish all labor, equipment, material, coordination, and supervision to decontaminate equipment, vehicles, containment areas, and personnel prior to leaving areas of contamination.
- B. <u>Contingent Action</u>: Immediately mitigate any issue, where applicable; any failure in cleaning or decontamination of equipment or vehicles including, but not limited to, trackout or spillage of material outside Work areas; ; and any costs associated with the contamination or damage to equipment (e.g., rental equipment).
- C. <u>Unit Responsibility</u>: Decontaminate personnel. Set up and maintain EZs, CRZs/stations, and support/break zones.
- D. <u>Waste Management</u>: Properly manage, contain, profile, label, and manage in accordance with the CMMP of any waste generated by decontamination activities. Additional waste management information is provided in Section 02 81 00 Non-ACM Material Management.

3.02 PREPARATION

- A. <u>Prevent Trackout</u>: Establish CRZs or decontamination stations at all necessary locations to prevent the migration or trackout of contamination from zones of greater contamination or different physical state (e.g., excavations or stockpiles versus vegetated or gravel surfaces) by workers, equipment, vehicles, or any material.
- B. <u>Locations</u>: To prevent tracking, design CRZs or decontamination stations so that they function for decontamination of personnel and/or equipment/vehicles based on the expected ingress/egress between the zones from which the CRZ is placed. The use of each CRZ or decontamination station will be defined in the Site Specific HASP ..
- C. <u>Site Entrances and Exits</u>: Establish decontamination pad(s), station(s), or vehicle wash station(s) at the exit of the Site and Property or at the entrance to a designated clean zone, such that no vehicle tracks out contamination or any visible debris outside the Site or Property onto public property or any area not established as part of the Site.
- D. <u>Communication</u>: Establish communication, monitoring, and culture among Site personnel and visitors to increase the potential that planned decontamination procedures are followed.

3.03 PERSONNEL DECONTAMINATION REQUIREMENTS

- A. <u>General Requirements</u>: Provide all labor, equipment, and materials necessary to operate the personnel decontamination pad/area(s).
- B. <u>Scope</u>: Decontaminate each worker and tool used in the EZ in compliance with the Site-specific HASP accepted by the Engineer.

- C. <u>Rule Compliance</u>: Meet all OSHA requirements with respect to providing a safe work environment for all workers, including proper personnel and tool decontamination while working on a site containing known hazardous chemicals.
- D. <u>Procedures</u>: Implement personnel decontamination procedures that include, but are not limited to:
 - 1. <u>Dry Methods</u>: Decontamination by dry methods, if effective.
 - 2. <u>Wet Methods</u>: A complete rinse with a low-pressure water stream adequate to remove adhering soil or residue.
 - 3. <u>Contain Liquid</u>: Containerizing all water rinsate and overspray from personnel and tools within the CRZ/decontamination station area.
 - 4. <u>Contain Spent Personal Protective Equipment (PPE)</u>: Collection and proper disposal of spent PPE.

3.04 EQUIPMENT AND VEHICLE DECONTAMINATION REQUIREMENTS

- A. <u>General Requirements</u>: Provide all labor, equipment, and materials necessary to operate the equipment/truck decontamination area(s).
- B. <u>Prior to Exit</u>: Decontaminate each piece of equipment and all vehicles that otherwise enter the Work area prior to exiting the Site.
 - 1. Waste Transport Trucks: Decontaminate each truck used.
 - 2. <u>Prevent Trackout</u>: The purpose of the equipment/truck decontamination pad/area is to prevent trackout of soil and debris onto offsite public roadways.
 - 3. <u>Public Perception of the Project</u>: Maintain a positive image of the Site, as required by Owner, including preventing trackout of soil and debris from vehicles exiting the Site onto public streets.
 - 4. <u>Fines</u>: Pay the full cost of response and the value of any fines imposed by any agency, including public safety organizations having jurisdiction, due to equipment or vehicle trackout soil or debris onto public streets, at no additional Contract cost.
- C. <u>Procedures</u>: Equipment and truck decontamination procedures may include:
 - 1. <u>Dry Methods</u>: Decontamination by dry methods, if effective.
 - 2. <u>Wet Methods</u>: A complete rinse with a high-pressure water stream adequate to remove adhering soil or residue.
 - 3. <u>Contain Liquid</u>: Contain all water rinsate and overspray from decontamination within the decontamination area, inclusive of a collection sump and pumping to appropriate storage or treatment as per the CMMP.
- D. <u>Station Maintenance</u>: Routinely, as needed, clean the equipment/truck decontamination pad/area of water (if needed), loose soil, debris, and collected sediment.
- E. <u>Liquid Residuals Management</u>: Manage or treat and dispose of all rinsate or otherwise produced or impacted water associated with decontamination in accordance with the CMMP.
- F. <u>Solid Residuals Management</u>: Manage and dispose of all solid waste associated with decontamination.
 - Site Origin Waste Management: Solids that clearly originated onsite may be entered into the treatment or disposal streams (e.g., ISS treatment area, temporary groundwater treatment system) of contaminated material only with the clear, specific, and prior written approval of the Engineer.
 - Imported Waste Management: Handle, profile, store, transport, and dispose of offsite any solid waste that is the result of imported material not affected by impacted Site media or is otherwise not accepted by the Engineer to enter the treatment or disposal streams, using methods approved in advance by the Engineer and at no additional Contract cost.

- G. <u>Waste Classification</u>: Classify and manage separately each different class of waste stream for management either onsite or offsite in accordance with the CMMP.
 - 1. <u>Spent PPE Separation</u>: Contractor shall separate and dispose of spent PPE generated by personnel during the Work at an appropriate offsite disposal facility.
 - 2. <u>Exclude PPE from Other Waste</u>: Prevent spent PPE from being mixed with soil materials, regardless of whether managed on the Site or transported for offsite disposal, unless otherwise approved in advance in writing by the Owner.
 - Unimpacted Waste Management: Do not mix unimpacted construction waste, such as
 material wrappings, office wastes, extra materials, spent tires, and/or any other waste
 generated as either an indirect or direct result of the Work with materials from the Site.
 Contain, load, transport, and dispose of unimpacted construction waste offsite at no
 additional Contract cost.

END OF SECTION

SECTION 01 41 00

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Regulations applicable to construction of the Work.
- B. Regulations applicable to the completed Work.
- C. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 COMPLIANCE WITH REGULATORY REQUIREMENTS

- A. Comply with all laws, rules, and permit requirements throughout the Work.
- B. Contractor is responsible for making any payments or taking any corrective actions necessary for any non-compliance by Contractor. Any delays caused by Work stoppage due to non-compliance issues will not be cause for Change Order or trigger and Stand By charges, including schedule extension.

1.03 WORK BY THE OWNER

A. <u>Permit Procurement:</u> The Owner or Engineer will submit for initial permit applications and pay permit fees for the permits listed in Section 01 10 00. Contractor shall assist Engineer in obtaining the permits which require identification of the Contractor and use of the Contractor's contractor license. Contractor shall obtain and pay for all other permits required to complete the Work and not listed as to be obtained by Owner in Section 01 10 00.

1.04 RELATED SECTIONS

Section 01 10 00 Summary of the Work

Section 02 83 20 Construction and Contact Water Management

1.05 REFERENCED STANDARDS

A. <u>U.S. Environmental Protection Agency Regulations</u>

40 Code of Federal Regulations (CFR) 112 — Oil Pollution Prevention 40 CFR 370 — Hazardous Chemical Reporting: Community Right-To-Know

B. Federal Occupational Safety and Health (OSHA) Regulations

29 CFR 1910.120 — Hazardous Waste Operations and Emergency Response 29 CFR 1910.1200 — Hazard Communication

C. Oregon Regulations

OAR chapter 437 division 2, General Occupational Safety and Health Rules OAR chapter 437 division 3, Construction OAR chapter 340 division 248, Asbestos Requirements

1.06 PRECEDING REGULATORY REQUIREMENTS

A. In accordance with the Order on Consent LQVC-NWR-08-04 between ODEQ and Arkema, Inc., dated 2008, LSS has performed remedial investigations for the Arkema Site, which included preparation of a Remedial Investigation Report. The ODEQ has directed LSS to perform a series of Interim Removal Action Measures (IRAMs).

1.07 LEAD AGENCY DECISION DOCUMENT

- A. <u>ODEQ Documents</u>: ODEQ issued a letter on 19 January 2024 requesting LSS to implement a series of IRAMs.
 - 1. Complete Work in accordance with the approved Final Design Report.

1.08 OREGON CONSTRUCTION GENERAL PERMIT REQUIREMENTS

A. <u>SWPPP</u>: The Engineer has generated a SWPPP for the Work. Comply with the SWPPP obtained by the Engineer for the Work. A draft SWPPP will be provided to Contractor prior to finalizing the Contract.

1.09 ODEQ REGULATIONS

- A. <u>Asbestos Notification</u>: If friable asbestos-containing materials are encountered during demolition or earthwork activities, the Contractor shall make notification in accordance with ODEQ via Your DEQ Online.
 - 1. Fugitive Dust, OAR 340-208-0210: Requirements for Fugitive Emissions:
 - a. Water exposed soil with adequate frequency for continued moist soil.
 - b. Suspend excavation, grading, and/or demolition activity when wind speeds exceed 20 miles per hour.
 - c. Install wind breaks (e.g., solid fencing) on windward side(s) of construction areas.
 - d. Install wheel washers for all exiting trucks or wash off all trucks and equipment leaving the Site.

1.10 CONSTRUCTION AND CONTACT WATER DISCHARGE REQUIREMENTS

A. Refer to Section 02 83 20 for construction and contact water management requirements.

1.11 ONSITE HAZARDOUS MATERIALS REQUIREMENTS

- A. <u>Hazard Communication</u>: Manage chemical products brought onto the Property in accordance with applicable regulations including federal and Oregon OSHA. Include compliance with storage, labeling, signage, and maintaining of a Safety Data Sheet for each applicable product.
- B. Oil and Fuel Storage: Comply with requirements in 40 CFR 112 if the aggregate quantity of oil and fuel storage containers exceeds 1,320 U.S. gallons or any other related requirement.

1.12 MATERIALS TRANSPORTATION REQUIREMENTS

- A. <u>Federal and State Transportation Requirements</u>: Transport all materials to and from the Site in compliance with all applicable federal and state regulations, including but not limited to:
 - Federal Department of Transportation and ODOT regulations for hazardous materials and waste
 - 2. ODOT Commercial Vehicle Regulations.

1.13 CITY OF PORTLAND REQUIREMENTS

- A. <u>City Engineering or Building Department Requirements</u>: Comply with all City of Portland requirements applicable to completion of the Work including, but not limited to:
 - 1. Building, demolition, or grading permit applications, notifications, or permit requirements.

- 2. Allowable work hours and days of week for construction activities.
- 3. Noise emission limitations.
- Use of city streets for transportation or encroachment.
- B. City of Portland Permitting and Development Requirements: Comply with all City of Portland requirements applicable to completion of the work including but not limited to:
 - 1. Greenway Review exemptions

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 42 00

DEFINITIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Definitions of abbreviations and acronyms.
- B. Definitions of technical terms.

1.02 ABBREVIATIONS AND ACRONYMS

Abbreviations and acronyms have the following definitions unless otherwise noted.

AA Asbestos abatement

ACM Asbestos-containing material

AMS Air monitoring station

ANSI American National Standards Institute

ARAR Applicable or Relevant and Appropriate Requirement

ASTM ASTM International bcy Bank cubic yards bgs Below ground surface

BM Benchmark

BMP Best management practice

C/L Centerline

CESCL Certified Erosion and Sediment Control Lead

ccy Compacted cubic yards
CFR Code of Federal Regulations
cfs Cubic feet per second

clr. Clearance

CMMP Contaminated Material Management Plan

cm/s Centimeters per second

CMT Construction Materials Testing

COC Constituent of concern

CPR Cardiopulmonary resuscitation
CQA Construction quality assurance
CQC Construction quality control
CRZ Contamination Reduction Zone
CSO Construction Safety Orders

cy Cubic yards

DFOW Definable Feature of Work DGA Dense Graded Aggregate

dia. Diameter

DOT Department of Transportation

DSM Deep soil mixing DTM Digital terrain model

EDD Electronic Data Deliverable

El. Elevation

EOR Engineer of Record

ERM Environmental Resources Management, Inc.

ERS Earth retention system

EZ Exclusion Zone F.G. Finished grade

F/L Flowline

fps Feet per second FSO Field Safety Officer FS Feasibility Study

ft. Feet

GAC Granular activated carbon

GGBFS Ground granulated blast furnace slag (slag cement)

GISO General Industry Safety Order
H:V Horizontal to vertical (slope)
HASP Health and Safety Plan

HAZWOPER Hazardous Waste Operations and Emergency Response

HC Hydraulic conductivity
HEPA High-efficiency particulate air

I.D. Inside diameter

ICE Internal combustion engine

in. Inches

ISS In Situ Soil Stabilization/Solidification

JHA Job Hazard Analysis JSA Job Safety Analysis

If Linear feet

LOD Limit of disturbance
MOC Management of change
MSB Main switchboard

NAD 83 North American Datum, 1983

NAVD 88 North American Vertical Datum, 1988

NAM Native American Monitor

N.G. Natural ground

NELAP National Environmental Laboratory Accreditation Program

NFPA National Fire Protection Association

NOAA National Oceanic and Atmospheric Administration NPDES National Pollutant Discharge Elimination System

NPS Nominal pipe size

O&M Operation and maintenance

O.D. Outside diameter

OHE Overhead electric (power line)
OAR Oregon Administrative Rules

ODEQ Oregon Department of Environmental Quality

OSBEELS Oregon State Board of Examiners for Engineering and Land Surveying

OSHA Occupational Safety and Health Administration, U.S.

PC Portland cement
pcf pounds per cubic foot
PDI Predesign Investigation

PERP Portable Equipment Registration Program

PFD Process flow diagram

PG&E Pacific Gas and Electric Company

PID Photoionization detector
P.L.S. Professional Land Surveyor
PM₁₀ Respirable particulate matter

PNOR Particulates Not Otherwise Regulated

ppbv Parts per billion by volume
PPE Personal protective equipment
psf Pounds per square foot
psi Pounds per square inch
PSP Project Safety Plan
RAP Remedial Action Plan

RCRA Resource Conservation and Recovery Act

RFI Request for Information

RFP Request for Proposal RMSE Root mean square error

SCFM Standard cubic feet per minute

SDS Safety data sheet sf Square feet

SOP Standard Operating Procedure

SPCC Spill Prevention, Control, and Countermeasures

SPCR Spill Prevention, Control, and Response

SPCS State Plane Coordinate System
SPRP Spill Prevention and Response Plan

SSC Subsurface Clearance SSO Site Safety Officer

SWPP Stormwater pollution prevention
SWPPP Stormwater Pollution Prevention Plan

sy Square yards
SZ Support Zone
TAT Turnaround time
TBM Temporary benchmark

TOB Top of bank TOS Toe of slope

tsf Tons per square foot

UCS Unconfined compressive strength USCS Unified Soil Classification System

USEPA United States Environmental Protection Agency

VOC Volatile organic compound

vf Vertical feet

W:C Water-to-cement ratio
WTS Water Treatment System

1.03 TECHNICAL TERMS

- A. <u>Definitions</u>: Technical terms have the following definitions unless otherwise noted.
 - 1. Bid: Contractor's bid for the Work as incorporated in the Contract.
 - 2. Bid Item: Unit of work to be performed by Contractor.
 - 3. <u>Base Bid Item</u>: Unit of work upon which the Base Bid is predicated, exclusive of any Contingent Bid Items.
 - 4. Contingent Bid Item: Unit of work in addition to the Base Bid Item(s).
 - 5. <u>Contract</u>: The contract between the Engineer and the Contractor for the Work. The Contract includes the Work Authorization, the General Terms and Conditions, all applicable Special Terms and Conditions, the requirements and obligations of the MESA as they relate to the Work, and all documents referenced within or attached to the Work Authorization for construction of the Work. The words "Contract" and "Agreement" are synonymous.
 - Contractor: The company responsible for constructing the Work in accordance with the Contract.
 - 7. <u>Contract Documents</u>: The documents that define the Contract for the Work including the Drawings, the Technical Specifications, the Specification Attachments, the General Terms and Conditions, all applicable Special Terms and Conditions, and all documents referenced within or attached to the Contract.
 - 8. Work: The equipment, labor, materials, tools, services, and other work described on the Drawings and in the Technical Specifications subject to Contract requirements.
 - 9. <u>Competent Person:</u> A person by the way of training and/or experience who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

- 10. <u>Contractor HASP</u>: The Health and Safety Plan prepared by the Contractor in accordance with OSHA requirements in 29 CFR 1910.120 et seq., favorably reviewed by the Owner, and implemented by the Contractor to construct the Work.
- 11. <u>CQA Contractor</u>: The company authorized by LSS to provide CQA services for the Work. ERM will serve as the CQA Contractor under contract with LSS.
- 12. <u>CQA Officer</u>: The CQA Contractor employee responsible for managing implementation of the CQA Program at the Site. The CQA Officer will be an ERM employee designated by ERM and approved for that service by the Owner.
- 13. <u>CQA Plan</u>: Construction Quality Assurance Plan for IRAM #1 Implementation, ERM Project No. 0732436, 04 June 2025, which is the CQA Plan prepared by the CQA Contractor and approved by the Owner.
- 14. <u>CQA Program</u>: The CQA program administered by the Engineer and implemented in accordance with the CQA Plan.
- 15. <u>Drawings</u>: The final design drawings for the Work "Issued for Bidding" by the Engineer for implementation of the Work, including revisions to the Drawings issued as addenda and Change Orders agreed to by the Owner and the Contractor, Drawings for Phase 1 ISS Remedy for Former Acid Plant Area (ISS RFP), Arkema, Portland, Oregon, Job No. 0732436, Environmental Resources Management, Inc. Drawings shall be updated as needed for changes in design, permitting, and "Issued for Construction." References to Drawings within the RFP shall refer to the most updated set issued by Engineer during bidding and permitting (including addenda), and the "Issued for Construction" set during and after contracting.
- 16. <u>Engineer</u>: The engineering company retained under separate contract by the Owner to design the remediation Work and to provide bidding and construction phase engineering support and CQA services during construction of the Work. ERM will serve as the Engineer.
- 17. <u>EOR</u>: The professional engineer of record employed by the Engineer to provide engineering services for the Work.
- 18. FSO: The Engineer's onsite Field Safety Officer.
- 19. <u>ISS Mix Cell</u>: The zone of native soil mixed at a single location from the top elevation designated on the Drawings (at or below the surface of the ISS Work Platform) to the bottom elevation designated on the Drawings or to refusal, if refusal is encountered above the designated bottom and confirmed and approved by the CQA Officer as the refusal bottom for that mix cell.
- 20. <u>ISS Work Area</u>: The work area within the former Acid Plant Area authorized for use by the Property Owner to implement the ISS Work described in the Contract and authorized by the Engineer. The Engineer reserves the right to change the boundary of the ISS Work Area shown on the Drawings, which may result in a smaller work area to implement the Work.
- 21. <u>ISS Work Plan</u>: The primary pre-mobilization submittal that contains details, methods, sequencing, schedule, materials, equipment, diagrams, figures, product data, and other pertinent information on the Contractor's planned approach to complete the key elements of the Work. Multiple ISS and other technical specification sections contain requirements to be included in the ISS Work Plan, which shall be a more thorough and detailed plan than the Bid submittal but in general alignment with it.
- 22. <u>ISS Reagent</u>: The reagent(s) specified to accomplish ISS soil treatment, which include PC and GGBFS.
- 23. <u>ISS Soil Mixing</u>: Mixing and curing impacted soil designated on the Drawings or otherwise ordered by the Owner to be mixed with the specified ISS reagents at the Contractor-specified reagent-soil mix ratios to achieve each corresponding CQA Acceptance Criteria.
- 24. ISS Soil Mixture: The ISS reagent soil-mixture resulting from ISS soil mixing.
- ISS Cap: The ISS Cap will consist of compacted ISS soil mixture and swell, compacted ISS Work Platform Excavation reuse soil, and compacted imported DGA a minimum of 1 foot thick.
- 26. <u>Notice of Intent to Award</u>: Written notice to successful Bidder of intent for Owner to contract with Contractor for completion of Work.
- 27. <u>Notice to Proceed</u>: A Notice to Proceed is a notification letter from the Owner indicating that performance should begin under a construction contract.

- 28. Other Owner Contractor: Employees of a company under contract with Owner (LSS), but not under contract with Engineer (ERM).
- 29. Owner: Legacy Site Services (LSS). The Owner is the Responsible Party for conducting cleanup work of the Property under the 2008 Order on Consent No. LQVC-NWR-08-04 between the Oregon Department of Environmental Quality (ODEQ) and Arkema, Inc. LSS will contract for the Work and related services of the CQA Contractor, the Engineer, and related services needed to accomplish the Work.
- 30. <u>Property</u>: The former Arkema facility in Portland, Oregon. The former Acid Plant Area is located within the Property.
- 31. <u>Products</u>: Manufactured items, ISS reagents, soil, and other material to be incorporated in the Work approved in writing by the Owner for the Work.
- 32. Property Owner: Arkema, Inc.
- 33. Site: 6400 NW Front Avenue, Portland, Oregon 97210.
- 34. <u>SSO</u>: The Contractor employee who will serve as the Site Safety Officer and who will be onsite continuously throughout the Work with no other job responsibilities. Unless otherwise agreed by the Owner, the SSO will be responsible for planning, monitoring, and reporting safe performance for the Work consistent with requirements of the Contractor's Health and Safety Plan (HASP), accepted by the Owner. Also referred to as Field Safety Officer (FSO).
- 35. <u>Subcontractor</u>: Any company or person engaged in the Work under subcontract with the Contractor or any lower-tier subcontractor if approved in advance by the Owner to be engaged by the Contractor for an agreed part of the Work.
- 36. <u>Technical Specifications</u>: Documents describing the technical requirements of the Work required by the Contract.
- 37. Work: All controls, equipment, fuel labor, materials, power, services, and other work necessary to construct the Work specified on the Drawings, the Technical Specifications, and referenced documents as required by the Contract. The Work is part of the remediation of the Site. The words "Work" and "Project" are synonymous.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 43

CONSTRUCTION QUALITY ASSURANCE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. The CQA program for the Work.
- B. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 RELATED SECTIONS

Section 01 10 00	Summary of the Work
Section 01 32 00	Construction Project Documentation
Section 01 33 00	Submittals
Section 01 45 00	Construction Quality Control

1.03 REFERENCED STANDARDS

A. CQA Plan: Construction Quality Assurance Plan for the Arkema Site IRAM #1 Implementation

1.04 DEFINITIONS

- A. <u>CQA Acceptance Criteria:</u> The construction quality assurance (CQA) acceptance criteria for the Work described in the CQA Plan.
- B. <u>CQA Contractor:</u> The company retained by Owner to provide CQA inspection and testing services during construction of the Work. Environmental Resources Management, Inc. (ERM) will serve as the CQA Contractor. The responsibilities of the CQA Contractor are described in Section 01 43 00 and the CQA Plan.
- C. <u>CQC Contractor:</u> The Contractor and their respective CQC manager, CQC technicians, personnel, and subcontractors, vendors, and laboratories responsible for implementing the CQC components of the Contract as described in Section 01 45 00 and in the CQA Plan.

1.05 WORK BY THE OWNER

A. <u>CQA Plan Implementation</u>: The Owner will implement the CQA Plan for the Work under this Contract during the Work via contract with the CQA Contractor (ERM). CQA Contractor implementation of CQA inspection, field testing, and sampling of components of the Work that the Contractor believes to be complete is not a representation that the Engineer accepts the corresponding Definable Feature of Work (DFOW).

1.06 WORK BY THE CQA CONTRACTOR

- A. Authority: The CQA Contractor will implement the CQA Plan under contract with the Owner.
- B. <u>CQA Plan Implementation</u>: The CQA Contractor will observe and evaluate construction CQC implementation of the CQA Plan by the CQC Contractor for the Work as described in Section 01 45 00. The CQA Contractor will also implement supplemental CQA inspection and testing in accordance with the CQA Plan for the Work described in this section. CQA Contractor implementation of CQA inspection, field testing, and sampling of components of the Work that the

Contractor believes to be complete is not a representation that the CQA Contractor accepts the corresponding component of the Work as complete, nor acceptance of the corresponding components of the Work.

C. <u>Evaluation of Achievement of CQA Acceptance Criteria</u>: The CQA Officer will determine achievement of the Work with the corresponding CQC Acceptance Criteria stated in the CQC Plan. The CQA Officer will report the results of each CQA Acceptance Criteria evaluation to the Contractor.

1.07 CQA ACCEPTANCE CRITERIA

A. <u>General Requirements</u>: The CQA Contractor will evaluate the results of CQC inspection and testing performed by the CQC Contractor in accordance with Section 1 45 00, and of supplemental CQA inspection and testing performed in accordance with this section, as achieving, or not achieving, each of the corresponding CQA Acceptance Criteria listed in the CQA Plan.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

- 3.01 ASSISTANCE IMPLEMENTING CQA OBSERVATION AND REVIEW OF CQC INSPECTION AND TESTING
 - A. <u>General Requirements</u>: At times and places requested by the CQA Officer, assist the CQA Officer observation and review of CQC implementation of the CQA Plan described in Section 01 45 00.
 - B. <u>Assist CQA Observation of Source Sampling</u>: Assist the CQA Officer by providing access to observe CQC sampling of representative samples of proposed source materials (e.g., ISS reagents, ISS mixed soil, stockpiled soil, water sampling, clean import fill, etc.) from the material sources the Contractor proposes to use for the Work and related CQC sampling and test reports.
 - C. <u>Assist CQA Observation of CQC Inspection</u>: Assist the CQA Officer by providing safe and necessary access to the Work to observe CQC inspection of work in progress and related CQC inspection reports.
 - D. <u>Assist CQA Observation of CQC Field Testing</u>: Assist the CQA Officer by providing safe and necessary access to observe CQC performance of CQA field tests of components of the Work that the CQC Contractor believes to be complete and related CQC field test data and reports.
 - E. <u>Assist CQA Observation of CQC Sampling</u>: Assist the CQA Officer by providing safe and necessary access to observe CQC staff obtaining representative CQC samples of components of the Work that the CQC Contractor believes to be complete, preparation of the test specimens, and preservation of the prepared test specimens.
- 3.02 ASSISTANCE IMPLEMENTING SUPPLEMENTAL CQA INSPECTION AND TESTING
 - A. <u>General Requirements</u>: At times and places requested by the CQA Officer, assist the CQA Officer in performing supplemental CQA inspection and field testing, and obtaining and preparing supplemental CQA samples in accordance with methods described in the CQA Plan and favorably reviewed by the CQA Officer.
 - B. <u>Assist Supplemental CQA Source Sampling</u>: Assist the CQA Officer by providing a split of a representative CQC source sample or a separate representative CQA sample of proposed source

- materials from the material sources the Contractor proposes to use for the Work and related sampling tools, containers, sample preservation supplies, and sample chain-of-custody form.
- C. <u>Assist Supplemental CQA Inspection</u>: Assist the CQA Officer by providing safe and necessary access to the Work for supplemental CQA inspection of work in progress and, if requested by the CQA Officer, related inspection equipment and instruments.
- D. <u>Assist Supplemental CQA Field Testing</u>: Assist the CQA Officer by providing safe and necessary access to observe CQC performance of supplemental CQA field tests of components of the Work that the CQC Contractor believes to be complete and related CQC field test data and reports.
- E. <u>Assist Supplemental CQA Sampling</u>: Assist the CQA Officer by providing safe and necessary access to observe CQC staff obtaining representative supplemental CQA samples of components of the Work that the CQC Contractor believes to be complete at locations and times specified by the CQA Officer, preparing the test specimens, and preserving the prepared test specimens until they are shipped by the CQA Officer to the CQA laboratory.

END OF SECTION

SECTION 01 45 00

CONSTRUCTION QUALITY CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. The CQC program for the Work.
- B. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 RELATED SECTIONS

Section 01 10 00	Scope of Work
Section 01 32 00	Construction Project Documentation
Section 01 33 00	Submittals
Section 01 43 00	Construction Quality Assurance

1.03 REFERENCED STANDARDS

A. CQA Plan: Construction Quality Assurance Plan

1.04 DEFINITIONS

- A. <u>CQC Acceptance Criteria:</u> The CQC Acceptance Criteria for the Work described in the CQC Plan.
- B. <u>CQA Contractor:</u> The company retained under separate contract by Owner to provide CQA inspection and testing services during construction of the Work. ERM will serve as the CQA Contractor. The responsibilities of the CQA Contractor are described in Section 01 43 00 and the CQA Plan.
- C. <u>CQC Contractor:</u> The Contractor and their respective CQC manager, CQC technicians, personnel, and subcontractors, vendors, and laboratories responsible for implementing the CQC components of the Contract as described in this Section and in the CQA Plan.
- D. <u>CQC Plan</u>: The contractor quality control requirements for inspections, as described in Table 01 45 00-1, and testing, as described in Table 01 45 00-2.

1.05 WORK BY THE OWNER

- A. <u>CQA Program</u>: The Owner will implement a CQA program for the Work under this Contract as described in Section 01 43 00.
- B. <u>CQC Program Observation</u>: The Owner will observe, via contract with the CQA Contractor (ERM), CQC Contractor implementation of CQC inspection and testing in accordance with requirements of the CQC Plan as specified in this section. CQA Contractor observation of CQC Contractor implementation of CQC inspection, field testing, sampling, and laboratory testing of the Work is not a representation that the CQA Contractor accepts the corresponding CQC inspection and testing to be complete, nor acceptance of the corresponding components of the Work.

1.06 WORK BY THE CQA CONTRACTOR

- A. <u>Authority</u>: On behalf of the Owner, the CQA Contractor will review, require revision if determined necessary, and confirm CQC Contractor implementation of CQC inspection and testing in accordance with requirements of the CQA Plan as specified in this section.
- B. <u>CQA Program</u>: The CQA Contractor will observe and evaluate CQC implementation of the CQC Plan for the Work as described in this section. The CQA Contractor will also implement supplemental CQA inspection and testing in accordance with the CQA Plan for the Work as described in Section 01 43 00.
- C. <u>CQA Observation of CQC Inspection and Testing</u>: The CQA Contractor will observe or review results of CQC staff and CQC Contractor implementation of the CQC inspection, field testing, sampling, laboratory testing, CQC evaluation, and documentation of the CQA inspection and retesting tasks stated in the CQA Plan. CQA Contractor observation or review of CQC inspection, field testing, sampling, laboratory testing, evaluation, and documentation of components of the Work is not a representation that the CQA Contractor accepts the corresponding CQC inspection, field testing, sampling, laboratory testing, evaluation, and documentation to be complete, nor acceptance of the corresponding components of the Work.
- D. <u>CQA Evaluation of CQC Inspection and Testing Data</u>: The CQA Contractor will review CQC inspection and testing data submittals for the Work to evaluate completeness and consistency of the CQC inspection and testing data with the corresponding requirements in the CQA Plan, and achievement of the corresponding CQA Acceptance Criteria.
- E. <u>CQA Evaluation of Achievement of CQA Acceptance Criteria</u>: The CQA Officer will review CQC data and the CQC evaluation of achievement of the CQA Acceptance Criteria based on related CQC data for the Work under this Contract. The CQA Officer will report the results of each CQA Acceptance Criteria evaluation to the Contractor.

1.07 SUBMITTALS

- A. <u>Pre-Mobilization Submittals</u>: Submit information prior to initiation of mobilization for the Work. No change from the Bid submittal or, if the Bid submittal was revised by the Contract submittal approved by the Owner, from the Contract submittal will be allowed unless otherwise favorably reviewed in advance in each instance in writing by the Engineer.
 - 1. <u>General Requirements</u>: Submit description of CQC inspection, field testing, sampling, and laboratory testing, evaluation, and documentation consistent with requirements of this section, the CQA program described in Section 01 43 00 for the Work, the CQA Plan, and, if proposed by the Contractor, supplemental CQC inspection and testing.
 - 2. <u>CQC Organization</u>: Submit the CQC organization chart with name and title of the CQC Manager, each CQC technician, each CQC laboratory manager, and lines of authority and communication, including to Engineer, CQA Contractor, and Contractor staff.
 - 3. <u>CQC Staff</u>: Submit the name, qualifications, duties, and employer of the CQC Manager and each CQC technician as described in Section 01 33 00.
 - CQC Laboratories: Submit the name and qualifications of each CQC analytical and Construction Materials Testing (CMT) laboratory as described in Section 01 33 00.
 - a. <u>CQC Analytical Testing Laboratory</u>: Contract with a single analytical testing laboratory per media/material type (e.g., soil, groundwater, ACM, etc.) acceptable to the Owner and currently accredited by National Environmental Laboratory Analytical Program to perform each type of analytical testing required by the CQA Plan and, if proposed by the Contractor and favorably reviewed by the Engineer, each supplemental CQC analytical test.
 - b. <u>CQC CMT Laboratory</u>: Contract with a single CMT laboratory acceptable to the Engineer and currently approved by American Association for Laboratory Accreditation and ODOT, where applicable, to perform each type of CMT required by the CQA Plan and, if

- proposed by the Contractor and favorably reviewed by the Engineer for each supplemental CQC CMT test.
- CQC Equipment and Instruments: Submit complete manufacturer's technical data describing each CQC measurement, field testing, and sampling equipment and instrument and the corresponding CQC inspection, field test, sampling, and/or sample preparation for which the equipment is intended.
 - a. <u>Suitability and Accuracy</u>: Submit independent data demonstrating capability of the CQC equipment and instruments to obtaining complete and accurate measurements, or obtaining, preparing, and preserving representative samples of the Work for the stated CQC task.
 - b. <u>Operation and Maintenance Data</u>: Submit each equipment and instrument manufacturer's printed operation and maintenance instructions, including complete copies of referenced standards.
 - c. <u>Procedures</u>: Submit a complete step-by-step description of procedures proposed for preparation, use, and maintenance of each CQC equipment and instrument for each corresponding CQC inspection, field test, sampling, and sample preparation task.
 - d. <u>Certification of Calibration</u>: Submit each equipment and instrument certification of calibration, where applicable, for the stated CQC task.
- 6. CQC Report Forms: Submit a copy of each CQC inspection and testing report form.
- B. <u>Progress Submittals</u>: Review for accuracy and completeness, sign and date as approved by the Contractor's CQC Manager, and submit CQC notification and data to the CQA Officer throughout the Work.
 - 1. <u>Notification of Completion of Definable Features of Work (DFOWs)</u>: Notify the CQA Officer via the CQC Manager when each stage of each DFOW is considered by the Contractor to be complete and ready for CQC inspection, field testing, and/or sampling.
 - 2. CQC Daily Reports: Submit a complete copy of the CQC daily report prepared by the CQC Manager describing CQC and supplemental CQA inspection, field testing, and sampling. Include CQC and supplemental CQA inspection, field testing scope, and results. Record each CQC and supplemental CQA sample obtained. Additionally, describe all ongoing construction for the day in the various areas of responsibility, areas of non-conformance and corrective actions ordered or implemented (if any), follow-up information from previously reported problems or deficiencies, and example photographs of Work activities or completed Work. Provide signature and date of each report by the CQC Manager. Provide a transmittal cover that includes a statement that the Contractor believes, or does not believe, that the CQC data show achievement of the corresponding CQA Acceptance Criteria for that component of the Work.
 - a. Include a detailed printout of ISS mix cell data for each column attempted (Jean Lutz or similar type report); assure each printout includes at a minimum a graph with time, depth, and grout flow for the DSM auger, as well as volume of ISS slurry injection by depth interval (maximum 2-foot depth intervals).
 - b. Include a cover sheet table for each CQC daily report that provides at a minimum the following information for each mix cell:
 - i. Date.
 - ii. Mix cell identification.
 - iii. Diameter.
 - iv. Start time.
 - v. Stop time.
 - vi. Actual top elevation.
 - vii. Target bottom elevation.
 - viii. Actual bottom elevation.
 - ix. Total depth.
 - x. Number of overlaps with other cells.
 - xi. Net surface area.
 - xii. Target ISS slurry volume.
 - xiii. Actual ISS slurry volume injected.

- xiv. Target Portland cement weight.
- xv. Actual Portland cement weight injected.
- xvi. Target ground granulated blast furnace slag (GGBFS) weight.
- xvii. Actual GGBFS weight injected.
- xviii. Target weight of any possible additional reagents.
- xix. Actual weight injected of any possible additional reagents.
- xx. Water volume injected.
- xxi. QC sample or not.
- xxii. Sample identification.
- xxiii. Sample depth.
- xxiv. Number of mixing passes.
- xxv. Volume of material treated.
- xxvi. Mix design used.
- xxvii. Water to reagent ratio used.
- xxviii. Assumed soil density prior to injection.
- xxix. Daily notes.
- c. Include in the daily notes at a minimum the following daily summary items:
 - i. Columns attempted that day.
 - ii. Columns completed that day.
 - iii. Columns attempted to date.
 - iv. Columns completed to date.
 - v. Volume of soil treated today.
 - vi. Volume of soil treated to date.
 - vii. Notes for Work completed or attempted to date.
- 3. <u>CQC Laboratory Test Reports</u>: Submit each CQC laboratory test report to the CQA Officer via the CQC Manager within 24 hours of issuance of the test report by the laboratory. Comply with CQA reporting requirements, and submit results in both .pdf and ERM EFWEDD EQuIS Electronic Data Deliverable (EDD) formats. Show each sample test result and each corresponding CQA Acceptance Criterion. Provide a transmittal cover that includes a statement that the Contractor believes, or does not believe, that the CQC data are complete and accurate, and show achievement of the corresponding CQA Acceptance Criteria for that component of the Work.
- 4. <u>CQC Log</u>: Prepare and maintain, via the CQC Manager, a complete and accurate daily log of each CQC inspection, field test, sample, laboratory test, and evaluation of each data item that indicates that the Contractor believes, or does not believe, that the CQC data are complete and accurate; and show achievement of the corresponding CQA Acceptance Criteria for that DFOW, plus reference to documentation updated within 24 hours of the end of each work day. Submit a copy of the log to the CQA Officer daily.
- C. <u>Contract Closeout</u>: Submit a CQC final report that provides copies of the final CQC logs and each CQC report favorably reviewed by the CQA Officer for all Work.

1.08 CQC ACCEPTANCE CRITERIA

A. <u>General Requirements</u>: Achieve each of the corresponding CQA Acceptance Criteria listed in the CQA Plan for the Work for each CQC inspection and test as favorably reviewed by the CQA Officer.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 CQC PROGRAM IMPLEMENTATION

- A. <u>General CQC Requirements</u>: Implement the CQC inspection and testing relevant to the CQC requirements, field testing, sampling, and testing as stated in the CQC Plan; any supplemental CQC inspection, field sampling, and testing as submitted to and favorably reviewed by the Engineer; and the supplemental CQA inspection, field testing, and sampling ordered by the CQA Officer throughout the Work.
- B. <u>CQC Equipment and Instruments</u>: Provide, operate, maintain, and if necessary, repair or replace CQC measurement, field testing, and sampling equipment and instruments favorably reviewed by the Engineer. Provide equipment and instruments capable of obtaining complete and accurate measurements and of obtaining, preparing, and preserving representative samples of the Work.
- C. <u>Three-Phase CQC Process</u>: The Contractor will follow a three-phase CQC process as described below:
 - Preparatory Phase: This phase will be performed prior to beginning work on each DFOW.
 The preparatory phase checklist will be used when conducting this phase meeting with the CQA Contractor and Engineer.
 - 2. <u>Initial Phase</u>: This phase will be accomplished at the beginning of a DFOW. The initial phase checklist will be used when conducting this phase meeting with the CQA Contractor.
 - 3. <u>Follow-up Phase</u>: This phase includes daily checks to assure continuing compliance with contract requirements.

3.02 ASSIST CQA OFFICER IN OBSERVING AND REVIEWING CQC INSPECTION AND TESTING

- A. <u>General Requirements</u>: Assist the CQA Officer in observing or, if chosen by the CQA Officer, in reviewing CQC records of CQC inspection, field testing, sampling, laboratory testing, CQC evaluation, and CQC documentation implemented for the Work.
- B. <u>CQC Laboratory Testing</u>: Inform, via the CQC Manager, the CQA Officer daily of progress of CQC laboratory testing.

3.03 CQC EVALUATION OF CQC INSPECTION AND TESTING

- A. <u>CQC Evaluation of Achievement of CQA Acceptance Criteria</u>: Prepare a report with reference to each corresponding CQC inspection, field test, sample, and laboratory test report.
- B. <u>CQC Evaluation Statement</u>: Include a CQC evaluation statement that the Contractor believes that the CQC data show, or do not show, achievement of the corresponding CQA Acceptance Criteria for that component of the Work.
- C. <u>CQA Use of the CQC Evaluation</u>: CQC evaluation of achievement of CQA acceptance criteria may be considered by the CQA Officer in the independent CQA evaluation of achievement of the corresponding CQA Acceptance Criteria.
- D. <u>Limitation of CQC Evaluation</u>: CQC evaluation of achievement of the CQA Acceptance Criteria for any corresponding component of the Work will not be used in lieu of CQA evaluation of the associated DFOW in Engineer consideration of accepting, or not accepting, the corresponding DFOW.

3.04 CORING PLAN FOR SAMPLES THAT DO NOT MEET PERFORMANCE CRITERIA

A. <u>Samples Not Meeting Performance Criteria</u>: The Contractor may consider Coring of DSM columns as a contingent measure for verification of ISS strength and permeability properties for samples not meeting performance criteria (as defined in the CQA Plan). Please note that this only applies to ISS DSM mix cells and not to ERS columns, which shall conform to the Engineering ERS Design requirements and the restrictions, allowances, test methods, and management of columns not meeting performance criteria specified therein.

- B. Mix Cell Coring Sample Plan: Where DSM sample results collected during full-scale mixing do not meet Project performance criteria as defined in the CQA Plan, the Contractor may elect to prepare a DSM Mix Cell Coring Sample Plan to propose collection of additional samples and testing, which may be performed before the ISS mix cell is designated to be redrilled. The DSM Mix Cell Coring Sample Plan shall contain the following:
 - 1. Identify mix cells where DSM core samples are to be collected for unconfined compressive strength (UCS) and hydraulic conductivity testing.
 - 2. Propose coring diameter, depth, drilling technique, and sample recovery method.
 - 3. Propose how test results shall compliment or replace previous testing results.
 - 4. Specify methods for grouting of the core space to meet post mix permeability requirements.

Engineer shall provide favorable review of the overall Plan and any specific mix cells before Contractor shall implement any coring activities.

- C. <u>Sample Evaluation</u>: DSM Mix Cell core samples shall be submitted for the same UCS and hydraulic conductivity testing as samples collected during pilot or full scale mixing. The results shall be reviewed and compared to the performance criteria required in the CQA Plan. Contractor shall propose for consideration in their Plan if test results shall replace and supersede previous test results, or if results shall compliment and become part of an average.
- D. <u>Expense:</u> Any additional costs or schedule shift associated with preparation of the DSM Mix Cell Coring Sample Plan, collection or analysis of mix cell core samples, altered construction sequencing, or other related schedule delays will be the sole responsibility of the Contractor.

3.05 CORRECTIVE MEASURES

- A. <u>General Requirements</u>: On notification by the CQA Officer that a CQC inspection, field test, or laboratory test of a sample of the Work is incomplete or failed any of the corresponding CQA Acceptance Criteria, the Contractor shall repair, rework, or replace the related DFOW(s) at no additional Contract cost.
- B. Work <u>Deficiency Meetings</u>: A work deficiency meeting will be held when and if a technical problem or deficiency is present or is considered likely to occur by the CQA Officer. The meeting will be attended by representatives from the CQA Contractor, the Contractor (including the CQC Manager), the Owner (if available), and other parties as appropriate. If the problem requires a design modification, the Engineer will be present at, consulted prior to, or notified immediately upon conclusion of this meeting. The purpose of the work deficiency meeting is to resolve the problem or work deficiency using the following steps.
 - 1. Define and discuss the problem or deficiency
 - 2. Review alternative solutions
 - 3. Select a suitable solution agreeable to all parties and to regulatory agencies (if appropriate)
 - Document and distribute the findings of the meeting and the proposed action plan for mitigation
 - 5. Implement an action plan to resolve the problem or deficiency
- C. <u>Notify the Engineer of Completion of Corrective Measures</u>: Notify the Engineer that the Contractor believes the corrective measures implemented for the DFOW are complete.
- D. <u>Assist CQA Officer in Observing the CQC Inspection, Field Testing, and/or Sampling:</u> Assist the CQA Officer in observing CQC inspection, field testing, and/or sampling of the DFOW subjected to corrective measures.
- E. <u>Repeat Until the CQA Acceptance Criteria Are Achieved</u>: Repeat corrective measures as needed to achieve the CQA Acceptance Criteria for the related DFOW at no additional Contract cost.

3.06 PRE-FINAL AND FINAL INSPECTIONS

- A. Pre-Final CQA Inspection: Following notification of substantial completion of the Work, the Engineer and the CQA Contractor will conduct a pre-final inspection of the Project area. A final written Work "punch list" will be prepared by the CQA Contractor, which will enable the Contractor to understand the Project completion expectations and schedule Work activities, including demobilization.
- B. <u>Final CQA Inspection</u>: Once the punch list items have been addressed by the Contractor to the satisfaction of the Owner and the CQA Contractor and approved in writing by the Owner and the CQA Contractor, a final inspection will be conducted by the Owner and the CQA Contractor for certification and acceptance of the Work.

END OF SECTION

Work Inspected	Parameter	Method	Frequency	Acceptance Criteria
ISS Reagent slurry in accordance with Section 02 52 20* Each ISS receipt a stored of	General requirements	Inspection and documentation by the CQC staff, and observation or review of complete CQC data and reports by the CQA staff	Throughout the Work	 Controls are implemented in accordance with the Contractor's ISS Work Plan (favorably reviewed by the Engineer). Dust is controlled in accordance with Section 01 50 00 of the Technical Specifications and the HASP. Spills are prevented, controlled, and responded to in accordance with the spill control provisions of the Contractor's ISS Work Plan (favorably reviewed by the Engineer). ISS Reagents (including Portland cement (PC), ground granulated blast furnace slag (GGBFS), activated carbon (AC), biochar (BC), and sodium persulfate (SP)) are not released from haul vehicles, storage containers, conveyors, mixing vessels, or other sources onsite. ISS Reagent slurry is not released from instruments, piping, pumps, vessels, mixing equipment, the ISS Mix Cell, and other sources onsite.
	Each ISS Reagent on receipt at the Property		Each load on delivery	 Each delivery ticket states that the reagent is the correct reagent, specifies the quantity of the reagent, and confirms the reagent is from the source specified in the Contractor's ISS Work Plan (favorably reviewed by the Engineer). The reagent is not caked or hydrated. Analytical samples are collected for each ISS reagent at the frequency specified in Table 2.
	Each ISS Reagent stored onsite		Each day in onsite storage	 Not mixed with other ISS reagents or water. Protected from precipitation and humid air. Not caked. Not in contact with flowing or ponded water. Dust is controlled during delivery and storage as needed to prevent onsite and offsite migration. Stored material is protected from weather exposure to extent necessary to prevent dust emissions and hydration by precipitation.
	ISS Reagent slurry mix water		 Prior to the start of mixing each day For cause ordered by the CQA Officer 	 Free of oil, acids, salt, alkali, organic matter, debris, settleable particles, or other deleterious matter or substances that interfere with achievement of each ISS soil mixture CQA acceptance criteria. From the source stated in the Contractor's ISS Work Plan (favorably reviewed by the Engineer).
	ISS Reagent feed system			 Check each ISS Reagent feed system using the system self-calibration function described in the ISS Work Plan (favorably reviewed by the Engineer).
	ISS Reagent mix ratio		 At the start of each day that slurry is mixed On each reagent feed and slurry mix equipment adjustment or restart On each change to any ISS Reagent mix ratio 	 The amendment mix ratios are within 0.5% of the mix ratio states in the Contractor's ISS Work Plan (favorably reviewed by the Engineer). Applies to PC, GGBFS, AC, BC, or SP. The amendment-water mix ratio is within 1.0% of the mix ratio stated in the Contractor's ISS Work Plan (favorably reviewed by the Engineer). Applies to PC, GGBFS, AC, BC, or SP. The PC/GGBFS/AC/BC/SP slurry to soil ratio is within 1% of the mix ratio stated in the Contractor's ISS Work Plan (favorably reviewed by the Engineer) but shall not be less than the stated mix ratio.
	ISS Reagent slurry mixing		For cause ordered by the CQA Officer	 The ISS Reagent slurry is mixed using methods that prevent air entrainment in the slurry ISS reagents are completely mixed and suspended in the slurry The ISS Reagent slurry exhibits uniform color and viscosity The ISS Reagent slurry is pumpable
	ISS Reagent slurry unit weight	Mud balance		Within 1 pound per cubic foot of the value stated in the Contractor's ISS Work Plan for a given ISS reagent mix ratio (favorably reviewed by the Engineer).
	ISS Reagent flow rate	Slurry flow meter	Calibration	Achieves accuracy stated for the slurry flow in the Contractor's ISS Work Plan (favorably reviewed by the Engineer).
			Continuous record	Achieves the flow rate needed to achieve the ISS Reagent mix ratio in the ISS Soil Mixture stated in the Contractor's ISS Work Plan (favorably reviewed by the Engineer).

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Work Inspected	Parameter	Method	Frequency	Acceptance Criteria
ISS Deep Soil Mixing in accordance with Section 02 55 10*	ISS Mix Cell location, diameter, and elevations	Survey by the Contractor	 Set prior to initiation of ISS soil mixing work Maintained throughout ISS soil mixing 	 ISS Mix Cell center point is set and protected by the Contractor. The ISS Mix Cell center point location is within 0.1 foot of the location of that mix cell specified in the Contractor's ISS Work Plan (favorably reviewed by the Engineer). The ISS deep soil mixing rig mast is within 0.5% of vertical as determined by an electronic level capable of displaying 0.1% increments. The ISS deep soil mixing rig auger diameter matches the diameter specified for that ISS Mix Cell in the Contractor's ISS Work Plan (favorably reviewed by the Engineer). The bottom elevation and corresponding mix depth of that mix cell is within 0.5 foot of the design elevation shown on the Drawings in the ISS Mix Cell.
	Temporary stormwater and erosion controls	Inspection and documentation by the CQC staff, and observation or review of complete CQC data and reports by the CQA staff	Prior to initiation of and during ISS soil mixing preparation, mixing, and curing	 Stormwater run-on is prevented. Stormwater runoff is contained and removed from the ISS work area without ponding. Effective temporary erosion and sedimentation controls are installed. Temporary controls are maintained throughout the Work.
	Dust control	Inspection and documentation by the CQC staff, and observation or review of complete CQC data and reports by the CQA staff	Throughout the Work	No visible dust outside the ISS work area.
	ISS Reagent slurry mixing in the ISS Mix Cell	Inspection and documentation by the CQC staff, tracking system data, and observation or review of complete CQC data and reports by the CQA staff	At key stages during placement in each mix cell Continuous tracking system (GHUMA or other similar systems) record	 The drill and slurry tracking system is operating and recording throughout the ISS Reagent slurry addition. ISS Reagent slurry is added using methods stated in the Contractor's ISS Work Plan (favorably reviewed by the Engineer). ISS Reagent slurry is contained in pipe and fittings except where discharged via the slurry injection ports in the mixing equipment only when the mixing equipment is below the surface of the ISS soil mixture. ISS Reagent slurry is mixed with soil in the ISS Mix Cell to produce a uniform reagent-soil mix ratio. The mass of each ISS Reagent added to each mix cell is the percentage of the corresponding weight of existing in place potentially impacted soil designated to be mixed in that ISS Mix Cell; the mass of each ISS Reagent will be determined by the Contractor as a mix ratio suitable for achieving the CQA acceptance criteria as stated in the Contractor's ISS Work Plan (favorably reviewed by the Engineer).
	ISS soil mixing Inspection and documentation by the CQC staff, and observation or review of complete CQC data and reports by the CQA staff	Each ISS Mix Cell prior to mixing	 The mass of ISS Reagent injected per is approximately uniform per depth interval tracked. Flowing and ponded water is drained/pumped and excluded from the ISS Work Platform and ISS Mix Cell. Impacted Soil depth to be mixed is calculated and documented prior to initiation of mixing of the ISS Mix Cell. Impacted Soil depth to be mixed is calculated and documented during mixing of the ISS Mix Cell. ISS Mix Cell center point is marked and documented. Boundary of the ISS Mix Cell provides overlap and continuity of ISS mixing along the boundary of each adjoining ISS Mix Cell previously mixed. Planned mix ratio of each reagent is placed and uniformly distributed in the ISS Mix Cell. 	
			Each ISS Mix Cell during mixing	 Flowing and ponded water is drained/pumped and excluded from the ISS Work Platform and the ISS Mix Cell. Mixing is limited to the designated mix cell, including the designated overlap with each adjoining ISS Mix Cell designated to be overlapped with the ISS Mix Cell. ISS reagent slurry is mixed with potentially impacted soil the full depth and extent of the ISS Mix Cell (i.e. with all potentially impacted soil designated to be stabilized at that location). Potentially impacted soil, ISS Reagent slurry, and the ISS soil mixture is contained in the area of the ISS Mix Cell. Each cell is mixed from the ISS mix cell top elevation to the ISS mix cell design bottom elevation with a minimum of three descending and three ascending vertical passes. Each pass does not have to be continuous from top to bottom across the

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Work Inspected	Parameter	Method	Frequency	Acceptance Criteria
				full vertical interval in every case; however, the stroking pattern must result in a minimum total of six passes (3 downward and 3 upward) by every point along the vertical interval. If Contractor demonstrates that few passes are required to meet the acceptance criteria in Table 01 45 00-2, the Contractor may use fewer passes if favorably reviewed by the Engineer.
			Each ISS Mix Cell after mixing	 Flowing and ponded water is drained/pumped and excluded from the ISS Work Platform and the ISS Mix Cell. The ISS soil mixture is homogenous, with uniform color and texture of material visible at the surface of the mix cell and in each ISS soil mixture sample obtained from the mix cell. The ISS soil mixture does not release liquid.
			Each ISS Mix Cell after mixing and prior to regrading if necessary, and cover	 Flowing and ponded water is drained/pumped and excluded from the ISS Work Platform and the ISS Mix Cell. Impacted Soil and Impacted Soil-reagent mixture is not displaced or eroded from the mix cell. Impacted Soil and Impacted Soil-reagent mixture is not removed, regraded, or covered until cured adequately to support imposed loads without displacement or release of liquids.
Excavation for	Preparation	Inspection and documentation by the	Prior to initiation of excavation	Excavation boundary and excavation depths are staked.
ISS Work Platform in		CQC staff, and observation or review of complete CQC data and reports by the	On each change to controls, stockpiles,	Public and private underground utility location services are complete and marked.
accordance with Section		CQA staff; and observation and documentation by the CQC staff	and materials management	 Underground obstructions in the critical zone are identified and the Contractor's response is approved in the field by the Engineer.
02 61 10*		,		 Ponded surface water is drained or pumped from the area to be excavated and containerized for sampling and processing as described in the Contractor's ISS Work Plan (favorably reviewed by the Engineer).
				• Stormwater run-on controls are in place to prevent stormwater run-on into the excavation and stockpile areas during and at completion of the excavation as described in the Contractor's ISS Work Plan (favorably reviewed by the Engineer).
			• Stormwater runoff controls are in place to prevent stormwater runoff from accumulating in the excavation as described in the Contractor's ISS Work Plan (favorably reviewed by the Engineer).	
			• Erosion and sedimentation controls are in place around each stockpile and work area as described in the Contractor's ISS Work Plan (favorably reviewed by the Engineer).	
				Existing structures to be protected are flagged and protected.
				• Excavation soil stockpile areas are prepared as described in the Contaminated Material Management Plan, the Sampling and Analysis Plan (Part 3.6 of the CQA), and the Contractor's ISS Work Plan (favorably reviewed by the Engineer).
				• Concrete debris stockpile areas are prepared as described in the Contractor's ISS Work Plan (favorably reviewed by the Engineer).
			• Solid and/or liquid waste containers are staged on the Property in accordance with Section 02 81 00* and as described in the Contractor's ISS Work Plan (favorably reviewed by the Engineer).	
		Excavation		 ACM temporary storage areas are prepared, , in accordance with Section 02 82 10*, the Contaminated Material Management Plan, and the Contractor's ISS Work Plan (favorably reviewed by the Engineer).
	Excavation		At the start of each work day	Excavation boundary and excavation depth stakes are protected and, if damaged, are restored.
			 At each key stage of the Work on each work day At the end of each work day 	Stormwater run-on is prevented and stormwater runoff is promptly removed from the excavation to restore dry condition.
				Erosion and sedimentation controls are intact and effective.
				• The excavation side slope is limited to the slope approved by inspection of the field by the Contractor's Competent Person in accordance with 29 CFR 1929, Subpart P, throughout the Work.
				• Excavation soil is properly classified, loaded, and transported to the stockpile designated for that use in the Contractor's ISS Work Plan (favorably reviewed by the Engineer).
				• Each excavation soil stockpile is limited to the area shown on the Drawings with height and slope controlled for project requirements, permit conditions, and safe storage of material. Stockpile slope is limited to the slope approved by inspection of the Contractor's Competent Person.

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Work Inspected	Parameter	Method	Frequency	Acceptance Criteria
				 Each excavation spoil stockpile is graded to not pond stormwater runoff. Each excavation stockpile is surrounded by sediment traps and, if required, covered with means to prevent dust or erosion and control sediment runoff. Each excavation temporary storage area is covered with temporary synthetic membrane barrier with no holes in its surface and that is effectively ballasted. Non-ACM is separated from excavation spoil and managed in accordance with Section 02 81 00*. ACM is separated from excavation spoil and managed in accordance with Section 02 82 10* and the Contaminated Material Management Plan.
	ISS Work Platform		After completion of excavation	 The ISS Work Platform is at the elevation shown on the Drawings. The ISS Work Platform surface is dry, compacted, and stable. Stormwater run-on and runoff controls are in place and effective. Erosion and sedimentation controls are in place and effective. . The excavation is ready for ISS soil mixing in accordance with Section 02 55 10*.
ISS Cap in accordance with Section 31 23 25*	Reuse Soil	Inspection and documentation by the CQC staff, and observation or review of complete CQC data and reports by the CQA staff	Prior to transport of the soil Throughout the Work	From excavation stockpile soil that has passed field screening for reuse.
	Imported Aggregate Borrow	Inspection and documentation by the CQC staff, and observation or review of complete CQC data and reports by the CQA staff	Prior to ordering the borrowOn receipt at the PropertyThroughout the work	 From an offsite commercial borrow source described in the Contractor's ISS Work Plan (favorably reviewed by the Engineer). Each borrow site shall provide a certificate or affidavit that provided material is clean fill. Borrow material shall be inspected using grab samples to verify that it passes field screening criteria for reuse.
	ISS Cap Sub Layer and Top Layer elevation and location	 Survey using precision optical or GPS-RTK survey instruments Elevation (NAVD88) and easting/northing (NAD83 Oregon State Plane North, International Foot) 	 Along each interior and perimeter slope break line at intervals not greater than 100 feet; at each P.C., P.I. and P.T. At each V.P.C., V.P.I., and V.P.T. At each material boundary, and in the interior of each subarea at approximate intervals not greater than 100 feet 	 Elevation RMSE less than 0.2 foot. Horizontal RMSE less than 0.2 foot.
	ISS Cap Sub Layer and Top Layer thickness in each continuous layer	Wooden stakes set with top at the top surface layer	 Along each interior and perimeter slope break line at intervals not greater than 100 feet; at each P.C., P.I. and P.T. At each V.P.C., V.P.I., and V.P.T. At each material boundary; and in the interior of each subarea at approximate intervals not greater than 100 feet 	At or above the top of each grade stake.
	ISS Cap Sub Layer and Top Layer spreading	Inspection and documentation by the CQC staff, and observation or review of complete CQC data and reports by CQA staff	At key stages during spreading	 Free of debris; additionally, remove all vegetation (organic matter and roots), stones larger than 3-inch nominal size, and unsuitable material from the soil fill in the top 2 feet of backfill prior to compaction. Not in contact with flowing or ponded water. Place an initial layer of soil cover (12-inch compacted lift) on the ISS soil mixture prior to installation of the marker scrim Spread in a single lift not exceeding 12-inch thickness. Water content is adjusted if necessary to facilitate spreading and production of stable subgrade.

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Table 01 45 00-1 CQC Inspection Schedule Contractor Quality Control Requirements for the Former Acid Plant Area Arkema Site Portland, OR

Work Inspected	Parameter	Method	Frequency	Acceptance Criteria
	ISS Cap Sub Layer and Top Layer grading and compaction		At key stages during compaction	 The layer surface matches the design grade and slope. The F.G. surface matches the adjoining topsoil and natural ground surface. The F.G. surface and the adjoining areas drain to relief without ponding in dry weather.
	ISS Cap		 At the start of each work day At each key stage of the Work on each work day At the end of each work day 	 Constructed in accordance with Section 31 23 25*. Placed on stable ISS soil mixture capable of supporting the base layer and the associated borrow transport, construction equipment, and other surface loads without collapse or displacement. Reuse soil is used to construct the ISS Cap Sub Layer (soil cover). The thickness of the soil cover layer meets the minimum thickness shown on the Drawings. The thickness of the aggregate layer meets the minimum thickness shown on the Drawings. The ISS Cap Top Layer (aggregate cover) is graded to drain without ponding. The thickness of each lift of the ISS Cap does not exceed 12 inches uncompacted. Frequency of compaction testing (and associated relative compaction and moisture content) of the soil cover layer are in accordance with the requirements specified in Table 01 45 00-2
	ISS Cap Top Layer finished grade surface slope in each area with the same specified slope		 At the start of each work day At each key stage of the Work on each work day At the end of each work day 	The finished grade surface does not pond water.

NOTES & KEY:						
*Technical specifications to be developed upon DEQ approval of	F.G.	Finished grade	P.C.	Point of curve		point of curvature
PFDR.	GBFS	Ground granular blast furnace slag (slag cement), ASTM C989	P.I.	Point of intersection		point of intersection
ACM Asbestos-containing material	HASP	Health and Safety Plan	P.T.	Point of tangent	V.P.T. Vertical	point of tangent
CFR Code of Federal Regulations	ISS	In situ soil stabilization/solidification	PFDR	R Pre-Final Design Report		
CMT Construction materials testing			RMSE	E Root mean square error		
CQA Construction quality assurance						
CQC Construction quality control						

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Table 01 45 00-2 CQC Test Schedule Contractor Quality Control Requirements for the Former Acid Plant Area Arkema Site Portland, OR

Work Sampled	Sample Type	Sample Frequency	Test Specimen Preparation	Test Parameter	Test Method	Acceptance Criteria
ISS Portland cement reagent in accordance with Section 02 52 20*	A representative grab sample of the Portland cement reagent from the storage tank feeding that reagent to	1 sample from each new Portland cement reagent source or type	USEPA 6010B	Each of 7 RCRA metals: Ag, As, Ba, Cd, Cr, Pb, and Se.	SW-846, Method 6010B	Results shall not exceed any of the individual EPA Maximum Concentration of Contaminants for the Toxicity Characteristic.
	the ISS Slurry Mix plant or as ordered by the CQA Officer		USEPA 7400	Mercury	SW-846, Method 7400	Results shall not exceed any of the individual EPA Maximum Concentration of Contaminants for the Toxicity Characteristic.
	A representative grab sample of the Portland cement reagent from the storage tank feeding that reagent to	 1 sample per 500 tons of Portland cement reagent used to make ISS Reagent slurry. 1 sample from each new Portland cement 	Preserve from contact with water and atmospheric humidity	Water content	ASTM D2216	 In range for standard product specified in the material manufacturer's technical data for that source and grade approved by the Engineer.
	the ISS Slurry Mix plant	 reagent source or type 1 sample on observation of change of Portland cement color or texture 	ASTM C109	Compressive strength	ASTM C109	Compressive strength after curing for 1, 3, and 7 days is greater than the corresponding type values specified in ASTM C150.
		Prepare duplicate samples for 10% of the above samples selected by the CQA Officer as separate CQA samples for analytical and CMT testing by the CQA Officer	ASTM C191	Set time	ASTM C191	• 45-375 minutes.
ISS GGBFS reagent in accordance with Section 02 52 20*	A representative grab sample of the GGBFS reagent from the storage tank feeding that reagent to the ISS Slurry Mix plant or as ordered by the CQA Officer	from the storage source or type t reagent to the ISS or as ordered by	USEPA 6010B	Each of 7 RCRA metals: Ag, As, Ba, Cd, Cr, Pb, and Se.	SW-846, Method 6010B	Results shall not exceed any of the individual EPA Maximum Concentration of Contaminants for the Toxicity Characteristic.
			USEPA 7400	Mercury	SW-846, Method 7400	Results shall not exceed any of the individual EPA Maximum Concentration of Contaminants for the Toxicity Characteristic.
	A representative grab sample of the GGBFS reagent from the storage tank feeding that reagent to the ISS Slurry Mix plant.	n the storage used to make ISS Reagent slurry	Preserve from contact with water and atmospheric humidity and test standard	Water content	ASTM D2216	In range for standard product specified in the material manufacturer's technical data for that source and grade approved by the Engineer.
				Fineness	ASTM C430, wet screened.	• ≤ 20% retained on U.S. Std. No. 325 Screen.
			ASTM C989	Slag activity index	ASTM C989	Requirements set forth in ASTM C989 grade 120 for Slag Cement.
ISS powdered activated carbon reagent in	A representative grab sample of the activated carbon reagent from the storage tank feeding that reagent to	sentative grab sample of the ded carbon reagent from the activated carbon reagent source or type	USEPA 6010B	Each of 7 RCRA metals: Ag, As, Ba, Cd, Cr, Pb, and Se.	SW-846, Method 6010B	Results shall not exceed any of the individual EPA Maximum Concentration of Contaminants for the Toxicity Characteristic.
accordance with Section 02 52 20*	the ISS Slurry Mix plant or as ordered by the CQA Officer		USEPA 7400	Mercury	SW-846, Method 7400	Results shall not exceed any of the individual EPA Maximum Concentration of Contaminants for the Toxicity Characteristic.
	A representative grab sample of the activated carbon reagent from the storage tank feeding that reagent to the ISS Slurry Mix plant		Preserve from contact with water and atmospheric humidity	Water content	ASTM D2867-17	The moisture content of the activated carbon shall be used in calculating the required mass of activated carbon for the amendment mix so that at least 90% of the required dry weight of activated carbon is incorporated into the amendment mix.

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Table 01 45 00-2 CQC Test Schedule Contractor Quality Control Requirements for the Former Acid Plant Area Arkema Site Portland, OR

Work Sampled	Sample Type	Sample Frequency	Test Specimen Preparation	Test Parameter	Test Method	Acceptance Criteria	
		 1 sample per 100 tons of activated carbon reagent used to make ISS Reagent slurry. Assumed at this time to be 0% to 1% w/w, to be verified during final phase of treatability testing. 1 sample from each new activated carbon reagent source or type 1 sample on observation of change of activated carbon color or texture Prepare duplicate samples for 10% of the above samples selected by the CQA Officer as separate CQA samples for analytical and CMT testing by the CQA Officer 		Fineness	ASTM D5158-23	 0% retained on U.S., Std. No. 50 Screen ≤ 20% by mass retained on U.S. Std. No. 80 Screen. 	
ISS powdered biochar reagent in accordance with	A representative grab sample of the biochar reagent from the storage tank feeding that reagent to the ISS Slurry Mix plant or as ordered by the CQA Officer	ochar reagent from the storage reagent source or type nk feeding that reagent to the ISS	1 sample from each new powdered biochar reagent source or type	USEPA 6010B	Each of 7 RCRA metals: Ag, As, Ba, Cd, Cr, Pb, and Se.	SW-846, Method 6010B	Results shall not exceed any of the individual EPA Maximum Concentration of Contaminants for the Toxicity Characteristic.
Section 02 52 20*			USEPA 7400	Mercury	SW-846, Method 7400	Results shall not exceed any of the individual EPA Maximum Concentration of Contaminants for the Toxicity Characteristic.	
			ASTM D6316	Total Organic Carbon	ASTM B6316	Minimum 80% by dry weight	
			ASTM D5373	H:Corg Ratio	ASTM D5373	Maximum 0.7	
	A representative grab sample of the biochar reagent from the storage tank feeding that reagent to the ISS Slurry Mix plant	biochar reagent from the storage tank feeding that reagent to the ISS Slurry Mix plant biochar reagent used to make I Reagent slurry. Assumed at this 0% to 1% w/w, to be verified du	1 sample per 100 tons of powdered biochar reagent used to make ISS Reagent slurry. Assumed at this time to be 0% to 1% w/w, to be verified during final phase of treatability testing.	Preserve from contact with water and atmospheric humidity	Water content	ASTM D2867-17	The moisture content of the biochar shall be used in calculating the required mass of activated carbon for the amendment mix so that at least 90% of the required dry weight of biochar is incorporated into the amendment mix.
		 1 sample from each new biochar reagent source or type 1 sample on observation of change of biochar color or texture Prepare duplicate samples for 10% of the above samples selected by the CQA Officer as separate CQA samples for analytical and CMT testing by the CQA Officer 		Fineness	ASTM D5158-23	 0% retained on U.S., Std. No. 50 Screen ≤ 20% retained on U.S. Std. No. 80 Screen. 	
ISS sodium persulfate reagent in	A representative grab sample of the sodium persulfate reagent from the	1 sample from each new sodium persulfate reagent source or type		Purity	Declaration	≥99.7% pure sodium persulfate	

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Table 01 45 00-2 CQC Test Schedule Contractor Quality Control Requirements for the Former Acid Plant Area Arkema Site Portland, OR

Work Sampled	Sample	Sample	Test Specimen	Test	Test	Acceptance
<u> </u>	Туре	Frequency	Preparation	Parameter	Method	Criteria
accordance with Section 02 52 20*	storage tank feeding that reagent to the ISS Slurry Mix plant	 1 sample per 100 tons of sodium persulfate reagent used to make ISS Reagent slurry. Assumed at this time to be 0% to 1% w/w, to be verified during final phase of treatability testing. 1 sample from each new sodium persulfate reagent source or type 1 sample on observation of change of sodium persulfate color or texture Prepare duplicate samples for 10% of the above samples selected by the CQA Officer as separate CQA samples for analytical and CMT testing by the CQA Officer 	Preserve from contact with water and atmospheric humidity	Water content	USEPA Method 1684, Total Solids, or similar method favorably approved by the Engineer.	• ≤ 0.1% moisture by mass
Anticipated ERS and Bearing Capacity for Mixing Slope and Floor to ISS Limits (Exact Specifications to be provided by ERS Engineer)	A representative ERS Soil Mixture sample obtained immediately after completion of mixing from the center of the ERS Mix Cell and at alternating bottom third, middle third, and top third of the ERS Mix Cell or depth as otherwise ordered by the CQA Officer	 ≥ 1 per day mixed for each ISS DSM Unit ≥ 1 per shift mixed for each ISS DSM Unit ≥ 1 per 200 cubic yards mixed 	Screen a representative aliquot of the sample to exclude particles retained on a U.S. Std. No. 4 screen and mold immediately thereafter in each of four 3-inch-diameter x 6-inchtall plastic cylinder molds, and cure in accordance with ASTM D1632 and ASTM D1633.	Compressive strength	ASTM D1633	• ≥ 60 psi after curing.
		Prepare duplicate samples of at least 10% of the above and other location and depth		Hydraulic conductivity	ASTM D5084	See Hydraulic Conductivity testing requirements in ISS Soil Mixture below.
ISS Soil Mixture in accordance with Section 02 55 10*	A representative ISS Soil Mixture sample obtained immediately after completion of mixing from the center of the ISS Mix Cell and at alternating bottom third, middle third, and top third of the ISS Mix Cell or depth as otherwise ordered by the CQA Officer	During implementation of Field Pilot (mixing of first 5,000 bank cubic yards):	Screen a representative aliquot of the sample to exclude particles retained on a U.S. Std. No. 4 screen and mold immediately thereafter in each of four 3-inch-diameter x 6-inchtall plastic cylinder molds, and cure in accordance with ASTM D1632 and ASTM D1633.	Compressive strength	ASTM D1633	 ≥ 60 psi after curing. On a limited basis as approved via the RFI process, where a sample does not pass performance criteria at 28-day cure, test results for 42-day and 56-day cure may be provided; the first passing result (or highest non-passing UCS result) will be applied against the performance criteria for that sample. If the first CQC sample fails, two additional samples will be collected and tested and performance criteria will be applied to the average of the three sample results. The two additional samples tested may be duplicate samples from the same ISS column, and same depth, or other samples from the same ISS column, but different depth(s).

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Work Sampled	Sample	Sample	Test Specimen	Test	Test	Acceptance
	Туре	Frequency	Preparation	Parameter	Method	Criteria
	Type	 ≥ 1 per day mixed for each ISS DSM Unit ≥ 1 per shift mixed for each ISS DSM Unit ≥ 1 per 200 cubic yards mixed Prepare duplicate samples of at least 10% of the above and other location and depth samples selected by the CQA Officer as separate CQA samples for analytical and CMT testing by the CQA Officer Following completion of Field Pilot (after mixing of first 4,000 bank cubic yards): ≥ 1 per day mixed for each ISS DSM Unit ≥ 1 per shift mixed for each ISS DSM Unit ≥ 1 per day for each mix design ratio used ≥ 1 per 1,000 cubic yards mixed per day ≥ 1 per 20 ISS Mix Cells per day 1 on each start of ISS Reagent slurry mixing by a new plant operator 1 on each start of ISS DSM Unit operation by a new operator Prepare duplicate samples of at least 10% of the above and other location and depth 		Hydraulic conductivity	ASTM D5084	 The average of at least 90% of the values is ≤ 1.0 x 10⁻⁶ cm/s, and no value is ≥ 1 x 10⁻⁵ cm/s, after curing for 28 days, or fewer days if proposed in the Contractor's ISS Work Plan (favorably approved by the Engineer). On a limited basis as approved via the RFI process, where a sample does not pass performance criteria at 28-day cure, test results for 42-day and 56-day cure mabe provided; the first passing result (or lowest nonpassing hydraulic conductivity result) will be applied against the performance criteria for that sample. If the first CQC sample fails, two additional samples will be collected and tested and performance criteria will be applied to the average of the three sample results. The two additional samples tested may be duplicate samples from the same ISS column, and same depth, or other samples from the same ISS column, but different depth(s).
SS Work Platform xcavation Soil eused Onsite as SS Cap Sub Layer accordance with ection 31 25 25*	Representative grab samples from each stockpile in accordance with the Sampling and Analysis Plan (Section 3.5 of the CQA plan)	samples selected by the CQA Officer as separate CQA samples for analytical and CMT testing by the CQA Officer 1 sample collected from each stockpile after at least 90% of the expected volume has been excavated 1 sample collected from specified stockpiles at any time there is a significant change in soil type as determined by the Engineer	A representative aliquot of the sample delivered to the CMT laboratory for each CMT test	Standard Proctor	ASTM D698	See ASTM technical specifications.
		1 sample per 5,000 cubic yards of reused	-	Atterberg Limits	ASTM D4318	No criteria are specified for excavated soil reused onsite
		excavation soil brought back into the ISS area for use as soil cover		Sieve / Hydrometer	ASTM D422 and D7928	for the ISS CapResults shall be reported to the Engineer
		1 sample for each change in material type		Moisture Content	ASTM D2216	
		Minimum 2 samples		Soil Classification	ASTM D2487	
	Representative location within each 12-inch lift of the ISS Soil Cover Layer	5 per acre per lift	Test and equipment preparation in accordance with ASTM D6938	In-Place Density and Water Content	ASTM D6938	 Soil compaction is at least 95 percent of the maximum dry unit weight per ASTM D698. Soil moisture content is within +/-3% of the value define by ASTM D698. Any lift that does not meet the compaction criteria shall be recompacted or removed and replaced.

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Work Sampled	Sample Type	Sample Frequency	Test Specimen Preparation	Test Parameter	Test Method	Acceptance Criteria
Imported Dense Graded Aggregate for the ISS Cap Top Layer in accordance with Section 31 25	Representative grab sample(s)	1 sample prior to initial import from each new source		Contamination	Attestation	Each commercial borrow source shall attest that the provided material is "clean fill" as defined in ODEQ 2019 Internal Management Directive: Clean Fill Determinations.
25*			A representative aliquot of the sample delivered to the CMT testing laboratory for each CMT test	Standard Proctor	ASTM D698	See ASTM technical specifications.
		1 initial sample and 1 per 5,000 cubic yards thereafter for soil imported as soil	A representative aliquot of the sample delivered to the CMT testing laboratory for each CMT test	Soil reaction	ASTM D4972	pH 5.5–8; orOtherwise approved by the Engineer.
		cover layer		Water content	ASTM D2216	 ≤ 50% of saturated water content; or Otherwise approved by the Engineer.
				Particle size	ASTM D422	100% passing the 1.5-inch screen.
				USCS soil classification	ASTM D2487	USCS Group GM or GP.
	Representative location within each 12-inch lift of the ISS Soil Cover Layer	5 per acre per lift	Test and equipment preparation in accordance with	In-Place Density and Water Content	ASTM D6938	Soil compaction is at least 98 percent of the maximum dry unit weight per ASTM D698.
			ASTM D6938			 Soil moisture content is within +/-3% of the value defined by ASTM D698.
						Any lift that does not meet the compaction criteria shall be recompacted or removed and replaced.

NOTES & KEY:

CQC

Construction quality control

*Technical specifications to be developed upon approval of the PFDR.		Cr	Chromium	PFDR	Pre-Final Design Report	
		DSM	Deep soil mixing	Psi	Pounds per square inch	
≥	Greater than or equal to	ENGINE	ER Engineer-of-Record	RFI	Request for information	
≤	Less than or equal to	ERS	Earth Retention System	Se	Selenium	
Ag	Silver	GBFS	Ground granular blast furnace slag	Std.	Standard	
As	Arsenic	ISS	In situ soil stabilization/solidification	SVOC	Semivolatile organic compound	
ASTM	ASTM International	ODEQ	Oregon Department of Environmental Quality	UCS	Unconfined compressive strength	
Ba	Barium	Pb	Lead	USCS	Unified Soil Classification System	
Cd	Cadmium	PCB	Polychlorinated biphenyl	USEPA	United States Environmental Protection Agency	
CFR	Code of Federal Regulations	PI	Plasticity index	VOC	Volatile organic compound	
CMT	Construction materials testing		. Idealety index		· Giamo organio composita	
CQA	Construction quality assurance					

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SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

- A. General requirements.
- B. Emergency facilities.
- C. Communications (e.g., radio).
- D. Equipment inspection and maintenance.
- E. Air monitoring.
- F. Temporary buildings.
- G. Temporary utilities.
- H. Sanitary facilities.
- Erosion control.
- J. Dust control.
- K. Perimeter air monitoring.
- L. Materials.
- M. Site inspection.
- N. Installation.
- O. Maintenance.
- P. Operation on call.
- Q. Removal.
- R. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 RELATED SECTIONS

Section 01 33 00 Submittals
Section 01 35 29 Health and Safety Requirements
Section 02 83 20 Construction and Contact Water Management

Section 01 41 00 Regulatory Requirements

1.03 REFERENCES

A. OAR 437-002-0041(8) and 437-002-0144(1).

1.04 TEMPORARY FACILITIES AND CONTROLS BY THE OWNER

A. <u>SWPPP</u>: The Engineer will inspect and monitor stormwater best management practice (BMP) controls in accordance with the SWPPP.

1.05 GENERAL REQUIREMENTS

- A. <u>Minimum Expectation</u>: Facilities and controls specified in this section are considered minimum for the Work. Provide additional facilities and controls considered necessary to accomplish the Work, subject to approval by the Engineer, at no additional Contract cost.
- B. <u>Supplemental Facilities and Controls</u>: Provide supplemental facilities and controls that the Contractor considers necessary for proper execution of the Work.
 - 1. Fulfill responsibilities for protection of persons and property, subject to approval in advance by Owner.
 - 2. Provide, maintain, and remove supplemental facilities and controls at no additional Contract cost.
 - 3. Provide meters/instruments required to measure temporary utility usage associated with the Work such that it can be separated from utility usage by the Owner and/or Property Owner.
- C. <u>Construction and Inspection Aids</u>: Provide construction aids, inspection aids, and equipment required by personnel to facilitate the Work.
- D. <u>Installation</u>: Furnish, install, and maintain temporary facilities and controls required to construct the Work.
 - 1. Use qualified workers for installation of temporary facilities and controls.
 - 2. Locate temporary facilities and controls where they will serve all the Work to the extent practical. If not, provide multiple temporary facilities and controls to provide service to the entire ISS Work Area.
- E. <u>Damage</u>: Clean and repair damage caused by or to temporary facilities and controls, or due to the use of temporary facilities or controls.
- F. Equipment Inspection: Schedule, deliver, stage, and demonstrate each unit of powered equipment proposed for use onsite as arranged by Engineer at the Property entrance. Obtain Engineer approval of the equipment for use for the Work prior to transit from the Property entrance to the work area.
- G. <u>Spills</u>: Develop and implement a Spill Prevention, Control, and Response Plan acceptable to the Engineer for the Work.
- H. <u>Operation and Maintenance</u>: Operate and maintain each temporary facility and control in good condition acceptable to the Owner.

- Residuals Management: Manage residuals from installation, operation, maintenance, and removal of temporary facilities and controls in accordance with procedures approved in advance by the Engineer.
- J. <u>Removal</u>: Remove temporary facilities and controls installed for the Work after completion of the Work, unless otherwise approved in advance or ordered in writing by the Engineer.

1.06 SUBMITTALS

- A. <u>General Requirements</u>: Submit a complete description of each temporary facility and control that will be used for the Work, including compliance with applicable plans, dimensions, materials, product standards, size, shop and field fabrication, strength, type, weight, installation requirements, power requirements, maintenance requirements, operating residuals management and volume, removal, and final disposal or reuse, in accordance with Section 01 33 00.
- B. <u>Use, Modification, and Removal</u>: Obtain Engineer approval of each temporary facility and control prior to initiating purchase of the corresponding facility or control, each modification, and each removal.
- C. <u>Engineer Review and Approval</u>: Obtain Engineer approval of each submittal prior to mobilization for the Work.

1.07 TEMPORARY BUILDINGS (if planned)

- B. <u>General Requirements</u>: Provide temporary buildings for Contractor use during the Work in this Contract.
 - Obtain temporary utility connections from a public or private utility authorized by the
 corresponding utility regulator to provide that service at the Site, if applicable. A temporary
 power pole from the Owner's electric utility may be installed by the Contractor; any such
 power pole must be in compliance with all local, state, and national regulations. Supply each
 building intended to be occupied with adequate electric power for air conditioning, heating, air
 vents, lighting, work stations, refrigerators, and equipment charging.
 - 2. Provide secure locking doors with door bars for each building. Provide secured windows for each building.
 - 3. Provide at least one window in each room.
 - 4. Locate buildings in a support area(s) onsite approved for that use by the Engineer.
 - 5. Install buildings in compliance with the manufacturer's printed instruction approved by the Engineer.
 - 6. Install buildings in compliance with City of Portland and Multnomah Country regulations.
 - 7. Install wind and seismic tie-downs and electrical ground rod or grounding grid after subsurface clearances acceptable to the Engineer.
- C. <u>Field Office</u>: Provide sufficient temporary office trailers for the Contractor and Contractor personnel and subcontractors at a location acceptable to the Owner.
 - 1. Locate Contractor field office in an area that will provide nearby and convenient access to the Engineer field office.
 - 2. Provide a project meeting room for regular meetings attended by Contractor and Engineer.
 - 3. Provide sufficient offices for Contractor personnel.

- 4. Provide all furnishings including tables, desks, chairs, filing cabinets, refrigerator, microwave, printer/copier/scanner, etc. for the field office.
- 5. Establish a designated location within the field office for temporary storage of personal protective equipment (PPE) while not in use.
- 6. Keep used PPE segregated from any food/drink storage or preparation areas.
- 7. Engineer will provide their own Field Office Trailers sufficient for Engineer personnel only.
- 8. The offices and meeting room in the Owner's administration building may be used by the Contractor with Owner's approval.
- D. Worker Break Room: Provide a break room in each trailer for use by Contractor field staff.
 - 1. Consumption of food and beverages and application of cosmetics in areas of Work and outside the designated break room are prohibited.
 - 2. The Contractor shall place signage in the break room indicating that PPE shall not be placed on tables or other surfaces where food or drink may be placed.
 - 3. Contractor shall clean all surfaces in the break room (floor, tables, etc.) at least once during each workday or more frequently as needed.
- E. <u>Supply Trailer</u>: If necessary to protect equipment, products, and supplies from weather, provide a weatherproof supply trailer with, if necessary, air conditioning, heating, and lighting at a location onsite approved by the Owner. Protect and, as needed, restore to original condition, surfaces on which any supply trailer is placed.
- F. Maintenance and Repair: Maintain each temporary facility in good repair throughout the Work.

1.08 TEMPORARY UTILITIES

- A. <u>Electric Power</u>: Provide electric power needed for the Work from a source, and via distribution, grounding, and controls, acceptable to the Engineer. Provide power supply or generation facilities with sufficient capacity for power and lighting required for all active work areas, traffic, and security when natural light and any artificial light provided by Engineer is not adequate to accomplish the Work safely, as determined by the Engineer. Engineer has an existing grid-source, though Contractor must provide all electric power from portable generator sources for any areas that cannot be supplied via onsite distribution.
 - 1. Temporary Site Electric Power Supply or Generators (if necessary): Install and operate an electric power supply by use of portable generators for the Property that is sufficient for the Work. Operate the electric power system by workers on the Property who are qualified to start, operate, adjust, stop, and secure the system from unintended or unsafe operation. Assure that Engineer field offices are wired and powered during all work hours and non-work hours as equipment will be charging overnight, and kitchen refrigerator and sample refrigerators shall remain operational over nights and weekends.
 - 2. <u>Connection Approval</u>: Make each termination, connection, and disconnection of any power source or supply in accordance with approval in advance of the first connection, and in accordance with all applicable permits.
 - 3. <u>Interconnections</u>: Do not interconnect any public utility electric power supply or ground with any Site power supply or ground.
 - 4. <u>Temporary Electric Power Distribution for the Work</u>: Regardless of the electric power supply source, design, construct, operate, decommission, and demolish temporary electric power distribution from the electric power supply to the Work electric power controls and loads in

- accordance with the National Electric Code, the National Electric Safety Code, all current federal, state, and local codes and regulations, and utility company requirements.
- Inspections: Coordinate City and/or public utility owner inspection of all electrical services
 unless otherwise approved by the City and/or public utility owner. Correct any deficiency or
 requirement stated by City and/or public utility owner inspection report at no additional
 Contract cost.
- 6. GFCI Protection: Equip all electrical services with GFCI protection.
- 7. <u>Electrical Grounding</u>: Complete grounding of power conductors via a grounding rod or a grounding grid in accordance with the National Electric Code, the National Electric Safety Code, all current federal, state, and local codes and regulations, County Health Department regulations, and utility company requirements. The installation of any grounding rods must be in compliance with the Engineer's Subsurface Clearance (SSC) requirements.
- 8. Cost of Electric Power from a Local Electric Power Supply or Generator: If electric power is obtained from the use of a generator for the Work, obtain and pay for the electric power supply design, permitting, mobilization, equipment purchase, equipment rental, structures, electrical devices, installation, connection, fuel and lubricants, maintenance, qualified operator(s) disconnection, and demobilization provided by a licensed electrical contractor at no additional Contract cost.
- 9. <u>Powering of AMS</u>: see section 1.03, A, 3 for Contractor requirements to power 5 AMS throughout the course of work.
- B. <u>Lighting</u>: Provide safety and task lighting as needed to accomplish the Work. Provide lighting necessary to complete the Work and as required by Oregon Occupational Health and Safety (Oregon OSHA) regulations, and OAR 437-002-0041(8) and 437-002-0144(1).
- C. Water: Obtain and transport to the Property water necessary to construct the Work.
 - <u>Drinking Water Supply</u>: Supply sufficient bottled water to meet the demand of all onsite Contractor and Engineer personnel, including drinking water for human consumption and emergency eyewash, in original labeled bottles from a commercial vendor licensed by the State of Oregon to sell drinking water in Oregon.
 - a. Contractor shall equip field offices with water coolers with 5-gallon water jugs (or similar as approved by Owner) that allow for filling of reusable water bottles.
 - b. Contractor shall provide a minimum of one such reusable bottle for each member of Contractor's team (plus an allowance for replacement personnel). Reusable bottles are to be used only in Support Zones, field offices, or offsite.
 - 2. <u>Construction Water Supply</u>: Provide connection to private hydrants at the Property for construction of the Work.
 - 3. <u>Equipment and Personnel Decontamination Water Supply:</u> Use City of Portland water supply or otherwise supplied potable water.
 - 4. <u>Key Water Quality Properties</u>: Regardless of source, use water that is free of acid, alkali, oil, salt, Property constituents of concern, waste, and other unsuitable substances.
- D. <u>High Speed Wireless Internet</u>: High speed Internet is supplied to the Owner's administration building. The Contractor may install wireless Internet relay antennas from the administration building to the Contractor's buildings; such antennas must not interfere with existing antenna relays to the Owner's other buildings.
- E. <u>Maintenance</u>: Maintain each temporary utility's structural, mechanical, and electrical components in good and safe operating condition. Modify, extend, and operate temporary electric power facilities as work progress requires at no additional Contract cost.

1.09 TEMPORARY SANITARY FACILITIES AND EMERGENCY WASH FACILITIES

- A. <u>Sanitary Facilities</u>: Provide self-contained, gender-specific sanitary and hand-wash facilities including mobilization and maintenance.
 - 1. Service and maintain each self-contained sanitary facility throughout the Work.
 - 2. Provide a sufficient number of separate men's and women's sanitary facilities for all onsite personnel and guests, including for up to 5 Engineer personnel.
 - 3. Provide at least one facility in accordance with the Americans with Disabilities Act.
 - 4. Provide and locate a sufficient number of sanitary and hand-wash facilities in close proximity to each of the office trailers, break areas, and work areas.
 - After Owner approval of the final inspection, remove sanitary facilities in accordance with the requirements of local or state health authorities, ordinances, and laws and that are acceptable to the Owner.
- B. <u>Emergency Wash Facility Requirements</u>: Provide an adequate number of eyewash facilities and at least one emergency shower.
 - 1. Comply with all applicable regulations regarding the number, type, condition, size, location, labelling or signage, and accessibility of emergency wash facilities.

1.10 WORK ZONE ESTABLISHMENT

- B. <u>General Requirements</u>: Establish all required work zones including Exclusion Zones, Contamination Reduction Zones, Support Zones, PPE storage facilities, traffic zones, and break areas. Comply with all applicable regulations, including federal and Oregon Occupational Safety and Health Administration (OSHA).
- C. Establish Temporary/Permanent Fencing and Barricades: Each individual AMS location shall be secured with fencing enclosures (cages) fabricated by the Contractor, designed for easy access by Engineer personnel by means of a locking gate or door, to prevent equipment and material from vandalism and theft in the event Site perimeter is breached. Use mini mesh (no-climb) chain link fence panels for the enclosure with appropriate structural support and sufficiently fastened to the ground to prevent trespassers from moving or lifting them. Assume that each enclosure shall have an interior clear dimension of 10'x10'x8' tall. Due to the size of high-volume samplers and their bright metallic appearance, they are considered an attractive target for trespassers and are not easily moved into a conex for overnight safe storage. Another priority is to use material that would prevent bolt cutters from easily cutting access into the enclosures (standard chain link fence is easily breached).
 - 1. Provide additional barricades, signage, and protection from open excavations, trenches, stockpiles, and other high-risk hazards during non-working hours.
 - 2. Replace in kind any existing fencing removed during the course of Work, as needed.
 - 3. Dispose of or recycle all removed fence materials at no additional Contract cost.
 - 4. Remove temporary fencing and barricades after final inspection.
- D. <u>Non-Working Hours</u>: Contractor may provide security measures outside of site working hours. The Property Owner shall not be responsible for any theft, destruction, vandalism, or other damage to the Contractor's owned, leased, or rented equipment.

1.11 TEMPORARY DECONTAMINATION FACILITIES

- A. <u>General:</u> Provide all materials and personnel to establish and maintain Contamination Reduction Zones in accordance with Section 01 35 29 and the Contractor's HASP favorably reviewed by the Engineer.
- B. Workers Served: Provide and maintain personnel decontamination facilities described in detail in the Contractor's HASP for use by the Contractor employees, Contractor subcontractor employees, Engineer employees, and other Owner Contractor employees providing labor or services for the Work.
- C. <u>Disposable Items</u>: Provide, maintain, and contain spent disposable items such as plastic drop cloths, detergents, wash water, trash bags, and towels.
- D. <u>Fixtures, Equipment, and Supplies</u>: Provide all fixtures, equipment, and supplies (e.g., benches, stools, tables, buckets, wash tubs, trash cans, scrub brushes, sponges, detergents, and degreasers) necessary to set up and operate the decontamination facilities.
- E. <u>Construction Entrances and Exits</u>: Furnish and install construction entrance and exit points with appropriate measures (e.g., rumble strips, large rock) to prevent tracking from the Site throughout the Work.
- F. <u>Prevent Tracking</u>: Perform manual dry or wet decontamination to prevent tracking soil or other debris to any areas outside of any Exclusion Zone, including onto private roads and city streets.
 - 1. Sweep weekly or more frequently as needed to collect and containerize fugitive trackout, dust, and spills on Property roads and NW Front Avenue. It shall be noted that Property Owner maintains a clean Property and requires the ISS Work operations to contain all trackout, dust, debris, trash, and other impacts to the Property within the ISS Work Area. Contractor is expected to comply with these requirements, as well as remove any trackout on NW Front Avenue from Site operations.
- G. <u>Immediate Remedy of Failure to Prevent Tracking</u>: If the measures to prevent tracking (including those at the construction entrances and exits and on Front Avenue) fail to do so as determined by the Engineer, immediately implement an effective and permanent remedy, including recovery of matter that migrates from the original location on which the material was tracked and decontamination of the facilities and surfaces affected, at no additional Contract cost.
- H. <u>Decontamination Waste Collection and Disposal</u>: Contain and collect decontamination wash water and solids for the Work, if any.
 - If any of the ISS Soil Cover is not covering all or part of the ISS Work Area, and all or part of
 the wash water and solids can be contained in the uncovered part of the ISS Treatment Cell,
 consolidate the part of the wash water and solids with the ISS soil mixture at a location(s)
 where it can be covered by the bottom of the initial Soil Cover placed over ISS soil mixture as
 approved by Engineer.
 - If the ISS Work Area is not prepared, or is no longer uncovered, store wash water and solids removed in waste containers approved for that use by the Engineer at a location designated by the Engineer.
 - 3. After obtaining Owner approval of the location and proper labeling of waste containers, dispose of the waste in accordance with the CMMP..
 - 4. Provide to the Owner confirmation that proper handling and/or disposal was completed.

- Submittals: Submit the temporary decontamination facility details and obtain Owner approval
 prior to initiation of mobilization for the Work.
 Submit a scaled Site plan showing the construction entrance and exit layouts and
 specifications of any associated controls including rock, rumble strips, dry decontamination
 equipment and personnel, and wet decontamination equipment and personnel.
- 2. Submit a Site plan or description of the typical location of each Contamination Reduction Zone and the associated equipment and materials to be provided.

1.12 TEMPORARY FACILITIES FOR PREVENTION OF EROSION AND SEDIMENTATION

- A. <u>General Requirements</u>: Construct, modify, maintain, and remove erosion and sedimentation controls that allow Property stormwater to comply with the SWPPP and any applicable regulatory requirements.
 - The Contract Documents shall be considered minimum requirements for erosion and sediment control and shall not relieve the Contractor of the responsibility to actively take all steps necessary to control soil erosion and sediment in all areas associated with the Work in accordance with all applicable local, municipal, state, or federal enforcing agency guidelines; Engineer direction; and these Specifications.
 - 2. Temporary erosion and sediment control features installed by the Contractor shall be maintained by the Contractor until no longer needed as determined by the Engineer.
 - 3. The Contractor shall provide additional erosion and sediment control measures when heavy precipitation events are forecasted in the area.
 - 4. The Engineer shall perform regular SWPPP and BMP inspections around the Site and Property, and Contractor shall promptly fix, repair, and maintain controls and BMPs based on the Engineer inspection results.
- B. Erosion Minimization: Prevent discharge of pollutants, including sediment and pH.
- C. <u>SWPPP Inspection Requirements</u>: Comply with and provide all improvements noted by the Engineer. Provide maintenance of controls and any additional materials needed throughout the Work at no additional Contract cost.

1.13 TEMPORARY DUST CONTROL

- A. <u>General Requirements</u>: Construct, modify, maintain, and remove wind erosion controls that allow compliance with the HASP, Section 01 41 00, and all applicable regulatory requirements.
- B. Onsite Worker Protection: Implement dust control (e.g., applying water through spray nozzles, cover over material stockpiles) to limit generation of dust at the Property to concentrations less than the most stringent of the limit specified in the HASP, the OSHA limits for exposure to Particulates Not Otherwise Regulated (PNOR) listed, and in accordance with the Contractor's HASP as favorably reviewed by the Owner and as otherwise directed by the Owner to prevent dust from leaving the Property above action levels.
 - 1. The Contractor shall provide for enough dust control devices (e.g., water truck) to simultaneously apply dust control measures at all active work zones, including haul routes.
 - The Contractor will cease work if directed by the Owner as a result of unacceptable dust generation; such work stoppage shall not be acceptable cause for Change Orders (including schedule extensions).

- Perform dust monitoring in accordance with OSHA and Cal/OSHA requirements and the Contractor's HASP.
- C. <u>Local Regulatory Requirements</u>: Prevent visible dust and dust concentrations from leaving the Property boundary. Comply with applicable ODEQ requirements for dust or particulate generation and controls. If action levels in the HASP are exceeded or consistently close to being exceeded, stop work as directed by the Owner and develop mitigation actions to lower the levels of dust being generated.
- D. <u>Reagent Particulate Controls</u>: Prevent generation of visible dust during the transfer or use of each ISS reagent and reagent mixtures to the satisfaction of the Engineer.
- E. <u>SWPPP Inspection Requirements</u>: Comply with and provide all improvements noted by the Engineer during Engineer inspection of SWPPP implementation. Provide maintenance of controls and any additional materials needed throughout the Work at no additional Contract cost.
- F. <u>Submittals</u>: Submit proposed dust controls, monitoring, and implementation procedures to the Owner. Obtain Owner approval prior to mobilization for the Work.

1.14 TEMPORARY SPILL PREVENTION AND RESPONSE CONTROLS

- A. <u>General Requirements</u>: Construct, modify, maintain, and remove spill prevention controls that allow compliance with the SWPPP, HASP, and all applicable regulatory requirements.
- B. <u>Spill Cleanup Equipment</u>: Provide empty containers, tools, and materials that are designated spill kits staged near each potential spill source.
- C. Notification of Spills: Report each spill of fuel or oil, reagent or slurry, , product, and other material to the Engineer immediately and when safe to do so. Report each spill in excess of the respective reportable quantity(s) or, for a spill in transit, in accordance with the CMMP. The report shall include the quantity of the spill, a description of the material spilled, and a description of the actions taken to clean up the spill. Any impacted materials associated with spill cleanup shall be managed and disposed of by the Contractor in accordance with all applicable laws, rules, regulations, and other requirements CMMP at no cost to the Owner. The Contractor (or any of their subcontractors or vendors as applicable) shall be listed as the generator for such materials. No schedule extensions or Change Orders will be granted for lost time or costs associated with spills caused by the Contractor or any of their subcontractors or vendors.
- D. Fueling Facilities: Use a commercial fueling service approved by the Owner to refuel equipment.
 - 1. Use a fueling service vendor stated in the ISS Work Plan favorably reviewed by the Owner.
 - 2. Portable refueling tanks for equipment are permitted on the Site with written approval by the Owner.
 - 3. Any minor quantities of fuel (5 gallons or fewer) shall be stored in container types and quantities below the applicability levels of federal, state, and local requirements for SPCC Plans and/or secondary containment requirements. Comply with all applicable laws, rules, regulations, and other requirements.
- E. <u>SWPPP Inspection Requirements</u>: Comply with and provide all improvements noted by the Engineer during spill prevention and response-related inspections, including those required by

conditions of the SWPPP permit. Provide maintenance of spill controls and any additional materials needed throughout the Project at no additional Contract cost.

F. <u>Submittals</u>: Submit a detailed Spill Prevention, Control, and Response Plan to the Owner. Obtain Owner approval prior to initiation of mobilization for the Work.

1.15 ONSITE STORAGE AND STAGING

- A. <u>General Requirements</u>: Locate onsite storage areas in parts of the Property approved in advance by the Owner.
 - 1. Store on the Property only equipment or supplies that are designated for use for the Work.
 - 2. Properly store equipment and supplies, including hazardous materials.
 - 3. Keep all storage and laydown areas in a neat and orderly manner, free of potential fire and trip hazards.
 - 4. Confine temporary storage or staging of materials, supplies, and equipment for the Work, as constrained by Work sequencing requirements and available areas designated on the Drawings and approved by the Owner/Engineer.
 - 5. Prepare, maintain, secure, and decommission the temporary staging area.
- B. <u>Material and Equipment Security</u>: Provide secure storage facilities or containers as necessary to perform the Work.
 - 1. Provide security throughout the Work and after work hours, unless clearly stated as not included in the Contract.
 - 2. Secure all materials and equipment stored onsite for the Work, as well as the completed Work, until the Owner accepts all Work.
 - 3. Security scope and responsibility include prevention of theft, damage from all sources, vandalism, and non-compliance with the requirements of these Specifications.
- C. <u>Maintenance and Removal</u>: Manage and modify temporary staging areas, if necessary, as approved by the Owner.
 - 1. Comply with all federal, state, and local rules and regulations.
 - 2. Remediate contamination of the temporary staging area caused by spills, releases, and emissions to the environment to the satisfaction of the Owner at no additional Contract cost.
 - 3. Remove all materials or wastes from the Property at the conclusion of the Work at no additional Contract cost.
 - 4. Remove all evidence of the temporary staging area prior to completion of demobilization.

PART 2 - PRODUCTS

2.01 MATERIALS FOR TEMPORARY FACILITIES AND CONTROLS

- A. <u>Compliance with Codes and Standards</u>: Use materials that comply with the requirements of applicable codes, permits, and standards.
- B. <u>Submittals</u>: Submit each material proposed for use as temporary facilities and controls. Obtain Owner approval prior to mobilization for the Work.

C. <u>Type</u>: Provide newly manufactured materials in their original factory containers suitable for their intended purpose unless otherwise submitted and approved by the Owner.

2.02 TEMPORARY WATER TANKS AND OTHER STORAGE VESSELS

- A. <u>Clean Prior to Delivery to the Site</u>: Clean each tank or vessel prior to delivery to the Site.
- B. <u>Inspection</u>: Facilitate Engineer access and inspection to confirm that each tank and vessel proposed for use for the Work is clean and empty prior to use for the Work.

PART 3 - EXECUTION

3.01 STORMWATER MANAGEMENT DURING THE WORK

- A. Erosion Control: Prevent erosion of Property sediment and soil, including soil stockpiles.
- B. <u>Sedimentation Control</u>: Prevent release of sediment from each work area to locations outside that work area.
- C. <u>Stormwater Run-on</u>: Prevent run-on of surface water into the ISS Work Area.

3.02 DECONTAMINATION DURING THE WORK

- A. <u>Storage of Construction Waste Materials</u>: Dispose of all spent PPE and related residuals in containers for storage onsite in locations approved by the Owner.
- B. Exclude Liquids: Exclude liquids from waste materials disposed of in waste containers.
- C. <u>Minimize Waste</u>: Minimize the number and volume of materials that contact potentially impacted groundwater, sediment, soil, and surface water; and media contacted by potentially impacted groundwater, sediment, soil, and surface water and are otherwise spent or wasted, and that therefore require containment and disposal.
- D. <u>Label Waste Containers</u>: Fill in and prominently affix consistent-design, legible, descriptive precautionary labels approved by rule for that use and approved in advance by the Owner to containers of potentially impacted construction waste.
- E. <u>Disposal</u>: Coordinate with the Owner regarding location and proper labeling of waste containers. After obtaining Owner approval of the location and proper labeling of waste containers, dispose of the waste and the waste containers at a properly permitted facility approved in advance by the Owner for that use at no additional Contract cost.
- F. Provide the Owner with confirmation that each waste disposal action was completed and documented as planned.

3.03 DUST CONTROL

- A. <u>Application Frequency and Rate</u>: Obtain, transport, control, and apply clean water at frequencies and rates sufficient to control dust originating from traffic and construction activities associated with the Work.
- B. <u>Water Transport</u>: Convey or transport water to the application site in a manner approved by the Owner.
- C. <u>Water Application Components</u>: Apply water with pressurized distributors on pipes or water trucks equipped with nozzles or an equivalent system to produce a uniform distribution of water that controls dust while minimizing runoff.
- D. <u>Runoff Collection and Disposal</u>: Contain and collect resulting runoff, if any. Pump runoff collected to a container or location approved by the Owner.
- E. <u>Dust Abatement</u>: Implement dust abatement in accordance with the HASP and the CAMP to prevent visible dust from leaving the Property boundary, and in compliance with all applicable regulations.
- 3.04 SITE INSPECTION PRIOR TO CONSTRUCTION OF TEMPORARY FACILITIES AND CONTROLS
 - A. <u>Inspection</u>: Review Property conditions and factors that affect construction procedures and construction facilities, including adjacent properties that may be affected by the Work.
- 3.05 INSTALLATION OF TEMPORARY FACILITIES AND CONTROLS
 - A. <u>Installation</u>: Install facilities of neat and reasonably uniform appearance. Provide facilities that are structurally adequate for the purposes used.
- 3.06 MAINTENANCE OF TEMPORARY FACILITIES AND CONTROLS
 - A. <u>Maintenance</u>: Maintain facilities throughout the Work.
- 3.07 OPERATION ON CALL
 - A. <u>General Requirements</u>: Provide equipment, material, personnel, and supplies necessary to operate and maintain temporary facilities and controls during non-working hours when necessary to maintain effectiveness of the controls throughout the Work at no additional Contract cost.
- 3.08 REMOVAL OF TEMPORARY FACILITIES AND CONTROLS
 - A. <u>Removal</u>: Remove all temporary buildings, storage facilities, sanitary facilities, and signs, and disconnect all temporary utility connections, prior to final inspection.
 - 1. Temporary Property improvements may remain in place at conclusion of the Work only with Owner's written approval in advance.
 - 2. Provide temporary facilities and controls left in place at no additional Contract cost.
 - B. <u>Damage Repair</u>: Clean and repair damage caused by installation or by use of temporary facilities or controls.

- C. <u>Grading</u>: Grade areas of the Property affected by the installation of temporary facilities to required elevations and slopes. Do not reduce the thickness of ISS Cap or soil used as backfill.
- D. <u>Existing Facilities</u>: Restore existing facilities used for temporary facilities or controls to original condition.
- E. <u>Safety Devices</u>: Clear the work area of temporary safety devices.

END OF SECTION

SECTION 01 57 00

ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall perform all Work in such manner as to minimize the polluting of air, water, or land, and shall, within reasonable limits, control noise and minimize the generation of solid waste materials, as well as other pollutants. Disposal of contractor generated waste materials shall comply with all applicable federal, state, local, and environmental regulations and the CMMP.

1.02 PRE-CONSTRUCTION WALK-THROUGH

A. Prior to the start of any on-Site construction activities, the Contractor and the Engineer shall make a joint condition survey of the Site after which the Contractor shall prepare a brief report indicating on a layout plan the condition of structures, fences, equipment, stored product and materials, and items near the Work areas and access route(s) as applicable. The report shall contain photographs of pre-construction conditions, including photographs of any structures designated for demolition. This report will be signed by both the Engineer and the Contractor upon mutual agreement as to its accuracy and completeness. The report must be submitted to and signed by the Engineer prior to the onset of construction activities.

1.03 PROTECTION OF LAND AREAS AND UTILITIES

- A. Except for any Work, or storage area and access routes specifically assigned for the use of the Contractor, the land areas outside the limits of disturbance performed shall be preserved in their present condition.
- B. The Contractor shall confine its construction activities to areas defined for Work on the Drawings or specifically assigned for its use within the designated disturbed area. Storage and related areas and access required temporarily by the Contractor in the performance of the Work shall be coordinated with the Owner.
- C. The Work includes grading and other activities near, and at, the location of utilities, both subsurface and overhead. Work shall also be conducted in accordance with all local and state requirements.
- D. It is the responsibility of the Contractor to notify Oregon 811 in advance of performing any intrusive work. Any other active One-Call tickets on the Site may not be used as basis to perform excavation activities.

1.04 PROTECTION OF SURROUNDING AREAS

A. The Contractor shall not damage or compromise the integrity of any infrastructure, equipment, materials, or other items not designated for removal or any Work. Any damage to items within or outside the Work area that are not designated for dismantling shall be restored or replaced in kind at no additional cost to the Owner.

1.05 PROTECTION OF WATER RESOURCES

A. The Contractor shall control the management, handling, and disposal of fuels, oils, acids, alkalis, pesticides, rodenticides, or other harmful materials brought onsite, both on- and off-Site, and shall comply with applicable federal, state, and local laws concerning the pollution of rivers and

streams. Special measures shall be taken to prevent chemicals, fuels, oils, greases, herbicides, and insecticides from entering public waters or the onsite Stormwater System. Stationary equipment containing these materials shall be stored in secondary containment of sufficient capacity to contain a release.

B. All residues resulting from spills of fuels, lubricants, or cleaning agents must be properly removed, handled, and disposed and shall comply with applicable federal, state, and local laws and the CMMP at the Contractor's expense.

1.06 WASTE DISPOSAL

- A. The Contractor shall place all general debris and waste; i.e., paper, trash, etc., in a storage container provided by the Contractor for subsequent disposal and shall comply with applicable federal, state, and local laws and the CMMP. Demolition debris and similar materials that are not considered general debris, but rather potential contaminated material shall be managed as required by these Specifications and the CMMP as construction and demolition debris. If any waste material is dumped in unauthorized areas, the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed areas.
- B. No material shall be burned on the project Site. It shall be the responsibility of the Contractor to provide disposal of all contractor generated construction waste materials in accordance with all federal, state and local regulations.
- E. For materials potentially transported off-Site, the Owner will retain responsibility for the waste and sign all waste manifests and/or bills of lading as a demonstration that the waste was delivered and properly managed by the designated facility, and such disposal complies with all applicable regulations. The contractor is responsible for the segregation, stockpiling and loading the trucks for any material designated/characterized requiring offsite disposal.

1.07 DUST CONTROL

- A. The Contractor shall maintain all stockpiles, access roads, work areas, off-Site roadways and all other Work areas free from excess dust to such reasonable degree as to avoid causing a hazard or nuisance to others.
- B. Approved temporary methods for dust control consist of sprinkling of water, a dilute solution of water with a biodegradable surfactant (less than 0.05 percent), application of spray-on cellulose cover, or covering with plastic sheeting. Approval of such temporary methods must be granted by the Owner prior to initiation.
- C. Dust control shall be performed as the Work proceeds and whenever a dust, no visible dust nuisance, hazard, or exceedance of predefined action levels occurs, or as otherwise directed by the Owner.

1.08 CORRECTIVE ACTION

A. The Contractor shall, upon receipt of a written notice in writing from the Owner of any non-compliance with the foregoing provisions, take immediate corrective action in accordance with any and all federal, state, or local laws or regulations. If the Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the Work until satisfactory corrective action has been taken.

1.09 POST-CONSTRUCTION CLEANUP OR OBLITERATION

A. The Contractor shall, unless otherwise instructed in writing by the Owner, obliterate all signs of temporary construction facilities such as temporary access roads, Work areas, , and other vestiges of construction prior to final acceptance of the Work. Any disturbed surface areas shall be graded as indicated on the Drawings.

1.10 EROSION CONTROL

- A. Surface drainage from cuts and fills, within the construction limits, whether or not completed, and from excavated areas shall be graded to control erosion within acceptable limits.
- B. Temporary control measures shall be provided and maintained throughout construction. Such measures may include, but not be limited to silt fence, silt sock, filter sock, inlet filters, erosion control mat, and stabilized construction entrance(s). No additional payment will be considered or approved for repair or maintenance of the erosion control measures or for erosion repair.
- C. The area of bare soil, exposed at any one time by construction operations shall be minimized to the satisfaction of the Engineer.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

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SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 EQUIPMENT AND PRODUCTS SPECIFIED

- A. In various detailed Sections of these Specifications, certain items of equipment, materials, or products are specified by proprietary name or trade name and shall be used without exception unless prior written approval from the Engineer. It is to be understood that these items are to be furnished by the Contractor as indicated in this Section and no substitutes will be allowed without prior written approval of the Engineer.
- B. In the various detailed Sections of these Specifications, where any item of equipment or product is specified by proprietary name or trade name, with the addition of such expressions as "or equal", it is to be understood that equal quality equipment or products of either a manufacturer named or a manufacturer not named which meet the detailed requirements of the Specifications are subject to the approval of the Engineer as to the equality thereof.

1.02 STORAGE AND MAINTENANCE OF EQUIPMENT

- A. All equipment, materials, and products provided and Work performed under this Contract shall be protected from damage before installation. The Contractor shall be responsible for Work, equipment, materials, and products until inspected, tested, and finally accepted in accordance with this Section and the General Conditions.
- B. During construction, and at the end of each working day or other period, equipment shall be effectively closed with temporary covers or plugs to prevent the entry of foreign material.
- C. Where permanent equipment called for under this Contract is installed, before the erection of adequate protective structures, the Contractor without additional compensation therefore, shall provide approved, effective, and durable covers for fully protecting such equipment against damage from the elements or from any other causes.
- D. All machinery, equipment, piping, and accessories and appurtenances shall be adequately supported and safeguarded against all damage or injury during performance of Work under this Contract. The Contractor shall be responsible for all damage or injury resulting from its operations and shall repair such damage immediately and to the satisfaction of the Owner.
- E. The Contractor shall store and protect equipment, materials, and products in accordance with the manufacturer's recommendations and the requirements specified in these Specifications and shall submit the manufacturer's storage and maintenance instructions to the Owner prior to delivery.
- F. The Contractor shall make all arrangements and provisions necessary for the storage of equipment, materials, and products. All excavated material, construction equipment, and materials and equipment to be incorporated into the Work shall be placed so as not to injure any part of the Work or existing facilities, and so that free access can be achieved at all times to all parts of the Work and to all public utility installations in the vicinity of the Work. Equipment, materials, and products shall be kept neatly and compactly stored in locations that will cause a minimum of inconvenience to other contractors, public travel, adjoining owners, tenants, occupants, and Engineer personnel.
- G. Areas available on the project site for storage of equipment, materials, and products shall be as shown on the DWGs, specified, or designated and approved by the Engineer. All equipment,

materials, and products must be consigned to the Contractor directly. No delivery of equipment, materials, and products will be accepted by the Engineer, and all expenses incurred by the Engineer in handling equipment, materials, and products which have been consigned or directed to the Owner will be charged to the Contractor.

- H. Equipment, materials, and products which are to become the property of the Owner shall be stored to facilitate their inspection and ensure preservation of the quality and fitness of the Work, including proper protection against damage by freezing and moisture. They shall be placed inside storage areas, unless otherwise shown, specified, or acceptable to the Owner.
- Contractor shall be fully responsible for loss or damage to stored equipment, materials, and products.
- J. Any equipment, materials, or products which, in the opinion of the Owner, have been damaged due to improper storage and/or handling and is unfit for its specified or intended use shall be properly removed from the site or Work. The Contractor shall receive no compensation for the damaged equipment, material, or product or its removal or replacement.
- K. All materials delivered and stored on-site shall bear the manufacturer's trade names, labels, stamps, or other suitable identification clearly marked in a conspicuous place.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 66 00

MATERIAL HANDLING AND STORAGE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Material handling and storage.
- B. Housekeeping associated with material handling and storage.
- C. Disposal of excess material.
- All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 GENERAL REQUIREMENTS

- A. <u>Good Housekeeping</u>: Maintain all Work areas in neat and safe condition at all times. Store materials in a planned and orderly manner that does not endanger worker safety. Comply with Owner's Contractor Minimum Safety Requirements and perform all additional housekeeping measures as directed by the Owner, Property Owner, or Engineer in Section 01 35 29 (Health and Safety Requirements).
- B. <u>Hazardous Materials</u>: Store hazardous materials in accordance with all applicable local, state, and federal laws, rules, regulations, and CMMP requirements.
- C. <u>Pallets</u>: Store all materials on clean and sound pallets to discourage rodent infestation unless otherwise approved in writing by the Engineer. Immediately clean up spills and leaks that create such rodent habitat.
- D. <u>Lifting</u>: Use slings to hoist bagged material, lumber, bricks, masonry blocks, and similar loosely stacked materials only if the slings are in acceptable condition; have the appropriate weight rating for the proposed load; and are fully secured against falling by straps, sideboards, nets, or other suitable devices. Lifting plans shall be prepared for Owner and FSO review, for all lifting that requires cranes, a telehandler, forklift, or similar equipment.
- E. <u>Containers</u>: Receive and store materials delivered for the Work in containers in the original manufacturer's factory-sealed container and with the original manufacturer's labels that identify the materials and associated hazards in accordance with Occupation Safety and Health Administration (OSHA) requirements, including appropriate signal words and pictograms where applicable.

1.03 STORING MATERIALS IN TEMPORARY LAYDOWN AND STOCKPILE AREAS

- A. <u>General Requirements</u>: Store material in a temporary laydown or stockpile area on the Site approved in advance by the Owner for that use and those materials. Designate laydown and stockpile areas with signage, traffic delineators, and rope or plastic tape or chain barriers.
- B. <u>Protection</u>: Actively provide protection of combustible materials, including access, power lines, and fire protection acceptable at all times to the Owner.
- C. <u>Combustible Materials:</u> Stack combustible materials securely. Store combustible material at least 10 feet away from any building or structure.

- D. Access: Provide driveways between and around combustible storage piles that are at least 15 feet wide.
 - 1. Provide a radius of at least 25 feet at the inside side of turns and intersections.
 - 2. Keep access clear of accumulation of stored material and rubbish.
 - 3. Store materials to prevent blocking routine worker access and egress.
 - 4. Store materials to prevent blocking emergency equipment access and egress.
- E. <u>Fire Protection</u>: Provide portable fire-extinguishing equipment rated 2-A:40-B:C at accessible marked locations so that the nearest extinguisher is no more than 50 feet away from a Class B hazard or 75 feet away from a Class A hazard. Class C (electrical hazards) fire extinguishers cannot exceed 75 feet in travel distance.

1.04 STORING MATERIALS INDOORS

- A. <u>General Requirements</u>: Address safe access, fire prevention and protection, floor loading, and overhead hazards for materials stored indoors.
- B. <u>Access</u>: Place or store materials to not interfere with access ways, doorways, electrical panels, fire extinguishers, or hoistways.
 - 1. Do not obstruct access ways or exits with accumulation of scrap or materials.
 - 2. Provide aisles wide enough to allow unobstructed passage of forklifts and firefighting equipment.
- C. Fire Prevention: When storing, handling, and piling materials, consider their fire characteristics.
 - 1. Store non-compatible materials that may create a fire hazard at least 25 feet apart or separate them with a barrier having at least a 1-hour fire rating.
 - 2. Store flammable materials in an approved flammables storage cabinet per OSHA regulations and safe work practices.
 - 3. Pile material to minimize internal fire spread and to provide convenient access for firefighting.
 - 4. Store wooden pallets in a neat pile no more than 4 feet high.
- D. <u>Heating Appliances</u>: If present, maintain a clearance of at least 36 inches between stored materials and unit heaters, radiant space heaters, duct furnaces, and flues, or the clearance shown on the approval agency label attached to the heating appliance and approved by the Owner.

1.05 STACKING BAGGED MATERIAL

A. Stack bagged materials by stepping back the layers and cross-keying the bags at least every 10 bags high, except when restrained by walls or partitions of adequate strength.

1.06 STORING MATERIAL IN BULK

A. Provide entry to bulk storage locations, such as to silos, hoppers, tanks, or bins (classified as confined spaces), that comply with OSHA, state, and local agency requirements.

1.07 HANDLING AND STORING CEMENT PRODUCTS

- A. <u>Personal Protective Equipment (PPE)</u>: Require, provide, and implement worker use of appropriate PPE in accordance with Section 01 35 29, the Contractor's HASP, and the corresponding job hazard analyses (JHA[s]) reviewed favorably by the Owner.
- B. <u>Dermal Protection</u>: Provide washing facilities, hand cream, chemical barrier cream, or similar preparations to protect from dermatitis.

- C. <u>Eye Wash and Emergency Shower</u>: Provide eye wash and emergency shower facilities in the vicinity of any cement storage facilities, easily accessible by workers who use those facilities and in sufficient quantities and condition for the intended use and per local regulations.
- 1.08 STORING SOIL, SAND, GRAVEL, CRUSHED STONE, AND SOLID DEBRIS
 - A. <u>Location</u>: Situate stockpiles at locations as shown on the Drawings that are approved for that use by the Owner, and that provide safe access for placing and withdrawing material.
 - B. <u>Base</u>: Store materials on sound asphalt or concrete pavement, or on an isolation layer, to separate the material from the ground surface unless the material is certified in writing by the supplier to contain no contamination, or is designated unimpacted reuse soil, prior to placement and storage. Submit the certification and obtain Owner favorable review in writing before placing material on any unpaved ground surface.
 - C. <u>Prevent Overhang</u>: Store material or situate pile to prevent overhang or unstable slope.
 - D. <u>Limit Height Supported by Walls</u>: Store material against walls or partitions only in an amount that will not endanger the stability of the wall or partition.
- 1.09 HANDLING FLAMMABLE AND COMBUSTIBLE LIQUIDS
 - A. <u>Comply With National Fire Protection Association (NFPA) Standards</u>: Unless defined otherwise, terms used in this subsection are the same as those in the flammable and combustible liquids code, NFPA 30, or 29 Code of Federal Regulations 1910.106.
 - B. <u>Refueling</u>: Refuel equipment and vehicles at locations approved in advance by the Owner. Implement good housekeeping and safe practices during refueling operations to prevent unwanted leaks, drips, and spills in accordance with the Contractor's Spill Prevention, Control, and Response (SPCR) Plan approved by the Owner.

1.10 HOUSEKEEPING

- A. <u>General Requirements</u>: Keep work and storage areas clean and orderly and in a sanitary condition.
 - 1. Keep indoor access ways and exits free from scrap, supplies, materials, or equipment.
 - 2. Keep outdoor areas adjacent to facilities free from rubbish, waste, and tall, dry vegetation.
 - 3. Place combustible waste materials stored outdoors to await subsequent disposal at least 20 feet away from facilities.
 - 4. Immediately contain and clean up spills, leaks, drips, and releases of any non-native materials in accordance with product-specific cleanup instructions/recommendations and in accordance with the SPCR Plan approved by the Owner.
- B. <u>Waste Disposal</u>: Collect, store, and remove combustible waste products at the end of each workday or at the end of each Work shift.
 - 1. Use only noncombustible containers to dispose of waste and rubbish.
 - 2. Equip each waste container with fitted or self-closing covers.
 - 3. Promptly remove and dispose of spills (and any associated cleanup materials such as rags) of flammable or combustible liquids.
- C. <u>Segregation of Materials</u>: Consider storage segregation precautions for all materials.
 - 1. Use SDS to determine appropriate storage segregation.
 - 2. Identify and label segregated material containers.
 - 3. Following are some examples of materials that must be segregated:
 - a. Ordinary combustibles such as paper, wood, and natural fiber fabrics.
 - b. Oily or flammable materials, such as saturated oily or solvent rags.

- c. Corrosive and caustic materials, such as batteries.
- d. Infectious materials that may cause infection, disease, or death.
- e. Reactive materials that may self-decompose or self-ignite because of heat, chemical reaction, friction, or impact.
- Radioactive materials.
- g. Toxic materials that may be fatal if inhaled, swallowed, or absorbed through the skin.
- D. <u>Tools and Equipment</u>: To prevent tripping or injury, keep the ground surface and floors clear of tools and portable equipment. Adequately secure tools, materials, and equipment where a tripping hazard exists.
- E. <u>Sacks and Bags</u>: Remove empty bags that contained cement or other dust-producing material from the Work area at least daily.
- F. <u>Excavated Materials</u>: Keep roads and walkways clear of excavated materials wherever possible. Where this is not possible, adequately post or barricade these areas and provide other access.
- G. <u>Signage and labeling</u>: Comply with Owner, Property Owner, and Engineer requirements as well as federal and local regulations.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 71 23 FIELD ENGINEERING AND CONSTRUCTION SURVEYING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Control surveys
- B. Construction staking
- C. Quantity surveys and calculations
- D. As-built survey
- E. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 WORK BY THE Owner

- A. <u>Engineer Records</u>: The Engineer will provide mapping, documentation, and applicable survey information that is readily available related to the site.
- B. <u>CQA Survey</u>: The Engineer may obtain CQA survey data of critical points during the Work.

1.03 REFERENCED STANDARDS

- A. U.S. Army Corps of Engineers, 2007. Control and Topographic Surveying, Engineer Manual EM-1110-1-1005
- B. NAVSTAR Global Positioning System Surveying Manual
- C. North American Datum of 1983 (NAD 83)
- D. North American Vertical Datum of 1988 (NAVD 88)

1.04 DESCRIPTION

Primary Line and Grade Measurements

- A. The Contractor shall employ a competent surveyor registered and licensed in the State of Oregon and require said surveyor to establish all lines, elevations, reference or benchmarks, etc. needed by the Contractor or Engineer during the progress of the Work, and from time to time to verify such marks by instrument or other appropriate means. All field survey data must be collected and interpreted directly by a licensed surveyor.
- B. An Oregon-licensed professional surveyor shall provide survey control for each stage of construction, and provide a "Pre-Construction" survey and "As-Built" documentation for various components of construction (including existing conditions for volumetric or area pay items). The surveyor shall furnish all labor, materials, tools, supervision, transportation, and equipment necessary to perform the project surveying Work as specified herein for the cover system; roads; stormwater management system; existing, subbase and final grades; and other structures, as shown on the Drawings.

1.05 QUALIFICATIONS

- A. The Contractor shall employ the services of a competent Surveyor registered and licensed in the State of Oregon acceptable to the Owner and Engineer.
- B. The surveyor, in the opinion of the Engineer, shall have a proven record of successful performance on projects of similar magnitude. Prior to acceptance by the Owner and Engineer, the Surveyor will be required to submit a Survey Plan describing the qualifications of the survey crew chief, other key personnel, instrumentation to be used, accuracy and precision required, type of grid system to be used, and a description of the other survey points required to establish grades, layout, quantities, and required "As-Builts" and certifications. The Plan must also provide the Surveyor's commitment to meet the project schedule and provide the requirements imposed by the project schedule.

1.06 SUBMITTALS

- C. The Contractor shall provide the Engineer with the following submittals.
 - 1. Point File Data: Submit survey data as a point file in identical-content portable document format (.pdf) and Excel (.xls) electronic files. Update the point file to include data from each survey field event.
 - 2. State the company, date, field book, party chief, instrument identification number(s), horizontal datum, vertical datum, and the horizontal and vertical measurement units.
 - a. Horizontal datum shall be NAD83 Oregon State Planes North, International Foot.
 - b. Vertical datum shall be NAVD88
 - State each benchmark used for each survey event, and the called and measured elevation and coordinates.
 - 4. <u>Point Data</u>: State the point number, the northing, the easting, the elevation, and the description of each point for each survey field event, including check and closure at two or more previously documented control points.
 - 5. <u>Drawings</u>: Submit the survey data on a drawing of each survey event with consistent image range, drawing size, and scale approved in advance by the Engineer.
 - 6. Number and show the total number of sheets on each sheet.
 - Show match lines where plan views and sections are continued in another view or on another sheet
 - 8. Submit each survey drawing in both .pdf and .dwg electronic file formats.
- D. <u>Pre-Mobilization Submittals</u>: During the pre-mobilization phase of work, submit to the Engineer for approval the name, P.L.S. license number, employer, business address, telephone number, email address, and qualifications of the Surveyor proposed to provide survey services for the Work.
 - 1. <u>Name and Qualifications</u>: Include the name and qualifications of each person who is proposed for assignment to the Work. Contractor may perform surveying for progress submittals under supervision of the PLS. Provide the name of each Contractor personnel who will be performing progress or payment surveys.
 - Survey Plan: Describe instrumentation to be used, accuracy and precision required, type of grid system to be used, and a description of the other survey points required to establish grades, layout, quantities, and required "as-builts" and certifications for both P.L.S. and Contractor surveys.
 - 3. Additional Information: The Engineer reserves the right to request additional information regarding the qualifications of the Surveyor and Contractor survey personnel 01 77 00 for use in the evaluation process, and must provide favorable review of Contractor surveying system prior to mobilization to the site.

- E. <u>Progress Submittals</u>: Submit progress surveys each workday with design and as-built stage survey data and under the supervision of the land surveyor to support the quantities and progress stated in the Daily Construction Report, including, as current progress:
 - 1. <u>ISS Treatment Area</u>: The area inside the ISS treatment area boundary shown on the Drawings.
 - 2. Subareas: Each ISS treatment area subarea boundary and area (i.e., Area A, B, and C).
 - 3. <u>ISS Work Platform Elevation</u>: The ISS Work Platform depth below existing grade and elevation in each ISS Work subarea.
 - 4. <u>ISS Work Platform Perimeter</u>: The Work Platform Excavation top of bank and toe of slope at the perimeter of the ISS treatment area and each interim stage, if any.
 - 5. <u>ISS Mix Cell Locations</u>: The location of the center, the top elevation, and the design perimeter of each ISS mix cell, including identification of the overlap with each adjoining ISS mix cell, each point overlap, and overlap voids between mix cells, if any.
 - 6. <u>ISS Mix Cell Bottom</u>: The bottom of each ISS mix cell, including refusal, if it occurs above the design elevation of the bottom of the ISS mix cell.
 - 7. <u>ISS Mix Cell Volume and Mass</u>: The volume and dry mass of potentially impacted soil in each ISS mix cell.
 - 8. <u>ISS Reagent Mass</u>: The mass of each ISS reagent needed to be mixed with the potentially impacted soil in each ISS mix cell.
 - 9. <u>ERS Mix Cell Locations</u>: The location of the center, the top elevation, and the design perimeter of each ERS mix cell, including identification of the overlap with each adjoining ERS mix cell, each point overlap, and overlap voids between mix cells, if any.
 - 10. ERS Mix Cell Bottom: The bottom of each ERS mix cell.
 - 11. <u>ERS Mix Cell Volume and Mass</u>: The volume and dry mass of potentially impacted soil in each ERS mix cell.
 - 12. <u>ERS Reagent Mass</u>: The mass of each reagent needed to be mixed with the potentially impacted soil in each ERS mix cell.
 - 13. <u>ISS Soil Mixture</u>: The boundary and surface of stable ISS soil mixture of each stage of grading. Perform a progress survey and one final survey of ISS soil mixture that allows calculation of the total volume of swell produced by the ISS mixing performed up to the date of each survey, and provide an estimated ISS soil mixture expansion rate to the Engineer, with one survey performed after the Field Pilot.
 - 14. <u>ISS Cap Layer</u>: The boundary and surface of each stage of placement of the ISS Soil Cover Layer placed over the ISS Soil Cover marker scrim.
 - 15. Stockpiles: The boundary and area for each material stockpile.
 - 16. <u>Buried Utilities</u>: The location of each buried utility removed, and each remaining in place, in the ISS Work Area at the completion of the Work
- F. <u>Closeout Submittals</u>: Submit as-built survey data with the closeout submittal in accordance with Section 01 77 00.
 - 1. <u>ISS Treatment Area</u>: The final overall as-built ISS treatment area performed by the Contractor (aggregate of all ISS Mix Cells), including all horizontal extents and vertical limits.
 - Subareas: Each as-built ISS treatment area subarea boundary and area performed by Contractor.
 - 3. <u>ISS Work Platform Elevation</u>: The as-built ISS Work Platform elevation in each ISS Work subarea.
 - 4. <u>ISS Work Platform Perimeter</u>: The as-built Work Platform Excavation top of bank and toe of slope at the perimeter of the ISS treatment area and intermediate points of slopes.
 - 5. <u>ISS Mix Cell Locations</u>: The as-built location of the center, the top elevation, and the perimeter of each ISS mix cell, including identification of the overlap with each adjoining ISS mix cell, each point overlap, and overlap voids between mix cells, if any.
 - 6. <u>ISS Mix Cell Bottom</u>: The as-built bottom of each ISS mix cell, including refusal, if it occurs above the design elevation of the bottom of the ISS mix cell.
 - 7. <u>ISS Mix Cell Volume and Mass</u>: The as-built volume and dry mass of potentially impacted soil in each ISS mix cell.

- 8. <u>ISS Reagent Mass</u>: The as-built mass of each ISS reagent mixed with the potentially impacted soil in each ISS mix cell.
- 9. <u>ERS Mix Cell Locations</u>: The location of the center, the top elevation, and the design perimeter of each ERS mix cell, including identification of the overlap with each adjoining ERS mix cell, each point overlap, and overlap voids between mix cells, if any.
- 10. ERS Mix Cell Bottom: The bottom of each ERS mix cell.
- 11. ERS Mix Cell Volume and Mass: The volume and dry mass of potentially impacted soil in each ERS mix cell.
- 12. <u>ERS Reagent Mass</u>: The mass of each reagent needed to be mixed with the potentially impacted soil in each ERS mix cell.
- 13. <u>ISS Swell/Soil Mixture</u>: The as-built boundary and surface of stable ISS soil mixture at the completion of the ISS soil mixture grading.
- 14. ISS Cap Layer: The as-built boundary and surface of the ISS Soil Cover Layer.
- 15. <u>Buried Utilities</u>: The location of each buried utility removed, and each remaining in place, in the ISS Work Area at the completion of the Work.
- 16. <u>Reuse Soil Stockpile(s)</u>: The boundary, area, and volume of each reuse soil stockpile remaining following completion of the Work.
- 17. As-Built Drawings: Submit as-built drawings showing the following information:
 - a. <u>Surveyor Information</u>: Name, address, telephone number, and signature of the Surveyor who made the survey, Surveyor's signed and dated P.L.S. seal, the date survey completed, and dates of each revision. Use a P.L.S. for the final as-built topo survey for the Site after backfill work is completed. Progress and payment quantity surveys may be provided by Contractor if Engineer provides favorable review of surveying system, methods, and personnel.
 - b. <u>Drawing Information</u>: Description of the accuracy of the coordinates, dimensions, elevations, and slopes shown on the as-built drawings.
 - c. <u>Datum</u>: The horizontal and vertical datums used for the survey. Use the same datum sets that the Drawings are provided in.
 - d. <u>Benchmark Information</u>: Description of each permanent documented benchmark used for the survey.
 - e. <u>Surface Contours</u>: Show surface elevation contours at 0.5-foot intervals for finished grade in the Work area.
 - f. <u>Certification</u>: Include, sign, and date the following certification adjacent to the survey seal:

SURVEYOR'S STATEMENT This drawing correctly represents a survey made by me or under my direction in conformance with the requirements of ORS chapter 672 at the request of ______ in _____, 20 ____. Name of Person Authorizing Survey Signed and sealed) ______ P.L.S. [or P.E.] No. ______

G. Upon request of the Engineer, documentation shall be submitted verifying the accuracy of the survey work.

1.07 SURVEY REQUIREMENTS

A. Contractor must provide notification to Surveyor immediately upon completion of Work to ensure no schedule delays. All required surveying herein shall be provided promptly from the Contractors Licensed surveyor and not more than 2 business days after completion of the field work associated with the Surveying individual task and as elaborated within this specification. The Surveyor shall locate survey control points prior to starting Site Work. The Engineer shall be promptly notified in writing of any discrepancies discovered before or during construction. No additional surveys may be conducted until such discrepancies are resolved to the satisfaction of the EOR.

- B. The Surveyor shall maintain lines and levels, layout, and locate the Work utilizing recognized engineering survey practices. A complete and accurate log of control and survey Work must be maintained. The Surveyor shall establish, at a minimum, a 50-foot by 50-foot survey grid for construction and "As-Built" documentation. The spacing of the grid shall be reduced in areas of steep slopes, grade changes, ditches, ponds, and other structuring to assure adequate control and accurate "As-Builts." The plan grid shall be approved by the Engineer. The Surveyor shall provide, at a minimum, a detailed survey that is signed and sealed by the Surveyor for the following components in the "As-Built":
 - Existing, pre-construction condition survey, including topography and Site features shall be conducted prior to commencement of any Work. This includes the footprints of all on-Site structures to be demolished and top contours of the existing subbase to the limits of disturbance in order to determine payment quantities. This survey shall be submitted to the Engineer within two weeks from the project Notice to Proceed.
 - 2. The top contours of the regraded stockpiles.
 - 3. The top contours of the final grades (to the limits of the proposed grading) upon completion of the Work shall be provided in the final As-Built survey.
 - 4. The final As Built survey shall include the location fencing and other project and Site features.
 - 5. Topography at 1-foot intervals of the final work area, any erected structures, stockpiles, and the limits of the final cover system.
 - 6. All other items that the Contractor requires to complete the Work and establish quantities for payment.
 - 7. All other reasonable items requested by the Engineer.
- C. Upon request of the Engineer, documentation shall be submitted verifying the accuracy of the survey work.
- D. The detailed topographic survey shall extend a minimum of 100 feet in all directions beyond the limits of disturbance except where limited by the top of bank.
- E. The survey instruments used shall be capable of reading to a precision of 0.01 feet in both the horizontal and vertical direction.
- F. The Surveyor shall provide survey information in the following formats:
 - 1. Hard copy drawings stamped by a licensed surveyor; and
 - 2. Electronically in CAD format with contours and all required features.

1.08 Contractor ENGINEERING REQUIREMENTS

A. The Contractor shall provide all engineering, support, and coordination necessary to perform the scope of work. These services include, but are not limited to, all work associated with obtaining permits, preparing shop drawings and submittals, providing engineering and licensed certification (P.E. stamp) for alternate designs, performing quality control, conducting monitoring and maintenance activities, performing inspections, and any other required activities.

1.09 CONSTRUCTION TOLERANCES

- A. Construction tolerances shall be as provided in the various Sections of these Specifications, and as given below.
- B. Regardless of the final grade tolerances, all minimum thicknesses specified within these Contract Documents shall be met with only exception to encountering refusal. No additional payments for actual thicknesses of specified soil layers greater than that required will be approved.
- C. The construction tolerances on final contours shall be within one tenth of one foot below to one tenth of one foot above (-0.1' to +0.1') the specified grades as they appear on the Drawings, or as

otherwise approved by the EOR. The minimum and maximum slope gradients shall be met without additional tolerances. No additional payments for actual thicknesses of specified soil layers greater than that required will be approved.

- D. The Engineer shall be permitted at all times to check the lines, elevations, reference marks, etc. set by the Contractor, who will correct any errors in lines, elevations, reference marks, etc. disclosed by such check. Such a check will not be construed to be an approval of the Contractor's work and shall not relieve or diminish in any way the responsibility of the Contractor for the accurate and satisfactory construction and completion of the entire Work. In order to verify the construction, the Engineer shall be supplied with survey information at the time of surveying.
- E. The Contractor shall be aware of the surveying activities and shall account for them in the construction schedule.

1.10 RECORD DOCUMENTATION

- A. Record documentation shall be provided for the components listed herein.
- B. At completion of the Work the Contractor shall have its Surveyor prepare "As-Built" drawings showing the location of all Work installed, including that Work installed by the Owner (if any) and submit the "As-Built" drawings to the Engineer for review. "As-Built" drawings shall include the various Work components discussed herein. Stamped, sealed "As-Built" drawings by the registered Surveyor are required. Submittals of these "As-Built" drawings shall conform to requirements of Section 01 33 00 SUBMITTAL PROCEDURES.

1.11 QUALITY ASSURANCE

- A. <u>Accuracy</u>: The accuracy of the topographic survey shall conform to U.S. Army Corps of Engineers, 2007. Control and Topographic Surveying, Engineer Manual EM-1110-1-1005, Table 4-1 and 4-2, Third Order, Class II or higher.
- B. Vertical Datum: NAVD88, International Foot.
- C. <u>Horizontal Datum</u>: Oregon State Planes North, NAD83, International Foot.
- D. <u>Control Points</u>: Document each construction control point with reference to, and consistent with the drawings.
- E. <u>Precision</u>: 0.05 foot horizontal and vertical root mean square error or less.
- F. <u>Point Accuracy</u>: Construct the Work so that as-built coordinates, dimensions, and elevations are accurate to within 0.10 foot of the specified coordinate, dimension, and elevation.
- G. <u>Slope Accuracy</u>: Construct the Work so that as-built surface slopes are accurate to within 10% of the specified slope and drain to the relief specified without ponding.
- H. <u>OSBEELS Requirements</u>: Provide survey services in accordance with the Oregon State Board of Examiners for Engineering and Land Surveying (ORS chapter 672).
- I. Total Station: Check vertical index and horizontal collimation each day.

PART 2 - PRODUCTS

Not used.

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PART 03 - EXECUTION

2.01 GENERAL REQUIREMENTS

- A. <u>Review Current Survey Data</u>: Review the Site topography shown on the Drawings. Notify the Engineer in writing of any discrepancy found before or during the Work.
- B. <u>Instruments</u>: Use precision optical or GPS-enabled survey instruments capable of indicating coordinates and elevations with a precision of 0.01 foot or less and angles with a precision of 10 arc seconds or less.
- C. <u>Detail</u>: Obtain and submit adequately detailed and accurate survey data acceptable to the Engineer.
- D. Records: Maintain a complete and accurate log of control and survey work.
- E. <u>Quantity Surveys</u>: Obtain and use survey data to calculate quantities for applications for measurement and payment submitted to the Engineer approval by the Owner.
- F. <u>CQA Survey Assistance</u>: Assist the Engineer in obtaining access to the Work for CQA surveys obtained by the Owner under separate contract.
- G. Report Variances during the Work: Report to the Engineer each observation, measurement, or finding that supplements or is contrary to the Drawings, the Technical Specifications, or the Engineer's written instructions.

2.02 CONTROL

- A. Control Points: Locate construction control points prior to starting Site Work.
- B. <u>Control Survey</u>: Obtain and document survey control data that establish the relationship of the survey to permanent documented benchmarks (BMs) and the related horizontal and vertical datums. Use the control data to set at least three local temporary benchmarks (TBMs).

2.03 SURVEY OF THE WORK

- A. <u>Methods</u>: Maintain lines and levels, layout, and locate the Work using currently recognized engineering survey best practices.
- B. <u>Protection</u>: Identify and protect each survey control point and stake during construction. Immediately replace any survey control point or stake that is lost, damaged, or destroyed, or that requires relocation.
- C. Excavation Perimeter: Locate and stake each excavation top of bank and toe of slope.
- D. <u>Surface Surveys</u>: Survey surfaces at data collection interval of not more than 50 feet per survey observation; along the trace of each surface material boundary and slope break line at each grid line, plus at each tangent angle point and each end of each arc; the top and bottom of each side scarp; and each building and structure corner, culvert, fence line, pipe riser, power pole, open channel, streambank, and other topographic feature. The spacing of the grid shall be reduced in areas of steep slopes, grade changes, ditches, ponds, and other structuring to assure adequate control and accurate survey "as-built."

E. <u>Control and Closure</u>: Survey and document use of at least two BMs or TBMs as reference for each subsequent survey event. Close each survey event by survey of the BMs or TBMs used for that survey event. Document the horizontal and vertical accuracy of the resulting closure measurement. Resolve variance of the closure measurement with the required accuracy.

2.04 DELIVERABLES

- A. General Requirements: Document all survey data on survey drawings and point file data submitted to the Engineer and Owner.
- B. Drawing Scale: Prepare survey drawings to a standard inch-foot scale acceptable to the Engineer.
 - 1. Show a graphic scale and, for plan views, the north arrow on each survey drawing.
 - 2. Show a graphic scale for each plan, section, and detail on each drawing.
 - 3. Show a north arrow for each plan view in each drawing.
 - 4. When practicable, orient plan views with the north direction oriented toward the top of the drawing.
- C. <u>Legend</u>: Define abbreviations and acronyms, and provide a legend for graphic symbols shown on the drawing.
- D. <u>Detail</u>: Provide supplementary or schematic diagrams on the drawing where dimension data are too small to be shown clearly at the subject scale.
- E. <u>Size</u>: American National Standards Institute (ANSI) Size D (22 inches tall by 34 inches wide), or as otherwise approved in advance or ordered by the Engineer.
- F. <u>Progress Draft Drawings</u>: Include the name and license number of the Surveyor, as well as a notation "[date] Progress Draft Future Data Will Be Added" on each progress draft document prepared and submitted to the Owner prior to Contract closeout. Do not sign or seal progress draft documents.

END OF SECTION

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SECTION 01 77 00

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Closeout procedures for the Work.
- B. Final cleaning for the Work.
- C. Project record documents for the Work.
- D. Warranties for the Work.
- E. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 REFERENCES

A. General Conditions: Acceptance and approval of Work by the Owner, including final as-built submittals, closeout of applicable permits, and final payment in accordance with Attachment 6 (General Conditions of the contracting documents).

1.03 CLOSEOUT PROCEDURES

- A. <u>Certification</u>: Submit written certification that Contract documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract documents and ready for inspection by the Owner.
- B. <u>Agency Submittal Documents</u>: Submit to the Owner documents and records that are required by agencies that have jurisdiction for the Work.
- C. <u>Final Application for Payment</u>: Submit final application for payment identifying total adjusted contract sum, previous payments, and sum remaining due.
- D. Owner/Property Owner Occupation: The Owner and/or Property Owner reserve the right to occupy portions of the Property prior to acceptance.

1.04 FINAL CLEANING

- A. <u>Clean Prior to Final Inspection</u>: Execute final cleaning prior to final inspection.
- B. <u>Drainage</u>: Clean debris from drainage systems.
- C. <u>Grading</u>: Provide rough grading in accordance with Section 31 22 10 and the Drawings (with grades to be updated based on swell and re-use material volumes), and otherwise in accordance with the SWPPP.
- D. Construction Waste: Remove waste, rubbish, and construction facilities from the Site.

1.05 PROJECT RECORD DOCUMENTS

A. <u>Preparation</u>: Maintain one set of the Project record documents onsite and available for inspection by request from Owner in accordance with Section 01 33 00.

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B. <u>Submittal</u>: Submit closeout documents including final as-built surveys to Owner with the application for payment preceding the final application for payment to obtain Owner's payment of retainage.

1.06 WARRANTIES

- A. Guarantee and warrant the Work against any and all defects attributable to Contractor's construction workmanship for a period of 12 months, commencing on the date of Owner's acceptance of the Work.
- B. Repair, replace, and correct any and all defects in Contractor's construction workmanship, which are called to the Contractor's attention by the Owner in writing in a timely manner and prior to the expiration of the warranty period.
- C. For any such repairs, replacement, or correction, Contractor will (at Contractor's expense):
 - 1. Provide materials necessary to perform warranty corrective work.
 - 2. Perform warranty corrective work including labor, equipment, or other costs necessary to correct construction and installation defects.
- D. Additional warranty-related requirements may apply in accordance with the Contract to be executed between the Contractor and the Owner.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

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SECTION 02 41 00

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 **WORK INCLUDES**

- A. Demolition of concrete slabs on grade and associated concrete curbs, foundations, supports, and wooden utility poles in the ISS Work Area.
- B. Demolition of decommissioned, buried utilities and abandoned wells in the ISS Work Area. Demolition of above grade decommissioned utilities, mechanical piping, valves, and appurtenances.
- C. Demolition or in situ mixing of the indicated portions of a stormwater pipe.
- D. Decontamination of demolition debris.
- E. Removal of demolition debris from the ISS Work Area.
- F. Placement of decontaminated demolition debris in stockpiles or containers for offsite recycling or disposal as applicable.
- G. Loading demolition debris from stockpiles to waste hauling trucks. Owner is responsible for waste transportation and disposal.
- H. Asbestos Notification: OAR 340-248-0260. If asbestos containing materials are encountered during demolition or earthwork activities the Owner/Engineer shall make notification in accordance with ODEQ requirements.
- I. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 **WORK BY OTHERS**

A. Not applicable.

1.03 **RELATED SECTIONS**

Section 02 41 10	Utility Isolation and Removal
Section 02 61 10	ISS Work Platform
Section 02 82 00	Non-ACM Material Management
Section 02 82 10	ACM Material Management
Section 31 22 10	ISS Work Grading
Section 31 23 25	ISS Cap

1.04 REFERENCED DOCUMENTS

A. ERM, 2025. Contaminated Material Management Plan,

1.05 JOB CONDITIONS

- A. No Salvage Allowed: No salvage will be allowed.
- B. Facility Condition: The Owner and Engineer offer no guarantee of the current condition or energized state of facilities or utilities to be demolished.

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1.06 SUBMITTALS

- A. <u>Pre-Mobilization Submittals</u>: Submit a description of demolition equipment, personnel, materials, means, methods, monitoring and mitigations to be implemented, and schedule, favorably reviewed by OR, prior to initiation of mobilization for fieldwork.
 - 1. Schedule: Submit a schedule of demolition activities including the following:
 - Detailed sequence of demolition and removal work, with starting and ending dates for each activity.
 - b. Onsite waste stockpile (if proposed).
 - c. Waste load out.
 - d. Excavation backfill, if proposed.
 - 2. <u>Sources</u>: If import backfill is proposed, submit backfill materials source information and data demonstrating compliance with the requirements of Sections 01 43 00 and 01 45 00 and the CQA Acceptance Criteria.
- B. <u>Submittals Prior to the Acceptance of Work</u>: Provide "as-built" drawings at completion of the Work.
 - Buried Facilities: Identify and accurately locate capped utilities and other subsurface structural, electrical, or mechanical conditions and subsurface obstructions that were demolished in the ISS Work Area, but have components that remain within the ISS Work Area.
 - 2. <u>Complete Data</u>: Show all record information on the final as-built drawing submitted with the Contract closeout submittal.

PART 2 - PRODUCTS

2.01 CLEAN SOIL FILL

A. <u>General Requirements:</u> Import clean soil fill or utilize reuse overburden material in accordance with Sections 31 22 10 and 31 23 25 and the CMMP.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

- A. <u>Temporary Stormwater Controls</u>: Place, maintain, and remove all temporary stormwater controls necessary to prevent stormwater run-on into, and potentially impacted stormwater runoff from, the demolition work area, including each demolition debris decontamination work area and decontaminated demolition debris stockpile area in accordance with Section 02 83 20.
- B. <u>Temporary Surface Water Controls</u>: Contain and manage any water drained from the channels, equipment, pipe, structures, and utilities demolished. Manage potentially impacted liquid in accordance with Section 02 83 20.
- C. Protect Existing Facilities to Remain: Protect existing access roads, buried piping not removed, stormwater drainage swales, site features, and all other surface structures and Site features during demolition and backfill. Restore any existing facilities to remain that are damaged by Contractor to satisfaction of Owner. Protect other site features and areas where no soil disturbance is allowed. Make breaks and disconnections for structures and utilities that are to be partially removed or are partially located outside the limits of construction. Perform demolition in a manner that will not disturb improvements to remain in place and avoid creating any soil settlement that may impact existing structures or potentially create settlement issues.
- D. Protect ERS: Protect installed ERS as indicated in the Engineered ERS Design.

- E. <u>Contain Potentially Impacted Demolition Debris</u>: Contain potentially impacted concrete structures, excavation spoil, pipe, pipe supports, soil, and related residuals; haul to a suitable stockpile at the Site approved for that purpose by the Owner; reduce the size of the demolition debris; decontaminate the demolition debris; and place the decontaminated demolition debris in a waste container designated by the Owner or their designee for transport of that class of debris to an offsite recycling or disposal facility as applicable.
- F. <u>Site Access</u>: Maintain access to the Property via existing access roads (Front Avenue and onsite routes) throughout the Work.
- G. <u>Dust Control</u>: Provide all necessary hoses, equipment, tanks, water, connections, cover, and other to facilitate dust control in accordance with Section 01 50 00, Section 01 41 00, Project permits, applicable regulatory requirements, and the requirements of the Contractor's HASP and other required work plans.
- H. <u>Vibration Monitoring</u>: Refer to the Engineered ERS Design and Project permits for vibration monitoring requirements.
- I. Reduce Contact with Potentially Impacted Components and Residuals: Use equipment and methods that prevent contact of unimpacted soil with potentially impacted demolition debris, equipment, and residuals, and thereby reduce the volume of potentially impacted demolition debris and residuals to be managed during the Work.

3.02 UTILITIES

A. <u>Buried Utilities</u>: Identify buried utilities in the ISS Work Area in accordance with the Owner's subsurface clearance (SSC) requirements. Decommission and disconnect each buried utility at a location outside the ISS Work Area to provide isolation of the utility, worker safety, and prevention of interrupted utility service outside the ISS Work Area. Buried utility handling to be in accordance with Section 02 41 10.

3.03 DEMOLITION

A. <u>Demolish Subgrade Utilities</u>: Demolish subgrade utilities after all identified utilities have been decommissioned/disconnected.

3.04 MANAGEMENT OF DEMOLITION DEBRIS

- A. <u>General Requirements</u>: Contain, load, transport, and consolidate potentially impacted demolition debris and related potentially impacted residuals in a demolition debris decontamination area approved for that purpose by the Owner or their designee.
- B. <u>Reduce Size of Demolition Debris</u>: Reduce the size of demolition debris as necessary for effective and efficient handling, decontamination, loading into the waste container, transport, and receipt by the offsite disposal or recycling facility.
- C. <u>Decontaminate Demolition Debris</u>: Decontaminate potentially impacted demolition debris, containerize decontamination media (e.g., soil or water), and characterize decontamination media.
- D. <u>Separate Decontaminated Demolition Debris</u>: Separate and load decontaminated demolition debris into a waste container designated by the Owner or their designee for containment and transport of that class of debris for transport to an offsite recycling or disposal facility.
- E. <u>Load Waste Container</u>: Load the waste container for transport to the recycling or disposal facility designated by the Owner or their designee for that class of waste.

- F. <u>Waste Manifest</u>: Assist the Owner or their designee in preparing the waste manifest for each load transported from the Property. Obtain acknowledgement signatures from the Owner on relinquishment of the waste and manifest for transport, the waste transporter on receipt of the waste load and the waste manifest, and the waste disposal facility on receipt of the waste load and the manifest. Provide the designated copy of the waste manifest at each corresponding stage to the Owner or their designee, the waste transporter, and the disposal facility; and provide the waste manifest with all of those dated signatures to the Owner or their designee.
- G. <u>Load the Waste for Offsite Disposal</u>: The Contractor shall be responsible for staging, managing, handling, conditioning, sorting, storing, on-site stockpiling, and loading into haul trucks all material that is designated to be removed from the Site for off-site disposal, by others, and in accordance with these Specifications, Drawings, and the CMMP.
- H. <u>Potentially Impacted Residuals</u>: Separate into appropriate waste classes approved by the Owner or their designee, contain, assist the Owner or their designee in classifying each container of demolition debris residuals, and manage potentially impacted demolition debris decontamination residuals as approved in advance or ordered in writing by the Owner or their designee.

END OF SECTION

SECTION 02 41 10

UTILITY ISOLATION, REMOVAL, AND RELOCATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Requirements for identifying, protecting, disconnecting, relocating, and /or removing utilities near and/or affected by the Work, and for returning affected utilities back into service at the conclusion of Work as applicable.
- B. Contractor shall identify and review all utility disconnection and isolations with OR prior to starting protection, disconnection, relocation and/or removal of utilities.

1.02 REFERENCED DOCUMENTS

A. NFPA 70E, Standard for Electrical Safety in the Workplace, 2024 edition

1.03 IDENTIFICATION OF UTILITIES

- A. Contact Oregon Utility Notification Center (e.g., 811 or https://www.digsafelyoregon.com/) at least 48 hours (excluding the day when contact is made) prior to disturbing surfaces or initiating subsurface activities (or earlier if required by state law). Update the public utility callouts/markouts throughout the project as required by governing law.
- B. Prior to conducting any subsurface disturbance, implement Owner's excavation works requirements. This includes a requirement for perform private utility locating services in all areas of intended excavation or/or other surface disturbance. All utilities must be marked out and documented on the Excavation Certificate. The Contractor must review the Owner's Life Saving Checks for excavation works and Owner's Golden Rule #9 prior to beginning any subsurface disturbance.
- C. The Owner's excavation works requirements includes the prohibition of any mechanical excavation within 2 feet of an active utility (see the Procedure for definition of "active").
- Owner's HSE requirements for excavation requirements can be found in the Informational Attachments section of the RFP.

1.04 SUBMITTALS

- A. Tickets and documentation of public utility markouts/callouts.
- B. Completed Sub Surface Clearance (SSC) Procedure, including documentation of SSC findings and locations of utilities; include markups indicating previously unknown utilities identified during implementation of the SSC work, utilities identified in a different location or alignment than shown on the Drawings, or utilities that are shown on the Drawings but were not identified during implementation of the Work.
- C. Documentation that utilities have been disconnected and air gapped (utility checklist) as may be required in other Specification sections.
- D. Copies of the closed daily permits documenting utility disconnections as they are performed.

E. Documentation (AutoCAD file is acceptable) of the location of the ends of remaining utility stubs, and updates to locations of utilities shown on the drawings but located in a different alignment in the field. Submit this drawing at the conclusion of utility work.

1.05 ISOLATION AND PROTECTION OF EXISTING UTILITY SERVICES:

- A. Water supply lines, standpipes, and other above grade piping and appurtenances shall be investigated for pressure and current site use. If lines and appurtenances are found to be inactive, remove in accordance with the Drawings and as necessary to perform Work. If any lines or appurtenances are found to be pressurized or active, consult with the Owner to determine the best approach to account for these lines and any conflicts with the Work they may pose.
- B. All active utilities must be locked out and tagged out (LOTO) prior to other work on those utilities, including utilities specified to be removed. All lockout work shall be completed by an authorized employee.
- C. Owner, or appointed designee, on site must review the LOTO status of each utility prior to proceeding with Work.
- D. After LOTO verification has been completed, utilities specified for permanent removal shall be disconnected and permanently air-gapped downstream of the LOTO location. This status must be documented on the appropriate safe work permit (may be Contractor provided), filed onsite throughout the duration of Work, and each specific utility must be clearly marked or tagged in a dedicated manner to indicate a disconnected and permanently air-gapped utility, prior to any dismantling or demolition of nearby/affected infrastructure including the remnant utilities themselves.
- E. Utilities specified for temporary removal. i.e., utilities that will be reconnected at the completion of ISS or other subsurface disturbance, shall be disconnected and temporarily airgapped downstream of the LOTO location.
- F. Utilities specified to remain shall be protected at all times during the Work. These utilities shall undergo LOTO prior to any dismantling or demolition of nearby/affected infrastructure. If such utilities must remain in active service (not locked/tagged out), each specific utility must be clearly marked or tagged in a dedicated manner to indicate an energized utility, and mitigation for its safety hazards must be coordinated with the Owner or appointed designee prior to other work in the area and noted on the appropriate field and safety documents including JHAs and daily reports.
- G. Motor control center (MCC) room 1 shall be temporarily decommissioned for the duration of the ISS. All existing MCC hardware including but not limited to control panels, cabinets, and variable frequency drives (VFDs), shall be safely disconnected and removed, and safely stored in a secure location for reinstallation. All utility connections to the enclosure shall be safely disconnected and temporarily air-gapped after verifying LOTO.
- H. Following removal of all hardware from MCC room 1, the Contractor shall safely move the pre-cast concrete enclosure to a safe location for storage until such time as the MCC room 1 will be reinstalled. With approval from the Owner, the Contractor may safely demolish and dispose of the existing enclosure and provide a new in-kind enclosure at no additional contract cost to the Owner.

- I. Certain utilities may be specified to be relocated during the Work. Contractor also has the discretion of relocating utilities indicated to remain in service or to be temporarily disconnected, to benefit Contractor's means and methods, if approved by Owner and utility owner. Utilities to be relocated must undergo LOTO and the status documented on the appropriate safe work permit prior to any subsequent work on these utilities.
- J. Perform any other temporary terminations, temporary relocations, permanent relocations, or permanent terminations of existing utility services not otherwise specified as necessary to properly and safely conduct the Work.
- K. Verify that all utilities have been located, marked-out, isolated, and either disconnected or tagged/ protected, prior to further Work in the area.
- L. The provisions of this section apply to any/all other hazardous energy sources present in the Work area including temporary utilities, temporary facilities, and infrastructure/equipment (including batch plant).
- M. When previously unknown utilities are encountered during the Work, the Contractor shall stop work immediately and inform the Owner.
- N. In the event of damage to any utility, equipment, or property, the Contractor shall stop work and immediately notify the Owner (and complete any other notifications required by local, state, or and/or federal law and notify the utility owner). Contractor shall be responsible for repairing damage to or replacing any utilities, equipment, or property that is designated to remain in service and is damaged by the Work. The determination as to whether a utility, equipment, or property has incurred damage will be made by the respective owner of the respective utility, equipment, or property.

1.06 RELOCATION AND/OR REMOVAL OF EXISTING UTILITY SERVICES:

- A. After the work in the previous section is completed, proceed to perform the specified and/or required relocations or removals of the utility systems and hazardous energy delivery systems.
- B. Utilities to be relocated shall be tested to Owner's satisfaction and placed back into service as soon as practical to meet facility needs and to reasonably minimize the disruption of the service, whichever is sooner.
- C. Once relocation of a utility service has begun, the work on that utility service must be completed with continuous work progress prior to proceeding with other work.

1.06 UNDERGROUND INFRASTRUCTURE REMOVAL

- A. Prior to the start of ISS Work, underground utilities shall be removed by the Contractor. This will only occur after all above-mentioned requirements related to utility isolation, LOTO, and relocation have been met.
- B. Additional infrastructure includes an abandoned stormwater pipe. This pipe is a vitrified clay pipe following the alignment as indicated in the drawings. This stormwater pipe has been abandoned using grout/controlled low strength material (CSLM) pumped in via the inlet. Following removal, the exposed ends of the pipe must be sealed using grout or other methods approved by the Owner. The Contractor may, upon authorization from the Owner, elect to permanently seal the outlet of the pipe using grout or other methods approved by the Owner and then leave the pipe in place as part of the ISS treatment area, at no additional contract cost.

C. In addition to the stormwater pipe, remnants of former buildings, structures, and abandoned utilities may still remain in place. They include, but are not limited to, former utilities (see Section 02 82 10 for proper handling and management), asphalt and concrete footings and foundations, wood and concrete pilings, and other known/unknown structures.

1.07 JOB TRAILER POWER

- A. After mobilization but prior to the start of ISS Work, Owner will remove the existing overhead power line in the vicinity of the ISS Work Area. Contractor is responsible for supplying power to the Engineer job trailer supplied by the removed overhead power line.
- B. Contractor may install a new power line, buried or overhead, from the GWET to the job trailer, or supply a temporary power generator for the duration of the Work. Any ground disturbance including installation of buried utilities or installation of a new utility pole must implement Owner excavation works requirements. This includes a requirement for perform private utility locating services in all areas of intended excavation or/or other surface disturbance. All utilities must be marked out and documented on the Excavation Certificate. The Contractor must review the Owner's Life Saving Checks for excavation works and Owner's Golden Rule #9 prior to beginning any subsurface disturbance.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 02 41 20

TRENCHES 2 AND 3

PART 1 - GENERAL

1.01 WORK INCLUDES

- A. Abandoning utilities associated with Trenches 2 and 3, including electrical and communication lines and conduit.
- B. Removal of well vaults and monuments associated with Trenches 2 and 3, including vaults for EW-03, EW-04, EW-05, EW-06, and the MWA-64 and MWA-65 monitoring wells.
- C. Adjacent excavation of trenches and protection of extraction wells.

1.02 RELATED SECTIONS

Section 02 41 10	Utility Isolation and Removal
Section 02 83 20	Construction and Contact Water Management
Section 31 22 10	ISS Work Grading
Section 31 23 25	ISS Soil Cap

1.03 WORK BY OTHERS

A. The Engineer will depressurize and drain the conveyance lines.

1.04 JOB CONDITIONS

- A. No Salvage Allowed: No salvage will be allowed.
- B. <u>Facility Condition</u>: The Owner and Engineer offer no guarantee of the current condition of facilities or utilities to be demolished.

1.05 SUBMITTALS

- A. <u>Pre-Mobilization Submittals</u>: Submit a description of demolition equipment, personnel, materials, means, methods, monitoring and mitigations to be implemented, and schedule, favorably reviewed by Engineer, prior to initiation of mobilization for fieldwork.
 - 1. Schedule: Submit a schedule of demolition activities including the following:
 - a. Detailed sequence of demolition and removal work, with starting and ending dates for each activity.
 - b. Onsite soil stockpile (if proposed).
 - c. Excavation backfill, if proposed.
 - Sources: If import backfill is proposed, submit backfill materials source information and data demonstrating compliance with the requirements of Sections 01 43 00 and 01 45 00 and the CQA Acceptance Criteria.
- B. <u>Submittals Prior to the Acceptance of Work</u>: Provide "as-built" drawings at completion of the Work.
 - Buried Facilities: Identify and accurately locate capped utilities and other subsurface structural, electrical, or mechanical conditions and subsurface obstructions that were demolished in the ISS Work Area, but have components that remain within the ISS Work Area
 - 2. <u>Complete Data</u>: Show all record information on the final as-built drawing submitted with the Contract closeout submittal

PART 2 - PRODUCTS

2.01 CLEAN SOIL FILL

A. <u>General Requirements</u>: Import clean soil fill or utilize reuse overburden material in accordance with Sections 31 22 10 and 31 23 25 and the CMMP.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

- A. <u>Temporary Stormwater Controls</u>: Place andmaintain all temporary stormwater controls necessary to prevent stormwater run-on into, and potentially impacted stormwater runoff from, the work area.
- B. Protect existing access roads, buried piping not removed, stormwater drainage swales, site features, and all other surface structures and Site features during demolition and backfill. Restore any existing facilities to remain that are damaged by Contractor to satisfaction of Engineer. Protect other site features and areas where no soil disturbance is allowed. Make breaks and disconnections for structures and utilities that are to be partially removed or are partially located outside the limits of construction. Perform demolition in a manner that will not disturb improvements to remain in place and avoid creating any soil settlement that may impact existing structures or potentially create settlement issues.
- C. Contain Potentially Impacted Demolition Debris: Contain potentially impacted concrete structures, excavation spoil, pipe, pipe supports, sediment, soil, and related residuals; haul to a suitable stockpile at the Site approved for that purpose by the Engineer; reduce the size of the demolition debris; decontaminate the demolition debris; and handle the decontaminated demolition debris per the CMMP.
- D. Site Access: Maintain access to the Property via existing access roads throughout the Work.
- E. <u>Dust Control</u>: Provide all necessary hoses, equipment, tanks, water, connections, cover, and other to facilitate dust control in accordance with Section 01 50 00, Section 01 41 00, Project permits, applicable regulatory requirements, and the requirements of the Contractor's HASP and other required work plans.
- F. <u>Vibration Monitoring</u>: Refer to the Engineered ERS Design and Project permits for vibration monitoring requirements.
- G. Reduce Contact with Potentially Impacted Components and Residuals: Use equipment and methods that prevent contact of unimpacted soil with potentially impacted demolition debris, equipment, and residuals, and thereby reduce the volume of potentially impacted demolition debris and residuals to be managed during the Work.

3.02 UTILITIES

A. <u>Buried Utilities</u>: Identify buried utilities in the ISS Work Area in accordance with the Owner's excavation procedures. Decommission and disconnect each buried utility at a location outside the ISS Work Area to provide isolation of the utility, worker safety, and prevention of interrupted utility service outside the ISS Work Area. Buried utility handling to be in accordance with Section 02 41 10.

3.02 DEMOLITION

- A. <u>Abandon Utilities</u>: Utilities in the area of Trenches 2 and 3 shall be handled in accordance with Section 02 41 10.
- B. Remove Vaults and Monuments: Vaults and monuments in the area of Trenches 2 and 3 shall be handled in accordance with Section 02 41 00.
- C. Excavate and Protect Wells: Excavate the engineered backfill to elevation and slope indicated on the Drawings. The portions of the extraction wells and monitoring wells above grade must be protected, or may be temporarily removed and the resulting hole (stick-up) temporarily plugged to prevent entry of debris. The area around the stick-ups shall be cordoned off or otherwise identified to control the slip, trip, and fall hazard. Any portions of the wells that are removed shall be replaced and restored following completion of the ISS DSM work.

3.03 MANAGEMENT OF DEMOLITION DEBRIS

A. <u>General Requirements</u>: All demolition debris shall be handled in accordance with Section 02 81 00 and the CMMP.

3.04 BACKFILL

A. General Requirements: Backfill shall be in accordance with Section 31 22 10.

END OF SECTION

SECTION 02 52 20

ISS REAGENT SLURRY

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. ISS reagents.
- B. ISS reagent slurry mix water.
- C. ISS reagent slurry mixing.
- D. ISS reagent slurry conveyance.
- E. ISS reagent slurry residuals management.
- F. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 RELATED SECTIONS

Section 02 55 10 ISS Deep Soil Mixing Section 02 61 10 ISS Work Platform

1.03 REFERENCES

A. ASTM International (ASTM) Standards:

ASTM C150 Standard Specification for Portland Cement

ASTM C989 Standard Specification for Slag Cement for Use in Concrete and Mortars

ASTM D2854 Standard Test Method for Apparent Density of Activated Carbon

ASTM D5158 Standard Test Method for Determination of Particle Size of Powdered Activated Carbon by Air-Jet Sieving

ASTM D2867 Standard Test Method for Moisture in Activated Carbon

ASTM D1762 Standard Test Method for Chemical Analysis of Wood Charcoal

1.04 QUALITY ASSURANCE

A. Contractor Qualifications and Requirements

- 1. <u>General Requirements</u>: Provide supervisors and workers experienced with operation, maintenance, and calibration of ISS reagent storage, conveyance, mix water supply, mixing, pumping equipment, instruments, and processes similar to those required at the Site.
- Reagent Slurry Mixing Plant Operator: Provide an operator experienced in implementing all ISS
 reagent and reagent slurry handling, mixing, and pumping under the direction of the onsite
 supervisor.
- B. <u>CQA Requirements</u>: Achieve each of the CQA Acceptance Criteria stated in the CQA Plan in addition to the requirements of this section.

1.05 SUBMITTALS

- A. General Requirements: Provide submittals consistent with Section 01 33 00 and this section.
 - 1. <u>Pre-Mobilization Submittals</u>: Submit in the ISS Work Plan information describing Work requiring ISS reagent prior to initiation of mobilization for the Work. No change from the Bid submittal or, if the Bid submittal was revised by the Contract submittal favorably reviewed by

SECTION 02 52 20

ISS REAGENT SLURRY

- the Engineer, from the Contract submittal will be allowed unless otherwise approved in advance in each instance in writing by the Owner.
- 2. <u>Key Personnel</u>: Submit an ISS reagent slurry mixing organization chart showing each person assigned to work on the ISS reagent slurry mixing tasks and each person's designated relief.
- Reagents: Submit the type, standard, source, and third-party analysis of each proposed reagent in accordance with the documentation and testing requirements specified in the CQA Plan
- 4. <u>Mix Water</u>: Submit manufacturer's printed data describing details of all required tankage, connection devices including valves, back-flow preventers, and meters; permits or approvals; agency inspections; and payment of fees. The proposed source of water for making ISS reagent slurry is an onsite private hydrant.
 - a. Confirm that the water quality is satisfactory for Project use and free of oil, acids, salt, alkali, organic matter, debris, settleable particles, or other deleterious matter or substances.
 - b. Outline water supply source protection (i.e., air gaps, backflow preventers, control valves, etc.)
 - c. State meter types and sizes.
- 5. <u>Process</u>: Submit a process flow diagram showing the description and size of each key conveyance and equipment item including flow rate and constituent conveyed, mixed, or stored.
- 6. <u>Equipment</u>: Submit information describing ISS reagent slurry mixing equipment, including controls, covers, dust controls, electric motors and drives, electric power system, instruments, internal combustion engines, meters, mixers, operation and maintenance (O&M) procedures, piping, process controllers, pumps, repair agencies proposed, spare parts, storage, tanks, treatment, valves, vessels, and other key components with key equipment manufacturer's descriptive technical data for:
 - a. ISS reagent mix water transfer, storage, and conveyance to the slurry mixing plant.
 - b. Dry ISS reagent delivery, storage, and conveyance to the slurry mixing plant.
 - c. ISS reagent slurry mix plant.
- Construction Quality Control (CQC): Submit information describing CQC methods for daily, more frequent, and for-cause calibration of meters and measuring devices used for supplying, confirming, and documenting the delivery of dry reagent, water for mixing, and mixed slurry.
- 8. <u>Waste Management</u>: Submit information describing the type, volume, classification, onsite treatment, containment, staging and loading of waste generated by the ISS reagent slurry mixing and related work.
- 9. <u>Drawings</u>: Process schematic and scale plan view of the Site showing each key ISS reagent slurry water supply, dry reagent, mix plant, slurry conveyance controls, equipment, power supply, piping, pump, source, tank, and vessel; and installation and O&M clearances.
- 10. <u>Dry ISS Reagent Conveyance</u>: Describe equipment and methods used for dry reagent conveyance from the storage vessel to the mixing vessel(s), including conveyance equipment, dust control, mass metering, and key equipment capacity, dimensions, material, size, and standards in manufacturer's product technical data.
- 11. <u>Mix Water Transfer and Storage</u>: Submit proposed ISS reagent slurry mix water transfer and storage facilities:
 - a. The proposed mode of transfer from original source to any temporary storage vessels, transfer between temporary storage vessels, and transfer from temporary storage vessels into the ISS reagent slurry mixing plant.
 - b. Controls to prevent overflow, spillage or spraying, hose or connection failure, and pump overheating.
 - c. Metering and/or measurement of water into mixing vessels.
 - d. Management of water used for rinsing of ISS reagent mixing vessels, or other water impacted by contact with ISS reagent or Site soils.
 - e. Collection, temporary storage, treatment, transfer, recycling or reuse, staging and load out per the CMMP.
- 12. ISS Reagent Bulk Storage: Submit proposed ISS reagent bulk storage facilities:

- a. Drawings, specifications, and cut sheets of each proposed ISS reagent storage vessel, including pigs, silos, and other vessels.
- b. Specifications, statements, or engineered plans describing if each vessel requires anchoring; and anchoring plans, in accordance with applicable state or local regulations or requirements.
- c. Statement that each vessel is free of ISS reagent and other material prior to arriving onsite and placement of the specified ISS reagent into the vessel.
- Institutional controls to prevent placement of delivered reagent into a vessel containing a different reagent type, e.g., mixing Portland cement with ground granulated blast furnace slag (GGBFS).
- e. Controls to protect ISS reagent from weather exposure to prevent dust emissions and hydration by moisture.
- Reagent Transfer and Measurement: Submit proposed ISS reagent transfer and measurement:
 - a. Description of equipment, instruments, and methods proposed to measure the quantity of each ISS reagent onsite and tracking on a daily basis.
 - b. Methods used to prevent oversupply of reagent at completion of ISS Work.
 - c. Methods used to transfer ISS reagent into and between each type of ISS reagent storage vessel, and into the ISS reagent slurry batch plant or mixing vessel.
 - d. Metering and/or measurement of each ISS reagent into mixing vessels.
- 14. Process Control: Submit proposed ISS reagent slurry process control:
 - Daily calibration of each metering and measuring device used for supplying, confirming, or documenting the delivery of the intended ISS reagent-soil mix ratio and the ISS reagent-water mix ratio.
 - b. Details and explanation of calibration to be performed at a frequency other than daily.
 - c. Means and methods of daily grout density measurement.
- A. Documentation form or forms to be submitted to the Engineer as documentation of each calibration performed daily.
- 15. <u>ISS Reagent Slurry Mix Plant</u>: Complete description of the proposed ISS reagent slurry mixing equipment and associated process control instrumentation.
 - a. Process flow diagrams, mixing times, batch volumes if applicable, and processing rates.
 - b. Drawings, specifications, cut sheets, and other available details.
 - Electric and internal combustion power supplies, and any metered connections to power available onsite.
 - d. Maintenance and cleaning procedures and tasks.
 - e. As-needed maintenance, including distance and/or lead time to provide vendor- or manufacturer-authorized repair technicians and parts.
 - f. Potential replacement of entire mixing plant or critical equipment components, including type, vendor, and lead time.
 - g. Details, documentation, and certification that the plant, including an attached generator or diesel engine or connection to power available onsite, conforms to all applicable regulations for operation at the Site, including those of ODEQ if applicable.
- 16. <u>Drawings</u>: Scale drawings showing dimensions, plan, sections, and utilities for each ISS reagent storage, transfer, or mixing device location onsite.
- B. <u>Progress Submittals</u>: Submit certificate of origin and analysis supplied by the stabilization reagent vendor with each shipping unit on receipt at the Site. Analyses of the reagents shall satisfy the requirements of the CQA Plan.
 - 1. <u>Reagent Records</u>: Maintain complete and readily available records of stabilization reagent(s) from shipment of the reagent from the source through mixing to provide complete and accurate determination of quantities and distribution of reagents used.
 - 2. <u>Daily Calibration, Mixing, and Delivery Records</u>: During ISS Work, submit daily reports to CQA Officer detailing, at a minimum, the quantity of soil treated, identification of designated soil columns treated, the quantity of each reagent used for each column including partial vertical segments within each column (e.g., per vertical 3-foot interval), the time and date that mixing is

completed at each column, and the completed forms documenting calibrations and measurements performed.

1.06 DELIVERY, STORAGE, AND HANDLING

<u>ISS REAGENT</u>: DELIVER, STORE, AND HANDLE EACH ISS REAGENT IN ACCORDANCE WITH THE CORRESPONDING REAGENT SUPPLIER'S PRINTED INSTRUCTIONS FAVORABLY REVIEWED BY ENGINEER.

- 1. Ship each reagent separately in properly labeled containers or transport vehicles.
- 2. Reject caked or wet reagent.
- 3. Control dust in each storage and handling step.
- 4. Prevent contact with precipitation and flowing or ponded stormwater.
- 5. Collect samples of reagent for testing in accordance with the CQA Plan.

PART 2 - PRODUCTS

2.01 PORTLAND CEMENT ISS REAGENT

- A. <u>Type</u>: Portland cement in accordance with ASTM C150, Type II-V. or similar favorably reviewed by Engineer.
- B. <u>Source</u>: CalPortland Portland Cement Terminal, Portland, Oregon; or other source favorably reviewed by the Engineer.

2.02 GGBFS ISS REAGENT

- A. Type: Slag cement (GGBFS) in accordance with ASTM C-989, Grade 120.
- B. <u>Source</u>: CalPortland Portland Cement Terminal, Portland, Oregon; or other source favorably reviewed by the Engineer.
- Quality: Shall be sampled and meet the requirements set forth in the table T2, CQA Test Schedule

2.03 POWDERED ACTIVATED CARBON (GAC)

- A. Type: Virgin Coconut Shell Carbon.
- B. <u>Source</u>: Pacific Coast Carbon, Vancouver, WA; or other source favorably reviewed by the Engineer.
- C. Quality: Shall be sampled and meet the requirements set forth in the table T2, CQA Test Schedule.

2.04 BIOCHAR

- A. Type: Oat hull biochar that meets the following specifications:
 - Source: Pacific Coast Carbon, Vancouver, WA; or other source favorably reviewed by the Engineer.
- B. Quality: Shall be sampled and meet the requirements set forth in the table T2, CQA Test Schedule.

2.05 SODIUM PERSULFATE

- A. Type: Crystalline sodium persulfate that meets the following specifications:
- PART 2 Source: Evonik, Piscataway, NJ; or other source favorably review by the Engineer.
 - B. Quality: Shall be sampled and meet the requirements set forth in the table T2, CQA Test Schedule.

2.06 WATER

- A. <u>General Requirements</u>: Free of concentrations of oil, acid, salt, alkali, organic matter, or other deleterious matter or substances that interfere with achievement of each of the ISS soil treatment CQA Acceptance Criteria.
- B. <u>Source</u>: From a source favorably reviewed by the Engineer and consistently demonstrated capable of producing ISS reagent slurry and ISS soil mixtures that achieve each of the corresponding CQA Acceptance Criteria.
 - 1. <u>Potable Water</u>: From a permitted connection to an existing fire hydrant or potable water line onsite.

2.07 REAGENT AND SLURRY ADDITIVES

A. None allowed.

2.08 ISS REAGENT MIX RATIO

- A. General Requirements: Add each ISS reagent at the ratio in ISS reagent slurry that is suitable for producing pumpable, reactive, and stable reagent slurry suitable for ISS soil treatment in accordance with Section 02 55 10 and achieves each corresponding ISS reagent slurry and ISS soil mixture CQA Acceptance Criteria.
- B. <u>Reagent Supply</u>: Procure, receive, store, and mix sufficient ISS reagents and water to provide ISS treatment of all soil within the ISS treatment area of the former Acid Plant Area from the surface of the ISS Work Platform to the bottom of the ISS mixing zone shown on the Drawings.
- C. <u>Portland Cement Mix Ratio</u>: Provide Portland cement in the ISS reagent slurry at a slurry mix ratio that will produce a Portland cement mass thoroughly mixed via the ISS reagent slurry in the ISS soil mixture sufficient to achieve the performance criteria specified in the CQA Plan.
- D. <u>GGBFS Mix Ratio</u>: Provide GGBFS in the ISS reagent slurry at a slurry mix ratio that will produce a GGBFS mass thoroughly mixed via the ISS reagent slurry in the ISS soil mixture sufficient to achieve the performance criteria specified in the CQA Plan.
- E. <u>Activated Carbon Mix Ratio</u>: Provide activated carbon in the ISS reagent slurry at a slurry mix ratio on a dry weight basis that will produce an activated carbon mass thoroughly mixed via the ISS reagent slurry in the ISS soil mixture sufficient to achieve the performance criteria specified in the CQA Plan.
- F. <u>Biochar Mix Ratio</u>: Provide biochar in the ISS reagent slurry at a slurry mix ratio on a dry weight basis that will produce a biochar mass thoroughly mixed via the ISS reagent slurry in the ISS soil mixture sufficient to achieve the performance criteria specified in the CQA Plan.
- G. Sodium Persulfate Mix Ratio: Provide sodium persulfate in the ISS reagent slurry at a slurry mix ratio that will produce a sodium persulfate mass thoroughly mixed via the ISS reagent slurry in the ISS soil mixture sufficient to achieve the performance criteria specified in the CQA Plan.

2.09 ISS REAGENT-WATER MIX RATIO

- A. <u>General Requirements</u>: Mix ISS all reagents with ISS mix water to produce a slurry with uniform color and texture, and that maintains reagent solids in suspension.
- B. Reagent-Water Mix Ratio: Provide an ISS reagent slurry with an ISS reagent (total mass of Portland cement, GGBFS, activated carbon, biochar, and sodium persulfate) to mass of water mix ratio that is suitable for pumping to the ISS DSM Unit and producing effective ISS soil mixture by the ISS DSM Unit that meets performance criteria specified in the CQA Plan and as demonstrated in the Field Pilot.
- C. Air Entrainment: Mix ISS reagent slurry using methods that prevent air entrainment in the slurry.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

- A. <u>Unit Responsibility</u>: Obtain, assemble, and operate an ISS reagent slurry mixing system that provides a safe and reliable method to generate reagent slurry mixture to treat impacted soil so that the treated material conforms to the specified performance criteria.
- B. <u>Dust Control</u>: Prevent and mitigate fugitive dust release during all onsite handling or use of ISS reagents in accordance with Section 01 50 00 and the Contractor's HASP favorably reviewed by the Engineer.
- C. <u>Spill Control</u>: Prevent, control, and implement countermeasures necessary to address each spill or release of dry reagent, reagent slurry, reagent slurry residuals, potentially impacted water, and unused water during the Work.
- Control Release of Reagent, Impacted Soil, and Residuals: Do not allow migration or release of stabilization reagents, impacted soil, stabilized soil, or related residuals.
- E. <u>Patents and Royalties</u>: Determine and define each possible infringement or conflict of the proposed stabilization process with each proprietary and patented process, and pay all fees and royalties due at no additional Contract cost.
- F. <u>Control Spills</u>: Do not spill treated or untreated impacted soil during excavation, mixing, or removal activities in the ISS Work Area. Immediately contain and clean up each spill at no additional Contract cost
- G. <u>ISS Mixing Equipment</u>: Use equipment and techniques suitable for consistent and controlled mixing and conveyance of ISS reagent slurry that can be mixed uniformly throughout the entire mass of impacted soil in each mix cell designated to be subjected to ISS soil mixing.
 - Mixing Plant Washwater Management: Minimize volume of water impacted by contact with ISS reagent slurry.
 - 2. Mixing plant washwater must be handled in accordance with Section 02 55 10 paragraph 3.05, ISS Construction Water Management.
 - 3. Contain, convey, pre-treat, treat, reuse, discharge, , or otherwise manage mixing plant washwater, or any other water impacted by contact with ISS reagent, at no additional Contract cost, and in accordance with applicable regulations, Project documents, and approved Contractor submittals.
- H. <u>ISS Reagent Mixing Equipment and Storage Unit O&M</u>: Maintain all ISS reagent mixing equipment and storage units in proper working order and perform periodic inspections and O&M in accordance with manufacturer recommendations and requirements.

I. <u>Residuals Management</u>: Minimize, contain, and properly reuse or dispose of all residuals associated with ISS reagent mixing in accordance with applicable regulations and as approved by the Engineer.

END OF SECTION

SECTION 02 55 10

ISS DEEP SOIL MIXING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. ISS of soil in the Acid Plant Area of the Site and at the extent and depth intervals shown on the Drawings.
- B. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 RELATED SECTIONS

Section 01 43 00	Construction Quality Assurance
Section 01 45 00	Construction Quality Control
Section 02 52 20	ISS Reagent Slurry
Section 02 61 10	ISS Work Platform
Section 31 23 25	ISS Soil Cap

1.03 REFERENCED DOCUMENTS

A. ERM, 2025. Construction Quality Assurance Plan, Pre-Final Design Report, Appendix I (CQA Plan).

1.04 DEFINITIONS

- A. <u>ISS DSM Unit</u>: Equipment needed to mix one ISS mix cell, including tracked excavator, soil auger, mats, tracked sample tool support device, ISS soil mixture sample tool, and related equipment, personnel, and services not shared with another ISS DSM Unit.
- B. <u>ISS Mix Cell</u>: The zone of soil mixed at a single location from the top elevation designated on the Drawings (at or below the surface of the ISS Work Platform) to the bottom elevation designated on the Drawings or to refusal, if refusal is encountered above the designated bottom and confirmed and approved by the CQA Officer as the refusal bottom for that mix cell.
- C. <u>ISS Soil Mixture</u>: A homogeneous mixture of soil that was originally in the ISS mix cell after being thoroughly mixed with ISS reagent slurry in the ISS mix cell.
- D. Refusal: Inability of the ISS DSM auger to be advanced to greater depth by normal effort of the ISS DSM Unit at a higher elevation than the elevation designated as total depth for that ISS mix cell, as demonstrated by the Contractor and confirmed by the CQA Officer. Refusal will be handled on a case-by-case basis, including attempts to remove the obstruction by means of excavator or other heavy equipment. For purposes of tracking Work progress, refusal shall be qualitatively defined as requiring excessive drilling effort that (i) results in unreasonably slow progress or is not likely to advance to full depth, (ii) results in injection of excessive ISS slurry that would preclude homogenous injection of the ISS mix cell, or (iii) is likely to result in mechanical failure of the ISS DSM Unit. Contractor shall notify the Engineer immediately when they believe refusal criteria have been met.

1.05 SUBMITTALS

A. <u>General Requirements</u>: Provide all designs, submittals, equipment, material, and labor to complete ISS of impacted soil as specified in this section and on the Drawings.

- B. <u>Pre-Mobilization Submittals</u>: Submit in the ISS Work Plan a summary of the proposed ISS DSM work consistent with the ISS DSM work proposed in the Bid and in accordance with Section 01 33 00 and this section, including the following:
 - 1. <u>ISS DSM Workers</u>: Submit the name, qualifications, and experience of each key onsite ISS DSM worker and relief in accordance with Section 01 33 00, including:
 - The ISS DSM superintendent and each relief superintendent managing each ISS DSM Unit.
 - b. The ISS DSM equipment operator and each relief operator operating each ISS DSM Unit.
 - The ISS DSM mechanic and each relief mechanic maintaining and repairing each ISS DSM Unit.
 - d. The ISS DSM sampling equipment operator and each relief operator operating each piece of ISS DSM sampling equipment.
 - e. Each ISS DSM CQC Manager and each relief worker managing the CQC inspection, testing, and reporting.
 - f. Each ISS DSM CQC technician and each relief technician implementing CQC inspection and testing.
 - 2. <u>ISS DSM Equipment</u>: Submit an adequately detailed description of the proposed ISS DSM equipment and associated process control instrumentation.
 - a. Submit a process flow diagram showing the location, size, and materials of each connection to the ISS Reagent Slurry Unit.
 - b. Submit proposed ISS DSM Unit setup time, mix cell processing rates per bank vertical foot (for each proposed mix cell diameter), DSM auger stroke plan, and unit mix cell demobilization time.
 - c. Submit drawings, specifications, cut sheets, photographs, and details describing the ISS DSM Unit and each key component. State whether the ISS DSM Unit will be rented or is owned by the Contractor or a subcontractor, and if the latter, by which company.
 - d. Submit shop drawings of each ISS DSM auger to be used or staged available for use onsite.
 - e. Submit a list of ISS DSM replacement equipment and parts that will be stocked onsite throughout the Work and for each ISS DSM Unit.
 - (1) Submit both the installed and the replacement equipment and part manufacturer name and brand name.
 - f. Submit each equipment electric and internal combustion engine power supply required and how that power is proposed to be provided and paid for.
 - g. Submit information documenting the number of hours that each ISS DSM Unit and each key component has operated since manufacture and since the most recent detailed inspection, maintenance, and test operation.
 - h. Submit documentation of maintenance, inspection, and cleaning of each ISS DSM Unit.
 - i. Submit reports documenting abnormal or irregular maintenance, including distance and/or lead time to provide vendor or manufacturer authorized repair technicians and parts, for each ISS DSM Unit.
 - j. Submit information describing ability to replace the entire ISS DSM Unit and each key component, including the type, manufacturer, local supplier, and lead time required from order to delivery to the Site.
 - k. Submit details, documentation, and certification that the ISS DSM equipment, including an attached generator or diesel engine, complies with all applicable regulations for operation at the Site, including requirements administered by ODEQ.
 - 3. <u>Drawings</u>: Submit scale drawings showing dimensions, plan, sections, and utilities for each ISS reagent storage, transfer, mixing, and sampling device and its proposed location on the Site. Show ISS mix cell design that shows the size, depth, and ID of each cell.
 - 4. <u>ISS Demobilization</u>: Submit a post-ISS treatment cleanup and restoration plan for the treatment area, including ISS swell grading and preparation for soil cover placement.
 - 5. Work Zone Delineation: Submit a scale plan drawing showing the planned location of each ISS DSM Unit, key personnel, products, access routes, and procedures, including the location, materials, and work in the Support Zone, Contamination Reduction Zone, and Exclusion Zone for each ISS DSM Work Zone.

- 6. <u>Construction Quality Control</u>: Submit proposed CQC inspection, testing, and records used to document control and quality of ISS soil mixing.
 - a. Means and methods to control and demonstrate accurate horizontal and vertical placement of mixing columns, and vertical alignment of mixing columns.
 - b. Means and methods of collecting (i.e., the sample tool and sample tool use), forming, and curing samples of ISS soil mixture in accordance with the CQA Plan. Describe in detail methods of sample collection from 0-40 feet in depth (relative to ISS Work Platform).
 - c. Means and methods to re-treat any material that does not achieve any CQA Acceptance Criteria.
 - d. Example CQC documentation forms for documentation of ISS mixing performed, including location, quantities of soil mixed, each reagent mix ratio in each part of each mix cell, and all monitored parameters and samples collected in accordance with the CQA Plan.
 - e. Examples of outputs from DSM equipment electronic monitoring systems (e.g., "GUHMA" logs), if applicable.
- 7. <u>ISS Work Process</u>: Describe each step of the ISS DSM Work process and related CQC sampling.
- A. <u>Progress Submittals</u>: Prepare, file, and submit daily to the Owner complete and readily available records of ISS mixing performed including complete and accurate details of quantities and distribution of reagents used. Include the following at a minimum for each ISS mix cell completed:
- 1. The mix cell ID.
- 2. Planned and as-built survey describing the location (horizontal coordinates), vertical extent (the elevation of the ISS Work Platform at the top of mix cell and the bottom of the mix cell), mix cell diameter, and calculated volume and dry-weight basis mass of bank soil in each mix cell.
- 3. Record of each adjoining mix cell overlap and calculation of the corresponding adjustment to the total volume mixed at that mix cell.
- 4. Data and calculations showing each reagent mix ratio mixed in each mix cell, expressed as reagent dry weight to soil native (wet) weight and associated slurry volume.
- 5. Mass of each reagent mixed in each part of each mix cell.
- 6. The time at the beginning and end of each ISS mix cell downward and upward mix pass.
- 7. Mixing details including number of vertical passes completed, rotational speed, torque and pressure at the auger head, vertical log of the pressure and flowrate of reagent slurry, and the calculated reagent mix ratio per each defined vertical elevation interval (e.g., 3-vertical-foot elevation interval).
- 8. Associated observations (e.g., encountering refusal), measurements, and samples collected to demonstrate compliance with the CQA Acceptance Criteria.

PART 2 - PRODUCTS

2.01 ISS REAGENT SLURRY

A. Provide ISS reagent slurry in accordance with Section 02 52 20.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

- A. <u>ISS Mixing</u>: Provide and operate ISS DSM equipment that provides a safe, reliable method of treating impacted soil so that the treated material conforms to the specified performance criteria.
- B. <u>Surface Erosion Protection</u>: Deploy and move mats or other measures approved in advance or ordered in writing by the Engineer and demonstrated effective in preventing disturbance of soil due to loads imposed by moving, operating ISS DSM equipment, and stationary equipment, piping, and supplies.

- C. <u>Control Release of Reagent, Impacted Soil, and Residuals</u>: Prevent migration or release of stabilization reagents, impacted soil, stabilized soil, or related residuals.
- D. Dust Control: Control dust in accordance with Section 01 50 00.
- E. <u>Spill Prevention, Control, and Response</u>: Prevent, control, and implement countermeasures to mitigate release or spill of dry reagent, reagent slurry, potentially impacted water, or clean unused water, if unintended, throughout onsite handling, mixing, and use of ISS reagents in accordance with Section 01 50 00.

3.02 PREPARATION

- A. <u>General Requirements</u>: Prepare the Site for the ISS Work as necessary and approved by the Engineer including:
 - 1. Utility relocation, temporary capping, or abandonment (coordination and/or construction).
 - 2. Access and access controls.
 - 3. Stormwater run-on and runoff controls.
 - 4. Removal/grading of surface debris, structures, soil, or pavement.
 - 5. Equipment placement in preparation for ISS soil mixing.
 - 6. Selective demolition of subsurface structures (e.g., abandoned stormwater pipe).
- B. <u>Separate Existing In Place Soil and ISS Soil Mixture</u>: Do not mix, to the extent practical, existing in place soil and previously mixed ISS soil mixture during ISS Work Platform excavation, and during related Work area excavation and grading.
- C. <u>ISS Work Platform</u>: Excavate soil to the top of the ISS Work Platform to elevation shown on the Drawings (or to elevation approved by the Engineer) in accordance with Section 02 61 10. When encountered, separate and excavate or regrade the ISS soil mixture to expose undisturbed soil at the ISS Work Platform elevation shown on the Drawings (or to elevation approved by the Engineer) in accordance with Section 02 61 10.
- D. <u>Work Area Preparation</u>: Excavate and grade the Work area adjacent to the ISS mix cell as needed to stage and operate ISS DSM, sampling, ISS reagent slurry and all other necessary equipment, piping, supports, and controls.

3.03 ISS REAGENT SLURRY

A. <u>General Requirements</u>: Mix ISS reagent slurry produced in accordance with Section 02 52 20 with soil in the ISS mix cell throughout ISS soil mixing.

3.04 ISS SOIL MIXING

- A. <u>Equipment</u>: Provide equipment and techniques suitable to deliver and mix ISS reagents with soil in the mix cell to create a uniform mixture in accordance with Part 3.04 B of this section.
 - <u>Capacity</u>: Provide equipment of minimum capacity, condition, and effectiveness adequate to meet the specified schedule requirements of the Work.
 - 2. <u>Maintenance</u>: Provide all maintenance, spare parts, and backup equipment as necessary to meet the specified schedule requirements of the Work.
 - 3. <u>Mix Control</u>: Provide equipment with positive means for controlling the mix proportions, maintaining an appropriate and constant rate of rotation with alternating upward and downward, full-depth vertical motion while mixing; and maintaining the appropriate ISS mixer alignment and location.
 - 4. <u>Instrumentation</u>: Provide GUHMA instruments and recording devices. Produce continuous GUHMA records for all mixing in each ISS mix cell acceptable to the Engineer.

- 5. <u>Daily Inspection</u>: Perform equipment inspection of each ISS DSM Unit by a certified operator documented on a form approved by the Engineer prior to initiation of the Work each day. Provide completed equipment inspection forms to the Engineer daily.
- B. <u>Uniform Mixture:</u> Thoroughly mix the reagent slurry and impacted soil in the ISS mix cell to create a homogeneous ISS soil mixture that achieves the CQA Acceptance Criteria.
- C. <u>ISS Mix Area</u>: Perform ISS mixing in each ISS mix cell in the ISS Work Area(s) shown on the Drawings.
- D. <u>ISS Mix Cell Configuration</u>: Locate and set elevations of each ISS mix cell to achieve mixing of all potentially impacted soil in the ISS treatment areas shown on the Drawings.
 - 1. <u>ISS Mix Cell Area</u>: Limit the horizontal extent of the ISS mix cell to the area under the vertical projection of the soil mixing tool centered on the center of that ISS mix cell set in accordance with the ISS Work Plan favorably reviewed by the Engineer.
 - 2. <u>ISS Mix Cell Initial Top Surface</u>: Set the initial top of the ISS mix cell at the horizontal plane at the specified ISS Work Platform elevation, or at the as-built ISS Work Plan elevation if different and a corresponding field change is approved in writing by the Engineer in advance of that work. ISS mixing from a higher starting elevation than shown on the Drawings shall be performed per written approval of the Engineer and per the unit rates established in the Contract.
 - 3. <u>ISS Mix Cell Bottom Surface</u>: Set the bottom of the ISS mix cell at the horizontal plane at the ISS mix cell bottom elevation shown on the Drawings. ISS mixing by Contractor to a lower bottom elevation than shown on the Drawings and not directed in writing by Engineer shall be performed at no additional Contract cost.
 - 4. <u>ISS Soil Mixture Top Surface</u>: If the ISS soil mixture expands above the ISS mix cell initial top surface, set the ISS soil mixture top surface in the vertical projection of the area of that ISS mix cell.
 - 5. Overburden Soil on Top of ISS Mix Cell Top Surface: Use a requisite amount of reagent to perform ISS mixing through the overburden soil to the top of the ISS Mix Cell top surface, then follow the requirements listed herein for the ISS Mix Cell. Contractor is not required to perform a minimum number of passes through the overburden soil except to access and complete the ISS Mix Cell. No CQC samples shall be taken from overburden material, and Contractor shall not be held to any CQC, CQA, or other sampling requirements for the overburden soil mixing. Minimize to the extent possible the volume of overburden soil required to be passed through to access ISS Mix Cell top surface.
 - B. <u>ISS Mix Cell Overlap</u>: Locate each ISS mix cell to produce an ISS mix cell area overlap with each existing or proposed adjoining mix cell to result in ISS treatment of the entire ISS Work Area(s). Provide a configuration of ISS mix cells as shown on the Drawings or an alternate configuration as detailed in the ISS Work Plan that is approved by Engineer and that achieves CQA acceptance criteria.
- E. <u>ISS Mix Cell Sequence</u>: Perform continuous ISS soil mixing in the ISS mix cell in a single stage.
 - ISS Mix Cell Area: Limit the horizontal extent of the ISS mix cell during all ISS DSM in that ISS mix cell to the area under the vertical projection of the soil mixing tool centered on the designated center of that ISS mix cell.
 - 2. <u>ISS Soil Mixing Passes</u>: Mix each ISS mix cell in accordance with the requirements specified in the CQA Plan.
 - 3. <u>ISS Soil Mixing at the Top of the ISS Soil Mixture</u>: Limit the upward extent of the ISS soil mixing to mix all ISS soil mixture in that ISS mix cell but prevent dynamic ejection of ISS soil mixture from the rotating auger.
 - 4. <u>ISS Mix Cell Refusal</u>: In the event of refusal, including when any portion of the vertical interval is not mixed by at least six passes (3 downward and 3 upward), the Contractor must immediately notify the Engineer before moving to the next ISS mix cell. For any ISS mix cell that does not achieve the target bottom elevation within the tolerance specified in the CQA Plan for the work, acceptance of that column as complete will be subject to Engineer approval on a case-by-case

basis via the Request for Information process, and corrective measures may be required at no additional Contract cost in accordance with Section 01 45 00. Refer to Section 1.03 for definition of Refusal.

3.05 ISS CONSTRUCTION WATER MANAGEMENT

- A. <u>Minimize Contact</u>: Minimize the volume of surface water and stormwater impacted by contact with ISS reagent slurry and ISS soil mixture.
- B. <u>Prevent Runoff</u>: Prevent surface water and stormwater that contacts with ISS reagent slurry and ISS soil mixture from migrating outside the ISS Work Area.
- C. <u>Manage Potentially Impacted Water</u>: Contain, convey, pre-treat, treat, reuse, discharge, transport and dispose of, or otherwise manage mixing plant washwater, or any other water impacted by contact with ISS reagent, at no additional Contract cost, and in accordance with the CMMP and with applicable regulations, Drawings, Technical Specifications, permits, and submittals favorably reviewed by the Engineer.
- D. <u>Prevent Washwater Drainage and Run-On to the ISS Work Area</u>: Prevent impacted and non-impacted water drained or generated outside the ISS Work Area from being conveyed or drained to the ISS Work Area.
- E. <u>Disposal</u>: All water shall be treated and disposed of in accordance with Section 02 83 20 and CMMP.

3.06 ISS RESIDUALS MANAGEMENT

A. Minimize, contain, and properly reuse or dispose of all residuals associated with ISS Work in accordance with the CMMP, applicable regulations and as approved by Engineer.

3.07 ISS SOIL MIXTURE SAMPLING

- A. <u>General Requirements</u>: Collect ISS-treated material and generate sample specimens in accordance with this section, the CQA Plan, and approved Contractor submittals.
- B. <u>Sample Collection Equipment</u>: Provide equipment, instruments, and tools demonstrated effective in obtaining a representative ISS soil mixture at each location and depth that the CQA Officer approves or orders to be sampled.
 - Collection Equipment: Collect the ISS soil mixture using equipment in a safe and efficient manner that accurately locates the sample tool in the ISS mix cell.
 - a. Insert, operate, and withdraw the sample tool in a uniformly vertical direction.
 - b. Obtain accurate measurement of the sample elevation.
 - c. Support and operate the sample tool to safely obtain a representative ISS soil mixture sample at the designated sample elevation.
 - d. Suspend the collection tool using equipment and following methodology described in the submittal favorably reviewed by the Engineer.
 - Sample Collection Tool: Provide a durable sample collection tool demonstrated capable of obtaining a representative ISS soil mixture at the elevation that the CQA Officer designates be sampled.
- C. <u>Sample Methods</u>: Use uniform sample collection methods described in the ISS work pre-mobilization submittal favorably reviewed by the Engineer and as specified in the CQA Plan.

D. <u>DSM Mix Cell Coring Plan Option:</u> DSM mix cell coring is provided as an optional contingent measure for verification of DSM UCS and hydraulic conductivity properties for sample results not meeting performance criteria as defined in the CQA plan. See Section 01 45 00 paragraph 3.04.

3.08 ISS SOIL MIXTURE EXPANSION

- A. Evaluate swell from the proposed ISS process and limit the elevation of the top of the swell to an elevation that achieves the ISS cap and grading slopes and related limits specified in Section 31 22 10 and in the Drawings.
 - C. Plan for, manage, and reassess ISS swell expansion, and modify ISS Work means and methods as needed to not exceed the design limit elevation of the top of swell, including but not limited to modifying the ISS Work Platform elevation and modifying the ISS reagent mix design, at no additional Contract cost. Notify the Engineer immediately if at any time the Contractor observes evidence that suggests the elevation of the top of the swell will exceed what is shown in the Drawings.
 - Perform a final ISS swell as-built survey to accurately delineate the horizontal and vertical extents of graded swell prior to placement of ISS Cap. Provide as-built survey in both .pdf and .dwg formats.

3.09 ISS SOIL MIXTURE PROTECTION

A. Protect ISS soil mixture in each mix cell from loads, ponded water, and other disturbance for at least 7 days after mixing that mix cell.

3.10 ISS SOIL MIXTURE GRADING

D. Regrade ISS soil mixture if needed to access other ISS mix cells and to allow placement of ISS Cap as described in the ISS Work Plan favorably reviewed by the Engineer.

3.11 ISS SOIL MIXTURE COVER

A. Place ISS soil mixture Cap in accordance with Section 31 23 25.

END OF SECTION

SECTION 02 61 10

ISS WORK PLATFORM

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Excavation of potentially impacted overburden soil in the ISS Work Area.
- B. Excavation of potentially non-impacted overburden soil in the ISS Work Area.
- C. Preparation and management of the ISS Work Platform for ISS deep soil mixing.
- D. Management and grading of swell within the ISS Work Platform.
- E. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 RELATED SECTIONS

Section 01 50 00	Temporary Facilities and Control
Section 02 41 00	Selective Demolition
Section 02 55 10	ISS Deep Soil Mixing
Section 02 81 00	Non-ACM Material Management
Section 02 82 10	ACM Material Management
Section 31 22 10	ISS Work Grading

1.03 REFERENCES

- A. Oregon Administrative Rules (OAR) chapter 437, division 3, subdivision P. Excavations.
- B. Oregon Department of Environmental Quality. 2021. Construction Stormwater Best Management Practices Manual.
- C. ERM, 2025. *Construction Quality Assurance Plan* for the Former Acid Plant Area, Pre-Final Design Report, Appendix I (CQA Plan).
- D. Occupational Safety and Health Administration (OSHA) 2226-10R 205 Trenching and Excavation Safety

1.04 SUBMITTALS

- A. <u>Pre-Mobilization Submittals</u>: Submit information describing the ISS Work Platform work in the ISS Work Plan (consistent with the information submitted with the Bid but with further detail) prior to initiation of the Work in accordance with Section 01 33 00 and including the following.
 - Earthwork Equipment: Completely describe each equipment unit proposed to accomplish the ISS Work Platform Excavation, loading, transport, and grading (including dimensions, maximum and minimum swing clearances, load capacity, operating weight with and without excavated load), motor type and horsepower (including for accessory drives, support and traction devices, contact pressure, manufacturer, model, hours used), and whether owned or rented.
 - A. <u>Sequencing and Methods</u>: Describe the sequence and staging of the ISS Work Platform work, including relation to the installation of the Earth Retention System (ERS) of the riverbank-adjacent portion of the site, ISS Work Area demolition work, ISS DSM work, ISS soil backfill, and related Work. Include discussion about management of excavated soil identified as eligible for reuse as denoted in the Contaminated Materials

Management Plan (CMMP) and management of potentially impacted soil that requires analytical testing to confirm eligibility for reuse or determine disposition for disposal.

- 2. <u>Survey</u>: Describe surveying, staking, marking, and other methods used to measure the elevation and location of each part and stage of the ISS Work Platform work to achieve the lines and grades shown on the Drawings.
- 3. Work Zone Safety: Describe in text or on drawings worker communication, potential crush points, equipment or load swing radii, operator blind spots, and similar hazards to support safe separation and/or coordinated use of equipment and personnel performing ISS Work Platform work and, if simultaneous or in close sequence, installation of ERS, ISS Work Area demolition, ISS DSM, ISS soil backfill, and other ISS Work.
- 4. Equipment Entry to ISS Work Area: Describe in text and/or on drawings the locations where the ISS Soil Mixing Unit and other ISS soil mixing equipment will enter and exit each stage of the ISS Work Platform. Include description of sloping, removal of asphalt, foundations, or other engineered surfaces, placement and movement of timber mats or other surface protection, and each other key technique to accomplish the Work.
- 5. <u>Dewatering</u>: Describe dewatering and stormwater run-on and runoff controls and structural best management practices (BMPs), collection, conveyance, treatment, and discharge proposed to maintain safe and effective access to and use of the ISS Work Platform for the Work.
- 6. <u>Monitoring ERS during ISS Work Platform Excavation:</u> Describe the requirements, limitations, and monitoring that will be implemented to protect and monitor the integrity of the ERS during excavation of the ISS Work Platform.
- 1. <u>Progress Submittals</u>: <u>Onsite Material Removal and Storage Records</u>: Maintain and provide logs recording quantities and descriptions of all material removed, classified, sorted, and stockpiled onsite for reuse or staged for classification and subsequent load out for offsite disposal.
- 2. <u>Limits of Excavation</u>: Provide progress as-built surveys (in addition to final as-built surveys) of the extents and depths of the Work Platform Excavation as requested by Engineer.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

- A. <u>Excavation and Trench Safety</u>: Provide services, a Competent Person, labor, equipment, and materials to perform excavation and trenching, and any subsequent entry or adjacent Work to excavations and trenches, safely and in accordance with OAR 437-003-1926-P requirements and the approved Contractor HASP.
- B. <u>ERS Installation and Monitoring</u>: Install and monitor ERS as provided in the Engineered ERS Design provided by the ERS Engineer. Comply with all requirements, limitations, restrictions, notes, and monitoring provided for in the design. Submit a work plan detailing Contractor means and methods, sequencing, compliance with these requirements, and value-engineering for review by Engineer and ERS Engineer.
- C. <u>Erosion and Sediment Control</u>: Establish and maintain effective erosion and sediment control for all disturbed areas at the Site in accordance with the SWPPP and Section 01 50 00. Install all stormwater structural BMPs in accordance with the SWPPP and the Contractor's Construction Stormwater (1200-C) permit.
- D. <u>Soil Segregation and Stockpiling</u>: Segregate soil during excavation and handling into separate stockpiles and locations based on the requirements of the Drawings and related Technical

Specifications. Maintain stockpiles according to the same requirements until the final disposition of each stockpile is determined. If soil contaminated with DNAPL is encountered within the extent of the excavation, this soil shall be managed within the footprint of Area B. Screening criteria from the CMMP will be used to determine whether soil contains DNAPL.

- E. <u>Lines and Grades</u>: Construct the ISS Work Platform to lines and grades shown on the Drawings or as adjusted by Engineer. The overarching goal of the Platform Excavation depth is to achieve the most beneficial balance of cost efficiency, management of groundwater, and constructability.
 - Adjustment of Elevation Based on Overburden Soil: Minimize the ISS of overburden soils above
 the ISS top elevation designated on the Drawings to the extent feasible, except as directed
 below or if cost of excavation and processing of exceeds the cost of ISS for overburden soil.
 - 2. Adjust Elevation if Necessary for ISS Swell: Assess the volume and/or vertical distance of ISS material that expands into the space above the ISS Work Platform during ISS soil mixing, and propose modifications to the lines, grades, and elevations of the ISS Work Platform as needed to achieve a final elevation of the top of the ISS soil mixture in a range that achieves the grading requirements in Section 31 22 10, and ISS soil mixture cover to lines and grades as shown on the Drawings. Modifications to the ISS Work Platform for this purpose to be performed at no additional Contract cost unless approved by the Owner in advance. Said proposal must be approved in advance or ordered in writing by the Engineer.
 - 3. Adjust Elevation if Necessary based on Groundwater Elevation: Assess the groundwater elevation relative to the elevation of the ISS Work Platform and propose modifications to the lines, grades, and elevations of the ISS Work Platform as needed to maintain a stable ISS Work Platform elevation and avoid or minimize dewatering.
 - 4. <u>Correct Excess Excavation</u>: Provide backfill, compaction, and grading at locations where excessive excavation occurs as or ordered in writing by the Engineer to correct the excess excavation at no additional Contract cost.
 - a. <u>Utility Removal Voids</u>: Provide backfill material to fill the voids left by removal of the subsurface utilities, such as stormwater pipes and establish a stable platform for ISS of soils backfilled and to the depth indicated on the Drawings. Backfill soil shall be Platform Excavation soil immediately adjacent to the stormwater pipe. Stockpile backfill soil within the limits of the Platform Excavation in sufficient quantity to backfill the voids to achieve the intended grade and stability.
- F. <u>Construction Staking</u>: Lay out and mark out the limits of ISS Work Platform Excavation to lines and grades shown on the Drawings.
- G. <u>Temporary Stormwater Runoff/Run-on Control</u>: Maintain surface grades for complete drainage as specified in Section 01 50 00, Temporary Facilities and Controls. When necessary, install temporary berms or drainage ditches to intercept or divert surface water from entering the Platform Excavation, and prevent excessive accumulation of water or interference or delay of the Work at no additional Contract cost.
- H. Dust Control: Control dust in accordance with Section 01 50 00.
- I. Equipment, Personnel, and Methods
 - 1. Provide supervisors and workers experienced with earthwork using means and methods similar to those at the Site.
 - 2. Implement all earthwork under the supervision of the person proposed by the Contractor and approved by Owner to supervise the earthwork in this Contract, including a Competent Person to oversee all excavation and trenching in accordance with OAR 4370031926P requirements.
 - 3. Provide ERS and any additional shoring or bracing as needed within excavations or trenches to protect workers, equipment, or existing structures.
 - 4. Provide personnel and selected methods adequate to meet the specified schedule and safety requirements of the Work.
 - 5. Provide all required maintenance, spare parts, and backup equipment as necessary to meet the specified schedule and safety requirements of the Work.

- J. Protection of Existing Structures: Protect structures, utilities, roadways, sidewalks, watercourses, and other facilities from damage caused by settlement, lateral movement, undermining, wash-out, and other hazards created by the ISS Work Platform work. Protect the installed ERS in accordance with the requirements set forth in the Engineered ERS Design, and City of Portland Grading Permit, and Greenway Exempt Review.
 - 1. Report: If any existing utility or other onsite feature is damaged, immediately report the damage to the Engineer.
 - 2. Repair: Make necessary repairs approved by or ordered by the Owner or Property Owner in writing at no additional Contract cost.
- K. <u>Equipment Inspection</u>: Perform daily equipment inspections by a certified operator documented on a form approved by the Engineer. Submit completed equipment inspection forms to the Engineer daily.
- L. <u>Separate Native Soil and ISS Soil Mixture</u>: Do not mix, to the extent practical, native soil and previously mixed ISS soil mixture during the ISS Work Platform Excavation or during related Work Area excavation and grading.
- M. <u>ISS Soil Mixture Handling and Placement</u>: ISS soil mixture shall remain within the ISS Work Platform Excavation and shall be incorporated into the final ISS soil mixture, graded as needed to allow for placement of ISS Cap above the top elevation of the ISS soil mixture. This shall apply to ISS soil mixture generated during an earlier sequence of the Work that is encountered to complete the current sequence of Work (if applicable), and for ISS soil mixture generated during the current phase of Work.

3.02 PREPARATION

- A. <u>General Requirements</u>: Prepare the Site for the earthwork including equipment mobilization; Site preparation; environmental management; and removal/grading of surface debris, structures, soil, or pavement as specified in other sections.
- B. <u>Subsurface Clearance</u>: Perform and comply with subsurface clearance and utility requirements as specified in Section 02 41 10.

3.03 CONSTRUCTION WATER MANAGEMENT

- A. <u>General Requirements</u>: Manage perched groundwater, stormwater run-on, contact water, and water expelled from the ISS soil mixing throughout the Work in accordance with Section 02 83 20.
 - Eliminate stormwater run-on from sheet flow into excavation areas through use of diversions, berms, or similar means. Minimize the volume of water entering soil stockpile areas by similar means and cover stockpiles to prevent water intrusion and runoff impacted by sediments or constituents of concern from the soil.
 - Provide equipment, materials, personnel, and energy supply to remove water or moisture from excavations or soil placement areas as necessary to complete the Work, at no additional Contract cost.
 - Provide equipment, materials, personnel, and energy supply to remove water or moisture from drainage weep holes installed in the ERS to relieve differential hydrostatic pressure as necessary to complete the Work, at no additional Contract cost.
 - 4. All stormwater, contact water, wash water, or other construction water shall be managed in accordance with Section 02 83 20.
- B. <u>Drainage</u>: Maintain a well-drained ISS Work Platform for performance of ISS mixing and subsequent placement, compaction, or grading work.

C. <u>Protect Surface</u>: Do not move or stage equipment on soils or materials that are excessively wet or soft. Provide timber crane mats or other effective surface protection approved in advance or ordered in writing by the Engineer as necessary at no additional Contract cost.

3.04 CONCRETE, DEBRIS, AND UTILITIES

- A. Remove Debris: Remove all concrete, debris, or utilities as necessary to complete excavation of the ISS Work Platform or as necessary to complete ISS soil mixing work.
- B. <u>Identify and Remove Utilities</u>: Expose by hand-digging or vac truck, assess, isolate, abandon, remove, and dispose of all utilities observed prior to the excavation or during the ISS Work Platform work in accordance with regulatory requirements and Contractor's HASP.
- C. <u>Identify and Segregate ACM</u>: Assess, test, mitigate, remove, containerize and stage all potential ACM in accordance with Section 02 82 00 and the CMMP

3.05 STOCKPILING AND MATERIAL HANDLING

 Handle, transport, and stockpile excavated materials in accordance with Section 02 81 00 and the CMMP.

3.06 PROTECTION OF THE WORK

- A. Protect the completed ISS Work Platform, other completed Work, and Work in progress from damage.
 - 1. If any Work is damaged, immediately report the damage to the Engineer.
 - Make necessary repairs approved by or ordered by the Engineer in writing at no additional Contract cost.

END OF SECTION

SECTION 02 81 00

NON-ACM WASTE MANAGEMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Management of potentially impacted soil.
- B. Management of potentially impacted ISS soil mixture.
- C. Management of potentially impacted groundwater.
- D. Management of non-ACM construction and demolition debris.
- E. Management of potentially impacted decontamination residuals.
- F. Other construction waste management.
- G. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 **RELATED SECTIONS**

02 41 00 02 41 10 02 52 20 02 55 10 02 61 10	Selective Demolition Utility Isolation and Removal ISS Reagent Slurry ISS Deep Soil Mixing ISS Work Platform
02 82 10	ACM Waste Management
02 83 20	Construction and Contact Water Management
31 23 25	ISS Cap

1.03 REFERENCES

- A. 29 Code of Federal Regulations (CFR) 1910.252 Disposal of Waste Materials at Construction Sites.
- B. 29 CFR 1926.252 Disposal of Waste Materials.
- C. 49 CFR 172.304 Marking Requirements.
- D. 40 CFR 262.32 Marking.
- E. 49 CFR 171 through 180.
- F. Contaminated Material Management Plan (CMMP),

1.04 WORK BY THE OWNER

A. Sample Collection and Analysis of Potentially Impacted Soil: Unless otherwise specified and/or agreed, the Owner will collect representative samples of Platform Excavation soil for required analyses as necessary to assess eligibility for reuse on site or for waste characterization and profiling purposes for soil not eligible for reuse per the CMMP. See Section 02 83 20 for

0732436.403 02 81 00 - 1 responsibilities on Contact Water sampling. Owner shall be responsible for sampling all other waste and recycle streams as required per the Contract, regulatory requirements, and offsite disposal and recycling facility requirements.

B. <u>Characterization and Profiling of Materials:</u> The Engineer may aid the Owner by providing profiling and identifying the disposal facility for any materials without input from the Contractor.

1.05 SUBMITTALS

- A. Progress Submittals: Submit additional waste management information during the Work.
 - 1. Waste Manifests: Assist Owner and Engineer to prepare a manifest for each shipment offsite.
 - a. Obtain Owner approval of each construction waste manifest prior to loading the subject material for shipment from the Site. The CQA Officer shall be responsible for maintaining the Site copy of all executed manifests.
 - Progress Reports: Submit a report to the Owner weekly documenting waste management for the Work.
 - a. Submit a report of compliance to the Owner weekly describing materials management operations, containment operations and problems, and resolution or proposed resolution of each current and prior unresolved problem.
- B. <u>Completion Submittals</u>: Submit a comprehensive materials management report including documenting construction waste management for the Work.
 - 1. Include a description of the results of implementation of any spill response actions taken.

1.06 QUALITY ASSURANCE

- A. <u>Occupational Safety and Health Administration Requirements</u>: Comply with the requirements in 29 CFR 1910.252.
- B. Waste Transportation and Disposal Requirements for Construction related Wastes:
 - 1. Comply with all federal and Oregon-specific regulations regarding waste classification, transportation, and disposal of Contractor generated wastes.
 - 2. Obtain Owner approval of the waste profile, disposal or recycling facility, transportation method and route, transporter, and waste manifest or bill of lading, prior to offsite transportation of any contractor generated waste stream.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 SUPPORT OF WORK BY THE OWNER

A. <u>Sample Collection and Analysis of Potentially Impacted Waste</u>: Assist Owner in sample collection at times and locations if requested by the Owner.

3.02 TEMPORARY CONTROLS

- A. <u>Health and Safety</u>: Implement protective measures required in 29 CFR 1926.252 and the HASP accepted by the Owner for the Work.
- B. <u>Clean Work Site</u>: Remove construction waste from the work area as the work progresses.

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- C. <u>Prevent Contact with Potentially Impacted Media</u>: Prevent contact of unaffected construction waste with potentially impacted groundwater. . soil. surface water, and related residuals.
- D. <u>Burn Ban</u>: No burning will be allowed on the Site.
- E. <u>Control Fire Hazards</u>: Keep flammable materials/waste in fire-resistant, covered containers until they are disposed of offsite.

3.03 MATERIAL CLASSIFICATION

- A. <u>General Requirements</u>: It is anticipated that the following material types may be generated by the Work, and may require reuse, recycling, or off site disposal.
 - 1. Material to be salvaged and stockpiled on the Site for reuse for the Work.
 - 2. Nonhazardous materials that are suitable for recycling.
 - 3. Nonhazardous materials to be disposed of or recycled offsite:
 - a. Concrete, asphaltic concrete, metal, wood debris, treated wood, vegetation, masonry, brick, metals, and miscellaneous materials further defined in the CMMP.
 - b. Trash and office debris.
 - c. Liquids.
 - 4. Non-ACM hazardous materials, including:
 - a. Solids.
 - b. Liquids and oily residuals.
 - 5. ACM containing debris as specified in Section 02 82 10.

3.04 STAGING

- A. <u>Removal</u>: To the extent possible, remove, separate, potentially hazardous materials prior to initiation of related work that will expose or use unaffected imported or native materials and products.
- B. <u>Plan Materials Handling</u>: Separate and stage construction wastes during construction to reduce double-handling to the extent practical.

3.05 CHARACTERIZATION OF MATERIALS

A. <u>General Requirements</u>: Aid Owner in characterizing materials removed during the Work so that each class of materials can be properly reused, recycled, or disposed of under this Contract and according to the CMMP.

3.06 MANAGEMENT OF DEBRIS

- A. <u>General Requirements</u>: Manage existing Site debris removed during demolition or excavation in preparation for recycling and/or offsite disposal.
- B. <u>Separation</u>: Separate, and maintain separated, different types materials encountered during the Work.
 - 1. Asphalt Debris: Separate asphalt debris from all other materials to the extent practical.
 - 2. <u>Concrete Debris</u>: Separate concrete debris from all other materials to the extent practical.
 - 3. <u>Mixed Asphalt and Concrete Debris</u>: Mix asphalt and concrete debris only if approved in advance or ordered in writing by the Owner.
 - 4. Metal Debris: Separate metal debris from all other materials to the extent practical.
 - 5. Other Debris: Separate other debris from soil to the extent practical.
 - 6. ACM: Manage ACM and potential ACM in accordance with Section 02 82 10.
 - 7. Stockpile: Place each separated debris into a stockpile designated for that material.

3.07 MANAGEMENT OF SOIL:

- A. <u>General Requirements</u>: Manage Site soil excavated to perform the Work in accordance with the Contract documents.
- B. <u>Separation</u>: Separate, and maintain separated, different types of materials encountered during the Work.
 - 1. Debris: Separate debris from soil to the extent practical.
 - 2. <u>Segregation</u>: Separate each class of soil during excavation based on known or potential differences in accordance with the CMMP as described in the Contract documents, CMMP and as approved or ordered in writing by the Owner or Engineer.
 - 3. Stockpile: Place each separated soil into a stockpile designated for that material.

3.08 Soil STOCKPILES

- A. <u>General Requirements</u>: Place each separated class of Soil into a stockpile designated for that material and that maintains separation of the material in accordance with the CMMP..
- B. <u>Location</u>: Establish stockpiles in locations shown on the Drawings within designated construction staging areas and approved in advance or ordered by the Engineer.
- C. <u>Stockpile Management</u>: Contain, place, and maintain stockpiles to prevent potential cross-contamination to underlying soils, impact to stormwater, or wind erosion, in accordance with other sections, the SWPPP, CMMP and applicable regulations. Debris stockpiled on asphalt or concrete may not require underlining if so approved in advance or ordered in writing by the Engineer. Contractor shall assure that management of saturated soils is followed by checking moisture conditions of stockpiled soil. Contractor to ensure prevention of leaking on access roads leaving the Site
- D. <u>Identification</u>: Use clear signage if the material type is not obvious by observation or if the material surface is covered. Potentially hazardous stockpiles must be clearly identified.
- E. <u>Log</u>: Maintain a log of each stockpile including a unique identification code, the location, the date started, the date last added to, the origin, the material description, the total quantity added, the total quantity removed, and the current estimated quantity.
- F. Log Update: Submit a copy of the updated stockpile log to the Owner each day.
- G. <u>Transport Procedures</u>: Owner to provide transportation of materials, that in accordance with the CMMP, is to be disposed offsite in accordance all applicable federal and state regulations.
 - 1. <u>Truck Inspection</u>: Perform truck inspections and submit inspection forms to the Engineer for each truck before it is loaded onsite.
 - 2. <u>Monitoring</u>: Ensure and confirm that VOC vapor emissions from waste do not result in air concentrations exceeding limits in the HASP.
 - 3. <u>Shipment Transport Log</u>: Maintain a detailed log of each load of shipment removed from Site, including at a minimum, a load number, material description, date, tonnage, transporter and driver, profile number, disposal facility, and manifest number. Submit an updated copy of the shipment transportation log to the Owner each day.

3.09 MANAGEMENT OF POTENTIALLY IMPACTED GROUNDWATER:

- A. <u>General Requirements</u>: Manage potentially impacted Site groundwater in accordance with Section 02 83 20.
- B. <u>Dewatering</u>: Collect, treat, and disposed of water that has been in contact with potentially impacted material in accordance with Section 02 82 10.

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3.10 MANAGEMENT OF LIQUIDS

- A. <u>General Requirements</u>: Remove and contain liquid and/or oily residuals from existing equipment and or piping discovered in the Work area from Work in accordance with the CMMP and applicable federal, state, and local environmental, safety, and emergency regulations.
- B. <u>Construction Equipment Spills</u>: Prevent and respond to spills from construction equipment, vessels, piping, and processes used for the Work in accordance with the Spill Prevention and Response Plan specified in Section 01 50 00.
- C. <u>Notification</u>: Inform the Owner/Engineer immediately upon discovery of liquids and oily residuals, and prior to handling those materials.
- D. <u>Characterization</u>: Assist the Owner in obtaining samples for analysis of any liquids and oily residuals discovered for characterization by the Owner.
- E. <u>Containment</u>: Contain liquids and oily residuals in Department of Transportation (DOT)-approved storage containers approved for both onsite storage and offsite transport of corresponding types and classes of liquids and oily residuals, if practical, to reduce the number of containers used and the number of times the liquids and oily residuals are transferred to the extent practical.
- F. <u>Label</u>: Label each container with Owner name and contact information, a unique container identification number determined by the Contractor, the content, its characteristics (if known), and date(s) of generation. If the characteristics of the liquid or oily residual are unknown, label "pending characterization" or "pending analysis."
- G. <u>Staging</u>: Stage each container on the Site in a secure area approved by the Owner for that use while the contents are being sampled and analyzed for characterization prior to transport to offsite recycling or disposal, approved in advance or ordered by the Owner.

3.11 MANAGEMENT OF ISS SOIL MIXTURE:

- A. <u>General Requirements</u>: All swell material is to be maintained onsite within the excavation. Additional details can be found in the following Technical Specifications:
 - 1. 02 52 20 ISS Reagent Slurry
 - 2. 02 55 10 ISS Deep Soil Mixing

3.12 PREPARATION FOR OFF SITE TRANSPORT

- A. <u>Notification</u>: Notify the Engineer of initiation of each planned debris or construction derived waste transport trip at least 24 hours prior to loading the waste onto the transport vehicle.
- B. <u>Manifest</u>: Owner will retain responsibility for the waste and sign all waste manifests and/or bills of lading requiring a waste generator signature before transport of the load from the Site.

3.13 WASTE TRANSPORT

A. <u>Inspection</u>: Perform truck inspections and submit inspection forms to the Engineer for each truck before it is loaded at the Site.

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- B. <u>Log</u>: Maintain a detailed log of each load of waste removed from the Site, including the unique load number, waste material description, transport date, transport tonnage, transport company, truck driver's name, truck number, truck license plate, waste disposal facility, manifest number, and confirmation of acceptance of the load by the waste disposal facility.
- C. Log Submittal: Submit the updated waste transportation log to the Owner each day.

END OF SECTION

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SECTION 02 82 10

ACM MATERIAL MANAGEMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Identification, sampling, analysis, classification, abatement, containment, staging and loading for off site disposal, and reporting for ACM.
- B. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 REFERENCES

- A. Contaminated Material Management Plan.
- B. ODEQ. Your DEQ Online.

WORK BY THE ENGINEER

- A. <u>Owner review of Contractor Submittals</u>: Owner will review Contractor's proposed asbestos work plan measures, including for the following:
 - 1. Asbestos control measures.
 - 2. Asbestos abatement (AA) work procedures.
 - 3. Baseline, ambient, and Site perimeter monitoring and sampling and personal sampling.
 - 4. Visual inspection of the Work Area prior to, during, and after asbestos removal and cleanup are complete.
 - 5. Final clearance air monitoring as applicable.

1.03 SITE CONDITIONS

- A. <u>Known ACM</u>: Owner records indicate that non-friable ACM was encountered during prior work in the ISS Work area.
- B. <u>ACM in the ISS Work Area:</u> The Owner and Engineer cannot guarantee absence of ACM in the ISS Work area or adjoining parts of the Site that may be disturbed by the ISS Work.

1.04 RELATED WORK

Section 02 41 00	Selective Demolition
Section 02 55 10	ISS Deep Soil Mixing
Section 02 61 10	ISS Work Platform
Section 02 81 00	Non-ACM Material Management
Section 31 22 10	ISS Work Grading
Section 31 23 25	ISS Cap

1.05 SUBMITTALS

- A. <u>General Requirements:</u> Submit proposed friable asbestos abatement (AA) information in accordance with Section 01 33 00 and as described in this section.
- B. Pre-Mobilization Submittals: Submit AA statement of qualifications and plans.
 - 1. <u>Submittal Approval</u>: Obtain Owner acceptance of each submittal prior to initiation of mobilization for fieldwork.
 - 2. <u>Contractor and Worker Approval</u>: The Owner reserves the right to refuse to allow use of any proposed AA contractor or worker access to the Site or to perform the Work.

- C. <u>Contractor Qualifications and Experience</u>: Submit AA subcontractor; or, if self-performing, Contractor AA qualifications and experience. If friable asbestos is encountered, all the following are required. In the case non-friable asbestos is encountered, submit rationale for applicability of work plan component in the AA Work Plan.
 - 1. Contractor AA License: Submit and maintain current AA contractor license.
 - 2. AA Worker Certifications: Submit each AA worker's AA certifications or licenses.
 - 3. AA Worker Medical Clearance: Submit each AA worker's medical clearance and respirator fit test.
 - 4. AA Work Plan: Submit an AA work plan, including the following:
 - Describe the means and methods to abate, segregate and stockpile of the ACM encountered during the Work.
 - b. Include requirements for abatement of each AA worker's personal protective equipment.
 - c. Describe work practices and engineering controls that comply with each applicable federal, state, and local regulation cited in the plan.
 - d. Describe each work area..
 - e. Training for the competent person and each AA worker.
 - f. List of employees with potential asbestos exposure.
 - g. Asbestos exposure assessment.
 - h. Respiratory protection procedure.
 - i. Management plan for potential asbestos-affected dust, if friable.
 - j. Air monitoring plan including baseline and perimeter monitoring and personal sampling plan.
 - k. AA procedures.
 - I. Post-AA packaging procedures for shipment, per the CMMP.
 - m. Post-AA cleanup procedures.
 - n. Final AA clearance air monitoring.
 - o. Arrangements made by each company working on the Site to inform their employees and employees of each other company working on the Site of potential exposure to asbestos and of asbestos access-regulated areas.
 - p. Procedures to be followed in the event that unexpected friable ACMs are found or non-friable ACMs become friable.
 - q. Requirement for notifications, signs, and labels informing other contractors and/or affected employees of presence and/or potential exposure.
 - r. Medical surveillance and medical examination plan.
 - s. Certification stating that at least one person, who is trained and certified in asbestos removal consistent with Oregon Division of Occupational Safety and Health (Oregon OSHA) regulations, will supervise the AA and disposal.
 - t. High efficiency particulate air (HEPA) cartridges and filters Manufacturer's Catalog Data.
 - u. Respirator manufacturer's product technical data.
- D. AA Notification Submittals: Submit documents required by ODEQ prior to initiating AA Work.
 - 1. <u>Asbestos Notification</u>: OAR 340-248-0260. If asbestos containing materials are encountered during demolition or earthwork activities the Owner shall make notification in accordance with ODEQ via Your DEQ Online.

<u>Progress Submittals</u>: Submit the following to the Owner during AA work:

- 1. <u>Monitoring Data</u>: Submit the Contractor's daily personnel air monitoring and perimeter monitoring data to the Owner within 24 hours of the end of the work that day.
- Negative Pressure Records: Submit daily negative pressure records, if applicable for friable AA
- 3. Test Reports: Submit AA construction quality control test reports, as applicable.

1.06 QUALITY ASSURANCE

A. Rules: Comply with all rules and regulations including, but not limited to:

- 1. <u>NESHAP Rule</u>: Federal asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP) rule, 40 Code of Federal Regulations (CFR) 61 Subpart M.
- Oregon Rules: Oregon Administrative Rules asbestos safety in construction (OAR Division 3/Z, 1926.1101) and asbestos contractor licensing and certification (OAR 340-248-0120 and 0130); Oregon OSHA and ODEQ are the agencies that enforce these requirements.
- 3. <u>Department of Transportation Rules</u>: The U.S. Department of Transportation regulations regarding asbestos material packaging and transportation.
- 4. Other Rules: Applicable federal, state, and local laws, rules, regulations, and requirements to conduct the Work.
- B. Contractor: Currently licensed as an AA contractor issued by ODEQ.
- C. Worker License: Currently licensed as an AA worker issued by ODEQ.
- D. <u>Worker Medical Clearance</u>: Current medical clearance to work in the respirator required to accomplish the AA work and accepted by the Owner.
- E. <u>Sampling and Evaluation</u>: Aid Owner in performing sampling, evaluation, or survey of potential ACM by an Oregon State Certified Asbestos Consultant.
- F. <u>Testing</u>: Aid Owner in testing for asbestos. Testing shall be performed by a qualified asbestos testing laboratory.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

- A. <u>Control Migration</u>: Minimize and control dust to prevent the spread of asbestos to the surrounding area.
- B. Housekeeping: Maintain the construction area in a neat and orderly manner on a daily basis.
- C. HASP: Implement the provisions of the HASP.
- D. <u>Monitoring</u>: Conduct personal exposure monitoring of all Contractor's employees and execute appropriate emission control measures to protect Site worker health and safety in accordance with Oregon OSHA and ODEQ regulations, and all other applicable laws, regulations, and rules.
- E. <u>Access Control</u>: Limit access to the entire Work area upon the commencement and throughout the duration of the AA work to trained and authorized AA workers.
- F. <u>Temporary Facilities and Controls</u>: Provide, erect, and maintain all barricades, traffic control devices, hand railings, toe boards, safety devices, safety measures, and security measures necessary for the protection of Contractor's employees and agents until the Work specified under this Contract is completed. Remove all safety devices and security measures upon the completion of Work.

<u>Scaffolding</u>: If required to accomplish the AA work, erect and maintain scaffolding in accordance with applicable Oregon OSHA regulations and Engineer requirements.

3.02 ASBESTOS ABATEMENT

- A. <u>AA Work Classification</u>: Those conducting nonfriable asbestos abatement are required to submit a nonfriable (ASN-6) notification form and fee to ODEQ five days prior to beginning work. <u>Only an ODEQ-licensed asbestos abatement contractor may perform projects with friable materials.</u>
 Asbestos abatement contractors conducting friable asbestos abatement are required to submit a friable (ASN-1) notification form and fee to ODEQ 10 days prior to beginning work. DEQ can waive the waiting period on a case-by-case basis in emergency situations.
- B. <u>ACM Removal</u>: Completely remove all ACM encountered within the limits of Work in the I1TA. If field conditions prohibit complete removal, notify the Owner immediately. Work is not considered complete without Owner favorable review of ACM removal.

Packaging: Contractor will aid owner by packaging and preparing ACM for offsite disposal and transport.

3.03 AIR MONITORING

- A. <u>General Requirements</u>: Implement air monitoring in accordance with the HASP approved by the Engineer.
- B. <u>Monitoring</u>: Implement air monitoring as specified in the HASP and as submitted by Contractor in their AA work plan favorably reviewed by the Engineer when required, including for the following:
 - 1. Asbestos control measures.
 - 2. AA work procedures.
 - 3. Baseline, ambient, and Site perimeter monitoring and sampling.
 - 4. Visual inspection of the Work Area prior to, during, and after asbestos removal and cleanup are complete.
 - 5. Final clearance air monitoring as applicable.

END OF SECTION

SECTION 02 83 20

CONSTRUCTION AND CONTACT WATER MANAGEMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Effluent limits and permit requirements.
- B. Stormwater run-on.
- C. Water management.
- D. Treatment system monitoring.
- E. Record-keeping and reporting.
- F. Waste management.

1.02 RELATED SECTIONS

01 41 00 Regulatory Requirements01 50 00 Temporary Facilities and Controls02 81 00 Non-ACM Materials Management

1.03 DESCRIPTION

- G. The Work discussed in this section consists of all activities necessary to manage Construction Stormwater and Decontamination Water/Industrial Wastewater (Contact Water) during Project implementation, including management of water generated during soil excavation, related debris, ERS installation and management, backfilling, and restoration activities in accordance with the Design Drawings, as well as rinsing of equipment. All Construction Stormwater shall be treated onsite by the Contractor's temporary Water Treatment System (WTS) or the Owner's existing Groundwater Extraction and Treatment (GWET) system operated by Engineer. All Decontamination Water/Industrial Wastewater shall be treated onsite by the Owner's existing GWET system operated by Engineer. Other liquid wastes shall be disposed of off-site by the Contractor unless accepted by Engineer for on-site treatment, as determined on a case-by-case basis per encounter throughout the completion of the Work.
- H. The Platform Excavation elevation shall be coordinated with Engineer and may need to be adjusted as field and groundwater conditions dictate. The design Platform elevation is above the historical high-water elevation and no adjustments to the Platform elevation are expected to be required.
- I. The Contractor shall properly contain, and as required, store, test, label, and treat water prior to discharge to receiving point designated by the Engineer. Discharging water of any kind, including water potentially impacted by remediation activities to conveyance features (e.g., ditches/channels), stormwater systems, water bodies, existing monitoring wells, or the ground is prohibited without written approval by the Engineer.
- J. Typical groundwater concentrations of the analytes listed in paragraph 3.03 are given below for informational purposes only. The Owner and Engineer make no guarantees as to the quality of Construction Stormwater that may be encountered during the Work.

Total suspended solids

20 mg/L

2,4'-DDD 0.0084 mg/L 4,4'-DDD 0.0056 mg/L 0.0039 mg/L 2.4'-DDE 0.0016 mg/L 4,4'-DDE 2,4'-DDT 0.270 mg/L 4,4'-DDT 0.0537 mg/L Sum of 2,4'- and 4,4'-DDx 0.343 mg/L Chlorobenzene 3.52 ma/L 0.01 mg/L Oil and grease Copper, total 0.01 mg/L Lead, total 0.00985 mg/L 0.0380 mg/L Zinc, total

pH Between 5.5 and 6.5

1.04 SUBMITTALS

- A. In accordance with the provisions of these Contract Documents, the Contractor shall submit a Project work plan with a detailed section on water management for the Owner's approval. For any WTS implemented by the Contractor, the plan shall detail the design, basis of design, technical information on all equipment, methods, sequencing, sampling, and discharge means and methods to be used during water management activities to meet the limits defined in paragraph 3 03
- B. For any WTS implemented by the Contractor, the Contractor shall collect and submit samples of for the analytes listed in paragraph 3.03 to a lab accredited by the Oregon Environmental Laboratory Accreditation Program at least once a week during any period when water is being treated, except for pH which shall be measured using a field device.

1.05 DEFINITIONS

- A. <u>Construction Stormwater (Stormwater)</u>: Includes rainwater that falls directly onto the Platform Excavation (excludes stormwater run-on) that does not infiltrate the soil and cannot be managed by the Contractor in the Platform Excavation.
- B. <u>Decontamination Water/Industrial Wastewater (Contact Water)</u>: Includes construction-related water that contacts potentially impacted materials, including water used for decontamination of equipment or debris, and water used for wheel wash stations.
- C. <u>Industrial Discharge Permit(s)</u>: Existing NPDES Permit to surface water for treated groundwater that Owner currently uses for Property remediation.
- D. <u>Stormwater Discharge Permit</u>: Existing Mutual Agreement and Order governing discharge to surface water of treated stormwater.

1.06 EFFLUENT LIMITS AND PERMIT REQUIREMENTS

A. Discharge rates and limits to the stormwater system shall be in accordance with the requirements of the stormwater permit.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. For any WTS implemented by the Contractor, the Contractor shall furnish all necessary labor, materials, sumps, cofferdams, sandbags, conveyance piping, pumps, piping, hoses, tubing, test ports, equipment, ancillaries and material fittings, tanks, weir tanks, secondary containment, drums, filters, oxygen, chemicals, and other equipment/materials as needed for proper water management as specified herein. Any damage encountered during project execution (due to extreme weather conditions, equipment malfunction, material failure, etc.) to Contractor facilities shall be repaired by the Contractor, at no additional cost to the Owner.
- B. For water presented by the Contractor to the Engineer, the Contractor shall comply with all written requests for water management provided by the Engineer including arrangement of detention ponds or pumping equipment used to transfer water to the Engineer. The Contractor shall furnish all necessary labor, materials, sumps, cofferdams, sandbags, conveyance piping, pumps, piping, hoses, equipment, ancillaries and material fittings, and other equipment/materials needed to safely convey Stormwater from the excavation to the Engineer's acceptance point.

PART 3 - EXECUTION

3.01 STORMWATER RUN-ON

A. The Contractor shall be responsible for the diversion of stormwater run-on from the adjacent areas to prevent it from becoming Construction Stormwater that must be treated. The Contractor will be responsible for additional costs resulting from management of additional water. Contractor shall ensure stormwater run-on is diverted from the Work Area in a non-erosive and non-deleterious manner, as approved by the Engineer. The Contractor shall follow the requirements outlined in Sections 01 50 00 (Temporary Facilities and Controls) and 02 81 00 (Non-ACM Management) as well as the SWPPP and CMMP.

3.02 WATER MANAGEMENT

- A. The Contractor shall install all necessary sumps, pumps, and conveyance piping for excavation dewatering, and management of the Platform Excavation.
- B. The Contractor may elect to install a WTS for treatment of Construction Stormwater. The Contractor shall be responsible for supplying, operating, and maintaining a WTS capable of meeting the limits defined in paragraph 3.03(A) and discharging treated water to the adjacent stormwater swale including monitoring according to paragraph 3.04.
- C. For any Contractor-supplied WTS, the Contractor is responsible for all costs associated with removal of any accumulated sediment in tanks. Frac tanks are subject to inspections by the Engineer prior to receipt and use onsite
- D. The Contractor may elect to transfer Stormwater to the Engineer for treatment. The Contractor shall be responsible for supplying, operating, and maintaining pumps, hoses, and other equipment required to transfer Construction Stormwater from the Platform Excavation to the Engineer's water acceptance point. The Contractor shall minimize the amount of silt and other solids sent to the Engineer by employing skimmers, elevated suction hoses, or other means to prevent placing the suction hose on the bottom of the detention pond or frac tank. The Contractor shall comply with the discharge limits in paragraph 3.03(B). If the accumulation of Construction Stormwater exceeds the capability of the Contractor to comply with these limits, the Contractor may stockpile the Construction Stormwater or the Work shall be paused due to weather.
- E. All equipment must be leak-tight. The Contractor must routinely inspect (at least daily and at least hourly during water transfer or treatment system operations) and regularly maintain to ensure proper operation and no leaks. Any leaks or spills from Contractor-supplied equipment requiring cleanup are the Contractor's responsibility. If inspections deem equipment/storage is not suitable

for use, Contractor is responsible for all costs associated with removing tank(s) from the Site and remobilizing suitable equipment/storage for use.

3.03 TREATMENT SYSTEM LIMITS

- A. <u>Discharge Treatment</u>: The Contractor must not discharge any water to the stormwater swale except water that has been treated in accordance with the existing Site stormwater requirements, defined below. The Contractor shall be responsible for the design and implementation of an appropriate onsite treatment system capable of discharging treated water at or below the limits defined below. Such water shall be discharged into the existing onsite stormwater system using the swale adjacent to the treatment area. The Contractor shall collect CQC samples to verify compliance. The Engineer may collect additional CQA samples at any time.
 - 1. Maximum Acceptable Stormwater SCM Influent Concentrations:

•	Total suspended solids	2800 mg/L
•	2,4'-DDD	1.08 µg/L
•	4,4'-DDD	1.08 µg/L
•	2,4'-DDE	1.08 µg/L
•	4,4'-DDE	1.08 µg/L
•	2,4'-DDT	1.08 µg/L
•	4,4'-DDT	1.08 µg/L
•	Chlorobenzene	74 µg/L
•	Oil and grease	10 mg/L
•	Copper, total	0.1 mg/L
•	Lead, total	0.4 mg/L
•	Zinc, total	0.6 mg/L

pH Between 5.5 and 9.0

2. SCM Discharge Effluent Limits:

	3	
•	Total suspended solids	130 mg/L
•	2,4'-DDD	0.05 μg/L
•	4,4'-DDD	0.05 μg/L
•	2,4'-DDE	0.05 μg/L
•	4,4'-DDE	0.05 μg/L
•	2,4'-DDT	0.05 μg/L
•	4,4'-DDT	0.05 μg/L
•	Chlorobenzene	74 μg/L
•	Oil and grease	10 mg/L
•	Copper, total	0.1 mg/L
•	Lead, total	0.4 mg/L
•	Zinc, total	0.6 mg/L
•	рН	Between 5.5 and 9.0

- B. Onsite Treatment: The Contractor shall only transfer water to the Engineer under the following conditions.
 - 1. Maximum acceptable flow: 60 gallons per minute
 - 2. Discharge timeframes: Monday Saturday, 6:00 AM 4:00 PM.

3.04 TREATMENT SYSTEM MONITORING – DISCHARGE TO STORMWATER SCM

- A. The Contractor shall establish and maintain a discharge quality monitoring program to assure the WTS sufficiently treats Construction Stormwater to comply with the limits defined in paragraph 3.03(A), as well as to regularly monitor performance of the system and assess filter media for changeout. The following is in addition to the test batch requirements stipulated herein.
 - 1. The Contractor shall collect two rounds of samples during the first week of discharge, each composed of one influent sample and one effluent (treated) sample. One sampling round shall

be performed on the first day of discharge, and one subsequent round shall be done on a non-consecutive day during the first week of discharge. These samples shall be analyzed in accordance with the requirements of the Discharge Permit with a maximum 5-day turnaround time, and analytical results will be reviewed within 48 hours of their receipt.

- Analytical results shall be compared to the following, with a comparison table assembled and laboratory results submitted to the Engineer in ERM EQuIS Electronic Data Deliverable (EDD) format.
 - i. Compare analytical results from influent samples to effluent (treated) samples.
 - ii. Compare effluent (treated) samples to the Discharge Permit limits and requirements listed in paragraph 3.03(A).
- 2. Following the first week of operation, the Contractor shall collect influent and effluent samples once per week for 3 additional weeks of operation. This sampling program shall begin no earlier than 24 hours following the second round of initial samples. Samples collected during this period and subsequently may be analyzed with a turnaround time of up to 10 days, and results must be reviewed no more than 72 hours after their receipt. Results must be shared with Engineer per the requirements in Section 3.04, A.(1.) above.
- 3. After the fourth week of discharge, the Contractor shall collect influent and effluent samples once per 4 weeks of operation for the remainder of WTS operation. This monitoring frequency may be further reduced if such a reduction is approved in writing by the Owner.

3.05 DECONTAMINATION WATER/INDUSTRIAL WASTEWATER

A. The Contractor shall employ methods such as water reuse, dry brushing, low-flow pressure washing, or other methods to minimize the generation of decontamination water/industrial wastewater. The Contractor shall containerize and store all generated decontamination water/industrial wastewater throughout the execution of the work. When approximately 6,000 gallons of water has been accumulated, and following final Site grading for any remaining water, the Contractor shall coordinate with the Engineer to begin transferring accumulated decontamination water/industrial wastewater to the Engineer for treatment through the GWET.

3.06 RECORDKEEPING AND REPORTING

- B. The Contractor shall submit to the Owner all analytical data, laboratory reports (in EDD format), sample collection information, Best Management Practices documentation as described in the SWPPP, field monitoring records, operation and maintenance records, inspection records, and training records pertaining to operation of the onsite WTS.
- C. The Contractor shall notify Engineer immediately of any planned alterations to the onsite WTS, periods of anticipated noncompliance, or effluent (treated) analytical results that exceed Discharge Permit limits. Any noncompliance that may endanger health or the environment must be reported to Owner and Engineer within 24 hours of the time the Contractor becomes aware of the circumstances.

3.07 WASTE

A. All waste generated by the Contractor from water management activities including, but not limited to, bag filters, spent media, hoses, resins, and residue, shall be properly contained and managed by the Contractor. The Contractor retains responsibility for waste characterization and disposal at an approved offsite disposal facility.

3.08 SEDIMENT AND SLUDGE

- A. All sediment and sludge generated from water management activities shall be handled in accordance with Section 02 81 00 and the CMMP.
- B. The Contractor shall assist with loading sediment and sludge as requested by the Engineer.

END OF SECTION

SECTION 31 22 10

ISS WORK EXCAVATION, BACKFILL, AND GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Grading of soil surface disturbed by the Work.
- B. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 RELATED SECTIONS

Section 01 33 00	Submittals
Section 01 50 00	Temporary Facilities and Controls
Section 01 71 23	Construction Surveying
Section 31 23 25	ISS Cap

1.03 REFERENCES

- A. ERM, 2025. Construction Quality Assurance Plan for IRAM #1 Implementation, Pre-Final Design Report, Appendix I (CQA Plan).
- B. ERM, 2025. Contaminated Material Management Plan for the Former Acid Plant Area (CMMP).
- C. SWPPP: Stormwater Pollution Prevention Plan for the Arkema Site. To be issued as an addendum to the RFP.
- D. City of Portland Grading Permit.

E. ASTM Standards

ASTM D2487	Standard Classification of Soils for Engineering Purposes (Unified Soil
	Classification System)
ASTM D2216	Standard Test Methods for Laboratory Determination of Water Content of
	Soil and Rock by Mass
ASTM D422	Standard Test Method for Particle-Size Analysis of Soils
ASTM D698	Standard Test Method for Laboratory Compaction Characteristics of Soil
	Using Standard Effort
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and
	Soil-Aggregate by Nuclear Methods

1.04 SUBMITTALS

- A. <u>Pre-Mobilization Submittals</u>: Submit a description of the ISS Work Area grading in the ISS Work Plan prior to mobilization for the Work consistent with the Bid and in accordance with Section 01 33 00, including the following.
 - 1. <u>Earthwork Equipment</u>: Submit a description of the proposed earthwork equipment for each task associated with ISS Work Area grading, including but not limited to the following:
 - a. Equipment used to haul spoils from the excavation area to the stockpile locations.
 - b. Equipment used to haul reuse or fill material from stockpile to placement location, or direct placement from the soil fill material transport truck, if applicable.
 - c. Equipment used to perform rough grading.
 - d. Equipment used to place, grade, and compact soils to complete the Work.
 - 2. <u>Survey and Field Control</u>: Submit a description of the method of surveying, staking, marking, or other methods used to measure the extent, lines, and grades of graded areas, and to meet the line and grade elevations shown on the Drawings.

B. <u>Closeout Submittals</u>: Submit as-built drawings (in all of the following formats: PDF, .dwg, and .csv data files) and survey data describing the Work completed.

1.05 QUALITY ASSURANCE

- A. Contractor Qualifications and Requirements
 - 1. <u>General Requirements</u>: Provide supervisors and workers experienced with earthwork using means and methods similar to those at the Site.
 - 2. <u>Site Superintendent</u>: Implement all grading under the supervision of the person approved by the Engineer to supervise the grading work.
- B. <u>CQA Requirements</u>: Achieve each acceptance criterion stated in the CQA Plan in addition to the requirements of this section.

PART 2 PRODUCTS

2.01 GRADING AND BACKFILL MATERIALS

A. General: All materials shall be in accordance with Section 31 23 25 and the CQA Plan.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- Survey, Layout, and Mark: Lay out and mark out the limits of all earthwork necessary for the Work.
- B. <u>Temporary Stormwater Runoff and Run-on Control</u>: Maintain surface grades for drainage to relief without ponding in accordance with Section 01 50 00. When necessary to control stormwater run-on or runoff, install temporary berms or drainage channels to intercept or divert surface water and prevent interference or delay of the Work.
- C. <u>Erosion and Sedimentation Control</u>: Establish and maintain effective erosion and sediment control for all disturbed areas at the Site in accordance with Section 01 50 00.
- D. Dust Control: Control dust in accordance with Section 01 50 00.
- E. <u>Equipment, Personnel, and Methods</u>: Provide equipment, personnel, and methods necessary to accomplish the Work.
- F. Construction Water Management: Manage construction water in accordance with Section 02 83 20.
- G. <u>Equipment Inspection</u>: Perform daily equipment inspection by a certified equipment operator documented on a form approved by Engineer. Submit completed equipment inspection forms to the Owner daily.
- H. <u>Prevent Surface Tracks or Ruts</u>: Prevent tracks or ruts created by equipment traffic on the Site. Scarify and recompact ruts or irregularities made on any fill layer or lift.
- I. <u>Residuals Management</u>: Reduce, contain, and properly reuse all residuals associated with the Work in accordance with CMMP, 02 83 20 and applicable regulations and as approved by the Engineer.
- J. <u>Protection of Existing Structures</u>: Protect onsite structures, utilities, roadways, sidewalks, watercourses, and other facilities from damage caused by settlement, lateral movement, undermining, wash-out, and other hazards created by the Work. Immediately report damage to the

Owner. Repair damage to original condition acceptable to the Owner and Property Owner at no additional Contract cost.

K. <u>Excavation Works Requirements</u>: The Contractor shall comply with Owner's excavation works requirements at all times as described in Section 02 41 10 and the Informational Attachments section.

3.02 PREPARATION

- A. <u>Utilities</u>: Contractor must verify that utilities have been located and relocated, removed, or capped as required in accordance with Section 02 41 10.
- B. <u>Existing Structures</u>: Contractor shall identify and flag existing aboveground and underground features to be protected.
- C. <u>Subgrade Preparation</u>: Prepare the subgrade in accordance with Section 31 23 25.

3.03 SAFETY

- A. Contractor is responsible for providing an OSHA Excavation Competent Person, who shall determine the sloping and benching necessary to safely conduct the excavation work, and who must be present on site at all times while excavation work is occurring.
- B. Perform earthwork in compliance with all applicable OSHA regulations. Contractor is solely responsible for earthwork and slope stability.
- C. Excavate in a manner that does not disturb or damage existing structures, utilities, sidewalks, fencing, monitor wells, or other features not indicated to be removed. Overhead power poles and other permanent features must NOT be destabilized as a result of excavation or any other work conducted by Contractor. Contractor must plan work accordingly.
- D. Implement proper Site layout, staging, decontamination procedures, and operational controls to prevent the cross-contamination and re-contamination of remediated areas.
- E. Control dust emissions during excavation activities in accordance with the requirements of Section 01 57 00

3.04 EXCAVATION

- A. Contractor shall perform the excavation in accordance with OSHA regulations.
- B. Perform the Work to the lines and grades shown on the Construction Drawings, and remove any debris encountered.
- C. Segregate construction debris encountered during the excavation in accordance with the CMMP.
- D. Remove all historical subsurface structures within the excavation limits.
- E. Perform all excavations using proper shoring and bracing and/or excavation sloping/benching consistent with OSHA requirements to ensure slope stability.
- F. Handle materials in a manner that will protect Site personnel, the public, and the environment in accordance with all applicable Federal, State, and local laws and regulations, and to prevent cross contamination.
- G. Backfill shall proceed after approval is provided by Engineer.
- H. In the event Contractor excavates in areas not authorized by Engineer, the consolidation of affected media, as well as backfill and restoration of that area shall be conducted at Contractor's sole expense.

3.05 BACKFILL

- A. Wet, soft, frozen, or otherwise unsuitable fill/soil, which has a moisture content that adversely affects the placement, grading or compaction of the material, shall be allowed to dry, prior to any grading or filling activities, as approved by the Engineer.
- B. Final grades shall be constructed to the contours and elevations indicated on the Drawings, or as directed by the Engineer following the Pre-construction survey. Grading and placement of the various materials shall be in conformity with the typical sections depicted and shall be finished

- within the tolerances specified in this Specification. The grading requirements shall comply with criteria presented on the Drawings.
- C. Placement of backfill in a manner not consistent with the Technical Specifications is at the Contractor's risk and may require removal at the Contractor's cost. Commence backfill placement and compaction upon confirmation of the horizontal and vertical limits of the excavation.
- D. Place backfill using a method that does not disturb/damage adjacent structures and property.
- E. Fill shall be placed in 12-inch maximum loose lifts and compacted. The compaction of the Fill shall be accomplished by any appropriate means required to achieve the minimum in-place densities, however, a minimum of four passes of a roller is required.
- F. Fill shall be compacted to density and moisture content requirements listed within Table 01 45 00-1
- G. A maximum 10 percent of all field moisture content test results are permitted outside the specified range. The outliers are, however, not permitted to be concentrated in one lift or one area, and moisture content less than 2 percent or more than 4 percent of the optimum moisture content is not permitted. The aerial extent is at the discretion of the Engineer.
- H. A maximum 10 percent of all field dry density test results are permitted outside the specified range. The outliers are, however, not permitted to be concentrated in one lift or one area, and no dry density less than 85 percent as determined by ASTM D-698 is permitted. The aerial extent is at the discretion of the Engineer.
- I. If the criteria set forth in (G) and (H) of this part have been exceeded, the Contractor shall remove the failing soil and replace, compact and grade new, acceptable fill at no cost to the Owner.
- J. All general waste or debris shall be containerized on-site and periodically disposed off-site in accordance with these Specifications.
- K. Stockpiles shall be graded to drain; no surface-water ponding is permitted on stockpiles. Proper erosion controls; i.e. silt fence, shall be installed at the perimeter of each stockpile.
- L. Stockpiles that are not used for more than 14 days shall be covered with plastic sheeting, cellulose, or other material to preserve the soil integrity.
- M. No soil materials shall be removed from the Site, except as specified in Section 02 81 00 and the Contaminated Material Management Plan.+

3.06 GRADING

- A. <u>Lines and Grades</u>: Grade restored Work areas to drain the ISS Work Area and adjoining surfaces to relief without ponding.
- B. <u>Slope Transitions:</u> Grade the surface to provide continuous surface transitions between areas of varying grade with no slope surface scarp and surface slope substantially constant between 8% and 2%, unless otherwise approved in writing or ordered in writing by the Engineer.
- C. <u>Proof Roll:</u> Proof-roll the entire final surface of the ISS Cap Layer to demonstrate construction of stable compacted DGA fill not displaced, rutted, or compacted by the compaction equipment. Proof-roll all unfinished surfaces prior to rain events unless otherwise approved by the Engineer. Repeat proof-rolling until there is no evidence of "pumping" or displacement of the soil as observed by the CQA Officer.
- D. <u>Testing and Inspection:</u> Perform CQC inspection of the soil placement per Table 1 of the CQA Plan and submit to Engineer for review. Perform CQC testing of placed soil per Table 2 of the CQA Plan; provide Engineer with samples as requested to perform CQA testing.
- E. <u>Transition and Match Surrounding Grade</u>: Construct slopes to blend into existing undisturbed areas gradually to provide neat, clean transition zones. Feather constructed slopes into existing grades to promote natural drainage toward the existing Site stormwater swales and eliminate possible surface-water ponding.
- F. <u>Adjustments to Grades or Elevations</u>: The Engineer reserves the right to make adjustments or revisions in lines or grades if found necessary as the Work progresses due to final volumetric

expansion of ISS soil mixture and Platform Excavation depths, or to obtain drainage of the cover and the surrounding area to relief without ponding.

END OF SECTION

SECTION 31 23 19

DEWATERING

PART 1 - GENERAL

1.01 RELATED SECTIONS

Section 02 83 20 Construction and Contact Water Management

1.02 SUMMARY

- A. Groundwater elevation management and dewatering is not anticipated.
- B. Design, furnish, install, and operate a dewatering system to remove water, as necessary.
- C. Dewatering effluent will require treatment before discharge.

1.03 SUBMITTALS

- A. Submit information in the Dewatering section that describes the principal components of the systems and contains narratives on the following topics:
 - 1. Design
 - 2. Installation
 - 3. Operation
 - 4. Maintenance
 - 5. Removal
- B. Submit drawings of the proposed dewatering system.
- C. As part of the Daily Report described in Section 01 31 00, submit information daily regarding dewatering operations, including duration of operations, water quality observations, quantities of water managed, and status of the dewatering systems and equipment.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 DEWATERING

- A. Install and operate the dewatering system in accordance with Section 02 83 20.
- B. Dewater only to the extent necessary to complete the Work.
- C. Collect and treat dewatering effluent prior to discharge in accordance with Section 02 83 20, and applicable laws, regulation, approvals, and permit.
- D. Do not operate dewatering equipment unattended.

3.02 INSPECTION AND MAINTENANCE

A. Repair or replace damaged pumps, piping hoses, tanks, or any other dewatering equipment if damaged. Damage includes any pump or power failures, leaks, breaks, clogs, or other conditions that adversely affect operation or pose a risk of release to the environment.

3.03 SYSTEM REMOVAL

- A. Decontaminate dewatering equipment in accordance with Section 01 35 43.
- B. Remove equipment from Site at the completion of dewatering operations.

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3.04 FIELD QUALITY CONTROL

A. Perform initial tests of dewatering equipment to ensure proper operation of the system components and that all effluent is treated according to Section 02 83 20.

END OF SECTION

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SECTION 31 23 25

ISS CAP

- GENERAL

1.01 SECTION INCLUDES

- A. ISS soil mixture rough grading.
- B. ISS Cap Layers.
- C. All requirements described herein are the responsibility of the Contractor unless otherwise stated.

1.02 RELATED SECTIONS

Section 01 71 23	Construction Surveying
Section 02 55 10	ISS Deep Soil Mixing
Section 02 61 10	ISS Work Platform
0 1 04 00 40	ICC Eventuation Dealetill a

Section 31 22 10 ISS Excavation, Backfill, and Grading

1.03 REFERENCES

- A. ERM, 2025. Construction Quality Assurance Plan for IRAM #1 Implementation, Pre-Final Design Report, Appendix I (CQA Plan).
- B. ERM, 2025. Contaminated Material Management Plan for the Former Acid Plant Area (CMMP).

C. ASTM Standards

ASTM D2487	Standard Classification of Soils for Engineering Purposes (Unified Soil
	Classification System)
ASTM D2216	Standard Test Methods for Laboratory Determination of Water Content of
	Soil and Rock by Mass
ASTM D422	Standard Test Method for Particle-Size Analysis of Soils
ASTM D698	Standard Test Method for Laboratory Compaction Characteristics of Soil
	Using Standard Effort
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods

1.04 SUBMITTALS

- A. <u>Pre-Mobilization Submittals</u>: Submit a description of ISS Cap construction in the ISS Work Plan prior to initiation of the Work consistent with the Bid and in accordance with Section 01 33 00, including the following:
 - 1. <u>Earthwork equipment</u>: Submit a description of the proposed earthwork equipment for each task associated with ISS Cap work, including but not limited to the following:
 - a. Equipment used to haul overburden reuse or fill material from stockpile to placement location, or direct placement from import truck.
 - b. Equipment used to perform rough grading of recently mixed ISS soil mixture.
 - c. Equipment used to place, grade, and compact the ISS Cap Layer.
 - Sequencing and Methods: Submit a description of the sequencing and relative schedule of completion of each earthwork task, including in relation to ISS soil mixing at each ISS mix cell.

- 3. <u>Survey</u>: Submit details describing the method of surveying, staking, marking, or other methods used to measure the extent of each layer of Cap, and to meet the lines and grade elevations shown on the Drawings.
- 4. <u>Work Zone Delineation</u>: Submit a description or drawings describing how equipment and personnel performing ISS Cap work will be separated or safely integrated with equipment and personnel performing ISS soil mixing work. Include a description of ISS soil mixture rough grading, placement of the ISS Cap Layer.
- Import Material Source, Description, and Testing Data: Submit a complete description of the source, materials, and testing results of geotechnical and chemical analyses performed to satisfy all requirements of the CQA Plan and/or ODEQ clean fill determination, and this section.
 - a. Submit a 10- to 50-pound sample from each proposed borrow source.
- B. Progress Submittals: Submit documentation as obtained or produced throughout the Work.
 - 1. <u>Imported Material Records</u>: Submit certificate of origin, material description, and weight tickets supplied by the imported material source for each shipping unit on receipt at the Site.
 - a. Provide all documentation of imported material receipt attached to the daily report submitted daily to the Engineer.
 - b. Maintain a detailed log of all imported fill material received at the Site for the Work, including the date, the transport company, the material source, the material description, the manifest or weight ticket number, the material weight, and description of placement in stockpile or direct to the final work location.
 - c. Provide the log of imported fill material to the Owner on request.
 - d. For any imported material not approved as a pre-mobilization submittal, submit all required description and testing results at least 10 working days prior to purchase or mobilization of import of that material.
 - a. Any schedule delays or added work effort due to a lack of approval for material import is the sole responsibility of the Contractor.
 - 2. <u>Equipment Inspection Forms</u>: Submit completed equipment inspection forms to the Engineer daily.

1.05 QUALITY ASSURANCE

A. Contractor Qualifications and Requirements

- 1. <u>General Requirements</u>: Provide supervisors and workers experienced with earthwork using means and methods similar to those at the Site.
- Site Superintendent: Implement all ISS Cap work under the supervision of the person proposed by the Contractor and approved by Engineer to supervise the earthwork covered under this Contract.
- B. <u>CQA Requirements</u>: Achieve each acceptance criterion stated in the CQA Plan in addition to the requirements of this section.

- PRODUCTS

1.06 IMPORTED AGGREGATE CAP

- A. <u>Source</u>: Provide imported dense graded aggregate (DGA) material from the source(s) approved in writing by the Engineer. DGA is a well-graded crushed stone aggregate material with few air void between stones consisting of, and may also be referred to as "1-1/2-inch minus."
- B. <u>Material Properties</u>: Provide imported DGA material that meets the CQA Plan requirements specified in Table 01 45 00-2.

1.07 WATER

A. General Requirements: Water from a source approved by the Owner.

- EXECUTION

1.08 GENERAL REQUIREMENTS

- A. <u>ISS Cap Components</u>: Over stable ISS soil mixture subgrade, place, grade, and compact in sequence remaining swell material, the backfill layer consisting of reuse excavation soil, and a 1-foot thick DGA cap. Each lift shall be no more than 12 inches thick.
- B. <u>Lines and Grades</u>: Construct each component of the ISS Cap to lines and grades described in this section and otherwise shown on the Drawings, and as updated based on field conditions and directives by the Engineer.
- C. Survey, Layout, and Mark: Lay out and mark out the limits of each component.
- D. <u>Temporary Stormwater Runoff and Run-on Control</u>: Maintain surface grades for drainage to relief without ponding in accordance with Section 01 50 00. When necessary to control stormwater runon or runoff, install temporary berms or drainage channels to intercept or divert surface water and prevent interference in or delay of the Work.
- E. Dust Control: Control dust in accordance with Section 01 50 00.
- F. <u>Equipment, Personnel, and Methods</u>: Provide equipment, personnel, and methods adequate to achieve the Work schedule approved by the Owner.
 - 1. <u>Equipment Inspection:</u> Perform daily equipment inspections by a certified operator. Document each inspection on a form approved by Owner.
 - 2. <u>Equipment Maintenance</u>: Provide all maintenance, spare parts, and backup equipment necessary to achieve the Work schedule approved by the Owner.
- G. Construction Water Management: Manage water in accordance with Section 01 50 00.
 - General Requirements: Contain, convey, treat, reuse, discharge, transport, and dispose of, or otherwise manage all construction water in accordance with Section 02 83 20 and with all applicable regulations and submittals approved by the Owner.
 - 2. <u>Prevent Run-on</u>: Prevent stormwater run-on and other source water from entering excavations or soil placement areas.
 - 3. <u>Methods</u>: Provide equipment, materials, and personnel necessary to remove water from excavations and soil placement areas to complete the Work.
 - 4. <u>Discharge</u>: Discharge water collected from the ISS Platform Excavation in accordance with the CMMP
 - 5. <u>Area Drainage</u>: Maintain a well-drained construction area for performance of all placement, compaction, or grading work.
 - 6. <u>Lift Water Content</u>: Ensure that placed backfill, and the lift surfaces on which backfill is to be placed are not excessively wet or soft, unless otherwise approved by the Engineer.
 - 7. <u>Interruption Due to Rain:</u> When the Work is interrupted by rain, do not resume fill operations until the moisture content, density, and integrity of the previously placed soils are suitable for safe continuation of that work. Any defect in the Work that results from Contractor performing work when conditions are not suitable will be corrected by Contractor to the satisfaction of Owner at no additional Contract cost.
 - 8. <u>Work Drainage</u>: Place, grade, and compact cap materials to facilitate drainage to relief without ponding at all times.

- 9. <u>Moisture Control</u>: Modify soil moisture control by adding and mixing water or drying the soil as necessary to achieve the corresponding CQA Acceptance Criteria.
- H. Repair Tracks or Ruts: Prevent tracks or ruts created by equipment traffic onsite. Scarify and recompact ruts or irregularities made on any fill layer or lift.
- I. <u>Residuals Management</u>: Reduce, contain, and properly reuse or dispose of all residuals associated with the Work in accordance with applicable regulations and as approved by the Owner.
- J. <u>Protection of Existing Structures</u>: Protect onsite structures, utilities, roadways, sidewalks, watercourses, and other facilities from damage caused by settlement, lateral movement, undermining, wash-out, and other hazards created by the Work, including due to delivery of fill materials. Immediately report damage to the Owner. Repair damage to original condition acceptable to the Owner and Property Owner at no additional Contract cost.

1.09 ISS CAP SUBGRADE PREPARATION

- A. <u>ISS Soil Mixture Preparation</u>: Rough grade the ISS soil mixture including remaining swell that was previously stockpiled.
- B. <u>ISS Soil Mixture Curing</u>: Prepare the ISS Cap after the rough-graded ISS soil mixture has cured sufficiently to support placement and compaction of the ISS Cap soil layer.
- C. <u>Subgrade Preparation</u>: Remove water and unstable saturated ISS soil mixture prior to placing cover soil fill. Maintain complete drainage during compaction to avoid soil pumping of near-surface material.
- D. <u>Subgrade Compaction</u>: Compact the ISS soil mixture by proof-rolling the surface with an equipment load approved for that purpose by the Engineer that contacts the entire surface and produces no ruts deeper than 0.5 inch.
- E. <u>Subgrade Inspection</u>: Obtain CQA Officer approval of the prepared subgrade prior to placement of the subsequent lift.

1.10 PLACE AND COMPACT ISS CAP SUB LAYER

- A. <u>Source</u>: ISS Work Platform Excavation reuse soil from an onsite stockpile as described in the CMMP section 3.2. Inform Engineer immediately if Contractor determines that the quantity of ISS Work Platform Excavation reuse soil is insufficient to backfill and grade the Site back to previous grade or as indicated on the Drawings.
- B. <u>Schedule</u>: Place and compact ISS Cap Sub Layer after work in the area and the strength of the supporting ISS soil mixture makes effective compaction practical.
- C. <u>Removal of Debris</u>: Before (and during as needed) the placement and spreading of each lift of ISS Cap Sub Layer, remove all debris. Additionally, remove all organic matter, roots, and stones larger than 3-inch nominal size, and wastes from the soil fill in the top 2 feet of backfill prior to compaction. Stockpile debris and screening reject material from ISS Cap Sub Layer in its own stockpile segregated from other stockpiles until a final use or disposition has been determined by the Engineer.
- D. Spreading: After dumping the soil, spread the loose soil in a uniformly level lift.
 - 1. Extent: Spread the loose soil fill over the entire surface on which the lift is to be compacted.
 - 2. <u>Thickness</u>: Spread the soil fill to produce a lift thickness of a maximum of 12 inches of uncompacted thickness prior to compaction.

- E. <u>Corrective Measures</u>: Remove, replace, resupply, and recompact any portion of the ISS Cap Sub Layer if necessary due to failure of the underlying ISS soil mixture to achieve the corresponding CQA Acceptance Criteria at no additional Contract cost.
- F. <u>Moisture Content</u>: Adjust the moisture content of each loose lift to a moisture content as determined suitable for producing stable compacted fill that is not displaced by loads imposed by the compaction equipment.
 - 1. <u>Correcting Excess Moisture Content</u>: If the moisture content of the loose lift is greater than the acceptable range for that soil, adjust it by spreading and blade excavation, disking, or harrowing the affected soil, as necessary, to dry it by evaporation.
 - Correcting Deficient Moisture Content: If the moisture content of the loose lift is less than the
 acceptable range for that soil, distribute water uniformly over the surface of the lift and adjust
 the moisture content of the affected soil by blade excavation or disking, harrowing, or another
 method approved by the Engineer to produce a lift with a relatively uniform acceptable
 moisture content.
 - 3. <u>Replacement</u>: If acceptable moisture content cannot be achieved, excavate and replace with stockpiled reuse materials to achieve, the required moisture content.
 - 4. <u>Maintenance</u>: Maintain the moisture content within the specified limits until covered by the next lift of material.
- G. <u>Compaction</u>: After verifying that the moisture content of the loose soil lift is within the acceptable range, compact the lift to produce a durable and stable lift using a compactor/roller or equivalent equipment approved for that purpose by the Engineer, that contacts the entire surface and produces no ruts deeper than 0.5 inch in the compacted lift surface. Compaction shall be in accordance with the CQA Plan requirements.

1.11 PLACE AND COMPACT ISS CAP TOP LAYER

- A. Source: DGA from source(s) approved by Engineer
- B. <u>Schedule</u>: Place and compact ISS Cap Top Layer after work in the area and the strength of the supporting ISS soil mixture makes effective compaction practical.
- C. <u>Spreading</u>: After dumping the DGA, spread the loose aggregate in a uniformly level lift.
 - 1. Extent: Spread the loose DGA over the entire surface on which the lift is to be compacted.
 - 2. <u>Thickness</u>: Spread the DGA to produce a lift thickness of a maximum of 12 inches of uncompacted thickness prior to compaction.
- D. <u>Corrective Measures</u>: Remove, replace, resupply, and recompact any portion of the ISS Cap Top Layer if necessary due to failure of the underlying ISS Sub Layer to achieve the corresponding CQA Acceptance Criteria at no additional Contract cost.
- E. <u>Moisture Content</u>: Adjust the moisture content of each loose lift to a moisture content as determined suitable for producing stable compacted fill that is not displaced by loads imposed by the compaction equipment.
 - 1. <u>Correcting Excess Moisture Content</u>: If the moisture content of the loose lift is greater than the acceptable range for the DGA, adjust it by spreading and blade excavation, disking, or harrowing the affected soil, as necessary, to dry it by evaporation.
 - 2. Correcting Deficient Moisture Content: If the moisture content of the loose lift is less than the acceptable range for DGA, distribute water uniformly over the surface of the lift and adjust the moisture content of the affected soil by blade excavation or disking, harrowing, or another method approved by the Engineer to produce a lift with a relatively uniform acceptable moisture content
 - 3. Replacement: If acceptable moisture content cannot be achieved, excavate and replace with fresh material to achieve, the required moisture content.

- 4. <u>Maintenance</u>: Maintain the moisture content within the specified limits until covered by the next lift of material.
- F. <u>Compaction</u>: After verifying that the moisture content of the loose soil lift is within the acceptable range, compact the lift to produce a durable and stable lift using a compactor/roller or equivalent equipment approved for that purpose by the Engineer, that contacts the entire surface and produces no ruts deeper than 0.5 inch in the compacted lift surface. Compaction shall be in accordance with the CQA Plan requirements.

1.12 GRADING

- A. <u>Grade</u>: Grade compacted imported Cap Layer to lines and grades specified on the Drawings and as directed by the Engineer.
- B. <u>Transition and Match Surrounding Grade</u>: Construct slopes to blend into existing undisturbed areas gradually to provide neat, clean transition zones. Feather constructed slopes into existing grades to promote natural drainage and eliminate possible surface-water ponding.
- C. <u>Adjustments to Grades or Elevations</u>: The Engineer reserves the right to make adjustments or revisions in lines or grades if found necessary as the Work progresses due to final volumetric expansion of ISS soil mixture, or to obtain drainage of the cover/cap and the surrounding area to relief without ponding.

END OF SECTION



APPENDIX H DESIGN DRAWINGS

IN-SITU STABILIZATION FOR

ARKEMA INC. PORTLAND, OREGON

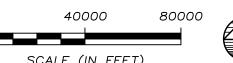
PRE-FINAL DESIGN DRAWINGS

JUNE 2025

PREPARED FOR:



MULTNOMAH COUNTY OREGON







GENERAL NOTES LIST OF DRAWINGS

- GROUND SURFACE ELEVATIONS SHOWN ARE BASED ON A LIDAR SURVEY PERFORMED BY I-TEN ASSOCIATES IN 2001, A BATHYMETRIC SURVEY PERFORMED BY DAVID EVANS AND ASSOCIATES IN 2004 AND A LIDAR, PHOTOGRAMMETRY, AND UAS SURVEY PERFORMED BY PBS IN 2024. ELEVATIONS SHOWN ARE IN FEET, NAVD 88. HORIZONTAL CONTROL IS BASED ON NAD83, OREGON STATE PLANES, INTERNATIONAL FOOT.
- EXISTING CONTOUR LINES ARE SHOWN AT 2—FOOT INTERVALS, UNLESS OTHERWISE NOTED.
- 3. AT NO POINT SHALL TRAFFIC ASSOCIATED WITH THE WORK BE ALLOWED TO QUEUE ON PUBLIC ROADS. VEHICLES AND EQUIPMENT MAY NOT ENTER OR EXIT THE PROPERTY THROUGH ADJOINING PROPERTIES.
- 4. ANY PROPERTY IMPROVEMENTS THAT ARE NECESSARY FOR COMPLETION OF THE WORK, BEYOND THOSE SHOWN HEREIN, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE APPROVED BY THE OWNER AND ENGINEER PRIOR TO IMPLEMENTATION.
- BENCHMARKS, MONUMENTS, AND PROPERTY MARKERS SHALL BE PROTECTED AT ALL TIMES AND SHALL NOT BE DISTURBED BY CONSTRUCTION ACTIVITIES.
- UTILITY LOCATIONS ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EXISTING STRUCTURES, EASEMENTS, PIPES, AND UTILITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE OREGON UTILITY NOTIFICATION CENTER AT 1-800-332-2344 THREE DAYS PRIOR TO THE START OF ANY EXCAVATION WORK. CONTRACTOR SHALL CONTRACT AN APPROVED PRIVATE UTILITY LOCATOR FOR MARKOUT OF OWNER UTILITIES.
- 7. THE 100-YEAR FLOOD PLAIN DELINEATION (ELEVATION 32.5 FEET, NAVD 88) WAS OBTAINED FROM THE FEMA FLOOD INSURANCE STUDY, CITY OF PORTLAND OREGON, DATE NOVEMBER 26,
- THE GENERAL NOTES AND LEGEND ON THIS SHEET APPLY TO ALL DRAWINGS, UNLESS
- 9. SCALES ARE NOTED ON EACH DRAWING.

OTHERWISE NOTED.

- 10. CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF SITE HEALTH AND SAFETY THROUGHOUT CONSTRUCTION.
- 11. IN THE EVENT THAT THE DRAWINGS AND TECHNICAL SPECIFICATIONS CONFLICT, THE DRAWINGS SHALL TAKE PRECEDENCE OVER THE SPECIFICATIONS.

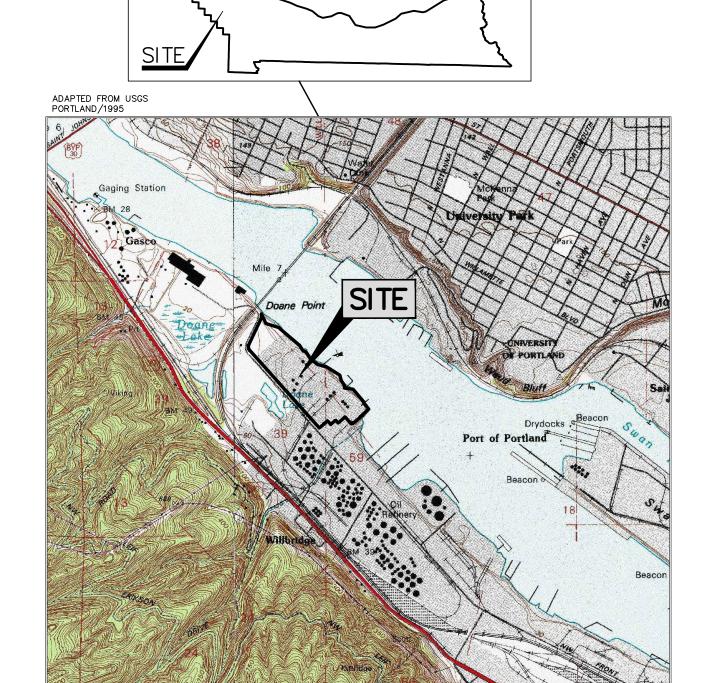
AGENT: LEGACY SITE SVCS LLC CONTACT: MR. TODD SLATER 1201 LOUISIANA STREET, SUITE 1800 HOUSTON, TX 77002 PHONE: (610) 804-0506

6400 NW FRONT AVE. PORTLAND, OR 97210. NEAR THE INTERSECTION OF FRONT AVE AND NW 61ST S AVE., MULTNOMAH COUNTY, OREGON LATITUDE = 45.572 NLONGITUDE = 122.746

ENGINEERING FIRM ENGINEERING FIRM: ENVIRONMENTAL RESOURCES MANAGEMENT, INC. CONTACT: BRENDAN ROBINSON 1050 SW 6TH AVE, SUITE 1650 PORTLAND, OR 97204 PHONE: (503) 488-5282

TAX LOTS R61740050, R61740100, R61740150, R61740200, LOCATED IN THE SECTIONS 13 AND 18, TOWNSHIP 1 NORTH, RANGE 1 EASE AND RANGE WEST, WILLAMETTE MERIDIAN, MULTNOMAH COUNTY, OREGON

<u>ATTENTION EXCAVATORS</u> OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH OAR 952-001-0090. YOU MAY OBTAIN COPIES OF THESE RULES FROM THE CENTER BY CALLING 503-232-1987. IF YOU HAVE ANY QUESTIONS ABOUT THE RULES, YOU MAY CONTACT THE CENTER. YOU MUST NOTIFY THE CENTER AT LEAST TWO BUSINESS DAYS BEFORE COMMENCING AN EXCAVATION. CALL 503-245-6699.



MULTNOMAH COUNTY

SECTION 59 T.1N / R.1E

CITY OF PORTLAND, MULTNOMAH COUNTY, OREGON

SITE LOCATION MAP

MCC

ABBREVIATIONS

CENTERLINE NOMINAL DIAMETER BELOW GROUND SURFACE EXISTING NOT IN CONTRACT TYPICAL WSE WATER SURFACE ELEVATION INVERT INV STL STEEL MINIMUM DRAWING **ELEVATION** GALLONS CUBIC YARDS GWET GROUNDWATER EXTRACTION AND TREATMENT MAXMAXIMUM

MOTOR CONTROL CENTER

SHEET NO. TITLE

RAIN GAUGE: CATHEDRAL PARK STATION

DETAILS

DETAILS

HYPERLINK: https://www.wunderground.com/weather/us/or/portland/KORPORTL1737

LOCATION MAPS, GENERAL NOTES, LIST OF DRAWINGS, ABBREVIATIONS, AND LEGEND

NARRATIVE DESCRIPTIONS **EXISTING SITE CONDITION**

ADMIN BUILDING, GROUNDWATER EXTRACTION AND TREATMENT SYSTEM (TRENCHES, RECOVERY WELLS, PIPING, UTILITIES, TREATMENT BUILDING, MCC BUILDINGS), STORMWATER FEATURES (SWALES, BERMS, DETENTION POND, SAND FILTER, STORMWATER SEWER NEAR ADMIN BUILDING, TREATMENT PIPING), NPDES OUTFALL NO. 4 TO WILLAMETTE RIVER, CONCRETE FOUNDATIONS, ASPHALT PAVED AREAS, RECOVERY WELLS, MONITORING WELLS, GROUNDWATER BARRIER WALL, AND EXISTING SOIL STOCKPILE AREAS PREVIOUSLY ESTABLISHED.

FINAL CONDITIONS

1. GROUNDWATER UTILITIES AIR GAPPED AND ABANDONED IN PLACE AT THE LIMITS OF WORK. GROUNDWATER UTILITIES REMOVED WHERE NECESSARY TO FACILITATE WORK.

2. IN-SITU STABILIZED MONOLITH, COVERED IN REUSED BACKFILL, AND FINISHED TO GRADE WITH AGGREGATE FINAL COVER. 3. CONTRACTOR TO ENSURE THAT POST-CONSTRUCTION CONDITIONS MATCH PRE-CONSTRUCTION CONDITIONS.

4. NO ADDITIONAL LANDSCAPING WILL BE UTILIZED AS STABILIZATION.

NATURE OF CONSTRUCTION ACTIVITY AND ESTIMATED TIME TABLE

MOBILIZATION AND SITE PREPARATION (INCLUDES EROSION AND SEDIMENT CONTROLS) CONSTRUCTION LAYOUT AND SURVEYING CONSTRUCTION OF ISS PLATFORM ISS DEEP SOIL MIXING AND FINISH

53.70 ACRES

11.00 ACRES

DEMOBILIZATION

EXISTING CONDITIONS PLAN

AREA B EXCAVATION PLAN

AREA C EXCAVATION PLAN

ISS PROCESS FLOW DIAGRAM

CONCEPTUAL UTILITY REROUTE

IN-SITU SOLIDIFICATION PLAN AND PROFILE

ARFA A IN SITU SOLIDIFICATION PLAN

EROSION AND SEDIMENT CONTROL PLAN

SOIL COVER AND FINAL GRADING PLAN AND PROFILE

SITE SOIL CLASSIFICATION

TOTAL SITE AREA=2,339,400 SF

TOTAL DISTURBED AREA = 461,613 SF

SOIL EXISTING IN PLACE GENERALLY CONSIST OF LATERALLY DISCONTINUOUS, ALTERNATING LAYERS OF SAND WITH VARIOUS AMOUNTS AND SILT AND THINNER SILT LAYERS WITH VARYING AMOUNTS OF FIND SAND. DREDGE SPOILS (FINE-GRAINED SOILS) WERE ALSO USED AS FILL.

FILL MATERIALS OCCUR FROM THE SURFACE TO DEPTHS OF APPROXIMATELY 25 FEET BELOW GROUND SURFACE (BGS) IN SOME AREAS ALONG THE RIVER, AND CONSIST OF CLAYEY SILT TO SILTY SAND WITH SOME OCCASIONAL FRAGMENTS OF WOOD, BRICK, METAL, PIPING, AND ASPHALT.

RECEIVING WATER BODIES: NEAREST WATER BODY: WILLAMETTE RIVER

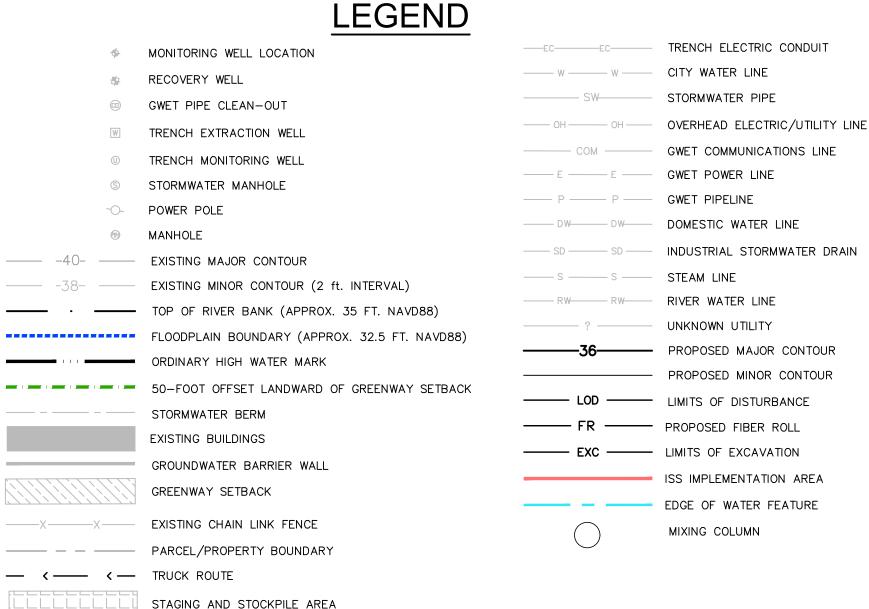
PERMITTEE'S STORMWATER INSPECTOR: TBD COMPANY/AGENCY: TBD PHONE: TBD

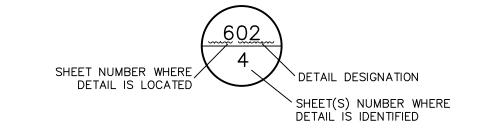
EMAIL: TBD DESCRIPTION OF EXPERIENCE: TBD COMPLETED: TBD CERTIFICATION EXPIRES: TBD ID#: TBD

BACKUP STORMWATER INSPECTOR: TBD DESCRIPTION OF EXPERIENCE: TBD COMPLETED: TBD CERTIFICATION EXPIRES: TBD ID#: TBD

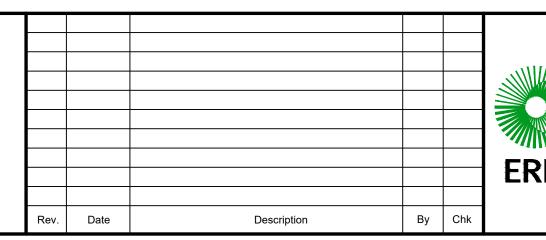


SITE VICINITY MAP





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SMALL DEBRIS/FRAGMENTS/FILL

RAILROAD TRACK

CONTROL POINT

EXISTING TRENCH

OIL N SOIL PLUME

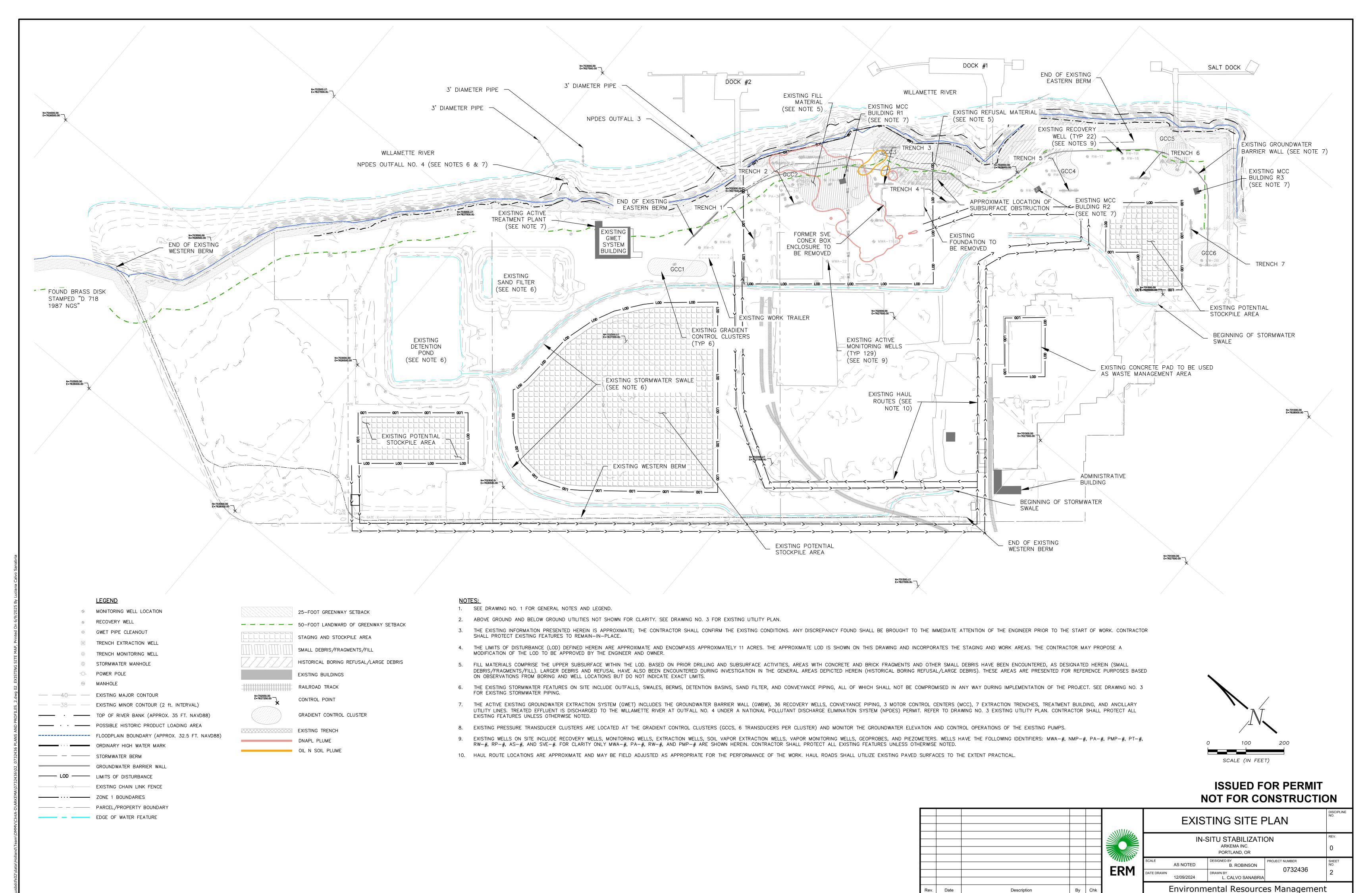
DNAPL PLUME

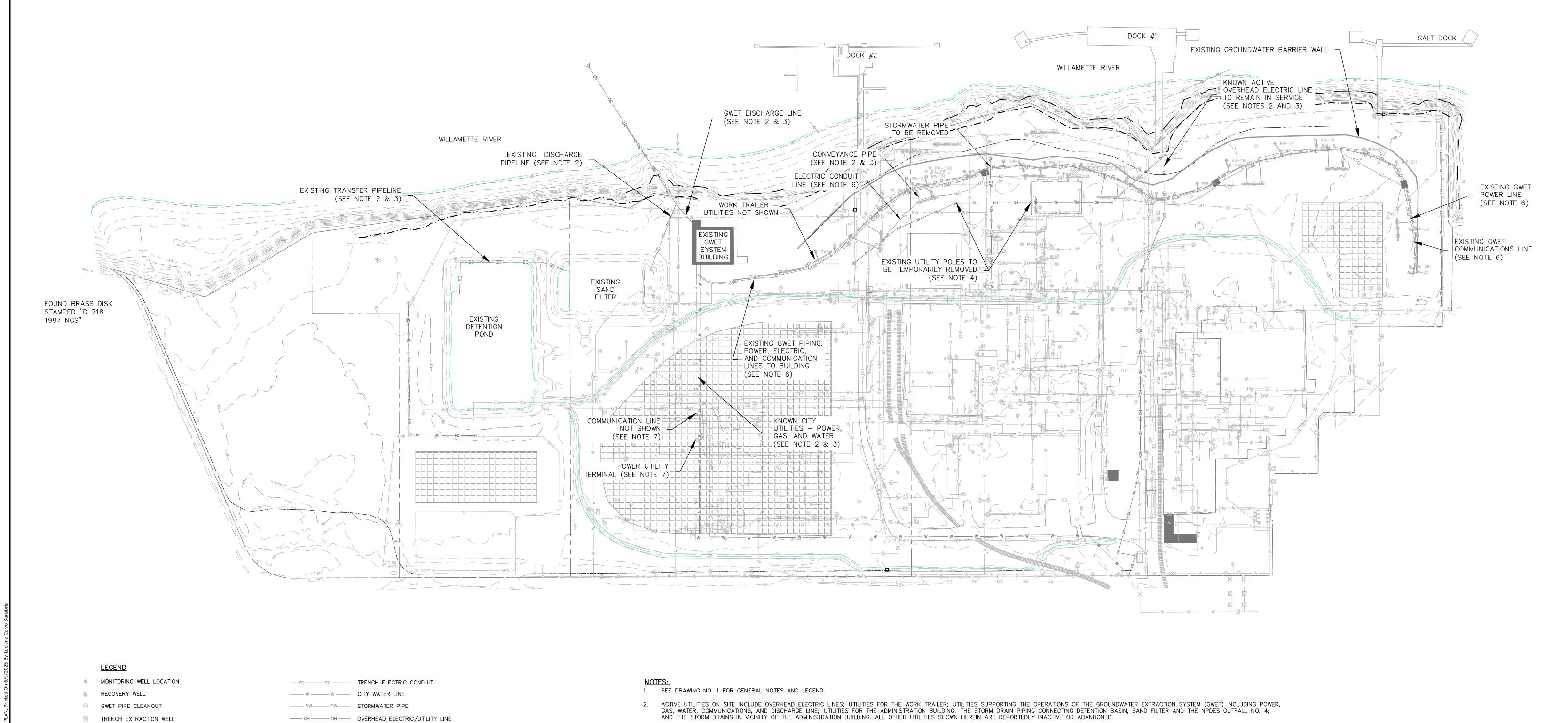
HISTORICAL BORING REFUSAL/LARGE DEBRIS

GWET GRADIENT CONTROL CLUSTERS (GCC)

ww.	LOCATION MAPS, GENERAL NOTES, LIST OF DRAWINGS, ABBREBIATIONS, AND LEGEND	1
	IN-SITU STABILIZATION ARKEMA INC.	F
	PORTLAND, OR	

AS NOTED B. ROBINSON 0732436 L. CALVO SANABRIA **Environmental Resources Management**





RAILROAD TRACK

----E ----- GWET POWER LINE

---- DW----- DOMESTIC WATER LINE

----- P ------ GWET PIPELINE

----- S ------ STEAM LINE

----- ? ----- UNKNOWN UTILITY

TRENCH MONITORING WELL STORMWATER MANHOLE

O- POWER POLE

MANHOLE

——— — PARCEL/PROPERTY BOUNDARY ----- -40- EXISTING MAJOR CONTOUR

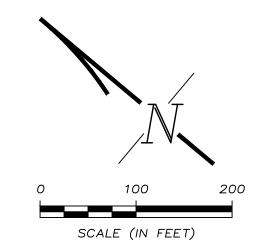
ORDINARY HIGH WATER MARK

----- STORMWATER BERM GROUNDWATER BARRIER WALL EDGE OF WATER FEATURE

EXISTING BUILDINGS

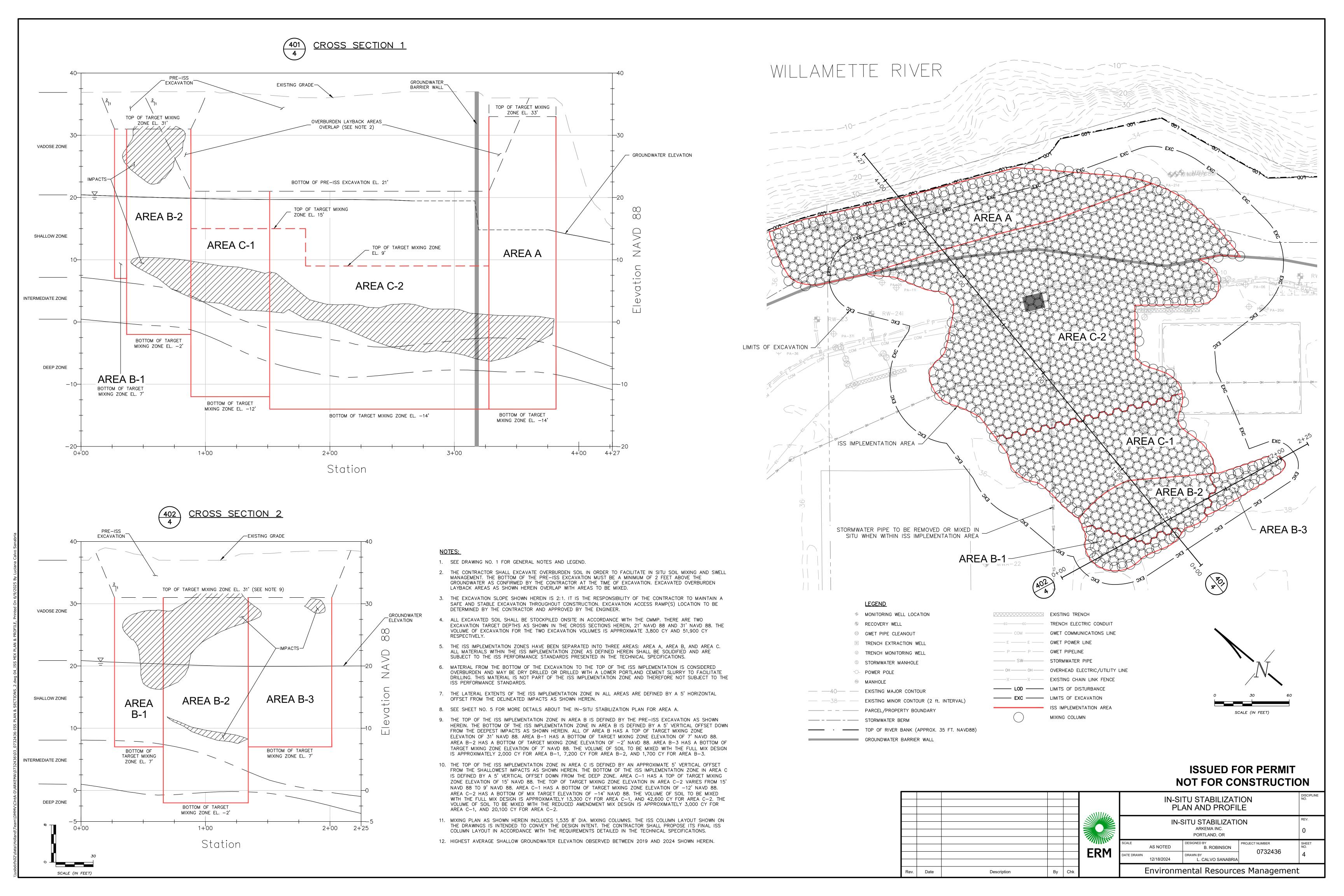
LLLLLL STAGING AND STOCKPILE AREA

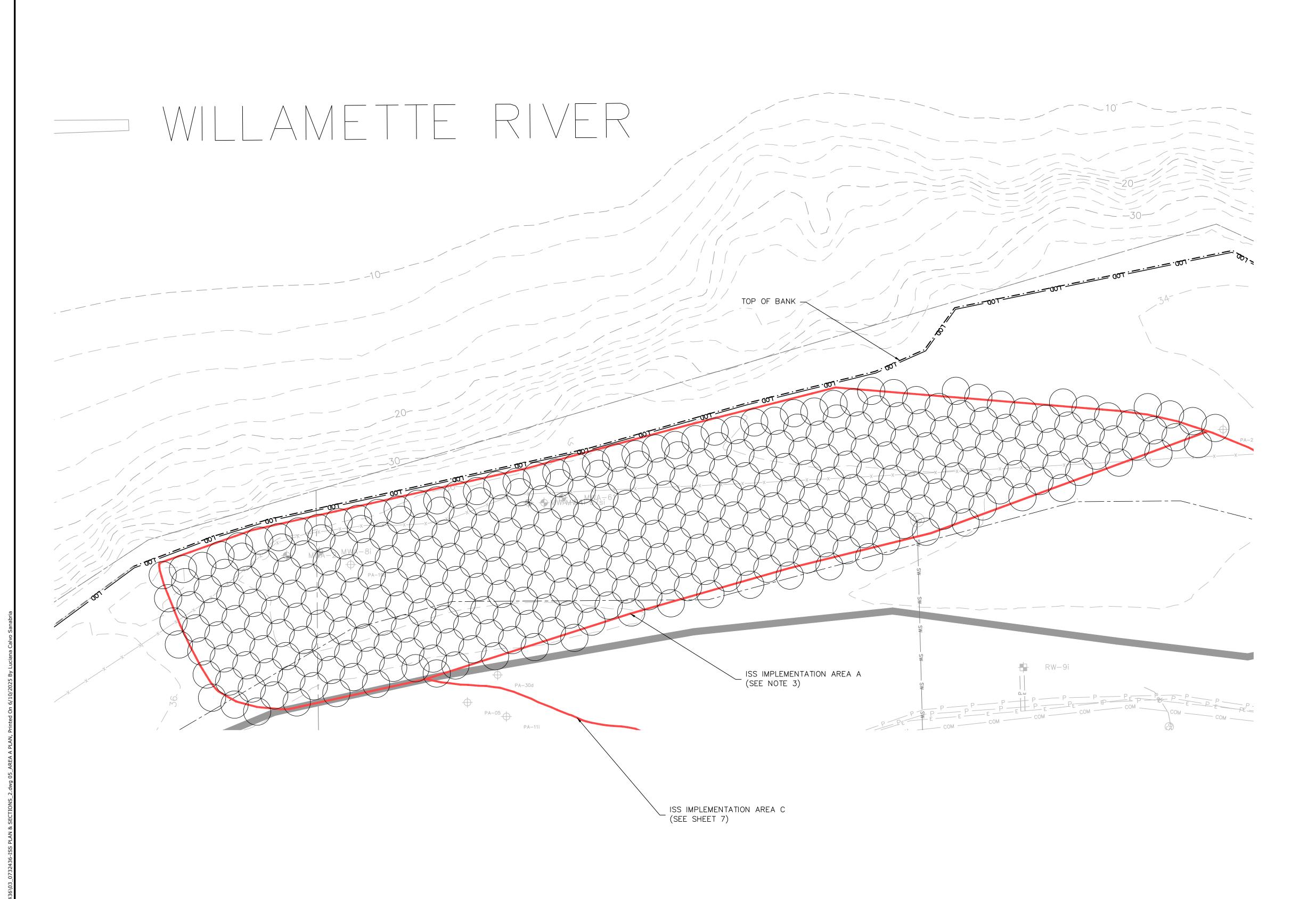
- 3. THE CONTRACTOR SHALL VERIFY ACTUAL CONDITIONS OF ALL EXISTING UTILITIES PRIOR TO THE START OF ANY WORK. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER PRIOR TO THE START OF WORK. LOCATIONS SHOWN ARE APPROXIMATE.
- 4. CONTRACTOR SHALL COORDINATE WITH PORTLAND GENERAL ELECTRIC TO DISCONNECT THE OVERHEAD ELECTRIC LINE.
- 5. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER AND OWNER TO MINIMIZE POTENTIAL CONFLICTS WITH CURRENT OPERATIONS.
- 6. THE LOCATION OF THE EXISTING GWET PIPELINE, POWER, AND COMMUNICATION LINES AND THE CONDUITS TO EXISTING RECOVERY WELLS IS BASED ON A SURVEY CONDUCTED BY GPRS ON 01 APRIL 2021 USING A HAND-HELD GPS UNIT AND SURVEYED AS-BUILTS FROM THE 2022 TRENCH INSTALLATION.
- 7. IF WORK IS DONE IN THIS AREA, OR IF WORK RELIES ON COMMUNICATION OR ELECTRIC UTILITIES FROM THESE LINES, THE CONTRACTOR SHALL ASSESS WHETHER ELECTRIC AND COMMUNICATION LINES TERMINATE OR EXTEND BEYOND THIS POINT AND LOCATE EXTENT OF THESE LINES.



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							I\	IOT FOR CO	MSTRUCTIC	JN
					W.	EXISTING UTILITY PLAN				DISCIPLINE NO.
							IN-	SITU STABILIZATIO ARKEMA INC. PORTLAND, OR	NC	REV.
						SCALE	AS NOTED	DESIGNED BY B. ROBINSON	PROJECT NUMBER	SHEET NO.
					ERM	DATE DRAWN	12/09/2024	DRAWN BY L. CALVO SANABRIA	0732436	3
Rev.	Date	Description	Ву	Chk		F	Environm	nental Resource	es Management	_



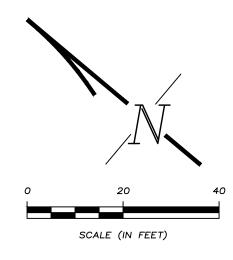


MONITORING WELL LOCATION RECOVERY WELL S STORMWATER MANHOLE —40— EXISTING MAJOR CONTOUR —38— EXISTING MINOR CONTOUR (2 ft. INTERVAL) ----- STORMWATER BERM TOP OF RIVER BANK (APPROX. 35 FT. NAVD88) GROUNDWATER BARRIER WALL EXISTING CHAIN LINK FENCE STORMWATER PIPE GWET COMMUNICATIONS LINE —— E —— E —— GWET POWER LINE —— P —— P —— GWET PIPELINE - LOD - LIMITS OF DISTURBANCE — ISS IMPLEMENTATION AREA MIXING COLUMN

<u>LEGEND</u>

NOTES:

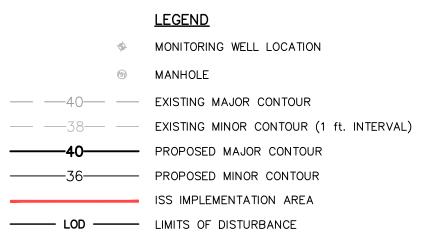
- 1. SEE DRAWING NO. 1 FOR GENERAL NOTES AND LEGEND.
- 2. THE CONTRACTOR MAY EXCAVATE A SHALLOW WORKING PLATFORM IN ORDER TO FACILITATE MIXING. A 3' WORKING PLATFORM IS SHOWN HEREIN FOR ILLUSTRATIVE PURPOSES ONLY.
- 3. SOUTHERN LIMIT OF THE ISS IMPLEMENTATION AREA A IS DEFINED BY A 50' OFFSET FROM THE TOP OF BANK AND IS SHOWN HEREIN FOR ILLUSTRATIVE PURPOSES ONLY. SEE LANGAN DESIGN SPECIFICATIONS FOR REQUIRED OFFSET FROM THE TOP OF BANK,
- 4. THE TOP OF THE ISS IMPLEMENTATION ZONE IS DEFINED BY THE BOTTOM OF THE WORK PLATFORM AS SHOWN HEREIN. ALL OF AREA A HAS A TOP OF TARGET MIXING ZONE ELEVATION OF 33' NAVD 88.
- 5. THE BOTTOM OF THE ISS IMPLEMENTATION ZONE IS DEFINED BY A 5' VERTICAL OFFSET DOWN FROM THE DEEP ZONE. AREA A HAS A BOTTOM OF TARGET MIXING ZONE ELEVATION OF -14' NAVD 88.
- 6. THE VOLUME OF SOIL TO BE MIXED WITH THE FULL MIX DESIGN IS APPROXIMATELY 33,700 CY.
- 7. THE ISS COLUMN LAYOUT SHOWN ON THE DRAWINGS IS INTENDED TO CONVEY THE DESIGN INTENT. THE CONTRACTOR SHALL PROPOSE ITS FINAL ISS COLUMN LAYOUT IN ACCORDANCE WITH THE REQUIREMENTS DETAILED IN THE TECHNICAL SPECIFICATIONS.



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						W.		IN-SITU	AREA A STABILIZATION	N PLAN	DISCIPLINE NO.
								IN-S	SITU STABILIZATION ARKEMA INC. PORTLAND, OR	ON	REV.
							SCALE	AS NOTED	DESIGNED BY B. ROBINSON	PROJECT NUMBER	SHEET NO.
						ERM	DATE DRAWN	12/18/2024	DRAWN BY L. CALVO SANABRIA	0732436	5
	Rev.	Date	Description	Ву	Chk			Environm	ental Resource	es Management	t

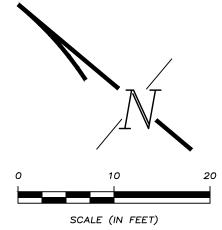




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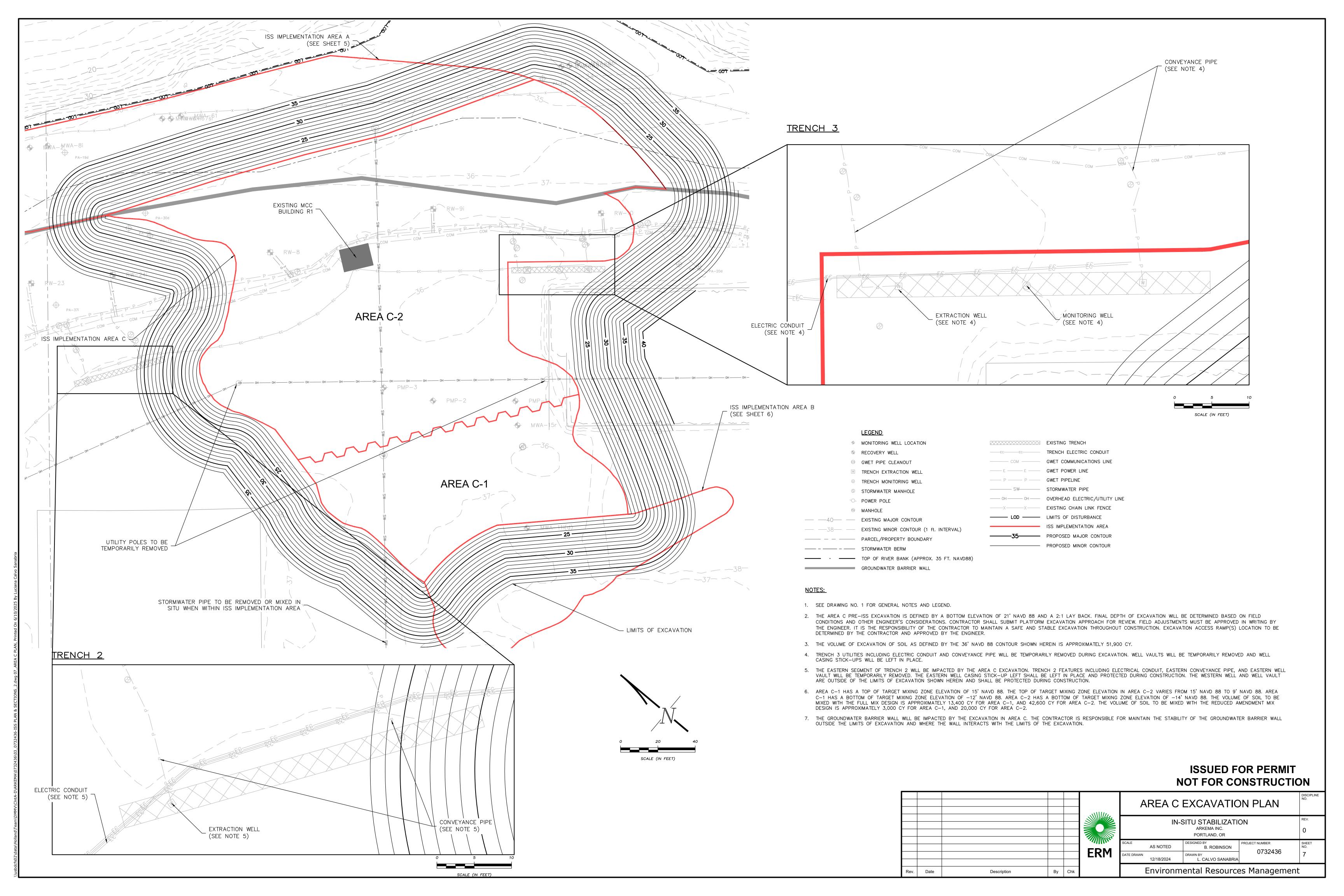
1. SEE DRAWING NO. 1 FOR GENERAL NOTES AND LEGEND.

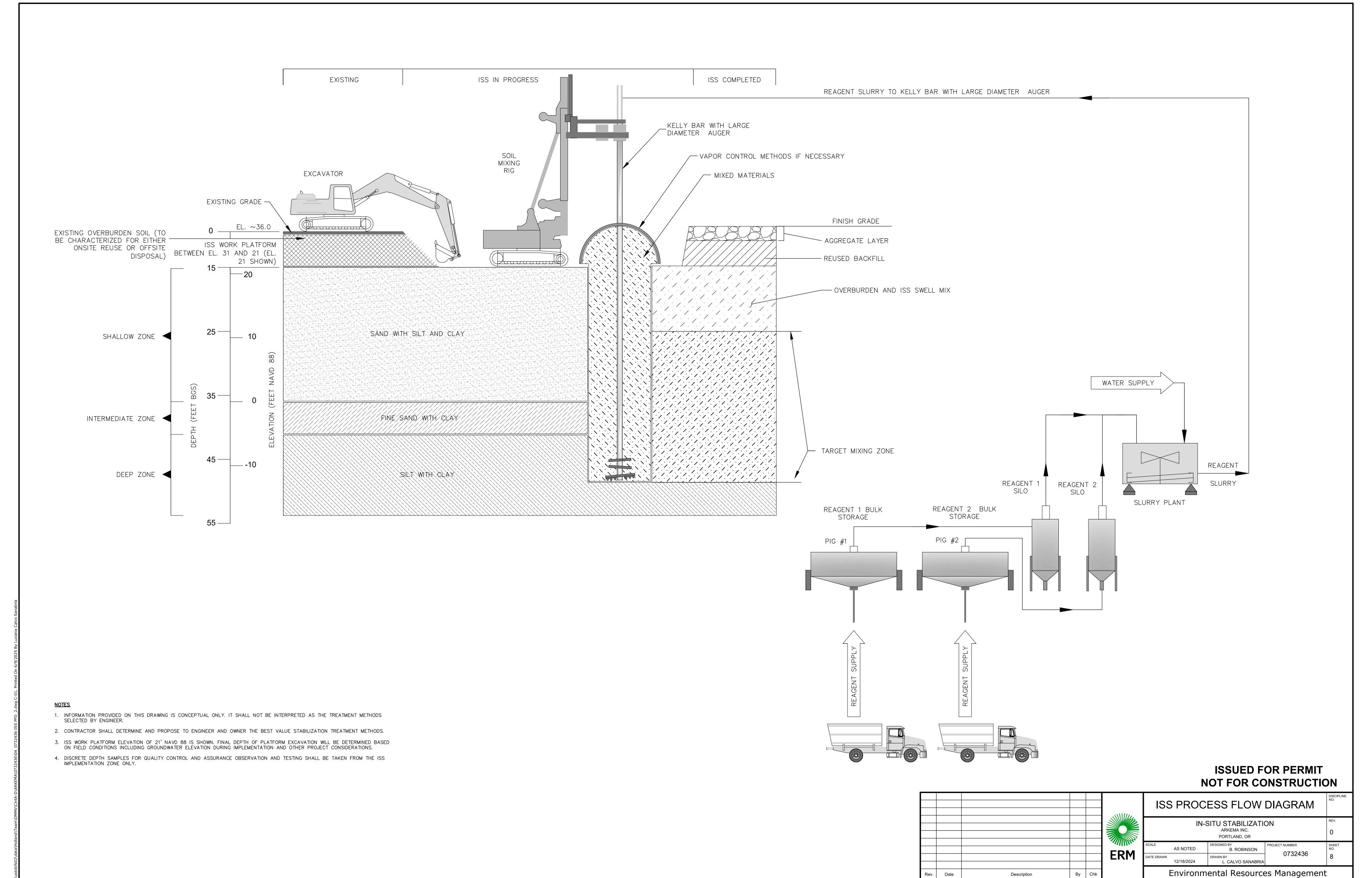
- 2. THE AREA B PRE—ISS EXCAVATION IS DEFINED BY A BOTTOM ELEVATION OF 31' NAVD 88 AND A 2:1 LAY BACK. FINAL DEPTH OF EXCAVATION WILL BE DETERMINED BASED ON FIELD CONDITIONS AND OTHER ENGINEER'S CONSIDERATIONS. CONTRACTOR SHALL SUBMIT PLATFORM EXCAVATION APPROACH FOR REVIEW. FIELD ADJUSTMENTS MUST BE APPROVED IN WRITING BY THE ENGINEER. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN A SAFE AND STABLE EXCAVATION THROUGHOUT CONSTRUCTION. EXCAVATION ACCESS RAMP(S) LOCATION TO BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
- 2. THE VOLUME OF EXCAVATION OF SOIL AS DEFINED BY THE 36.' NAVD 88 CONTOUR SHOWN HEREIN IS APPROXIMATELY 3,800 CY.
- 3. ALL OF AREA B HAS A TOP OF TARGET MIXING ZONE ELEVATION OF 31' NAVD 88. AREA B1 HAS A BOTTOM OF TARGET MIXING ZONE ELEVATION OF 7' NAVD 88. AREA B-2 HAS A BOTTOM OF TARGET MIXING ZONE ELEVATION OF 7' NAVD 88. THE VOLUME OF SOIL TO BE MIXED WITH THE FULL MIX DESIGN IS APPROXIMATELY 2,000 CY FOR AREA B-1, 7,200 CY FOR AREA B-2, AND 1,700 CY FOR AREA B-3.

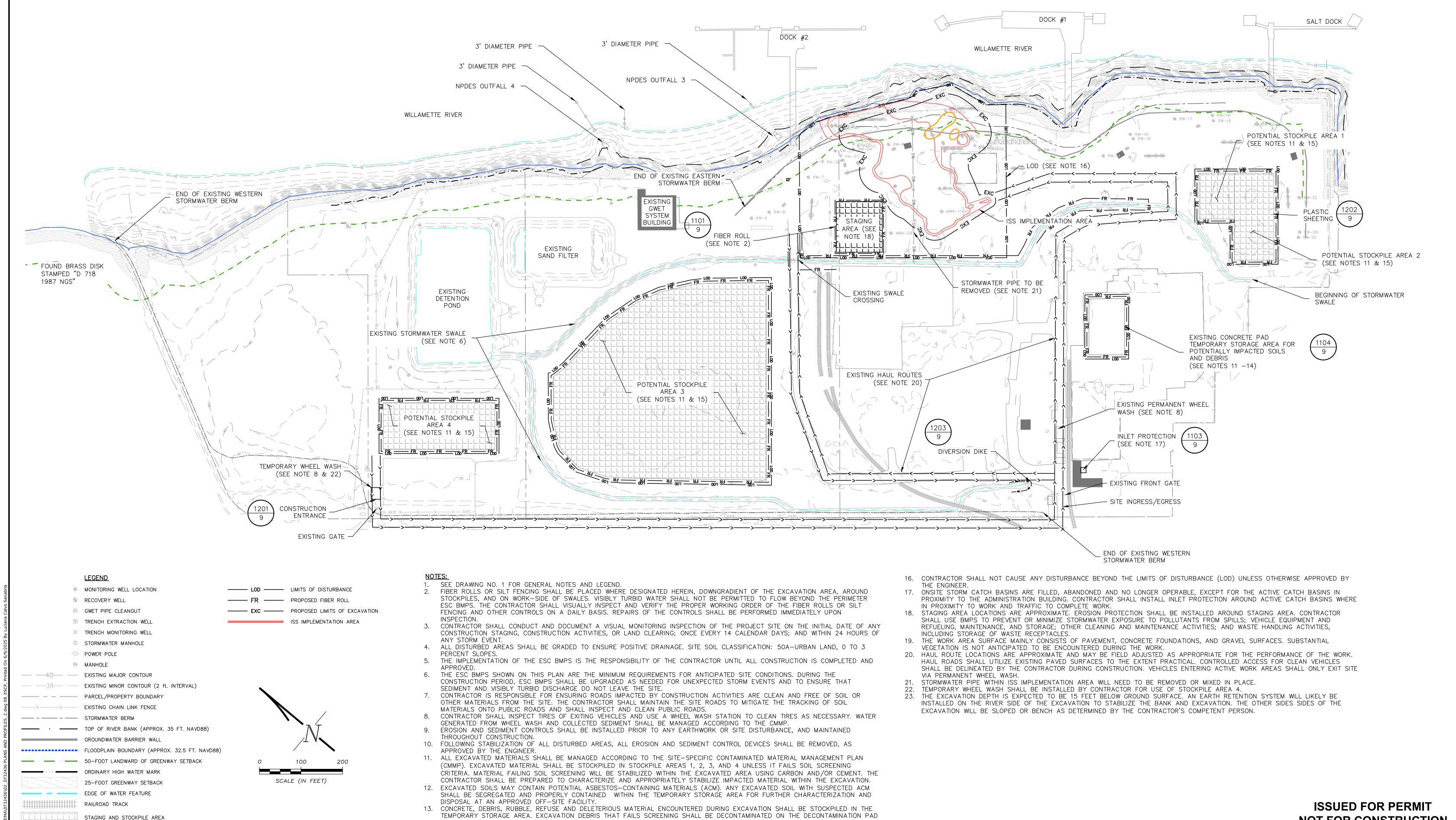


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					ERM	DATE DRAWN	12/18/2024	DRAWN BY L. CALVO SANABRIA	0732436	6
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IN THE TEMPORARY STORAGE AREA FOR POTENTIALLY IMPACTED MATERIAL IN ACCORDANCE WITH THE CMMP.

THE DECONTAMINATION PAD.

SPECIFIED IN THE SITE SPECIFIC CMMP.

EXISTING BUILDING

OIL N SOIL PLUME

EXISTING TRENCH

DNAPL PLUME

STORMWATER PIPE

14. CONTRACTOR SHALL CONSTRUCT/INSTALL A DECONTAMINATION PAD IN THE TEMPORARY STORAGE AREA. THE DECONTAMINATION PAD

WATER TO AN ABOVE-GROUND TANK FOR STORAGE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE, OPERATION AND

15. IN ALL STOCKPILES, THE SOILS SHALL BE PLACED UNIFORMLY WITH SIMILAR THICKNESSES IN EACH STOCKPILE AND GRADED TO

SHALL BE SIZED TO DECONTAMINATE EQUIPMENT AND DEBRIS, SHALL FULLY CONTAIN WATER, AND HAVE ABILITY TO PUMP COLLECTED

REPAIR OF THE DECONTAMINATION PAD THROUGHOUT THE DURATION OF THE WORK. THE CONTRACTOR SHALL SUBMIT FOR REVIEW THE

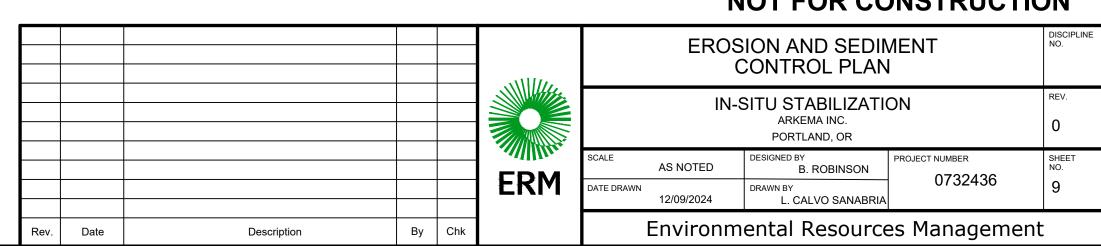
EXISTING STOCKPILE AREAS CONSIST OF GRAVEL AND GEOTEXTILE FABRIC. THE CONTRACTOR SHALL INSTALL AND MAINTAIN STOCKPILE

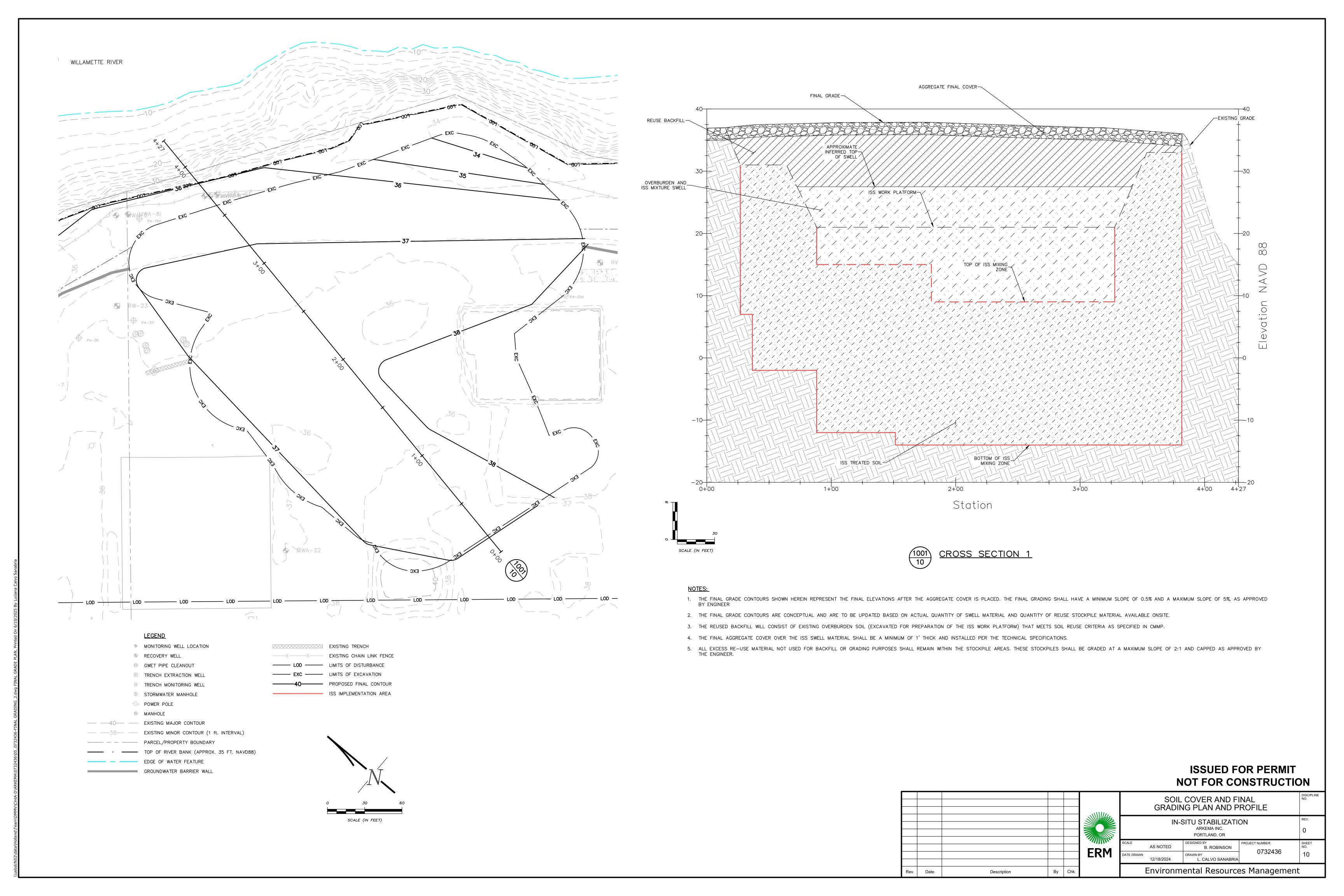
DESIGN OF THE DECONTAMINATION PAD NO LESS THAN TEN (10) DAYS PRIOR TO THE SCHEDULED CONSTRUCTION/INSTALLATION OF

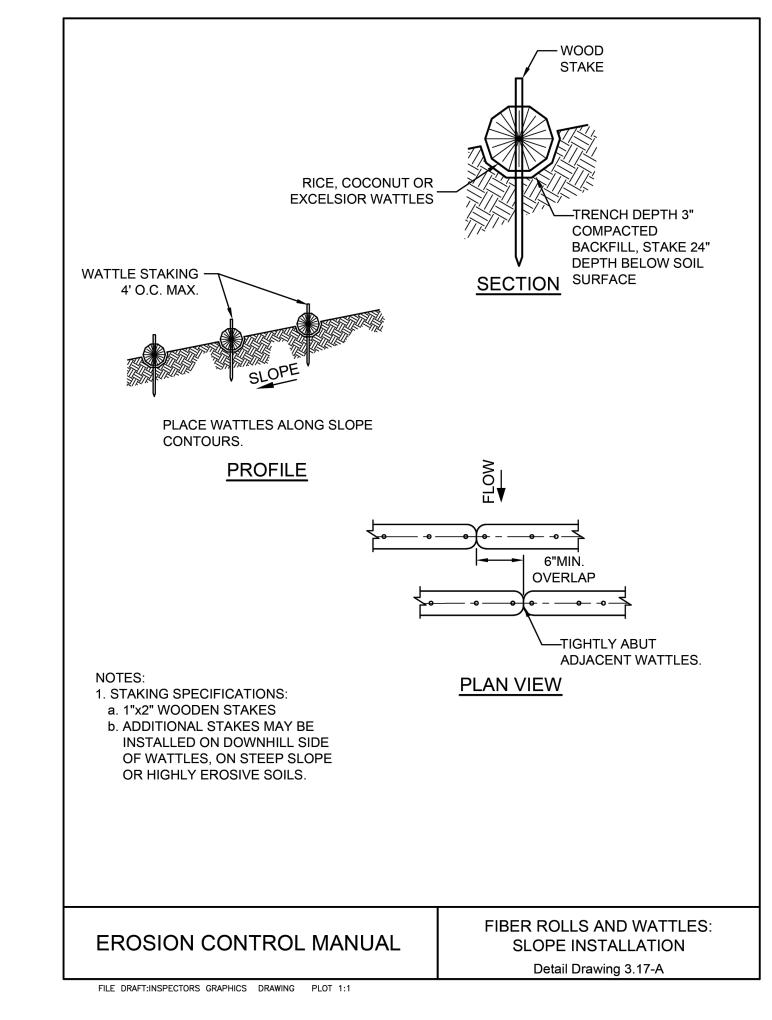
PROMOTE RUNOFF DRAINAGE. NO SURFACE WATER PONDING IS PERMITTED ON STOCKPILES. DEWATERING SHALL BE ACCOMPLISHED VIA AIR DRYING, WINDROWING, OR MIXING A REAGENT (I.E., LIME) AS APPROVED BY THE ENGINEER. THE IN-PLACE COVERS OF THE

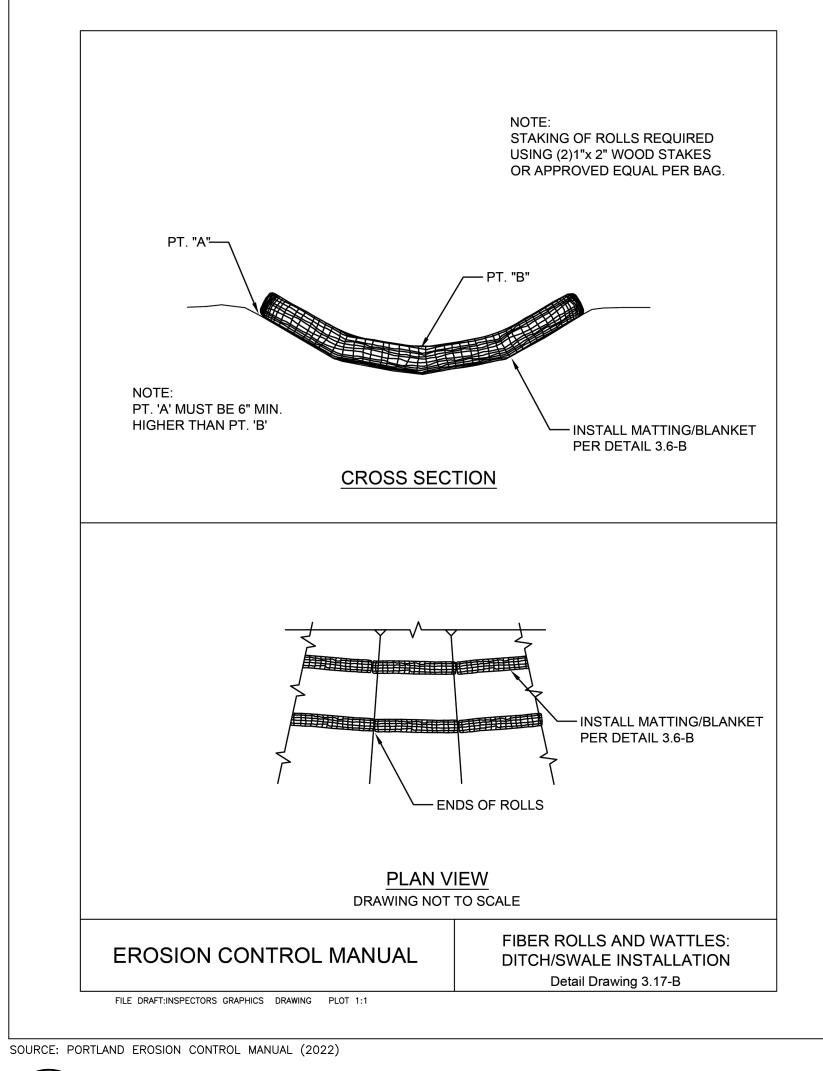
COVERS CONSISTING OF NEW GEOTEXTILE FABRIC AND THE EXISTING GRANULAR MATERIAL TO THE EXTENT PRACTICAL AND AS

NOT FOR CONSTRUCTION









SOURCE: PORTLAND EROSION CONTROL MANUAL (2022)

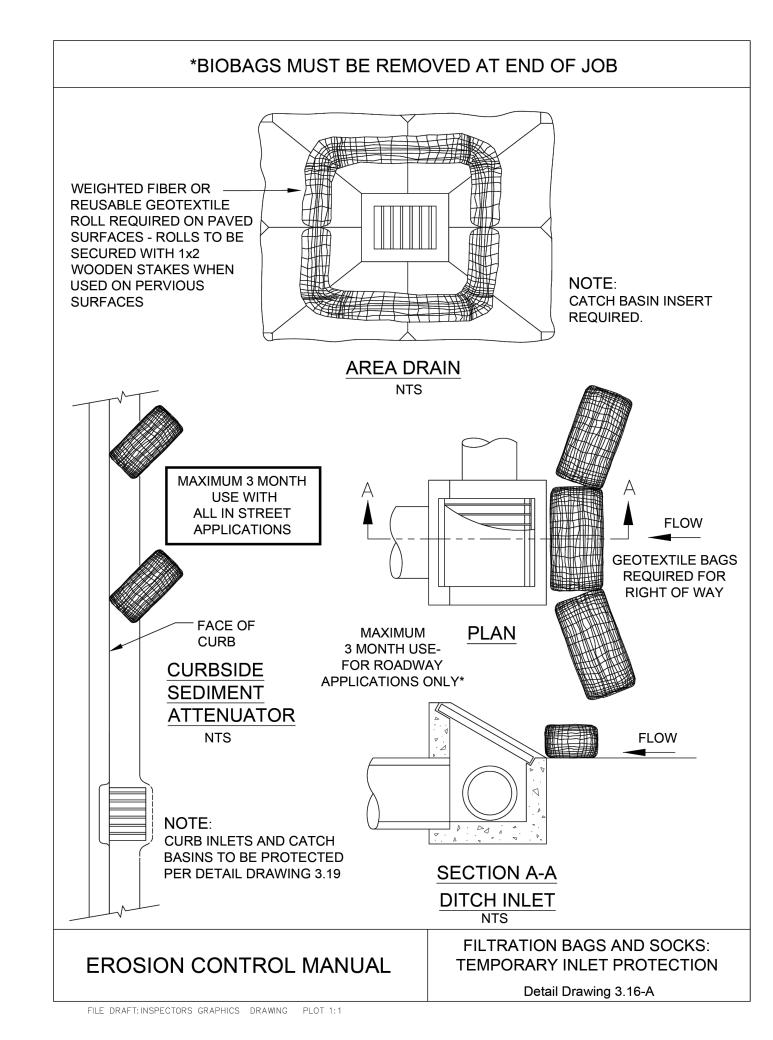




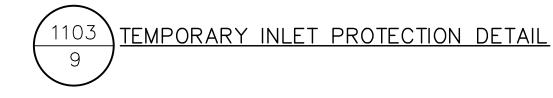
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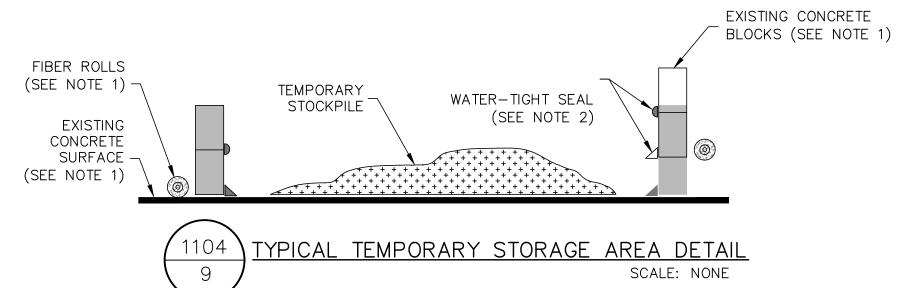
- 1. FIBER ROLLS SHALL BE PLACED ON IMPERVIOUS SURFACES TO MINIMIZE TRANSPORT OF SEDIMENT TO THE STORMWATER SWALES, WILLAMETTE RIVER, AND STORM DRAIN INLETS, AND AROUND STOCKPILES AND STAGING AREA AS DESIGNATED ON DRAWING NO. 9, AND IN ACCORDANCE WITH THE CITY OF PORTLAND'S EROSION AND SEDIMENT CONTROL MANUAL. SEE DETAIL 1103 FOR
- INSTALLATION OF FIBER ROLLS TO PROTECT STORM DRAIN INLETS.

 2. CONTRACTOR SHALL USE 6-INCH DIAMETER FIBER ROLLS.
- 3. CONTRACTOR SHALL USE WEIGHTS (E.G. SANDBAGS) ON FIBER ROLLS TO IMPROVE GROUND CONTACT ON IMPERVIOUS SURFACES, OR EQUIVALENT INSTALLATION (E.G. MANUFACTURED WEIGHTED STRAW WATTLES). STAKES SHALL BE USED WHERE APPLICABLE ON PERVIOUS SURFACES. ENSURE THAT NO GAPS EXIST UNDER OR BETWEEN ROLLS THAT COULD BYPASS FLOWS. OVERLAP ENDS OF FIBER ROLLS WHERE POSSIBLE.
- 4. FIBER ROLLS USED SHALL BE BIODEGRADABLE AND COMPOSED OF WEED-FREE VEGETATIVE MATERIALS.
- 5. FIBER ROLLS SHALL BE INSPECTED DAILY. SEDIMENT DEPTH SHALL NOT ACCUMULATE TO MORE THAN 1/3 THE HEIGHT OF THE FIBER ROLL. SEDIMENT SHALL BE REMOVED OR RE-GRADED ONTO THE SLOPE, OR NEW ADDITIONAL ROLLS SHALL BE INSTALLED UPHILL OF SEDIMENT LADEN BARRIERS.



SOURCE: PORTLAND EROSION CONTROL MANUAL (2022)





NOTES:

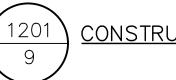
- 1. THE CONTRACTOR SHALL LOCATE THE TEMPORARY STORAGE AREAS ON EXISTING CONCRETE SURFACE AND UTILIZE THE EXISTING CONCRETE BLOCKS AS MEANS TO SEGREGATE THE STORAGE AREAS.
- 2. CONTRACTOR SHALL ENSURE THAT FREE LIQUID IS CONTAINED WITHIN THE BOUNDARY OF THE CONCRETE BLOCKS BY GROUTING WHERE THE CONCRETE BLOCKS MEET THE CONCRETE SURFACE AND AT THE JOINTS BETWEEN CONCRETE BLOCKS, AND WITH THE USE OF SOIL CONDITIONING PRACTICES. CONTRACTOR SHALL PROVIDE IN THE PROJECT WORK PLAN THE MEANS OF CONTAINING LIQUID AND COLLECTING LIQUID (IF NECESSARY) FROM THE STORAGE AREA.
- 3. CONTRACTOR SHALL HAVE THE OPTION OF ADJUSTING THE SIZE OF THE TEMPORARY STORAGE AREA AS NEEDED FOR PLANNED EQUIPMENT AND VEHICLES. ALL ADJUSTMENTS MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL BY 10 WORKING DAYS PRIOR TO THE ADJUSTMENTS BEING MADE.
- ENGINEER FOR APPROVAL BY 10 WORKING DAYS PRIOR TO THE ADJUSTMENTS BEING MADE.

 4. THE CONTRACTOR SHALL DEPLOY FIBER ROLLS ALONG THE PERIMETER OF THE STORAGE AREAS, AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN.

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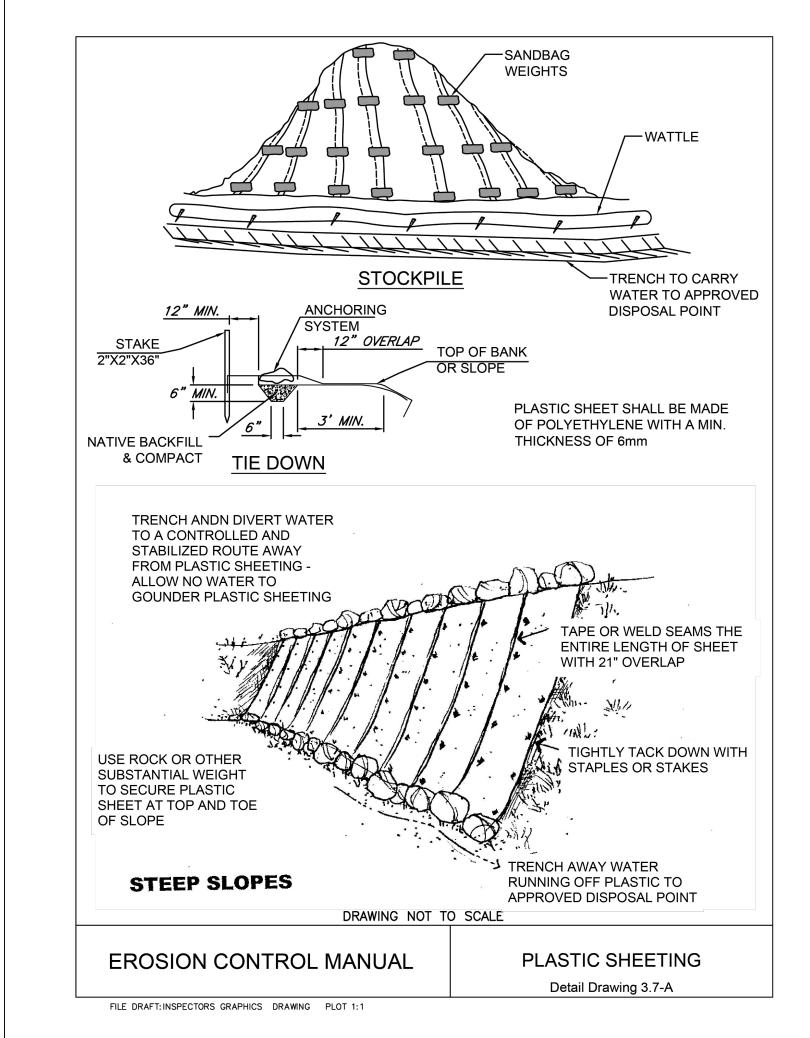
SOURCE: PORTLAND EROSION CONTROL MANUAL (2022)



CONSTRUCTION ACCESS DETAIL

NOTES:

1. A CONSTRUCTION ENTRANCE SHALL BE INSTALLED AT THE ENTRANCE TO THE STOCKPILE 3 AREA. A DRY WHEEL WASH (ROCK BED, SHAKER RACK, OR SIMILAR) SHALL BE INSTALLED FOR USE BY ALL EXITING TRUCKS.



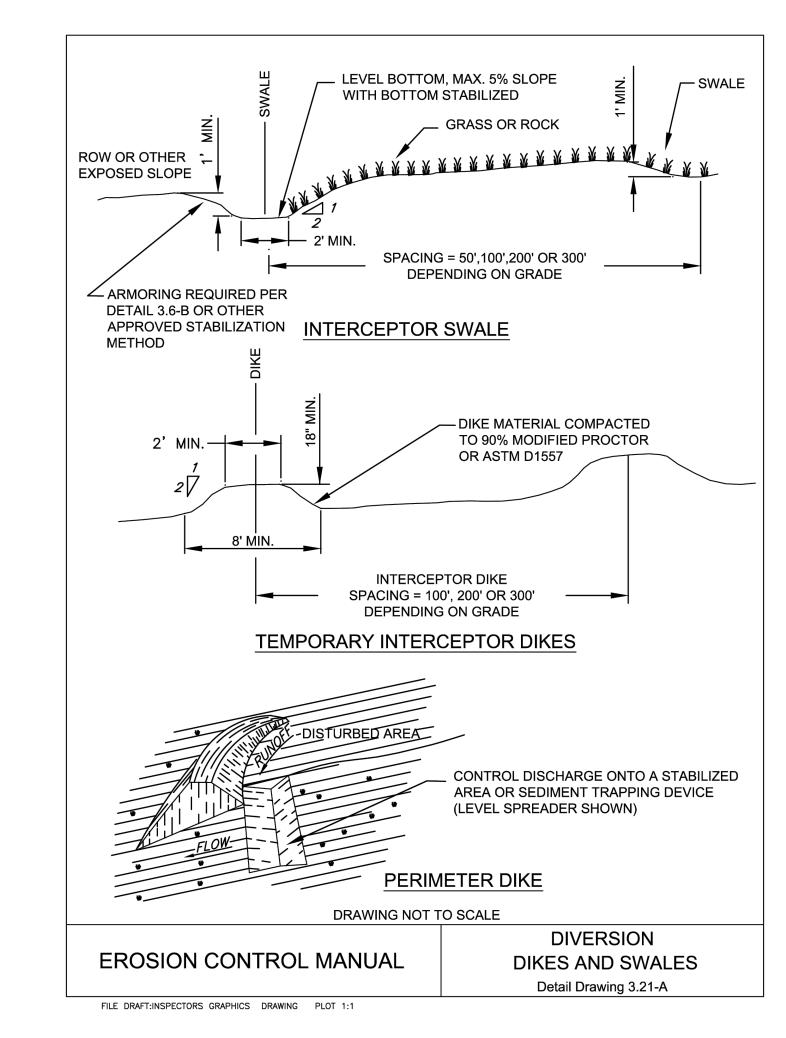
SOURCE: PORTLAND EROSION CONTROL MANUAL (2022)



NOTES:

- 1. PLASTIC SHEETING SHALL BE PLACED ON CONTAMINATED AND PENDING ANALYSIS STOCKPILES TO MINIMIZE TRANSPORT OF SEDIMENT TO THE STORMWATER SWALES, WILLAMETTE RIVER, AND STORM DRAIN INLETS, AND AROUND STOCKPILES AND STAGING AREA AS DESIGNATED ON DRAWING NO. 9, AND IN ACCORDANCE WITH THE CITY OF PORTLAND'S EROSION AND SEDIMENT CONTROL MANUAL.
- 2. CONTRACTOR SHALL USE WEIGHTS (E.G. SANDBAGS) ON PLASTIC SHEETING TO IMPROVE GROUND CONTACT ON IMPERVIOUS SURFACES. STAKES SHALL BE USED WHERE APPLICABLE ON PERVIOUS SURFACES. ENSURE THAT NO GAPS EXIST UNDER OR BETWEEN PLASTIC SHEETS THAT COULD BYPASS FLOWS. OVERLAP ENDS OF PLASTIC SHEETS WHERE POSSIBLE.
- 3. PLASTIC SHEETING COVERS SHALL BE INSPECTED DAILY. ANY UNCOVERED PORTIONS OF THE STOCKPILE
- SHALL BE RECOVERED WITH PLASTIC SHEETING.

 4. REQUIRED ON PERMANENT SLOPES ONLY UNLESS OTHERWISE SPECIFIED.



SOURCE: PORTLAND EROSION CONTROL MANUAL (2022)



NOTES:

1. EXISTING STORMWATER SWALES AND DIKES SHALL NOT BE DAMAGED BY CONSTRUCTION ACTIVITIES. SWALES SHALL BE PROTECTED FROM SILT BY PLACING FIBER ROLL ON THE CONSTRUCTION SIDE OF

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APPENDIX I CQA PLAN



Draft - Construction Quality Assurance Plan for IRAM #1 Implementation

Arkema Site

PREPARED FOR

Legacy Site Services LLC, agent for Arkema Inc.

DATE

04 June 2025

REFERENCE 0732436.602



SIGNATURE PAGE

Draft - Construction Quality Assurance Plan for IRAM #1 Implementation

Arkema Site

[Double click to insert signature]	[Double click to insert signature]
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Partner in Charge	Principal Consultant, Project Manager
[Double click to insert signature]	
Avery Soplata, RG	
Geologist	

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ACRONYMS AND ABBREVIATIONS

Acronym	Description
CM	Construction Manager
CMT	Construction Materials Testing
COC	Chain of custody
CQA	Construction quality assurance
CQC	Construction quality control
DFOW	Definable Feature of Work
EDD	Electronic Data Deliverable
EOR	Engineer-of-Record
ERM	Environmental Resources Management, Inc.
FSO	Field Safety Officer
ISS	In-situ soil stabilization/solidification
LSS	Legacy Site Services LLC, agent for Arkema Inc
ODEQ	Oregon Department of Environmental Quality
PE	Project Engineer
PFDR	Pre-Final Design Report
PIC	Partner-in-Charge
PM	Project Manager
QA	Quality assurance
QC	Quality control
RFI	Request for information



Acronym	Description
Site	the former Arkema facility located at 6400 NW Front Avenue in Portland, Oregon
Specification	PFDR Appendix G
ТВ	Trip Blank
Work	implementation of an in-situ soil stabilization/solidification (ISS) remedy



1. INTRODUCTION

On behalf of Legacy Site Services LLC, agent for Arkema Inc. (LSS) Environmental Resources Management, Inc. (ERM) has prepared this *Construction Quality Assurance Plan* (CQA Plan) as an appendix to the ISS Pre-Final Design Report (PFDR) for the former Arkema Facility (the "Site" or the "Facility") located at 6400 NW Front Avenue in Portland, Oregon. The PFDR describes implementation of an in-situ soil stabilization/solidification (ISS) remedy (the Work) for the former Acid Plant Area at the Arkema site in Portland, Oregon.

As used in this CQA Plan, CQA and Contractor Quality Control (CQC) are defined as follows:

- CQA The planned and systematic means and actions that provide LSS and regulatory agencies adequate confidence that materials and/or services meet contractual and regulatory requirements and will perform satisfactorily in service.
- CQA Contractor The contractor solicited by LSS to implement CQA inspection and testing associated with the Work (ERM).
- Remediation Contractor The subcontractor solicited by LSS to perform ISS activities.
- CQC The planned system of inspections and testing used by the Remediation Contractor to monitor and control the characteristics of an item or service in relation to contractual and regulatory requirements.
- CQC Contractor The subcontractor or analytical or geotechnical laboratory solicited by the Remediation Contractor to implement CQC inspection and testing associated with the Work.
- QC Officer The Remediation Contractor manager providing daily reports and updates to the entire COA team.

Implementation of CQA inspection and testing by LSS's CQA Contractor will support CQC inspection and testing that is implemented by the Remediation Contractor authorized by LSS to construct the Work.

1.1 DOCUMENT ORGANIZATION

This document is organized as follows:

- Section 1 presents the background, Work description, and purpose of this CQA Plan.
- Section 2 describes the project team and organization, including roles and responsibilities of the project team members, the chain of command, and communication procedures for CQA-related issues.
- Section 3 discusses the CQA documentation, including recordkeeping, chain of custody (COC), field change forms, and nonconformances and deficiencies.
- Section 4 discusses CQA meetings, CQA inspections, technical submittals review, requests for information (RFI), and change management.
- Section 5 presents an overview of the CQA sampling and testing requirements for the ISS reagents and metering equipment, ISS-treated material, and import fill material.

Tables and appendices immediately follow the text.



1.2 BACKGROUND

The Site is described in detail in the *Upland Remedial Investigation Report* (ERM 2005), the *GWET Wellfield Enhancement – Preliminary Design Investigation* (ERM 2021). This section summarizes the information contained in these reports.

The Site is located at 6400 NW Front Avenue in the northwest industrial area of Portland, Oregon, at approximately river-mile 7.5 of the river in the Guild's Lake Industrial Sanctuary (formerly the Northwest Portland Industrial Sanctuary), zoned and designated "IH" for heavy industrial use. The Site is bordered on the east by the Willamette River, on the south by CertainTeed Roofing Products Company, and on the north and west by Front Avenue. The Site is divided into Lots 1 through 4 and Tract A along the river. Historically, the Facility was a chlor-alkali plant until the plant shut down in 2001, and decommissioned and dismantled in 2004.

The Site is generally flat with surface elevations ranging from approximately 25 to 38 feet North American Vertical Datum of 1988. Most of the Site is surrounded by security fencing. The northern portion of the Site includes Lots 1 and 2 and is relatively undeveloped. No manufacturing has occurred on Lots 1 and 2 (ERM 2005). The southern portion of the Site includes Lots 3 and 4, which comprise approximately two-thirds of the Site (39 acres). The Site historically conducted manufacturing in the southern portion of the Site, and developed Lots 3 and 4 with buildings, paved roads, rail spurs, and associated tanks and piping to support manufacturing processes. Tract A is a narrow strip of property between the top of the bank and the mean high-water line along the entire riverbank of the Site.

1.3 PROJECT DESCRIPTION

The Work described in this CQA Plan will be performed in the ISS treatment areas defined in the PFDR and presented on the drawings (Appendix H to the PFDR). The general scope for the Work is as follows:

- Excavation and stockpiling of overburden soil (impacted and potentially unimpacted soil) in Area B from existing grade to a level at or above the planned ISS Work platform elevation to access the target ISS treatment interval and contain the expanded volume of ISS soil mixture (swell) from the ISS-treated material.
- Excavation and ex situ mixing of overburden soil (impacted and potentially unimpacted soil) in Area C from existing grade to a level at or above the planned ISS Work platform elevation to access the target ISS treatment interval and contain the expanded volume of ISS soil mixture (swell) from the ISS-treated material.
- ISS treatment of impacted soil in Area A designated on the drawings (Appendix H to the PFDR).
- ISS treatment of impacted soil in Area B designated on the drawings.
- Collection of depth-discrete soil-cement specimens for molding, curing, and subsequent unconfined compressive strength and hydraulic conductivity testing.
- Use of the following (usage of best performing controls): vapor suppressing foam, cellulose fiber mixture, and odor neutralizing agents to help mitigate potential odors and volatile organic compound air emissions.



- Compaction and grading of ISS swell material above the level of the ISS Work platform as needed to shape the ISS swell surface to support the backfill and grading above the ISS-treated material at the intended levels and grade slopes.
- In-situ mixing of managed contaminated soil.
- Transportation and offsite disposal of non-reuse material, namely asbestos-containing material
- On-site stockpiling, grading, and compaction of excess reuse soil.
- Covering and compaction of ISS-treated material with either reuse soil (from the overburden excavation), vapor suppressing foam, cellulose fiber cover, soil tackifier, reagent slurry, or other similar means for volatile organic compound vapor control.
- Backfilling of ISS-treated soil to prevent direct exposure to constituents in shallow soil and reduce infiltration of stormwater to soil with constituent concentrations that exceed groundwater protection remedial goals.

More detailed information on the scope of Work is provided in the drawings (Appendix H to the PFDR) and will be developed following Oregon Department of Environmental Quality (ODEQ) approval of the PFDR and incorporated into a set of technical specifications.

1.3.1 DEFINABLE FEATURE OF WORK

A key element of a successful CQA program is the Definable Feature of Work (DFOW). A DFOW is a task that is separate and distinct from other tasks and requires corresponding tracking for progress billing, CQC inspection, test, and acceptance criteria. A DFOW is identified by different trades or disciplines and is an item or activity on the construction schedule and/or schedule of values. Each technical specifications section could be considered a DFOW, but there frequently is more than one DFOW in a technical specifications section. The DFOWs are detailed in Specification 01 22 00 and are summarized in the list above.

1.4 CONSTRUCTION QUALITY ASSURANCE PLAN PURPOSE

The purpose of this CQA Plan is to describe appropriate CQC inspection, field testing, sampling, laboratory testing, and evaluation procedures that will be implemented during the Work (including for ISS treatment of impacted materials, backfill and grading, etc.) to measure the quality of the Work.

This CQA Plan describes specific CQC inspection and testing requirements for each of the various components of the Work. This plan also defines the responsibilities and experience requirements of the CQA management and inspection staff personnel responsible for the CQA activities.

The CQA Plan was prepared to be consistent with the requirements for the Work included in the technical specifications. The Remediation Contractor will implement a CQC program that will include each inspection, field testing, sampling, laboratory testing, and evaluation requirement described in this CQA Plan.

The Remediation Contractor will notify and report in advance, and promptly after receipt of results, the schedule for each CQC inspection and test to the ERM CQA Officer. During the Work, supplemental supporting documents and information will be provided by the Remediation



Contractor, its subcontractors, and its vendors involved in construction of the Work. The CQA program implemented by the CQA team will build upon, as well as expand upon, the CQC program implemented by the Remediation Contractor.



CONSTRUCTION QUALITY ASSURANCE PROGRAM ORGANIZATION

The Remediation Contractor will be responsible for the quality of construction in the finished product and compliance with the construction documents, drawings, and technical specifications.

The CQA team will have the primary responsibility for implementing and managing the CQA program described in this CQA Plan. The CQA team will act principally as a CQA function, but will be involved in other aspects of the construction effort as described below. The CQA team will be the part of the ERM project team that includes the Engineer-of-Record (EOR), the Project Engineer (PE), and the ERM CQA Officer.

2.1 POSITIONS AND RESPONSIBILITIES

The core positions of the project team are described below with respect to duties and responsibilities related to the CQA program.

2.1.1 ERM PARTNER-IN-CHARGE

The ERM Partner-in-Charge (PIC) will be responsible for overall project delivery oversight and will serve as a resource for the ERM Project Manager (PM) and other members of the project team for risk, quality, and financial management of the project. The responsibilities of the ERM PIC related to the CQA program will be to:

- Engage with design/construction team to identify and resolve challenges;
- Serve as a resource for the ERM PM and project team for risk, quality, and financial management of the project;
- · Perform senior review of ERM risk management plans;
- Support the ERM PM in communication with LSS, regulatory agencies, and other stakeholders regarding implementation of the Work as needed;
- Participate in the weekly construction meeting as needed;
- Review high-level proposed scope changes as necessary for efficient and safe project delivery;
 and
- Participate periodically in compliance walks.

2.1.2 ERM PROJECT MANAGER

The ERM PM will be responsible for overall project management and quality, including maintaining the project schedule, tracking the project budget, reporting, and interfacing with LSS and other stakeholders. The responsibilities of the ERM PM related to the implementation of the CQA Plan will be to:

- Serve as LSS's main point of contact for project implementation;
- Support the ERM PIC in reviewing/implementing risk management plans;
- Review all proposals, budgets, and change orders;
- Manage overall project scope, schedule, and budget;



- Prepare subcontractor work authorizations;
- Coordinate with the EOR, subject matter experts, and other support staff;
- Lead engagement with the design/construction team to identify and resolve challenges;
- Lead meetings with LSS representatives;
- Schedule and coordinate agency project visits and inspections;
- Prepare weekly construction reports for LSS as requested;
- Participate in project controls meetings;
- Participate in the weekly construction meeting;
- Participate in DFOW meetings before project Work begins;
- Coordinate and check in with the ERM Construction Manager (CM) and ERM CQA Officer; and
- Attend DFOW meetings.

The ERM PM will also review and make recommendations to LSS regarding any delays or other alterations to the project schedule.

2.1.3 ERM ENGINEER-OF-RECORD

The ERM EOR will be an ERM staff member who is a registered professional civil or environmental engineer by the Oregon State Board of Examiners for Engineering & Land Surveying. The ERM EOR can attest to the quality of the Work performed and will be responsible for the overall implementation and management of the CQA program.

The EOR will have responsibility to oversee construction and conformance with the drawings, technical specifications, and CQA requirements. The ERM EOR will be directly accountable to LSS for the successful completion of the Work. The duties and responsibilities of the ERM EOR related to the implementation of the CQA Plan will be to:

- Oversee the submittal and RFI processes, and help make final design change decisions with the Remediation Contractor and LSS;
- Support the ERM PE and the ERM CQA Officer in interpreting the meaning and intent of the drawings and technical specifications, and the performance and supervision of the CQA program;
- Provide design consultation and technical support to LSS and the Remediation Contractor;
- Identify and/or review the adequacy of field design changes as compared to the requirements
 of the drawings and technical specifications and document these for review by LSS and ODEQ,
 if needed;
- Inspect the project with the ERM PE and the ERM CQA Officer, as appropriate, to identify discrepancies or deficiencies in the Work;
- Attend DFOW meetings as needed; and
- Provide certification for Completion Report following completion of the Work, which will include
 the results of all CQA and CQC testing and document deviations from the drawings and
 technical specifications, in addition to daily inspection reports, photographs, and other
 applicable data.



2.1.4 ERM PROJECT ENGINEER

The ERM PE will be responsible for engineering support and CQA program support. The ERM PE will also serve as the point of contact for each submittal and RFI that requires documentation, budget, and schedule tracking, including impacts related to delays or changes in the design, drawings, and/or technical specifications. The duties and responsibilities of the ERM PE related to implementation of the CQA Plan will be to:

- Perform initial interpretation of RFIs related to the remedial design and project suitability, and seek input from the EOR when needed;
- Coordinate with the EOR and the ERM CQA Officer;
- Review Remediation Contractor submittals for conformance with the drawings and technical specifications;
- Prepare responses to each RFI that requires documents;
- Prepare change orders for project controls for review by the ERM CM and approval by the ERM PM;
- Contribute to and help oversee near real-time and daily tracking of quantities, quality
 assurance (QA)/quality control (QC) testing, and associated impacts on the scope and
 schedule;
- Participate in and report out during project controls meeting; and
- Attend DFOW meetings and review Remediation Contractor-developed DFOW documents prior to each DFOW meeting.

2.1.5 ERM CONSTRUCTION MANAGER

The ERM CM will serve as the overall operations manager for the project. The ERM CM will oversee the Remediation Contractor and ERM subcontractors, will report to the ERM PM, and will oversee the safe execution of the remedial construction Work in accordance with the drawings, technical specifications, and health and safety requirements. The duties of the ERM CM related to implementation of the CQA Plan will be to:

- Coordinate directly with the ERM PM, CQA team, and the ERM Field Safety Officer (FSO) for project needs and assign adequate safety, compliance, and other field resources;
- Oversee Remediation Contractor's construction activities, maintain situational awareness of all field activities, and implement in-line course corrections (as needed);
- Support ERM PE/PM in identifying potential RFIs and associated schedule and budget impacts;
- Participate in daily tailgate meetings led by the Remediation Contractor's Field CM;
- Lead weekly construction meetings;
- Lead or participate in other meetings as required;
- Maintain the construction schedule;
- Confirm that documentation is submitted to the ERM EOR/ERM PE as required in the contract documents;



- Oversee implementation of fieldwork in accordance with the drawings and technical specifications;
- Assist the ERM CQA Officer in implementing the CQA Plan;
- Report safety incidents directly to the ERM PM and manage implementation of required corrective actions and best management practices;
- Serve as the subsurface clearance experienced person responsible for implementing the ERM Subsurface Clearance Program;
- Escort Site visitors; and
- Review draft invoices from ERM subcontractors and coordinate with ERM PE/PM.

2.1.6 ERM CQA OFFICER

The ERM CQA Officer will manage overall implementation of the CQA Plan, manage all CQA inspection and testing, and will observe and/or review records of CQC inspection and testing activities. The ERM CQA Officer will be responsible for confirming that a full, complete, and properly constructed product is delivered in accordance with the drawings and technical specifications. The ERM CQA Officer will report directly to the ERM PM. The ERM CQA Officer will coordinate with the ERM CM and the EOR. The ERM CQA Officer will have the authority to suspend construction activities under conditions such as inclement weather where the integrity of the construction or any of its components could be compromised. The duties and responsibilities of the ERM CQA Officer related to implementation of the CQA Plan will be to:

- Implement the CQA program and verify Remediation Contractor implementation of the CQC program;
- Verify that all required CQA and CQC inspections and tests are performed;
- Confirm that all installed equipment and materials have met the associated CQA acceptance criteria;
- Coordinate CQA activities, and confirm coordination of CQC activities managed by the Remediation Contractor's CQC Manager with the ERM EOR, ERM PE, and ERM CM;
- Observe or review CQC reports of CQC inspection, sampling, and testing performed by the Remediation Contractor CQC staff, and independently review and verify the results;
- Collect, store, and/or coordinate shipment of CQA samples to the CQA analytical and geotechnical testing laboratories;
- Observe the Work (excavation, ISS, backfill, etc.) and take detailed notes and photographs for documentation;
- Independently verify quantity calculations and report this information to the ERM PE;
- Document nonconformance with the drawings and technical specifications and basis for acceptance or if rework is required;
- Review and maintain copies of all CQA testing results and certifications;
- Conduct daily and weekly compliance walks with the ERM CM and Remediation Contractor, record deficiencies, and verify corrective actions;
- Update and maintain the CQA and compliance registers daily; and



 Attend DFOW meetings when available (depending on project Work activities), and receive a briefing of the meetings when not available.

Upon completion of material and equipment tests, the ERM CQA Officer will communicate all testing results (after the data have been reviewed) to the ERM EOR, maintain reports of testing results, report any failures, and review the corrective actions employed to obtain acceptable test results.

2.1.7 CQA ANALYTICAL AND CONSTRUCTION MATERIALS TESTING LABORATORIES

The CQA analytical laboratory and CQA Construction Materials Testing (CMT) laboratory are entities independent of LSS, ERM, and the Remediation Contractor, located either on- or offsite that will be responsible for conducting various tests on the ISS-treated soil, waste disposal samples, and construction materials to provide data supporting evaluation of achievement of corresponding CQA acceptance criteria. The CQA analytical laboratory will be responsible for CQA sample chemical testing, and the CQA CMT laboratory will be responsible for CQA sample physical property testing. Both laboratories will report directly to the ERM CQA Officer.

2.1.8 CQA SURVEYOR

The CQA surveyor is an entity independent of LSS and ERM that will be responsible for establishing project survey controls. The CQA surveyor or Remediation Contractor will perform surveying, documenting, and verifying compliance with the drawings and all significant components of the Work, including but not limited to final excavation extents, ISS treatment area boundaries, ISS column center points, horizontal extents of swell material, top of ISS swell material elevation, and final grade following completion of backfill and surface cap (if applicable) or final grading. The as-built survey is the Remediation Contractor's responsibility and will be subject to the CQA surveyor's verification.

2.2 CONSTRUCTION QUALITY ASSURANCE CHAIN OF COMMAND

The ERM PIC and PM are pivotal to the project, including CQA chain of command. Any issues or concerns from LSS, ODEQ, or other agencies will be channeled through the ERM PIC and/or ERM PM during construction. The ERM PIC and/or ERM PM will be in direct communication with the ERM EOR, ERM CM, ERM FSO, ERM CQA Officer, LSS, and ODEQ. In general, it is anticipated that ODEQ and other agencies will not give direction to the ERM CM, ERM subcontractors, the Remediation Contractor, or the Remediation Contractor's subcontractors for performing the Work; however, if such direction occurs, Work will be paused and the ERM PM will be notified immediately to determine any actions necessary.

For safety-related issues, all parties, including LSS and ODEQ, have Stop Work authority. However, if the Work is being conducted safely and in accordance with the approved drawings and technical specifications, only the ERM PIC and/or ERM PM and LSS have authority to Stop Work. The ERM PIC and/or ERM PM and LSS will address any concerns from ODEQ. Stop Work authority will be used as necessary to rectify any concerns or issues that arise during the Work.



3. CONSTRUCTION QUALITY ASSURANCE DOCUMENTATION

The CQA team will document that all CQA requirements have been addressed and satisfied by the respective parties responsible. Documentation will consist of daily recordkeeping and preparing the Completion Report.

3.1 FIELD LOG BOOK

The ERM CM, ERM FSO, ERM CQA Officer, CQA staff, and ERM PE will maintain individual daily tracking logs for the project. Construction activities will be documented with the following details at a minimum: dates, times, weather conditions, personnel on site, equipment used, materials used, visitors, health and safety issues, Work activities completed, delays, and other construction-related issues.

3.2 DAILY QUALITY ASSURANCE CONSTRUCTION REPORT

At a minimum, daily construction reports will be prepared by the ERM CQA Officer (or ERM PE as necessary) and consist of a summary of construction activities and progress; results of CQA and CQC inspection and testing; a summary of Remediation Contractor CQC activities and tests; inspection and test data sheets; and nonconformance and corrective measures ordered and implemented, as required. The daily construction report will summarize ongoing CQA and CQC inspections and testing, and construction activities. The ERM PM will review each daily QA construction report prepared, with support from the ERM CM and ERM PE.

At a minimum, the report will include the following CQA and CQC activities:

- A description of all ongoing construction for the day in the various areas of responsibility;
- A brief description of CQA and CQC tests and observations, identified as passing or failing, or in the event of failure, a retest;
- Areas of nonconformance and corrective actions ordered or implemented, if any;
- Follow-up information on previously reported problems or deficiencies; and
- Example photographs of Work activities or completed Work.

The ERM implementation team members will be copied on the daily QA construction reports, and on the following workday will communicate any discrepancies in the daily QA construction report to the ERM PM. The ERM PM will revise and/or reissue daily construction reports as needed to correct any discrepancies from the daily QA construction report. The ERM EOR, with support from the ERM PE, will review reports and confirm that the project is being executed in accordance with the approved drawings and technical specifications and the approved scope, schedule, and budget.

3.3 DAILY QUALITY CONTROL CONSTRUCTION REPORT

At a minimum, daily construction reports will be prepared by the Remediation Contractor's QC Officer and distributed to an email list prepared by the CQA team. This report may be appended to a daily construction report that may be required of the Remediation Contractor elsewhere in the contract documents. At a minimum, the daily QC construction report will consist of a summary of construction activities and progress; results of CQC inspection and testing; a summary of



Remediation Contractor QC activities, samples collected (including location and depth), and tests run; inspection and test data sheets; details on ISS column installation, column ID, target grout volume, water-to-cement ratio, soil volume treated, elevations, depths, rig and auger details, and date and time details; a detailed printout of ISS column data for each column attempted (Jean Lutz or similar type report); and nonconformance and corrective measures ordered and implemented, as required. The daily QC construction report will accurately summarize ongoing CQA and CQC inspections and testing, and construction activities and progress. The ERM PM will review each daily QC construction report prepared, with support from the ERM CM, ERM PE, and ERM CQA Officer.

At a minimum, the report will include the following CQC activities:

- A description of all ongoing construction for the day in the various areas of responsibility;
- A brief description of CQA and CQC tests and observations, identified as passing or failing, or in the event of failure, a retest;
- Areas of nonconformance and corrective actions ordered or implemented, if any;
- Follow-up information on previously reported problems or deficiencies; and
- Example photographs of Work activities or completed Work.

The ERM implementation team members will be copied on the daily QC construction reports, and on the following workday, will communicate any discrepancies in the daily QC construction report to the ERM PM. The ERM PM will request the Remediation Contractor to make any necessary revisions and/or reissue the daily construction reports as needed.

3.4 PHOTOGRAPHIC DOCUMENTATION

The ERM CQA Officer will be responsible for obtaining photographic documentation of the construction activities, material installation methods, and testing procedures as appropriate to their area of responsibility. Photographs will serve as a pictorial record of Work progress, problems, and corrective measures. Photographs may be appended to daily field reports as examples of issues and Work product, CQA and CQC monitoring logs, or test data sheets and/or problem identification and corrective measures reports.

3.5 SAMPLE COLLECTION

Multiple media will be sampled and analyzed as part of the CQA program and the CQC portion of the CQA program. The ERM CQA Officer will oversee sampling and analysis procedures so that all analytical data represent what was intended at the time of collection. Aspects of sampling and analysis to be overseen include the following:

- Laboratory selection and qualifications;
- Methods of collection;
- Sample preparation and packing;
- Sample storage, hold times, and curing;
- Sample identification nomenclature;
- Labeling and COC record;



- Laboratory communication; and
- Data review and management after laboratory reporting.

Specific media and collection methods relevant to this CQA Plan are described in Section 5. The sample labeling, handling and transportation, and COC protocols are described in the following subsections.

3.5.1 SAMPLE IDENTIFICATION AND LABELING

A unique sample identification will be assigned to each sample collected for the project. The ERM CQA Officer (or the CQC Manager for CQC samples) or their respective designee will be responsible for labeling each sample as it is collected in the field. Indelible ink will be used to fill out sample labels. Each sample will be labeled in accordance with the requirements for Earthsoft's EQuIS database (Appendix I.1 of this CQA), which are documented in the Data Management Plan (Part 3.6). A dash will be used to separate each basic sample designation category. Each sample label will include the following information:

- Project name/number and task number (if needed);
- Identification as a CQA or CQC sample;
- Sample location/identification number;
- Sample depth (if appropriate);
- Date and time of collection;
- Analysis to be performed and preservation (if any); and
- Sampler's initials.

The sample identification, coupled with a detailed field log, must include adequate information to allow the data reviewer to know the origin and nature of the sample (e.g., clean imported fill, untreated soil, ISS-treated soil, untreated/treated wastewater, air samples, etc.). The following sample designation procedures will be used for all samples collected for laboratory analyses:

- The designation system will be composed of a code sequence that will adequately indicate the sample matrix and sample number (or other descriptive qualifiers as appropriate);
- If necessary, an additional code will be added to the sample label to indicate the order in which multiple similar samples were collected on a single day or at a single location (i.e., duplicate, split sample, etc.); and
- QA/QC testing information will be included on the sample label where appropriate (i.e., duplicate, field blank, matrix spike/matrix spike duplicate, trip blank, etc.).

The designation affixed to a sample will be properly documented and cross-referenced to field notes, sampling records, COCs, project sample inventory, and other relevant and required documentation. An inventory of every sample collected will be maintained on site and will include basic information (e.g., sample name, type, collection date, etc.) for every sample submitted for laboratory analyses.



3.5.2 SAMPLE HANDLING, STORAGE, AND TRANSPORTATION

Samples will be packaged and stored in accordance with instructions from the CQA analytical laboratory and/or the CQA CMT laboratory (or the CQC analytical laboratory and/or the CQC CMT laboratory for CQC samples) and as required by the method after sufficient cure time. The Remediation Contractor's CQC Manager will prepare an appropriate number of ISS test specimens for CQA and CQC testing in coordination with the ERM CQA Officer. The Remediation Contractor will provide a designated sample storage container or building for CQA and CQC samples, and will maintain appropriate temperature, sunlight avoidance, and moisture standards outlined in ASTM International D1632-07 and otherwise acceptable to the ERM CQA Officer.

Each ISS test specimen will be prepared by placing a representative aliquot of the ISS soil mixture in clean molds, gently rodding the material in the mold to eliminate voids (vibratory methods are subject to the discretion and approval of the ERM EOR), sealing the molded samples, and allowing them to cure at ambient temperature (68 to 72 degrees Fahrenheit) in a moisture-sealed container for the cure duration specified in the standard, or as approved by the ERM EOR.

Soil and water samples will be placed in a pre-chilled cooler on wet ice pending transportation to the laboratory. The cooler temperature will be documented prior to shipping. Each glass container will be bubble-wrapped to prevent breakage. Air samples collected in SUMMA canisters will be placed back into their respective cardboard boxes and grouped for shipping. Organic vapor diffusion badges will be packaged in accordance with manufacturer instructions. Samples may be hand-delivered or shipped to the laboratory on the date of sample collection, or as soon afterward as possible, and should be consistent with the corresponding sample receipt and hold times.

3.5.3 CHAIN-OF-CUSTODY RECORD

A COC record will be completed by the ERM CQA Officer or, for CQC samples, by the CQC Manager, or their respective designee. A COC record will accompany every shipment of samples to the designated CQA analytical laboratory and/or CQA CMT laboratory, or, for CQC samples, to the designated CQC analytical laboratory and/or CQC CMT laboratory.

The COC form documents possession of a sample from the time of collection in the field to its final disposal by the laboratory. The COC record will contain all the information on the sample label, plus the following:

- Number of containers;
- ERM PE and ERM CQA Officer's contact information, or for CQC samples, the Remediation Contractor's Field PM and CQC Manager;
- Turnaround time;
- Requested analyses;
- Shipping information;
- Electronic data deliverable format requirements; and
- Special handling and/or reporting instructions.

All corrections to the COC record will be initialed and dated by the person making the corrections. Each COC form will include signatures of the appropriate individuals indicated on the form. The



originals will follow the samples to the laboratory, and copies documenting each custody change will be retained and kept on file by the ERM CQA Officer, or for CQC samples, by the CQC Manager. Upon laboratory receipt of samples, the ERM CQA Officer, or for CQC samples the CQC Manager, will review and verify the information on the laboratory login confirmation against the COC.

3.6 DATA MANAGEMENT PLAN

3.6.1 DATA TYPES AND USES

This section presents the types of environmental data that the PFDR expects to be generated by remediation activities in the former Arkema site. The environmental data are divided into Reference Data and Active Data. Reference Data comprise records, data, and documentation that are not directly used for decision-making purposes. The management of reference data consists of a logical file storage system. Active Data comprise data and documentation directly generated by remediation activities. The management of Active Data includes review of data and documentation that directly support decision-making.

3.6.1.1 ENVIRONMENTAL ACTIVE DATA

The Active Data associated with the remediation activities is expected to include:

- All analytical laboratory data;
- ISS performance criteria data (unconfined compressive strength, hydraulic conductivity);
- Completed chain-of-custody forms;
- Ongoing survey data;
- AutoCAD figures;
- ArcGIS figures;
- Project schedules;
- Daily field reports;
- Air monitoring readings recorded using field instruments;
- Weight tickets associated with soil and debris disposal/recycling as well as import material;
 and
- Compaction test results, if applicable.

These data will be frequently accessed for decision-making purposes.

Analytical Laboratory Data

Laboratory analytical data will be generated during the project in both electronic and hardcopy formats. These data may include:

- ISS performance criteria samples;
- Stockpile soil samples;
- Air monitoring samples (ambient and personal samples);
- Debris material samples; and
- Personal and area sampling.



Analytical data from samples will be compared to a screening level, performance criteria, or remedial goal as applicable to the sample and media type. These data will be compared electronically using EQuIS, an environmental data management and decision support system. The use of EQuIS allows the data to be received from the laboratory and uploaded into the database without manual entry. Evaluation tools built into EQuIS allow the database to compare the data with an established set of criteria and generate an Evaluation and Summary Spreadsheet for the analyzed samples. Criteria may be provided for site remedial goals, performance criteria for ISS-treated soil, suitability for excavated overburden material to be reused on site, or for waste characterization purposes. The spreadsheets will summarize the analytical data alongside the set of criteria for the constituents of concern. Detected concentrations above the criteria goals and other situations requiring further analysis (laboratory reporting limits greater than remedial goals, rejected data) will be highlighted on the spreadsheets. Prior to decisions being made based on the data presented on the spreadsheets, the calculations will be verified and then signed by the reviewer.

Stockpiling of soil will be needed throughout the Work, and the anticipated locations will be determined prior to mobilization.

In lieu of stockpile sampling, overburden soil samples may be collected by use of drill rigs and soil boring techniques to properly represent the in-situ overburden soil, perform proper analysis, and classify/characterize it before implementation of ISS. In this instance, the same procedures listed above for soil stockpiles will be followed for soil cuttings generated during the soil boring installation. It is anticipated that certain stockpiles may need additional sampling based on visual and olfactory screening during excavation.

Samples of ISS-treated material will be analyzed for unconfined compressive strength and hydraulic conductivity. These results will be compared to the performance criteria for unconfined compressive strength and hydraulic conductivity defined in the PFDR.

Air monitoring data (including analytical samples and field instrument readings) will be compared to thresholds specified in the PFDR, which are site-specific action levels based on risk criteria calculated to protect the public health.

Completed Chain-of-Custody Forms

A COC form customized for this project will be used for each group of samples. Individual COC forms will be generated for each sample group. Confirmation samples and stockpile samples will not be combined on the same COC form. The COC forms for the various samples collected during the project may be revised to request further analyses of submitted samples. The request for additional analyses will be documented on the COC form.

Disposal and Import Weight Tickets

All weight tickets and other pertinent information associated with soil, debris, or liquid disposal (waste manifest number, date and time, disposal facility, etc.) will be tracked in a spreadsheet and updated daily. Similarly, all weight tickets and other pertinent information associated with import fill material (date and time, material type, source location, etc.) will be tracked and updated daily.



3.6.2 DATA IDENTIFICATION SYSTEM

This section outlines the components and logic of the data identification system. The objective is to design a simple, but unique, system of naming and numbering the sources of environmental data that will be generated by remediation activities. The primary sources of environmental data subject to an identification system are expected to include:

- CQC/CQA samples;
- Excavations;
- ISS columns;
- Soil borings;
- Stockpiles; and
- Air monitoring.

The following sections specify the naming and numbering format for the primary sources of data.

3.6.2.1 QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

The CQC/CQA samples will be collected in accordance with the CQC sampling plan (Specification 01 45 00) and may consist of field duplicates, matrix spikes, trip blanks, and equipment blanks. Field duplicates will be formatted as "DUP"-"sequential number"-"date," for example: DUP-002-20250306. Trip blanks will be formatted as "TB"-"sequential number"-"date," for example: TB-004-20250306. Equipment blanks will be formatted as "EB"-"sequential number"-"date," for example: EB-002-20250306.

3.6.2.2 STOCKPILES

For the purposes of this project, two different types of stockpiles may be created: temporary and profiled stockpiles.

Temporary stockpiles will be formatted as "excavation source"-"TS"-"increment." For example, the first temporary stockpile generated from Excavation Area A would be identified as AREA-A-TS-1; the second temporary stockpile generated from this excavation would be identified as AREA-A-TS-2.

When a temporary stockpile is characterized through sampling and analysis in accordance with the SAP, it will be determined to be suitable for on-site reuse or required to be disposed of off site.

When a temporary stockpile is created, an identification sign will be posted near the stockpile; or a site figure will clearly depict the name of the stockpile and distinguish it from any other stockpile on site or that may be developed on site. When a temporary stockpile becomes profiled, the disposition of the profiled stockpile will be written on the stockpile sign or figure. If several profiled stockpiles are combined to form a larger profiled stockpile, the identification signs that have the name of the temporary stockpile will be removed and the larger stockpile will be identified by one sign with the disposition clearly indicated.



3.6.2.3 SOIL SAMPLES

The identification system for soil samples will depend on the source of the soil sample. Soil samples will be collected from stockpiles for characterization.

Characterization Soil Samples

Before characterization samples are collected, the sample locations will be selected in accordance with the SAP and the PFDR. The sample locations will be measured and recorded, but the coordinates of confirmation soil samples will not be part of the sample designation.

Characterization soil samples from borings or excavations will be identified by the excavation identification followed by a hyphen, and then a sequential number and any other unique identifier like depth or location within a grid. For example, the first confirmation soil sample from Excavation Area A taken from the 5-foot depth interval will be identified as AREA-A-5f. Samples will be numbered sequentially regardless of other status to account for a total sample count.

Stockpile Soil Samples

Soil samples will be collected primarily from temporary stockpiles in accordance with the SAP. Soil samples may also be collected from profiled stockpiles, as necessary.

ISS-Treated Soil Samples

Samples of ISS-treated material will be identified with the ISS column ID (based on the Remediation Contractor-prepared ISS column layout), sample depth, and date of collection. For example, a soil sample collected from ISS Column 247 at a depth of 45 feet below ground surface (with respect to existing ground surface elevation, not the ISS Work platform) on 06 March 2025 would be identified as ISS-247-45-20250306. Information related to the ISS mix design, water-to-cement ratio, and ISS column coordinates will be tracked but not included as part of the sample identification.

3.6.2.4 AIR MONITORING SAMPLES

Air monitoring will be performed at the start of the project to confirm PID readings. The data management associated with ambient air monitoring sampling is described below.

Ambient Air Samples

Air samples collected from the initial start of the project will be submitted for laboratory analyses. Air monitoring requirements are described in the PFDR. For data identification purposes, air monitoring locations will be numbered, and the locations will be indicated on a site plan. The air monitoring samples from these locations will be labeled by the location number and the date. For example, a sample collected from air monitoring location number 5 on 06 March 2025 would be identified as AML-5-20250306.

3.6.3 DATA MANAGEMENT SYSTEM OUTLINE

The data management system will use a combination of hardcopy and electronic filing systems. The project office will be staffed and equipped to efficiently manage the remediation activities and



the influx of data and documentation. ERM's Portland office, which is near the site, will also support data management.

Some of the data and documentation that Arkema expects to generate will be managed electronically and some will be managed as hardcopy (paper).

3.6.3.1 ELECTRONIC DATA MANAGEMENT

The following types of data, documentation, and figures will be maintained and managed electronically:

- Survey data;
- Figures in AutoCAD and ArcGIS;
- Analytical data;
- Manifest tracking; and
- ISS column tracking.

As mentioned in Section 3.6.1 of this CQA Plan, analytical data for immediate (day-to-day) decision-making will primarily be received, reviewed, and stored electronically using EQuIS. Both electronic and hardcopy data will be utilized to ensure a complete and correct data set is used to make and document decisions. An Electronic Data Deliverable (EDD) from the laboratory will be used to enter the data into the primary database for long-term storage and reference.

Field Data Workflow

As needed, electronic field input forms will be generated using the Collect module of the EQuIS system. The forms will be prepopulated with sample location information and valid values. Field teams will use the Collect forms on tablets to collect sample and location information. Using the Collect field forms reduces transcription errors and streamlines the process for updating the database, when compared to using paper forms. The data from Collect forms will be loaded into the database and reviewed to ensure consistency and completeness.

Laboratory Data Workflow

Analytical laboratories will be set up for delivery of EQuIS-compatible EDDs that can be uploaded directly to EQuIS once the EDDs pass the EQuIS checking tool. The laboratories will be provided reference values and EDD format information. Uploaded EDDs will be reviewed to ensure that the laboratory's sample information matches the field data already loaded, using field notes and chain-of-custody forms from the field data collection team for reference.

Validation Data Workflow

Once the laboratory data have been verified as complete and accurate, the data will be validated according to United States Environmental Protection Agency Level IIA guidance. The validator will complete data validation, generate a validation memorandum, and populate a data validation EDD with validation qualifiers. The completed data validation EDD will be loaded into the database and the data will be marked as final and ready for reporting.



3.7 REQUEST FOR INFORMATION FORM

Changes to the approved design will require ERM EOR approval prior to the change being implemented. In addition, some changes to the design may require ODEQ approval prior to implementation. Refer to Specification 01 26 10 for the Request for Information procedure. For changes that incur an additional cost, refer to Specification 01 26 for the Change Order form.

3.8 NONCONFORMANCES AND DEFICIENCIES

The overall goal of this CQA Plan is to measure key properties of the Work constructed for conformance with the drawings, technical specifications, permits, and the applicable regulatory requirements. The processes described in this CQA Plan make it possible to meet those objectives by confirming achievement of each corresponding component CQA acceptance criterion and identifying corresponding nonconformances or deficiencies (i.e., failure to achieve one or more corresponding component CQA acceptance criteria). During the various control phases, CQA and CQC inspections, review of CQA and CQC test results, and CQA and CQC field observations, it is possible that the quality of the Work or materials may be deficient and may not meet the standards prescribed in the construction documents. The following procedures will be followed, under the direction of the ERM CQA Officer and/or ERM EOR, in the event of a nonconformance or deficiency:

- If a nonconformance/deficiency exists and is identified as a threat to health and safety or design integrity, a Stop Work order will be issued by the ERM CQA Officer and Work will cease until corrective action is taken. The decision to resume work will be made by agreement of the ERM PE, ERM CM, ERM CQA Officer, ERM FSO, ERM PM, and ERM PIC.
- The extent and nature of the nonconformance/deficiency will be identified by CQA inspection and testing, CQA observation and/or review of CQC inspection and testing, review of CQC documentation provided by the Remediation Contractor, and other means implemented by the ERM CQA Officer. The ERM CQA Officer will verbally communicate the results to the Remediation Contractor and, if applicable, the Remediation Contractor's subcontractor involved in the particular element of Work. If the ERM CQA Officer determines that a nonconformance/deficiency exists, the situation will be corrected, where possible, by the end of the workday.
- The ERM CQA Officer will document nonconformances and deficiencies with an action item that identifies the responsible parties and the estimated date for completion of the corrective action.
- The ERM CQA Officer will notify the ERM EOR immediately to find resolution to deficiencies that cannot be resolved in one working day.
- A work deficiency meeting may be held as described in Section 4.3 of this CQA Plan.

All nonconforming conditions will be documented on a nonconformance and corrective action report and tracked on a Nonconformance/Deficiency Log. Deficiencies will be summarized in tabular format showing the date of discovery, the date the deficiency occurred, a brief description of the deficiency, the necessary corrective action, the party responsible for the corrective action,



the date of the corrective action, and the date of acceptance of the corrected work. The ERM CQA Officer will update the log daily.



4. CONSTRUCTION QUALITY ASSURANCE COMMUNICATIONS

This section describes various communication channels of CQA and CQC activities, inspection procedures, and change management.

4.1 CONSTRUCTION QUALITY CONTROL INSPECTION AND TESTING SCHEDULE

Responsibilities for inspection and testing are as follows:

- Remediation Contractor CM:
 - Responsible for providing access to the Work and notifications of readiness for CQC inspection and testing
 - Ultimately responsible to confirm that the Work they are delivering achieves each corresponding CQA acceptance criterion
- Remediation Contractor CQC Manager:
 - Responsible for coordination of CQC inspection and testing with the corresponding construction schedule
 - Responsible for identification and continuous update of the scope, schedule, and status of CQC inspection and testing submittals and test reports in a CQC schedule
 - Responsible for keeping record of all CQC test results, notifying the Remediation Contractor CM and ERM CQA Officer of failing test results, and coordinating remedy of the failed results

Prior to mobilization, and periodically throughout the project, the ERM CQA Officer will review and comment on the CQC inspection and testing schedule to confirm that it is consistent with the project objectives and the CQA Plan. Any necessary additions or revisions to the CQC inspection and testing schedule during construction will be prepared by the CQC Manager and submitted to the ERM CQA Officer for review.

4.2 CONSTRUCTION QUALITY ASSURANCE/CONSTRUCTION QUALITY CONTROL PROGRESS MEETINGS

The Remediation Contractor's CQC Manager and staff and the ERM CQA Officer and staff will coordinate closely during construction, and will have joint meetings when necessary. A designated meeting lead will document each CQA/CQC meeting in meeting minutes. Copies of meeting minutes will be distributed to each participant; the Remediation Contractor's Field PM; and the ERM CM, ERM PE, ERM PM, and ERM EOR within 24 hours of conclusion of the meeting. A copy of the minutes will be retained in project CQC records.

4.3 WORK DEFICIENCY MEETINGS

A special meeting will be held by the ERM CQA Officer when and if a technical problem or deficiency occurs or is considered likely to occur. The meeting will be attended by the ERM EOR, ERM PM, ERM CM, ERM CQA Officer, Remediation Contractor, CQC Manager, LSS (if available), and other parties as appropriate. If the problem requires a design modification, the ERM EOR will either be consulted prior to this meeting, attend the meeting, or will be notified immediately upon



conclusion of the meeting. The purpose of the work deficiency meeting is to resolve the problem or work deficiency using the following steps:

- 1. Define and discuss the problem or deficiency.
- 2. Review alternative solutions.
- 3. Select a suitable solution agreeable to all parties and to regulatory agencies (if appropriate).
- 4. Document and distribute the findings of the meeting and the proposed action plan for mitigation.
- 5. Implement an action plan to resolve the problem or deficiency.

The ERM CQA Officer will appoint one attendee to record the discussions and decisions of the meeting. The ERM CQA Officer will distribute meeting notes to each participant and a copy to the CQA file within 24 hours of conclusion of the meeting. Schedule and budget impacts from the deficiencies are not part of the CQA scope, and may be addressed in separate meetings organized by the ERM PM.

4.4 CONSTRUCTION QUALITY ASSURANCE INSPECTIONS

For each DFOW, the Remediation Contractor will follow a three-phase CQC process as described below:

- Preparatory Phase This phase will be performed prior to beginning Work on each DFOW.
 The preparatory phase checklist will be used when conducting this phase meeting.
- Initial Phase This phase will be accomplished at the beginning of a DFOW. The initial phase checklist will be used when conducting this phase meeting.
- Follow-Up Phase This phase includes daily checks to assure continuing compliance with contract requirements.

The ERM CM, ERM CQA Officer, or assigned designee will participate in the three phase meetings and will conduct CQA inspections of Work areas daily.

The required CQC and CQA sampling and testing are usually performed during the initial or follow-up inspection phase.

4.4.1 DAILY CONSTRUCTION QUALITY ASSURANCE INSPECTIONS

The ERM CQA Officer or designee will perform the daily CQA inspection and complete the checklist. The daily CQA inspection will cover such items as:

- Observing the daily construction progress;
- Verifying previous day's CQC results;
- Following up on solutions and status of the deficiencies identified; and
- Providing the ERM CQA Officer with recommendations for acceptance of completed DFOW based on the CQC and CQA results.



4.4.2 PRE-FINAL AND FINAL CONSTRUCTION QUALITY ASSURANCE INSPECTIONS

Following notification of ninety percent completion of the Work, LSS, the ERM PM, ERM CM, ERM EOR, and the ERM CQA Officer will conduct a pre-final inspection of the project area. The ERM CM will prepare a final written Work "punch list." The final punch list will enable the Remediation Contractor to understand the project completion expectations and schedule Work activities, including demobilization. Once the Remediation Contractor has addressed the punch list items to the satisfaction of LSS and the ERM CM, and once LSS, the ERM PIC, and the ERM PM approve them in writing; LSS, the ERM PM, and the ERM EOR will conduct a final inspection for certification and acceptance of the Work.

4.5 TECHNICAL SUBMITTAL REVIEW

The ERM CM or designee will prepare and maintain a technical submittal register. The submittal register will document the review cycles, the status of each submittal, and priority to facilitate construction progress. Sufficient lead time will be built into the schedule to prevent construction delays, provided the submittals are made in a timely manner. The ERM CQA Officer, ERM PE, or ERM EOR will review construction submittals expeditiously, but no Work will proceed without the proper reviews being completed. The ERM EOR will review submittals requiring engineering interpretation.

4.6 REQUESTS FOR INFORMATION

The Remediation Contractor will use an RFI form to request clarification on the design drawings and technical specifications as soon as a question arises. Refer to Specification 01 26 10 for the Request for Information process.

4.7 CHANGES TO THE APPROVED DESIGN, PLANS, OR SPECIFICATIONS

Changes to the approved CQA Plan will require approval by the ERM EOR, ERM PIC, ERM PM, and LSS, prior to the change being implemented. Significant changes with substantial deviation from the PFDR may also require approval of ODEQ and potentially other agencies or stakeholders. Material substitutions (i.e., "or equals") and determinations associated with construction means and methods are not considered a design change and will be reviewed by the ERM PE as part of the technical submittal review process in accordance with the technical specifications. All changes will be documented through the RFI process and changes requiring approval by ODEQ will be submitted in memo format as a design modification.



5. CONSTRUCTION QUALITY CONTROL INSPECTION AND TESTING

The Remediation Contractor will implement CQC inspection and testing; the ERM CQA Officer will implement supplemental CQA inspection and testing. CQC inspection work components, parameters, methods, frequency, and CQC acceptance criteria are described in Specification Table 01 45 00-1. CQC testing work components, sample types, sampling frequency, test specimen preparation, test parameters, test methods, and CQC acceptance criteria are shown in Specification Table 01 45 00-2. Clean Import Fill Screening Levels are shown in Table I.1 based on ODEQ 2019 Internal Management Directive: Clean Fill Determinations, which is provided as Appendix I.2, although it is not anticipated that import fill will be required.



CLIENT: Legacy Site Services LLC, agent for Arkema Inc.

PROJECT NO: 0732436.602 DATE: 04 June 2025 VERSION: 01 - Draft

6. REFERENCES

ERM (Environmental Resources Management, Inc.). 2005. Upland Remedial Investigation Report, Lots 3 & 4 and Tract A – Revision 1, Arkema Inc. Portland facility, Portland, Oregon. December.

ERM. 2021. GWET Wellfield Enhancement – Preliminary Design Investigation, Arkema Inc. Facility, Portland, Oregon. 1 February.





TABLES

Table I.1 - Clean fill screening levels for organics and other selected constituents All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Acenaphthene	83-32-9	0.25	g
Acenaphthylene	208-96-8	120	g
Acephate	30560-19-1 75-07-0	0.32 0.031	b
Acetaldehyde Acetochlor	34256-82-1	17	<u>b</u> b
Acetone	67-64-1	1.2	q
Acetone Cyanohydrin	75-86-5	2,800,000	a
Acetonitrile	75-05-8	1.6	b
Acetophenone	98-86-2	35	b
Acetylaminofluorene, 2- Acrolein (Propenal)	53-96-3 107-02-8	0.0043 0.0005	<u>b</u> b
Acrylamide	79-06-1	0.00066	b
Acrylic Acid	79-10-7	0.025	b
Acrylonitrile	107-13-1	0.00036	d
Adiponitrile Alachlor	111-69-3 15972-60-8	8,500,000 0.052	a b
Aldicarb	116-06-3	0.032	b
Aldicarb Sulfone	1646-88-4	0.26	b
Aldrin	309-00-2	0.023	d
Allyl Alcohol	107-18-6	0.0025	b
Allyl Chloride Aluminum Phosphide	107-05-1 20859-73-8	0.014 31	b a
Ametryn	834-12-8	9.6	b
Aminobiphenyl, 4-	92-67-1	0.0009	b
Aminophenol, m-	591-27-5	37	b
Aminophenol, o-	95-55-6	1.8	b
Aminophenol, p- Amitraz	123-30-8 33089-61-1	9 160	b a
Ammonium Perchlorate	7790-98-9	55	a a
Ammonium polyphosphate	68333-79-9	3,800,000	a
Ammonium Sulfamate	7773-06-0	16,000	a
Apilino	75-85-4	0.078	<u>b</u>
Aniline Anthracene	62-53-3 120-12-7	0.28 6.8	b g
Anthraquinone, 9,10-	84-65-1	0.84	b
Antimony Pentoxide	1314-60-9	39	а
Antimony Tetroxide	1332-81-6	31	a
Antimony Trioxide Aroclor 1016	1309-64-4 12674-11-2	280,000 1.1	a
Aroclor 1221	11104-28-2	0.0048	g b
Aroclor 1232	11141-16-5	0.0048	b
Aroclor 1242	53469-21-9	0.041	g
Arcelor 1248	12672-29-6	0.0073	g
Aroclor 1254 Aroclor 1260	11097-69-1 11096-82-5	0.041 0.24	g a
Aroclor 5460	11126-42-4	35	a
Arsenic III	7440-38-2	10	е
Arsine	7784-42-1	0.27	a
Asulam Atrazine	3337-71-1 1912-24-9	11 0.012	b b
Auramine	492-80-8	0.012	b
Avermectin B1	65195-55-3	25	a
Azinphos-methyl	86-50-0	1	b
Azobenzene	103-33-3	0.056	<u>b</u>
Azodicarbonamide Benfluralin	123-77-3 1861-40-1	410 56	<u> </u>
Benomyl	17804-35-2	51	b
Bensulfuron-methyl	83055-99-6	60	b
Bentazon	25057-89-0	7.2	b
Benzaldehyde	100-52-7 71-43-2	0.25 0.023	b
Benzene Benzenediamine-2-methyl sulfate, 1,4-	6369-59-1	0.023	<u>d</u> b
Benzenethiol (thiophenol)	108-98-5	0.66	b b
Benzidine	92-87-5	0.000038	d
Benzo(a)anthracene	56-55-3	0.73	g
Benzo(a)pyrene (BaP equivalents)	50-32-8	0.11	a
Benzo(b)fluoranthene Benzo(g,h,i)perylene	205-99-2 191-24-2	1.1 25	a q
Benzo(j)fluoranthene	205-82-3	0.42	a
Benzo(k)fluoranthene	207-08-9	11	a
Benzoic Acid	65-85-0	1	g
Benzotrichloride Benzyl Alcohol	98-07-7 100-51-6	0.0004 29	b b
Benzyl Alcohol Benzyl Chloride	100-51-6 100-44-7	0.0059	<u>b</u> b
Bidrin (Dicrotophos)	141-66-2	0.0084	b
Bifenox	42576-02-3	46	b
Biphenthrin	82657-04-3	950 0.53	a
Biphenyl, 1,1'- Bis(2-chloro-1-methylethyl) ether (Bis(2-chloroisopropyl) ether)	92-52-4 108-60-1	0.52 16	<u> </u>
Bis(2-chloroethoxy)methane	111-91-1	0.78	b b
Bis(2-chloroethyl)ether (dichloroethyl ether)	111-44-4	0.00019	d
Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7	0.02	g
Bis(chloromethyl)ether	542-88-1	0.000001	b
Bisphenol A Boron And Borates Only	80-05-7 7440-42-8	3,200 0.5	a
Boron Trichloride	10294-34-5	160,000	<u>e</u> a
		_ = = = = = = = = = = = = = = = = = = =	~

Chemical Name	CAS	Clean Fill Value	Note
Boron Trifluoride	7637-07-2	3,100	a
Bromate	15541-45-4	0.051	b
Bromine Bromo-2-chloroethane, 1-	7726-95-6 107-04-0	10 0.00013	<u>е</u> b
Bromo-3-fluorobenzene, 1-	107-04-0	0.00013	b
Bromo-4-fluorobenzene, 1-	460-00-4	0.26	b
Bromoaniline, 4-	106-40-1	100	e
Bromobenzene Bromochloromethane	108-86-1 74-97-5	2.5	<u> </u>
Bromodichloromethane	75-27-4	0.002	d d
Bromoform (tribromomethane)	75-25-2	0.046	d
Bromomethane	74-83-9	0.083	<u>d</u>
Bromophos Bromopropane, 1-	2104-96-3 106-94-5	9 3.8	<u> </u>
Bromoxynil	1689-84-5	0.031	b
Bromoxynil Octanoate	1689-99-2	0.13	b
Butadiene, 1,3-	106-99-0	0.00059	<u>b</u>
Butanoic acid, 4-(2,4-dichlorophenoxy)- Butanol, N-	94-82-6 71-36-3	25 25	b b
Butyl alcohol, sec-	78-92-2	300	b
Butyl benzyl phthlate	85-68-7	14	b
Butylate	2008-41-5	27	b
Butylated hydroxytraluana	25013-16-5 128-37-0	17 6	<u> </u>
Butylated hydroxytoluene Butylbenzene, n-	104-51-8	190	b b
Butylbenzene, sec-	135-98-8	350	b
Butylbenzene, tert-	98-06-6	96	b
Butylphthalyl Butylglycolate	85-70-1	19,000	<u>b</u>
Cacodylic Acid Calcium Cyanide	75-60-5 592-01-8	6.6 78	b a
Calcium pyrophosphate	7790-76-3	3,800,000	<u>а</u> а
Caprolactam	105-60-2	150	b
Captafol	2425-06-1	0.043	<u>b</u>
Carband	133-06-2 63-25-2	1.3	<u>b</u>
Carbaryl Carbazole	86-74-8	100 79	<u> </u>
Carbofuran	1563-66-2	2.2	b
Carbon Disulfide	75-15-0	0.81	g
Carbon Tetrachloride Carbonyl Sulfide	56-23-5 463-58-1	0.013 31	<u>d</u> b
Carbosulfan	55285-14-8	72	<u>b</u>
Carboxin	5234-68-4	60	b
Ceric oxide	1306-38-3	1,300,000	a
Chloral Hydrate Chloramben	302-17-0 133-90-4	24 4.2	<u> </u>
Chloranil	118-75-2	0.009	b b
Chloraniline, 3-	108-42-9	20	e
Chlordane, alpha-	5103-71-9	0.27	g
Chlordane, gamma-	5103-74-2 57-74-9	2.2 0.91	g d
Chlordane, technical Chlordecone (Kepone)	143-50-0	0.0072	<u>u</u> b
Chlorfenvinphos	470-90-6	1.9	b
Chlorimuron, Ethyl-	90982-32-4	36	b
Chlorine Chlorine Dioxide	7782-50-5 10049-04-4	0.0084 2,300	<u>b</u> a
Chlorite (Sodium Salt)	7758-19-2	2,300	<u>a</u> a
Chloro-1,1-difluoroethane, 1-	75-68-3	3,100	b
Chloro-1,3-butadiene, 2- (Chloroprene)	126-99-8	0.00059	b
Chloro-2-methylaniline HCl, 4-	3165-93-3	0.009	b
Chloro-2-methylaniline, 4- Chloroacetaldehyde, 2-	95-69-2 107-20-0	0.024 0.0035	<u> </u>
Chloroacetamide	79-07-2	2	e
Chloroacetophenone, 2-	532-27-4	43,000	a
Chloroaniline, p- (4-Chloroaniline)	106-47-8	0.0096	b
Chlorobenzene Chlorobenzene sulfonic acid, p-	108-90-7 98-66-8	2.4	<u>g</u> b
Chlorobenzilate	510-15-6	0.06	b
Chlorobenzoic Acid, p-	74-11-3	7.8	b
Chlorobenzotrifluoride, 4-	98-56-6	7.2	<u>b</u>
Chlorobutane, 1- Chlorodibromomethane (dibromochloromethane)	109-69-3 124-48-1	16 0.0024	<u> </u>
Chlorodifluoromethane	75-45-6	2,600	b
Chloroethanol, 2-	107-07-3	4.9	b
Chloroform	67-66-3	0.0034	d
Chloromethane Chloromethyl Methyl Ether	74-87-3 107-30-2	2.2 0.000084	<u>d</u> b
Chloronaphthalene, Beta-	91-58-7	230	b
Chloronitrobenzene, o-	88-73-3	0.013	b
Chloronitrobenzene, p-	100-00-5	0.066	b
Chlorophenol, 2- Chlorophenol, 3-	95-57-8 108-43-0	0.39	g e
Chlorophenol, 4-	106-48-9	50	<u>е</u> е
Chloropicrin	76-06-2	0.015	b
Chlorothalonil	1897-45-6	3	b
Chlorotoluene, o-	95-49-8 106-43-4	14 14	<u>b</u>
Chlorotoluene n-		. 14	b
Chlorotoluene, p- Chlorozotocin			h
Chlorotoluene, p- Chlorozotocin Chlorpropham	54749-90-5 101-21-3 2921-88-2	0.0000043 38 7.2	b b

Chemical Name	CAS	Clean Fill Value	Noto
			Note
Chlorpyrifos Methyl Chlorsulfuron	5598-13-0 64902-72-3	32 50	<u>b</u>
Chlorthal-dimethyl	1861-32-1	9	<u> </u>
Chlorthiophos	60238-56-4	4.4	<u></u> b
Chromium (VI)	18540-29-9	0.04	<u>b</u>
Chrysene	218-01-9	3.1	a
Clofentezine	74115-24-5	820	a
Copper Cyanide	544-92-3	390	a
Cresol, m- (3-Methylphenol)	108-39-4	0.69	q
Cresol, o- (2-Methylphenol)	95-48-7	0.67	g
Cresol, p-	106-44-5	90	b
Cresol, p-chloro-m-	59-50-7	100	b
Cresols	1319-77-3	78	b
Crotonaldehyde, trans-	123-73-9	0.00049	b
Cumene	98-82-8	96	d
Cupferron	135-20-6	0.037	b
Cyanazine	21725-46-2	0.0025	b
Cyanogen	460-19-5	78	a
Cyanogen Bromide	506-68-3	7,000	а
Cyanogen Chloride	506-77-4	3,900	<u>a</u>
Cyclohexane	110-82-7	780	<u>b</u>
Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	87-84-3	0.96	<u> </u>
Cyclohexanone	108-94-1	20	<u>b</u>
Cyclohexene Cyclohexylamine	110-83-8 108-91-8	2.8	<u> </u>
Cyfluthrin	68359-37-5	1,600	<u>р</u> а
Cyhalothrin/karate	68085-85-8	63	а а
Cyromazine	66215-27-8	150	<u>а</u> b
Dalapon	75-99-0	7.2	<u></u> b
Daminozide (Alar)	1596-84-5	0.057	<u>b</u>
Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209)	1163-19-5	440	<u></u> а
Demeton	8065-48-3	2.5	а
Di(2-ethylhexyl)adipate	103-23-1	280	<u>a</u> b
Diallate	2303-16-4	0.048	b
Diammonium phosphate	7783-28-0	3,800,000	a
Diazinon	333-41-5	3.9	b
Dibenz(a,h)anthracene	53-70-3	0.11	а
Dibenzo(a,e)pyrene	192-65-4	0.042	а
Dibenzofuran	132-64-9	0.002	е
Dibenzothiophene	132-65-0	72	b
Dibromo-3-chloropropane, 1,2-	96-12-8	0.0000084	b
Dibromobenzene, 1,3-	108-36-1	0.31	b
Dibromobenzene, 1,4-	106-37-6	7.2	b
dibromoethane, 1,2- (EDB)	106-93-4	0.00012	d
Dibromomethane (Methylene Bromide)	74-95-3	0.13	b
Dibutyl phthalate (Di-n-butyl phthalate)	84-74-2	0.011	g
Dibutyltin Compounds	E1790660	19	a
Dicalcium phosphate	7757-93-9	3,800,000	a
Dicamba Diablaga 2 butana 1 4	1918-00-9	9	<u>b</u>
Dichloro-2-butene, 1,4-	764-41-0	0.00004	<u>b</u>
Dichloro-2-butene, cis-1,4- Dichloro-2-butene, trans-1,4-	1476-11-5 110-57-6	0.000037 0.000037	<u> </u>
Dichloroacetic Acid	79-43-6	0.00037	<u></u> b
Dichloroaniline, 2,4-	554-00-7	100	<u></u> е
Dichloroaniline, 3,4-	95-76-1	100	e
Dichlorobenzene, 1,2-	95-50-1	0.92	a
Dichlorobenzene, 1,3-	541-76-1	0.74	<u>9</u>
Dichlorobenzene, 1,4-	106-46-7	0.057	d d
Dichlorobenzidine, 3,3'-	91-94-1	0.17	d
Dichlorobenzophenone, 4,4'-	90-98-2	28	b
Dichlorodifluoromethane (Freon-12)	75-71-8	18	b
Dichlorodiphenyldichloroethane, 4,4- (DDD)	72-54-8	0.0063	g
Dichlorodiphenyldichloroethene, 4,4- (DDE)	72-55-9	0.01	e
Dichlorodiphenyltrichloroethane, 4,4- (DDT)	50-29-3	0.01	е
Dichloroethane, 1,1-	75-34-3	0.044	d
Dichloroethane, 1,2- (EDC)	107-06-2	0.0028	d
Dichloroethylene, 1,1-	75-35-4	6.7	d
Dichloroethylene, 1,2- (mixture)	450.50.5	2,500	<u>e</u>
Dichloroethylene, 1,2-cis-	156-59-2	0.63	<u>d</u>
Dichloroethylene, 1,2-trans-	156-60-5	7	d
Dichloromethane	75-09-2 120-83-2	0.14	<u>d</u>
Dichlorophenol, 2,4- Dichlorophenol, 3,4-	120-83-2 95-77-2	1.4	<u>b</u>
Dichlorophenoxy Acetic Acid, 2,4-	95-77-2 94-75-7	2.3	<u>е</u> d
Dichloropropane, 1,2-	78-87-5	0.017	<u>u</u> b
Dichloropropane, 1,3-	142-28-9	7.8	<u></u> b
Dichloropropanol, 2,3-	616-23-9	0.78	<u>b</u>
Dichloropropene, 1,3-	542-75-6	0.01	<u>b</u>
Dichlorvos	62-73-7	0.0049	<u> </u>
Dicyclopentadiene	77-73-6	0.13	b
Dieldrin	60-57-1	0.0045	g
Diethanolamine	111-42-2	0.49	b
Diethyl phthalate	84-66-2	100	е
Diethylene Glycol Monobutyl Ether	112-34-5	7.8	b
Diethylene glycol monoethyl ether	111-90-0	14	b
Diethylformamide	617-84-5	0.25	b
	·	0.0046	а
Diethylstilbestrol	56-53-1	0.0016	
Diethylstilbestrol Difenzoquat Diflubenzuron	56-53-1 43222-48-6 35367-38-5	5,200 20	a b

Chemical Name	CAS	Clean Fill Value	Noto
			Note
Difluoroethane, 1,1- (DFE) Difluoropropane, 2,2-	75-37-6 420-45-1	1,700 8,400	<u>b</u> b
Dihydrosafrole	94-58-6	0.011	b b
Diisopropyl ether (DIPE)	108-20-3	22	b
Diisopropyl Methylphosphonate	1445-75-6	27	b
Dimagnesium phosphate	7782-75-4	3,800,000	a
Dimethipin	55290-64-7	5.8	b
Dimethoate	60-51-5	0.59	b
Dimethoxybenzidine, 3,3'-	119-90-4	0.0035	b
Dimethyl methylphosphonate	756-79-6	0.58	b
Dimethyl phthalate	131-11-3	10	g
Dimethylamino azobenzene [p-]	60-11-7	0.0013	b
Dimethylaniline HCl, 2,4-	21436-96-4	0.0072	b
Dimethylaniline, 2,4-	95-68-1	0.013	b
Dimethylaniline, N,N-	121-69-7	0.054	b
Dimethylbenz(a)anthracene, 7,12-	57-97-6	0.00046	a
Dimethylbenzidine, 3,3'- Dimethylformamide	119-93-7 68-12-2	0.0026 0.72	<u> </u>
Dimethylhydrazine, 1,1-	57-14-7	0.000056	b b
Dimethylhydrazine, 1,1-	540-73-8	0.000030	b b
Dimethylphenol, 2,4-	105-67-9	20	e
Dimethylphenol, 2,6-	576-26-1	0.78	b
Dimethylphenol, 3,4-	95-65-8	1.3	b
Dimethylterephthalate	120-61-6	29	b
Dimethylvinylchloride	513-37-1	0.0066	b
Di-n-hexylphthalate	84-75-3	3,100	e
Dinitrobenzene, 1,2-	528-29-0	0.11	b
Dinitrobenzene, 1,3-	99-65-0	0.072	g
Dinitrobenzene, 1,4-	100-25-4	0.11	b
Dinitro-o-cresol, 4,6-	534-52-1	0.16	b
Dinitro-o-cyclohexyl Phenol, 4,6-	131-89-5	46	b
Dinitrophenol, 2,4-	51-28-5	2.6	b
Dinitrotoluene Mixture, 2,4/2,6-	E1615210	0.009	b
Dinitrotoluene, 2,4-	121-14-2	0.019	b
Dinitrotoluene, 2,6-	606-20-2	0.0089	d
Dinitrotoluene, 2-Amino-4,6-	35572-78-2	1.8	b
Dinitrotoluene, 4-Amino-2,6-	19406-51-0	1.8	<u>b</u>
Dinitrotoluene, Technical grade	25321-14-6	0.0084	<u>b</u>
Dinoseb	88-85-7	7.8	<u>b</u>
Di-N-propylnitrosamine (N-nitrosodi-N-propylamine)	621-64-7	0.00094 0.0023	d
Dioxane, 1,4- Diphenamid	123-91-1 957-51-7	310	<u>d</u> b
Diphenyl Ether	101-84-8	0.2	b b
Diphenyl Sulfone	127-63-9	2.2	b b
Diphenylamine	122-39-4	10	g
Diphenylhydrazine, 1,2-	122-66-7	0.015	b
Dipotassium phosphate	7758-11-4	3,800,000	a
Diquat	85-00-7	50	b
Direct Black 38	1937-37-7	0.076	a
Direct Blue 6	2602-46-2	0.073	a
Direct Brown 95	16071-86-6	0.081	а
Disodium phosphate	7558-79-4	3,800,000	а
Disulfoton	298-04-4	0.056	b
Dithiane, 1,4-	505-29-3	5.8	b
Diuron	330-54-1	0.9	b
Dodine	2439-10-3	130	b
Endosulfan, (alpha-beta)		0.64	<u>g</u>
Endothall	145-73-3	5.5	b
Endrin Enichloropydrin	72-20-8	0.0014	g b
Epichlorohydrin Epoxybutane, 1,2-	106-89-8 106-88-7	0.027 0.55	b
EPTC	759-94-4	24	b b
Ethanol	64-17-5	4,000	<u></u> е
Ethanol, 2-(2-methoxyethoxy)-	111-77-3	9.6	b
Ethephon	16672-87-0	1.3	b
Ethion	563-12-2	0.51	b
Ethoxyethanol Acetate, 2-	111-15-9	1.5	b
Ethoxyethanol, 2-	110-80-5	4.1	b
Ethyl Acetate	141-78-6	1.9	b
Ethyl Acrylate	140-88-5	0.19	b
Ethyl Chloride (Chloroethane)	75-00-3	310	d
Ethyl Ether (Diethyl ether)	60-29-7	53	b
Ethyl Methacrylate	97-63-2	9	b
Ethylbenzene	100-41-4	0.22	d
Ethylene Cyanohydrin	109-78-4	17	<u>b</u>
Ethylene Diamine	107-15-3	25	<u>b</u>
Ethylene Glycol Ethylene Glycol Monobutyl Ethor	107-21-1	490 25	b b
Ethylene Glycol Monobutyl Ether Ethylene Oxide	111-76-2 75-21-8	0.000084	<u> </u>
Ethylene Oxide Ethylene Thiourea	75-21-8 96-45-7	0.0000084	b b
Ethyleneimine	151-56-4	0.000031	b b
Ethylphthalyl Ethyl Glycolate	84-72-0	7,800	b b
Ethyl-p-nitrophenyl phosphonate (EPN)	2104-64-5	0.17	b
Fenamiphos	22224-92-6	0.0002	<u>в</u>
r Champhos	39515-41-8	170	<u>е</u> b
Fenpropathrin	19717-41-6	±,, ∪	U
Fenpropathrin Fenvalerate			a
Fenvalerate	51630-58-1	1,600 11	<u>а</u> b
		1,600	

Fluorine 10984-48-8 3,100 c Fluorine 1792-14 32 c c Fluorine 1792-1	Chemical Name	CAS	Clean Fill Value	Note
Fluentic (Studie Fluentle)				
Furthum				_
Finalizate	Fluridone			а
Fluctaint				b
Final				
Foliphet				-
Fonnestafen 72178-02-0 9.6 b Formadebytel 50-00-0 0.0020 d Formadebytel 50-00-0 0.0020				
Francisco Franci				
Formic Acid				
FigetPri Al				d
Furname				
Furtieral 98-01-1 0,49 0 0 Furtum 551-83-8 0,001-1 0,49 0 0,49 0 0 Furtum 551-83-8 0,001-1 0,49 0 0,4				
Furtural				
Furtiser				
Furmecyclox Generic Diseal/Heating Oil Generic Sasoline Generic Sasoline Generic Sasoline Generic Mercal/Insulating Oil Contents Mineral/Insulating Oil Contents Mineral Cont				
Generic Mineral/Insulating Oil 77182-82-2 1.6 b				b
Generic Mineral/Insulation Oil				
Glufosinate, Ammonium				
Substitution Subs		77102 02 2		
Glypthosate 1071-83-6 530 b Glypthosate 1071-83-6 530 b Glundinine 113-00-8 2.77 b Guandine 113-00-8 2.77 b Guandine Chioride 50-01-1 1,300 a a Guandine Nitrate 506-93-4 9 b b Guandine Nitrate 506-93-4 9 b Guandine Nitrate 506-93-4 500-92 d Guandine Nitrate 506-92 d Guandin				
Glyphosele				
Guandine 113-00-8 2.77 b Guandine 50-01-1 1,300 a Guandine Nitrate 506-93-4 9 b b Haloxyfop, Methyl 69806-40-2 0.55 b b Haptachior 76-44-8 0.017 d Heptachior 76-44-8 0.018 d Hexachiorobiphenyl 76-44-5 76-68-53 0.018 d Hexachiorobiphenyl 76-74-5 76-75 76-75 76-75 76-75 0.018 d Hexachiorobiphenyl 76-74-5 76-75 76-75 76-75 0.018 d Hexachiorobiphenyl 76-74-75 76-75 76-75 0.019 d Hexachiorobiphenyl 76-74-75 76-75 0.019 d Hexachiorobytochexane, elpha-(elpha-HCH) or alpha-BHC 76-74-75 0.009 d Hexachiorocyclohexane, elpha-(elpha-HCH) or alpha-BHC 76-74-75 0.000 d Hexachiorocyclohexane, elpha-(elpha-HCH) or alpha-BHC				
Guandine Chloride				
Haloxyfop, Methyl		50-01-1		
Heptachlor 76-44-8				
Heptachlor Epoxide				
Heptanchirorbiphenyl, 2,3,3',4,4',5,5'- (PCB 189) 39635-31-9 0.13 a Heptanal, n-				
Heptanal, n-	' '			-
Heptane, N-				
Hexabromobenzene				
Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153) 68631-49-2 13 a b hexachlorobenzene 118-74-1 0.018 d hexachlorobenzene 123-34',5'-5' (PCB 156) 38380-08-4 0.1 b hexachlorobenzene 123-34',5'-5' (PCB 167) 52663-72-6 0.1 b hexachlorobenzene 123-34',5'-5' (PCB 169) 32774-16-6 0.0001 b hexachlorocytolene 123-34',5'-5' (PCB 169) 32774-16-6 0.0001 b hexachlorocytolene 123-34',5'-5' (PCB 169) 32774-16-6 0.0001 b hexachlorocytolene 123-34',5'-5' (PCB 169) 319-85-7 0.009 b hexachlorocytolene 123-34',5'-5' (PCB 169) 319-85-7 0.009 b hexachlorocytolene 123-34',5'-5' (PCB 169) 319-85-7 0.009 b hexachlorocytolene 123-85',5' (PCB 169) 319-85-7 0.009 b hexachlorocytolene 123-85',5' (PCB 169) 319-85-7 0.009 b hexachlorocytolene 77-47-4 0.078 b hexachlorocytolene 77-47-4 0.022 d hexachlorocytolene 123-34',5' (PCB 169) 123-34',5' (PCB				_
Hexachlorobinervi, 2, 3, 3, 4, 4, 5- (PCB 156)				b
Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)			_	
Hexachlorobiphenyl, 2,3',4',4',5,5'- (PCB 157) 69782-90-7 0.1 b Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167) 52663-72-6 0.1 b Hexachlorobiphenyl, 3,3',4',5,5'- (PCB 169) 32774-16-6 0.0001 b Hexachlorobiphenyl, 3,3',4',5,5'- (PCB 169) 32774-16-6 0.0001 b Hexachlorocyclohexane, (technical-BHC) 608-73-1 0.009 b Hexachlorocyclohexane, alpha- (alpha-HCH or alpha-BHC) 319-84-6 0.0063 d Hexachlorocyclohexane, gamma-(gamma-BHC or Lindane) 58-89-9 0.0095 d Hexachlorocyclopentacline 77-47-4 0.078 b Hexachlorocyclopentacline 77-47-4 0.078 b Hexachlorocyclopentacline 77-47-4 0.078 b Hexachlorocyclopentacline 77-30-4 19 a Hexachlorothane 77-30-4 19 a Hexachlorothane 77-30-4 19 a Hexachlorothane 77-30-4 19 a Hexachlorothane 77-30-4 19 a Hexamethylene Diisocyanate, 1,6- 822-06-0 0.013 b Hexamethylene Diisocyanate, 1,6- 822-06-0 0.013 b Hexamethylphosphoramide 680-31-9 0.11 b Hexamethylphosphoramide 680-31-9 0.11 b Hexamethylphosphoramide 51235-04-2 18 b Hexannos 78887-05-0 30 b Hexamethylphosphoramide 51235-04-2 18 b Hexannos 78887-05-0 30 b Hexannos 78887-05-0 30 b Hexannos 78887-05-0 30 b Hoydrazine Sulfate 10034-93-2 0.23 a Hydrogen Sulfate 764-39-3 3,100 a Hydrogen Sulfate 764-39-3 3,100 a Hydrogen Sulfate 788-4-0 0.9 b Hydrazine Sulfate 788-4-0 0.9 b Hydrazine Sulfate 788-4-0 0.9 b Imazalii 35554-44-0 0.9 b Imazalii 35554-30-0 55 b Imazalii 35559-0 55 b Imazalii 35559-0 55 b Isopropalii 382-58-30-7 1.400 b Isopropalii 382-58-30-7 1.500 b Indenoli 78-83-1 72 b Isopropalii 382-58-30-7 1.500 b Indenoli 78-83-1 72 b Isopropalii 382-58-30-7 1.500 b Indenoli 78-83-1 72 b Isopropalii 382-58-6 0.12 b Iso				
Hexachlorobiphenyl, 2,3',4,4',5,5' (PCB 167) 52663-72-6 0.1 b Hexachlorobiphenyl, 3,3',4,4',5,5' (PCB 169) 32774-16-6 0.0001 b Hexachlorobutadiene 87-68-3 0.016 b Hexachlorocyclohexane, (technical-BHC) 608-73-1 0.009 b Hexachlorocyclohexane, alpha- (alpha-HCH or alpha-BHC) 319-84-6 0.0063 d Hexachlorocyclohexane, Beta- (beta-BHC) 319-85-7 0.009 b Hexachlorocyclohexane, Beta- (beta-BHC) 319-85-7 0.009 b Hexachlorocyclohexane, Beta- (beta-BHC) 58-89-9 0.0095 g Hexachlorocyclohexane, Beta- (beta-BHC) 0 0.0001 a Hexachlorocyclohexane, Beta- (beta-BHC) 0 0 0.0001 a Hexachlorocyclohexane, Beta- (beta-BHC) 0 0 0.0001 a Hexachlorocyclohexane, Beta- (beta-BHC) 0 0 0 Hexachlorocyclohexane, Beta- (beta-BHC) 0 0 0 Hexachlorocyclohexane, Beta-BHC 0 0 0 0 Hexachlorocyclohexane, Beta-Beta-Bucklohexane, Beta-Beta-Bucklohexane, Beta-Beta				
Hexachlorobiphenyl, 3,3',4',5,5' PCB 169 32774-16-6				
Hexachlorocyclohexane, (technical-BHC)				
Hexachlorocyclohexane, (technical-BHC)				
Hexachlorocyclohexane, alpha- (alpha-HCH or alpha-BHC) 319-85-7 0.006				
Hexachlorocyclohexane, Betar (betar-BHC) 319-85-7 0.009 b Hexachlorocyclohexane, gamma (gamma-BHC or Lindane) 58-89-9 0.0095 g Hexachlorocyclopentadiene 77-47-4 0.078 b Hexachlorocyclopentadiene 67-72-1 0.022 d Hexachlorophene 70-30-4 19 a Hexachlorophene 70-30-4 19 a Hexahlyrophene 70-30-4 19 a Hexahlyrophene 822-06-0 0.013 b Hexamethylene Disocyanate, 1,6- 822-06-0 0.013 b Hexamethylphosphoramide 6680-31-9 0.11 b Hexamedicic Acid 110-54-3 600 b Hexamedicic Acid 124-04-9 590 b Hexamedicic Acid 124-04-9 590 b Hexameno				
Hexachlorocyclopentadiene				
Hexachlorocyclopentadiene				-
Hexachlorodibenzo-p-dioxin, Mixture	, , , , , , , , , , , , , , , , , , , ,			
Hexachlorophene 70-30-4 19 a Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) 121-82-4 0.016 b thexamethylene Diisocyanate, 1,6- 822-06-0 0.013 b Hexamethylene Diisocyanate, 1,6- 680-31-9 0.11 b Hexane Mexamethylene Diisocyanate 1680-31-9 0.11 b Hexane Mexamethylene 124-04-9 590 b Mexamethylene 591-78-6 0.36 g Mexamethylene 151235-04-2 18 b Mexamethylene 151235-04-2 18 b Mexamethylene 151235-04-2 18 b Mexamethylene 151235-04-2 18 b Mexamethylene 151235-04-2 1.100 a Mexamethylene 151235-04-2 1.100 a Mexamethylene 151235-04-2 0.000013 b Mexamethylene 151235-04-2 0.000013 b Mexamethylene 10034-93-2 0.23 a Mexamethylene 10034-93-3 3.100 a M				_
Hexamethylene Diisocyanate, 1,6-	Hexachloroethane			d
Hexamethylene Dilsocyanate, 1,6-				
Hexamethylphosphoramide 680-31-9 0.11 b Hexane, N-				
Hexane, N-				
Hexanedioic Acid 124-04-9 590 b Hexanone, 2- 591-78-6 0.36 q Hexazinone 51235-04-2 18 b hexythiazox 78587-05-0 30 b Heydramethylnon 67485-29-4 1,100 a Hydrazine 302-01-2 0.000013 b Hydrazine 51035-04-92 0.23 a Hydrogane Choride 7647-01-0 28,000,000 a Hydrogen Choride 7647-01-0 28,000,000 a Hydrogen Fluoride 7647-01-0 28,000,000 a Hydrogen Fluoride 7647-01-0 28,000,000 a Hydrogen Fluoride 7647-01-0 28,000,000 a Hydrogen Sulfide 7783-06-4 2,800,000 a Alydrogen Fluoride 7647-01-0 28,000,000 a Hydrogen Sulfide 7783-06-4 2,800,000 a Alydrogen Fluoride 7647-01-0 2,800,000 a Hydrogen Sulfide 3355-37-5 2,500 b Imazalil 3355-444-0 0.9 b Imazathapyr 81335-37-5 2,500 b Indeno[1,2,3-cd]pyrene 193-39-5 1,1 a Indeno[1,2,3-cd]pyrene 193-39-5 1,1 a Indine Indine 1,1 a Indine Indi				
Hexazinone				
Hexythiazox	Hexanone, 2-	591-78-6	0.36	
Hydramethylnon				
Hydrazine 302-01-2 0.000013 b Hydrazine Sulfate 10034-93-2 0.23 a Hydrogen Chloride 7647-01-0 28,000,000 a Hydrogen Cyanide 74-90-8 0.88 d Hydrogen Fluoride 7664-39-3 3,100 a Hydrogen Sulfide 7783-06-4 2,800,000 a Hydrogen Sulfide 7783-06-4 2,800,000 a Hydrogen Sulfide 7783-06-4 2,800,000 a Hydrogen Sulfide 35554-44-0 0.9 b Imazalii 35554-44-0 0.9 b Imazaquin 81335-37-7 1,400 b Imazethapyr 81335-37-7 1,400 b Imazethapyr 81335-37-5 2,500 b Indeno[1,2,3-cd]pyrene 193-39-5 1.1 a Iodine 7553-56-2 4 e Iprodione 36734-19-7 13 b Isophorone 78-83-1 72 b Isophorone 78-85-1 1.6 b Isophorone 78-59-1 1.6 b Isophorone 78-59-1 1.6 b Isopropalin 33820-53-0 55 b Isopropanol 1832-54-8 26 b Isopropanol 1832-54-8 26 b Isophorone 82558-50-7 120 b Isophorone 82558-50-7 120 b Isophorone 1832-54-8 26 b Isophorone 82558-50-7 120 b Isophorone 82558-50-7 120 b Isophorone 82558-50-7 120 b Isophorone 77501-63-4 280 b Isophorone 78-97-7 0.049 b Isophorone 1335-32-6 0.11 b Isophorone 1335-32-6 0.12 b Isophorone 13				
Hydrazine Sulfate				
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Hydrogen Fluoride 7664-39-3 3,100 a Hydrogen Sulfide 7783-06-4 2,800,000 a Hydroquinone 123-31-9 0.052 b Imazalil 35554-44-0 0.9 b Imazaquin 81335-37-7 1,400 b Imazethapyr 81335-77-5 2,500 b Indeno[1,2,3-cd]pyrene 193-39-5 1.1 a Iodine 7553-56-2 4 e Iprodione 36734-19-7 13 b Isophorone 78-83-1 72 b Isopropalin 33820-53-0 55 b Isopropanol 67-63-0 5 b Isopropyl Methyl Phosphonic Acid 1832-54-8 26 b Isoxaben 82558-50-7 120 b JP-7 E1737665 430,000,000 a Lactofen 77501-63-4 280 b Lactonitrile 78-97-7 0.049 b Lead acetate 301-04-2 0.11 b Lead subacetate 1335-32-6 <td< td=""><td></td><td>74-90-8</td><td>0.88</td><td></td></td<>		74-90-8	0.88	
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Lead subacetate 1335-32-6 0.12 b Lewisite 541-25-3 0.0023 b				
Lewisite 541-25-3 0.0023 b				
Linuron 330-55-2 6.6 b			i	
Lithium Perchlorate 7791-03-9 55 a				

Chemical Name	CAS	Clean Fill Value	Note
Malathion	121-75-5	6	b
Maleic Anhydride	108-31-6	23	b
Maleic Hydrazide Malononitrile	123-33-1 109-77-3	130 0.025	<u>b</u> b
Mancozeb	8018-01-7	46	b
Maneb	12427-38-2	8.4	b
MCPA ((4-chloro-2-methylphenoxy)acetic acid)	94-74-6	0.097	d
MCPB MCPP	94-81-5 93-65-2	1.6 0.28	<u> </u>
Mephosfolan	950-10-7	0.26	b
Mepiquat Chloride	24307-26-4	12	b
Mercaptobenzothiazole, 2-	149-30-4	1.1	b
Mercuric Chloride (and other Mercury salts) Mercury (methyl)	7487-94-7 22967-92-6	23 0.0002	a e
Merphos	150-50-5	2.3	a
Merphos Oxide	78-48-8	0.084	b
Metalaxyl Methacrylonitrile	57837-19-1 126-98-7	20 0.026	<u> </u>
Methamidophos	10265-92-6	0.013	b
Methanol	67-56-1	250	b
Methidathion Methodathion	950-37-8 16752-77-5	0.43	b
Methomyl Methoxy-5-nitroaniline, 2-	16752-77-5 99-59-2	6.6 0.032	<u> </u>
Methoxychlor	72-43-5	5.1	g
Methoxyethanol Acetate, 2-	110-49-6	0.025	b
Methoxyethanol, 2- Methyl Acetate	109-86-4 79-20-9	0.35 250	<u> </u>
Methyl Acrylate	96-33-3	0.53	p p
Methyl Ethyl Ketone (2-Butanone)	78-93-3	72	b
Methyl Hydrazine	60-34-4	0.000078	b
Methyl Iodide Methyl Isobutyl Ketone (4-methyl-2-pentanone)	74-88-4 108-10-1	0.038 9.7	g q
Methyl Isocyanate	624-83-9	0.035	b b
Methyl Methacrylate	80-62-6	18	b
Methyl Methanesulfonate	66-27-3	0.0096	b
Methyl Parathion Methyl Phosphonic Acid	298-00-0 993-13-5	0.44 14	b b
Methyl Styrene (Mixed Isomers)	25013-15-4	2.3	b b
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.11	d
Methyl-1,4-benzenediamine dihydrochloride, 2-	615-45-2	0.22	b
Methyl-2-Pentanol, 4-	108-11-2	84	<u>b</u>
Methyl-5-nitroaniline, 2- (5-Nitro-o-toluidine) Methylaniline Hydrochloride, 2-	99-55-8 636-21-5	0.28 0.016	b b
Methylarsonic acid	124-58-3	3.5	b
Methylbenzene,1-4-diamine monohydrochloride, 2-	74612-12-7	13	а
Methylbenzene-1,4-diamine sulfate, 2-	615-50-9	5.4	a
Methylcholanthrene, 3-	56-49-5	0.0055	a
Methylene-bis(2-chloroaniline), 4,4'- Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	101-14-4 101-61-1	0.11 0.16	b b
Methylenebisbenzenamine, 4,4'-	101-77-9	0.013	b
Methylenediphenyl Diisocyanate	101-68-8	850,000	a
Methylnaphthalene, 1- Methylnaphthalene, 2-	90-12-0 91-57-6	0.36 11	<u>b</u> b
Methyl-N-nitro-N-nitrosoguanidine, N-	70-25-7	0.00019	b
Methylstyrene, Alpha-	98-83-9	72	b
Metolachlor	51218-45-2	190	b
Metribuzin Metsulfuron-methyl	21087-64-9 74223-64-6	9 110	<u>b</u> b
Mineral oils	8012-95-1	140,000	b
Mirex	2385-85-5	0.036	a
Molinate Monoaluminum phosphate	2212-67-1 13530-50-2	3,800,000	<u>b</u> a
Monoammonium phosphate	7722-76-1	3,800,000	a
Monocalcium phosphate	7758-23-8	3,800,000	a
Monochloramine Managagagium phosphate	10599-90-3	7,800	а
Monomagnesium phosphate Monomethylaniline	7757-86-0 100-61-8	3,800,000 0.84	a b
Monopotassium phosphate	7778-77-0	3,800,000	a
Monosodium phosphate	7558-80-7	3,800,000	a
Myclobutanil N,N'-Diphenyl-1,4-benzenediamine	88671-89-0 74-31-7	340 19	<u>b</u>
Naled	300-76-5	1.1	a b
Naphtha, High Flash Aromatic (HFAN)	64742-95-6	2,300	a
Naphthalene Naphthylamine, 2-	91-20-3 91-59-8	0.077 0.012	<u>d</u> b
Napropamide	15299-99-7	780	b
Nickel Acetate	373-02-4	2.7	b
Nickel Carbonate	3333-67-3	670	a
Nickel Carbonyl Nickel Hydroxide	13463-39-3 12054-48-7	820 820	a a
Nickel Oxide	1313-99-1	840	a
Nickel Refinery Dust	E715532	820	a
Nickel Subsulfide	12035-72-2	0.41	а
Nickelocene Nitrate	1271-28-9 14797-55-8	670 130,000	a a
Nitrite	14797-65-0	7,800	<u>а</u> а
Nitroaniline, 2-	88-74-4	4.8	b
Nitroaniline, 3-	99-09-2	70	е

Chemical Name	CAS	Clean Fill Value	Note
Nitroaniline, 4-	100-01-6	0.096	b
Nitrobenzene	98-95-3	0.0055	b
Nitrocellulose	9004-70-0	780,000	b
Nitrofurantoin	67-20-9	37	b
Nitrofurazone	59-87-0 55-63-0	0.0032	b b
Nitroglycerin Nitroguanidine	55-63-0 556-88-7	0.051 29	b b
Nitromethane	75-52-5	0.0084	b
Nitrophenol, 4-	100-02-7	7	e
Nitropropane, 2-	79-46-9	0.000032	b
Nitropyrene, 4-	57835-92-4	0.2	b
Nitrosodiethanolamine, N- Nitrosodiethylamine, N-	1116-54-7 55-18-5	0.00034 0.0000037	b b
Nitrosodimethylamine, N-	62-75-9	0.0000037	b b
Nitroso-di-N-butylamine, N-	924-16-3	0.00033	b
Nitrosodiphenylamine, N- (Diphenylnitrosamine)	86-30-6	10	d
Nitrosomethylethylamine, N-	10595-95-6	0.000012	b
Nitrosomorpholine [N-]	59-89-2	0.00017	b
Nitroso-N-ethylurea, N-	759-73-9	0.000013	<u>b</u>
Nitroso-N-methylurea, N- Nitrosopiperidine [N-]	684-93-5 100-75-4	0.0000028 0.00026	b b
Nitrosopyrrolidine, N-	930-55-2	0.00026	b b
Nitrotoluene, m-	99-08-1	0.096	b
Nitrotoluene, o-	88-72-2	0.018	b
Nitrotoluene, p-	99-99-0	0.24	b
Nonane, n-	111-84-2	4.5	b
Norflurazon	27314-13-2	110	b
Octabromodiphenyl Ether	32536-52-0 3601-41-0	190 16	a
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) Octamethylpyrophosphoramide	2691-41-0 152-16-9	0.58	g b
Octyl Phthalate, di-N-	152-16-9	0.58	a a
Oryzalin	19044-88-3	0.9	<u>9</u> b
Oxadiazon	19666-30-9	29	b
Oxamyl	23135-22-0	6.6	b
Oxyfluorfen	42874-03-3	2.6	b
Paclobutrazol	76738-62-0	28	b
PAHs - High Molecular Weight PAHs - Low Molecular Weight	0	1.1 29	f f
Paraguat Dichloride	1910-42-5	72	<u>'</u> b
Parathion	56-38-2	26	b
Pebulate	1114-71-2	27	b
Pendimethalin	40487-42-1	960	b
Pentabromodiphenyl Ether	32534-81-9	100	b
Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99)	60348-60-9	5.2	b
Pentachlorobenzene	608-93-5 32598-14-4	1.4	<u>b</u>
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105) Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)	74472-37-0	0.06 0.06	b b
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 114)	31508-00-6	0.06	b
Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)	65510-44-3	0.06	b
Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)	57465-28-8	0.000018	b
Pentachloroethane Pentachloronitrobenzene	76-01-7 82-68-8	0.019 0.09	b b
Pentachlorophenol	87-86-5	0.09	d
Pentaerythritol tetranitrate (PETN)	78-11-5	1.7	b
Pentane, n-	109-66-0	600	b
Perchlorate and perchlorate salts	14797-73-0	55	а
Perfluorobutane sulfonic acid (PFBS)	375-73-5	7.8	b
Perfluorobutanesulfonate	45187-15-3	7.8	b
Permethrin Phenacetin	52645-53-1 62-44-2	3,200 0.58	a b
Phenanthrene	85-01-8	5.5	g q
Phenmedipham	13684-63-4	1,300	b
Phenol	108-95-2	0.79	g
Phenol, 2-(1-methylethoxy)-, methylcarbamate	114-26-1	1.5	b
Phenothiazine	92-84-2	0.84	b
Phenyl Isothiocyanate	103-72-0	0.1	b
Phenylopediamine, m-	108-45-2	1.9	<u>b</u>
Phenylenediamine, o- Phenylenediamine, p-	95-54-5 106-50-3	0.01 0.32	b b
Phenylmercuric Acetate	62-38-4	0.03	b
Phenylphenol, 2-	90-43-7	25	b
Phorate	298-02-2	0.2	b
Phosgene Dh. a was a b	75-44-5	0.31	a
Phosphine	732-11-6 7803-51-2	4.9 23	<u>b</u>
Phosphine Phosphoric Acid	7803-51-2 7664-38-2	3,000,000	a a
Phosphorus, White	7723-14-0	0.09	<u>a</u> b
Phthalic Acid, P-	100-21-0	410	b
Phthalic Anhydride	85-44-9	510	b
Picloram	1918-02-1	23	b
Picramic Acid (2-Amino-4,6-dinitrophenol)	96-91-3	0.078	<u>b</u>
Picric Acid (2,4,6-Trinitrophenol)	88-89-1	5	<u>b</u>
Pirimiphos, Methyl Polybrominated biphenyls	29232-93-7 59536-65-1	0.049 0.018	b a
Polychlorinated biphenyls (Total PCBs)	7-20-02-1	0.018	a C
Polymeric Methylene Diphenyl Diisocyanate (PMDI)			-
, , , , , , , , , , , , , , , , , , , ,	9016-87-9	850.000	а
Polyphosphoric acid	9016-87-9 8017-16-1	850,000 3,800,000	a a
Polyphosphoric acid Potassium Cyanide Potassium Perchlorate		850,000 3,800,000 160 55	

Chemical Name	Chamical Name	C ^ C	Cloop Fill V-1	N1 - ± -
Processor Shee Cyanade She 5-1 6 390 a				
Palaschart Introdumosphate				
Procession				
Programmer 2,339-36-0 98 5 7 7 7 7 7 7 7 7 7			, ,	
Promotech				
Fromestrin				
Proposed 799-98-8	Prometryn	7287-19-6	54	b
Properties 331,235 8 0.66 b Properties 107,197 0.49 b b Propietoracele 107,297 0.10 0.70				_
Properties 137-40-2 18 b Proposeine 139-40-2 19 19 19 19 19 19 19 1	· · · · · · · · · · · · · · · · · · ·			_
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Propicions 122-42-9				
Propionace				
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Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47) 5436-43-1 3.2 b Tetrachloroaniline, 2,3,5,6- 3481-20-7 20 e Tetrachlorobenzene, 1,2,3,4- 634-66-2 10 e Tetrachlorobiphenyl, 3,3',4,4'- 95-94-3 0.47 b Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77) 32598-13-3 0.038 a Tetrachlorobiphenyl, 3,4',4',5- (PCB 81) 70362-50-4 0.0037 b Tetrachlorodibenzodioxin (TCDD), 2,3,7,8- (dioxin) 1746-01-6 0.00000029 g Tetrachloroethane, 1,1,1,2- 630-20-6 0.013 b Tetrachloroethylene (PCE) 127-18-4 0.18 g Tetrachlorophenol, 2,3,4,6- 58-90-2 11 b Tetrachlorotoluene, p- alpha, alpha, alpha, alpha- 5216-25-1 0.00027 b Tetraethyl Dithiopyrophosphate 3689-24-5 0.31 b Tetraethyl lead 78-00-2 0.00028 b Tetrapotassium phosphate 7320-34-5 3,800,000 a Tetrasodium pyrophosphate 7722-88-5 3,800,000 a				
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Tetrasodium pyrophosphate 7722-88-5 3,800,000 a				
	Tetrapotassium phosphate	7320-34-5		a
Tetryl (Trinitrophenylmethylnitramine) 479-45-8 1.5 g	Tetrasodium pyrophosphate	7722-88-5	3,800,000	
	Tetryl (Trinitrophenylmethylnitramine)	479-45-8	1.5	<u>g</u>

Chemical Name	CAS	Clean Fill Value	Note
Thallic Oxide	1314-32-5	1.6	a
Thallium (I) Nitrate	10102-45-1	0.78	a
Thallium (Soluble Salts) Thallium Acetate	7440-28-0 563-68-8	0.78 0.0025	a b
Thallium Carbonate	6533-73-9	0.0025	b
Thallium Chloride	7791-12-0	0.78	a
Thallium Selenite	12039-52-0	0.78	a
Thallium Sulfate Thifensulfuron-methyl	7446-18-6 79277-27-3	1.6 16	a b
Thiobencarb	28249-77-6	33	b
Thiocyanates	E1790664	16	a
Thiocyanic Acid Thiocyanomethylthio benzothiazole, 2- (TCMTB)	463-56-9 21564-17-0	16 200	a b
Thiodiglycol	111-48-8	17	b
Thiofanox	39196-18-4	0.11	b
Thiophanate, Methyl	23564-05-8	0.34	<u>b</u>
Thiram Titanium Tetrachloride	137-26-8 7550-45-0	25 140,000	b a
Toluene	108-88-3	23	g
Toluene-2,4-diisocyanate	584-84-9	0.015	b
Toluene-2,5-diamine Toluene-2,6-diisocyanate	95-70-5 91-08-7	0.0078 0.016	b b
Toluic Acid, p-	99-94-5	1.4	b
Toluidine, o- (Methylaniline, 2-)	95-53-4	0.12	b
Toluidine, p- Total Petroleum Hydrocarbons (Aliphatic High)	106-49-0 E1790670	0.066 140,000	b b
Total Petroleum Hydrocarbons (Aliphatic High) Total Petroleum Hydrocarbons (Aliphatic Low)	E1790670 E1790666	520	a D
Total Petroleum Hydrocarbons (Aliphatic Medium)	E1790668	90	b
Total Petroleum Hydrocarbons (Aromatic High)	E1790676	2,500	a
Total Petroleum Hydrocarbons (Aromatic Low) Total Petroleum Hydrocarbons (Aromatic Medium)	E1790672 E1790674	1 1.4	b b
Toxaphene	8001-35-2	0.36	d d
Tralomethrin	66841-25-6	470	а
Triacetin Triadimafon	102-76-1	27,000	b
Triadimefon Triallate	43121-43-3 2303-17-5	30 0.06	b b
Trialuminum sodium tetra decahydrogenoctaorthophosphate (dihydrate)	15136-87-5	3,800,000	a
Triasulfuron	82097-50-5	13	b
Tribenuron-methyl	101200-48-0	3.7	b
Tribromobenzene, 1,2,4- Tribromophenol, 2,4,6-	615-54-3 118-79-6	3.8 13	b b
Tributyl Phosphate	126-73-8	1.5	b
Tributyltin Compounds	E1790678	19	a
Tributyltin oxide (TBTO)	56-35-9 7758-87-4	19	a
Tricalcium phosphate Trichloro-1,2,2-trifluoroethane, 1,1,2- (Freon 113)	76-13-1	3,800,000 1,600	a b
Trichloroacetic Acid	76-03-9	0.013	b
Trichloroaniline HCl, 2,4,6-	33663-50-2	0.44	b
Trichloroaniline, 2,4,5- Trichloroaniline, 2,4,6-	636-30-6 634-93-5	20 0.22	e b
Trichlorobenzene, 1,2,3-	87-61-6	1.3	b
Trichlorobenzene, 1,2,4-	120-82-1	0.2	b
Trichloroethane, 1,1,1-	71-55-6	190	d
Trichloroethane, 1,1,2- Trichloroethylene (TCE)	79-00-5 79-01-6	0.0063 0.013	d d
Trichlorofluoromethane (Freon 11)	75-69-4	52	g
Trichlorophenol, 2,4,5-	95-95-4	4	e
Trichlorophenol, 2,4,6- Trichlorophenoxyacetic Acid, 2,4,5-	88-06-2 93-76-5	2.4 4.1	d b
Trichlorophenoxypropionic acid, -2,4,5	93-72-1	3.7	b
Trichloropropane, 1,1,2-	598-77-6	2.1	b
Trichloropropane, 1,2,3-	96-18-4	0.000019	b
Trichloropropene, 1,2,3- Tricresyl Phosphate (TCP)	96-19-5 1330-78-5	0.019 900	b b
Tridiphane	58138-08-2	7.8	b
Triethylamine	121-44-8	0.26	b
Triethylene Glycol Trifluoroethane, 1,1,1-	112-27-6 420-46-2	530 7,800	b b
Trifluralin	1582-09-8	5	b
Trimagnesium phosphate	7757-87-1	3,800,000	a
Trimethyl Phosphate Trimethylbenzene, 1,2,3-	512-56-1 526-73-8	0.052 4.9	b b
Trimethylbenzene, 1,2,4-	95-63-6	10	d d
Trimethylbenzene, 1,3,5-	108-67-8	11	d
Trimethylpentene, 2,4,4-	25167-70-8 688-73-3	13	b
Tri-n-butyltin Trinitrobenzene, 1,3,5-	688-73-3 99-35-4	4.9 10	b g
Trinitrotoluene, 2,4,6- (TNT)	118-96-7	0.9	b
Triphenylphosphine Oxide	791-28-6	90	b
Tripotassium phosphate Tris(1,3-Dichloro-2-propyl) Phosphate	7778-53-2 13674-87-8	3,800,000 480	a b
Tris(1-chloro-2-propyl) Phosphate Tris(1-chloro-2-propyl)phosphate	13674-87-8	39	b
Tris(2,3-dibromopropyl)phosphate	126-72-7	0.0078	b
Tris(2-chloroethyl)phosphate	115-96-8	0.23	b
Tris(2-ethylhexyl)phosphate			
Trisodium phosphate	78-42-2	170	a a
Trisodium phosphate Uranium (Soluble Salts)			a a e

Chemical Name	CAS	Clean Fill Value	Note
Vanadium Pentoxide	1314-62-1	460	а
Vernolate	1929-77-7	0.53	b
Vinclozolin	50471-44-8	0.96	b
Vinyl Acetate	108-05-4	5.2	b
Vinyl Bromide	593-60-2	0.0031	b
Vinyl Chloride	75-01-4	0.00057	d
Warfarin	81-81-2	0.35	b
Xylene, m-	108-38-3	11	b
Xylene, o-	95-47-6	1	е
Xylene, P-	106-42-3	11	b
Xylenes	1330-20-7	1.4	g
Zinc Cyanide	557-21-1	3,900	а
Zinc Phosphide	1314-84-7	23	а
Zineb	12122-67-7	170	b
Zirconium	7440-67-7	6.3	a

Notes:

- a Regional Screening Levels, EPA (May 2018), Residential soil. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm
- b Regional Screening Levels, EPA (May 2018), groundwater protection (x60 to convert to Oregon dilution attenuation factor).
- $c Risk\ Based\ Concentrations,\ DEQ\ (May\ 2018),\ Residential\ soil.\ \ https://www.oregon.gov/deq/FilterDocs/RBDMTable.pdf$
- d Risk Based Concentrations, DEQ (May 2018), Leaching to groundwater.
 e Table 1, Guidance for Ecological Risk Assessment, Level II Screening Level Values, DEQ (2001), https://www.oregon.gov/deq/FilterDocs/GuidanceEcologicalRisk.pdf
 f Ecological Soil Screening Levels, EPA (2005, 2007), http://www.epa.gov/ecotox/ecossl/
 g Ecotoxicological screening benchmarks developed by Oak Ridge National Laboratory: https://www.lanl.gov/environment/protection/eco-risk-assessment.php



APPENDIX I.1 ERM SAMPLE NOMENCLATURE – EQUIS DATABASE

A unique sample identification will be assigned to each sample collected for the project. The ERM CQA Officer (or the CQC Manager for CQC samples) or their respective designee will be responsible for labeling each sample as it is collected in the field. Indelible ink will be used to fill out sample labels. Each sample will be labeled in accordance with the requirements for the EQuIS database, which are documented in the Data Management Plan for the Arkema Site IRAM #1 Implementation. A dash will be used to separate each basic sample designation category. Each sample label will include the following information:

- Project name/number and task number (if needed);
- Identification as a CQC or CQA sample;
- Sample location/identification number;
- Sample matrix code;
- Sample depth (if appropriate);
- Date and time of collection;
- Analysis to be performed and preservation (if any); and
- Sampler's initials.

The sample identification, coupled with a detailed field log, must include adequate information to allow the data reviewer to know the origin and nature of the sample (e.g., clean imported fill, untreated soil, ISS-treated soil, untreated/treated wastewater, air samples, etc.). The following sample designation procedures will be used for all samples collected for laboratory analyses:

- The designation system will be composed of a code sequence that will adequately indicate the sample matrix and sample number (or other descriptive qualifiers as appropriate)
- If necessary, an additional code will be added to the sample label to indicate the order in which multiple similar samples were collected on a single day or at a single location (i.e., duplicate, split sample, etc.)
- QA/QC testing information will be included on the sample label where appropriate (i.e., duplicate, field blank, matrix spike/matrix spike duplicate, trip blank, etc.)

The designation affixed to a sample will be properly documented and cross-referenced to field notes, sampling records, COCs, project sample inventory, and other relevant and required documentation. An inventory of every sample collected will be maintained on site and will include basic information (e.g., sample name, type, collection date, etc.) for every sample submitted for laboratory analyses.



APPENDIX I.2 CLEAN IMPORTED FILL MATERIAL

Clean Fill Determinations



Materials Management

700 NE Multnomah St. Suite 600

Portland, OR 97232 Phone: 503-229-5696

800-452-4011 503-229-5850 Contact: Heather Kuoppamaki

Kuoppamaki.heather@deq.st ate.or.us

www.oregon.gov/DEQ

DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.



Documents can be provided upon request in an alternate format for individuals with disabilities
or in a language other than English for people with limited English skills. To request a document in another format or language, call DEQ in Portland at 503-229-5696, or toll-free in Oregon at 1-800-452-4011, ext. 5696; or email deqinfo@deq.state.or.us .

Disclaimer

This directive is intended solely as guidance for DEQ employees. It does not constitute rulemaking by the Environmental Quality Commission and may not be relied upon to create an enforceable right or benefit, substantive or procedural, enforceable at law or in equity, by any person. With written managerial approval, DEQ employees may deviate from this directive. DEQ anticipates revising this directive from time to time as conditions warrant.

Document Development

Prepared By:	Heather Kuoppamaki			
Reviewed By:	Audrey O'Brien			
Approved By:	fyd day	·	Date:	February 21, 2019

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Tables:

Table 1 - Province specific and background metals Clean Fill Screening Levels

Table 2 - Clean fill screening levels for organics and other selected constituents

Figures:

Figure 1 – Physiographic Provinces of Oregon

Figure 2 – Clean Fill Evaluation Flow Chart

Intent/Purpose/Statement of Need

DEQ often receives requests to determine or confirm whether solid waste qualifies as clean fill. Oregon Administrative Rules define clean fill and allow DEQ to exempt clean fill from regulation as solid waste in many instances. It is important to note that clean fill that is mixed with solid waste is considered to be solid waste. This directive describes the screening criteria DEQ Materials Management staff uses to evaluate whether material meets DEQ's definition of clean fill for purposes of reuse or disposal.

2. Applicability

DEQ Materials Management staff are to use this Internal Management Directive to determine whether a waste material is clean fill or needs to be regulated as a solid waste.

3. Summary

This directive lays out a process and provides screening values that DEQ Materials Management staff should use to prepare and review clean fill determinations.

Section 7 of this directive describes the process that DEQ Materials Management staff will use to make clean fill determinations. Section 8 provides information on how the clean fill screening levels were determined, and information on how and when the screening levels can be updated. Tables 1 and 2 provide clean fill screening levels.

4. Background and Definitions

<u>Clean fill</u> – As defined in DEQ regulations, clean fill means "material consisting of soil, rock, concrete, brick, building block, tile or asphalt paving, which do not contain contaminants that could adversely impact the waters of the state or public health." Clean fill does not include "putrescible wastes, construction and demolition wastes and industrial solid wastes." [OAR 340-093-0030(18)]. This definition is clarified in the following subsections of the regulations:

Asphalt paving means "asphalt which has been applied to the land to form a street, road, path, parking lot, highway, or similar paved surface and that is weathered, consolidated, and does not contain visual evidence of fresh oil." [OAR 340-093-0030(9)].

Clean fill that has been separated from construction and demolition waste is considered clean fill [OAR 340-093-0030(26)].

<u>Clean fill land disposal sites</u> – DEQ's Materials Management Program does not regulate clean fill land disposal sites that are managed correctly. If solid waste is accepted at such a clean fill land disposal site, the facility is then subject to permit requirements and possible enforcement action by DEQ. This is stated in the following regulations:

A disposal site does not include a site that is used by the owner or person in control of the premises to dispose of soil, rock, concrete or other similar non-decomposable clean fill material, unless the site is used by the public either directly or through a collection service [OAR 340-093-0030(38)].

A person owning or controlling a land disposal site used exclusively for the disposal of clean fill may be exempt from DEQ solid waste permitting requirements. Clean fill still must be managed so that, when placed or disposed, it will not create an adverse impact on groundwater, surface water, or public health or safety. [OAR 340-093-0050(3)(c)].

<u>Permit exemptions</u> - Persons owning or controlling a land disposal site used exclusively for the disposal of clean fill, are specifically exempted from the requirements to obtain a DEQ solid waste permit. Such persons must comply with all other provisions of OAR chapter 340, divisions 93 through 97 and other applicable laws, rules, and regulations regarding solid waste disposal. The exemption does not apply if the materials have been contaminated such that the Department determines that their nature, amount or location may create an adverse impact on groundwater, surface water or public health or safety [based on OAR 340-093-0050(3)(c)]. Additional information on receiving DEQ approval at an exempt site is provided in OAR 340-093-0080:

A person wishing to obtain an exemption from the requirement to obtain a solid waste permit for disposal of an inert waste in specified locations may submit a request to the Department. The applicant must demonstrate that the waste is substantially the same as "clean fill." The request shall include but not be limited to the following information:

- (a) The exact location (including a map) at which the waste is to be disposed of and a description of the surrounding area;
- (b) The monthly rate of disposal;
- (c) A copy of the Safety Data Sheet (or equivalent, if a Safety Data Sheet is not available) for all applicable raw materials used at the facility generating the waste;
- (d) A description of the process generating the waste and how that process fits into the overall operation of the facility;
- (e) Documentation that the waste is not hazardous as defined in OAR 340, division 101. The procedure for making a hazardous waste determination is in OAR 340-102-0011;
- (f) A demonstration that the waste is inert, stable, non-putrescible, and physically similar to soil, rock, concrete, brick, building block, tile, or asphalt paving;
- (g) A demonstration that the waste will not discharge constituents which would adversely impact the waters of the state or public health.

5. Abbreviations Used in This Directive

DEQ - Oregon Department of Environmental Quality

ECO SSL – EPA Ecological Soil Screening Level

EPA – United States Environmental Protection Agency

IMD – Internal Management Directive

OAR – Oregon Administration Rule

RBC – Oregon DEQ Risk Based Concentration

RSL – EPA Regional Screening Level

USGS – United States Geological Survey

VOC - Volatile Organic Compound

6. Updates to 2014 Directive

This 2018 update makes the following changes to the clean fill IMD-

- The format is modified to meet DEQ's IMD format guidelines.
- Modifies language to reflect rule requirements.
- Clarifies and expands some of the guidance language.
- Updates the clean fill tables to:
 - include EPA groundwater protection SSLs (adjusted to reflect Oregon DEQ dilution attenuation factor),
 - remove the DEQ chemical-specific calculation for leaching to groundwater [since these are now provided by the EPA soil screening levels (SSL)],
 - incorporate updated DEQ risk based concentrations (RBCs) and EPA regional screening levels (RSLs), and
 - include screening ecological benchmarks developed by Oak Ridge National Laboratory.
- Updates links to Oregon DEQ's new web pages.

• Removes lanthanum, niobium, technetium, tellurium, titanium, and tungsten from Table 1 as they are not commonly detected in soils in Oregon, and are generally not contaminants of interest at sites investigated in Oregon.

7. Directive

7.1. Who can make clean fill determinations

7.1.a. Generator

When generators of excavated materials (or their consultants) ask how they can make their own clean fill determinations, DEQ Materials Management staff should explain that, when presented with a permit-exemption application, DEQ evaluates whether a material is clean fill according to the process outlined in this IMD.

A generator always has the option to do their own statistical analysis and make site-specific clean fill decisions based on the material generated.

7.1.b. DEQ Materials Management

DEQ Materials Management staff should encourage the generators of material (or their consultants) to make their own clean fill determination based on this IMD, including the clean fill screening levels provided in Table 1 and Table 2. If generators want to use different risk assumptions or would like DEQ to review clean fill determinations and provide approval, direct them to apply for a permit exemption (OAR 340-093-0080) and pay any associated fees.

7.1.c. DEQ Cleanup

If a generator is remediating a site under our Cleanup Program, DEQ Materials Management staff should involve DEQ's project manager for the site. Under cleanup statutes, DEQ may exempt the onsite reuse of materials from regulation under solid waste statutes, provided that substantive requirements are met. [See ORS 465.315 (3) and (4)]

7.2. Placement Locations

7.2.a. Physiographic Provinces

The clean fill values shown in Table 1 take into account naturally occurring concentrations of metals and metalloids in the various physiographic provinces within Oregon (Figure 1). These concentrations are compiled from DEQ Cleanup Program's background metals technical report¹. Clean fill generated in one physiographic province may not qualify as clean fill in another physiographic province with lower background metals concentrations. The material must be below the clean fill screening levels in both the province in which it is generated and the province in which it is disposed.

¹ DEQ. 2013. Development of Oregon Background Metals Concentrations in Soil, Technical Report. March. https://www.oregon.gov/deq/FilterDocs/DebORbackgroundMetal.pdf

7.2.b. In-Water Locations

The clean fill determination process applies only to terrestrial (upland) reuse or disposal. The Clean Water Act and associated state water quality rules, rather than the solid waste rules, govern the filling of wetlands or waters of the state.

If generators of clean fill plan to place the material in wetlands or other waters of the state, DEQ Materials Management staff should direct them to the Army Corps of Engineers and the Oregon Department of State Lands.

7.2.c. Clean Fill Land Disposal Sites

If any solid wastes are be disposed of at a site that accepts clean fill, the site is no longer exempt from DEQ solid waste permitting requirements.

7.3. Clean Fill Evaluation

The clean fill definition in OAR 340-093-0030 refers to material type as well as the presence of contaminants that could adversely impact waters of the state and human health. Both parts of the definition must be satisfied for the material to be considered clean fill.

- (1) The material type is limited to soil, rock, concrete, brick, building block, tile or asphalt paving and does not consist of putrescible wastes, construction and demolition wastes and industrial solid wastes.
- (2) The contaminants may **not** adversely impact waters of the state or public health. The clean fill screening level tables are based on background concentrations (for metals) and risk screening levels published by Oregon DEQ and EPA.

The steps to conduct a clean fill determination are described below. These steps are also shown in Figure 2.

7.3.a. Material description

The first step in performing a clean fill determination is to check that the material meets the general material definition. To do this, determine whether the material:

- Consists of soil, rock, concrete, brick, building block, tile or asphalt paving; and,
- Does not include putrescible wastes, construction and demolition wastes, or industrial solid wastes

In addition, specific material attributes should be considered. Some examples:

- Asphalt paving must be used, be weathered material (not fresh asphalt) and consist of large, intact chunks. Ground up asphalt is not clean fill.
- Concrete, brick, blocks or tile must be unpainted, unless the materials have been evaluated for hazardous constituents, and concentrations of those constituents are below clean fill screening levels.

• If filler material used in the production of concrete, brick, building block, or tile has the potential to impact waters of the state or public health, the material is not clean fill.

Material that is determined to not be clean fill is solid waste. It may be disposed under a location-specific permit exemption, a solid waste letter authorization, or in a permitted landfill. The material also potentially may be reused under the authority of a Beneficial Use Determination.

7.3.b. Contaminants Evaluation

The second step in conducting a clean fill determination is to evaluate the risk from contaminants in the material. This is based on the presence of staining or odor, known hazardous substances, and laboratory analysis of the material for contaminants of potential concern.

Staining or odor

If the material appears chemically stained or has a chemical smell it is not clean fill. Chemicals that stain or produce odors indicate the material contains contaminants that could impact waters of the state or public health.

Hazardous waste

If the material contains a listed or characteristic hazardous waste it is not clean fill, even if the chemical concentrations are below clean fill table values. The generator may use alternative management methods such as "contained-in" determinations² to decide the ultimate disposal of the material.

Characterize the fill for chemical characterization

DEQ Materials Management staff should determine whether applicants adequately characterized the chemical quality of fill materials.

DEQ review must ensure that the applicant proposes and conducts an adequate sampling program to characterize the material. Sampling programs should be based on an understanding of the historical site use, processes that were used at the site, spatial variability of site soils, and potential chemicals that were handled, used, or stored at the site. Sampling programs should include: how samples are collected (in-situ or ex-situ), where samples are collected to obtain representative results, types of samples collected (discrete or composite), the number of samples collected, and the constituents the samples are being analyzed for. The sampling program should depend on the size, condition, spatial variability of the soils, and history of the area the generator will excavate (or has excavated).

Because designing a sampling program to collect representative data for heterogeneous materials is potentially complex, DEQ staff should refer generators to sampling guidance such as EPA

² DEQ, 2015. Conducting Contained-In Determinations for Environmental Media, Internal Management Directive. https://www.oregon.gov/deq/Filtered%20Library/IMDEnvMediaContainedinDet.pdf

(1986)³, EPA (2002)⁴, ITRC (2012)⁵ or to an experienced consultant when asked "how many samples should I collect?" during the pre-application period.

Examples of site considerations:

An applicant would need to collect fewer samples along a long stretch of highway through a single land use (such as agricultural fields with similar crops) than in areas where land use changes frequently.

Materials from agricultural lands should be tested for metals and pesticides/herbicides at a minimum. Materials from a facility whose history is uncertain may require testing for a larger list of analytes. Historical site information may be available in an environmental site assessment conducted in accordance with standard practices (for instance, ASTM E1903)⁶.

If the material is sediment that is being dredged and will be placed upland, DEQ Materials Management staff should work with DEQ Water Quality staff to determine if sampling done for the 401 water quality certification or dredging permits is sufficient to adequately characterize the sediment that will be placed upland.

7.3.c. Compare chemical concentrations to clean fill screening levels

Once an appropriate sampling and analysis program has been completed, the results should be compared to clean fill screening levels. These levels are provided in Tables 1 and 2. When reviewing the results, make sure the laboratory method detection limit (MDL) is lower than the screening table value.

If the contaminant concentrations in the material do not exceed clean fill screening levels defined in the tables, the material is clean fill, provided the other criteria described in this IMD are also met, such as absence of staining or odor.

Note that the material may be clean fill even if there are some exceedances of these screening levels. For instance, if an appropriate statistical analysis⁷ demonstrates that the concentration of the contaminants are very close to clean fill screening values, DEQ may determine that the material can be considered to be clean fill in certain cases.

If a clean fill determination cannot be made, the party may contact DEQ to discuss other options, such as a permit exemption, disposal under a solid waste letter authorization, and disposal at a permitted landfill.

³ EPA, 1986. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), Chapter 9, https://www.epa.gov/sites/production/files/2015-10/documents/chap9 0.pdf

⁴ EPA, 2002. Guidance on Choosing a Sampling Design for Environmental Data Collection, EPA QA/G-5S. https://www.epa.gov/sites/production/files/2015-06/documents/g5s-final.pdf

⁵ ITRC, 2012. Incremental Sampling Methodology, Technical and Regulatory Guidance. February. https://www.itrcweb.org/ism-1/pdfs/ISM-1 021512 Final.pdf

⁶ ASTM, 2011. Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process, E1903-11. http://www.astm.org/Standards/E1903.htm

⁷Calculating a 90% Upper Confidence Limit is usually an appropriate statistical method. https://www.epa.gov/land-research/proucl-software

8. Derivation of clean fill screening levels

8.1. Table 1

The values in Table 1 are based on the following:

- DEQ's technical report on background metals concentrations in soil⁸
- DEQ and EPA ecological screening levels⁹, ¹⁰
- Ecological screening benchmarks developed by Oak Ridge National Laboratory¹¹
- DEO RBCs for residential soils 12
- EPA RSLs for residential soils¹³
- Calculations based on USGS data¹⁴

In the case of background metals concentrations exceeding human health or ecological screening values, the background metal values are shown. Otherwise, the lowest of human or ecological screening values are used.

In the case of metals for which background concentration levels are not available, DEQ used data compiled by USGS to calculate an estimated background value. DEQ used ProUCL to calculate a nonparametric 95% Upper Prediction Limit.

The background concentration of lead for the Portland Basin appears to include anthropogenic influences (it is 79 mg/kg compared to no more than about 36 mg/kg in the rest of the state). Therefore, DEQ used the background lead concentration from the South Willamette Basin province as a background concentration for lead (28 mg/kg) for the Portland Basin.

8.2. Table 2

Values in Table 2 are based on the lowest of the following:

- Residential soil concentrations from DEQ's Risk-Based Decision Making table
- EPA's residential soil Regional Screening Level

⁸ DEQ. 2013. Development of Oregon Background Metals Concentrations in Soil, Technical Report. March. https://www.oregon.gov/deq/FilterDocs/DebORbackgroundMetal.pdf

⁹ DEQ, 1998. Guidance for Ecological Risk Assessment: Levels I, II, III, IV. April. https://www.oregon.gov/deq/FilterDocs/GuidanceEcologicalRisk.pdf

¹⁰ EPA, Interim Ecological Soil Screening Level Documents. Website accessed September 6, 2018: https://www.epa.gov/chemical-research/interim-ecological-soil-screening-level-documents

¹¹ Oak Ridge National Laboratory, https://www.lanl.gov/environment/protection/eco-risk-assessment.php

¹² DEQ, 2018. Risk-Based Concentrations for Individual Chemicals. May. https://www.oregon.gov/deg/FilterDocs/RBDMTable.pdf

¹³ EPA, 2018. Regional Screening Levels (RSLs) – Generic Tables. May. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

¹⁴ USGS, 2013. Geochemical and Mineralogical Data for Soils of the Conterminous United States. https://pubs.usgs.gov/ds/801/pdf/ds801.pdf

- EPA's risk-based soil screening levels (SSL) for protection of groundwater, multiplied by 60.
 EPA uses a dilution attenuation factor (DAF) of 1 in the calculation of their SSLs; DEQ uses a default DAF of 60. Therefore the EPA SSL is multiplied by 60 to be consistent with DEQ methodology.
- For chemicals where DEQ and EPA have both calculated a screening level for groundwater protection, the DEQ level is used.
- DEQ's Ecological Screening Level Values
- EPA's Ecological Soil Screening Levels
- Ecological screening benchmarks developed by Oak Ridge National Laboratory¹⁵

8.3. Modifications

If any of the references screening levels are updated and the clean fill guidance has not been updated to reflect the new screening levels, generators can calculate their own, updated, clean fill screening levels based on the methods discussed above.

9. Review Schedule

This Directive and its referenced clean fill screening tables should be reviewed and updated when DEQ or EPA risk-based screening levels change.

¹⁵ Oak Ridge National Laboratory, https://www.lanl.gov/environment/protection/eco-risk-assessment.php

10. Record of Revisions to IMD

Revision	Date	Changes	Editor
0	07/15/2014	New document	Bill Mason
1	07/23/2014	a. Corrected URL in footnote 1b. Corrected OAR reference on page 3	Bill Mason
2	07/12/2018	a. Incorporated new RBCs, RSLs and SSLsb. Updated formattingc. See Section 6 for all changes	Heather Kuoppamaki
3	11/7/2018	Grammatical/typographical review	Julie Miller
4	4/3/2019	Minor edits in Tables 1 and 2. Fix footnotes in Table 1, remove Chromium III from Table 2	Heather Kuoppamaki
5	6/17/2019	Minor edits in Tables 1 and 2. Add CAS numbers and BaP equivalents to Table 2.	Heather Kuoppamakirecordof

Table 1 - Clean fill screening levels for province specific and background metals. All concentrations in mg/kg

	Statewide		Province* Background / Clean Fill Value									
Elements	Clean Fill Value	Basin and Range	Blue Mountains	Cascade Range	Coast Range	Deschutes- Columbia Plateau	High Lava Plains	Klamath Mountains	Owyhee Uplands	South Willamette Valley	Portland Basin	Note
Antimony		0.86	1.3d d	0.67	0.55	1.3	0.35	0.59	1.3 d	0.39	0.56	a
Arsenic		12	14	19	12	6.8	7.2	12	17	18	8.8	a
Barium		790	950	630	840	700	790	630	970	730	790	a
Beryllium		2.4	2.6	2.1	2.8	2.6	2.6	1.4	2	2.6	2	a
Bismuth	20											c
Cadmium		0.81	0.69	0.54	0.54	0.4	0.78	0.52	N/A	1.6	0.63	a
Chromium (total)		100	190	200	240	170	140	890	120	100	76	a
Cobalt	43											b
Copper		110	120	73	100	29	62	110	50	140	34	a
Lead		29	21	34	34	18	21	36	30	28	28 **	a
Lithium	35											b
Manganese		1,600	1,800	2,100	2,100	1,300	1,500	3,000	1,200	2,900	1,800	a
Mercury		0.28	1.4	0.24	0.11	0.04	0.06	0.17	0.75	0.07	0.23	a
Molybdenum	2.1											b
Nickel		66	92	110	160	78	75	630	53	50	47	a
Selenium		0.41	0.93	0.52	1.5	0.46	0.54	0.8	0.49	0.68	0.71	a
Silver		0.42	0.51	0.17	0.41	0.82	0.68	0.16	2.2	0.33	0.82	a
Strontium (stable)	4,700											b
Thallium		0.22	N/A	2.8	5.4	4.6	0.21	0.31	N/A	5.7	5.2	a
Tin (inorganic)	50											c
Uranium	5											С
Vanadium		270	400	280	260	300	220	290	190	370	180	a
Zinc		130	160	170	140	130	140	140	120	200	180	a

Notes:

- a Table 4, Development of Oregon Background Metals Concentrations in Soil, Technical Report, DEQ (2013),
- https://www.oregon.gov/deq/FilterDocs/DebORbackgroundMetal.pdf. Background concentrations (a or d), when available, are used for the clean fill value. When background concentrations are not available, risk screening values are used.
- b 95% Upper Prediction Limit calculated using USGS data for Oregon, Smith, D.B., Cannon, W.F., Woodruff, L.G., Solano, Federico, Kilburn, J.E., and Fey, D.L., 2013, Geochemical and mineralogical data for soils of the conterminous United States: U.S. Geological Survey Data Series 801, 19 p., http://pubs.usgs.gov/ds/801/
- c Table 1, Guidance for Ecological Risk Assessment, Level II Screening Level Values, DEQ (2001), https://www.oregon.gov/deq/FilterDocs/GuidanceEcologicalRisk.pdf. Only used if ecotoxicological benchmarks from Oak Ridge National Laboratory are not available.
- d Ecotoxicological screening benchmarks developed by Oak Ridge National Laboratory: https://www.lanl.gov/environment/protection/eco-risk-assessment.php
- e Regional Screening Levels, EPA (May 2018), Residential soil. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration table/index.htm
- * Province boundaries are presented in Figure 1

^{** -} The background concentration of lead for the Portland Basin appears to include anthropogenic influences (it is 79 mg/kg compared to no more than about 36 mg/kg in the rest of the state). Therefore, DEQ used the background lead concentration from the South Willamette Basin province as a background concentration for lead for the Portland Basin. Last updated by Heather Kuoppamaki, DEQ-NWR, on June 17, 2019

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

	tentrations in ing/kg		
Chemical Name	CAS	Clean Fill Value	Note
Acenaphthene	83-32-9	0.25	g
Acenaphthylene	208-96-8	120	g
Acephate	30560-19-1	0.32	b
Acetaldehyde	75-07-0	0.031	b
Acetochlor	34256-82-1	17	b
Acetone	67-64-1	1.2	g
Acetone Cyanohydrin	75-86-5	2,800,000	a
Acetonitrile	75-05-8	1.6	b
Acetophenone	98-86-2	35	b
Acetylaminofluorene, 2-	53-96-3	0.0043	b
Acrolein (Propenal)	107-02-8	0.0005	b
Acrylamide	79-06-1	0.00066	b
Acrylic Acid	79-10-7	0.025	b
Acrylonitrile	107-13-1	0.00036	d
Adiponitrile	111-69-3	8,500,000	a
Alachlor	15972-60-8	0.052	b
Aldicarb	116-06-3	0.29	b
Aldicarb Sulfone	1646-88-4	0.26	b
Aldrin	309-00-2	0.023	d
Allyl Alcohol	107-18-6	0.0025	b
Allyl Chloride	107-05-1	0.014	b
Aluminum Phosphide	20859-73-8	31	a
Ametryn	834-12-8	9.6	b
Aminobiphenyl, 4-	92-67-1	0.0009	b
Aminophenol, m-	591-27-5	37	b
Aminophenol, o-	95-55-6	1.8	b
Aminophenol, p-	123-30-8	9	b
Amitraz	33089-61-1	160	a
Ammonium Perchlorate	7790-98-9	55	a
Ammonium polyphosphate	68333-79-9	3,800,000	a
Ammonium Sulfamate	7773-06-0	16,000	a
Amyl Alcohol, tert-	75-85-4	0.078	b
Aniline	62-53-3	0.28	b
Anthracene	120-12-7	6.8	g
Anthraquinone, 9,10-	84-65-1	0.84	b
Antimony Pentoxide	1314-60-9	39	a
Antimony Tetroxide	1332-81-6	31	a
Antimony Trioxide	1309-64-4	280,000	a
Aroclor 1016	12674-11-2	1.1	g
Aroclor 1221	11104-28-2	0.0048	<u>b</u>
Aroclor 1232	11141-16-5	0.0048	b
Aroclor 1242	53469-21-9	0.041	g
Aroclor 1248	12672-29-6	0.0073	g
Aroclor 1254	11097-69-1	0.041	g
Aroclor 1260	11096-82-5	0.24	a
Aroclor 5460	11126-42-4	35	a
Arsenic III	7440-38-2	10	e
Arsine	7784-42-1	0.27	a
Asulam	3337-71-1	11	b
Atrazine	1912-24-9	0.012	b
Auramine	492-80-8	0.037	b

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

concenti a	ations in mg/kg		
Chemical Name	CAS	Clean Fill Value	Note
Avermectin B1	65195-55-3	25	a
Azinphos-methyl	86-50-0	1	b
Azobenzene	103-33-3	0.056	b
Azodicarbonamide	123-77-3	410	b
Benfluralin	1861-40-1	56	ь
Benomyl	17804-35-2	51	ь
Bensulfuron-methyl	83055-99-6	60	ь
Bentazon	25057-89-0	7.2	b
Benzaldehyde	100-52-7	0.25	b
Benzene	71-43-2	0.023	d
Benzenediamine-2-methyl sulfate, 1,4-	6369-59-1	0.013	b
Benzenethiol (thiophenol)	108-98-5	0.66	b
Benzidine	92-87-5	0.000038	d
Benzo(a)anthracene	56-55-3	0.73	g
Benzo(a)pyrene (BaP equivalents)	50-32-8	0.11	a
Benzo(b)fluoranthene	205-99-2	1.1	a
Benzo(g,h,i)perylene	191-24-2	25	
Benzo(j)fluoranthene	205-82-3	0.42	<u>g</u>
Benzo(k)fluoranthene	207-08-9	11	<u>a</u>
Benzoic Acid	65-85-0	1	a
Benzotrichloride	98-07-7	0.0004	<u>g</u>
			<u>b</u>
Benzyl Alcohol	100-51-6	29	<u>b</u>
Benzyl Chloride	100-44-7	0.0059	<u>b</u>
Bidrin (Dicrotophos)	141-66-2	0.0084	<u>b</u>
Bifenox	42576-02-3	46	b
Biphenthrin	82657-04-3	950	a
Biphenyl, 1,1'-	92-52-4	0.52	b
Bis(2-chloro-1-methylethyl) ether (Bis(2-	108-60-1	16	b
chloroisopropyl) ether)			
Bis(2-chloroethoxy)methane	111-91-1	0.78	b
Bis(2-chloroethyl)ether (dichloroethyl ether)	111-44-4	0.00019	d
Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7	0.02	g
Bis(chloromethyl)ether	542-88-1	0.000001	b
Bisphenol A	80-05-7	3,200	a
Boron And Borates Only	7440-42-8	0.5	e
Boron Trichloride	10294-34-5	160,000	a
Boron Trifluoride	7637-07-2	3,100	a
Bromate	15541-45-4	0.051	ь
Bromine	7726-95-6	10	e
Bromo-2-chloroethane, 1-	107-04-0	0.00013	b
Bromo-3-fluorobenzene, 1-	1073-06-9	0.28	b
Bromo-4-fluorobenzene, 1-	460-00-4	0.26	b
Bromoaniline, 4-	106-40-1	100	e
Bromobenzene	108-86-1	2.5	b
Bromochloromethane	74-97-5	1.3	b
Bromodichloromethane	75-27-4	0.002	d
Bromoform (tribromomethane)	75-25-2	0.046	d
Bromomethane	74-83-9	0.083	d
Bromophos	2104-96-3	9	b
Bromopropane, 1-	106-94-5	3.8	b
Bromoxynil	1689-84-5	0.031	b
Divinonjini	1007 07 3	0.031	J

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Bromoxynil Octanoate	1689-99-2	0.13	b
Butadiene, 1,3-	106-99-0	0.00059	b
Butanoic acid, 4-(2,4-dichlorophenoxy)-	94-82-6	25	b
Butanol, N-	71-36-3	25	b
Butyl alcohol, sec-	78-92-2	300	b
Butyl benzyl phthlate	85-68-7	14	b
Butylate	2008-41-5	27	b
Butylated hydroxyanisole	25013-16-5	17	b
Butylated hydroxytoluene	128-37-0	6	b
Butylbenzene, n-	104-51-8	190	b
Butylbenzene, sec-	135-98-8	350	b
Butylbenzene, tert-	98-06-6	96	b
Butylphthalyl Butylglycolate	85-70-1	19,000	b
Cacodylic Acid	75-60-5	6.6	b
Calcium Cyanide	592-01-8	78	a
Calcium pyrophosphate	7790-76-3	3,800,000	
Caprolactam	105-60-2	150	a b
Captafol	2425-06-1	0.043	b b
*	133-06-2	1.3	b
Captan	63-25-2		b
Carbaryl Carbazole		100	
Carbazole Carbofuran	86-74-8	79 2.2	<u>g</u>
	1563-66-2		b
Carbon Disulfide	75-15-0	0.81	<u>g</u>
Carbon Tetrachloride	56-23-5	0.013	d
Carbonyl Sulfide	463-58-1	31	b
Carbosulfan	55285-14-8	72	b
Carboxin	5234-68-4	60	b
Ceric oxide	1306-38-3	1,300,000	a
Chloral Hydrate	302-17-0	24	b
Chloramben	133-90-4	4.2	b
Chloranil	118-75-2	0.009	b
Chloraniline, 3-	108-42-9	20	e
Chlordane, alpha-	5103-71-9	0.27	g
Chlordane, gamma-	5103-74-2	2.2	g
Chlordane, technical	57-74-9	0.91	d
Chlordecone (Kepone)	143-50-0	0.0072	b
Chlorfenvinphos	470-90-6	1.9	b
Chlorimuron, Ethyl-	90982-32-4	36	b
Chlorine	7782-50-5	0.0084	b
Chlorine Dioxide	10049-04-4	2,300	a
Chlorite (Sodium Salt)	7758-19-2	2,300	a
Chloro-1,1-difluoroethane, 1-	75-68-3	3,100	b
Chloro-1,3-butadiene, 2- (Chloroprene)	126-99-8	0.00059	b
Chloro-2-methylaniline HCl, 4-	3165-93-3	0.009	b
Chloro-2-methylaniline, 4-	95-69-2	0.024	b
Chloroacetaldehyde, 2-	107-20-0	0.0035	b
Chloroacetamide	79-07-2	2	e
Chloroacetophenone, 2-	532-27-4	43,000	a
Chloroaniline, p- (4-Chloroaniline)	106-47-8	0.0096	b
Chlorobenzene	108-90-7	2.4	g
Chlorobenzene sulfonic acid, p-	98-66-8	28	b

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

concentra	1	1	
Chemical Name	CAS	Clean Fill Value	Note
Chlorobenzilate	510-15-6	0.06	b
Chlorobenzoic Acid, p-	74-11-3	7.8	b
Chlorobenzotrifluoride, 4-	98-56-6	7.2	b
Chlorobutane, 1-	109-69-3	16	b
Chlorodibromomethane (dibromochloromethane)	124-48-1	0.0024	d
Chlorodifluoromethane	75-45-6	2,600	b
		2,600	
Chloroethanol, 2-	107-07-3	4.9	<u>b</u>
Chloroform	67-66-3	0.0034	d
Chloromethane	74-87-3	2.2	d
Chloromethyl Methyl Ether	107-30-2	0.000084	<u>b</u>
Chloronaphthalene, Beta-	91-58-7	230	b
Chloronitrobenzene, o-	88-73-3	0.013	b
Chloronitrobenzene, p-	100-00-5	0.066	b
Chlorophenol, 2-	95-57-8	0.39	g
Chlorophenol, 3-	108-43-0	7	e
Chlorophenol, 4-	106-48-9	50	e
Chloropicrin	76-06-2	0.015	b
Chlorothalonil	1897-45-6	3	b
Chlorotoluene, o-	95-49-8	14	b
Chlorotoluene, p-	106-43-4	14	b
Chlorozotocin	54749-90-5	0.0000043	b
Chlorpropham	101-21-3	38	b
Chlorpyrifos	2921-88-2	7.2	b
Chlorpyrifos Methyl	5598-13-0	32	b
Chlorsulfuron	64902-72-3	50	b
Chlorthal-dimethyl	1861-32-1	9	b
Chlorthiophos	60238-56-4	4.4	b
Chromium (VI)	18540-29-9	0.04	b
Chrysene	218-01-9	3.1	g
Clofentezine	74115-24-5	820	a
Copper Cyanide	544-92-3	390	a
Cresol, m- (3-Methylphenol)	108-39-4	0.69	g
Cresol, o- (2-Methylphenol)	95-48-7	0.67	g
Cresol, p-	106-44-5	90	b
Cresol, p-chloro-m-	59-50-7	100	b
Cresols	1319-77-3	78	b
Crotonaldehyde, trans-	123-73-9	0.00049	b
Cumene	98-82-8	96	d
Cupferron	135-20-6	0.037	b
Cyanazine	21725-46-2	0.0025	b
Cyanogen	460-19-5	78	a
Cyanogen Bromide	506-68-3	7,000	a
Cyanogen Chloride	506-77-4	3,900	a
Cyclohexane	110-82-7	780	b
Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	87-84-3	0.96	b
Cyclohexanone	108-94-1	20	b
Cyclohexene	110-83-8	2.8	b
Cyclohexylamine	108-91-8	60	b
Cyfluthrin	68359-37-5	1,600	a
Cyhalothrin/karate	68085-85-8	63	a
- James vill ille iteration	00000 00 0	0.5	u

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Cyromazine	66215-27-8	150	b
Dalapon	75-99-0	7.2	ь
Daminozide (Alar)	1596-84-5	0.057	b
Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209)	1163-19-5	440	a
Demeton	8065-48-3	2.5	a
Di(2-ethylhexyl)adipate	103-23-1	280	b
Diallate	2303-16-4	0.048	b
Diammonium phosphate	7783-28-0	3,800,000	a
Diazinon	333-41-5	3.9	b
Dibenz(a,h)anthracene	53-70-3	0.11	a
Dibenzo(a,e)pyrene	192-65-4	0.042	a
Dibenzofuran	132-64-9	0.002	e
Dibenzothiophene	132-65-0	72	b
Dibromo-3-chloropropane, 1,2-	96-12-8	0.0000084	ь
Dibromobenzene, 1,3-	108-36-1	0.31	b
Dibromobenzene, 1,4-	106-37-6	7.2	b
dibromoethane, 1,2- (EDB)	106-93-4	0.00012	d
Dibromomethane (Methylene Bromide)	74-95-3	0.13	b
Dibutyl phthalate (Di-n-butyl phthalate)	84-74-2	0.011	g
Dibutyltin Compounds	E1790660	19	a
Dicalcium phosphate	7757-93-9	3,800,000	a
Dicamba	1918-00-9	9	b
Dichloro-2-butene, 1,4-	764-41-0	0.00004	b
Dichloro-2-butene, cis-1,4-	1476-11-5	0.000037	b
Dichloro-2-butene, trans-1,4-	110-57-6	0.000037	b
Dichloroacetic Acid	79-43-6	0.019	b
Dichloroaniline, 2,4-	554-00-7	100	e
Dichloroaniline, 3,4-	95-76-1	10	e
Dichlorobenzene, 1,2-	95-50-1	0.92	g
Dichlorobenzene, 1,3-	541-76-1	0.74	g
Dichlorobenzene, 1,4-	106-46-7	0.057	d
Dichlorobenzidine, 3,3'-	91-94-1	0.17	d
Dichlorobenzophenone, 4,4'-	90-98-2	28	b
Dichlorodifluoromethane (Freon-12)	75-71-8	18	b
Dichlorodiphenyldichloroethane, 4,4- (DDD)	72-54-8	0.0063	g
Dichlorodiphenyldichloroethene, 4,4- (DDE)	72-55-9	0.01	e
Dichlorodiphenyltrichloroethane, 4,4- (DDT)	50-29-3	0.01	e
Dichloroethane, 1,1-	75-34-3	0.044	d
Dichloroethane, 1,2- (EDC)	107-06-2	0.0028	d
Dichloroethylene, 1,1-	75-35-4	6.7	d
Dichloroethylene, 1,2- (mixture)		2,500	e
Dichloroethylene, 1,2-cis-	156-59-2	0.63	d
Dichloroethylene, 1,2-trans-	156-60-5	7	d
Dichloromethane	75-09-2	0.14	d
Dichlorophenol, 2,4-	120-83-2	1.4	b
Dichlorophenol, 3,4-	95-77-2	20	e
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	2.3	d
Dichloropropane, 1,2-	78-87-5	0.017	b
Dichloropropane, 1,3-	142-28-9	7.8	b
Dichloropropanol, 2,3-	616-23-9	0.78	b

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

	concentrations in mg/kg						
Chemical Name	CAS	Clean Fill Value	Note				
Dichloropropene, 1,3-	542-75-6	0.01	b				
Dichlorvos	62-73-7	0.0049	b				
Dicyclopentadiene	77-73-6	0.13	b				
Dieldrin	60-57-1	0.0045	g				
Diethanolamine	111-42-2	0.49	b				
Diethyl phthalate	84-66-2	100	e				
Diethylene Glycol Monobutyl Ether	112-34-5	7.8	b				
Diethylene glycol monoethyl ether	111-90-0	14	b				
Diethylformamide	617-84-5	0.25	b				
Diethylstilbestrol	56-53-1	0.0016	a				
Difenzoquat	43222-48-6	5,200	a				
Diflubenzuron	35367-38-5	20	b				
Difluoroethane, 1,1- (DFE)	75-37-6	1,700	b				
Difluoropropane, 2,2-	420-45-1	8,400	b				
Dihydrosafrole	94-58-6	0.011	b				
Diisopropyl ether (DIPE)	108-20-3	22	b				
Diisopropyl Methylphosphonate	1445-75-6	27	b				
Dimagnesium phosphate	7782-75-4	3,800,000	a				
Dimethipin	55290-64-7	5.8	b				
Dimethoate	60-51-5	0.59	b				
Dimethoxybenzidine, 3,3'-	119-90-4	0.0035	b				
Dimethyl methylphosphonate	756-79-6	0.58	b				
Dimethyl phthalate	131-11-3	10	g				
Dimethylamino azobenzene [p-]	60-11-7	0.0013	b				
Dimethylaniline HCl, 2,4-	21436-96-4	0.0072	b				
Dimethylaniline, 2,4-	95-68-1	0.013	b				
Dimethylaniline, N,N-	121-69-7	0.054	b				
Dimethylbenz(a)anthracene, 7,12-	57-97-6	0.00046	a				
Dimethylbenzidine, 3,3'-	119-93-7	0.0026	b				
Dimethylformamide	68-12-2	0.72	b				
Dimethylhydrazine, 1,1-	57-14-7	0.000056	b				
Dimethylhydrazine, 1,2-	540-73-8	0.00000039	b				
Dimethylphenol, 2,4-	105-67-9	20	e				
Dimethylphenol, 2,6-	576-26-1	0.78	b				
Dimethylphenol, 3,4-	95-65-8	1.3	b				
Dimethylterephthalate	120-61-6	29	ь				
Dimethylvinylchloride	513-37-1	0.0066	b				
Di-n-hexylphthalate	84-75-3	3,100	e				
Dinitrobenzene, 1,2-	528-29-0	0.11	b				
Dinitrobenzene, 1,3-	99-65-0	0.072	g				
Dinitrobenzene, 1,4-	100-25-4	0.11	b				
Dinitro-o-cresol, 4,6-	534-52-1	0.16	b				
Dinitro-o-cyclohexyl Phenol, 4,6-	131-89-5	46	b				
Dinitrophenol, 2,4-	51-28-5	2.6	b				
Dinitrotoluene Mixture, 2,4/2,6-	E1615210	0.009	b				
Dinitrotoluene, 2,4-	121-14-2	0.019	b				
Dinitrotoluene, 2,6-	606-20-2	0.0089	d				
Dinitrotoluene, 2-Amino-4,6-	35572-78-2	1.8	b				
Dinitrotoluene, 4-Amino-2,6-	19406-51-0	1.8	b				
Dinitrotoluene, Technical grade	25321-14-6	0.0084	b				
Dinoseb	88-85-7	7.8	b				

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

December December	Concen	trations in mg/kg		
Dipack 1,4 123-91-1 0.0023 d Diphenamid 957-51-7 310 b Diphenamid 957-51-7 310 b Diphenyl Ether 101-84-8 0.2 b Diphenyl Sulfone 127-63-9 2.2 b Diphenyl Sulfone 122-39-4 10 g Diphenyl Bydrazine, 1,2- 122-66-7 0.015 b Diphenyl Bydrazine, 1,2- 122-66-7 0.015 b Dipotassium phosphate 7758-11-4 3,800,000 a Dipotassium phosphate 85-00-7 50 b Direct Black 38 1937-37-7 0.076 a Direct Blace 6 2602-46-2 0.073 a Direct Brown 95 16071-86-6 0.081 a Disodium phosphate 7558-79-4 3,800,000 a Disulfoton 298-04-4 0.056 b Dithiane, 1,4- 505-29-3 5.8 b Dituron 330-54-1 0.9 b Diddine 2439-10-3 130 b Endosulfan, (alpha-beta) 145-73-3 5.5 b Endosulfan, (alpha-beta) - 10,64 g Endothall 145-73-3 5.5 b Endorin 72-20-8 0.0014 g Epichlorohydrin 106-89-8 0.027 b Epoxybutane, 1,2- 106-88-7 0.55 b Ethanol 2-(2-methoxyethoxy)- 111-77-3 9.6 b Ethonyethanol 2-(2-methoxyethoxy)- 111-77-3 9.6 b Ethhyl Acrylate 141-78-6 1.9 b Ethyl Acrylate 141-78-6 1.9 b Ethyl Chloride (Chloroethane) 75-00-3 310 d Ethyl Herrylate 100-41-4 0.22 d Ethyl Herrylate 100-41-4 0.22 d Ethyl Herrylate 100-41-4 0.22 d Ethyl Ethyl Chloride (Chloroethane) 107-21-1 490 b Ethyl Ethyl Ether (Diethyl ether) 100-21-1 490 b Ethyl Ethyl Ether (Diethyl Ether) 100-21-1 490 b Ethyl Ethylene Glycol Monobutyl Ether 111-76-2 2.5 b Ethylene Glycol Monobutyl Ether 111-76-2 2.5 b Ethylene Thiourea 96-45-7 0.0020 c Ethylene Thiourea 96-45-7 0.0020		CAS	Clean Fill Value	Note
Dipolarme 14	Di-N-propylnitrosamine (N-nitrosodi-N-	621-64-7	0.00094	А
Diphenamid 957-51-7 310 b Diphenyl Ether 101-84-8 0.2 b Diphenyl Ether 101-84-8 0.2 b Diphenyl Bulfone 127-63-9 2.2 b Diphenylamine 122-39-4 10 g Diphenylamine 123-39-4 10 Diphenylamine 123-39-4 3,800,000 a Dipotassium phosphate 758-11-4 3,800,000 a Direct Black 38 1937-37-7 0.076 a Direct Brown 95 16071-86-6 0.081 a Disodium phosphate 7558-79-4 3,800,000 a Disudium phosphate 7558-79-4 3,800,000 a Disudium phosphate 7558-79-4 3,800,000 a Disudium phosphate 7558-79-3 5,8 b Diurion 330-54-1 0.9 b Diurion 330-54-1 0.9 b Diddine 2439-10-3 130 b Endosulfan, (alpha-beta) 0.64 g Endosthall 145-73-3 5,5 b Epichlorohydrin 106-89-8 0.027 b Epichlorohydrin 106-89-8 0.027 b Epichlorohydrin 106-89-8 0.027 b Ethanol 242-enthoxyethoxy) 111-77-3 9,6 b Dithanol 242-enthoxyethoxy) 111-77-3 9,6 b Dithanol 242-enthoxyethoxy 111-77-3 9,6 b Dithanol 242-enthoxyethoxy 111-78-5 4,000 c Ethylamol 242-enthoxyethoxy 111-78-3 9,6 b Dithanol 242-enthoxyethoxy 242-enthoxyethoxy 242-enthoxyethoxyeth	propylamine)			
Diphenyl Ether				
Diphenyl Sulfone	*			
Diphenylamine				
Diphenylhydrazine, 1,2-				b
Dipotassium phosphate	1 /			
Diquat				b
Direct Black 38				
Direct Blue 6 2602-46-2 0.073 a Direct Brown 95 16071-86-6 0.081 a Disodium phosphate 7558-79-4 3,800,000 a Disulfoton 298-04-4 0.056 b Dithiane, 1,4- 505-29-3 5.8 b Diuron 330-54-1 0.9 b Dodine 2439-10-3 130 b Endosulfan, (alpha-beta) 0.64 g Endothall 145-73-3 5.5 b Endrin 72-20-8 0.0014 g Epichlorohydrin 106-89-8 0.027 b Epoxybutane, 1,2- 106-88-7 0.55 b Eproxybutane, 1,2- 106-88-7 0.55 b Ethanol 64-17-5 4,000 e Ethanol, 2-(2-methoxyethoxy)- 111-77-3 9.6 b Ethelpon 16672-87-0 1.3 b Ethion 563-12-2 0.51 b Ethionyethanol, 2 110-80-5 <td>1</td> <td></td> <td></td> <td>b</td>	1			b
Direct Brown 95 16071-86-6 0.081 a				a
Disodium phosphate 7558-79-4 3,800,000 a Disulfoton 298-04-4 0.056 b Dithiane, 1,4- 505-29-3 5.8 b Diuron 330-54-1 0.9 b Dodine 2439-10-3 130 b Endosulfan, (alpha-beta) 0.64 g Endothall 145-73-3 5.5 b Endrin 72-20-8 0.0014 g Epichlorohydrin 106-89-8 0.027 b Epoxybutane, 1,2- 106-88-7 0.55 b Eproxybutane, 1,2- 106-88-7 0.55 b Ethanol 64-17-5 4,000 e Ethanol, 2-(2-methoxyethoxy)- 111-7-3 9.6 b Ethoxyethanol Acetate, 2- 111-15-9 1.3 b Ethoxyethanol Acetate, 2- 111-15-9 1.5 b Ethyl Acetate 141-78-6 1.9 b Ethyl Acetate 141-78-6 1.9 b Ethyl Ether (Dicityle leth				a
Disulfoton 298-04-4 0.056 b Dithiane, 1,4- 505-29-3 5.8 b Douron 330-54-1 0.9 b Dodine 2439-10-3 130 b Endosulfan, (alpha-beta) 0.64 g Endothall 145-73-3 5.5 b Endrin 72-20-8 0.0014 g Epichlorohydrin 106-88-8 0.027 b Epoxybutane, 1,2- 106-88-7 0.55 b EPTC 759-94-4 24 b Ethanol 64-17-5 4,000 e Ethanol, 2-(2-methoxyethoxy)- 111-77-3 9.6 b Ethophon 16672-87-0 1.3 b Ethoxyethanol Acetate, 2- 111-15-9 1.5 b Ethoxyethanol, 2- 110-80-5 4.1 b Ethyl Acetate 141-78-6 1.9 b Ethyl Acetate 141-78-6 1.9 b Ethyl Choride (Chloroethane) 75-00-3				a
Dithiane, 1,4-			3,800,000	a
Diuron 330-54-1 0.9 b	Disulfoton			
Dodine				b
Endosulfan, (alpha-beta) 0.64 g Endothall 145-73-3 5.5 b Endrin 72-20-8 0.0014 g Epichlorohydrin 106-88-8 0.027 b Epoxybutane, 1,2- 106-88-7 0.55 b EPTC 759-94-4 24 b Ethanol 64-17-5 4,000 e Ethanol, 2-(2-methoxyethoxy)- 111-77-3 9.6 b Ethephon 16672-87-0 1.3 b Ethion 563-12-2 0.51 b Ethoxyethanol Acetate, 2- 111-15-9 1.5 b Ethoxyethanol, 2- 110-80-5 4.1 b Ethyl Acetate 141-78-6 1.9 b Ethyl Acrylate 140-88-5 0.19 b Ethyl Chloride (Chloroethane) 75-00-3 310 d Ethyl Ether (Diethyl ether) 60-29-7 53 b Ethyl Methacrylate 100-41-4 0.22 d Ethylene Diamine	Diuron			b
Endothall 145-73-3 5.5 b Endrin 72-20-8 0.0014 g Epichlorohydrin 106-89-8 0.027 b Epoxybutane, 1,2- 106-88-7 0.55 b EPTC 759-94-4 24 b Ethanol 64-17-5 4,000 e Ethanol, 2-(2-methoxyethoxy)- 111-77-3 9.6 b Ethephon 16672-87-0 1.3 b Ethion 563-12-2 0.51 b Ethoxyethanol Acetate, 2- 111-15-9 1.5 b Ethoxyethanol, 2- 110-80-5 4.1 b Ethyl Acetate 141-78-6 1.9 b Ethyl Acrylate 140-88-5 0.19 b Ethyl Chloride (Chloroethane) 75-00-3 310 d Ethyl Ether (Diethyl ether) 60-29-7 53 b Ethyl Methacrylate 97-63-2 9 b Ethylene Cyanohydrin 109-78-4 17 b Ethyle	Dodine	2439-10-3	130	b
Endrin 72-20-8 0.0014 g	Endosulfan, (alpha-beta)		0.64	g
Epichlorohydrin 106-89-8 0.027 b	Endothall	145-73-3	5.5	b
Epoxybutane, 1,2-	Endrin	72-20-8	0.0014	g
EPTC 759-94-4 24 b Ethanol 64-17-5 4,000 e Ethanol, 2-(2-methoxyethoxy)- 111-77-3 9.6 b Ethephon 16672-87-0 1.3 b Ethion 563-12-2 0.51 b Ethoxyethanol Acetate, 2- 111-15-9 1.5 b Ethoxyethanol, 2- 110-80-5 4.1 b Ethyl Acetate 141-78-6 1.9 b Ethyl Acrylate 140-88-5 0.19 b Ethyl Chloride (Chloroethane) 75-00-3 310 d Ethyl Ether (Diethyl ether) 60-29-7 53 b Ethyl Methacrylate 97-63-2 9 b Ethylene Cyanohydrin 109-78-4 17 b Ethylene Diamine 107-15-3 25 b Ethylene Glycol Monobutyl Ether 111-76-2 25 b Ethylene Oxide 75-21-8 0.0000084 b Ethyleneimine 151-56-4 0.0000031 b </td <td>Epichlorohydrin</td> <td>106-89-8</td> <td>0.027</td> <td>b</td>	Epichlorohydrin	106-89-8	0.027	b
Ethanol 64-17-5 4,000 e Ethanol, 2-(2-methoxyethoxy)- 111-77-3 9.6 b Ethophon 16672-87-0 1.3 b Ethion 563-12-2 0.51 b Ethoxyethanol Acetate, 2- 111-15-9 1.5 b Ethoxyethanol, 2- 110-80-5 4.1 b Ethyl Acetate 141-78-6 1.9 b Ethyl Acrylate 140-88-5 0.19 b Ethyl Chloride (Chloroethane) 75-00-3 310 d Ethyl Ether (Diethyl ether) 60-29-7 53 b Ethyl Methacrylate 97-63-2 9 b Ethylene Cyanohydrin 109-78-4 17 b Ethylene Diamine 107-15-3 25 b Ethylene Glycol 107-21-1 490 b Ethylene Glycol Monobutyl Ether 111-76-2 25 b Ethylene Thiourea 96-45-7 0.022 b Ethyleneimine 151-56-4 0.0000031 b<	Epoxybutane, 1,2-	106-88-7	0.55	ь
Ethanol, 2-(2-methoxyethoxy)- 111-77-3 9.6 b Ethephon 16672-87-0 1.3 b Ethion 563-12-2 0.51 b Ethoxyethanol Acetate, 2- 111-15-9 1.5 b Ethoxyethanol, 2- 110-80-5 4.1 b Ethyl Acetate 141-78-6 1.9 b Ethyl Acrylate 140-88-5 0.19 b Ethyl Chloride (Chloroethane) 75-00-3 310 d Ethyl Ether (Diethyl ether) 60-29-7 53 b Ethyl Methacrylate 97-63-2 9 b Ethylbenzene 100-41-4 0.22 d Ethylene Cyanohydrin 109-78-4 17 b Ethylene Diamine 107-15-3 25 b Ethylene Glycol 107-21-1 490 b Ethylene Glycol Monobutyl Ether 111-76-2 25 b Ethylene Thiourea 96-45-7 0.022 b Ethylene imine 151-56-4 0.0000031	EPTC	759-94-4	24	b
Ethephon 16672-87-0 1.3 b Ethion 563-12-2 0.51 b Ethoxyethanol Acetate, 2- 111-15-9 1.5 b Ethoxyethanol, 2- 110-80-5 4.1 b Ethyl Acetate 141-78-6 1.9 b Ethyl Acrylate 140-88-5 0.19 b Ethyl Chloride (Chloroethane) 75-00-3 310 d Ethyl Ether (Diethyl ether) 60-29-7 53 b Ethyl Methacrylate 97-63-2 9 b Ethylbenzene 100-41-4 0.22 d Ethylene Cyanohydrin 109-78-4 17 b Ethylene Glycol 107-15-3 25 b Ethylene Glycol 107-21-1 490 b Ethylene Glycol Monobutyl Ether 111-76-2 25 b Ethylene Thiourea 96-45-7 0.022 b Ethylene Thiourea 96-45-7 0.022 b Ethylphthalyl Ethyl Glycolate 84-72-0 7,800 <t< td=""><td>Ethanol</td><td>64-17-5</td><td>4,000</td><td>e</td></t<>	Ethanol	64-17-5	4,000	e
Ethion 563-12-2 0.51 b Ethoxyethanol Acetate, 2- 111-15-9 1.5 b Ethoxyethanol, 2- 110-80-5 4.1 b Ethyl Acetate 141-78-6 1.9 b Ethyl Acrylate 140-88-5 0.19 b Ethyl Chloride (Chloroethane) 75-00-3 310 d Ethyl Ether (Diethyl ether) 60-29-7 53 b Ethyl Methacrylate 97-63-2 9 b Ethylene Cyanohydrin 109-78-4 17 b Ethylene Cyanohydrin 109-78-4 17 b Ethylene Glycol 107-15-3 25 b Ethylene Glycol 107-21-1 490 b Ethylene Glycol Monobutyl Ether 111-76-2 25 b Ethylene Thiourea 96-45-7 0.022 b Ethylene Thiourea 96-45-7 0.022 b Ethylphthalyl Ethyl Glycolate 84-72-0 7,800 b Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 <td>Ethanol, 2-(2-methoxyethoxy)-</td> <td>111-77-3</td> <td>9.6</td> <td>b</td>	Ethanol, 2-(2-methoxyethoxy)-	111-77-3	9.6	b
Ethoxyethanol Acetate, 2- 111-15-9 1.5 b Ethoxyethanol, 2- 110-80-5 4.1 b Ethyl Acetate 141-78-6 1.9 b Ethyl Acrylate 140-88-5 0.19 b Ethyl Chloride (Chloroethane) 75-00-3 310 d Ethyl Ether (Diethyl ether) 60-29-7 53 b Ethyl Methacrylate 97-63-2 9 b Ethylbenzene 100-41-4 0.22 d Ethylene Cyanohydrin 109-78-4 17 b Ethylene Diamine 107-15-3 25 b Ethylene Glycol 107-21-1 490 b Ethylene Glycol Monobutyl Ether 111-76-2 25 b Ethylene Thiourea 96-45-7 0.0020 b Ethylene Thiourea 96-45-7 0.0022 b Ethylphthalyl Ethyl Glycolate 84-72-0 7,800 b Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 0.17 b Fenamiphos 22224-92-6	Ethephon	16672-87-0	1.3	b
Ethoxyethanol, 2- 110-80-5 4.1 b Ethyl Acetate 141-78-6 1.9 b Ethyl Acrylate 140-88-5 0.19 b Ethyl Chloride (Chloroethane) 75-00-3 310 d Ethyl Ether (Diethyl ether) 60-29-7 53 b Ethyl Methacrylate 97-63-2 9 b Ethylbenzene 100-41-4 0.22 d Ethylene Cyanohydrin 109-78-4 17 b Ethylene Diamine 107-15-3 25 b Ethylene Glycol 107-21-1 490 b Ethylene Glycol Monobutyl Ether 111-76-2 25 b Ethylene Oxide 75-21-8 0.0000084 b Ethylene Thiourea 96-45-7 0.022 b Ethyleneimine 151-56-4 0.0000031 b Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 0.17 b Fenamiphos 22224-92-6 0.0002 e Fenpropathrin 39515-41-8 1	Ethion	563-12-2	0.51	b
Ethyl Acetate 141-78-6 1.9 b Ethyl Acrylate 140-88-5 0.19 b Ethyl Chloride (Chloroethane) 75-00-3 310 d Ethyl Ether (Diethyl ether) 60-29-7 53 b Ethyl Methacrylate 97-63-2 9 b Ethyl Methacrylate 100-41-4 0.22 d Ethylene Cyanohydrin 109-78-4 17 b Ethylene Cyanohydrin 107-15-3 25 b Ethylene Diamine 107-15-3 25 b Ethylene Glycol 107-21-1 490 b Ethylene Glycol Monobutyl Ether 111-76-2 25 b Ethylene Oxide 75-21-8 0.0000084 b Ethylene Thiourea 96-45-7 0.022 b Ethyleneimine 151-56-4 0.000031 b Ethylphthalyl Ethyl Glycolate 84-72-0 7,800 b Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 0.17 b Fenamiphos 22224-92-6	Ethoxyethanol Acetate, 2-	111-15-9	1.5	b
Ethyl Acrylate 140-88-5 0.19 b Ethyl Chloride (Chloroethane) 75-00-3 310 d Ethyl Ether (Diethyl ether) 60-29-7 53 b Ethyl Methacrylate 97-63-2 9 b Ethylbenzene 100-41-4 0.22 d Ethylene Cyanohydrin 109-78-4 17 b Ethylene Diamine 107-15-3 25 b Ethylene Glycol 107-21-1 490 b Ethylene Glycol Monobutyl Ether 111-76-2 25 b Ethylene Oxide 75-21-8 0.0000084 b Ethylene Thiourea 96-45-7 0.022 b Ethyleneimine 151-56-4 0.0000031 b Ethylphthalyl Ethyl Glycolate 84-72-0 7,800 b Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 0.17 b Fenamiphos 22224-92-6 0.0002 e Fenpropathrin 39515-41-8 170 b Fenvalerate 51630-58-1	Ethoxyethanol, 2-	110-80-5	4.1	b
Ethyl Chloride (Chloroethane) 75-00-3 310 d Ethyl Ether (Diethyl ether) 60-29-7 53 b Ethyl Methacrylate 97-63-2 9 b Ethylbenzene 100-41-4 0.22 d Ethylene Cyanohydrin 109-78-4 17 b Ethylene Diamine 107-15-3 25 b Ethylene Glycol 107-21-1 490 b Ethylene Glycol Monobutyl Ether 111-76-2 25 b Ethylene Oxide 75-21-8 0.0000084 b Ethylene Thiourea 96-45-7 0.022 b Ethyleneimine 151-56-4 0.0000031 b Ethylphthalyl Ethyl Glycolate 84-72-0 7,800 b Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 0.17 b Fenamiphos 22224-92-6 0.0002 e Fenpropathrin 39515-41-8 170 b Fenvalerate 51630-58-1 1,600 a Fluometuron 2164-17-2	Ethyl Acetate	141-78-6	1.9	ь
Ethyl Ether (Diethyl ether) 60-29-7 53 b Ethyl Methacrylate 97-63-2 9 b Ethylbenzene 100-41-4 0.22 d Ethylene Cyanohydrin 109-78-4 17 b Ethylene Diamine 107-15-3 25 b Ethylene Glycol 107-21-1 490 b Ethylene Glycol Monobutyl Ether 111-76-2 25 b Ethylene Oxide 75-21-8 0.0000084 b Ethylene Thiourea 96-45-7 0.022 b Ethyleneimine 151-56-4 0.0000031 b Ethylphthalyl Ethyl Glycolate 84-72-0 7,800 b Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 0.17 b Fenamiphos 22224-92-6 0.0002 e Fenpropathrin 39515-41-8 170 b Fenvalerate 51630-58-1 1,600 a Fluometuron 2164-17-2 11 b Fluoranthene 206-44-0 10 <td>Ethyl Acrylate</td> <td>140-88-5</td> <td>0.19</td> <td>ь</td>	Ethyl Acrylate	140-88-5	0.19	ь
Ethyl Methacrylate 97-63-2 9 b Ethylbenzene 100-41-4 0.22 d Ethylene Cyanohydrin 109-78-4 17 b Ethylene Diamine 107-15-3 25 b Ethylene Glycol 107-21-1 490 b Ethylene Glycol Monobutyl Ether 111-76-2 25 b Ethylene Oxide 75-21-8 0.0000084 b Ethylene Thiourea 96-45-7 0.022 b Ethyleneimine 151-56-4 0.0000031 b Ethylphthalyl Ethyl Glycolate 84-72-0 7,800 b Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 0.17 b Fenamiphos 22224-92-6 0.0002 e Fenyolerate 51630-58-1 1,600 a Fluometuron 2164-17-2 11 b Fluoranthene 206-44-0 10 g	Ethyl Chloride (Chloroethane)	75-00-3	310	d
Ethylbenzene 100-41-4 0.22 d Ethylene Cyanohydrin 109-78-4 17 b Ethylene Diamine 107-15-3 25 b Ethylene Glycol 107-21-1 490 b Ethylene Glycol Monobutyl Ether 111-76-2 25 b Ethylene Oxide 75-21-8 0.0000084 b Ethylene Thiourea 96-45-7 0.022 b Ethyleneimine 151-56-4 0.0000031 b Ethylphthalyl Ethyl Glycolate 84-72-0 7,800 b Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 0.17 b Fenamiphos 22224-92-6 0.0002 e Fenpropathrin 39515-41-8 170 b Fenvalerate 51630-58-1 1,600 a Fluometuron 2164-17-2 11 b Fluoranthene 206-44-0 10 g	Ethyl Ether (Diethyl ether)	60-29-7	53	b
Ethylene Cyanohydrin 109-78-4 17 b Ethylene Diamine 107-15-3 25 b Ethylene Glycol 107-21-1 490 b Ethylene Glycol Monobutyl Ether 111-76-2 25 b Ethylene Oxide 75-21-8 0.0000084 b Ethylene Thiourea 96-45-7 0.022 b Ethyleneimine 151-56-4 0.0000031 b Ethylphthalyl Ethyl Glycolate 84-72-0 7,800 b Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 0.17 b Fenamiphos 22224-92-6 0.0002 e Fenpropathrin 39515-41-8 170 b Fenvalerate 51630-58-1 1,600 a Fluometuron 2164-17-2 11 b Fluoranthene 206-44-0 10 g	Ethyl Methacrylate	97-63-2	9	ь
Ethylene Diamine 107-15-3 25 b Ethylene Glycol 107-21-1 490 b Ethylene Glycol Monobutyl Ether 111-76-2 25 b Ethylene Oxide 75-21-8 0.0000084 b Ethylene Thiourea 96-45-7 0.022 b Ethyleneimine 151-56-4 0.0000031 b Ethylphthalyl Ethyl Glycolate 84-72-0 7,800 b Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 0.17 b Fenamiphos 22224-92-6 0.0002 e Fenyropathrin 39515-41-8 170 b Fenvalerate 51630-58-1 1,600 a Fluometuron 2164-17-2 11 b Fluoranthene 206-44-0 10 g	Ethylbenzene	100-41-4	0.22	d
Ethylene Glycol 107-21-1 490 b Ethylene Glycol Monobutyl Ether 111-76-2 25 b Ethylene Oxide 75-21-8 0.0000084 b Ethylene Thiourea 96-45-7 0.022 b Ethyleneimine 151-56-4 0.0000031 b Ethylphthalyl Ethyl Glycolate 84-72-0 7,800 b Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 0.17 b Fenamiphos 22224-92-6 0.0002 e Fenpropathrin 39515-41-8 170 b Fenvalerate 51630-58-1 1,600 a Fluometuron 2164-17-2 11 b Fluoranthene 206-44-0 10 g	Ethylene Cyanohydrin	109-78-4	17	b
Ethylene Glycol Monobutyl Ether 111-76-2 25 b Ethylene Oxide 75-21-8 0.0000084 b Ethylene Thiourea 96-45-7 0.022 b Ethyleneimine 151-56-4 0.0000031 b Ethylphthalyl Ethyl Glycolate 84-72-0 7,800 b Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 0.17 b Fenamiphos 22224-92-6 0.0002 e Fenpropathrin 39515-41-8 170 b Fenvalerate 51630-58-1 1,600 a Fluometuron 2164-17-2 11 b Fluoranthene 206-44-0 10 g	Ethylene Diamine	107-15-3	25	b
Ethylene Oxide 75-21-8 0.0000084 b Ethylene Thiourea 96-45-7 0.022 b Ethyleneimine 151-56-4 0.0000031 b Ethylphthalyl Ethyl Glycolate 84-72-0 7,800 b Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 0.17 b Fenamiphos 22224-92-6 0.0002 e Fenpropathrin 39515-41-8 170 b Fenvalerate 51630-58-1 1,600 a Fluometuron 2164-17-2 11 b Fluoranthene 206-44-0 10 g	Ethylene Glycol	107-21-1	490	b
Ethylene Thiourea 96-45-7 0.022 b Ethyleneimine 151-56-4 0.0000031 b Ethylphthalyl Ethyl Glycolate 84-72-0 7,800 b Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 0.17 b Fenamiphos 22224-92-6 0.0002 e Fenpropathrin 39515-41-8 170 b Fenvalerate 51630-58-1 1,600 a Fluometuron 2164-17-2 11 b Fluoranthene 206-44-0 10 g	Ethylene Glycol Monobutyl Ether	111-76-2	25	b
Ethyleneimine 151-56-4 0.0000031 b Ethylphthalyl Ethyl Glycolate 84-72-0 7,800 b Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 0.17 b Fenamiphos 22224-92-6 0.0002 e Fenpropathrin 39515-41-8 170 b Fenvalerate 51630-58-1 1,600 a Fluometuron 2164-17-2 11 b Fluoranthene 206-44-0 10 g	Ethylene Oxide	75-21-8		b
Ethylphthalyl Ethyl Glycolate 84-72-0 7,800 b Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 0.17 b Fenamiphos 22224-92-6 0.0002 e Fenpropathrin 39515-41-8 170 b Fenvalerate 51630-58-1 1,600 a Fluometuron 2164-17-2 11 b Fluoranthene 206-44-0 10 g	Ethylene Thiourea	96-45-7	0.022	b
Ethyl-p-nitrophenyl phosphonate (EPN) 2104-64-5 0.17 b Fenamiphos 22224-92-6 0.0002 e Fenpropathrin 39515-41-8 170 b Fenvalerate 51630-58-1 1,600 a Fluometuron 2164-17-2 11 b Fluoranthene 206-44-0 10 g	Ethyleneimine	151-56-4	0.0000031	
Fenamiphos 22224-92-6 0.0002 e Fenpropathrin 39515-41-8 170 b Fenvalerate 51630-58-1 1,600 a Fluometuron 2164-17-2 11 b Fluoranthene 206-44-0 10 g	Ethylphthalyl Ethyl Glycolate		7,800	b
Fenpropathrin 39515-41-8 170 b Fenvalerate 51630-58-1 1,600 a Fluometuron 2164-17-2 11 b Fluoranthene 206-44-0 10 g	Ethyl-p-nitrophenyl phosphonate (EPN)	2104-64-5	0.17	b
Fenvalerate 51630-58-1 1,600 a Fluometuron 2164-17-2 11 b Fluoranthene 206-44-0 10 g	Fenamiphos	22224-92-6	0.0002	e
Fluometuron 2164-17-2 11 b Fluoranthene 206-44-0 10 g	Fenpropathrin	39515-41-8	170	b
Fluoranthene 206-44-0 10 g	Fenvalerate	51630-58-1	1,600	a
· · · · · · · · · · · · · · · · · · ·	Fluometuron	2164-17-2	11	b
	Fluoranthene	206-44-0	10	g
	Fluorene	86-73-7	3.7	

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Fluoride	16984-48-8	3,100	a
Fluorine (Soluble Fluoride)	7782-41-4	30	e
Fluridone	59756-60-4	5,100	a
Flurprimidol	56425-91-3	190	b
Flusilazole	85509-19-9	130	a
Flutolanil	66332-96-5	2,500	b
Fluvalinate	69409-94-5	630	a
Folpet	133-07-3	23	b
Fomesafen	72178-02-0	9.6	b
Fonofos	944-22-9	2.8	b
Formaldehyde	50-00-0	0.002	d
Formic Acid	64-18-6	0.0078	b
Fosetyl-AL	39148-24-8	40,000	b
Furan	110-00-9	0.44	b
Furazolidone	67-45-8	0.0023	ь
Furfural	98-01-1	0.49	ь
Furium	531-82-8	0.0041	b
Furmecyclox	60568-05-0	0.072	b
Generic Diesel/Heating Oil		1,100	С
Generic Gasoline		31	d
Generic Mineral/Insulating Oil		2,800	С
Glufosinate, Ammonium	77182-82-2	1.6	b
Glutaraldehyde	111-30-8	24	b
Glycidyl	765-34-4	0.02	b
Glyphosate	1071-83-6	530	b
Guanidine	113-00-8	2.7	ь
Guanidine Chloride	50-01-1	1,300	a
Guanidine Nitrate	506-93-4	9	ь
Haloxyfop, Methyl	69806-40-2	0.5	ь
Heptachlor	76-44-8	0.017	d
Heptachlor Epoxide	1024-57-3	0.0042	d
Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	39635-31-9	0.13	a
Heptanal, n-	111-71-7	0.084	b
Heptane, N-	142-82-5	1	e
Hexabromobenzene	87-82-1	14	b
Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-	68631-49-2	13	a
153) Hexachlorobenzene	110 74 1	0.010	1
	118-74-1	0.018	<u>d</u>
Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)	38380-08-4	0.1	b
Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)	69782-90-7	0.1	b
Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)	52663-72-6	0.1	<u>b</u>
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	32774-16-6	0.0001	<u>b</u>
Hexachlorobutadiene	87-68-3	0.016	<u>b</u>
Hexachlorocyclohexane, (technical-BHC)	608-73-1	0.009	b
Hexachlorocyclohexane, alpha- (alpha-HCH or alpha-BHC)	319-84-6	0.0063	d
Hexachlorocyclohexane, Beta- (beta-BHC)	319-85-7	0.009	b
Hexachlorocyclohexane, gamma- (gamma-BHC or Lindane)	58-89-9	0.0095	g
Lindane) Hexachlorocyclopentadiene	77-47-4	0.078	b
	0		
Hexachlorodibenzo-p-dioxin, Mixture	V	0.0001	a

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Hexachloroethane	67-72-1	0.022	d
Hexachlorophene	70-30-4	19	a
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	0.016	b
Hexamethylene Diisocyanate, 1,6-	822-06-0	0.013	b
Hexamethylphosphoramide	680-31-9	0.11	b
Hexane, N-	110-54-3	600	b
Hexanedioic Acid	124-04-9	590	b
Hexanone, 2-	591-78-6	0.36	g
Hexazinone	51235-04-2	18	b
Hexythiazox	78587-05-0	30	b
Hydramethylnon	67485-29-4	1,100	a
Hydrazine	302-01-2	0.000013	b
Hydrazine Sulfate	10034-93-2	0.23	a
Hydrogen Chloride	7647-01-0	28,000,000	a
Hydrogen Cyanide	74-90-8	0.88	d
Hydrogen Fluoride	7664-39-3	3,100	a
Hydrogen Sulfide	7783-06-4	2,800,000	a
Hydroquinone	123-31-9	0.052	b
Imazalil	35554-44-0	0.9	b
Imazaquin	81335-37-7	1,400	b
Imazethapyr	81335-77-5	2,500	b
Indeno[1,2,3-cd]pyrene	193-39-5	1.1	a
Iodine	7553-56-2	4	e
Iprodione	36734-19-7	13	b
Isobutyl Alcohol	78-83-1	72	b
Isophorone	78-59-1	1.6	b
Isopropalin	33820-53-0	55	b
Isopropanol	67-63-0	5	b
Isopropyl Methyl Phosphonic Acid	1832-54-8	26	ь
Isoxaben	82558-50-7	120	b
JP-7	E1737665	430,000,000	a
Lactofen	77501-63-4	280	b
Lactonitrile	78-97-7	0.049	b
Lead acetate	301-04-2	0.11	b
Lead Phosphate	7446-27-7	82	a
Lead subacetate	1335-32-6	0.12	b
Lewisite	541-25-3	0.0023	b
Linuron	330-55-2	6.6	b
Lithium Perchlorate	7791-03-9	55	a
Malathion	121-75-5	6	b
Maleic Anhydride	108-31-6	23	b
Maleic Hydrazide	123-33-1	130	b
Malononitrile	109-77-3	0.025	b
Mancozeb	8018-01-7	46	b
Maneb	12427-38-2	8.4	b
MCPA ((4-chloro-2-methylphenoxy)acetic acid)	94-74-6	0.097	d
MCPB	94-81-5	1.6	b
MCPP	93-65-2	0.28	b
Mephosfolan	950-10-7	0.16	b
Mepiquat Chloride	24307-26-4	12	b

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Mercaptobenzothiazole, 2-	149-30-4	1.1	b
Mercuric Chloride (and other Mercury salts)	7487-94-7	23	a
Mercury (methyl)	22967-92-6	0.0002	e
Merphos	150-50-5	2.3	a
Merphos Oxide	78-48-8	0.084	b
Metalaxyl	57837-19-1	20	b
Methacrylonitrile	126-98-7	0.026	b
Methamidophos	10265-92-6	0.013	b
Methanol	67-56-1	250	b
Methidathion	950-37-8	0.43	b
Methomyl	16752-77-5	6.6	b
Methoxy-5-nitroaniline, 2-	99-59-2	0.032	b
Methoxychlor	72-43-5	5.1	g
Methoxyethanol Acetate, 2-	110-49-6	0.025	b
Methoxyethanol, 2-	109-86-4	0.35	b
Methyl Acetate	79-20-9	250	b
Methyl Acrylate	96-33-3	0.53	b
Methyl Ethyl Ketone (2-Butanone)	78-93-3	72	b
Methyl Hydrazine	60-34-4	0.000078	b
Methyl Iodide	74-88-4	0.038	g
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	9.7	g
Methyl Isocyanate	624-83-9	0.035	b
Methyl Methacrylate	80-62-6	18	b
Methyl Methanesulfonate	66-27-3	0.0096	b
Methyl Parathion	298-00-0	0.44	b
Methyl Phosphonic Acid	993-13-5	14	b
Methyl Styrene (Mixed Isomers)	25013-15-4	2.3	b
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.11	d
Methyl-1,4-benzenediamine dihydrochloride, 2-	615-45-2	0.22	b
Methyl-2-Pentanol, 4-	108-11-2	84	b
Methyl-5-nitroaniline, 2- (5-Nitro-o-toluidine)	99-55-8	0.28	b
Methylaniline Hydrochloride, 2-	636-21-5	0.016	b
Methylarsonic acid	124-58-3	3.5	b
Methylbenzene,1-4-diamine monohydrochloride, 2-	74612-12-7	13	a
Methylbenzene-1,4-diamine sulfate, 2-	615-50-9	5.4	a
Methylcholanthrene, 3-	56-49-5	0.0055	a
Methylene-bis(2-chloroaniline), 4,4'-	101-14-4	0.11	b
Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	101-61-1	0.16	b
Methylenebisbenzenamine, 4,4'-	101-77-9	0.013	b
Methylenediphenyl Diisocyanate	101-68-8	850,000	a
Methylnaphthalene, 1-	90-12-0	0.36	b
Methylnaphthalene, 2-	91-57-6	11	b
Methyl-N-nitro-N-nitrosoguanidine, N-	70-25-7	0.00019	b
Methylstyrene, Alpha-	98-83-9	72	b
Metolachlor	51218-45-2	190	b
Metribuzin	21087-64-9	9	b
Metsulfuron-methyl	74223-64-6	110	b
Mineral oils	8012-95-1	140,000	b
Mirex	2385-85-5	0.036	a

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Molinate	2212-67-1	1	b
Monoaluminum phosphate	13530-50-2	3,800,000	a
Monoammonium phosphate	7722-76-1	3,800,000	a
Monocalcium phosphate	7758-23-8	3,800,000	a
Monochloramine	10599-90-3	7,800	a
Monomagnesium phosphate	7757-86-0	3,800,000	a
Monomethylaniline	100-61-8	0.84	b
Monopotassium phosphate	7778-77-0	3,800,000	a
Monosodium phosphate	7558-80-7	3,800,000	a
Myclobutanil	88671-89-0	340	b
N,N'-Diphenyl-1,4-benzenediamine	74-31-7	19	a
Naled	300-76-5	1.1	b
Naphtha, High Flash Aromatic (HFAN)	64742-95-6	2,300	a
Naphthalene	91-20-3	0.077	d
Naphthylamine, 2-	91-59-8	0.012	b
Napropamide	15299-99-7	780	b
Napropamide Nickel Acetate	15299-99-7 373-02-4	2.7	b b
Nickel Carbonate	3333-67-3	670	
			a
Nickel Carbonyl	13463-39-3	820	a
Nickel Hydroxide Nickel Oxide	12054-48-7	820	a
	1313-99-1	840	a
Nickel Refinery Dust	E715532	820	a
Nickel Subsulfide	12035-72-2	0.41	a
Nickelocene	1271-28-9	670	a
Nitrate	14797-55-8	130,000	a
Nitrite	14797-65-0	7,800	a
Nitroaniline, 2-	88-74-4	4.8	b
Nitroaniline, 3-	99-09-2	70	e
Nitroaniline, 4-	100-01-6	0.096	b
Nitrobenzene	98-95-3	0.0055	b
Nitrocellulose	9004-70-0	780,000	b
Nitrofurantoin	67-20-9	37	b
Nitrofurazone	59-87-0	0.0032	b
Nitroglycerin	55-63-0	0.051	b
Nitroguanidine	556-88-7	29	b
Nitromethane	75-52-5	0.0084	b
Nitrophenol, 4-	100-02-7	7	e
Nitropropane, 2-	79-46-9	0.000032	b
Nitropyrene, 4-	57835-92-4	0.2	b
Nitrosodiethanolamine, N-	1116-54-7	0.00034	b
Nitrosodiethylamine, N-	55-18-5	0.0000037	b
Nitrosodimethylamine, N-	62-75-9	0.0000016	b
Nitroso-di-N-butylamine, N-	924-16-3	0.00033	b
Nitrosodiphenylamine, N- (Diphenylnitrosamine)	86-30-6	10	d
Nitrosomethylethylamine, N-	10595-95-6	0.000012	b
Nitrosomorpholine [N-]	59-89-2	0.00017	b
Nitroso-N-ethylurea, N-	759-73-9	0.000013	b
Nitroso-N-methylurea, N-	684-93-5	0.0000028	b
Nitrosopiperidine [N-]	100-75-4	0.00026	b
Nitrosopyrrolidine, N-	930-55-2	0.00084	b

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Nitrotoluene, m-	99-08-1	0.096	b
Nitrotoluene, o-	88-72-2	0.018	b
Nitrotoluene, p-	99-99-0	0.24	b
Nonane, n-	111-84-2	4.5	b
Norflurazon	27314-13-2	110	b
Octabromodiphenyl Ether	32536-52-0	190	a
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	2691-41-0	16	g
(HMX) Octamethylpyrophosphoramide	152-16-9	0.58	b
Octyl Phthalate, di-N-	117-84-0	0.91	
Oryzalin	19044-88-3	0.9	g b
Oxadiazon	19666-30-9	29	b
	23135-22-0	6.6	b
Oxamyl		2.6	
Oxyfluorfen Paclobutrazol	42874-03-3		<u>b</u>
	76738-62-0	28	b f
PAHs - High Molecular Weight	0	1.1	
PAHs - Low Molecular Weight	0	29	f
Paraquat Dichloride	1910-42-5	72	b
Parathion	56-38-2	26	b
Pebulate	1114-71-2	27	b
Pendimethalin	40487-42-1	960	b
Pentabromodiphenyl Ether	32534-81-9	100	b
Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99)	60348-60-9	5.2	b
Pentachlorobenzene	608-93-5	1.4	b
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	32598-14-4	0.06	b
Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)	74472-37-0	0.06	b
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	31508-00-6	0.06	b
Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)	65510-44-3	0.06	b
Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)	57465-28-8	0.000018	b
Pentachloroethane	76-01-7	0.019	b
Pentachloronitrobenzene	82-68-8	0.09	b
Pentachlorophenol	87-86-5	0.066	d
Pentaerythritol tetranitrate (PETN)	78-11-5	1.7	ь
Pentane, n-	109-66-0	600	b
Perchlorate and perchlorate salts	14797-73-0	55	a
Perfluorobutane sulfonic acid (PFBS)	375-73-5	7.8	b
Perfluorobutanesulfonate	45187-15-3	7.8	b
Permethrin	52645-53-1	3,200	a
Phenacetin	62-44-2	0.58	b
Phenanthrene	85-01-8	5.5	g
Phenmedipham	13684-63-4	1,300	b
Phenol	108-95-2	0.79	g
Phenol, 2-(1-methylethoxy)-, methylcarbamate	114-26-1	1.5	b
Phenothiazine	92-84-2	0.84	b
Phenyl Isothiocyanate	103-72-0	0.1	b
Phenylenediamine, m-	108-45-2	1.9	b
Phenylenediamine, o-	95-54-5	0.01	b
Phenylenediamine, p-	106-50-3	0.32	b
Phenylmercuric Acetate	62-38-4	0.03	b
Phenylphenol, 2-	90-43-7	25	b
Phorate	298-02-2	0.2	b
1 1101410	270 - 02 - 2	0.2	υ

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

concentrations in hig/kg				
Chemical Name	CAS	Clean Fill Value	Note	
Phosgene	75-44-5	0.31	a	
Phosmet	732-11-6	4.9	ь	
Phosphine	7803-51-2	23	a	
Phosphoric Acid	7664-38-2	3,000,000	a	
Phosphorus, White	7723-14-0	0.09	b	
Phthalic Acid, P-	100-21-0	410	b	
Phthalic Anhydride	85-44-9	510	ь	
Picloram	1918-02-1	23	b	
Picramic Acid (2-Amino-4,6-dinitrophenol)	96-91-3	0.078	b	
Picric Acid (2,4,6-Trinitrophenol)	88-89-1	5	ь	
Pirimiphos, Methyl	29232-93-7	0.049	b	
Polybrominated biphenyls	59536-65-1	0.018	a	
Polychlorinated biphenyls (Total		0.22		
PCBs)		0.23	С	
Polymeric Methylene Diphenyl Diisocyanate	0016.07.0	0.50,000		
(PMDI)	9016-87-9	850,000	a	
Polyphosphoric acid	8017-16-1	3,800,000	a	
Potassium Cyanide	151-50-8	160	a	
Potassium Perchlorate	7778-74-7	55	a	
Potassium Perfluorobutane Sulfonate	29420-49-3	1,300	a	
Potassium Silver Cyanide	506-61-6	390	a	
Potassium tripolyphosphate	13845-36-8	3,800,000	a	
Prochloraz	67747-09-5	0.11	b	
Profluralin	26399-36-0	96	b	
Prometon	1610-18-0	7.2	b	
Prometryn	7287-19-6	54	b	
Propachlor	1918-16-7	9	b	
Propanil	709-98-8	2.7	b	
Propargite	2312-35-8	0.66	b	
Propargyl Alcohol	107-19-7	0.49	b	
Propazine	139-40-2	18	b	
Propham	122-42-9	13	b	
Propiconazole	60207-90-1	320	b	
Propionaldehyde	123-38-6	0.2	b	
Propyl benzene	103-65-1	72	b	
Propylene	115-07-1	360	b	
Propylene Glycol	57-55-6	4,900	b	
Propylene Glycol Dinitrate	6423-43-4	390,000	a	
Propylene Glycol Monomethyl Ether	107-98-2	39	b	
Propylene Oxide	75-56-9	0.0034	b	
Propyzamide	23950-58-5	72	b	
Pyrene	129-00-0	10	g	
Pyridine	110-86-1	0.41	b	
Quinalphos	13593-03-8	2.6	b	
Quinoline	91-22-5	0.0047	b	
Quizalofop-ethyl	76578-14-8	110	b	
Refractory Ceramic Fibers	E715557	43,000,000	a	
Resmethrin	10453-86-8	1,900	a	
Ronnel	299-84-3	220	b	
Rotenone	83-79-4	250	a	
Safrole	94-59-7	0.0035	b	

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

concentrations in mg/kg				
Chemical Name	CAS	Clean Fill Value	Note	
Selenious Acid	7783-00-8	390	a	
Selenium Sulfide	7446-34-6	390	a	
Sethoxydim	74051-80-2	840	b	
Silica (crystalline, respirable)	7631-86-9	4,300,000	a	
Silver Cyanide	506-64-9	7,800	a	
Simazine	122-34-9	0.018	b	
Sodium acid pyrophosphate	7758-16-9	3,800,000	a	
Sodium Acifluorfen	62476-59-9	130	b	
Sodium aluminum phosphate (acidic)	7785-88-8	3,800,000	a	
Sodium aluminum phosphate (anhydrous)	10279-59-1	3,800,000	a	
Sodium aluminum phosphate (tetrahydrate)	10305-76-7	3,800,000	a	
Sodium Azide	26628-22-8	310	a	
Sodium Cyanide	143-33-9	78	a	
Sodium Diethyldithiocarbamate	148-18-5	0.011	b	
Sodium Fluoride	7681-49-4	3,900	a	
Sodium Fluoroacetate	62-74-8	0.0049	b	
Sodium hexametaphosphate	10124-56-8	3,800,000	a	
Sodium Metavanadate	13718-26-8	78	a	
Sodium Perchlorate	7601-89-0	55	a	
Sodium polyphosphate	68915-31-1	3,800,000	a	
Sodium trimetaphosphate	7785-84-4	3,800,000	a	
Sodium tripolyphosphate	7758-29-4	3,800,000	a	
Sodium Tungstate	13472-45-2	63	a	
Sodium Tungstate Dihydrate	10213-10-2	63	a	
Stirofos (Tetrachlorovinphos)	961-11-5	0.49	b	
Strychnine	57-24-9	3.9	b	
Styrene	100-42-5	1.2	g	
Styrene-Acrylonitrile (SAN) Trimer		190	a	
Sulfolane	126-33-0	0.26	b	
Sulfonylbis(4-chlorobenzene), 1,1'-	80-07-9	3.9	b	
Sulfur Trioxide	7446-11-9	1,400,000	a	
Sulfuric Acid	7664-93-9	1,400,000	a	
Sulfurous acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester	140-57-8	0.9	b	
Tebuthiuron	34014-18-1	23	b	
Temephos	3383-96-8	1,300		
Terbacil	5902-51-2	4.5	a b	
Terbufos	13071-79-9	0.031	b	
Terbutryn	886-50-0	1.1	b	
Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47)	5436-43-1	3.2	b	
Tetrachloroaniline, 2,3,5,6-	3481-20-7	20		
Tetrachlorobenzene, 1,2,3,4-	634-66-2	10	e e	
Tetrachlorobenzene, 1,2,4,5-	95-94-3	0.47	b	
Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)	32598-13-3	0.038	a	
Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)	70362-50-4	0.0037	a b	
Tetrachlorodibenzodioxin (TCDD), 2,3,7,8-		i	υ	
(dioxin)	1746-01-6	0.00000029	g	
Tetrachloroethane, 1,1,1,2-	630-20-6	0.013	b	
Tetrachloroethane, 1,1,2,2-	79-34-5	0.0018	b	
Tetrachloroethylene (PCE)	127-18-4	0.18	g	
Tetrachlorophenol, 2,3,4,6-	58-90-2	11	b	

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Tetrachlorotoluene, p- alpha, alpha, alpha-	5216-25-1	0.00027	b
Tetraethyl Dithiopyrophosphate	3689-24-5	0.31	b
Tetraethyl lead	78-00-2	0.00028	b
Tetrafluoroethane, 1,1,1,2-	811-97-2	5,600	b
Tetrahydrofuran	109-99-9	45	b
Tetrapotassium phosphate	7320-34-5	3,800,000	a
Tetrasodium pyrophosphate	7722-88-5	3,800,000	a
Tetryl (Trinitrophenylmethylnitramine)	479-45-8	1.5	g
Thallic Oxide	1314-32-5	1.6	a
Thallium (I) Nitrate	10102-45-1	0.78	a
Thallium (Soluble Salts)	7440-28-0	0.78	a
Thallium Acetate	563-68-8	0.0025	b
Thallium Carbonate	6533-73-9	0.005	b
Thallium Chloride	7791-12-0	0.78	a
Thallium Selenite	12039-52-0	0.78	a
Thallium Sulfate	7446-18-6	1.6	a
Thifensulfuron-methyl	79277-27-3	1.6	b
Thiobencarb	28249-77-6	33	b
Thiocyanates	E1790664	16	
Thiocyanic Acid	463-56-9	16	a
Thiocyanic Acid Thiocyanomethylthio benzothiazole, 2- (TCMTB)	21564-17-0	200	a b
Thiodiglycol	111-48-8	17	b
Thiofanox	39196-18-4	0.11	b
Thiophanate, Methyl	23564-05-8	0.34	b
Thiram	137-26-8	25	b
Titanium Tetrachloride	7550-45-0	140,000	a
Toluene	108-88-3	23	g
Toluene-2,4-diisocyanate	584-84-9	0.015	b
Toluene-2,5-diamine	95-70-5	0.0078	b
Toluene-2,6-diisocyanate	91-08-7	0.016	b
Toluic Acid, p-	99-94-5	1.4	b
Toluidine, o- (Methylaniline, 2-)	95-53-4	0.12	b
Toluidine, p-	106-49-0	0.066	b
Total Petroleum Hydrocarbons (Aliphatic High)	E1790670	140,000	b
Total Petroleum Hydrocarbons (Aliphatic Low)	E1790666	520	a
Total Petroleum Hydrocarbons (Aliphatic Medium)	E1790668	90	b
Total Petroleum Hydrocarbons (Aromatic High)	E1790676	2,500	a
Total Petroleum Hydrocarbons (Aromatic Low)	E1790672	1	ь
Total Petroleum Hydrocarbons (Aromatic Medium)	E1790674	1.4	b
Toxaphene	8001-35-2	0.36	d
Tralomethrin	66841-25-6	470	a
Triacetin	102-76-1	27,000	b
Triadimefon	43121-43-3	30	b
Triallate	2303-17-5	0.06	b
Trialuminum sodium tetra			
decahydrogenoctaorthophosphate (dihydrate)	15136-87-5	3,800,000	a
Triasulfuron	82097-50-5	13	b
Tribenuron-methyl	101200-48-0	3.7	b

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Tribromobenzene, 1,2,4-	615-54-3	3.8	b
Tribromophenol, 2,4,6-	118-79-6	13	b
Tributyl Phosphate	126-73-8	1.5	b
Tributyltin Compounds	E1790678	19	a
Tributyltin oxide (TBTO)	56-35-9	19	a
Tricalcium phosphate	7758-87-4	3,800,000	a
Trichloro-1,2,2-trifluoroethane, 1,1,2- (Freon 113)	76-13-1	1,600	b
Trichloroacetic Acid	76-03-9	0.013	b
Trichloroaniline HCl, 2,4,6-	33663-50-2	0.44	b
Trichloroaniline, 2,4,5-	636-30-6	20	e
Trichloroaniline, 2,4,6-	634-93-5	0.22	b
Trichlorobenzene, 1,2,3-	87-61-6	1.3	b
Trichlorobenzene, 1,2,4-	120-82-1	0.2	b
Trichloroethane, 1,1,1-	71-55-6	190	d
Trichloroethane, 1,1,2-	79-00-5	0.0063	d
Trichloroethylene (TCE)	79-01-6	0.013	d
Trichlorofluoromethane (Freon 11)	75-69-4	52	g
Trichlorophenol, 2,4,5-	95-95-4	4	e
Trichlorophenol, 2,4,6-	88-06-2	2.4	d
Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5	4.1	b
Trichlorophenoxypropionic acid, -2,4,5	93-72-1	3.7	b
Trichloropropane, 1,1,2-	598-77-6	2.1	b
Trichloropropane, 1,2,3-	96-18-4	0.000019	b
Trichloropropene, 1,2,3-	96-19-5	0.019	b
Tricresyl Phosphate (TCP)	1330-78-5	900	b
Tridiphane	58138-08-2	7.8	b
Triethylamine	121-44-8	0.26	b
Triethylene Glycol	112-27-6	530	b
Trifluoroethane, 1,1,1-	420-46-2	7,800	b
Trifluralin	1582-09-8	5	b
Trimagnesium phosphate	7757-87-1	3,800,000	a
Trimethyl Phosphate	512-56-1	0.052	b
Trimethylbenzene, 1,2,3-	526-73-8	4.9	b
Trimethylbenzene, 1,2,4-	95-63-6	10	d
Trimethylbenzene, 1,3,5-	108-67-8	11	d
Trimethylpentene, 2,4,4-	25167-70-8	13	b
Tri-n-butyltin	688-73-3	4.9	b
Trinitrobenzene, 1,3,5-	99-35-4	10	g
Trinitrotoluene, 2,4,6- (TNT)	118-96-7	0.9	b
Triphenylphosphine Oxide	791-28-6	90	b
Tripotassium phosphate	7778-53-2	3,800,000	a
Tris(1,3-Dichloro-2-propyl) Phosphate	13674-87-8	480	b
Tris(1-chloro-2-propyl)phosphate	13674-84-5	39	b
Tris(2,3-dibromopropyl)phosphate	126-72-7	0.0078	b
Tris(2-chloroethyl)phosphate	115-96-8	0.23	b
Tris(2-ethylhexyl)phosphate	78-42-2	170	a
Trisodium phosphate	7601-54-9	3,800,000	a
Uranium (Soluble Salts)	E715565	5	e
Urethane (Ethyl carbamate)	51-79-6	0.00034	b
Vanadium Pentoxide	1314-62-1	460	a

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Vernolate	1929-77-7	0.53	b
Vinclozolin	50471-44-8	0.96	b
Vinyl Acetate	108-05-4	5.2	b
Vinyl Bromide	593-60-2	0.0031	b
Vinyl Chloride	75-01-4	0.00057	d
Warfarin	81-81-2	0.35	b
Xylene, m-	108-38-3	11	b
Xylene, o-	95-47-6	1	e
Xylene, P-	106-42-3	11	b
Xylenes	1330-20-7	1.4	g
Zinc Cyanide	557-21-1	3,900	a
Zinc Phosphide	1314-84-7	23	a
Zineb	12122-67-7	170	b
Zirconium	7440-67-7	6.3	a

Notes:

- a Regional Screening Levels, EPA (May 2018), Residential soil. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm
- b Regional Screening Levels, EPA (May 2018), groundwater protection (x60 to convert to Oregon dilution attenuation factor).
- c Risk Based Concentrations, DEQ (May 2018), Residential soil. https://www.oregon.gov/deq/FilterDocs/RBDMTable.pdf
- d Risk Based Concentrations, DEQ (May 2018), Leaching to groundwater.
- e Table 1, Guidance for Ecological Risk Assessment, Level II Screening Level Values, DEQ (2001),

https://www.oregon.gov/deq/FilterDocs/GuidanceEcologicalRisk.pdf

- f Ecological Soil Screening Levels, EPA (2005, 2007), http://www.epa.gov/ecotox/ecossl/
- g Ecotoxicological screening benchmarks developed by Oak Ridge National Laboratory:

https://www.lanl.gov/environment/protection/eco-risk-assessment.php

Last updated by Heather Kuoppamaki, DEQ-NWR, on June 17, 2019

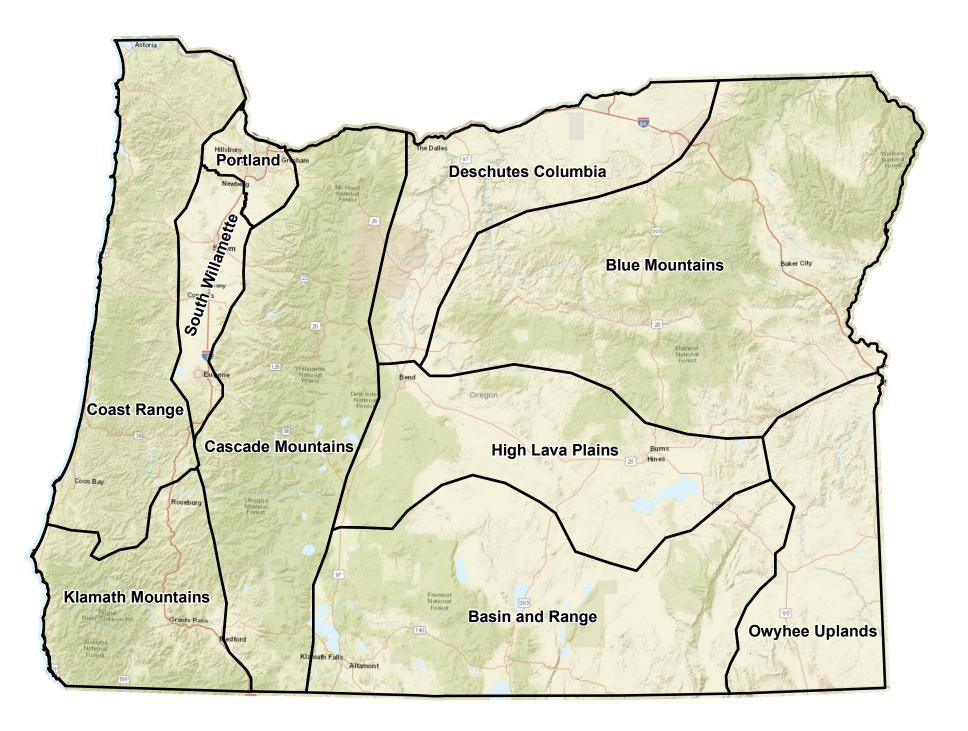
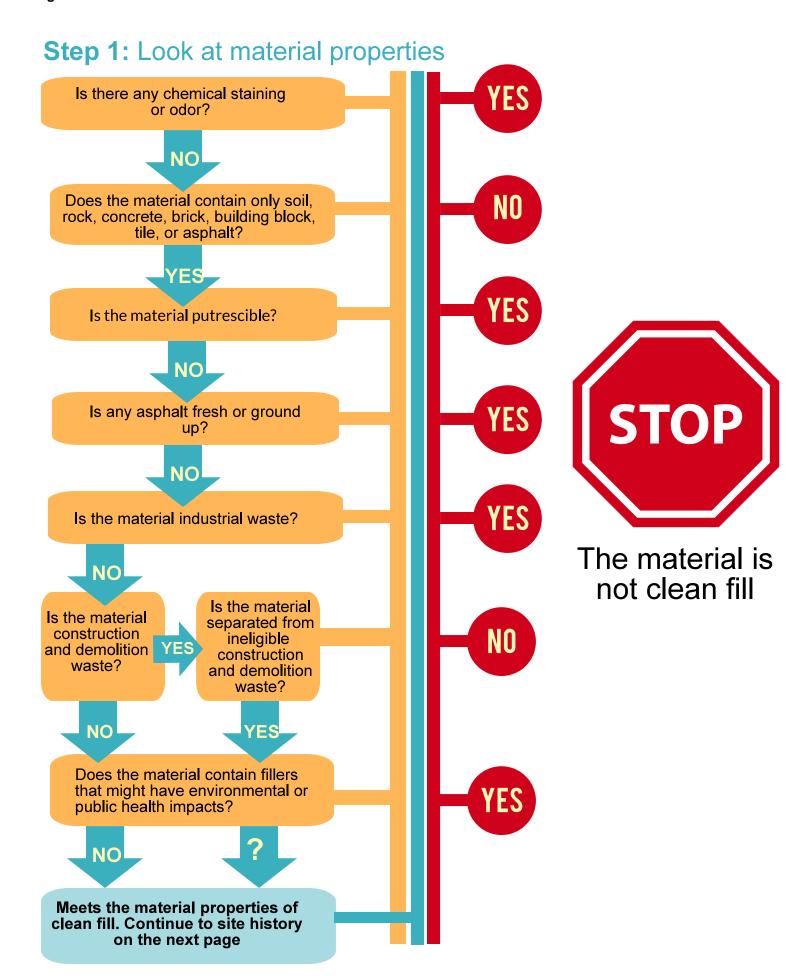
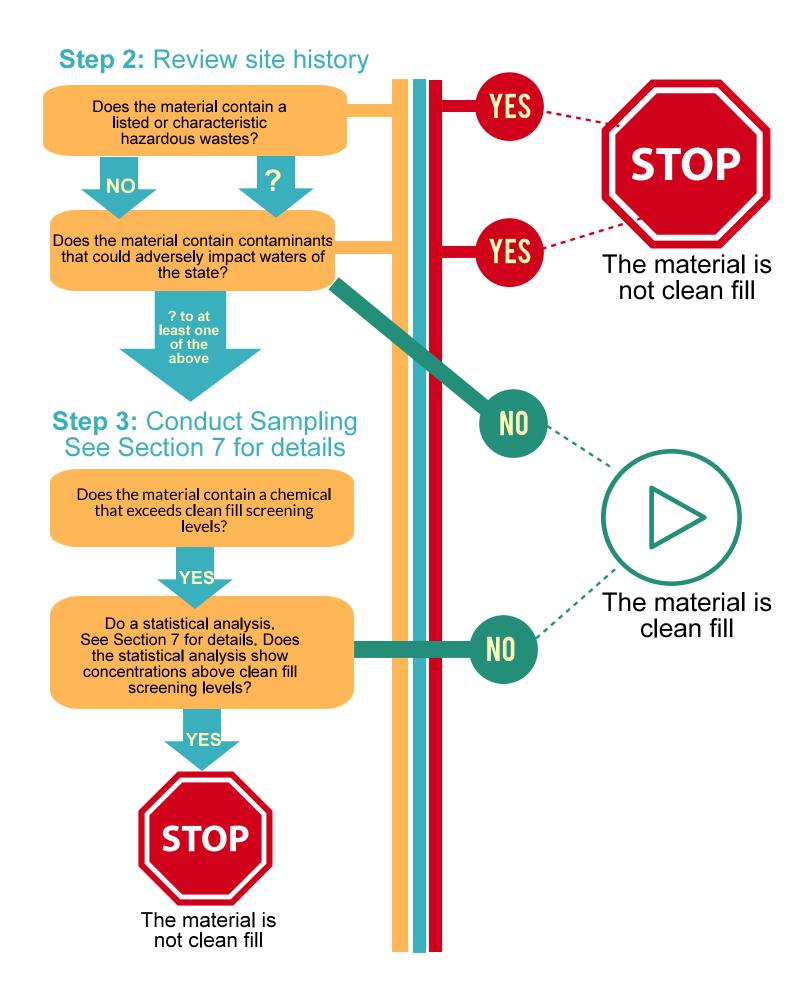


Figure 1. Physiographic Provinces of Oregon

Figure 2 - Clean Fill Evaluation Flow Chart







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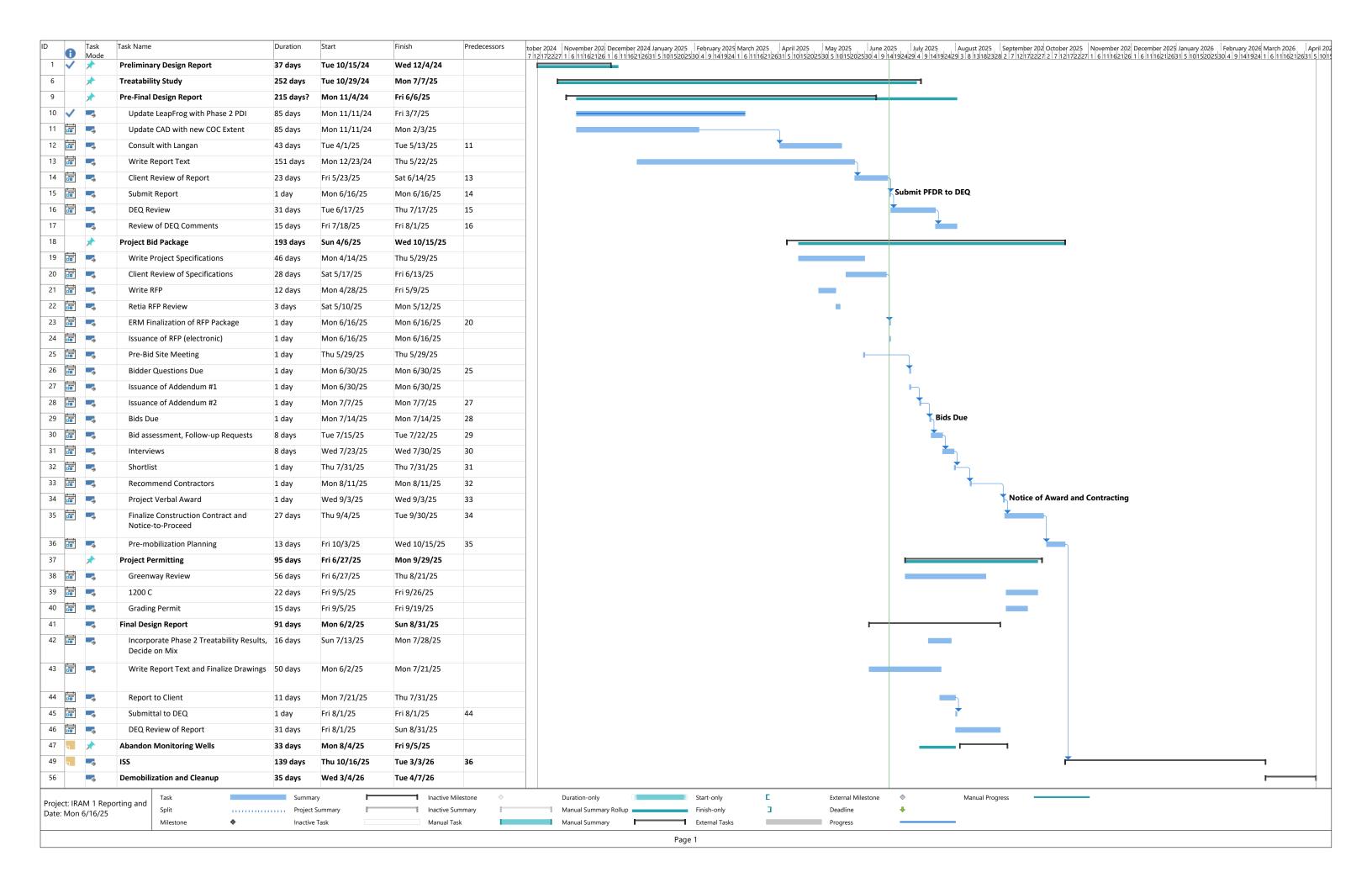
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