

Clean Fill Determination Report

Bull Run Filtration Facility
Gresham, Oregon

Prepared for:
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PBS Project 24433.000



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Table of Contents

1	INTRODUCTION	1
1.1	Site Description and Topography	1
1.2	Site Ownership and History	1
2	REGIONAL GEOLOGY AND HYDROGEOLOGY	1
3	PURPOSE AND SCOPE	1
3.1	Filtration Facility Assessment	2
3.2	Pipeline Alignment Assessment	2
4	ISM SAMPLING	4
4.1	Filtration Facility Soil Sampling	5
4.2	Finished Pipeline Alignment North End	5
4.3	Finished Pipeline Corridor Center	6
4.4	Finished Pipeline Alignment South End	6
4.5	SW Corner of SE Dodge Park and SE Cottrell Road	7
4.6	Raw Water Line Alignment East End	7
4.7	ISM Data Evaluation	8
5	INVESTIGATION-DERIVED WASTES	8
6	FINDINGS	8
6.1	Soil Field Observations	8
6.2	Soil Analytical Results	8
7	CLEAN FILL CRITERIA EVALUATION	9
8	RAW WATER FACILITY CONNECTION	9
9	CONCLUSIONS	10
10	LIMITATIONS	10

Supporting Data

FIGURES

- Figure 1. Site Vicinity
- Figure 2. Filtration Facility
- Figure 3. Finished Water North
- Figure 4. Finished Water Center
- Figure 5. Finished Water South and SE Dodge Park Boulevard
- Figure 6. SE Dodge Park Boulevard
- Figure 7. Raw Water East
- Figure 8. Raw Water Facility Connection

TABLES

- Table 1. Summary of Soil Analytical Results – Filtration Facility
- Table 2. Summary of Soil Analytical Results – Finished Water North
- Table 3. Summary of Soil Analytical Results – Finished Water Center
- Table 4. Summary of Soil Analytical Results – Finished Water South
- Table 5. Summary of Soil Analytical Results – Raw Water East
- Table 6. Summary of Soil Analytical Results – SE Dodge Park Boulevard and SE Cottrell Road Intersection

APPENDICES

Appendix A. City of Portland Sheet LU-T-01

Appendix B. Photo Documentation

Appendix C. Laboratory Reports

Appendix D. Multnomah County Right-of-Way Permit

Appendix E. Applicable Figures and Tables from AAI's Filtration Site Supplemental Report

1 INTRODUCTION

PBS Engineering and Environmental Inc. (PBS) completed a clean fill determination for Integrated Water Solutions, LLC (Client) at the planned Bull Run filtration facility and pipeline locations (Site) in Gresham, Oregon. The City of Portland Bull Run Filtration Facility is to be constructed south of SE Carpenter Lane on approximately 96 acres of land historically used for farming. The facility will include construction of ponds, structures, offices, and other features in support of a new system capable of filtering the Bull Run municipal water supply. Construction is anticipated to include excavation on approximately 46 acres of land, potentially generating up to 1 million cubic yards of soil requiring management, most of which will require off-site management. Installation of a buried 2.7-mile water pipeline alignment is anticipated to generate additional quantities of soil requiring management.

This report summarizes work performed at the Site and presents PBS' investigation results and conclusions.

1.1 Site Description and Topography

The planned filtration facility comprises 96 acres in Section 22, Township 1 South, Range 4 East, of the Willamette Base and Meridian (Figure 1). The property is bounded to the north by SE Carpenter Lane, to the south and west by agricultural properties, and to the east by undeveloped forest and rural residential properties. The planned facility location is largely flat with a gentle slope to the west.

The planned pipeline portions of the Site are situated along SE Altman Road, SE Lusted Road, a private farm road, SE Dodge Park Boulevard, and a private residence to the east of the filtration facility. Topography throughout the planned pipeline locations is generally flat with an overall gentle slope to the west.

Elevation across the filtration plant and pipeline locations ranges from approximately 600 to 720 feet above mean sea level (amsl), with the exception of the eastern private residence, where the elevation is approximately 500 feet amsl.

1.2 Ownership and History

The filtration facility property is currently owned by the City of Portland, which purchased the property in 1975. Historically, the property was used as an ornamental tree farm operated by an adjacent property owner in accordance with an agreement with the City of Portland.

2 REGIONAL GEOLOGY AND HYDROGEOLOGY

The Site lies in the southern portion of the Portland Basin, a structural feature formed through faulting and folding of the Tualatin Mountains to the west and the western edge of the Cascade Mountains to the east. The Portland Basin was subsequently filled with basalt as well as fluvial and lacustrine deposits during Eocene to Miocene times. Catastrophic flood events during the Pleistocene scoured the basin and deposited flood-transported material.¹ In the vicinity of the Site, surface soil consists of silt loam deposits.²

3 PURPOSE AND SCOPE

The proposed scope of the investigation was to complete a clean fill determination for excess soil that will be generated at the site as part of the construction of the filtration facility and associated pipeline alignments that meet the requirements outlined in the State of Oregon Department of Environmental Quality (DEQ) Clean

¹ United States Geological Survey (USGS). (1996). *Description of the Ground-Water Flow System in the Portland Basin, Oregon and Washington*. United States Geological Survey Water-Supply Paper 2470-A.

² Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. <http://websoilsurvey.nrcs.usda.gov/> Accessed October 9, 2023.

Fill Guidance and Interstate Technology Regulatory Council (ITRC) Incremental Sampling Methodology (ISM) Sampling Guidance.

Prior to initiating sampling activities, PBS prepared a clean fill determination workplan.³ The workplan was presented to DEQ for review and approval to implement the plan was provided by email on November 3, 2023.

3.1 Filtration Facility Assessment

Due to the large area requiring evaluation, PBS selected ISM sampling methods that have been utilized on similar projects in Oregon to characterize large volumes of soil for agricultural chemicals. The PBS scope of work was developed using ISM protocols as presented in an October 2020 ITRC document.

A decision unit (DU) comprises material that will stay in place or be managed at a single location or represents a specific use on a portion of a site. In reviewing historical aerial photographs and information previously provided by Assessment Associates, Inc. (AAI), portions of the site had been utilized for different row crops or grazeland over time. It was noted to be likely that any elevated concentrations of residual pesticides would be limited to the upper 18 inches of soil based on typical agricultural practices.

PBS designated the entire 46-acre western portion of the filtration facility site as a single area of focus (Figure 2), as this is where most of the construction excavation will occur. To evaluate this area, PBS designated two decision units.

Decision Unit 1 (DU-1)

Shallow soil between the surface and 1.5 feet below ground surface (bgs) was designated as DU-1. Prior sampling completed at the site (discussed in detail in the previously completed workplan) indicated that one or more contaminants of concern were present within this interval and site development will grade/excavate this material separately, placing it on the eastern portion of the larger property to be permanently managed in place.

Decision Unit 2 (DU-2)

Deeper soil comprising soil between 1.5 and 5 feet bgs was designated as DU-2, as this portion of the soil horizon likely contained no to very low concentrations of pesticides. Site development will grade/excavate this material separately and, assuming this material is confirmed to meet clean fill screening levels (CFSLs), it will be transported off site to other properties, the location of which have not yet been determined or finalized.

While site development activities will include excavation to depths up to 40 feet bgs, given the historic surface application of pesticides, it is unlikely that significant concentrations of pesticides are present at depths greater than 5 feet and this material can be assumed to meet CFSLs if the interval represented by DU-2 is confirmed to meet those levels.

3.2 Pipeline Alignment Assessment

Portions of the proposed pipeline transportation corridors are generally within areas of roadside shoulder and/or drainage ditches. The Oregon Department of Transportation has previously completed a study of shoulder soils across the state (but not specifically within the area of the site) that concluded the upper 18 inches of shoulder soil adjacent to roadways are likely to contain elevated concentrations of petroleum

³ PBS (PBS Engineering and Environmental Inc.). (2023, September). *Clean Fill Determination Work Plan, Bull Run Filtration Facility*. PBS Project 24433.000.

hydrocarbons and lead that exceed CFSLs. Given the depth of groundwater in the area, potential sources of contamination were assumed to be limited to surface sources (aerial deposition from traffic, agricultural overspray, and runoff). To evaluate soil for potential reuse/disposal options, PBS proposed utilizing ISM sampling.

3.2.1 Finished Pipeline Alignment North End

This approximately 0.87-mile portion of the finished water line alignment extends south from the intersection of SE Pipeline Road and SE Altman Road along SE Altman Road to the intersection of SE Altman Road and SE Lusted Road, then east on SE Lusted Road (Figure 3). The proposed pipe alignment is situated down the center line and eastern lane/shoulder of SE Altman Road. The pipeline designs for the SE Lusted Road section includes both the north and south shoulders.

The east shoulder along SE Altman Road is primarily flat and grass covered with adjacent farm fields and some rural residential properties. The shoulders along SE Lusted Road are primarily flat and grass covered, with adjacent farm fields and some rural residential properties. A drainage ditch is present along a portion of the north shoulder and overhead electrical lines are present on the south shoulder. An existing 50-inch City of Portland water main is present along the south shoulder of SE Lusted Road.

To evaluate this area, PBS designated the following areas of assessment:

- FWN-DU-1A, FWN-DU-1B, and FWN-DU-1C collected from surface to 1.5 feet bgs
- FWN-DU-2 collected from 1.5 to 5 feet bgs

3.2.2 Finished Pipeline Corridor Center

The approximately 0.49-mile portion of the finished water line alignment is situated along a graveled farm road between agricultural fields from SE Lusted Road to SE Dodge Park Boulevard.

To evaluate the area, PBS designated areas of assessment:

- FWC-DU-1 collected from surface to 1.5 feet bgs
- FWC-DU-2 collected from 1.5 to 5 feet bgs

3.2.3 Finished Pipeline Alignment South End

The approximately 0.95-mile portion of the finished water alignment occurs on SE Dodge Park Boulevard terminating at the filtration facility location. The proposed pipe alignment is situated along the southern shoulder of SE Dodge Park Boulevard. The shoulder along SE Dodge Park Boulevard is primarily flat and graveled with adjacent farm fields and some rural residential properties.

To evaluate this area, PBS has designated areas of assessment:

- FWS-DU-1 collected from surface to 1.5 feet bgs
- FWS-DU-2 collected from 1.5 to 5 feet bgs

3.2.4 SW Corner of SE Dodge Park and SE Cottrell Road

The project team identified and designed a modification, including construction of a retaining wall, to the southwest corner of the intersection of SE Dodge Park and SE Cottrell Road to allow for the turning radius of a hauling truck and tandem trailer. Approximately 10,000 cubic yards of material is expected to be excavated from a portion of the shoulder and adjacent property from a zone of soil with a vertical height of up to approximately 6 feet, extending west along SE Dodge Park Boulevard approximately 350 feet and along SE Cottrell Road approximately 100 feet. All soil excavated from this area will require off-site management. A

City of Portland figure titled Sheet No. LU-T-01 showing the approximate boundaries of this area is included in Appendix A.

To evaluate this area, PBS designated the following area of assessment:

- SWDC-DU-1

3.2.5 Raw Pipeline Alignment East End

While the western portion of the raw water alignment approaching the facility will be installed using trenchless excavation, the eastern 0.2-mile portion of this alignment will be trenched along the general path of a farm road extending from SE Lusted Road.

To evaluate this area, PBS has designated areas of assessment:

- RWE-DU-1 collected from surface to 1.5 feet bgs
- RWE-DU-2 collected from 1.5 to 5 feet bgs

4 ISM SAMPLING

Prior to field activities, a public utility notification request was filed to locate public utilities within the project area. PBS supervised Alpha Locates to clear the assessment locations of underground utilities and conduct boring clearance. Holt Services Inc. of Vancouver, Washington, was contracted to provide drilling services. A site-specific health and safety plan (HASP) was prepared and reviewed with field personnel and subcontractors before commencing fieldwork. Work was conducted by experienced PBS personnel and supervised by a registered geologist. Photo documentation of field activities can be found in Appendix B.

PBS conducted the sampling events on the following dates:

- Filtration Facility – November 6, 2023, through November 10, 2023
- Intersection at SE Dodge Park and SE Cottrell Road – November 15, 2023
- Finished Water South – November 16, 2023
- Raw Water East – November 17, 2023
- Finished Water Center – November 20, 2023
- Finished Water North – November 21, 2023

Sampling frequency including replicate sampling were completed as described in the DEQ-approved work plan for the site. DEQ's September 2020 Internal Management Directive (IMD) *Decision Unit Characterization* recommends collection of replicates samples from a subset of decision units in order to evaluate data quality and ensure the mean is adequately representative of a 90th percentile upper confidence level on the arithmetic mean. The IMD indicates that for DUs consisting of more than 50 increments, a reduced relative standard deviation (RSD) should be expected and field replicates can be collected at a lower frequency (e.g. one per batch).

Historic use and resulting deposition of potential contaminants of concern in areas of the study was anticipated to be similar as these areas are either rural roadways bounded by agricultural fields (water pipeline area DUs) or homogenously farmed agricultural fields (filtration facility DUs). PBS proposed (and DEQ approved) collection of one set of replicate samples to address each scenario, collecting replicate samples in the shallow decision unit from the Finished Water Line North Study Area and both DU intervals in the Filtration Facility Study Area. Findings of replicates samples and calculation of RSD are presented in Section 4.7.

All samples were collected in laboratory-supplied containers, placed on ice in a cooler, and transported to Apex Laboratories in Tigard, Oregon, with chain-of-custody documentation. Analyses were conducted under normal turnaround time. Testing for chlorinated herbicides was subcontracted to Eurofins Calscience of Tustin, California. Copies of the laboratory reports are included in Appendix C.

Nitrile gloves were worn by field staff when sampling. New disposable 5-gram Terracore sampling syringes or decontaminated stainless steel 30-gram scoops were used for the collection of sample aliquots. Temporary boreholes were backfilled with bentonite upon completion of sampling. Reusable sampling and drilling equipment was decontaminated between DUs using a detergent wash and distilled water rinse.

4.1 Filtration Facility Soil Sampling

Prior to beginning the investigation, PBS generated an ISM sampling grid across the area of study consisting of approximately 50 equal portions (0.9 acre each). PBS oversaw completion of three direct-push borings in each portion to a depth of 5 feet bgs. Randomly selected boring locations were located at the same relative location within each 0.9-acre grid. If necessary, boring locations were adjusted to accommodate field obstacles and irregularly shaped polygons. The three locations were repeated in each subsequent portion to create a primary DU sample (A) and two replicate DU samples (B and C). Boring locations were located in the field using GPS (Figure 2).

For the surface to 1.5-foot interval (DU-1A, DU-1B, and DU-1C), 10-gram samples were collected from retrieved soil within each 0.5-foot interval using a plastic Terracore syringe sampler (a total of three samples per boring, weighing 30 grams). The syringe was inserted into the soil and the resulting soil was placed into a laboratory-provided container, resulting in a sample total of approximately 1,500 grams per DU sample.

For the 1.5-to 5-foot interval (DU-2A, DU-2B, and DU-2C), samples were collected from the retrieved soil within each 0.5-foot interval using a plastic syringe capable of collecting approximately 5 grams of material (7 samples per boring weighing 35 grams) resulting in a total of approximately 1,750 grams per DU sample.

The six resulting samples were submitted to the analytical laboratory for ISM processing followed by analysis for the following:

- Organochlorine Pesticides by Environmental Protection Agency (EPA) Method 8081A
- Organophosphate Pesticides by EPA Method 8141A
- Chlorinated Herbicides by Method 8151
- Seventeen Agricultural Metals by EPA Methods 6000/7000 series

As noted in the workplan, samples DU-1A through 1C and DU-2A through DU-2C were sampled as replicate samples. The results of these three samples were analyzed for statistical significance, as presented in Section 4.7.

4.2 Finished Pipeline Alignment North End

Drilling along roadway shoulders was completed under Multnomah County Right-of-Way (ROW) Permit Number 864815YES, a copy of which is provided in Appendix D. Sampling consisted of the completion of 10 direct-push borings for FWN-DU-1 and FWN-DU-2 to evaluate the shallow (surface to 1.5 feet bgs) and deep (1.5 to 5 feet bgs) soil intervals, respectively. Replicate samples from the shallow interval were collected from locations extending 10 feet in opposite directions from the primary boring locations to collect replicate ISM samples FWN-DU-1B and FWN-DU-1C. PBS collected the replicate samples with a decontaminated hand auger. Replicate samples were not collected from the deep (1.5 to 5.0 feet bgs) DU.

For the surface to 1.5-foot interval (FWN-DU-1A, FWN-DU-1B, and FWN-DU-1C), samples were collected from the retrieved soil within each 0.5-foot vertical interval using a stainless-steel scoop capable of collecting approximately 30 grams of material (3 samples from each location). The resulting sample was placed into a laboratory-provided container, resulting in a sample total of approximately 900 grams.

For the 1.5-to 5-foot interval (FWN-DU-2), samples were collected from retrieved soil within each 0.5-foot vertical interval using a plastic syringe capable of collecting approximately 10 grams of material (7 samples) resulting in a sample total of approximately 700 grams.

The four resulting samples were submitted to the analytical laboratory for ISM processing followed by analysis for the following:

- Diesel- and heavy oil-range petroleum hydrocarbons by Northwest Method Total Petroleum Hydrocarbons, diesel extended (NWTPH-Dx)
- Organochlorine Pesticides by EPA Method 8081A
- Organophosphate Pesticides by EPA Method 8141A
- Chlorinated Herbicides by Method 8151
- Seventeen Agricultural Metals by EPA Methods 6000/7000 series

As noted in the workplan, samples FWN-DU-1A through 1C were sampled as replicate samples for the surface to 1.5 foot interval. The results of these three samples were analyzed for statistical significance, as presented in Section 4.7.

4.3 Finished Pipeline Corridor Center

Sampling consisted of the installation of 10 direct-push borings to evaluate the shallow (surface to 1.5 feet bgs) and deep (1.5 to 5 feet bgs) intervals. For the surface to 1.5-foot interval (FWC-DU-1) samples were collected from the retrieved soil within each 0.5-foot interval using a stainless-steel scoop capable of collecting approximately 30 grams of material (3 samples from each location). The resulting sample was placed into a laboratory-provided container, resulting in a sample total of approximately 900 grams.

For the 1.5-to 5-foot interval (FWC-DU-2), samples were collected from retrieved soil within each 0.5-foot interval using a plastic syringe capable of collecting approximately 10 grams of material (7 samples) resulting in a sample total of approximately 700 grams.

The two resulting samples were submitted to the analytical laboratory for ISM processing following by analysis for the following:

- Diesel- and heavy oil-range petroleum hydrocarbons by NWTPH-Dx
- Organochlorine Pesticides by EPA Method 8081A
- Organophosphate Pesticides by EPA Method 8141A
- Chlorinated Herbicides by Method 8151
- Seventeen Agricultural Metals by EPA Methods 6000/7000 series

4.4 Finished Pipeline Alignment South End

Sampling consisted of the installation of 10 direct-push borings to evaluate the surface to 1.5 feet bgs and 1.5- to 5-feet bgs intervals. For the surface to 1.5-foot interval (FWS-DU-1) samples were collected from retrieved soil within each 0.5-foot interval using a stainless steel scoop capable of collecting approximately

30 grams of material (3 samples from each location). The resulting sample was placed into a laboratory provided container, resulting in a sample total of approximately 900 grams.

For the 1.5-to 5-foot interval (FWC-DU-2) samples were collected from retrieved soil within each 0.5-foot interval using a plastic syringe capable of collecting approximately 10 grams of material (7 samples) resulting in a total of a sample of approximately 700 grams.

The two resulting samples were submitted to the analytical laboratory for ISM processing following by analysis for the following:

- Diesel- and heavy oil-range petroleum hydrocarbons by NWTPH-Dx
- Organochlorine Pesticides by EPA Method 8081A
- Organophosphate Pesticides by EPA Method 8141A
- Chlorinated Herbicides by Method 8151
- Seventeen Agricultural Metals by EPA Methods 6000/7000 series

4.5 SW Corner of SE Dodge Park and SE Cottrell Road

Sampling consisted of the collection of 30-gram aliquots from surface and subsurface soils along the bermed shoulder. Aliquots were collected from surficial soil at vertical elevations of 1, 3, and 5 feet as measured above the existing shoulder. An additional sample aliquot was collected from subsurface soil at the 3-foot vertical elevation at a depth of 2 lateral feet from the berm surface. Samples from these 4 intervals were collected every 30 feet along the extent of planned excavation (12 locations along SE Dodge Road and 3 locations along SE Cottrell Road). The resulting sample was placed into a laboratory-provided container, resulting in a sample total of approximately 1,800 grams.

The resulting sample was submitted to the analytical laboratory for ISM processing following by analysis for the following:

- Diesel- and heavy oil-range petroleum hydrocarbons by NWTPH-Dx
- Organochlorine Pesticides by EPA Method 8081A
- Organophosphate Pesticides by EPA Method 8141A
- Chlorinated Herbicides by Method 8151
- Seventeen Agricultural Metals by EPA Methods 6000/7000 series

4.6 Raw Water Line Alignment East End

Sampling consisted of the installation of 10 direct-push borings to evaluate the surface to 1.5 feet bgs and 1.5- to 5-feet bgs intervals. For the surface to 1.5-foot interval (RWE-DU-1) samples were collected from retrieved soil within each 0.5-foot vertical interval using a stainless-steel scoop capable of collecting approximately 30 grams of material (3 samples from each location). The resulting sample was placed into a laboratory-provided container, resulting in a sample total of approximately 900 grams.

For the 1.5-to 5-foot interval (RWE-DU-2) samples were collected from retrieved soil within each 0.5-foot interval using a plastic syringe capable of collecting approximately 10 grams of material (7 samples) resulting in a sample total of approximately 700 grams.

The two resulting samples were submitted to the analytical laboratory for ISM processing following by analysis for the following:

- Diesel- and heavy oil-range petroleum hydrocarbons by NWTPH-Dx
- Organochlorine Pesticides by EPA Method 8081A

- Organophosphate Pesticides by EPA Method 8141A
- Chlorinated Herbicides by Method 8151
- Seventeen Agricultural Metals by EPA Methods 6000/7000 series

4.7 ISM Data Evaluation

Replicate samples were collected in the filtration facility (DU-1 and DU-2) and finished water north assessment (FWN-DU-1) locations for quality control purposes as previously discussed in Sections 4.1 and 4.2.

DEQ's IMD for Decision Unit Characterization prescribes evaluation of data quality of samples consistent with Section 4 of the Hawai'i Department of Health (HDOH) Technical Guidance Manual (TGM) Section 4.2.7.3 (now addressed in Section 4, Appendix L, following a 2023 update of that guidance document). The HDOH TGM indicates that RSD values less than 35% provide *Good Data Precision*, confirm potential normal distribution of the data and are considered to reflect good precision for estimates of mean. RSD values between 35% and 50% are indicated to provide *Moderate Data Precision* and in most cases are still acceptable for decision making.

RSD was calculated for all three samples for which replicate samples were collected and the results are presented in Table 1 and Table 2. Of these calculated RSD values, one of the decision unit replicate samples, FWN-1A through FWN-1C, RSD values greater than 35% for the pesticide dieldrin (50%) and heavy-oil range petroleum hydrocarbons (43%).

PBS noted that in both cases, reported concentrations were only slightly greater than the laboratory method reporting limit. Given the low level concentrations are relatively higher RSD, the heavy oil-range hydrocarbon and dieldrin concentrations detected in FWN-DU-1A through FWN-DU-1C are considered estimates.

PBS determined that the statistical evaluation of field sampling methodology and number of increments indicate good to moderate data precision and the sample data can be relied upon for a clean fill determination.

5 INVESTIGATION-DERIVED WASTES

Unused soil cuttings were placed on the ground surface adjacent to the boreholes following the collection of samples. Investigation-derived waste was limited to disposable equipment and was disposed of as solid waste.

6 FINDINGS

6.1 Soil Field Observations

Surfaces across the project area consisted of gravel, grass, and agricultural fields. A reddish-brown silt loam soil matrix was typically observed to 5 feet bgs across the study area. Groundwater was not encountered in any of the boreholes.

No field evidence of contamination such as olfactory or visual indications were observed.

6.2 Soil Analytical Results

Diesel-range total petroleum hydrocarbons (TPH) were not detected above applicable reporting limits in any ISM sample. Heavy oil-range TPH was detected in the Finished Water North, Finished Water Center, and Finished Water South shallow ISM samples at concentrations ranging from 91.4 milligrams per kilogram (mg/kg) to 196 mg/kg. Heavy oil-range TPH was not detected above applicable reporting limits in any of the deep ISM samples analyzed.

Pesticide compounds 4,4-DDD, 4,4-DDE, 4,4-DDT, and dieldrin were detected above applicable reporting limits in several ISM samples. Below is a summary of the pesticide detections:

- 4,4'-DDD was detected in ISM samples collected from the filtration facility and Finished Water Center assessment areas. Concentrations ranged from 0.00204 mg/kg to 0.00421 mg/kg.
- 4,4-DDE was detected in ISM samples collected from the filtration facility, Finished Water North, Finished Water Center, Finished Water South, and SE Dodge Park Boulevard/SE Cottrell intersection assessment areas. Concentrations ranged from 0.00357 mg/kg to 0.0731 mg/kg.
- 4,4-DDT was detected in ISM samples collected from the filtration facility, Finished Water North, Finished Water Center, Finished Water South, and SE Dodge Park Boulevard/SE Cottrell assessment areas. Concentrations ranged from 0.00269 mg/kg to 0.076 mg/kg.
- Dieldrin was detected in ISM samples collected from the filtration facility, Finished Water North, Finished Water Center, and SE Dodge Park Boulevard/SE Cottrell intersection assessment areas. Concentrations ranged from 0.00228 mg/kg to 0.0366 mg/kg.

Chlorinated herbicides were only detected above applicable reporting limits in the filtration facility assessment location, where the compound 2,4-DB was detected in 5 of 6 ISM samples at concentrations ranging from 0.110 mg/kg to 0.190 mg/kg.

Concentrations of detected metals were noted to be within the range of naturally occurring background concentrations.

Table 1 through Table 6 summarize the analytical results; the laboratory reports are provided in Appendix C.

7 CLEAN FILL CRITERIA EVALUATION

Chlorinated pesticide concentrations exceeded clean fill criteria in shallow samples (surface to 1.5 feet bgs) collected from the filtration facility, Finished Water North, Finished Water Center, and Finished Water South assessment areas. Dieldrin concentrations additionally exceeded clean fill criteria in the ISM sample collected at the intersection of SE Dodge Park Boulevard and SE Cottrell Road. No contaminants were detected above clean fill criteria in any of the deep (1.5 feet bgs to 5.0 feet bgs) ISM samples. Only the Raw Water East assessment area met clean fill criteria entirely.

8 RAW WATER FACILITY CONNECTION

Open cut excavation methods are planned for connection of the raw water pipeline to the inlet structure that will be situated along the southeastern extent of the facility. The excavation is conservatively estimated to have dimensions of 80 feet wide by 1,300 feet long with depths ranging from 5 feet bgs to 35 feet bgs. The location and approximate extent of the excavation is shown on Figure 8.

PBS did not collect ISM samples from this southeastern portion of the facility, however the extensive ISM sampling performed within the western facility structure footprint can be considered adequate for clean fill characterization. Due to the homogenous nature of agricultural soils and consistent farming practices that occurred throughout the entire facility site, low levels of pesticides can be expected within the upper 1.5 feet of soil that will exceed clean fill criteria, while deeper soils can be anticipated to be suitable for reuse offsite as clean fill, given the surface application of pesticides and low mobility of the chemicals.

Soil samples were collected within the planned raw water connection excavation by AAI in 2019. Analytical results were consistent with the PBS shallow facility DU (DU-1A through DU-1C) with low concentrations of 4-

4-DDE, 4,4-DDT and dieldrin exceeding clean fill screening levels. Copies of applicable figures and tables from AAI's Filtration Site Supplemental Report are included in Appendix E.

Based on the above, it is acceptable to manage excavation spoils from this portion of the site similarly to the western portion.

9 CONCLUSIONS

Shallow soil excavated or graded within the upper 1.5 feet at the filtration facility and finished pipeline areas, as well as the entire volume of soil excavated during the widening of the intersection of SE Dodge Park Boulevard and SE Cottrell Road will require management as solid waste if it is transported off site. PBS understands that the upper 1.5 feet of material excavated at the filtration facility will be moved to the eastern portion of the site to facilitate grading where it will remain and is not anticipated to require off-site disposal. Finished pipeline excavation spoils do not require offsite management if they can be reused onsite within the same property for backfill purposes.

PBS determined that management of the upper 1.5 feet of soil from the finished pipeline areas and the entire volume of soil excavated during the widening of SE Dodge Park Boulevard/SE Cottrell Road intersection could potentially be managed on the eastern portion of the filtration property where similar contaminant concentrations are already present. Similarly, pipeline excavation spoils generated in public ROWs would likely be suitable for reuse at any of the other pipeline ROW locations. However, as this material does not meet clean fill criteria, use of a DEQ permit exemption or similar regulatory tool would be necessary.

Any excess soil generated from the Raw Water East assessment location was indicated to be suitable for unrestricted use if it is to be transported off site as it did not contain measurable levels of contaminants of concern.

10 LIMITATIONS

PBS has prepared this report for use by Integrated Water Solutions, LLC, and its partners. This report is for the exclusive use of the Client and is not to be relied upon by other parties. It is not to be photographed, photocopied, or similarly reproduced in total or in part without the express written consent of the Client and PBS.

This study was limited to the tests, locations, and depths as indicated to determine the absence or presence of certain contaminants. The Site as a whole may have other contamination that was not characterized by this study. The findings and conclusions of this report are not scientific certainties but probabilities based on professional judgment concerning the significance of the data gathered during the course of this investigation. PBS is not able to represent that the Site or adjoining land contain no hazardous waste, oil, or other latent conditions beyond that detected or observed by PBS.

PBS Engineering and Environmental Inc.

Riley Martin, GIT Staff Geologist	Date
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Dennis Terzian, RG Senior Geologist	Date
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RM:NT:DT:tl

Figures

Figure 1. Site Vicinity

Figure 2. Filtration Facility

Figure 3. Finished Water North

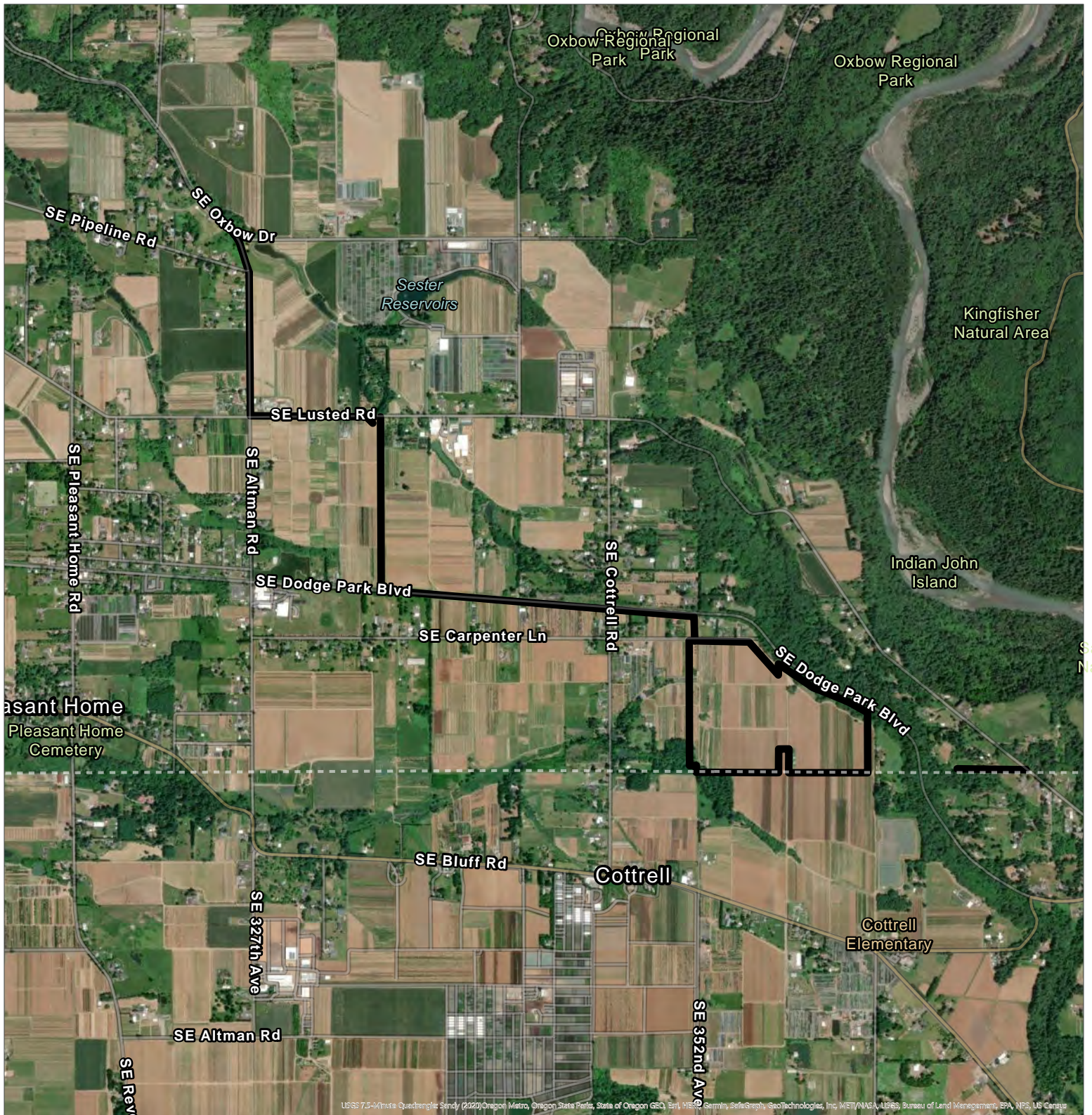
Figure 4. Finished Water Center

Figure 5. Finished Water South and SE Dodge Park Boulevard

Figure 6. SE Dodge Park Boulevard

Figure 7. Raw Water East

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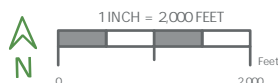
USGS 7.5-Minute Quadrangle Sandy (2022) Oregon Metro, Oregon State Parks, State of Oregon GEO, Esri, HERE, DeLorme, SwireGraph, GeoTechnologies, Inc, HERE/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census

Site Vicinity

Bull Run Filtration Facility
 Date: January 2024 | Project: 24433.000

Figure: 1

 Site Boundary



This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



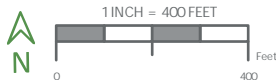
Finished Water North

Bull Run Filtration Facility

Date: January 2024 | Project: 24433.000

Figure: 3

- ISM Sampling Area
- FWN Boring Location



This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



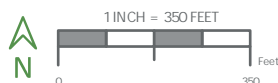
Finished Water Center

Bull Run Filtration Facility

Date: January 2024 | Project: 24433.000

Figure: 4

- ISM Sampling Area
- FWC Boring Location



This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

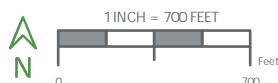


Finished Water South and SE Dodge Park Boulevard

Bull Run Filtration Facility
 Date: January 2024 | Project: 24433.000

Figure: 5

- ISM Sampling Area
- FWS Boring Location



This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.




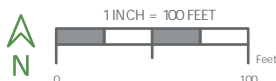
SE Dodge Park Boulevard

Bull Run Filtration Facility
 Date: January 2024 | Project: 24433.000

Figure: 6

 ISM Sampling Area

 SE Dodge Boring Location (Approximate)



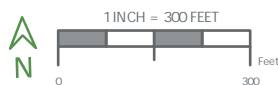
This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



Raw Water East
 Bull Run Filtration Facility
 Date: January 2024 | Project: 24433.000

Figure: 7

- ISM Sampling Area
- RWE Boring Location



This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.






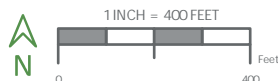
Raw Water Facility Connection

Bull Run Filtration Facility

Date: January 2024 | Project: 24433.000

Figure: 8

-  Full Facility Boundary
-  Future Filtration Facility Sample Area
-  Approximate Excavation Boundary



This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Tables

Table 1. Summary of Soil Analytical Results – Filtration Facility

Table 2. Summary of Soil Analytical Results – Finished Water North

Table 3. Summary of Soil Analytical Results – Finished Water Center

Table 4. Summary of Soil Analytical Results – Finished Water South

Table 5. Summary of Soil Analytical Results – Raw Water East

Table 6. Summary of Soil Analytical Results – SE Dodge Park Boulevard and SE Cottrell Road Intersection

Table 1. Summary of Soil Analytical Results – Filtration Facility

Bull Run Filtration Plant
Gresham, Oregon

Sample ID	Sample Date	Depth Collected (feet bgs)	Pesticides				Herbicides	Metals										
			4,4'-DDD	4,4'-DDE	4,4'-DDT	Dieldrin	2,4-DB	Arsenic	Barium	Beryllium	Chromium	Cobalt	Copper	Lead	Nickel	Thallium	Vanadium	Zinc
mg/kg																		
DU-1A	11/6/2023	0-1.5	0.00240	0.0586	0.0530	0.0366	0.190	5.18	226	0.882	42.0	17.2	30.5	12.4	26.5	<0.208	91.2	104
DU-1B	11/6/2023	0-1.5	0.00204	0.0382	0.0339	0.0266	<0.100	5.09	220	0.880	43.1	17.2	31.6	12.8	26.9	<0.216	93.4	102
DU-1C	11/6/2023	0-1.5	0.00212	0.0357	0.0337	0.0239	0.170	5.02	221	0.865	42.8	16.7	30.2	11.7	26.8	<0.221	91.7	101
DU-2A	11/6/2023	1.5-5.0	<0.00204	0.00357	0.00473	0.00228	0.140	4.98	160	0.994	42.8	17.2	28.5	11.9	25.0	0.240	96.8	66.4
DU-2B	11/6/2023	1.5-5.0	<0.00204	0.00387	0.00474	0.00320	0.120	4.88	156	0.996	42.4	17.3	28.5	11.9	25.9	<0.212	96.8	66.1
DU-2C	11/6/2023	1.5-5.0	<0.00204	0.00476	0.00546	0.00337	0.110	4.95	164	1.03	46.5	18.1	32.0	12.1	32.5	0.230	95.6	75.8
Oregon Clean Fill Criteria ¹			0.0063	0.01	0.01	0.0045	25	8.8	790	2	76	43	34	28	47	5.2	180	180
Quality Control - RSD	DU-1		9%	28%*	28%*	23%*	8%	2%	1%	1%	1%	2%	2%	5%	1%	-	1%	1%
	DU-2		-	15%	8%	20%	12%	1%	3%	2%	5%	3%	7%	1%	15%	3%	1%	8%

Notes:

Only detected chemicals are shown. See laboratory report for full list of analytes.

Bold text, if present, indicates an exceedance of one or more of the cleanup levels.

bgs: below ground surface

DB: dichlorophenoxy

DDD: dichloro-diphenyl-dichloroethane

DDE: dichloro-diphenyl-dichloroethylene

DDT: dichloro-diphenyl-trichloroethane

DU: decision unit

mg/kg: milligram per kilogram

RSD: relative standard deviation

An RSD of 35% or less is considered acceptable.

*: The results are outside of acceptable RSD limits and should be considered estimates.

¹State of Oregon Department of Environmental Quality (DEQ) clean fill screening levels for organics and other selected constituents.

Table 2. Summary of Soil Analytical Results – Finished Water North

Bull Run Filtration Plant
Gresham, Oregon

Sample ID	Sample Date	Depth Collected (feet bgs)	Total Petroleum Hydrocarbons		Pesticides (detections only)			Herbicides	Metals (detections only)										
			Diesel	Heavy Oil	4,4-DDE	4,4-DDT	Dieldrin		Arsenic	Barium	Beryllium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Vanadium	Zinc
mg/kg																			
FWN-DU-1A	11/21/2023	0-1.5	<19.0	91.4	0.0232	0.0216	0.0115	ND	3.40	142	0.732	25.9	10.6	15.4	15.0	0.158	11.4	67.5	60.8
FWN-DU-1B	11/21/2023	0-1.5	<18.7	195	0.0216	0.0177	0.0078	ND	3.66	146	0.719	24.7	11.0	18.0	20.8	<0.0860	13.1	64.9	71.4
FWN-DU-1C	11/21/2023	0-1.5	<19.3	106	0.0223	0.0198	0.0207	ND	2.94	142	0.679	23.4	10.3	22.0	20.3	<0.0816	11.5	61.7	75.5
FWN-DU-2	11/21/2023	1.5-5.0	<19.5	<38.9	<0.00201	<0.00201	<0.00201	ND	3.72	116	0.671	29.8	12.0	13.3	8.66	<0.0844	10.4	74.5	33.0
Oregon Clean Fill Criteria ¹			1,100		0.01	0.01	0.0045	Varies	8.8	790	2	76	43	34	28	0.23	47	180	180
Quality Control - RSD			-	43%*	4%	10%	50%*	-	11%	2%	4%	5%	3%	18%	17%	-	8%	4%	11%

Notes:

See laboratory report for full list of analytes.

Bold text, if present, indicates an exceedance of one or more of the cleanup levels.

bgs: below ground surface

DDD: dichloro-diphenyl-dichloroethane

DDE: dichloro-diphenyl-dichloroethylene

DDT: dichloro-diphenyl-trichloroethane

mg/kg: milligram per kilogram

ND: not detected

RSD: relative standard deviation

An RSD of 35% or less is considered acceptable.

*: The results are outside of acceptable RSD limits and should be considered estimates.

¹State of Oregon Department of Environmental Quality (DEQ) Clean fill screening levels for organics and other selected constituents.

Table 3. Summary of Soil Analytical Results – Finished Water Center

Bull Run Filtration Plant
Gresham, Oregon

Sample ID	Sample Date	Depth Collected (feet bgs)	Total Petroleum Hydrocarbons		Pesticides (detections only)				Herbicides	Metals (detections only)										
			Diesel	Heavy Oil	4,4'-DDD	4,4'-DDE	4,4'-DDT	Dieldrin		Arsenic	Barium	Beryllium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Vanadium	Zinc
mg/kg																				
FWC-DU-1	11/20/2023	0-1.5	<19.6	95.7	0.00421	0.0731	0.0760	0.0185	ND	4.18	182	0.705	23.1	10.2	19.4	10.0	0.0800	11.5	57.3	55.8
FWC-DU-2	11/20/2023	1.5-5.0	<19.5	<39.0	<0.00197	0.00995	0.00781	<0.00197	ND	3.67	157	0.816	27.1	12.2	14.3	10.1	<0.0839	11.4	69.5	40.7
Oregon Clean Fill Criteria ¹			1,100		0.0063	0.01	0.01	0.0045	Varies	8.8	790	2	76	43	34	28	0.23	47	180	180

Notes:

See laboratory report for full list of analytes.

Bold text, if present, indicates an exceedance of one or more of the cleanup levels.

bgs: below ground surface

DDD: dichloro-diphenyl-dichloroethane

DDE: dichloro-diphenyl-dichloroethylene

DDT: dichloro-diphenyl-trichloroethane

mg/kg: milligram per kilogram

ND: not detected

¹State of Oregon Department of Environmental Quality (DEQ) Clean fill screening levels for organics and other selected constituents.

Table 4. Summary of Soil Analytical Results – Finished Water South

Bull Run Filtration Plant
Gresham, Oregon

Sample ID	Sample Date	Depth Collected (feet bgs)	Total Petroleum Hydrocarbons		Pesticides (detections only)		Herbicides	Metals (detections only)									
			Diesel	Heavy Oil	4,4-DDE	4,4-DDT		Arsenic	Barium	Beryllium	Chromium	Cobalt	Copper	Lead	Nickel	Vanadium	Zinc
mg/kg																	
FWS-DU-1	11/16/2023	0-1.5	<19.9	156	0.0112	0.0214	ND	4.40	171	0.784	30.7	13.9	26.4	28.3	17.6	91.1	59.0
FWS-DU-2	11/16/2023	1.5-5.0	<18.3	<36.6	<0.00199	<0.00199	ND	4.85	170	0.846	36.5	13.7	23.0	12.0	18.2	92.2	48.8
Oregon Clean Fill Criteria ¹			1,100		0.01	0.01	Varies	8.8	790	2	76	43	34	28	47	180	180

Notes:

See laboratory report for full list of analytes.

Bold text, if present, indicates an exceedance of one or more of the cleanup levels.

bgs: below ground surface

DDE: dichloro-diphenyl-dichloroethylene

DDT: dichloro-diphenyl-trichloroethane

mg/kg: milligram per kilogram

ND: not detected

¹State of Oregon Department of Environmental Quality (DEQ) Clean fill screening levels for organics and other selected constituents.

Table 5. Summary of Soil Analytical Results – Raw Water East

Bull Run Filtration Plant
Gresham, Oregon

Sample ID	Sample Date	Depth Collected (feet bgs)	Total Petroleum Hydrocarbons		Pesticides	Herbicides	Metals (detections only)									
			Diesel	Heavy Oil			Arsenic	Barium	Beryllium	Chromium	Cobalt	Copper	Lead	Nickel	Vanadium	Zinc
mg/kg																
RWE-DU-1	11/17/2023	0-1.5	<20.0	<40.0	ND	ND	3.04	163	1.05	31.0	13.3	20.3	11.8	12.9	75.2	54.2
RWE-DU-2	11/17/2023	1.5-5	<19.6	<39.2	ND	ND	3.25	135	1.07	34.9	14.6	17.2	10.6	12.5	89.9	37.6
Oregon Clean Fill Criteria ¹			1,100		Varies	Varies	8.8	790	2	76	43	34	28	47	180	180

Notes:

See laboratory report for full list of analytes.

Bold text, if present, indicates an exceedance of one or more of the cleanup levels.

bgs: below ground surface

DDD: dichloro-diphenyl-dichloroethane

DDE: Dichloro-diphenyl-dichloroethylene

DDT: dichloro-diphenyl-trichloroethane

mg/kg: milligram per kilogram

ND: not detected

¹State of Oregon Department of Environmental Quality (DEQ) Clean fill screening levels for organics and other selected constituents.

Table 6. Summary of Soil Analytical Results – SE Dodge Park Boulevard and SE Cottrell Road Intersection

Bull Run Filtration Plant
Gresham, Oregon

Sample ID	Sample Date	Depth Collected (feet bgs)	Total Petroleum Hydrocarbons		Pesticides (detections only)			Herbicides	Metals (detections only)									
			Diesel	Heavy Oil	4,4-DDE	4,4-DDT	Dieldrin		Arsenic	Barium	Beryllium	Chromium	Cobalt	Copper	Lead	Nickel	Vanadium	Zinc
mg/kg																		
SWDC-DU-1	11/15/2023	0-5.0	<19.9	<39.9	0.00624	0.00269	0.00708	ND	4.16	192	0.807	28.7	14.5	18.6	14.5	13.7	74.6	54.5
Oregon Clean Fill Criteria ¹			1,100		0.01	0.01	0.0045	Varies	8.8	790	2	76	43	34	28	47	180	180

Notes:

Only detected chemicals are shown. See laboratory report for full list of analytes.

Bold text, if present, indicates an exceedance of one or more of the cleanup levels.

bgs: below ground surface

DDD: dichloro-diphenyl-dichloroethane

DDE: dichloro-diphenyl-dichloroethylene

DDT: dichloro-diphenyl-trichloroethane

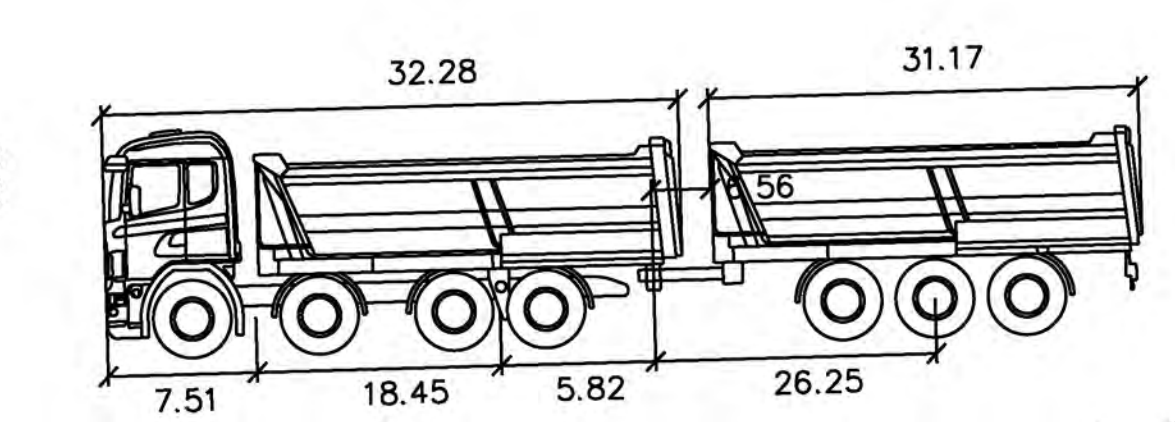
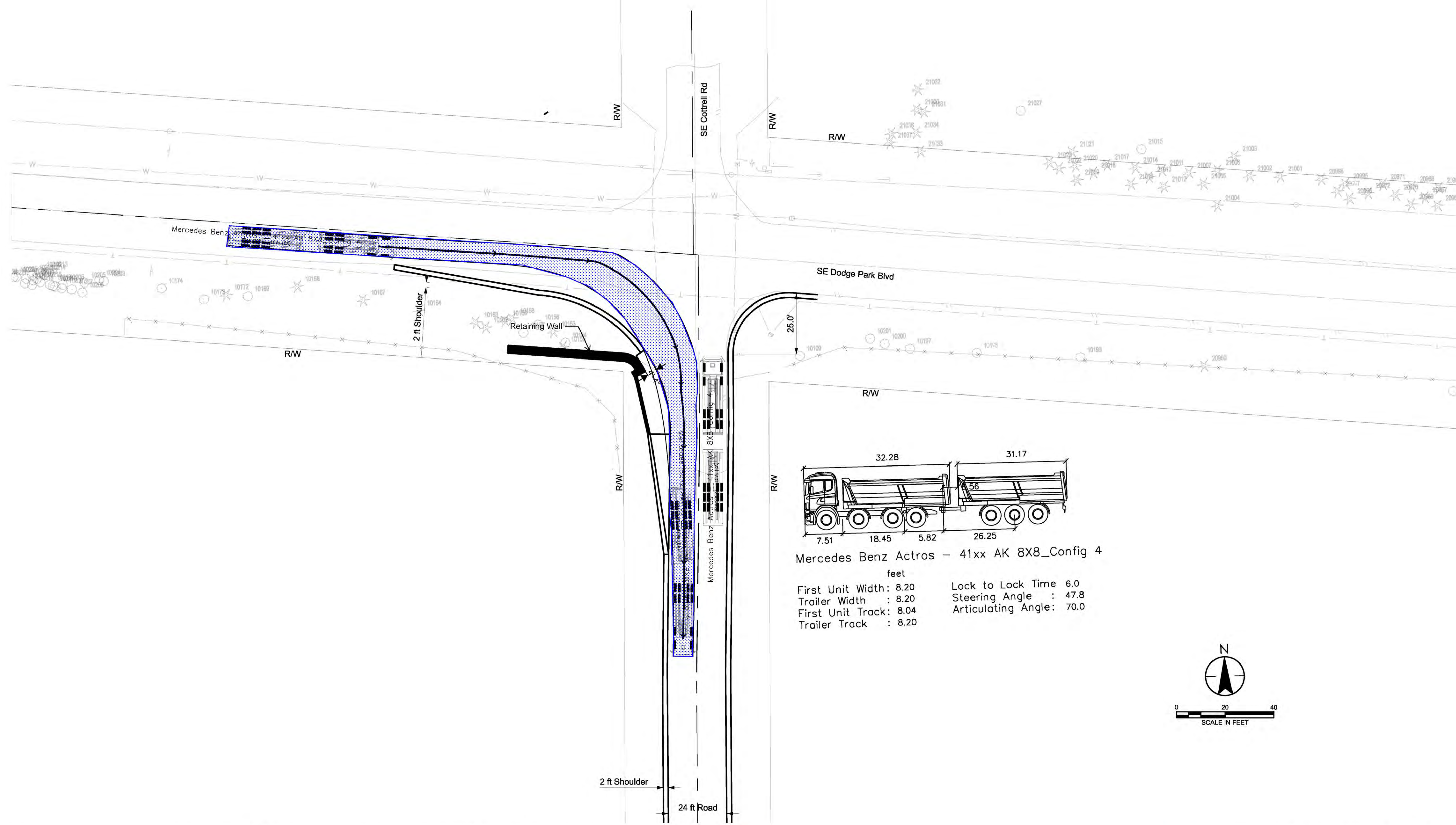
mg/kg: milligram per kilogram

ND: not detected

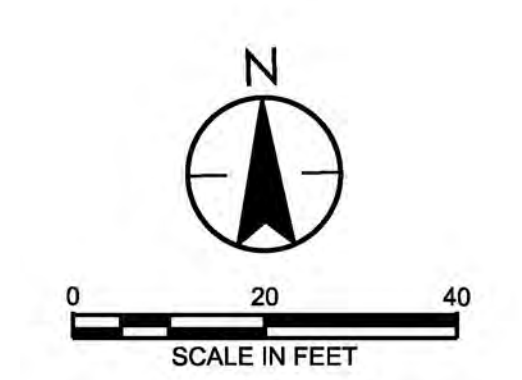
¹State of Oregon Department of Environmental Quality (DEQ) Clean fill screening levels for organics and other selected constituents.

Appendix A

City of Portland Sheet LU-T-01

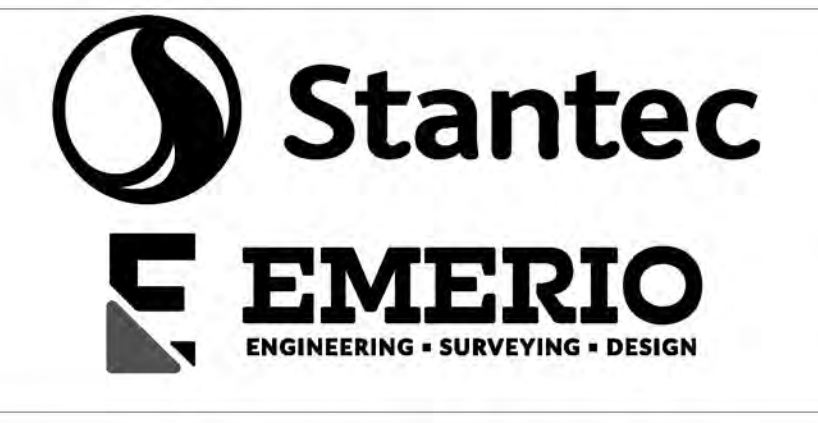


Mercedes Benz Actros - 41xx AK 8X8_Config 4
 feet
 First Unit Width: 8.20 Lock to Lock Time: 6.0
 Trailer Width: 8.20 Steering Angle: 47.8
 First Unit Track: 8.04 Articulating Angle: 70.0
 Trailer Track: 8.20

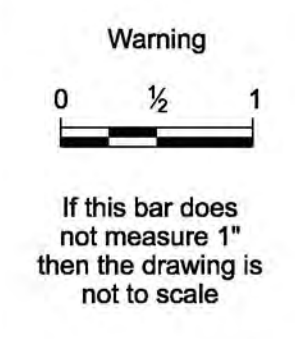


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 \$\$\$USER\$\$\$
 \$\$\$FILENAME\$\$\$

No	Date	Description	Appd



Designed By	Design Mgr
Drawn By	Const Mgr
Checked By	Const Supvr
Project Mgr	Date



David W. Peters, Engineering Manager, PE No 16683
 Date



Bull Run Filtration Facility
 Civil
 AutoTurn Exhibit
 Turning Path
 EB Dodge Park Boulevard to SB Cottrell Road

SAP Project No
W02229
 1/4 Section
 3765 / 3766
 Sheet No
 LU-T-01

Appendix B

Photo Documentation



Photo 1. View to the east across the future filtration facility location.



Photo 2. Looking south down an unnamed farm road at the future filtration facility.



Photo 3. Looking southeast toward a direct-push drill rig.



Photo 4. A direct-push drill rig on the shoulder of the SE Altman Road (Finished Water North) assessment location.



Photo 5. Looking north at the Finished Water Center assessment location.



Photo 6. View from the westernmost end of the SE Dodge Park Boulevard (Finished Water South) assessment location.



Photo 7. Drilling within the roadway shoulder of SE Dodge Park Boulevard (Finished Water South).



Photo 8. Looking east toward the intersection of SE Dodge Park Boulevard and SE Cottrell Road.



Photo 9. Sampling activities at the southwest corner of SE Dodge Park Boulevard and SE Cottrell Road.



Photo 10. Drilling activities at the westernmost boring location at the Raw Water East assessment location.

Appendix C

Laboratory Reports



ANALYTICAL REPORT

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Thursday, November 30, 2023
Nick Thornton
PBS Engineering and Environmental
4412 S Corbett Ave
Portland, OR 97239

RE: A3K1205 - Bull Run Filtration Facility - 24433.000

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A3K1205, which was received by the laboratory on 11/10/2023 at 1:11:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: jwoodcock@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.
(See Cooler Receipt Form for details)
Cooler #1 5.3 degC Cooler #2 0.1 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.

All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



Apex Laboratories

Handwritten signature of Jason Woodcock

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DU-1A	A3K1205-01	Soil	11/06/23 08:00	11/10/23 13:11
DU-1A	A3K1205-02	Soil	11/06/23 08:00	11/10/23 13:11
DU-2A	A3K1205-03	Soil	11/06/23 08:05	11/10/23 13:11
DU-2A	A3K1205-04	Soil	11/06/23 08:05	11/10/23 13:11
DU-1B	A3K1205-05	Soil	11/06/23 08:10	11/10/23 13:11
DU-1B	A3K1205-06	Soil	11/06/23 08:10	11/10/23 13:11
DU-2B	A3K1205-07	Soil	11/06/23 08:15	11/10/23 13:11
DU-2B	A3K1205-08	Soil	11/06/23 08:15	11/10/23 13:11
DU-1C	A3K1205-09	Soil	11/06/23 08:20	11/10/23 13:11
DU-1C	A3K1205-10	Soil	11/06/23 08:20	11/10/23 13:11
DU-2C	A3K1205-11	Soil	11/06/23 08:25	11/10/23 13:11
DU-2C	A3K1205-12	Soil	11/06/23 08:25	11/10/23 13:11

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u>	Project: <u>Bull Run Filtration Facility</u>	<u>Report ID:</u>
4412 S Corbett Ave	Project Number: 24433.000	A3K1205 - 11 30 23 1001
Portland, OR 97239	Project Manager: Nick Thornton	

ANALYTICAL CASE NARRATIVE

Work Order: A3K1205	Apex Laboratories
----------------------------	--------------------------

Subcontract

This report is complete only if it includes the attached subcontract laboratory report from Eurofins Calscience.

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU-1A (A3K1205-02RE2)				Matrix: Soil		Batch: 23K0748		C-05, PRO
Aldrin [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
alpha-BHC [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
beta-BHC [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
delta-BHC [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
gamma-BHC (Lindane) [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
cis-Chlordane [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
trans-Chlordane	ND	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
4,4'-DDD	0.00240	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
4,4'-DDE [2C]	0.0586	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
4,4'-DDT	0.0530	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
Dieldrin [2C]	0.0366	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
Endosulfan I [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
Endosulfan II [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
Endosulfan sulfate [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
Endrin	ND	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
Endrin aldehyde	ND	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
Endrin ketone [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
Heptachlor [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
Heptachlor epoxide [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
Methoxychlor	ND	---	0.00612	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
Chlordane (Technical) [2C]	ND	---	0.0612	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
Toxaphene (Total) [2C]	ND	---	0.0612	mg/kg dry	1	11/27/23 19:32	EPA 8081B	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 73 %</i>	<i>Limits: 42-129 %</i>	<i>1</i>	<i>11/27/23 19:32</i>	<i>EPA 8081B</i>	
<i>Decachlorobiphenyl (Surr)</i>			<i>91 %</i>	<i>55-130 %</i>	<i>1</i>	<i>11/27/23 19:32</i>	<i>EPA 8081B</i>	

DU-2A (A3K1205-04RE2)				Matrix: Soil		Batch: 23K0748		C-05, PRO
Aldrin [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
alpha-BHC [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
beta-BHC [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
delta-BHC [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
gamma-BHC (Lindane) [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
cis-Chlordane [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
trans-Chlordane [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
4,4'-DDD [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
4,4'-DDE [2C]	0.00357	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
4,4'-DDT	0.00473	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
Dieldrin	0.00228	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU-2A (A3K1205-04RE2)				Matrix: Soil		Batch: 23K0748		C-05, PRO
Endosulfan I [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
Endosulfan II [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
Endosulfan sulfate [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
Endrin [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
Endrin aldehyde [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
Endrin ketone [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
Heptachlor [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
Heptachlor epoxide [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
Methoxychlor [2C]	ND	---	0.00612	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
Chlordane (Technical) [2C]	ND	---	0.0612	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
Toxaphene (Total) [2C]	ND	---	0.0612	mg/kg dry	1	11/27/23 19:50	EPA 8081B	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 71 %</i>	<i>Limits: 42-129 %</i>	<i>1</i>	<i>11/27/23 19:50</i>	<i>EPA 8081B</i>	
<i>Decachlorobiphenyl (Surr)</i>			<i>90 %</i>	<i>55-130 %</i>	<i>1</i>	<i>11/27/23 19:50</i>	<i>EPA 8081B</i>	
DU-1B (A3K1205-06RE2)				Matrix: Soil		Batch: 23K0748		C-05, PRO
Aldrin [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
alpha-BHC [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
beta-BHC [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
delta-BHC [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
gamma-BHC (Lindane) [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
cis-Chlordane [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
trans-Chlordane [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
4,4'-DDD [2C]	0.00204	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
4,4'-DDE [2C]	0.0382	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
4,4'-DDT	0.0339	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
Dieldrin [2C]	0.0266	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
Endosulfan I [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
Endosulfan II [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
Endosulfan sulfate [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
Endrin	ND	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
Endrin aldehyde	ND	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
Endrin ketone [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
Heptachlor [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
Heptachlor epoxide [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
Methoxychlor	ND	---	0.00611	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
Chlordane (Technical) [2C]	ND	---	0.0611	mg/kg dry	1	11/27/23 20:07	EPA 8081B	
Toxaphene (Total) [2C]	ND	---	0.0611	mg/kg dry	1	11/27/23 20:07	EPA 8081B	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323

ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU-1B (A3K1205-06RE2)				Matrix: Soil		Batch: 23K0748		C-05, PRO
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 65 %</i>	<i>Limits: 42-129 %</i>	<i>1</i>	<i>11/27/23 20:07</i>	<i>EPA 8081B</i>	
<i>Decachlorobiphenyl (Surr)</i>			<i>83 %</i>	<i>55-130 %</i>	<i>1</i>	<i>11/27/23 20:07</i>	<i>EPA 8081B</i>	
DU-2B (A3K1205-08RE2)				Matrix: Soil		Batch: 23K0748		C-05, PRO
Aldrin [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
alpha-BHC [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
beta-BHC [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
delta-BHC [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
gamma-BHC (Lindane) [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
cis-Chlordane [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
trans-Chlordane [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
4,4'-DDD [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
4,4'-DDE [2C]	0.00387	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
4,4'-DDT	0.00474	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
Dieldrin	0.00320	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
Endosulfan I [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
Endosulfan II [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
Endosulfan sulfate [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
Endrin [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
Endrin aldehyde [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
Endrin ketone [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
Heptachlor [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
Heptachlor epoxide [2C]	ND	---	0.00204	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
Methoxychlor [2C]	ND	---	0.00611	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
Chlordane (Technical) [2C]	ND	---	0.0611	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
Toxaphene (Total) [2C]	ND	---	0.0611	mg/kg dry	1	11/27/23 20:24	EPA 8081B	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 72 %</i>	<i>Limits: 42-129 %</i>	<i>1</i>	<i>11/27/23 20:24</i>	<i>EPA 8081B</i>	
<i>Decachlorobiphenyl (Surr)</i>			<i>90 %</i>	<i>55-130 %</i>	<i>1</i>	<i>11/27/23 20:24</i>	<i>EPA 8081B</i>	
DU-1C (A3K1205-10RE2)				Matrix: Soil		Batch: 23K0748		C-05, PRO
Aldrin [2C]	ND	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
alpha-BHC [2C]	ND	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
beta-BHC [2C]	ND	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
delta-BHC [2C]	ND	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
gamma-BHC (Lindane) [2C]	ND	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
cis-Chlordane [2C]	ND	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU-1C (A3K1205-10RE2)				Matrix: Soil		Batch: 23K0748		C-05, PRO
trans-Chlordane [2C]	ND	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
4,4'-DDD	0.00212	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
4,4'-DDE [2C]	0.0357	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
4,4'-DDT	0.0337	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
Dieldrin	0.0239	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
Endosulfan I [2C]	ND	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
Endosulfan II [2C]	ND	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
Endosulfan sulfate [2C]	ND	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
Endrin	ND	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
Endrin aldehyde	ND	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
Endrin ketone [2C]	ND	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
Heptachlor [2C]	ND	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
Heptachlor epoxide	ND	---	0.00203	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
Methoxychlor	ND	---	0.00608	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
Chlordane (Technical) [2C]	ND	---	0.0608	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
Toxaphene (Total) [2C]	ND	---	0.0608	mg/kg dry	1	11/27/23 20:41	EPA 8081B	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 64 %</i>	<i>Limits: 42-129 %</i>	<i>1</i>	<i>11/27/23 20:41</i>	<i>EPA 8081B</i>	
<i>Decachlorobiphenyl (Surr)</i>			<i>86 %</i>	<i>55-130 %</i>	<i>1</i>	<i>11/27/23 20:41</i>	<i>EPA 8081B</i>	
DU-2C (A3K1205-12RE1)				Matrix: Soil		Batch: 23K0748		C-05, PRO
Aldrin [2C]	ND	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
alpha-BHC [2C]	ND	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
beta-BHC [2C]	ND	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
delta-BHC [2C]	ND	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
gamma-BHC (Lindane) [2C]	ND	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
cis-Chlordane [2C]	ND	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
trans-Chlordane [2C]	ND	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
4,4'-DDD [2C]	ND	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
4,4'-DDE [2C]	0.00476	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
4,4'-DDT	0.00546	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
Dieldrin [2C]	0.00337	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
Endosulfan I [2C]	ND	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
Endosulfan II [2C]	ND	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
Endosulfan sulfate [2C]	ND	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
Endrin [2C]	ND	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
Endrin aldehyde [2C]	ND	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	Q-42
Endrin ketone [2C]	ND	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU-2C (A3K1205-12RE1)				Matrix: Soil		Batch: 23K0748		C-05, PRO
Heptachlor [2C]	ND	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
Heptachlor epoxide [2C]	ND	---	0.00204	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
Methoxychlor [2C]	ND	---	0.00611	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
Chlordane (Technical) [2C]	ND	---	0.0611	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
Toxaphene (Total) [2C]	ND	---	0.0611	mg/kg dry	1	11/21/23 20:49	EPA 8081B	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 65 %</i>		<i>Limits: 42-129 %</i>		<i>1</i>	<i>11/21/23 20:49</i>	<i>EPA 8081B</i>
<i>Decachlorobiphenyl (Surr)</i>		<i>98 %</i>		<i>55-130 %</i>		<i>1</i>	<i>11/21/23 20:49</i>	<i>EPA 8081B</i>

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ANALYTICAL REPORT

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ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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ANALYTICAL SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU-1A (A3K1205-02RE1)				Matrix: Soil		Batch: 23K0676		PRO
Azinphos methyl (Guthion)	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Chlorpyrifos	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Coumaphos	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Demeton O	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Demeton S	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Diazinon	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Dichlorvos	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Dimethoate	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Disulfoton	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
EPN	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Ethoprop	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Fensulfothion	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Fenthion	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Malathion	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Merphos	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Methyl parathion	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Mevinphos (Phosdrin)	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Monocrotophos	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Naled (Dibrom)	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Parathion, ethyl	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Phorate	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Ronnel (Fenclorpos)	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Sulfotep	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Sulprofos (Bolstar)	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
TEPP	ND	---	0.204	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Tetrachlorvinphos (Rabon)	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Tokuthion (Prothiofos)	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
Trichloronate	ND	---	0.0509	mg/kg dry	1	11/17/23 13:31	EPA 8270E OPPs	
<i>Surrogate: Tributyl phosphate (Surr)</i>		<i>Recovery: 23 %</i>		<i>Limits: 10-136 %</i>		<i>1</i>	<i>11/17/23 13:31</i>	<i>EPA 8270E OPPs</i>
<i>Triphenyl phosphate (Surr)</i>		<i>60 %</i>		<i>34-121 %</i>		<i>1</i>	<i>11/17/23 13:31</i>	<i>EPA 8270E OPPs</i>

DU-2A (A3K1205-04RE1)				Matrix: Soil		Batch: 23K0804		PRO
Azinphos methyl (Guthion)	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Chlorpyrifos	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Coumaphos	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Demeton O	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Demeton S	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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ANALYTICAL SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU-2A (A3K1205-04RE1)				Matrix: Soil		Batch: 23K0804		PRO
Diazinon	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Dichlorvos	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Dimethoate	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Disulfoton	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
EPN	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Ethoprop	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Fensulfothion	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Fenthion	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Malathion	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Merphos	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Methyl parathion	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Mevinphos (Phosdrin)	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Monocrotophos	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Naled (Dibrom)	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Parathion, ethyl	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Phorate	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Ronnel (Fenchlorphos)	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Sulfotep	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Sulprofos (Bolstar)	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
TEPP	ND	---	0.195	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Tetrachlorvinphos (Rabon)	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Tokuthion (Prothiofos)	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
Trichloronate	ND	---	0.0487	mg/kg dry	1	11/21/23 14:34	EPA 8270E OPPs	
<i>Surrogate: Tributyl phosphate (Surr)</i>			<i>Recovery: 12 %</i>	<i>Limits: 10-136 %</i>	<i>1</i>	<i>11/21/23 14:34</i>	<i>EPA 8270E OPPs</i>	
<i>Triphenyl phosphate (Surr)</i>			<i>9 %</i>	<i>34-121 %</i>	<i>1</i>	<i>11/21/23 14:34</i>	<i>EPA 8270E OPPs</i>	<i>S-03</i>

DU-1B (A3K1205-06)				Matrix: Soil		Batch: 23K0676		PRO
Azinphos methyl (Guthion)	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Chlorpyrifos	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Coumaphos	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Demeton O	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Demeton S	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Diazinon	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Dichlorvos	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Dimethoate	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Disulfoton	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
EPN	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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ANALYTICAL SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU-1B (A3K1205-06)				Matrix: Soil		Batch: 23K0676		PRO
Ethoprop	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Fensulfothion	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Fenthion	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Malathion	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Merphos	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Methyl parathion	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Mevinphos (Phosdrin)	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Monocrotophos	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Naled (Dibrom)	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Parathion, ethyl	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Phorate	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Ronnel (Fenchlorphos)	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Sulfotep	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Sulprofos (Bolstar)	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
TEPP	ND	---	0.203	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Tetrachlorvinphos (Rabon)	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Tokuthion (Prothiofos)	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
Trichloronate	ND	---	0.0508	mg/kg dry	1	11/17/23 16:31	EPA 8270E OPPs	
<i>Surrogate: Tributyl phosphate (Surr)</i>		<i>Recovery: 21 %</i>		<i>Limits: 10-136 %</i>		<i>1</i>	<i>11/17/23 16:31</i>	<i>EPA 8270E OPPs</i>
<i>Triphenyl phosphate (Surr)</i>		<i>45 %</i>		<i>34-121 %</i>		<i>1</i>	<i>11/17/23 16:31</i>	<i>EPA 8270E OPPs</i>

DU-2B (A3K1205-08RE1)				Matrix: Soil		Batch: 23K0804		PRO
Azinphos methyl (Guthion)	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Chlorpyrifos	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Coumaphos	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Demeton O	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Demeton S	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Diazinon	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Dichlorvos	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Dimethoate	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Disulfoton	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
EPN	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Ethoprop	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Fensulfothion	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Fenthion	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Malathion	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Merphos	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental	Project: Bull Run Filtration Facility	
4412 S Corbett Ave	Project Number: 24433.000	Report ID:
Portland, OR 97239	Project Manager: Nick Thornton	A3K1205 - 11 30 23 1001

ANALYTICAL SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU-2B (A3K1205-08RE1)				Matrix: Soil		Batch: 23K0804		PRO
Methyl parathion	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Mevinphos (Phosdrin)	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Monocrotophos	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Naled (Dibrom)	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Parathion, ethyl	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Phorate	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Ronnel (Fenchlorphos)	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Sulfotep	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Sulprofos (Bolstar)	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
TEPP	ND	---	0.204	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Tetrachlorvinphos (Rabon)	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Tokuthion (Prothiofos)	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
Trichloronate	ND	---	0.0510	mg/kg dry	1	11/21/23 15:10	EPA 8270E OPPs	
<i>Surrogate: Tributyl phosphate (Surr)</i>		<i>Recovery: 24 %</i>		<i>Limits: 10-136 %</i>		<i>1</i>	<i>11/21/23 15:10</i>	<i>EPA 8270E OPPs</i>
<i>Triphenyl phosphate (Surr)</i>		<i>21 %</i>		<i>34-121 %</i>		<i>1</i>	<i>11/21/23 15:10</i>	<i>EPA 8270E OPPs S-03</i>

DU-1C (A3K1205-10)				Matrix: Soil		Batch: 23K0676		PRO
Azinphos methyl (Guthion)	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Chlorpyrifos	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Coumaphos	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Demeton O	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Demeton S	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Diazinon	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Dichlorvos	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Dimethoate	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Disulfoton	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
EPN	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Ethoprop	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Fensulfthion	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Fenthion	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Malathion	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Merphos	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Methyl parathion	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Mevinphos (Phosdrin)	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Monocrotophos	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Naled (Dibrom)	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Parathion, ethyl	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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ANALYTICAL SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU-1C (A3K1205-10)				Matrix: Soil		Batch: 23K0676		PRO
Phorate	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Ronnel (Fenclorpos)	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Sulfotep	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Sulprofos (Bolstar)	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
TEPP	ND	---	0.202	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Tetrachlorvinphos (Rabon)	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Tokuthion (Prothiofos)	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
Trichloronate	ND	---	0.0505	mg/kg dry	1	11/17/23 17:44	EPA 8270E OPPs	
<i>Surrogate: Tributyl phosphate (Surr)</i>		<i>Recovery: 19 %</i>		<i>Limits: 10-136 %</i>		<i>1</i>	<i>11/17/23 17:44</i>	<i>EPA 8270E OPPs</i>
<i>Triphenyl phosphate (Surr)</i>		<i>50 %</i>		<i>34-121 %</i>		<i>1</i>	<i>11/17/23 17:44</i>	<i>EPA 8270E OPPs</i>

DU-2C (A3K1205-12RE1)				Matrix: Soil		Batch: 23K0676		PRO
Azinphos methyl (Guthion)	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	
Chlorpyrifos	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	
Coumaphos	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	
Demeton O	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	Q-42
Demeton S	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	Q-42
Diazinon	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	Q-42
Dichlorvos	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	Q-42
Dimethoate	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	Q-42
Disulfoton	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	
EPN	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	
Ethoprop	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	Q-42
Fensulfothion	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	Q-42
Fenthion	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	
Malathion	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	Q-42
Merphos	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	Q-42
Methyl parathion	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	
Mevinphos (Phosdrin)	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	Q-42
Monocrotophos	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	Q-42
Naled (Dibrom)	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	Q-42
Parathion, ethyl	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	
Phorate	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	
Ronnel (Fenclorpos)	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	
Sulfotep	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	Q-42
Sulprofos (Bolstar)	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	
TEPP	ND	---	0.205	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	Q-42

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ANALYTICAL REPORT

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 ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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ANALYTICAL SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU-2C (A3K1205-12RE1)				Matrix: Soil		Batch: 23K0676		PRO
Tetrachlorvinphos (Rabon)	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	Q-42
Tokuthion (Prothiofos)	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	
Trichloronate	ND	---	0.0511	mg/kg dry	1	11/17/23 14:43	EPA 8270E OPPs	
<i>Surrogate: Tributyl phosphate (Surr)</i>			<i>Recovery: 19 %</i>	<i>Limits: 10-136 %</i>	<i>1</i>	<i>11/17/23 14:43</i>	<i>EPA 8270E OPPs</i>	
<i>Triphenyl phosphate (Surr)</i>			<i>23 %</i>	<i>34-121 %</i>	<i>1</i>	<i>11/17/23 14:43</i>	<i>EPA 8270E OPPs</i>	<i>S-03</i>

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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU-1A (A3K1205-02)				Matrix: Soil				
<u>Batch: 23K0906</u>								
Antimony	ND	---	1.04	mg/kg dry	10	11/22/23 22:08	EPA 6020B	PRO,Q-42
Arsenic	5.18	---	1.04	mg/kg dry	10	11/22/23 22:08	EPA 6020B	PRO
Barium	226	---	1.04	mg/kg dry	10	11/22/23 22:08	EPA 6020B	PRO
Beryllium	0.882	---	0.208	mg/kg dry	10	11/22/23 22:08	EPA 6020B	PRO
Cadmium	ND	---	0.208	mg/kg dry	10	11/22/23 22:08	EPA 6020B	PRO
Chromium	42.0	---	1.04	mg/kg dry	10	11/22/23 22:08	EPA 6020B	PRO
Cobalt	17.2	---	1.04	mg/kg dry	10	11/22/23 22:08	EPA 6020B	PRO
Copper	30.5	---	2.08	mg/kg dry	10	11/22/23 22:08	EPA 6020B	PRO
Lead	12.4	---	0.208	mg/kg dry	10	11/22/23 22:08	EPA 6020B	PRO
Mercury	ND	---	0.0832	mg/kg dry	10	11/22/23 22:08	EPA 6020B	PRO
Molybdenum	ND	---	1.04	mg/kg dry	10	11/22/23 22:08	EPA 6020B	PRO
Nickel	26.5	---	2.08	mg/kg dry	10	11/22/23 22:08	EPA 6020B	PRO
Selenium	ND	---	1.04	mg/kg dry	10	11/22/23 22:08	EPA 6020B	PRO
Silver	ND	---	0.208	mg/kg dry	10	11/22/23 22:08	EPA 6020B	PRO
Vanadium	91.2	---	2.08	mg/kg dry	10	11/22/23 22:08	EPA 6020B	PRO
Zinc	104	---	4.16	mg/kg dry	10	11/22/23 22:08	EPA 6020B	PRO
DU-1A (A3K1205-02RE1)				Matrix: Soil				
<u>Batch: 23K0906</u>								
Thallium	ND	---	0.208	mg/kg dry	10	11/27/23 14:11	EPA 6020B	PRO
DU-2A (A3K1205-04)				Matrix: Soil				
<u>Batch: 23K0906</u>								
Antimony	ND	---	1.09	mg/kg dry	10	11/22/23 22:23	EPA 6020B	PRO
Arsenic	4.98	---	1.09	mg/kg dry	10	11/22/23 22:23	EPA 6020B	PRO
Barium	160	---	1.09	mg/kg dry	10	11/22/23 22:23	EPA 6020B	PRO
Beryllium	0.994	---	0.218	mg/kg dry	10	11/22/23 22:23	EPA 6020B	PRO
Cadmium	ND	---	0.218	mg/kg dry	10	11/22/23 22:23	EPA 6020B	PRO
Chromium	42.8	---	1.09	mg/kg dry	10	11/22/23 22:23	EPA 6020B	PRO
Cobalt	17.2	---	1.09	mg/kg dry	10	11/22/23 22:23	EPA 6020B	PRO
Copper	28.5	---	2.18	mg/kg dry	10	11/22/23 22:23	EPA 6020B	PRO
Lead	11.9	---	0.218	mg/kg dry	10	11/22/23 22:23	EPA 6020B	PRO
Mercury	ND	---	0.0870	mg/kg dry	10	11/22/23 22:23	EPA 6020B	PRO
Molybdenum	ND	---	1.09	mg/kg dry	10	11/22/23 22:23	EPA 6020B	PRO
Nickel	25.0	---	2.18	mg/kg dry	10	11/22/23 22:23	EPA 6020B	PRO

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--	---	---

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU-2A (A3K1205-04)				Matrix: Soil				
Selenium	ND	---	1.09	mg/kg dry	10	11/22/23 22:23	EPA 6020B	PRO
Silver	ND	---	0.218	mg/kg dry	10	11/22/23 22:23	EPA 6020B	PRO
Vanadium	96.8	---	2.18	mg/kg dry	10	11/22/23 22:23	EPA 6020B	PRO
Zinc	66.4	---	4.35	mg/kg dry	10	11/22/23 22:23	EPA 6020B	PRO
DU-2A (A3K1205-04RE1)				Matrix: Soil				
Batch: 23K0906								
Thallium	0.240	---	0.218	mg/kg dry	10	11/27/23 14:26	EPA 6020B	PRO
DU-1B (A3K1205-06)				Matrix: Soil				
Batch: 23K0906								
Antimony	ND	---	1.08	mg/kg dry	10	11/22/23 22:29	EPA 6020B	PRO
Arsenic	5.09	---	1.08	mg/kg dry	10	11/22/23 22:29	EPA 6020B	PRO
Barium	220	---	1.08	mg/kg dry	10	11/22/23 22:29	EPA 6020B	PRO
Beryllium	0.880	---	0.216	mg/kg dry	10	11/22/23 22:29	EPA 6020B	PRO
Cadmium	ND	---	0.216	mg/kg dry	10	11/22/23 22:29	EPA 6020B	PRO
Chromium	43.1	---	1.08	mg/kg dry	10	11/22/23 22:29	EPA 6020B	PRO
Cobalt	17.2	---	1.08	mg/kg dry	10	11/22/23 22:29	EPA 6020B	PRO
Copper	31.6	---	2.16	mg/kg dry	10	11/22/23 22:29	EPA 6020B	PRO
Lead	12.8	---	0.216	mg/kg dry	10	11/22/23 22:29	EPA 6020B	PRO
Mercury	ND	---	0.0864	mg/kg dry	10	11/22/23 22:29	EPA 6020B	PRO
Molybdenum	ND	---	1.08	mg/kg dry	10	11/22/23 22:29	EPA 6020B	PRO
Nickel	26.9	---	2.16	mg/kg dry	10	11/22/23 22:29	EPA 6020B	PRO
Selenium	ND	---	1.08	mg/kg dry	10	11/22/23 22:29	EPA 6020B	PRO
Silver	ND	---	0.216	mg/kg dry	10	11/22/23 22:29	EPA 6020B	PRO
Vanadium	93.4	---	2.16	mg/kg dry	10	11/22/23 22:29	EPA 6020B	PRO
Zinc	102	---	4.32	mg/kg dry	10	11/22/23 22:29	EPA 6020B	PRO
DU-1B (A3K1205-06RE1)				Matrix: Soil				
Batch: 23K0906								
Thallium	ND	---	0.216	mg/kg dry	10	11/27/23 14:42	EPA 6020B	PRO
DU-2B (A3K1205-08)				Matrix: Soil				
Batch: 23K0906								
Antimony	ND	---	1.06	mg/kg dry	10	11/22/23 22:34	EPA 6020B	PRO
Arsenic	4.88	---	1.06	mg/kg dry	10	11/22/23 22:34	EPA 6020B	PRO

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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU-2B (A3K1205-08)				Matrix: Soil				
Barium	156	---	1.06	mg/kg dry	10	11/22/23 22:34	EPA 6020B	PRO
Beryllium	0.996	---	0.212	mg/kg dry	10	11/22/23 22:34	EPA 6020B	PRO
Cadmium	ND	---	0.212	mg/kg dry	10	11/22/23 22:34	EPA 6020B	PRO
Chromium	42.4	---	1.06	mg/kg dry	10	11/22/23 22:34	EPA 6020B	PRO
Cobalt	17.3	---	1.06	mg/kg dry	10	11/22/23 22:34	EPA 6020B	PRO
Copper	28.5	---	2.12	mg/kg dry	10	11/22/23 22:34	EPA 6020B	PRO
Lead	11.9	---	0.212	mg/kg dry	10	11/22/23 22:34	EPA 6020B	PRO
Mercury	ND	---	0.0848	mg/kg dry	10	11/22/23 22:34	EPA 6020B	PRO
Molybdenum	ND	---	1.06	mg/kg dry	10	11/22/23 22:34	EPA 6020B	PRO
Nickel	25.9	---	2.12	mg/kg dry	10	11/22/23 22:34	EPA 6020B	PRO
Selenium	ND	---	1.06	mg/kg dry	10	11/22/23 22:34	EPA 6020B	PRO
Silver	ND	---	0.212	mg/kg dry	10	11/22/23 22:34	EPA 6020B	PRO
Vanadium	96.8	---	2.12	mg/kg dry	10	11/22/23 22:34	EPA 6020B	PRO
Zinc	66.1	---	4.24	mg/kg dry	10	11/22/23 22:34	EPA 6020B	PRO
DU-2B (A3K1205-08RE1)				Matrix: Soil				
<u>Batch: 23K0906</u>								
Thallium	ND	---	0.212	mg/kg dry	10	11/27/23 14:47	EPA 6020B	PRO
DU-1C (A3K1205-10)				Matrix: Soil				
<u>Batch: 23K0906</u>								
Antimony	ND	---	1.11	mg/kg dry	10	11/22/23 22:39	EPA 6020B	PRO
Arsenic	5.02	---	1.11	mg/kg dry	10	11/22/23 22:39	EPA 6020B	PRO
Barium	221	---	1.11	mg/kg dry	10	11/22/23 22:39	EPA 6020B	PRO
Beryllium	0.865	---	0.221	mg/kg dry	10	11/22/23 22:39	EPA 6020B	PRO
Cadmium	ND	---	0.221	mg/kg dry	10	11/22/23 22:39	EPA 6020B	PRO
Chromium	42.8	---	1.11	mg/kg dry	10	11/22/23 22:39	EPA 6020B	PRO
Cobalt	16.7	---	1.11	mg/kg dry	10	11/22/23 22:39	EPA 6020B	PRO
Copper	30.2	---	2.21	mg/kg dry	10	11/22/23 22:39	EPA 6020B	PRO
Lead	11.7	---	0.221	mg/kg dry	10	11/22/23 22:39	EPA 6020B	PRO
Mercury	ND	---	0.0886	mg/kg dry	10	11/22/23 22:39	EPA 6020B	PRO
Molybdenum	ND	---	1.11	mg/kg dry	10	11/22/23 22:39	EPA 6020B	PRO
Nickel	26.8	---	2.21	mg/kg dry	10	11/22/23 22:39	EPA 6020B	PRO
Selenium	ND	---	1.11	mg/kg dry	10	11/22/23 22:39	EPA 6020B	PRO
Silver	ND	---	0.221	mg/kg dry	10	11/22/23 22:39	EPA 6020B	PRO
Vanadium	91.7	---	2.21	mg/kg dry	10	11/22/23 22:39	EPA 6020B	PRO
Zinc	101	---	4.43	mg/kg dry	10	11/22/23 22:39	EPA 6020B	PRO

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--	---	---

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU-1C (A3K1205-10RE1)				Matrix: Soil				
<u>Batch: 23K0906</u>								
Thallium	ND	---	0.221	mg/kg dry	10	11/27/23 14:52	EPA 6020B	PRO
DU-2C (A3K1205-12)				Matrix: Soil				
<u>Batch: 23K0906</u>								
Antimony	ND	---	1.09	mg/kg dry	10	11/22/23 22:44	EPA 6020B	PRO
Arsenic	4.95	---	1.09	mg/kg dry	10	11/22/23 22:44	EPA 6020B	PRO
Barium	164	---	1.09	mg/kg dry	10	11/22/23 22:44	EPA 6020B	PRO
Beryllium	1.03	---	0.217	mg/kg dry	10	11/22/23 22:44	EPA 6020B	PRO
Cadmium	ND	---	0.217	mg/kg dry	10	11/22/23 22:44	EPA 6020B	PRO
Chromium	46.5	---	1.09	mg/kg dry	10	11/22/23 22:44	EPA 6020B	PRO
Cobalt	18.1	---	1.09	mg/kg dry	10	11/22/23 22:44	EPA 6020B	PRO
Copper	32.0	---	2.17	mg/kg dry	10	11/22/23 22:44	EPA 6020B	PRO
Lead	12.1	---	0.217	mg/kg dry	10	11/22/23 22:44	EPA 6020B	PRO
Mercury	ND	---	0.0869	mg/kg dry	10	11/22/23 22:44	EPA 6020B	PRO
Molybdenum	ND	---	1.09	mg/kg dry	10	11/22/23 22:44	EPA 6020B	PRO
Nickel	32.5	---	2.17	mg/kg dry	10	11/22/23 22:44	EPA 6020B	PRO
Selenium	ND	---	1.09	mg/kg dry	10	11/22/23 22:44	EPA 6020B	PRO
Silver	ND	---	0.217	mg/kg dry	10	11/22/23 22:44	EPA 6020B	PRO
Vanadium	95.6	---	2.17	mg/kg dry	10	11/22/23 22:44	EPA 6020B	PRO
Zinc	75.8	---	4.35	mg/kg dry	10	11/22/23 22:44	EPA 6020B	PRO
DU-2C (A3K1205-12RE1)				Matrix: Soil				
<u>Batch: 23K0906</u>								
Thallium	0.230	---	0.217	mg/kg dry	10	11/27/23 16:15	EPA 6020B	PRO

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--	---	---

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight								
Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU-1A (A3K1205-02)				Matrix: Soil		Batch: 23K0659		PRO
% Solids	97.8	---	1.00	%	1	11/17/23 04:36	EPA 8000D	
DU-2A (A3K1205-04)				Matrix: Soil		Batch: 23K0659		PRO
% Solids	98.0	---	1.00	%	1	11/17/23 04:36	EPA 8000D	
DU-1B (A3K1205-06)				Matrix: Soil		Batch: 23K0659		PRO
% Solids	98.1	---	1.00	%	1	11/17/23 04:36	EPA 8000D	
DU-2B (A3K1205-08)				Matrix: Soil		Batch: 23K0659		PRO
% Solids	98.0	---	1.00	%	1	11/17/23 04:36	EPA 8000D	
DU-1C (A3K1205-10)				Matrix: Soil		Batch: 23K0659		PRO
% Solids	98.1	---	1.00	%	1	11/17/23 04:36	EPA 8000D	
DU-2C (A3K1205-12)				Matrix: Soil		Batch: 23K0659		PRO
% Solids	97.5	---	1.00	%	1	11/17/23 04:36	EPA 8000D	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0748 - EPA 3546/3640A (GPC)						Soil						
Blank (23K0748-BLK1)						Prepared: 11/16/23 12:17 Analyzed: 11/21/23 19:40						C-05
EPA 8081B												
Aldrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
alpha-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
beta-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
delta-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
gamma-BHC (Lindane)	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
cis-Chlordane	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
trans-Chlordane	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
4,4'-DDD	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
4,4'-DDE	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
4,4'-DDT	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Dieldrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endosulfan I	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endosulfan II	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endosulfan sulfate	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endrin aldehyde	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endrin ketone	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Heptachlor	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Heptachlor epoxide	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Methoxychlor	ND	---	0.00600	mg/kg wet	1	---	---	---	---	---	---	
Chlordane (Technical)	ND	---	0.0600	mg/kg wet	1	---	---	---	---	---	---	
Toxaphene (Total)	ND	---	0.0600	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: 2,4,5,6-TCMX (Surr) Recovery: 78 % Limits: 42-129 % Dilution: 1x</i> <i>Decachlorobiphenyl (Surr) 108 % 55-130 % "</i>												

LCS (23K0748-BS1)						Prepared: 11/16/23 12:17 Analyzed: 11/21/23 19:58						C-05
EPA 8081B												
Aldrin	0.0466	---	0.00200	mg/kg wet	1	0.0500	---	93	45 - 136%	---	---	
alpha-BHC	0.0467	---	0.00200	mg/kg wet	1	0.0500	---	93	45 - 137%	---	---	
beta-BHC	0.0442	---	0.00200	mg/kg wet	1	0.0500	---	88	50 - 136%	---	---	
delta-BHC	0.0516	---	0.00200	mg/kg wet	1	0.0500	---	103	47 - 139%	---	---	
gamma-BHC (Lindane)	0.0468	---	0.00200	mg/kg wet	1	0.0500	---	94	49 - 135%	---	---	
cis-Chlordane	0.0463	---	0.00200	mg/kg wet	1	0.0500	---	93	54 - 133%	---	---	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0748 - EPA 3546/3640A (GPC)						Soil						
LCS (23K0748-BS1)						Prepared: 11/16/23 12:17 Analyzed: 11/21/23 19:58						C-05
trans-Chlordane	0.0496	---	0.00200	mg/kg wet	1	0.0500	---	99	53 - 135%	---	---	
4,4'-DDD	0.0581	---	0.00200	mg/kg wet	1	0.0500	---	116	56 - 139%	---	---	
4,4'-DDE	0.0583	---	0.00200	mg/kg wet	1	0.0500	---	117	56 - 134%	---	---	
4,4'-DDT	0.0652	---	0.00200	mg/kg wet	1	0.0500	---	130	50 - 141%	---	---	
Dieldrin	0.0567	---	0.00200	mg/kg wet	1	0.0500	---	113	56 - 136%	---	---	
Endosulfan I	0.0517	---	0.00200	mg/kg wet	1	0.0500	---	103	53 - 132%	---	---	
Endosulfan II	0.0604	---	0.00200	mg/kg wet	1	0.0500	---	121	53 - 134%	---	---	
Endosulfan sulfate	0.0593	---	0.00200	mg/kg wet	1	0.0500	---	119	55 - 136%	---	---	
Endrin	0.0580	---	0.00200	mg/kg wet	1	0.0500	---	116	57 - 140%	---	---	
Endrin aldehyde	0.0571	---	0.00200	mg/kg wet	1	0.0500	---	114	35 - 137%	---	---	
Endrin ketone	0.0608	---	0.00200	mg/kg wet	1	0.0500	---	122	55 - 136%	---	---	
Heptachlor	0.0474	---	0.00200	mg/kg wet	1	0.0500	---	95	47 - 136%	---	---	
Heptachlor epoxide	0.0499	---	0.00200	mg/kg wet	1	0.0500	---	100	52 - 136%	---	---	
Methoxychlor	0.0674	---	0.00600	mg/kg wet	1	0.0500	---	135	52 - 143%	---	---	
<i>Surr: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 78 %</i>		<i>Limits: 42-129 %</i>		<i>Dilution: 1x</i>						
<i>Decachlorobiphenyl (Surr)</i>		<i>107 %</i>		<i>55-130 %</i>		<i>"</i>						

Matrix Spike (23K0748-MS1)						Prepared: 11/16/23 12:17 Analyzed: 11/21/23 21:07						C-05, PRO
QC Source Sample: DU-2C (A3K1205-12RE1)												
EPA 8081B												
Aldrin	0.0340	---	0.00205	mg/kg dry	1	0.0512	ND	66	45 - 136%	---	---	
alpha-BHC	0.0338	---	0.00205	mg/kg dry	1	0.0512	ND	66	45 - 137%	---	---	
beta-BHC	0.0321	---	0.00205	mg/kg dry	1	0.0512	ND	63	50 - 136%	---	---	
delta-BHC	0.0414	---	0.00205	mg/kg dry	1	0.0512	ND	81	47 - 139%	---	---	
gamma-BHC (Lindane)	0.0339	---	0.00205	mg/kg dry	1	0.0512	ND	66	49 - 135%	---	---	
cis-Chlordane	0.0349	---	0.00205	mg/kg dry	1	0.0512	ND	68	54 - 133%	---	---	
trans-Chlordane	0.0374	---	0.00205	mg/kg dry	1	0.0512	ND	73	53 - 135%	---	---	
4,4'-DDD	0.0488	---	0.00205	mg/kg dry	1	0.0512	ND	95	56 - 139%	---	---	
4,4'-DDE	0.0491	---	0.00205	mg/kg dry	1	0.0512	0.00476	87	56 - 134%	---	---	
4,4'-DDT	0.0561	---	0.00205	mg/kg dry	1	0.0512	0.00546	99	50 - 141%	---	---	
Dieldrin	0.0475	---	0.00205	mg/kg dry	1	0.0512	0.00337	86	56 - 136%	---	---	
Endosulfan I	0.0379	---	0.00205	mg/kg dry	1	0.0512	ND	74	53 - 132%	---	---	
Endosulfan II	0.0467	---	0.00205	mg/kg dry	1	0.0512	ND	91	53 - 134%	---	---	
Endosulfan sulfate	0.0488	---	0.00205	mg/kg dry	1	0.0512	ND	95	55 - 136%	---	---	

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes	
Batch 23K0748 - EPA 3546/3640A (GPC)						Soil							
Matrix Spike (23K0748-MS1)			Prepared: 11/16/23 12:17 Analyzed: 11/21/23 21:07						C-05, PRO				
QC Source Sample: DU-2C (A3K1205-12RE1)													
Endrin	0.0384	---	0.00205	mg/kg dry	1	0.0512	ND	75	57 - 140%	---	---		
Endrin aldehyde	0.0174	---	0.00205	mg/kg dry	1	0.0512	ND	34	35 - 137%	---	---	Q-01	
Endrin ketone	0.0580	---	0.00205	mg/kg dry	1	0.0512	ND	113	55 - 136%	---	---		
Heptachlor	0.0334	---	0.00205	mg/kg dry	1	0.0512	ND	65	47 - 136%	---	---		
Heptachlor epoxide	0.0371	---	0.00205	mg/kg dry	1	0.0512	ND	72	52 - 136%	---	---		
Methoxychlor	0.0588	---	0.00614	mg/kg dry	1	0.0512	ND	115	52 - 143%	---	---		
<i>Surr: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 60 %</i>		<i>Limits: 42-129 %</i>		<i>Dilution: 1x</i>							
<i>Decachlorobiphenyl (Surr)</i>		<i>91 %</i>		<i>55-130 %</i>		<i>"</i>							

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Jason Woodcock, Project Manager



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PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0676 - EPA 3546						Soil						
Blank (23K0676-BLK1)		Prepared: 11/16/23 12:21 Analyzed: 11/17/23 09:44										
EPA 8270E OPPs												
Azinphos methyl (Guthion)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Chlorpyrifos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Coumaphos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Demeton O	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Demeton S	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Diazinon	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Dichlorvos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Dimethoate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Disulfoton	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
EPN	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Ethoprop	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Fensulfothion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Fenthion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Malathion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Merphos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Methyl parathion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Mevinphos (Phosdrin)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Monocrotophos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Naled (Dibrom)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Parathion, ethyl	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Phorate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Ronnel (Fenclorphos)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Sulfotep	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Sulprofos (Bolstar)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
TEPP	ND	---	0.200	mg/kg wet	1	---	---	---	---	---	---	---
Tetrachlorvinphos (Rabon)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Tokuthion (Prothiofos)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Trichloronate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
<i>Surr: Tributyl phosphate (Surr)</i>		Recovery: 78 %		Limits: 10-136 %		Dilution: 1x						
<i>Triphenyl phosphate (Surr)</i>		90 %		34-121 %		"						

LCS (23K0676-BS1)	Prepared: 11/16/23 12:21 Analyzed: 11/17/23 10:21
EPA 8270E OPPs	

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ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0676 - EPA 3546						Soil						
LCS (23K0676-BS1)		Prepared: 11/16/23 12:21		Analyzed: 11/17/23 10:21								
Azinphos methyl (Guthion)	0.498	---	0.0500	mg/kg wet	1	0.400	---	124	38 - 156%	---	---	
Chlorpyrifos	0.447	---	0.0500	mg/kg wet	1	0.400	---	112	47 - 140%	---	---	
Coumaphos	0.478	---	0.0500	mg/kg wet	1	0.400	---	119	37 - 160%	---	---	
Demeton O	0.195	---	0.0500	mg/kg wet	1	0.184	---	106	66 - 127%	---	---	
Demeton S	0.205	---	0.0500	mg/kg wet	1	0.194	---	106	70 - 121%	---	---	
Diazinon	0.484	---	0.0500	mg/kg wet	1	0.400	---	121	42 - 134%	---	---	
Dichlorvos	0.428	---	0.0500	mg/kg wet	1	0.400	---	107	39 - 142%	---	---	
Dimethoate	0.412	---	0.0500	mg/kg wet	1	0.400	---	103	16 - 139%	---	---	
Disulfoton	0.450	---	0.0500	mg/kg wet	1	0.400	---	112	28 - 145%	---	---	
EPN	0.521	---	0.0500	mg/kg wet	1	0.400	---	130	44 - 137%	---	---	
Ethoprop	0.424	---	0.0500	mg/kg wet	1	0.400	---	106	47 - 128%	---	---	
Fensulfothion	0.475	---	0.0500	mg/kg wet	1	0.400	---	119	27 - 147%	---	---	
Fenthion	0.477	---	0.0500	mg/kg wet	1	0.400	---	119	44 - 134%	---	---	
Malathion	0.395	---	0.0500	mg/kg wet	1	0.400	---	99	46 - 137%	---	---	
Merphos	0.456	---	0.0500	mg/kg wet	1	0.400	---	114	66 - 131%	---	---	
Methyl parathion	0.489	---	0.0500	mg/kg wet	1	0.400	---	122	49 - 138%	---	---	
Mevinphos (Phosdrin)	0.430	---	0.0500	mg/kg wet	1	0.400	---	107	12 - 176%	---	---	
Monocrotophos	0.302	---	0.0500	mg/kg wet	1	0.400	---	75	10 - 153%	---	---	
Naled (Dibrom)	0.391	---	0.0500	mg/kg wet	1	0.400	---	98	10 - 174%	---	---	
Parathion, ethyl	0.476	---	0.0500	mg/kg wet	1	0.400	---	119	50 - 139%	---	---	
Phorate	0.412	---	0.0500	mg/kg wet	1	0.400	---	103	23 - 142%	---	---	
Ronnel (Fenclorphos)	0.476	---	0.0500	mg/kg wet	1	0.400	---	119	45 - 138%	---	---	
Sulfotep	0.402	---	0.0500	mg/kg wet	1	0.400	---	100	52 - 126%	---	---	
Sulprofos (Bolstar)	0.449	---	0.0500	mg/kg wet	1	0.400	---	112	48 - 139%	---	---	
TEPP	0.400	---	0.200	mg/kg wet	1	0.400	---	100	16 - 126%	---	---	Q-41
Tetrachlorvinphos (Rabon)	0.462	---	0.0500	mg/kg wet	1	0.400	---	115	54 - 129%	---	---	
Tokuthion (Prothiofos)	0.436	---	0.0500	mg/kg wet	1	0.400	---	109	45 - 136%	---	---	
Trichloronate	0.447	---	0.0500	mg/kg wet	1	0.400	---	112	37 - 140%	---	---	
<i>Surr: Tributyl phosphate (Surr)</i>		<i>Recovery: 98 %</i>		<i>Limits: 10-136 %</i>		<i>Dilution: 1x</i>						
<i>Triphenyl phosphate (Surr)</i>		<i>107 %</i>		<i>34-121 %</i>		<i>"</i>						

Duplicate (23K0676-DUP1) Prepared: 11/16/23 12:21 Analyzed: 11/17/23 14:07 **PRO**

QC Source Sample: DU-1A (A3K1205-02RE1)
EPA 8270E OPPs

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes	
Batch 23K0676 - EPA 3546						Soil							
Duplicate (23K0676-DUP1)			Prepared: 11/16/23 12:21 Analyzed: 11/17/23 14:07						PRO				
QC Source Sample: DU-1A (A3K1205-02RE1)													
Azinphos methyl (Guthion)	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Chlorpyrifos	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Coumaphos	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Demeton O	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Demeton S	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Diazinon	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Dichlorvos	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Dimethoate	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Disulfoton	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
EPN	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Ethoprop	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Fensulfothion	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Fenthion	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Malathion	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Merphos	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Methyl parathion	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Mevinphos (Phosdrin)	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Monocrotophos	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Naled (Dibrom)	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Parathion, ethyl	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Phorate	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Ronnel (Fenchlorphos)	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Sulfotep	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Sulprofos (Bolstar)	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
TEPP	ND	---	0.204	mg/kg dry	1	---	ND	---	---	---	30%		
Tetrachlorvinphos (Rabon)	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Tokuthion (Prothiofos)	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
Trichloronate	ND	---	0.0510	mg/kg dry	1	---	ND	---	---	---	30%		
<i>Surr: Tributyl phosphate (Surr)</i>		<i>Recovery: 27 %</i>		<i>Limits: 10-136 %</i>		<i>Dilution: 1x</i>							
<i>Triphenyl phosphate (Surr)</i>		<i>61 %</i>		<i>34-121 %</i>		<i>"</i>							

Matrix Spike (23K0676-MS1)	Prepared: 11/16/23 12:21 Analyzed: 11/17/23 15:19	PRO
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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
---	--	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes	
Batch 23K0676 - EPA 3546						Soil							
Matrix Spike (23K0676-MS1)			Prepared: 11/16/23 12:21 Analyzed: 11/17/23 15:19						PRO				
QC Source Sample: DU-2C (A3K1205-12RE1)													
EPA 8270E OPPs													
Azinphos methyl (Guthion)	0.169	---	0.0512	mg/kg dry	1	0.409	ND	41	38 - 156%	---	---		
Chlorpyrifos	0.266	---	0.0512	mg/kg dry	1	0.409	ND	65	47 - 140%	---	---		
Coumaphos	0.338	---	0.0512	mg/kg dry	1	0.409	ND	82	37 - 160%	---	---		
Demeton O	0.0977	---	0.0512	mg/kg dry	1	0.188	ND	52	66 - 127%	---	---	Q-01	
Demeton S	ND	---	0.0512	mg/kg dry	1	0.199	ND	21	70 - 121%	---	---	Q-01	
Diazinon	ND	---	0.0512	mg/kg dry	1	0.409	ND		42 - 134%	---	---	Q-01	
Dichlorvos	ND	---	0.0512	mg/kg dry	1	0.409	ND		39 - 142%	---	---	Q-01	
Dimethoate	ND	---	0.0512	mg/kg dry	1	0.409	ND	11	16 - 139%	---	---	Q-01	
Disulfoton	0.361	---	0.0512	mg/kg dry	1	0.409	ND	88	28 - 145%	---	---		
EPN	0.369	---	0.0512	mg/kg dry	1	0.409	ND	90	44 - 137%	---	---		
Ethoprop	0.0885	---	0.0512	mg/kg dry	1	0.409	ND	22	47 - 128%	---	---	Q-01	
Fensulfothion	0.0942	---	0.0512	mg/kg dry	1	0.409	ND	23	27 - 147%	---	---	Q-01	
Fenthion	0.372	---	0.0512	mg/kg dry	1	0.409	ND	91	44 - 134%	---	---		
Malathion	0.113	---	0.0512	mg/kg dry	1	0.409	ND	27	46 - 137%	---	---	Q-01	
Merphos	0.171	---	0.0512	mg/kg dry	1	0.409	ND	42	66 - 131%	---	---	Q-01	
Methyl parathion	0.377	---	0.0512	mg/kg dry	1	0.409	ND	92	49 - 138%	---	---		
Mevinphos (Phosdrin)	ND	---	0.0512	mg/kg dry	1	0.409	ND		12 - 176%	---	---	Q-01	
Monocrotophos	ND	---	0.0512	mg/kg dry	1	0.409	ND	8	10 - 153%	---	---	Q-01	
Naled (Dibrom)	ND	---	0.0512	mg/kg dry	1	0.409	ND		10 - 174%	---	---	Q-01	
Parathion, ethyl	0.394	---	0.0512	mg/kg dry	1	0.409	ND	96	50 - 139%	---	---		
Phorate	0.303	---	0.0512	mg/kg dry	1	0.409	ND	74	23 - 142%	---	---		
Ronnel (Fenchlorphos)	0.346	---	0.0512	mg/kg dry	1	0.409	ND	85	45 - 138%	---	---		
Sulfotep	0.207	---	0.0512	mg/kg dry	1	0.409	ND	51	52 - 126%	---	---	Q-01	
Sulprofos (Bolstar)	0.357	---	0.0512	mg/kg dry	1	0.409	ND	87	48 - 139%	---	---		
TEPP	ND	---	0.205	mg/kg dry	1	0.409	ND		16 - 126%	---	---	Q-01, Q-41	
Tetrachlorvinphos (Rabon)	ND	---	0.0512	mg/kg dry	1	0.409	ND	12	54 - 129%	---	---	Q-01	
Tokuthion (Prothiofos)	0.317	---	0.0512	mg/kg dry	1	0.409	ND	77	45 - 136%	---	---		
Trichloronate	0.286	---	0.0512	mg/kg dry	1	0.409	ND	70	37 - 140%	---	---		
<i>Surr: Tributyl phosphate (Surr)</i>		<i>Recovery: 23 %</i>		<i>Limits: 10-136 %</i>		<i>Dilution: 1x</i>							
<i>Triphenyl phosphate (Surr)</i>		<i>27 %</i>		<i>34-121 %</i>		<i>"</i>		<i>S-03</i>					

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0804 - EPA 3546						Soil						
Blank (23K0804-BLK1)		Prepared: 11/20/23 13:40 Analyzed: 11/21/23 11:35										
<u>EPA 8270E OPPs</u>												
Azinphos methyl (Guthion)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Chlorpyrifos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Coumaphos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Demeton O	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Demeton S	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Diazinon	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Dichlorvos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Dimethoate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Disulfoton	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
EPN	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Ethoprop	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Fensulfothion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Fenthion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Malathion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Merphos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Methyl parathion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Mevinphos (Phosdrin)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Monocrotophos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Naled (Dibrom)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Parathion, ethyl	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Phorate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Ronnel (Fenchlorphos)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Sulfotep	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Sulprofos (Bolstar)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
TEPP	ND	---	0.200	mg/kg wet	1	---	---	---	---	---	---	
Tetrachlorvinphos (Rabon)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Tokuthion (Prothiofos)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Trichloronate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: Tributyl phosphate (Surr)</i>		<i>Recovery: 81 %</i>		<i>Limits: 10-136 %</i>		<i>Dilution: 1x</i>						
<i>Triphenyl phosphate (Surr)</i>		<i>96 %</i>		<i>34-121 %</i>		<i>"</i>						

LCS (23K0804-BS1)	Prepared: 11/20/23 13:40 Analyzed: 11/21/23 12:10
<u>EPA 8270E OPPs</u>	

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ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0804 - EPA 3546						Soil						
LCS (23K0804-BS1)			Prepared: 11/20/23 13:40 Analyzed: 11/21/23 12:10									
Azinphos methyl (Guthion)	0.446	---	0.0500	mg/kg wet	1	0.400	---	112	38 - 156%	---	---	
Chlorpyrifos	0.417	---	0.0500	mg/kg wet	1	0.400	---	104	47 - 140%	---	---	
Coumaphos	0.458	---	0.0500	mg/kg wet	1	0.400	---	115	37 - 160%	---	---	
Demeton O	0.202	---	0.0500	mg/kg wet	1	0.184	---	110	66 - 127%	---	---	
Demeton S	0.202	---	0.0500	mg/kg wet	1	0.194	---	104	70 - 121%	---	---	
Diazinon	0.459	---	0.0500	mg/kg wet	1	0.400	---	115	42 - 134%	---	---	
Dichlorvos	0.419	---	0.0500	mg/kg wet	1	0.400	---	105	39 - 142%	---	---	
Dimethoate	0.404	---	0.0500	mg/kg wet	1	0.400	---	101	16 - 139%	---	---	
Disulfoton	0.421	---	0.0500	mg/kg wet	1	0.400	---	105	28 - 145%	---	---	
EPN	0.494	---	0.0500	mg/kg wet	1	0.400	---	123	44 - 137%	---	---	Q-41
Ethoprop	0.415	---	0.0500	mg/kg wet	1	0.400	---	104	47 - 128%	---	---	
Fensulfothion	0.498	---	0.0500	mg/kg wet	1	0.400	---	125	27 - 147%	---	---	Q-41
Fenthion	0.442	---	0.0500	mg/kg wet	1	0.400	---	110	44 - 134%	---	---	
Malathion	0.391	---	0.0500	mg/kg wet	1	0.400	---	98	46 - 137%	---	---	
Merphos	0.471	---	0.0500	mg/kg wet	1	0.400	---	118	66 - 131%	---	---	
Methyl parathion	0.471	---	0.0500	mg/kg wet	1	0.400	---	118	49 - 138%	---	---	
Mevinphos (Phosdrin)	0.446	---	0.0500	mg/kg wet	1	0.400	---	111	12 - 176%	---	---	
Monocrotophos	0.346	---	0.0500	mg/kg wet	1	0.400	---	87	10 - 153%	---	---	
Naled (Dibrom)	0.422	---	0.0500	mg/kg wet	1	0.400	---	106	10 - 174%	---	---	
Parathion, ethyl	0.451	---	0.0500	mg/kg wet	1	0.400	---	113	50 - 139%	---	---	
Phorate	0.400	---	0.0500	mg/kg wet	1	0.400	---	100	23 - 142%	---	---	
Ronnel (Fenchlorphos)	0.452	---	0.0500	mg/kg wet	1	0.400	---	113	45 - 138%	---	---	
Sulfotep	0.402	---	0.0500	mg/kg wet	1	0.400	---	100	52 - 126%	---	---	
Sulprofos (Bolstar)	0.412	---	0.0500	mg/kg wet	1	0.400	---	103	48 - 139%	---	---	
TEPP	0.527	---	0.200	mg/kg wet	1	0.400	---	132	16 - 126%	---	---	Q-29, Q-41
Tetrachlorvinphos (Rabon)	0.451	---	0.0500	mg/kg wet	1	0.400	---	113	54 - 129%	---	---	
Tokuthion (Prothiofos)	0.407	---	0.0500	mg/kg wet	1	0.400	---	102	45 - 136%	---	---	
Trichloronate	0.421	---	0.0500	mg/kg wet	1	0.400	---	105	37 - 140%	---	---	
Surr: Tributyl phosphate (Surr)		Recovery: 101 %		Limits: 10-136 %		Dilution: 1x						
Triphenyl phosphate (Surr)		98 %		34-121 %		"						

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0906 - EPA 3051A						Soil						
Blank (23K0906-BLK1)		Prepared: 11/22/23 10:16 Analyzed: 11/22/23 21:42										
EPA 6020B												
Antimony	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	---
Arsenic	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	---
Barium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	---
Beryllium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	---
Cadmium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	---
Chromium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	---
Cobalt	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	---
Copper	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	---
Lead	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	---
Mercury	ND	---	0.0800	mg/kg wet	10	---	---	---	---	---	---	---
Molybdenum	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	---
Nickel	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	---
Selenium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	---
Silver	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	---
Thallium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	---
Vanadium	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	---
Zinc	ND	---	4.00	mg/kg wet	10	---	---	---	---	---	---	---
LCS (23K0906-BS1)						Prepared: 11/22/23 10:16 Analyzed: 11/22/23 22:03						
EPA 6020B												
Antimony	25.4	---	1.00	mg/kg wet	10	25.0	---	101	80 - 120%	---	---	---
Arsenic	49.5	---	1.00	mg/kg wet	10	50.0	---	99	80 - 120%	---	---	---
Barium	50.4	---	1.00	mg/kg wet	10	50.0	---	101	80 - 120%	---	---	---
Beryllium	23.7	---	0.200	mg/kg wet	10	25.0	---	95	80 - 120%	---	---	---
Cadmium	50.1	---	0.200	mg/kg wet	10	50.0	---	100	80 - 120%	---	---	---
Chromium	50.1	---	1.00	mg/kg wet	10	50.0	---	100	80 - 120%	---	---	---
Cobalt	49.4	---	1.00	mg/kg wet	10	50.0	---	99	80 - 120%	---	---	---
Copper	51.8	---	2.00	mg/kg wet	10	50.0	---	104	80 - 120%	---	---	---
Lead	51.3	---	0.200	mg/kg wet	10	50.0	---	103	80 - 120%	---	---	---
Mercury	1.00	---	0.0800	mg/kg wet	10	1.00	---	100	80 - 120%	---	---	Q-41
Molybdenum	24.7	---	1.00	mg/kg wet	10	25.0	---	99	80 - 120%	---	---	Q-41
Nickel	51.3	---	2.00	mg/kg wet	10	50.0	---	103	80 - 120%	---	---	---
Selenium	24.8	---	1.00	mg/kg wet	10	25.0	---	99	80 - 120%	---	---	Q-41

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PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0906 - EPA 3051A												
Soil												
LCS (23K0906-BS1)												
			Prepared: 11/22/23 10:16 Analyzed: 11/22/23 22:03									
Silver	27.0	---	0.200	mg/kg wet	10	25.0	---	108	80 - 120%	---	---	
Thallium	24.1	---	0.200	mg/kg wet	10	25.0	---	96	80 - 120%	---	---	Q-41
Vanadium	48.1	---	2.00	mg/kg wet	10	50.0	---	96	80 - 120%	---	---	
Zinc	51.1	---	4.00	mg/kg wet	10	50.0	---	102	80 - 120%	---	---	

Duplicate (23K0906-DUP1)												
			Prepared: 11/22/23 10:16 Analyzed: 11/22/23 22:13									
QC Source Sample: DU-1A (A3K1205-02)												
EPA 6020B												
Antimony	ND	---	1.05	mg/kg dry	10	---	ND	---	---	---	20%	PRO
Arsenic	5.04	---	1.05	mg/kg dry	10	---	5.18	---	---	3	20%	PRO
Barium	219	---	1.05	mg/kg dry	10	---	226	---	---	3	20%	PRO
Beryllium	0.867	---	0.209	mg/kg dry	10	---	0.882	---	---	2	20%	PRO
Cadmium	ND	---	0.209	mg/kg dry	10	---	0.181	---	---	***	20%	PRO
Chromium	40.1	---	1.05	mg/kg dry	10	---	42.0	---	---	5	20%	PRO
Cobalt	16.5	---	1.05	mg/kg dry	10	---	17.2	---	---	4	20%	PRO
Copper	28.8	---	2.09	mg/kg dry	10	---	30.5	---	---	6	20%	PRO
Lead	12.0	---	0.209	mg/kg dry	10	---	12.4	---	---	3	20%	PRO
Mercury	ND	---	0.0837	mg/kg dry	10	---	0.0491	---	---	***	20%	PRO
Molybdenum	ND	---	1.05	mg/kg dry	10	---	0.680	---	---	***	20%	PRO
Nickel	24.4	---	2.09	mg/kg dry	10	---	26.5	---	---	8	20%	PRO
Selenium	ND	---	1.05	mg/kg dry	10	---	0.645	---	---	***	20%	PRO
Silver	ND	---	0.209	mg/kg dry	10	---	ND	---	---	---	20%	PRO
Vanadium	88.3	---	2.09	mg/kg dry	10	---	91.2	---	---	3	20%	PRO
Zinc	98.8	---	4.18	mg/kg dry	10	---	104	---	---	5	20%	PRO

Duplicate (23K0906-DUP2)												
			Prepared: 11/22/23 10:16 Analyzed: 11/27/23 14:16									
QC Source Sample: DU-1A (A3K1205-02RE1)												
EPA 6020B												
Thallium	ND	---	0.209	mg/kg dry	10	---	0.200	---	---	***	20%	PRO,Q-16

Matrix Spike (23K0906-MS1)												
			Prepared: 11/22/23 10:16 Analyzed: 11/22/23 22:18									
QC Source Sample: DU-1A (A3K1205-02)												
EPA 6020B												

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PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0906 - EPA 3051A												
Soil												
Matrix Spike (23K0906-MS1)			Prepared: 11/22/23 10:16 Analyzed: 11/22/23 22:18									
QC Source Sample: DU-1A (A3K1205-02)												
Antimony	9.40	---	1.07	mg/kg dry	10	26.7	ND	35	75 - 125%	---	---	PRO,Q-04
Arsenic	55.8	---	1.07	mg/kg dry	10	53.4	5.18	95	75 - 125%	---	---	PRO
Barium	298	---	1.07	mg/kg dry	10	53.4	226	134	75 - 125%	---	---	PRO,Q-65
Beryllium	25.4	---	0.214	mg/kg dry	10	26.7	0.882	92	75 - 125%	---	---	PRO
Cadmium	52.4	---	0.214	mg/kg dry	10	53.4	0.181	98	75 - 125%	---	---	PRO
Chromium	97.5	---	1.07	mg/kg dry	10	53.4	42.0	104	75 - 125%	---	---	PRO
Cobalt	67.9	---	1.07	mg/kg dry	10	53.4	17.2	95	75 - 125%	---	---	PRO
Copper	84.4	---	2.14	mg/kg dry	10	53.4	30.5	101	75 - 125%	---	---	PRO
Lead	62.7	---	0.214	mg/kg dry	10	53.4	12.4	94	75 - 125%	---	---	PRO
Mercury	1.04	---	0.0854	mg/kg dry	10	1.07	0.0491	93	75 - 125%	---	---	PRO,Q-41
Molybdenum	23.1	---	1.07	mg/kg dry	10	26.7	0.680	84	75 - 125%	---	---	PRO,Q-41
Nickel	81.5	---	2.14	mg/kg dry	10	53.4	26.5	103	75 - 125%	---	---	PRO
Selenium	24.9	---	1.07	mg/kg dry	10	26.7	0.645	91	75 - 125%	---	---	PRO,Q-41
Silver	27.4	---	0.214	mg/kg dry	10	26.7	ND	103	75 - 125%	---	---	PRO
Vanadium	147	---	2.14	mg/kg dry	10	53.4	91.2	104	75 - 125%	---	---	PRO
Zinc	162	---	4.27	mg/kg dry	10	53.4	104	109	75 - 125%	---	---	PRO
Matrix Spike (23K0906-MS2)												
Prepared: 11/22/23 10:16 Analyzed: 11/27/23 14:21												
QC Source Sample: DU-1A (A3K1205-02RE1)												
EPA 6020B												
Thallium	22.5	---	0.214	mg/kg dry	10	26.7	0.200	83	75 - 125%	---	---	PRO,Q-16

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0659 - Total Solids (Dry Weight) - 2022						Soil						

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

Apex Laboratories

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323

ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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SAMPLE PREPARATION INFORMATION

Organochlorine Pesticides by EPA 8081B

Prep: EPA 3546/3640A (GPC)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K0748</u>							
A3K1205-02RE2	Soil	EPA 8081B	11/06/23 08:00	11/16/23 12:17	10.03g/10mL	10g/5mL	1.99
A3K1205-04RE2	Soil	EPA 8081B	11/06/23 08:05	11/16/23 12:17	10.01g/10mL	10g/5mL	2.00
A3K1205-06RE2	Soil	EPA 8081B	11/06/23 08:10	11/16/23 12:17	10.01g/10mL	10g/5mL	2.00
A3K1205-08RE2	Soil	EPA 8081B	11/06/23 08:15	11/16/23 12:17	10.02g/10mL	10g/5mL	2.00
A3K1205-10RE2	Soil	EPA 8081B	11/06/23 08:20	11/16/23 12:17	10.05g/10mL	10g/5mL	1.99
A3K1205-12RE1	Soil	EPA 8081B	11/06/23 08:25	11/16/23 12:17	10.08g/10mL	10g/5mL	1.98

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Prep: EPA 3546					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K0676</u>							
A3K1205-02RE1	Soil	EPA 8270E OPPs	11/06/23 08:00	11/16/23 12:21	10.05g/5mL	10g/5mL	1.00
A3K1205-06	Soil	EPA 8270E OPPs	11/06/23 08:10	11/16/23 12:21	10.03g/5mL	10g/5mL	1.00
A3K1205-10	Soil	EPA 8270E OPPs	11/06/23 08:20	11/16/23 12:21	10.08g/5mL	10g/5mL	0.99
A3K1205-12RE1	Soil	EPA 8270E OPPs	11/06/23 08:25	11/16/23 12:21	10.03g/5mL	10g/5mL	1.00
<u>Batch: 23K0804</u>							
A3K1205-04RE1	Soil	EPA 8270E OPPs	11/06/23 08:05	11/20/23 13:40	10.47g/5mL	10g/5mL	0.96
A3K1205-08RE1	Soil	EPA 8270E OPPs	11/06/23 08:15	11/20/23 13:40	10.01g/5mL	10g/5mL	1.00

Total Metals by EPA 6020B (ICPMS)

Prep: EPA 3051A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K0906</u>							
A3K1205-02	Soil	EPA 6020B	11/06/23 08:00	11/22/23 10:16	0.492g/50mL	0.5g/50mL	1.02
A3K1205-02RE1	Soil	EPA 6020B	11/06/23 08:00	11/22/23 10:16	0.492g/50mL	0.5g/50mL	1.02
A3K1205-04	Soil	EPA 6020B	11/06/23 08:05	11/22/23 10:16	0.469g/50mL	0.5g/50mL	1.07
A3K1205-04RE1	Soil	EPA 6020B	11/06/23 08:05	11/22/23 10:16	0.469g/50mL	0.5g/50mL	1.07
A3K1205-06	Soil	EPA 6020B	11/06/23 08:10	11/22/23 10:16	0.472g/50mL	0.5g/50mL	1.06
A3K1205-06RE1	Soil	EPA 6020B	11/06/23 08:10	11/22/23 10:16	0.472g/50mL	0.5g/50mL	1.06
A3K1205-08	Soil	EPA 6020B	11/06/23 08:15	11/22/23 10:16	0.481g/50mL	0.5g/50mL	1.04
A3K1205-08RE1	Soil	EPA 6020B	11/06/23 08:15	11/22/23 10:16	0.481g/50mL	0.5g/50mL	1.04
A3K1205-10	Soil	EPA 6020B	11/06/23 08:20	11/22/23 10:16	0.46g/50mL	0.5g/50mL	1.09
A3K1205-10RE1	Soil	EPA 6020B	11/06/23 08:20	11/22/23 10:16	0.46g/50mL	0.5g/50mL	1.09
A3K1205-12	Soil	EPA 6020B	11/06/23 08:25	11/22/23 10:16	0.472g/50mL	0.5g/50mL	1.06

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
 Tigard, OR 97223
 503-718-2323
 ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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SAMPLE PREPARATION INFORMATION

Total Metals by EPA 6020B (ICPMS)

<u>Prep: EPA 3051A</u>					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
A3K1205-12RE1	Soil	EPA 6020B	11/06/23 08:25	11/22/23 10:16	0.472g/50mL	0.5g/50mL	1.06

Percent Dry Weight

<u>Prep: Total Solids (Dry Weight) - 2022</u>					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K0659</u>							
A3K1205-02	Soil	EPA 8000D	11/06/23 08:00	11/16/23 10:01			NA
A3K1205-04	Soil	EPA 8000D	11/06/23 08:05	11/16/23 10:01			NA
A3K1205-06	Soil	EPA 8000D	11/06/23 08:10	11/16/23 10:01			NA
A3K1205-08	Soil	EPA 8000D	11/06/23 08:15	11/16/23 10:01			NA
A3K1205-10	Soil	EPA 8000D	11/06/23 08:20	11/16/23 10:01			NA
A3K1205-12	Soil	EPA 8000D	11/06/23 08:25	11/16/23 10:01			NA

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QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

- C-05** Extract has undergone a GPC (Gel-Permeation Chromatography) cleanup per EPA 3640A. Reporting levels may be raised due to dilution necessary for cleanup. Sample Final Volume includes the GPC dilution factor, see the Prep page for details.
- PRO** Sample has undergone sample processing prior to extraction and analysis.
- Q-01** Spike recovery and/or RPD is outside acceptance limits.
- Q-04** Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
- Q-16** Reanalysis of an original Batch QC sample.
- Q-29** Recovery for Lab Control Spike (LCS) is above the upper control limit. Data may be biased high.
- Q-41** Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
- Q-42** Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)
- Q-65** Spike recovery is estimated due to the high analyte concentration of the source sample.
- S-03** Sample re-extract, or the analysis of an associated Batch QC sample, confirms surrogate failure due to sample matrix effect.

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported.
- RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as "dry", "wet", or " " (blank) designation.
- "dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.
- "wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
- " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) are not included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to ½ the Reporting Limit (RL).
-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.

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Jason Woodcock, Project Manager



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ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Table with project details: PBS Engineering and Environmental, Project: Bull Run Filtration Facility, Project Number: 24433.000, Project Manager: Nick Thornton, Report ID: A3K1205 - 11 30 23 1001

LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation)
EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Table header with columns: Matrix, Analysis, TNI_ID, Analyte, TNI_ID, Accreditation

All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

Handwritten signature of Jason Woodcock

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
 Tigard, OR 97223
 503-718-2323
 ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
--	---	---

APEX LABS
 6700 SW Sandburg St., Tigard, OR 97223 Ph. 503-718-2323

CHAIN OF CUSTODY

Company: **PBS** Lab # **A3K1205** coc 1 of 1

Address: **PORTLAND OFFICE** Project Mgr: **NICK THORNTON** Project Name: **BULL RUN FILTRATION FACILITY** Project #: **24433.000**

Sampled by: **RILEY MARTIN** Phone: **503-417-2788** Email: **NICK.THORNTON@PBSUSA.COM** PO #

Site Location: State **OR** County _____

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-DX	NWTPH-CX	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (9)	Priority Metals (13)	AL Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Ti, V, Zn	TOTAL DISS. TCIP	TCIP Metals (9)	PENTACHL 8081A	PESTICIDES 8191A	GHG 1000	HERBICIDES 8151	Ag METALS 6009	Hold Sample	Frozen Archive
DU-1A	11/03	800	S	1																	X	X	X	X	X		
DU-2A		805	S	1																	X	X	X	X	X		
DU-1B		810	S	1																	X	X	X	X	X		
DU-2B		815	S	1																	X	X	X	X	X		
DU-1C		820	S	1																	X	X	X	X	X		
DU-2C		825	S	1																	X	X	X	X	X		

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day 2 Day 3 Day 5 Day **Standard** Other: _____

SAMPLES ARE HELD FOR 30 DAYS

RECEIVED BY: Signature: <i>Riley Martin</i> Date: 11-03-23 Printed Name: RILEY MARTIN Time: 1311 Company: APEX	RECEIVED BY: Signature: _____ Date: _____ Printed Name: _____ Time: _____ Company: _____
--	--

Form Y-002 R-00

Apex Laboratories

Jason Woodcock

Jason Woodcock, Project Manager

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ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1205 - 11 30 23 1001
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APEX LABS COOLER RECEIPT FORM

Client: PBS Element WO#: A3 K1205

Project/Project #: Bull Run Filtration Facility / 2443300

Delivery Info:

Date/time received: 11/10/23 @ 13:11 By: RAM
Delivered by: Apex Client ESS FedEx UPS Radio Morgan SDS Evergreen Other

Cooler Inspection Date/time inspected: 11/10/23 @ 13:15 By: RAM

Chain of Custody included? Yes No

Signed/dated by client? Yes No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>5.3</u>	<u>0.1</u>					
Custody seals? (Y/N)	<u>N</u>	<u>N</u>					
Received on ice? (Y/N)	<u>Y</u>	<u>Y</u>					
Temp. blanks? (Y/N)	<u>Y</u>	<u>Y</u>					
Ice type: (Gel/Real/Other)	<u>Real</u>	<u>Real</u>					
Condition (In/Out):	<u>In</u>	<u>In</u>					

Cooler out of temp? (Y/N) (N) Possible reason why: _____

Green dots applied to out of temperature samples? Yes No

Out of temperature samples form initiated? Yes No

Sample Inspection: Date/time inspected: 11/10/23 @ 13:37 By: RAM

All samples intact? Yes No Comments: _____

Bottle labels/COCs agree? Yes No Comments: _____

COC/container discrepancies form initiated? Yes No

Containers/volumes received appropriate for analysis? Yes No Comments: 1 gallon Jars
1/2 Full.

Do VOA vials have visible headspace? Yes No NA

Comments: _____

Water samples: pH checked: Yes No NA pH appropriate? Yes No NA pH ID: _____

Comments: _____

Additional information: _____

Labeled by: RAM

Witness: DJI

Cooler Inspected by: RAM

Form Y-003 R-01

Apex Laboratories

Jason Woodcock, Project Manager

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 **ANALYTICAL REPORT****PREPARED FOR**

Attn: Jason Woodcock
Apex Laboratories LLC
6700 SW Sandburg St.
Tigard, Oregon 97223
Generated 11/28/2023 6:12:27 PM

JOB DESCRIPTION

A3K1205

JOB NUMBER

570-161096-1

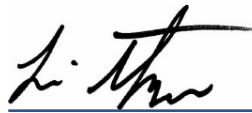
Eurofins Calscience

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 Calscience Project Manager.

Authorization



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11/28/2023 6:12:27 PM

Authorized for release by
Lori Thompson, Project Manager I
Lori.Thompson@et.eurofinsus.com
(657)212-3035



Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Detection Summary	6
Client Sample Results	7
Surrogate Summary	9
QC Sample Results	10
QC Association Summary	12
Lab Chronicle	13
Certification Summary	15
Method Summary	16
Sample Summary	17
Chain of Custody	18
Receipt Checklists	21

Definitions/Glossary

Client: Apex Laboratories LLC
Project/Site: A3K1205

Job ID: 570-161096-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
*1	LCS/LCSD RPD 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.
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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

Case Narrative

Client: Apex Laboratories LLC
Project/Site: A3K1205

Job ID: 570-161096-1

Job ID: 570-161096-1

Laboratory: Eurofins Calscience

Narrative

Job Narrative 570-161096-1

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 are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample 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 11/16/2023 9:45 AM. 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 1.5°C

Herbicides

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.



Detection Summary

Client: Apex Laboratories LLC
Project/Site: A3K1205

Job ID: 570-161096-1

Client Sample ID: DU-1A

Lab Sample ID: 570-161096-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2,4-DB	190	p*1	100	100	ug/Kg	1	✳	8151A	Total/NA

Client Sample ID: DU-2A

Lab Sample ID: 570-161096-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2,4-DB	140	p*1	100	100	ug/Kg	1	✳	8151A	Total/NA

Client Sample ID: DU-1B

Lab Sample ID: 570-161096-3

No Detections.

Client Sample ID: DU-2B

Lab Sample ID: 570-161096-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2,4-DB	120	p	100	100	ug/Kg	1	✳	8151A	Total/NA

Client Sample ID: DU-1C

Lab Sample ID: 570-161096-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2,4-DB	170	p	100	100	ug/Kg	1	✳	8151A	Total/NA

Client Sample ID: DU-2C

Lab Sample ID: 570-161096-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2,4-DB	110	p	100	100	ug/Kg	1	✳	8151A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1205

Job ID: 570-161096-1

Method: SW846 8151A - Herbicides (GC)

Client Sample ID: DU-1A
Date Collected: 11/06/23 08:00
Date Received: 11/16/23 09:45

Lab Sample ID: 570-161096-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.7	ug/Kg	☼	11/17/23 19:18	11/22/23 04:19	1
2,4,5-TP (Silvex)	ND		10	7.6	ug/Kg	☼	11/17/23 19:18	11/22/23 04:19	1
2,4-D	ND		100	49	ug/Kg	☼	11/17/23 19:18	11/22/23 04:19	1
2,4-DB	190	p *1	100	100	ug/Kg	☼	11/17/23 19:18	11/22/23 04:19	1
Dalapon	ND		250	73	ug/Kg	☼	11/17/23 19:18	11/22/23 04:19	1
Dicamba	ND		10	4.7	ug/Kg	☼	11/17/23 19:18	11/22/23 04:19	1
Dichlorprop	ND		100	50	ug/Kg	☼	11/17/23 19:18	11/22/23 04:19	1
Dinoseb	ND		100	59	ug/Kg	☼	11/17/23 19:18	11/22/23 04:19	1
MCPA	ND		10000	4900	ug/Kg	☼	11/17/23 19:18	11/22/23 04:19	1
MCPP	ND		10000	6600	ug/Kg	☼	11/17/23 19:18	11/22/23 04:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	64	p	20 - 163				11/17/23 19:18	11/22/23 04:19	1

Client Sample ID: DU-2A
Date Collected: 11/06/23 08:05
Date Received: 11/16/23 09:45

Lab Sample ID: 570-161096-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.7	ug/Kg	☼	11/17/23 19:18	11/22/23 04:41	1
2,4,5-TP (Silvex)	ND		10	7.6	ug/Kg	☼	11/17/23 19:18	11/22/23 04:41	1
2,4-D	ND		100	49	ug/Kg	☼	11/17/23 19:18	11/22/23 04:41	1
2,4-DB	140	p *1	100	100	ug/Kg	☼	11/17/23 19:18	11/22/23 04:41	1
Dalapon	ND		250	73	ug/Kg	☼	11/17/23 19:18	11/22/23 04:41	1
Dicamba	ND		10	4.8	ug/Kg	☼	11/17/23 19:18	11/22/23 04:41	1
Dichlorprop	ND		100	50	ug/Kg	☼	11/17/23 19:18	11/22/23 04:41	1
Dinoseb	ND		100	59	ug/Kg	☼	11/17/23 19:18	11/22/23 04:41	1
MCPA	ND		10000	4900	ug/Kg	☼	11/17/23 19:18	11/22/23 04:41	1
MCPP	ND		10000	6600	ug/Kg	☼	11/17/23 19:18	11/22/23 04:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	31	p	20 - 163				11/17/23 19:18	11/22/23 04:41	1

Client Sample ID: DU-1B
Date Collected: 11/06/23 08:10
Date Received: 11/16/23 09:45

Lab Sample ID: 570-161096-3
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.7	ug/Kg	☼	11/17/23 19:18	11/22/23 05:03	1
2,4,5-TP (Silvex)	ND		10	7.6	ug/Kg	☼	11/17/23 19:18	11/22/23 05:03	1
2,4-D	ND		100	49	ug/Kg	☼	11/17/23 19:18	11/22/23 05:03	1
2,4-DB	ND		100	100	ug/Kg	☼	11/17/23 19:18	11/22/23 05:03	1
Dalapon	ND		250	73	ug/Kg	☼	11/17/23 19:18	11/22/23 05:03	1
Dicamba	ND		10	4.8	ug/Kg	☼	11/17/23 19:18	11/22/23 05:03	1
Dichlorprop	ND		100	50	ug/Kg	☼	11/17/23 19:18	11/22/23 05:03	1
Dinoseb	ND		100	60	ug/Kg	☼	11/17/23 19:18	11/22/23 05:03	1
MCPA	ND		10000	4900	ug/Kg	☼	11/17/23 19:18	11/22/23 05:03	1
MCPP	ND		10000	6700	ug/Kg	☼	11/17/23 19:18	11/22/23 05:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	47	p	20 - 163				11/17/23 19:18	11/22/23 05:03	1

Client Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1205

Job ID: 570-161096-1

Method: SW846 8151A - Herbicides (GC)

Client Sample ID: DU-2B
Date Collected: 11/06/23 08:15
Date Received: 11/16/23 09:45

Lab Sample ID: 570-161096-4
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.7	ug/Kg	☼	11/17/23 19:18	11/22/23 05:25	1
2,4,5-TP (Silvex)	ND		10	7.5	ug/Kg	☼	11/17/23 19:18	11/22/23 05:25	1
2,4-D	ND		100	49	ug/Kg	☼	11/17/23 19:18	11/22/23 05:25	1
2,4-DB	120	p	100	100	ug/Kg	☼	11/17/23 19:18	11/22/23 05:25	1
Dalapon	ND		250	72	ug/Kg	☼	11/17/23 19:18	11/22/23 05:25	1
Dicamba	ND		10	4.7	ug/Kg	☼	11/17/23 19:18	11/22/23 05:25	1
Dichlorprop	ND		100	49	ug/Kg	☼	11/17/23 19:18	11/22/23 05:25	1
Dinoseb	ND		100	59	ug/Kg	☼	11/17/23 19:18	11/22/23 05:25	1
MCPA	ND		10000	4900	ug/Kg	☼	11/17/23 19:18	11/22/23 05:25	1
MCPP	ND		10000	6600	ug/Kg	☼	11/17/23 19:18	11/22/23 05:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	52	p	20 - 163				11/17/23 19:18	11/22/23 05:25	1

Client Sample ID: DU-1C
Date Collected: 11/06/23 08:20
Date Received: 11/16/23 09:45

Lab Sample ID: 570-161096-5
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.7	ug/Kg	☼	11/17/23 19:18	11/22/23 05:47	1
2,4,5-TP (Silvex)	ND		10	7.6	ug/Kg	☼	11/17/23 19:18	11/22/23 05:47	1
2,4-D	ND		100	49	ug/Kg	☼	11/17/23 19:18	11/22/23 05:47	1
2,4-DB	170	p	100	100	ug/Kg	☼	11/17/23 19:18	11/22/23 05:47	1
Dalapon	ND		250	73	ug/Kg	☼	11/17/23 19:18	11/22/23 05:47	1
Dicamba	ND		10	4.8	ug/Kg	☼	11/17/23 19:18	11/22/23 05:47	1
Dichlorprop	ND		100	50	ug/Kg	☼	11/17/23 19:18	11/22/23 05:47	1
Dinoseb	ND		100	59	ug/Kg	☼	11/17/23 19:18	11/22/23 05:47	1
MCPA	ND		10000	4900	ug/Kg	☼	11/17/23 19:18	11/22/23 05:47	1
MCPP	ND		10000	6700	ug/Kg	☼	11/17/23 19:18	11/22/23 05:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	75	p	20 - 163				11/17/23 19:18	11/22/23 05:47	1

Client Sample ID: DU-2C
Date Collected: 11/06/23 08:25
Date Received: 11/16/23 09:45

Lab Sample ID: 570-161096-6
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.8	ug/Kg	☼	11/17/23 19:18	11/22/23 06:10	1
2,4,5-TP (Silvex)	ND		10	7.7	ug/Kg	☼	11/17/23 19:18	11/22/23 06:10	1
2,4-D	ND		100	50	ug/Kg	☼	11/17/23 19:18	11/22/23 06:10	1
2,4-DB	110	p	100	100	ug/Kg	☼	11/17/23 19:18	11/22/23 06:10	1
Dalapon	ND		260	74	ug/Kg	☼	11/17/23 19:18	11/22/23 06:10	1
Dicamba	ND		10	4.8	ug/Kg	☼	11/17/23 19:18	11/22/23 06:10	1
Dichlorprop	ND		100	50	ug/Kg	☼	11/17/23 19:18	11/22/23 06:10	1
Dinoseb	ND		100	60	ug/Kg	☼	11/17/23 19:18	11/22/23 06:10	1
MCPA	ND		10000	5000	ug/Kg	☼	11/17/23 19:18	11/22/23 06:10	1
MCPP	ND		10000	6700	ug/Kg	☼	11/17/23 19:18	11/22/23 06:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	23	p	20 - 163				11/17/23 19:18	11/22/23 06:10	1

Surrogate Summary

Client: Apex Laboratories LLC
Project/Site: A3K1205

Job ID: 570-161096-1

Method: 8151A - Herbicides (GC)

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA2 (20-163)
570-161096-1	DU-1A	64 p
570-161096-2	DU-2A	31 p
570-161096-3	DU-1B	47 p
570-161096-4	DU-2B	52 p
570-161096-5	DU-1C	75 p
570-161096-6	DU-2C	23 p
LCS 570-385026/2-A	Lab Control Sample	114
LCSD 570-385026/3-A	Lab Control Sample Dup	112
MB 570-385026/1-A	Method Blank	57

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

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QC Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1205

Job ID: 570-161096-1

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 570-385026/1-A
Matrix: Solid
Analysis Batch: 386122

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 385026

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.7	ug/Kg		11/17/23 19:17	11/21/23 22:23	1
2,4,5-TP (Silvex)	ND		10	7.5	ug/Kg		11/17/23 19:17	11/21/23 22:23	1
2,4-D	ND		100	49	ug/Kg		11/17/23 19:17	11/21/23 22:23	1
2,4-DB	ND		100	100	ug/Kg		11/17/23 19:17	11/21/23 22:23	1
Dalapon	ND		250	72	ug/Kg		11/17/23 19:17	11/21/23 22:23	1
Dicamba	ND		10	4.7	ug/Kg		11/17/23 19:17	11/21/23 22:23	1
Dichlorprop	ND		100	49	ug/Kg		11/17/23 19:17	11/21/23 22:23	1
Dinoseb	ND		100	59	ug/Kg		11/17/23 19:17	11/21/23 22:23	1
MCPA	ND		10000	4900	ug/Kg		11/17/23 19:17	11/21/23 22:23	1
MCPP	ND		10000	6600	ug/Kg		11/17/23 19:17	11/21/23 22:23	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	57		20 - 163	11/17/23 19:17	11/21/23 22:23	1

Lab Sample ID: LCS 570-385026/2-A
Matrix: Solid
Analysis Batch: 386122

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 385026

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,4,5-T	20.0	18.26		ug/Kg		91	26 - 180
2,4,5-TP (Silvex)	20.0	16.78		ug/Kg		84	10 - 180
2,4-D	200	115.4	p	ug/Kg		58	13 - 180
2,4-DB	200	149.3	p	ug/Kg		75	10 - 180
Dalapon	500	400.2		ug/Kg		80	10 - 176
Dicamba	20.0	16.12		ug/Kg		81	21 - 164
Dichlorprop	200	137.1		ug/Kg		69	10 - 175
Dinoseb	100	95.54	J p	ug/Kg		96	10 - 180
MCPA	20000	35330		ug/Kg		177	22 - 180
MCPP	20000	18700		ug/Kg		94	18 - 180

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4-Dichlorophenylacetic acid	114		20 - 163

Lab Sample ID: LCSD 570-385026/3-A
Matrix: Solid
Analysis Batch: 386122

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 385026

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,4,5-T	20.0	17.34		ug/Kg		87	26 - 180	5	40
2,4,5-TP (Silvex)	20.0	17.65		ug/Kg		88	10 - 180	5	40
2,4-D	200	122.1	p	ug/Kg		61	13 - 180	6	40
2,4-DB	200	147.8		ug/Kg		74	10 - 180	1	40
Dalapon	500	432.5		ug/Kg		87	10 - 176	8	40
Dicamba	20.0	15.44		ug/Kg		77	21 - 164	4	40
Dichlorprop	200	142.0		ug/Kg		71	10 - 175	4	40
Dinoseb	100	142.0		ug/Kg		142	10 - 180	39	40
MCPA	20000	34830		ug/Kg		174	22 - 180	1	40
MCPP	20000	19450		ug/Kg		97	18 - 180	4	40

Eurolabs Calscience
50 of 61

QC Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1205

Job ID: 570-161096-1

Method: 8151A - Herbicides (GC) (Continued)

<i>Surrogate</i>	<i>LCS D</i>	<i>LCS D</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
2,4-Dichlorophenylacetic acid	112		20 - 163

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QC Association Summary

Client: Apex Laboratories LLC
Project/Site: A3K1205

Job ID: 570-161096-1

GC Semi VOA

Prep Batch: 385026

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-161096-1	DU-1A	Total/NA	Solid	8151A	
570-161096-2	DU-2A	Total/NA	Solid	8151A	
570-161096-3	DU-1B	Total/NA	Solid	8151A	
570-161096-4	DU-2B	Total/NA	Solid	8151A	
570-161096-5	DU-1C	Total/NA	Solid	8151A	
570-161096-6	DU-2C	Total/NA	Solid	8151A	
MB 570-385026/1-A	Method Blank	Total/NA	Solid	8151A	
LCS 570-385026/2-A	Lab Control Sample	Total/NA	Solid	8151A	
LCSD 570-385026/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	

Analysis Batch: 386122

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-161096-1	DU-1A	Total/NA	Solid	8151A	385026
570-161096-2	DU-2A	Total/NA	Solid	8151A	385026
570-161096-3	DU-1B	Total/NA	Solid	8151A	385026
570-161096-4	DU-2B	Total/NA	Solid	8151A	385026
570-161096-5	DU-1C	Total/NA	Solid	8151A	385026
570-161096-6	DU-2C	Total/NA	Solid	8151A	385026
MB 570-385026/1-A	Method Blank	Total/NA	Solid	8151A	385026
LCS 570-385026/2-A	Lab Control Sample	Total/NA	Solid	8151A	385026
LCSD 570-385026/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	385026

Lab Chronicle

Client: Apex Laboratories LLC
Project/Site: A3K1205

Job ID: 570-161096-1

Client Sample ID: DU-1A

Lab Sample ID: 570-161096-1

Date Collected: 11/06/23 08:00

Matrix: Solid

Date Received: 11/16/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			50.79 g	5 mL	385026	11/17/23 19:18	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	386122	11/22/23 04:19	J7WE	EET CAL 4
Instrument ID: GC41										

Client Sample ID: DU-2A

Lab Sample ID: 570-161096-2

Date Collected: 11/06/23 08:05

Matrix: Solid

Date Received: 11/16/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			50.58 g	5 mL	385026	11/17/23 19:18	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	386122	11/22/23 04:41	J7WE	EET CAL 4
Instrument ID: GC41										

Client Sample ID: DU-1B

Lab Sample ID: 570-161096-3

Date Collected: 11/06/23 08:10

Matrix: Solid

Date Received: 11/16/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			50.14 g	5 mL	385026	11/17/23 19:18	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	386122	11/22/23 05:03	J7WE	EET CAL 4
Instrument ID: GC41										

Client Sample ID: DU-2B

Lab Sample ID: 570-161096-4

Date Collected: 11/06/23 08:15

Matrix: Solid

Date Received: 11/16/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			50.96 g	5 mL	385026	11/17/23 19:18	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	386122	11/22/23 05:25	J7WE	EET CAL 4
Instrument ID: GC41										

Client Sample ID: DU-1C

Lab Sample ID: 570-161096-5

Date Collected: 11/06/23 08:20

Matrix: Solid

Date Received: 11/16/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			50.38 g	5 mL	385026	11/17/23 19:18	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	386122	11/22/23 05:47	J7WE	EET CAL 4
Instrument ID: GC41										

Lab Chronicle

Client: Apex Laboratories LLC
Project/Site: A3K1205

Job ID: 570-161096-1

Client Sample ID: DU-2C
Date Collected: 11/06/23 08:25
Date Received: 11/16/23 09:45

Lab Sample ID: 570-161096-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			50.09 g	5 mL	385026	11/17/23 19:18	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	386122	11/22/23 06:10	J7WE	EET CAL 4

Instrument ID: GC41

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

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Accreditation/Certification Summary

Client: Apex Laboratories LLC
Project/Site: A3K1205

Job ID: 570-161096-1

Laboratory: Eurofins Calscience

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	4175	02-02-24
Washington	State	C916-18	10-11-23 *

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* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Apex Laboratories LLC
Project/Site: A3K1205

Job ID: 570-161096-1

Method	Method Description	Protocol	Laboratory
8151A	Herbicides (GC)	SW846	EET CAL 4
8151A	Extraction (Herbicides)	SW846	EET CAL 4

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494



Sample Summary

Client: Apex Laboratories LLC
Project/Site: A3K1205

Job ID: 570-161096-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-161096-1	DU-1A	Solid	11/06/23 08:00	11/16/23 09:45
570-161096-2	DU-2A	Solid	11/06/23 08:05	11/16/23 09:45
570-161096-3	DU-1B	Solid	11/06/23 08:10	11/16/23 09:45
570-161096-4	DU-2B	Solid	11/06/23 08:15	11/16/23 09:45
570-161096-5	DU-1C	Solid	11/06/23 08:20	11/16/23 09:45
570-161096-6	DU-2C	Solid	11/06/23 08:25	11/16/23 09:45

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SUBCONTRACT ORDER

Loc: 570
161096

Apex Laboratories
A3K1205

h

ACC 11/17/23

SENDING LABORATORY:

Apex Laboratories
6700 S.W. Sandburg Street
Tigard, OR 97223
Phone: (503) 718-2323
Fax: (503) 336-0745
Project Manager: Jason Woodcock

RECEIVING LABORATORY:

Eurofins_CalScience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Phone : (714) 895-5494
Fax: (714) 894-7501



570-161096 Chain of Custody

Sample Name: DU-1A **After Processing**
Sampled: 11/06/23 08:00 (A3K1205-02)

Analysis	Due	Expires	Comments
8151A Herbicides (SUB) <i>Containers Supplied:</i> (B)4 oz Glass Jar	11/27/23 17:00	11/20/23 08:00	

Sample Name: DU-2A **After Processing**
Sampled: 11/06/23 08:05 (A3K1205-04)

Analysis	Due	Expires	Comments
8151A Herbicides (SUB) <i>Containers Supplied:</i> (B)4 oz Glass Jar	11/27/23 17:00	11/20/23 08:05	

Sample Name: DU-1B **After Processing**
Sampled: 11/06/23 08:10 (A3K1205-06)

Analysis	Due	Expires	Comments
8151A Herbicides (SUB) <i>Containers Supplied:</i> (B)4 oz Glass Jar	11/27/23 17:00	11/20/23 08:10	

Sample Name: DU-2B **After Processing**
Sampled: 11/06/23 08:15 (A3K1205-08)

Analysis	Due	Expires	Comments
8151A Herbicides (SUB) <i>Containers Supplied:</i> (B)4 oz Glass Jar	11/27/23 17:00	11/20/23 08:15	

Standard TAT

Released By *[Signature]* Date *11-15-23* Received By **Fed Ex (Shipper)** Date

Released By **Fed Ex (Shipper)** Date *[Signature]* Received By *[Signature]* Date *11/16/23 0948*

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SUBCONTRACT ORDER


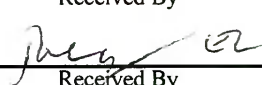
Apex Laboratories

A3K1205

Sample Name:	DU-1C	5	Soil	After Processing	Sampled: 11/06/23 08:20	(A3K1205-10)
Analysis	Due		Expires	Comments		
8151A Herbicides (SUB)	11/27/23 17:00		11/20/23 08:20			
Containers Supplied: (B)4 oz Glass Jar						

Sample Name:	DU-2C	6	Soil	After Processing	Sampled: 11/06/23 08:25	(A3K1205-12)
Analysis	Due		Expires	Comments		
8151A Herbicides (SUB)	11/27/23 17:00		11/20/23 08:25			
Containers Supplied: (B)4 oz Glass Jar						

Standard TAT

Released By	Date	Received By	Date
	11-15-23		11/16/23 0945
Fed Ex (Shipper)			
Released By	Date	Received By	Date

https://www.fedex.com/shipping/html/en/PrintFrame.html



570-161096 Waybill

ORIGIN ID: BNOA (503) 718-2323
APEX LABS
APEX LABORATORIES
6700 SW SANDBURG ST.

SHIP DATE: 15NOV23
ACTWGT: 27.00 LB
CAD: 4716258/INET4660
DIMS: 10x19x14 IN

TIGARD, OR 97223
UNITED STATES US

BILL SENDER

TO DANIELLE GONSMAN
EUROFINS_CALSCIENCE
2841 DOW AVENUE
SUITE 100
TUSTIN CA 92780

583J5F0629AE3

(714) 895-5494

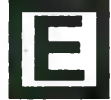
REF:

INV:
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DEPT:



FedEx
Express



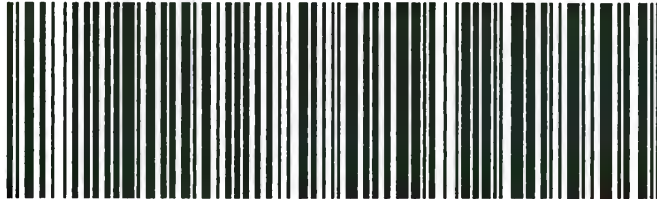
3340231019810w

THU - 16 NOV 10:30A
PRIORITY OVERNIGHT

TRK# 7741 2393 2884
0201

WZ DTHA

92780
CA-US SNA



Firefox

Login Sample Receipt Checklist

Client: Apex Laboratories LLC

Job Number: 570-161096-1

Login Number: 161096

List Number: 1

Creator: Cruise, Noel

List Source: Eurofins Calscience

Question	Answer	Comment
Radioactivity wasn't checked or is < /= background as measured by a survey meter.	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?	False	Received project as a subcontract.
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

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Monday, December 11, 2023
Nick Thornton
PBS Engineering and Environmental
4412 S Corbett Ave
Portland, OR 97239

RE: A3K1557 - Bull Run Filtration Facility - 24433.000

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A3K1557, which was received by the laboratory on 11/21/2023 at 3:25:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: jwoodcock@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.
(See Cooler Receipt Form for details)
Default Cooler 0.6 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.

All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



Apex Laboratories

Handwritten signature of Jason Woodcock

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FWN-DU-1A	A3K1557-01	Soil	11/21/23 09:30	11/21/23 15:25
FWN-DU-1A	A3K1557-02	Soil	11/21/23 09:30	11/21/23 15:25
FWN-DU-1B	A3K1557-03	Soil	11/21/23 10:00	11/21/23 15:25
FWN-DU-1B	A3K1557-04	Soil	11/21/23 10:00	11/21/23 15:25
FWN-DU-1C	A3K1557-05	Soil	11/21/23 10:30	11/21/23 15:25
FWN-DU-1C	A3K1557-06	Soil	11/21/23 10:30	11/21/23 15:25
FWN-DU-2	A3K1557-07	Soil	11/21/23 11:00	11/21/23 15:25
FWN-DU-2	A3K1557-08	Soil	11/21/23 11:00	11/21/23 15:25

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u>	Project: <u>Bull Run Filtration Facility</u>	<u>Report ID:</u>
4412 S Corbett Ave	Project Number: 24433.000	A3K1557 - 12 11 23 0909
Portland, OR 97239	Project Manager: Nick Thornton	

ANALYTICAL CASE NARRATIVE

Work Order: A3K1557	Apex Laboratories
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Subcontract

This report is complete only if it includes the attached subcontract laboratory report from Eurofins Calscience.

Apex Laboratories

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
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ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWN-DU-1A (A3K1557-02)				Matrix: Soil		Batch: 23L0072		PRO
Diesel	ND	---	19.0	mg/kg dry	1	12/04/23 22:04	NWTPH-Dx	
Oil	91.4	---	38.0	mg/kg dry	1	12/04/23 22:04	NWTPH-Dx	F-03
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 82 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/04/23 22:04</i>	<i>NWTPH-Dx</i>	
FWN-DU-1B (A3K1557-04)				Matrix: Soil		Batch: 23L0072		PRO
Diesel	ND	---	18.7	mg/kg dry	1	12/04/23 22:46	NWTPH-Dx	
Oil	195	---	37.5	mg/kg dry	1	12/04/23 22:46	NWTPH-Dx	F-03
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 75 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/04/23 22:46</i>	<i>NWTPH-Dx</i>	
FWN-DU-1C (A3K1557-06)				Matrix: Soil		Batch: 23L0072		PRO
Diesel	ND	---	19.3	mg/kg dry	1	12/04/23 23:27	NWTPH-Dx	
Oil	106	---	38.5	mg/kg dry	1	12/04/23 23:27	NWTPH-Dx	F-03
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 77 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/04/23 23:27</i>	<i>NWTPH-Dx</i>	
FWN-DU-2 (A3K1557-08)				Matrix: Soil		Batch: 23L0072		PRO
Diesel	ND	---	19.5	mg/kg dry	1	12/05/23 00:08	NWTPH-Dx	
Oil	ND	---	38.9	mg/kg dry	1	12/05/23 00:08	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 82 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/05/23 00:08</i>	<i>NWTPH-Dx</i>	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
--	---	---

ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWN-DU-1A (A3K1557-02RE1)				Matrix: Soil		Batch: 23L0030		C-05, PRO
Aldrin [2C]	ND	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
alpha-BHC [2C]	ND	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
beta-BHC [2C]	ND	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
delta-BHC [2C]	ND	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
gamma-BHC (Lindane) [2C]	ND	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
cis-Chlordane [2C]	ND	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
trans-Chlordane [2C]	ND	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
4,4'-DDD [2C]	ND	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
4,4'-DDE [2C]	0.0232	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
4,4'-DDT [2C]	0.0216	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
Dieldrin [2C]	0.0115	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
Endosulfan I [2C]	ND	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
Endosulfan II [2C]	ND	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
Endosulfan sulfate [2C]	ND	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
Endrin	ND	---	0.00206	mg/kg dry	1	12/06/23 17:50	EPA 8081B	R-02
Endrin aldehyde [2C]	ND	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
Endrin ketone [2C]	ND	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
Heptachlor [2C]	ND	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
Heptachlor epoxide [2C]	ND	---	0.00196	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
Methoxychlor [2C]	ND	---	0.00588	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
Chlordane (Technical) [2C]	ND	---	0.0588	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
Toxaphene (Total) [2C]	ND	---	0.0588	mg/kg dry	1	12/06/23 17:50	EPA 8081B	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 72 %</i>		<i>Limits: 42-129 %</i>		<i>1</i>	<i>12/06/23 17:50</i>	<i>EPA 8081B</i>
<i>Decachlorobiphenyl (Surr)</i>		<i>85 %</i>		<i>55-130 %</i>		<i>1</i>	<i>12/06/23 17:50</i>	<i>EPA 8081B</i>

FWN-DU-1B (A3K1557-04RE1)				Matrix: Soil		Batch: 23L0030		C-05, PRO
Aldrin [2C]	ND	---	0.00199	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
alpha-BHC [2C]	ND	---	0.00199	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
beta-BHC [2C]	ND	---	0.00199	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
delta-BHC [2C]	ND	---	0.00199	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
gamma-BHC (Lindane) [2C]	ND	---	0.00199	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
cis-Chlordane [2C]	ND	---	0.00199	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
trans-Chlordane [2C]	ND	---	0.00199	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
4,4'-DDD [2C]	ND	---	0.00199	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
4,4'-DDE [2C]	0.0216	---	0.00199	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
4,4'-DDT [2C]	0.0177	---	0.00199	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
Dieldrin [2C]	0.00780	---	0.00199	mg/kg dry	1	12/06/23 18:25	EPA 8081B	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
--	---	---

ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWN-DU-1B (A3K1557-04RE1)				Matrix: Soil		Batch: 23L0030		C-05, PRO
Endosulfan I [2C]	ND	---	0.00199	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
Endosulfan II	ND	---	0.00199	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
Endosulfan sulfate [2C]	ND	---	0.00538	mg/kg dry	1	12/06/23 18:25	EPA 8081B	R-02
Endrin [2C]	ND	---	0.00239	mg/kg dry	1	12/06/23 18:25	EPA 8081B	R-02
Endrin aldehyde [2C]	ND	---	0.00199	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
Endrin ketone [2C]	ND	---	0.00449	mg/kg dry	1	12/06/23 18:25	EPA 8081B	R-02
Heptachlor [2C]	ND	---	0.00199	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
Heptachlor epoxide [2C]	ND	---	0.00199	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
Methoxychlor [2C]	ND	---	0.00598	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
Chlordane (Technical) [2C]	ND	---	0.0598	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
Toxaphene (Total) [2C]	ND	---	0.0598	mg/kg dry	1	12/06/23 18:25	EPA 8081B	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 80 %</i>	<i>Limits: 42-129 %</i>	<i>1</i>	<i>12/06/23 18:25</i>	<i>EPA 8081B</i>	
<i>Decachlorobiphenyl (Surr)</i>			<i>114 %</i>	<i>55-130 %</i>	<i>1</i>	<i>12/06/23 18:25</i>	<i>EPA 8081B</i>	
FWN-DU-1C (A3K1557-06RE1)				Matrix: Soil		Batch: 23L0030		C-05, PRO
Aldrin [2C]	ND	---	0.00195	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
alpha-BHC [2C]	ND	---	0.00195	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
beta-BHC [2C]	ND	---	0.00195	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
delta-BHC [2C]	ND	---	0.00195	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
gamma-BHC (Lindane) [2C]	ND	---	0.00195	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
cis-Chlordane [2C]	ND	---	0.00195	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
trans-Chlordane [2C]	ND	---	0.00195	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
4,4'-DDD [2C]	ND	---	0.00195	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
4,4'-DDE [2C]	0.0223	---	0.00195	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
4,4'-DDT [2C]	0.0198	---	0.00195	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
Dieldrin [2C]	0.0207	---	0.00195	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
Endosulfan I [2C]	ND	---	0.00195	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
Endosulfan II	ND	---	0.00195	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
Endosulfan sulfate [2C]	ND	---	0.00283	mg/kg dry	1	12/06/23 18:59	EPA 8081B	R-02
Endrin	ND	---	0.00195	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
Endrin aldehyde [2C]	ND	---	0.00195	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
Endrin ketone [2C]	ND	---	0.00205	mg/kg dry	1	12/06/23 18:59	EPA 8081B	R-02
Heptachlor [2C]	ND	---	0.00195	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
Heptachlor epoxide [2C]	ND	---	0.00195	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
Methoxychlor [2C]	ND	---	0.00586	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
Chlordane (Technical) [2C]	ND	---	0.0586	mg/kg dry	1	12/06/23 18:59	EPA 8081B	
Toxaphene (Total) [2C]	ND	---	0.0586	mg/kg dry	1	12/06/23 18:59	EPA 8081B	

Apex Laboratories

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
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ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWN-DU-1C (A3K1557-06RE1)				Matrix: Soil		Batch: 23L0030		C-05, PRO
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 73 %</i>		<i>Limits: 42-129 %</i>		<i>1</i>	<i>12/06/23 18:59</i>	<i>EPA 8081B</i>
<i>Decachlorobiphenyl (Surr)</i>		<i>111 %</i>		<i>55-130 %</i>		<i>1</i>	<i>12/06/23 18:59</i>	<i>EPA 8081B</i>
FWN-DU-2 (A3K1557-08RE1)				Matrix: Soil		Batch: 23L0030		C-05, PRO
Aldrin [2C]	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
alpha-BHC [2C]	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
beta-BHC [2C]	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
delta-BHC [2C]	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
gamma-BHC (Lindane) [2C]	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
cis-Chlordane [2C]	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
trans-Chlordane	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
4,4'-DDD [2C]	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
4,4'-DDE [2C]	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
4,4'-DDT [2C]	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
Dieldrin [2C]	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
Endosulfan I	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
Endosulfan II [2C]	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
Endosulfan sulfate [2C]	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
Endrin [2C]	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
Endrin aldehyde [2C]	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
Endrin ketone [2C]	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
Heptachlor [2C]	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
Heptachlor epoxide [2C]	ND	---	0.00201	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
Methoxychlor [2C]	ND	---	0.00603	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
Chlordane (Technical) [2C]	ND	---	0.0603	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
Toxaphene (Total) [2C]	ND	---	0.0603	mg/kg dry	1	12/06/23 19:16	EPA 8081B	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 76 %</i>		<i>Limits: 42-129 %</i>		<i>1</i>	<i>12/06/23 19:16</i>	<i>EPA 8081B</i>
<i>Decachlorobiphenyl (Surr)</i>		<i>89 %</i>		<i>55-130 %</i>		<i>1</i>	<i>12/06/23 19:16</i>	<i>EPA 8081B</i>

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
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ANALYTICAL SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWN-DU-1A (A3K1557-02)				Matrix: Soil		Batch: 23L0070		PRO
Azinphos methyl (Guthion)	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Chlorpyrifos	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Coumaphos	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Demeton O	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Demeton S	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Diazinon	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Dichlorvos	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Dimethoate	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Disulfoton	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
EPN	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Ethoprop	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Fensulfothion	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Fenthion	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Malathion	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Merphos	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Methyl parathion	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Mevinphos (Phosdrin)	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Monocrotophos	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Naled (Dibrom)	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Parathion, ethyl	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Phorate	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Ronnel (Fenclorpos)	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Sulfotep	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Sulprofos (Bolstar)	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
TEPP	ND	---	0.200	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Tetrachlorvinphos (Rabon)	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
Tokuthion (Prothiofos)	ND	---	0.0631	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	R-02
Trichloronate	ND	---	0.0501	mg/kg dry	1	12/04/23 19:11	EPA 8270E OPPs	
<i>Surrogate: Tributyl phosphate (Surr)</i>			<i>Recovery: 23 %</i>	<i>Limits: 10-136 %</i>	<i>1</i>	<i>12/04/23 19:11</i>	<i>EPA 8270E OPPs</i>	
<i>Triphenyl phosphate (Surr)</i>			<i>71 %</i>	<i>34-121 %</i>	<i>1</i>	<i>12/04/23 19:11</i>	<i>EPA 8270E OPPs</i>	

FWN-DU-1B (A3K1557-04)				Matrix: Soil		Batch: 23L0070		PRO
Azinphos methyl (Guthion)	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Chlorpyrifos	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Coumaphos	ND	---	0.0558	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	R-02
Demeton O	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Demeton S	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
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ANALYTICAL SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWN-DU-1B (A3K1557-04)				Matrix: Soil		Batch: 23L0070		PRO
Diazinon	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Dichlorvos	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Dimethoate	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Disulfoton	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
EPN	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Ethoprop	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Fensulfothion	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Fenthion	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Malathion	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Merphos	ND	---	0.574	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	R-02
Methyl parathion	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Mevinphos (Phosdrin)	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Monocrotophos	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Naled (Dibrom)	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Parathion, ethyl	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Phorate	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Ronnel (Fenchlorphos)	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Sulfotep	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Sulprofos (Bolstar)	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
TEPP	ND	---	0.196	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
Tetrachlorvinphos (Rabon)	ND	---	0.0724	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	R-02
Tokuthion (Prothiofos)	ND	---	0.113	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	R-02
Trichloronate	ND	---	0.0489	mg/kg dry	1	12/04/23 21:31	EPA 8270E OPPs	
<i>Surrogate: Tributyl phosphate (Surr)</i>		<i>Recovery: 42 %</i>		<i>Limits: 10-136 %</i>		<i>1</i>	<i>12/04/23 21:31</i>	<i>EPA 8270E OPPs</i>
<i>Triphenyl phosphate (Surr)</i>		<i>79 %</i>		<i>34-121 %</i>		<i>1</i>	<i>12/04/23 21:31</i>	<i>EPA 8270E OPPs</i>

FWN-DU-1C (A3K1557-06)				Matrix: Soil		Batch: 23L0070		PRO
Azinphos methyl (Guthion)	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Chlorpyrifos	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Coumaphos	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Demeton O	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Demeton S	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Diazinon	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Dichlorvos	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Dimethoate	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Disulfoton	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
EPN	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
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ANALYTICAL SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWN-DU-1C (A3K1557-06)				Matrix: Soil		Batch: 23L0070		PRO
Ethoprop	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Fensulfothion	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Fenthion	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Malathion	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Merphos	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Methyl parathion	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Mevinphos (Phosdrin)	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Monocrotophos	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Naled (Dibrom)	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Parathion, ethyl	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Phorate	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Ronnel (Fenclorphos)	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Sulfotep	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Sulprofos (Bolstar)	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
TEPP	ND	---	0.200	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Tetrachlorvinphos (Rabon)	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Tokuthion (Prothiofos)	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
Trichloronate	ND	---	0.0500	mg/kg dry	1	12/04/23 22:06	EPA 8270E OPPs	
<i>Surrogate: Tributyl phosphate (Surr)</i>			<i>Recovery: 45 %</i>	<i>Limits: 10-136 %</i>	<i>1</i>	<i>12/04/23 22:06</i>	<i>EPA 8270E OPPs</i>	
<i>Triphenyl phosphate (Surr)</i>			<i>80 %</i>	<i>34-121 %</i>	<i>1</i>	<i>12/04/23 22:06</i>	<i>EPA 8270E OPPs</i>	

FWN-DU-2 (A3K1557-08)				Matrix: Soil		Batch: 23L0070		PRO
Azinphos methyl (Guthion)	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	
Chlorpyrifos	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	
Coumaphos	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	
Demeton O	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	Q-42
Demeton S	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	Q-42
Diazinon	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	Q-42
Dichlorvos	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	Q-42
Dimethoate	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	Q-42
Disulfoton	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	
EPN	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	
Ethoprop	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	Q-42
Fensulfothion	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	Q-42
Fenthion	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	
Malathion	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	Q-42
Merphos	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	Q-42

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
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ANALYTICAL SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWN-DU-2 (A3K1557-08)				Matrix: Soil		Batch: 23L0070		PRO
Methyl parathion	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	
Mevinphos (Phosdrin)	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	Q-42
Monocrotophos	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	Q-42
Naled (Dibrom)	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	Q-42
Parathion, ethyl	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	
Phorate	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	
Ronnel (Fenchlorphos)	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	
Sulfotep	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	
Sulprofos (Bolstar)	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	
TEPP	ND	---	0.198	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	Q-42
Tetrachlorvinphos (Rabon)	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	Q-42
Tokuthion (Prothiofos)	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	
Trichloronate	ND	---	0.0496	mg/kg dry	1	12/04/23 20:22	EPA 8270E OPPs	
<i>Surrogate: Tributyl phosphate (Surr)</i>			<i>Recovery: 20 %</i>	<i>Limits: 10-136 %</i>	<i>1</i>	<i>12/04/23 20:22</i>	<i>EPA 8270E OPPs</i>	
<i>Triphenyl phosphate (Surr)</i>			<i>36 %</i>	<i>34-121 %</i>	<i>1</i>	<i>12/04/23 20:22</i>	<i>EPA 8270E OPPs</i>	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental	Project: Bull Run Filtration Facility	
4412 S Corbett Ave	Project Number: 24433.000	Report ID:
Portland, OR 97239	Project Manager: Nick Thornton	A3K1557 - 12 11 23 0909

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWN-DU-1A (A3K1557-02)				Matrix: Soil				
Batch: 23L0023								
Antimony	ND	---	1.01	mg/kg dry	10	12/01/23 20:37	EPA 6020B	PRO
Arsenic	3.40	---	1.01	mg/kg dry	10	12/01/23 20:37	EPA 6020B	PRO
Barium	142	---	1.01	mg/kg dry	10	12/01/23 20:37	EPA 6020B	PRO
Beryllium	0.732	---	0.202	mg/kg dry	10	12/01/23 20:37	EPA 6020B	PRO
Cadmium	ND	---	0.202	mg/kg dry	10	12/01/23 20:37	EPA 6020B	PRO
Chromium	25.9	---	1.01	mg/kg dry	10	12/01/23 20:37	EPA 6020B	PRO
Cobalt	10.6	---	1.01	mg/kg dry	10	12/01/23 20:37	EPA 6020B	PRO
Copper	15.4	---	2.02	mg/kg dry	10	12/01/23 20:37	EPA 6020B	PRO
Lead	15.0	---	0.202	mg/kg dry	10	12/01/23 20:37	EPA 6020B	PRO
Mercury	0.158	---	0.0809	mg/kg dry	10	12/01/23 20:37	EPA 6020B	PRO
Molybdenum	ND	---	1.01	mg/kg dry	10	12/01/23 20:37	EPA 6020B	PRO
Nickel	11.4	---	2.02	mg/kg dry	10	12/01/23 20:37	EPA 6020B	PRO,Q-42
Selenium	ND	---	1.01	mg/kg dry	10	12/01/23 20:37	EPA 6020B	PRO
Silver	ND	---	0.202	mg/kg dry	10	12/01/23 20:37	EPA 6020B	PRO
Thallium	ND	---	0.202	mg/kg dry	10	12/01/23 20:37	EPA 6020B	PRO
Vanadium	67.5	---	2.02	mg/kg dry	10	12/01/23 20:37	EPA 6020B	PRO
Zinc	60.8	---	4.05	mg/kg dry	10	12/01/23 20:37	EPA 6020B	PRO

FWN-DU-1B (A3K1557-04)				Matrix: Soil				
Batch: 23L0023								
Antimony	ND	---	1.07	mg/kg dry	10	12/01/23 21:01	EPA 6020B	PRO
Arsenic	3.66	---	1.07	mg/kg dry	10	12/01/23 21:01	EPA 6020B	PRO
Barium	146	---	1.07	mg/kg dry	10	12/01/23 21:01	EPA 6020B	PRO
Beryllium	0.719	---	0.215	mg/kg dry	10	12/01/23 21:01	EPA 6020B	PRO
Cadmium	ND	---	0.215	mg/kg dry	10	12/01/23 21:01	EPA 6020B	PRO
Chromium	24.7	---	1.07	mg/kg dry	10	12/01/23 21:01	EPA 6020B	PRO
Cobalt	11.0	---	1.07	mg/kg dry	10	12/01/23 21:01	EPA 6020B	PRO
Copper	18.0	---	2.15	mg/kg dry	10	12/01/23 21:01	EPA 6020B	PRO
Lead	20.8	---	0.215	mg/kg dry	10	12/01/23 21:01	EPA 6020B	PRO
Mercury	ND	---	0.0860	mg/kg dry	10	12/01/23 21:01	EPA 6020B	PRO
Molybdenum	ND	---	1.07	mg/kg dry	10	12/01/23 21:01	EPA 6020B	PRO
Nickel	13.1	---	2.15	mg/kg dry	10	12/01/23 21:01	EPA 6020B	PRO
Selenium	ND	---	1.07	mg/kg dry	10	12/01/23 21:01	EPA 6020B	PRO
Silver	ND	---	0.215	mg/kg dry	10	12/01/23 21:01	EPA 6020B	PRO
Thallium	ND	---	0.215	mg/kg dry	10	12/01/23 21:01	EPA 6020B	PRO
Vanadium	64.9	---	2.15	mg/kg dry	10	12/01/23 21:01	EPA 6020B	PRO

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWN-DU-1B (A3K1557-04)				Matrix: Soil				
Zinc	71.4	---	4.30	mg/kg dry	10	12/01/23 21:01	EPA 6020B	PRO
FWN-DU-1C (A3K1557-06)				Matrix: Soil				
Batch: 23L0023								
Antimony	ND	---	1.02	mg/kg dry	10	12/01/23 21:06	EPA 6020B	PRO
Arsenic	2.94	---	1.02	mg/kg dry	10	12/01/23 21:06	EPA 6020B	PRO
Barium	142	---	1.02	mg/kg dry	10	12/01/23 21:06	EPA 6020B	PRO
Beryllium	0.679	---	0.204	mg/kg dry	10	12/01/23 21:06	EPA 6020B	PRO
Cadmium	ND	---	0.204	mg/kg dry	10	12/01/23 21:06	EPA 6020B	PRO
Chromium	23.4	---	1.02	mg/kg dry	10	12/01/23 21:06	EPA 6020B	PRO
Cobalt	10.3	---	1.02	mg/kg dry	10	12/01/23 21:06	EPA 6020B	PRO
Copper	22.0	---	2.04	mg/kg dry	10	12/01/23 21:06	EPA 6020B	PRO
Lead	20.3	---	0.204	mg/kg dry	10	12/01/23 21:06	EPA 6020B	PRO
Mercury	ND	---	0.0816	mg/kg dry	10	12/01/23 21:06	EPA 6020B	PRO
Molybdenum	ND	---	1.02	mg/kg dry	10	12/01/23 21:06	EPA 6020B	PRO
Nickel	11.5	---	2.04	mg/kg dry	10	12/01/23 21:06	EPA 6020B	PRO
Selenium	ND	---	1.02	mg/kg dry	10	12/01/23 21:06	EPA 6020B	PRO
Silver	ND	---	0.204	mg/kg dry	10	12/01/23 21:06	EPA 6020B	PRO
Thallium	ND	---	0.204	mg/kg dry	10	12/01/23 21:06	EPA 6020B	PRO
Vanadium	61.7	---	2.04	mg/kg dry	10	12/01/23 21:06	EPA 6020B	PRO
Zinc	75.5	---	4.08	mg/kg dry	10	12/01/23 21:06	EPA 6020B	PRO
FWN-DU-2 (A3K1557-08)				Matrix: Soil				
Batch: 23L0023								
Antimony	ND	---	1.05	mg/kg dry	10	12/01/23 21:11	EPA 6020B	PRO
Arsenic	3.72	---	1.05	mg/kg dry	10	12/01/23 21:11	EPA 6020B	PRO
Barium	116	---	1.05	mg/kg dry	10	12/01/23 21:11	EPA 6020B	PRO
Beryllium	0.671	---	0.211	mg/kg dry	10	12/01/23 21:11	EPA 6020B	PRO
Cadmium	ND	---	0.211	mg/kg dry	10	12/01/23 21:11	EPA 6020B	PRO
Chromium	29.8	---	1.05	mg/kg dry	10	12/01/23 21:11	EPA 6020B	PRO
Cobalt	12.0	---	1.05	mg/kg dry	10	12/01/23 21:11	EPA 6020B	PRO
Copper	13.3	---	2.11	mg/kg dry	10	12/01/23 21:11	EPA 6020B	PRO
Lead	8.66	---	0.211	mg/kg dry	10	12/01/23 21:11	EPA 6020B	PRO
Mercury	ND	---	0.0844	mg/kg dry	10	12/01/23 21:11	EPA 6020B	PRO
Molybdenum	ND	---	1.05	mg/kg dry	10	12/01/23 21:11	EPA 6020B	PRO
Nickel	10.4	---	2.11	mg/kg dry	10	12/01/23 21:11	EPA 6020B	PRO
Selenium	ND	---	1.05	mg/kg dry	10	12/01/23 21:11	EPA 6020B	PRO

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

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 503-718-2323
 ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWN-DU-2 (A3K1557-08)				Matrix: Soil				
Silver	ND	---	0.211	mg/kg dry	10	12/01/23 21:11	EPA 6020B	PRO
Thallium	ND	---	0.211	mg/kg dry	10	12/01/23 21:11	EPA 6020B	PRO
Vanadium	74.5	---	2.11	mg/kg dry	10	12/01/23 21:11	EPA 6020B	PRO
Zinc	33.0	---	4.22	mg/kg dry	10	12/01/23 21:11	EPA 6020B	PRO

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ANALYTICAL SAMPLE RESULTS

Percent Dry Weight								
Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWN-DU-1A (A3K1557-02)				Matrix: Soil		Batch: 23K1089		PRO
% Solids	98.7	---	1.00	%	1	12/01/23 07:14	EPA 8000D	
FWN-DU-1B (A3K1557-04)				Matrix: Soil		Batch: 23K1089		PRO
% Solids	99.0	---	1.00	%	1	12/01/23 07:14	EPA 8000D	
FWN-DU-1C (A3K1557-06)				Matrix: Soil		Batch: 23K1089		PRO
% Solids	99.2	---	1.00	%	1	12/01/23 07:14	EPA 8000D	
FWN-DU-2 (A3K1557-08)				Matrix: Soil		Batch: 23K1089		PRO
% Solids	99.4	---	1.00	%	1	12/01/23 07:14	EPA 8000D	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23L0072 - EPA 3546 (Fuels)						Soil						
Blank (23L0072-BLK1)		Prepared: 12/04/23 04:50 Analyzed: 12/04/23 20:21										
<u>NWTPH-Dx</u>												
Diesel	ND	---	20.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	---	40.0	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 81 %</i>			<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>					
LCS (23L0072-BS1)		Prepared: 12/04/23 04:50 Analyzed: 12/04/23 20:42										
<u>NWTPH-Dx</u>												
Diesel	110	---	20.0	mg/kg wet	1	125	---	88	38 - 132%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 88 %</i>			<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>					

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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PBS Engineering and Environmental	Project: Bull Run Filtration Facility	
4412 S Corbett Ave	Project Number: 24433.000	Report ID:
Portland, OR 97239	Project Manager: Nick Thornton	A3K1557 - 12 11 23 0909

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23L0030 - EPA 3546/3640A (GPC)						Soil						
Blank (23L0030-BLK1)						Prepared: 12/01/23 04:55 Analyzed: 12/06/23 17:16						C-05
EPA 8081B												
Aldrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
alpha-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
beta-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
delta-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
gamma-BHC (Lindane)	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
cis-Chlordane	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
trans-Chlordane	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
4,4'-DDD	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
4,4'-DDE	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
4,4'-DDT	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Dieldrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endosulfan I	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endosulfan II	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endosulfan sulfate	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endrin aldehyde	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endrin ketone	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Heptachlor	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Heptachlor epoxide	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Methoxychlor	ND	---	0.00600	mg/kg wet	1	---	---	---	---	---	---	
Chlordane (Technical)	ND	---	0.0600	mg/kg wet	1	---	---	---	---	---	---	
Toxaphene (Total)	ND	---	0.0600	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 75 %</i>	<i>Limits: 42-129 %</i>		<i>Dilution: 1x</i>						
<i>Decachlorobiphenyl (Surr)</i>			<i>83 %</i>	<i>55-130 %</i>		<i>"</i>						

LCS (23L0030-BS1)						Prepared: 12/01/23 04:55 Analyzed: 12/06/23 17:33						C-05
EPA 8081B												
Aldrin	0.0378	---	0.00200	mg/kg wet	1	0.0500	---	76	45 - 136%	---	---	
alpha-BHC	0.0372	---	0.00200	mg/kg wet	1	0.0500	---	74	45 - 137%	---	---	
beta-BHC	0.0356	---	0.00200	mg/kg wet	1	0.0500	---	71	50 - 136%	---	---	
delta-BHC	0.0395	---	0.00200	mg/kg wet	1	0.0500	---	79	47 - 139%	---	---	
gamma-BHC (Lindane)	0.0391	---	0.00200	mg/kg wet	1	0.0500	---	78	49 - 135%	---	---	
cis-Chlordane	0.0433	---	0.00200	mg/kg wet	1	0.0500	---	87	54 - 133%	---	---	

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PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23L0030 - EPA 3546/3640A (GPC)						Soil						
LCS (23L0030-BS1)	Prepared: 12/01/23 04:55 Analyzed: 12/06/23 17:33											C-05
trans-Chlordane	0.0433	---	0.00200	mg/kg wet	1	0.0500	---	87	53 - 135%	---	---	
4,4'-DDD	0.0459	---	0.00200	mg/kg wet	1	0.0500	---	92	56 - 139%	---	---	
4,4'-DDE	0.0453	---	0.00200	mg/kg wet	1	0.0500	---	91	56 - 134%	---	---	
4,4'-DDT	0.0489	---	0.00200	mg/kg wet	1	0.0500	---	98	50 - 141%	---	---	
Dieldrin	0.0459	---	0.00200	mg/kg wet	1	0.0500	---	92	56 - 136%	---	---	
Endosulfan I	0.0455	---	0.00200	mg/kg wet	1	0.0500	---	91	53 - 132%	---	---	
Endosulfan II	0.0466	---	0.00200	mg/kg wet	1	0.0500	---	93	53 - 134%	---	---	
Endosulfan sulfate	0.0476	---	0.00200	mg/kg wet	1	0.0500	---	95	55 - 136%	---	---	
Endrin	0.0545	---	0.00200	mg/kg wet	1	0.0500	---	109	57 - 140%	---	---	
Endrin aldehyde	0.0432	---	0.00200	mg/kg wet	1	0.0500	---	86	35 - 137%	---	---	
Endrin ketone	0.0478	---	0.00200	mg/kg wet	1	0.0500	---	96	55 - 136%	---	---	
Heptachlor	0.0426	---	0.00200	mg/kg wet	1	0.0500	---	85	47 - 136%	---	---	
Heptachlor epoxide	0.0441	---	0.00200	mg/kg wet	1	0.0500	---	88	52 - 136%	---	---	
Methoxychlor	0.0580	---	0.00600	mg/kg wet	1	0.0500	---	116	52 - 143%	---	---	
<i>Surr: 2,4,5,6-TCMX (Surr) Recovery: 64 % Limits: 42-129 % Dilution: 1x</i> <i>Decachlorobiphenyl (Surr) 77 % 55-130 % "</i>												

Duplicate (23L0030-DUP1) Prepared: 12/01/23 04:55 Analyzed: 12/06/23 18:08 **C-05, PRO**

QC Source Sample: FWN-DU-1A (A3K1557-02RE1)												
EPA 8081B												
Aldrin	ND	---	0.00198	mg/kg dry	1	---	ND	---	---	---	30%	
alpha-BHC	ND	---	0.00198	mg/kg dry	1	---	ND	---	---	---	30%	
beta-BHC	ND	---	0.00198	mg/kg dry	1	---	ND	---	---	---	30%	
delta-BHC	ND	---	0.00198	mg/kg dry	1	---	ND	---	---	---	30%	
gamma-BHC (Lindane)	ND	---	0.00198	mg/kg dry	1	---	ND	---	---	---	30%	
cis-Chlordane	ND	---	0.00198	mg/kg dry	1	---	ND	---	---	---	30%	
trans-Chlordane	ND	---	0.00198	mg/kg dry	1	---	ND	---	---	---	30%	
4,4'-DDD	ND	---	0.00198	mg/kg dry	1	---	ND	---	---	---	30%	
4,4'-DDE	0.0251	---	0.00198	mg/kg dry	1	---	0.0232	---	---	8	30%	
4,4'-DDT	0.0250	---	0.00198	mg/kg dry	1	---	0.0216	---	---	14	30%	
Dieldrin	0.0125	---	0.00198	mg/kg dry	1	---	0.0115	---	---	8	30%	
Endosulfan I	ND	---	0.00198	mg/kg dry	1	---	ND	---	---	---	30%	
Endosulfan II	ND	---	0.00198	mg/kg dry	1	---	ND	---	---	---	30%	
Endosulfan sulfate	ND	---	0.00218	mg/kg dry	1	---	ND	---	---	---	30%	R-02

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--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes	
Batch 23L0030 - EPA 3546/3640A (GPC)						Soil							
Duplicate (23L0030-DUP1)		Prepared: 12/01/23 04:55 Analyzed: 12/06/23 18:08						C-05, PRO					
QC Source Sample: FWN-DU-1A (A3K1557-02RE1)													
Endrin	ND	---	0.00198	mg/kg dry	1	---	ND	---	---	---	30%		
Endrin aldehyde	ND	---	0.00198	mg/kg dry	1	---	ND	---	---	---	30%		
Endrin ketone	ND	---	0.00198	mg/kg dry	1	---	ND	---	---	---	30%		
Heptachlor	ND	---	0.00198	mg/kg dry	1	---	ND	---	---	---	30%		
Heptachlor epoxide	ND	---	0.00198	mg/kg dry	1	---	ND	---	---	---	30%		
Methoxychlor	ND	---	0.00594	mg/kg dry	1	---	ND	---	---	---	30%		
Chlordane (Technical)	ND	---	0.0594	mg/kg dry	1	---	ND	---	---	---	30%		
Toxaphene (Total)	ND	---	0.0594	mg/kg dry	1	---	ND	---	---	---	30%		
<i>Surr: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 74 %</i>		<i>Limits: 42-129 %</i>		<i>Dilution: 1x</i>							
<i>Decachlorobiphenyl (Surr)</i>		<i>95 %</i>		<i>55-130 %</i>		<i>"</i>							

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23L0070 - EPA 3546						Soil						
Blank (23L0070-BLK1)		Prepared: 12/04/23 04:42 Analyzed: 12/04/23 18:00										
<u>EPA 8270E OPPs</u>												
Azinphos methyl (Guthion)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Chlorpyrifos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Coumaphos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Demeton O	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Demeton S	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Diazinon	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Dichlorvos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Dimethoate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Disulfoton	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
EPN	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Ethoprop	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Fensulfothion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Fenthion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Malathion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Merphos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Methyl parathion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Mevinphos (Phosdrin)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Monocrotophos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Naled (Dibrom)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Parathion, ethyl	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Phorate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Ronnel (Fenchlorphos)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Sulfotep	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Sulprofos (Bolstar)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
TEPP	ND	---	0.200	mg/kg wet	1	---	---	---	---	---	---	---
Tetrachlorvinphos (Rabon)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Tokuthion (Prothiofos)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Trichloronate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
<i>Surr: Tributyl phosphate (Surr)</i>		<i>Recovery: 81 %</i>		<i>Limits: 10-136 %</i>		<i>Dilution: 1x</i>						
<i>Triphenyl phosphate (Surr)</i>		<i>84 %</i>		<i>34-121 %</i>		<i>"</i>						

LCS (23L0070-BS1)	Prepared: 12/04/23 04:42 Analyzed: 12/04/23 18:35
<u>EPA 8270E OPPs</u>	

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ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23L0070 - EPA 3546						Soil						
LCS (23L0070-BS1)			Prepared: 12/04/23 04:42 Analyzed: 12/04/23 18:35									
Azinphos methyl (Guthion)	0.391	---	0.0500	mg/kg wet	1	0.400	---	98	38 - 156%	---	---	
Chlorpyrifos	0.377	---	0.0500	mg/kg wet	1	0.400	---	94	47 - 140%	---	---	
Coumaphos	0.383	---	0.0500	mg/kg wet	1	0.400	---	96	37 - 160%	---	---	
Demeton O	0.178	---	0.0500	mg/kg wet	1	0.184	---	97	66 - 127%	---	---	
Demeton S	0.176	---	0.0500	mg/kg wet	1	0.194	---	91	70 - 121%	---	---	
Diazinon	0.400	---	0.0500	mg/kg wet	1	0.400	---	100	42 - 134%	---	---	
Dichlorvos	0.392	---	0.0500	mg/kg wet	1	0.400	---	98	39 - 142%	---	---	
Dimethoate	0.318	---	0.0500	mg/kg wet	1	0.400	---	79	16 - 139%	---	---	
Disulfoton	0.374	---	0.0500	mg/kg wet	1	0.400	---	94	28 - 145%	---	---	
EPN	0.429	---	0.0500	mg/kg wet	1	0.400	---	107	44 - 137%	---	---	
Ethoprop	0.371	---	0.0500	mg/kg wet	1	0.400	---	93	47 - 128%	---	---	
Fensulfothion	0.408	---	0.0500	mg/kg wet	1	0.400	---	102	27 - 147%	---	---	
Fenthion	0.404	---	0.0500	mg/kg wet	1	0.400	---	101	44 - 134%	---	---	
Malathion	0.355	---	0.0500	mg/kg wet	1	0.400	---	89	46 - 137%	---	---	
Merphos	0.413	---	0.0500	mg/kg wet	1	0.400	---	103	66 - 131%	---	---	
Methyl parathion	0.424	---	0.0500	mg/kg wet	1	0.400	---	106	49 - 138%	---	---	
Mevinphos (Phosdrin)	0.420	---	0.0500	mg/kg wet	1	0.400	---	105	12 - 176%	---	---	
Monocrotophos	0.124	---	0.0500	mg/kg wet	1	0.400	---	31	10 - 153%	---	---	
Naled (Dibrom)	0.382	---	0.0500	mg/kg wet	1	0.400	---	96	10 - 174%	---	---	
Parathion, ethyl	0.415	---	0.0500	mg/kg wet	1	0.400	---	104	50 - 139%	---	---	
Phorate	0.377	---	0.0500	mg/kg wet	1	0.400	---	94	23 - 142%	---	---	
Ronnel (Fenclorphos)	0.401	---	0.0500	mg/kg wet	1	0.400	---	100	45 - 138%	---	---	
Sulfotep	0.375	---	0.0500	mg/kg wet	1	0.400	---	94	52 - 126%	---	---	
Sulprofos (Bolstar)	0.361	---	0.0500	mg/kg wet	1	0.400	---	90	48 - 139%	---	---	
TEPP	0.173	---	0.100	mg/kg wet	1	0.400	---	43	16 - 126%	---	---	Q-41
Tetrachlorvinphos (Rabon)	0.414	---	0.0500	mg/kg wet	1	0.400	---	104	54 - 129%	---	---	
Tokuthion (Prothiofos)	0.380	---	0.0500	mg/kg wet	1	0.400	---	95	45 - 136%	---	---	
Trichloronate	0.379	---	0.0500	mg/kg wet	1	0.400	---	95	37 - 140%	---	---	
Surr: Tributyl phosphate (Surr)		Recovery: 95 %		Limits: 10-136 %		Dilution: 1x						
Triphenyl phosphate (Surr)		93 %		34-121 %		"						

Duplicate (23L0070-DUP1) Prepared: 12/04/23 04:42 Analyzed: 12/04/23 19:46 **PRO**

QC Source Sample: FWN-DU-1A (A3K1557-02)
EPA 8270E OPPs

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ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes	
Batch 23L0070 - EPA 3546						Soil							
Duplicate (23L0070-DUP1)		Prepared: 12/04/23 04:42 Analyzed: 12/04/23 19:46						PRO					
QC Source Sample: FWN-DU-1A (A3K1557-02)													
Azinphos methyl (Guthion)	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Chlorpyrifos	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Coumaphos	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Demeton O	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Demeton S	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Diazinon	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Dichlorvos	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Dimethoate	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Disulfoton	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
EPN	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Ethoprop	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Fensulfothion	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Fenthion	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Malathion	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Merphos	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Methyl parathion	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Mevinphos (Phosdrin)	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Monocrotophos	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Naled (Dibrom)	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Parathion, ethyl	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Phorate	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Ronnel (Fenchlorphos)	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Sulfotep	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Sulprofos (Bolstar)	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
TEPP	ND	---	0.202	mg/kg dry	1	---	ND	---	---	---	30%		
Tetrachlorvinphos (Rabon)	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
Tokuthion (Prothiofos)	ND	---	0.0635	mg/kg dry	1	---	ND	---	---	---	30%	R-02	
Trichloronate	ND	---	0.0504	mg/kg dry	1	---	ND	---	---	---	30%		
<i>Surr: Tributyl phosphate (Surr)</i>		<i>Recovery: 41 %</i>		<i>Limits: 10-136 %</i>		<i>Dilution: 1x</i>							
<i>Triphenyl phosphate (Surr)</i>		<i>82 %</i>		<i>34-121 %</i>		<i>"</i>							

Matrix Spike (23L0070-MS1) Prepared: 12/04/23 04:42 Analyzed: 12/04/23 20:56 **PRO**

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
---	--	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes	
Batch 23L0070 - EPA 3546						Soil							
Matrix Spike (23L0070-MS1)			Prepared: 12/04/23 04:42 Analyzed: 12/04/23 20:56						PRO				
QC Source Sample: FWN-DU-2 (A3K1557-08)													
EPA 8270E OPPs													
Azinphos methyl (Guthion)	0.217	---	0.0479	mg/kg dry	1	0.383	ND	57	38 - 156%	---	---		
Chlorpyrifos	0.267	---	0.0479	mg/kg dry	1	0.383	ND	70	47 - 140%	---	---		
Coumaphos	0.326	---	0.0479	mg/kg dry	1	0.383	ND	85	37 - 160%	---	---		
Demeton O	0.103	---	0.0479	mg/kg dry	1	0.176	ND	58	66 - 127%	---	---	Q-01	
Demeton S	ND	---	0.0479	mg/kg dry	1	0.186	ND	16	70 - 121%	---	---	Q-01	
Diazinon	ND	---	0.0479	mg/kg dry	1	0.383	ND		42 - 134%	---	---	Q-01	
Dichlorvos	ND	---	0.0479	mg/kg dry	1	0.383	ND		39 - 142%	---	---	Q-01	
Dimethoate	ND	---	0.0479	mg/kg dry	1	0.383	ND	8	16 - 139%	---	---	Q-01	
Disulfoton	0.320	---	0.0479	mg/kg dry	1	0.383	ND	83	28 - 145%	---	---		
EPN	0.396	---	0.0479	mg/kg dry	1	0.383	ND	103	44 - 137%	---	---		
Ethoprop	0.0820	---	0.0479	mg/kg dry	1	0.383	ND	21	47 - 128%	---	---	Q-01	
Fensulfothion	0.0589	---	0.0479	mg/kg dry	1	0.383	ND	15	27 - 147%	---	---	Q-01	
Fenthion	0.331	---	0.0479	mg/kg dry	1	0.383	ND	86	44 - 134%	---	---		
Malathion	0.157	---	0.0479	mg/kg dry	1	0.383	ND	41	46 - 137%	---	---	Q-01	
Merphos	0.207	---	0.0479	mg/kg dry	1	0.383	ND	54	66 - 131%	---	---	Q-01	
Methyl parathion	0.367	---	0.0479	mg/kg dry	1	0.383	ND	96	49 - 138%	---	---		
Mevinphos (Phosdrin)	ND	---	0.0479	mg/kg dry	1	0.383	ND		12 - 176%	---	---	Q-01	
Monocrotophos	ND	---	0.0479	mg/kg dry	1	0.383	ND	7	10 - 153%	---	---	Q-01	
Naled (Dibrom)	ND	---	0.0479	mg/kg dry	1	0.383	ND		10 - 174%	---	---	Q-01	
Parathion, ethyl	0.367	---	0.0479	mg/kg dry	1	0.383	ND	96	50 - 139%	---	---		
Phorate	0.281	---	0.0479	mg/kg dry	1	0.383	ND	73	23 - 142%	---	---		
Ronnel (Fenchlorphos)	0.321	---	0.0479	mg/kg dry	1	0.383	ND	84	45 - 138%	---	---		
Sulfotep	0.200	---	0.0479	mg/kg dry	1	0.383	ND	52	52 - 126%	---	---		
Sulprofos (Bolstar)	0.333	---	0.0479	mg/kg dry	1	0.383	ND	87	48 - 139%	---	---		
TEPP	ND	---	0.192	mg/kg dry	1	0.383	ND		16 - 126%	---	---	Q-01, Q-41	
Tetrachlorvinphos (Rabon)	0.103	---	0.0479	mg/kg dry	1	0.383	ND	27	54 - 129%	---	---	Q-01	
Tokuthion (Prothiofos)	0.322	---	0.0479	mg/kg dry	1	0.383	ND	84	45 - 136%	---	---		
Trichloronate	0.283	---	0.0479	mg/kg dry	1	0.383	ND	74	37 - 140%	---	---		
<i>Surr: Tributyl phosphate (Surr)</i>		<i>Recovery: 18 %</i>		<i>Limits: 10-136 %</i>		<i>Dilution: 1x</i>							
<i>Triphenyl phosphate (Surr)</i>		<i>43 %</i>		<i>34-121 %</i>		<i>"</i>							

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23L0023 - EPA 3051A						Soil						
Blank (23L0023-BLK1)		Prepared: 12/01/23 09:57 Analyzed: 12/01/23 18:31										
<u>EPA 6020B</u>												
Antimony	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Arsenic	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Barium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Beryllium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	
Cadmium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	
Chromium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Cobalt	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Copper	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	
Mercury	ND	---	0.0800	mg/kg wet	10	---	---	---	---	---	---	
Molybdenum	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Nickel	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	
Selenium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Silver	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	
Thallium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	
Vanadium	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	
Zinc	ND	---	4.00	mg/kg wet	10	---	---	---	---	---	---	
Blank (23L0023-BLK3)		Prepared: 12/01/23 09:57 Analyzed: 12/01/23 19:59										
<u>EPA 6020B</u>												
Lead	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	Q-16
LCS (23L0023-BS1)		Prepared: 12/01/23 09:57 Analyzed: 12/01/23 20:09										
<u>EPA 6020B</u>												
Antimony	25.0	---	1.00	mg/kg wet	10	25.0	---	100	80 - 120%	---	---	
Arsenic	48.8	---	1.00	mg/kg wet	10	50.0	---	98	80 - 120%	---	---	
Barium	50.3	---	1.00	mg/kg wet	10	50.0	---	101	80 - 120%	---	---	
Beryllium	25.0	---	0.200	mg/kg wet	10	25.0	---	100	80 - 120%	---	---	
Cadmium	50.3	---	0.200	mg/kg wet	10	50.0	---	101	80 - 120%	---	---	
Chromium	50.0	---	1.00	mg/kg wet	10	50.0	---	100	80 - 120%	---	---	
Cobalt	50.1	---	1.00	mg/kg wet	10	50.0	---	100	80 - 120%	---	---	
Copper	51.7	---	2.00	mg/kg wet	10	50.0	---	103	80 - 120%	---	---	
Lead	50.5	---	0.200	mg/kg wet	10	50.0	---	101	80 - 120%	---	---	
Mercury	0.988	---	0.0800	mg/kg wet	10	1.00	---	99	80 - 120%	---	---	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23L0023 - EPA 3051A												
Soil												
LCS (23L0023-BS1)												
Prepared: 12/01/23 09:57 Analyzed: 12/01/23 20:09												
Molybdenum	24.6	---	1.00	mg/kg wet	10	25.0	---	99	80 - 120%	---	---	
Nickel	51.4	---	2.00	mg/kg wet	10	50.0	---	103	80 - 120%	---	---	
Selenium	24.0	---	1.00	mg/kg wet	10	25.0	---	96	80 - 120%	---	---	
Silver	27.0	---	0.200	mg/kg wet	10	25.0	---	108	80 - 120%	---	---	
Thallium	24.7	---	0.200	mg/kg wet	10	25.0	---	99	80 - 120%	---	---	
Vanadium	49.6	---	2.00	mg/kg wet	10	50.0	---	99	80 - 120%	---	---	
Zinc	50.8	---	4.00	mg/kg wet	10	50.0	---	102	80 - 120%	---	---	

Duplicate (23L0023-DUP1)												
Prepared: 12/01/23 09:57 Analyzed: 12/01/23 20:42												
QC Source Sample: FWN-DU-1A (A3K1557-02)												
EPA 6020B												
Antimony	ND	---	1.02	mg/kg dry	10	---	ND	---	---	---	20%	PRO
Arsenic	3.74	---	1.02	mg/kg dry	10	---	3.40	---	---	10	20%	PRO
Barium	147	---	1.02	mg/kg dry	10	---	142	---	---	3	20%	PRO
Beryllium	0.730	---	0.204	mg/kg dry	10	---	0.732	---	---	0.2	20%	PRO
Cadmium	ND	---	0.204	mg/kg dry	10	---	0.125	---	---	***	20%	PRO
Chromium	28.9	---	1.02	mg/kg dry	10	---	25.9	---	---	11	20%	PRO
Cobalt	11.1	---	1.02	mg/kg dry	10	---	10.6	---	---	5	20%	PRO
Copper	17.0	---	2.04	mg/kg dry	10	---	15.4	---	---	10	20%	PRO
Lead	15.8	---	0.204	mg/kg dry	10	---	15.0	---	---	5	20%	PRO
Mercury	ND	---	0.0817	mg/kg dry	10	---	0.158	---	---	***	20%	PRO, Q-05
Molybdenum	ND	---	1.02	mg/kg dry	10	---	ND	---	---	---	20%	PRO
Nickel	14.3	---	2.04	mg/kg dry	10	---	11.4	---	---	23	20%	PRO, Q-17
Selenium	ND	---	1.02	mg/kg dry	10	---	ND	---	---	---	20%	PRO
Silver	ND	---	0.204	mg/kg dry	10	---	ND	---	---	---	20%	PRO
Thallium	ND	---	0.204	mg/kg dry	10	---	0.115	---	---	***	20%	PRO
Vanadium	72.3	---	2.04	mg/kg dry	10	---	67.5	---	---	7	20%	PRO
Zinc	68.3	---	4.09	mg/kg dry	10	---	60.8	---	---	12	20%	PRO

Matrix Spike (23L0023-MS1)												
Prepared: 12/01/23 09:57 Analyzed: 12/01/23 20:57												
QC Source Sample: FWN-DU-1A (A3K1557-02)												
EPA 6020B												
Antimony	23.2	---	1.03	mg/kg dry	10	25.7	ND	90	75 - 125%	---	---	PRO
Arsenic	53.3	---	1.03	mg/kg dry	10	51.4	3.40	97	75 - 125%	---	---	PRO

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ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23L0023 - EPA 3051A						Soil						
Matrix Spike (23L0023-MS1)			Prepared: 12/01/23 09:57 Analyzed: 12/01/23 20:57									
QC Source Sample: FWN-DU-1A (A3K1557-02)												
Barium	206	---	1.03	mg/kg dry	10	51.4	142	124	75 - 125%	---	---	PRO
Beryllium	26.4	---	0.206	mg/kg dry	10	25.7	0.732	100	75 - 125%	---	---	PRO
Cadmium	52.0	---	0.206	mg/kg dry	10	51.4	0.125	101	75 - 125%	---	---	PRO
Chromium	82.8	---	1.03	mg/kg dry	10	51.4	25.9	111	75 - 125%	---	---	PRO
Cobalt	63.3	---	1.03	mg/kg dry	10	51.4	10.6	103	75 - 125%	---	---	PRO
Copper	72.0	---	2.06	mg/kg dry	10	51.4	15.4	110	75 - 125%	---	---	PRO
Lead	67.4	---	0.206	mg/kg dry	10	51.4	15.0	102	75 - 125%	---	---	PRO
Mercury	1.05	---	0.0822	mg/kg dry	10	1.03	0.158	87	75 - 125%	---	---	PRO
Molybdenum	25.6	---	1.03	mg/kg dry	10	25.7	ND	99	75 - 125%	---	---	PRO
Nickel	72.0	---	2.06	mg/kg dry	10	51.4	11.4	118	75 - 125%	---	---	PRO
Selenium	25.0	---	1.03	mg/kg dry	10	25.7	ND	97	75 - 125%	---	---	PRO
Silver	27.3	---	0.206	mg/kg dry	10	25.7	ND	106	75 - 125%	---	---	PRO
Thallium	24.9	---	0.206	mg/kg dry	10	25.7	0.115	96	75 - 125%	---	---	PRO
Vanadium	126	---	2.06	mg/kg dry	10	51.4	67.5	114	75 - 125%	---	---	PRO
Zinc	133	---	4.11	mg/kg dry	10	51.4	60.8	141	75 - 125%	---	---	PRO

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Jason Woodcock, Project Manager



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<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1089 - Total Solids (Dry Weight) - 2022						Soil						

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
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SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Prep: EPA 3546 (Fuels)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23L0072</u>							
A3K1557-02	Soil	NWTPH-Dx	11/21/23 09:30	12/04/23 04:50	10.66g/5mL	10g/5mL	0.94
A3K1557-04	Soil	NWTPH-Dx	11/21/23 10:00	12/04/23 04:50	10.78g/5mL	10g/5mL	0.93
A3K1557-06	Soil	NWTPH-Dx	11/21/23 10:30	12/04/23 04:50	10.46g/5mL	10g/5mL	0.96
A3K1557-08	Soil	NWTPH-Dx	11/21/23 11:00	12/04/23 04:50	10.34g/5mL	10g/5mL	0.97

Organochlorine Pesticides by EPA 8081B

Prep: EPA 3546/3640A (GPC)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23L0030</u>							
A3K1557-02RE1	Soil	EPA 8081B	11/21/23 09:30	12/01/23 04:55	10.34g/10mL	10g/5mL	1.93
A3K1557-04RE1	Soil	EPA 8081B	11/21/23 10:00	12/01/23 04:55	10.13g/10mL	10g/5mL	1.97
A3K1557-06RE1	Soil	EPA 8081B	11/21/23 10:30	12/01/23 04:55	10.33g/10mL	10g/5mL	1.94
A3K1557-08RE1	Soil	EPA 8081B	11/21/23 11:00	12/01/23 04:55	10.01g/10mL	10g/5mL	2.00

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Prep: EPA 3546					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23L0070</u>							
A3K1557-02	Soil	EPA 8270E OPPs	11/21/23 09:30	12/04/23 04:42	10.12g/5mL	10g/5mL	0.99
A3K1557-04	Soil	EPA 8270E OPPs	11/21/23 10:00	12/04/23 04:42	10.32g/5mL	10g/5mL	0.97
A3K1557-06	Soil	EPA 8270E OPPs	11/21/23 10:30	12/04/23 04:42	10.09g/5mL	10g/5mL	0.99
A3K1557-08	Soil	EPA 8270E OPPs	11/21/23 11:00	12/04/23 04:42	10.14g/5mL	10g/5mL	0.99

Total Metals by EPA 6020B (ICPMS)

Prep: EPA 3051A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23L0023</u>							
A3K1557-02	Soil	EPA 6020B	11/21/23 09:30	12/01/23 09:57	0.501g/50mL	0.5g/50mL	1.00
A3K1557-04	Soil	EPA 6020B	11/21/23 10:00	12/01/23 09:57	0.47g/50mL	0.5g/50mL	1.06
A3K1557-06	Soil	EPA 6020B	11/21/23 10:30	12/01/23 09:57	0.494g/50mL	0.5g/50mL	1.01
A3K1557-08	Soil	EPA 6020B	11/21/23 11:00	12/01/23 09:57	0.477g/50mL	0.5g/50mL	1.05

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Jason Woodcock, Project Manager



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<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
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SAMPLE PREPARATION INFORMATION

Percent Dry Weight

Prep: Total Solids (Dry Weight) - 2022

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 23K1089</u>							
A3K1557-02	Soil	EPA 8000D	11/21/23 09:30	11/30/23 18:50			NA
A3K1557-04	Soil	EPA 8000D	11/21/23 10:00	11/30/23 18:50			NA
A3K1557-06	Soil	EPA 8000D	11/21/23 10:30	11/30/23 18:50			NA
A3K1557-08	Soil	EPA 8000D	11/21/23 11:00	11/30/23 18:50			NA

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QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

- C-05** Extract has undergone a GPC (Gel-Permeation Chromatography) cleanup per EPA 3640A. Reporting levels may be raised due to dilution necessary for cleanup. Sample Final Volume includes the GPC dilution factor, see the Prep page for details.
- F-03** The result for this hydrocarbon range is elevated due to the presence of individual analyte peaks in the quantitation range that are not representative of the fuel pattern reported.
- PRO** Sample has undergone sample processing prior to extraction and analysis.
- Q-01** Spike recovery and/or RPD is outside acceptance limits.
- Q-05** Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
- Q-16** Reanalysis of an original Batch QC sample.
- Q-17** RPD between original and duplicate sample, or spike duplicates, is outside of established control limits.
- Q-41** Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
- Q-42** Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)
- R-02** The Reporting Limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported.
- RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as "dry", "wet", or " " (blank) designation.
- "dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.
- "wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
- " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) are not included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to 1/2 the Reporting Limit (RL).
-For Blank hits falling between 1/2 the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1557 - 12 11 23 0909
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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Table with project details: PBS Engineering and Environmental, Project: Bull Run Filtration Facility, Project Number: 24433.000, Project Manager: Nick Thornton, Report ID: A3K1557 - 12 11 23 0909

LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation)
EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Table header with columns: Matrix, Analysis, TNI_ID, Analyte, TNI_ID, Accreditation

All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

Handwritten signature of Jason Woodcock

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Jason Woodcock, Project Manager

PBS Engineering and Environmental Project: **Bull Run Filtration Facility**
4412 S Corbett Ave Project Number: **24433.000**
Portland, OR 97239 Project Manager: **Nick Thornton** **Report ID:**
A3K1557 - 12 11 23 0909

APEX LABS 6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323 Lab # **A3K1557** COC 1 of 1

CHAIN OF CUSTODY

Company: PBS	Project Mgr: Nick Thornton	Project Name: Bull Run	Project #: 24433.000																							
Address: Portland, OR	Phone: 503-417-7340	Email: nick.thornton@pbs.com	PO #																							
Sampled by: Caitlin Johnson	ANALYSIS REQUEST																									
Site Location:																										
State: OR																										
County: Multnomah																										
SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-ACID	NWTPH-D	NWTPH-G	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	AL, Sb, As, Ba, Be, Cd, Cr, Cu, Ni, Pb, Se, Ag, Na, TL, V, Zn	TOTAL DISS. TC/P	TC/P Metals (8)	Organic Metals	EOA Metals (82)	Chlorinated HCBs	EPA Metals (17)	EPA Metals (17) + 17 As Metals (EPA 4000.1000)	
FWN-DU-1A	11/15/23	1030	S	1		X								X												
FWN-DU-1B	11/15/23	1000	L	1		X								X												
FWN-DU-1C	11/15/23	1030	L	1		X								X												
FWN-DU-2	11/15/23	1100	L	1		X								X												

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day 2 Day 3 Day 5 Day Standard Other: _____

SPECIAL INSTRUCTIONS:
RSM prep, please run all samplers for the following: NWTPH-D, organochlorine pesticides (EPA 8081A), organophosphorus pesticides (EPA 8270), chlorinated hydrocarbons (HCBs), & 17 As Metals (EPA 4000.1000)

RELINQUISHED BY:		RECEIVED BY:	
Signature: <i>[Signature]</i>	Date: 11/24/23	Signature: <i>[Signature]</i>	Date: 11/21/23
Printed Name: Caitlin Johnson	Time: 1525	Printed Name: Rachael Pratt	Time: 1525
Company: PBS		Company: APEX	

Form Y-002 R-00



ANALYTICAL REPORT

Apex Laboratories, LLC

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503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u>	Project: <u>Bull Run Filtration Facility</u>	
4412 S Corbett Ave	Project Number: <u>24433.000</u>	Report ID:
Portland, OR 97239	Project Manager: <u>Nick Thornton</u>	<u>A3K1557 - 12 11 23 0909</u>

APEX LABS COOLER RECEIPT FORM

Client: PBS Element WO#: A3 K1557

Project/Project #: Bull Run / 24433.000

Delivery Info:

Date/time received: 11/21/23 @ 15:25 By: RHP
 Delivered by: Apex Client XESS FedEx UPS Radio Morgan SDS Evergreen Other

Cooler Inspection Date/time inspected: 11/21/23 @ 15:25 By: RHP

Chain of Custody included? Yes No
 Signed/dated by client? Yes No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>0.6</u>						
Custody seals? (Y/N)	<u>N</u>						
Received on ice? (Y/N)	<u>Y</u>						
Temp. blanks? (Y/N)	<u>N</u>						
Ice type: (Gel/Real/Other)	<u>REAL</u>						
Condition (In/Out):	<u>IN</u>						

Cooler out of temp? (Y/N) Possible reason why: _____
 Green dots applied to out of temperature samples? Yes No
 Out of temperature samples form initiated? Yes No

Sample Inspection: Date/time inspected: 11/21/23 @ 16:37 By: JKM

All samples intact? Yes No Comments: _____

Bottle labels/COCs agree? Yes No Comments: _____

COC/container discrepancies form initiated? Yes No

Containers/volumes received appropriate for analysis? Yes No Comments: 1 Gallon Jars are 1/4 full.

Do VOA vials have visible headspace? Yes No NA

Comments: _____

Water samples: pH checked: Yes No NA pH appropriate? Yes No NA pH ID: _____

Comments: _____

Additional information: _____

Labeled by: JKM Witness: AW Cooler Inspected by: JKM

Form Y-003 R-01

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

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ANALYTICAL REPORT

PREPARED FOR

Attn: Jason Woodcock
Apex Laboratories LLC
6700 SW Sandburg St.
Tigard, Oregon 97223

Generated 12/8/2023 7:02:58 PM

JOB DESCRIPTION

A3K1557

JOB NUMBER

570-162733-1

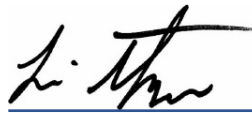
Eurofins Calscience

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 Calscience Project Manager.

Authorization



Authorized for release by
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Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Detection Summary	6
Client Sample Results	7
Surrogate Summary	9
QC Sample Results	10
QC Association Summary	12
Lab Chronicle	13
Certification Summary	14
Method Summary	15
Sample Summary	16
Chain of Custody	17
Receipt Checklists	18

Definitions/Glossary

Client: Apex Laboratories LLC
Project/Site: A3K1557

Job ID: 570-162733-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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

Case Narrative

Client: Apex Laboratories LLC
Project/Site: A3K1557

Job ID: 570-162733-1

Job ID: 570-162733-1

Laboratory: Eurofins Calscience

Narrative

Job Narrative 570-162733-1

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 are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample 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 12/1/2023 10:15 AM. 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 1.5°C

Herbicides

Method 8151A: The continuing calibration verification (CCV) associated with 570-390087 recovered high and outside the control limits for Dalapon on one column. Results are confirmed on both columns and reported from the passing column. The associated samples are: FWN-DU-1A (570-162733-1), FWN-DU-1B (570-162733-2), FWN-DU-1C (570-162733-3) and FWN-DU-2 (570-162733-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Apex Laboratories LLC
Project/Site: A3K1557

Job ID: 570-162733-1

Client Sample ID: FWN-DU-1A

Lab Sample ID: 570-162733-1

No Detections.

Client Sample ID: FWN-DU-1B

Lab Sample ID: 570-162733-2

No Detections.

Client Sample ID: FWN-DU-1C

Lab Sample ID: 570-162733-3

No Detections.

Client Sample ID: FWN-DU-2

Lab Sample ID: 570-162733-4

No Detections.

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This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1557

Job ID: 570-162733-1

Method: SW846 8151A - Herbicides (GC)

Client Sample ID: FWN-DU-1A
Date Collected: 11/21/23 09:30
Date Received: 12/01/23 10:15

Lab Sample ID: 570-162733-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.9	ug/Kg	☼	12/04/23 13:03	12/06/23 20:04	1
2,4,5-TP (Silvex)	ND		10	7.9	ug/Kg	☼	12/04/23 13:03	12/06/23 20:04	1
2,4-D	ND		100	51	ug/Kg	☼	12/04/23 13:03	12/06/23 20:04	1
2,4-DB	ND		100	100	ug/Kg	☼	12/04/23 13:03	12/06/23 20:04	1
Dalapon	ND		260	76	ug/Kg	☼	12/04/23 13:03	12/06/23 20:04	1
Dicamba	ND		10	5.0	ug/Kg	☼	12/04/23 13:03	12/06/23 20:04	1
Dichlorprop	ND		100	52	ug/Kg	☼	12/04/23 13:03	12/06/23 20:04	1
Dinoseb	ND		100	62	ug/Kg	☼	12/04/23 13:03	12/06/23 20:04	1
MCPA	ND		10000	5100	ug/Kg	☼	12/04/23 13:03	12/06/23 20:04	1
MCPPE	ND		10000	6900	ug/Kg	☼	12/04/23 13:03	12/06/23 20:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	20		20 - 163				12/04/23 13:03	12/06/23 20:04	1

Client Sample ID: FWN-DU-1B
Date Collected: 11/21/23 10:00
Date Received: 12/01/23 10:15

Lab Sample ID: 570-162733-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.8	ug/Kg	☼	12/04/23 13:03	12/06/23 20:26	1
2,4,5-TP (Silvex)	ND		10	7.6	ug/Kg	☼	12/04/23 13:03	12/06/23 20:26	1
2,4-D	ND		100	49	ug/Kg	☼	12/04/23 13:03	12/06/23 20:26	1
2,4-DB	ND		100	100	ug/Kg	☼	12/04/23 13:03	12/06/23 20:26	1
Dalapon	ND		250	74	ug/Kg	☼	12/04/23 13:03	12/06/23 20:26	1
Dicamba	ND		10	4.8	ug/Kg	☼	12/04/23 13:03	12/06/23 20:26	1
Dichlorprop	ND		100	50	ug/Kg	☼	12/04/23 13:03	12/06/23 20:26	1
Dinoseb	ND		100	60	ug/Kg	☼	12/04/23 13:03	12/06/23 20:26	1
MCPA	ND		10000	4900	ug/Kg	☼	12/04/23 13:03	12/06/23 20:26	1
MCPPE	ND		10000	6700	ug/Kg	☼	12/04/23 13:03	12/06/23 20:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	23		20 - 163				12/04/23 13:03	12/06/23 20:26	1

Client Sample ID: FWN-DU-1C
Date Collected: 11/21/23 10:30
Date Received: 12/01/23 10:15

Lab Sample ID: 570-162733-3
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.8	ug/Kg	☼	12/04/23 13:03	12/06/23 20:48	1
2,4,5-TP (Silvex)	ND		10	7.7	ug/Kg	☼	12/04/23 13:03	12/06/23 20:48	1
2,4-D	ND		100	50	ug/Kg	☼	12/04/23 13:03	12/06/23 20:48	1
2,4-DB	ND		100	100	ug/Kg	☼	12/04/23 13:03	12/06/23 20:48	1
Dalapon	ND		260	74	ug/Kg	☼	12/04/23 13:03	12/06/23 20:48	1
Dicamba	ND		10	4.9	ug/Kg	☼	12/04/23 13:03	12/06/23 20:48	1
Dichlorprop	ND		100	51	ug/Kg	☼	12/04/23 13:03	12/06/23 20:48	1
Dinoseb	ND		100	60	ug/Kg	☼	12/04/23 13:03	12/06/23 20:48	1
MCPA	ND		10000	5000	ug/Kg	☼	12/04/23 13:03	12/06/23 20:48	1
MCPPE	ND		10000	6800	ug/Kg	☼	12/04/23 13:03	12/06/23 20:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	24		20 - 163				12/04/23 13:03	12/06/23 20:48	1

Client Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1557

Job ID: 570-162733-1

Method: SW846 8151A - Herbicides (GC)

Client Sample ID: FWN-DU-2
Date Collected: 11/21/23 11:00
Date Received: 12/01/23 10:15

Lab Sample ID: 570-162733-4
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.8	ug/Kg	☼	12/04/23 13:03	12/06/23 21:10	1
2,4,5-TP (Silvex)	ND		10	7.6	ug/Kg	☼	12/04/23 13:03	12/06/23 21:10	1
2,4-D	ND		100	49	ug/Kg	☼	12/04/23 13:03	12/06/23 21:10	1
2,4-DB	ND		100	100	ug/Kg	☼	12/04/23 13:03	12/06/23 21:10	1
Dalapon	ND		250	74	ug/Kg	☼	12/04/23 13:03	12/06/23 21:10	1
Dicamba	ND		10	4.8	ug/Kg	☼	12/04/23 13:03	12/06/23 21:10	1
Dichlorprop	ND		100	50	ug/Kg	☼	12/04/23 13:03	12/06/23 21:10	1
Dinoseb	ND		100	60	ug/Kg	☼	12/04/23 13:03	12/06/23 21:10	1
MCPA	ND		10000	4900	ug/Kg	☼	12/04/23 13:03	12/06/23 21:10	1
MCPP	ND		10000	6700	ug/Kg	☼	12/04/23 13:03	12/06/23 21:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	126		20 - 163				12/04/23 13:03	12/06/23 21:10	1

Surrogate Summary

Client: Apex Laboratories LLC
Project/Site: A3K1557

Job ID: 570-162733-1

Method: 8151A - Herbicides (GC)

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (20-163)
570-162733-1	FWN-DU-1A	20
570-162733-2	FWN-DU-1B	23
570-162733-3	FWN-DU-1C	24
570-162733-4	FWN-DU-2	126
LCS 570-389127/2-A	Lab Control Sample	74
LCSD 570-389127/3-A	Lab Control Sample Dup	70
MB 570-389127/1-A	Method Blank	66

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

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QC Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1557

Job ID: 570-162733-1

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 570-389127/1-A
Matrix: Solid
Analysis Batch: 390087

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389127

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
2,4,5-T	ND		10	3.7	ug/Kg		12/04/23 13:02	12/06/23 17:50	1
2,4,5-TP (Silvex)	ND		10	7.5	ug/Kg		12/04/23 13:02	12/06/23 17:50	1
2,4-D	ND		100	49	ug/Kg		12/04/23 13:02	12/06/23 17:50	1
2,4-DB	ND		100	100	ug/Kg		12/04/23 13:02	12/06/23 17:50	1
Dalapon	ND		250	72	ug/Kg		12/04/23 13:02	12/06/23 17:50	1
Dicamba	ND		10	4.7	ug/Kg		12/04/23 13:02	12/06/23 17:50	1
Dichlorprop	ND		100	49	ug/Kg		12/04/23 13:02	12/06/23 17:50	1
Dinoseb	ND		100	59	ug/Kg		12/04/23 13:02	12/06/23 17:50	1
MCPA	ND		10000	4900	ug/Kg		12/04/23 13:02	12/06/23 17:50	1
MCPP	ND		10000	6600	ug/Kg		12/04/23 13:02	12/06/23 17:50	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2,4-Dichlorophenylacetic acid	66		20 - 163	12/04/23 13:02	12/06/23 17:50	1

Lab Sample ID: LCS 570-389127/2-A
Matrix: Solid
Analysis Batch: 390087

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389127

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
2,4,5-T	20.0	15.19		ug/Kg		76	26 - 180
2,4,5-TP (Silvex)	20.0	21.40		ug/Kg		107	10 - 180
2,4-D	200	220.2	p	ug/Kg		110	13 - 180
2,4-DB	200	280.2		ug/Kg		140	10 - 180
Dalapon	500	411.4		ug/Kg		82	10 - 176
Dicamba	20.0	15.97		ug/Kg		80	21 - 164
Dichlorprop	200	194.4		ug/Kg		97	10 - 175
Dinoseb	100	153.9		ug/Kg		154	10 - 180
MCPA	20000	21970	p	ug/Kg		110	22 - 180
MCPP	20000	19820		ug/Kg		99	18 - 180

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
2,4-Dichlorophenylacetic acid	74		20 - 163

Lab Sample ID: LCSD 570-389127/3-A
Matrix: Solid
Analysis Batch: 390087

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 389127

Analyte	Spike Added	LCSD	LCSD	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
		Result	Qualifier						
2,4,5-T	20.0	14.88		ug/Kg		74	26 - 180	2	40
2,4,5-TP (Silvex)	20.0	21.94		ug/Kg		110	10 - 180	2	40
2,4-D	200	195.5		ug/Kg		98	13 - 180	12	40
2,4-DB	200	210.4		ug/Kg		105	10 - 180	28	40
Dalapon	500	404.9		ug/Kg		81	10 - 176	2	40
Dicamba	20.0	15.95		ug/Kg		80	21 - 164	0	40
Dichlorprop	200	174.8		ug/Kg		87	10 - 175	11	40
Dinoseb	100	115.0		ug/Kg		115	10 - 180	29	40
MCPA	20000	20490	p	ug/Kg		102	22 - 180	7	40
MCPP	20000	19660		ug/Kg		98	18 - 180	1	40

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45 of 53
12/8/2023

QC Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1557

Job ID: 570-162733-1

Method: 8151A - Herbicides (GC) (Continued)

<i>Surrogate</i>	<i>LCSD</i>	<i>LCSD</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
2,4-Dichlorophenylacetic acid	70		20 - 163

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QC Association Summary

Client: Apex Laboratories LLC
Project/Site: A3K1557

Job ID: 570-162733-1

GC Semi VOA

Prep Batch: 389127

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-162733-1	FWN-DU-1A	Total/NA	Solid	8151A	
570-162733-2	FWN-DU-1B	Total/NA	Solid	8151A	
570-162733-3	FWN-DU-1C	Total/NA	Solid	8151A	
570-162733-4	FWN-DU-2	Total/NA	Solid	8151A	
MB 570-389127/1-A	Method Blank	Total/NA	Solid	8151A	
LCS 570-389127/2-A	Lab Control Sample	Total/NA	Solid	8151A	
LCSD 570-389127/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	

Analysis Batch: 390087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-162733-1	FWN-DU-1A	Total/NA	Solid	8151A	389127
570-162733-2	FWN-DU-1B	Total/NA	Solid	8151A	389127
570-162733-3	FWN-DU-1C	Total/NA	Solid	8151A	389127
570-162733-4	FWN-DU-2	Total/NA	Solid	8151A	389127
MB 570-389127/1-A	Method Blank	Total/NA	Solid	8151A	389127
LCS 570-389127/2-A	Lab Control Sample	Total/NA	Solid	8151A	389127
LCSD 570-389127/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	389127

Lab Chronicle

Client: Apex Laboratories LLC
Project/Site: A3K1557

Job ID: 570-162733-1

Client Sample ID: FWN-DU-1A

Lab Sample ID: 570-162733-1

Date Collected: 11/21/23 09:30

Matrix: Solid

Date Received: 12/01/23 10:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			48.71 g	5 mL	389127	12/04/23 13:03	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	390087	12/06/23 20:04	J7WE	EET CAL 4
Instrument ID: GC41										

Client Sample ID: FWN-DU-1B

Lab Sample ID: 570-162733-2

Date Collected: 11/21/23 10:00

Matrix: Solid

Date Received: 12/01/23 10:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			50.03 g	5 mL	389127	12/04/23 13:03	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	390087	12/06/23 20:26	J7WE	EET CAL 4
Instrument ID: GC41										

Client Sample ID: FWN-DU-1C

Lab Sample ID: 570-162733-3

Date Collected: 11/21/23 10:30

Matrix: Solid

Date Received: 12/01/23 10:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			49.53 g	5 mL	389127	12/04/23 13:03	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	390087	12/06/23 20:48	J7WE	EET CAL 4
Instrument ID: GC41										

Client Sample ID: FWN-DU-2

Lab Sample ID: 570-162733-4

Date Collected: 11/21/23 11:00

Matrix: Solid

Date Received: 12/01/23 10:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			49.94 g	5 mL	389127	12/04/23 13:03	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	390087	12/06/23 21:10	J7WE	EET CAL 4
Instrument ID: GC41										

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

Accreditation/Certification Summary

Client: Apex Laboratories LLC
Project/Site: A3K1557

Job ID: 570-162733-1

Laboratory: Eurofins Calscience

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	4175	02-02-24
Washington	State	C916-18	10-11-24

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Method Summary

Client: Apex Laboratories LLC
Project/Site: A3K1557

Job ID: 570-162733-1

Method	Method Description	Protocol	Laboratory
8151A	Herbicides (GC)	SW846	EET CAL 4
8151A	Extraction (Herbicides)	SW846	EET CAL 4

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494



Sample Summary

Client: Apex Laboratories LLC
Project/Site: A3K1557

Job ID: 570-162733-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-162733-1	FWN-DU-1A	Solid	11/21/23 09:30	12/01/23 10:15
570-162733-2	FWN-DU-1B	Solid	11/21/23 10:00	12/01/23 10:15
570-162733-3	FWN-DU-1C	Solid	11/21/23 10:30	12/01/23 10:15
570-162733-4	FWN-DU-2	Solid	11/21/23 11:00	12/01/23 10:15

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SUBCONTRACT ORDER

Loc: 570

Apex Laboratories

162733

A3K1557

AKC 11/21/23

SENDING LABORATORY:

Apex Laboratories
6700 S.W. Sandburg Street
Tigard, OR 97223
Phone: (503) 718-2323
Fax: (503) 336-0745
Project Manager: Jason Woodcock

RECEIVING LABORATORY:

Eurofins_CalScience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Phone : (714) 895-5494
Fax: (714) 894-7501



570-162733 Chain of Custody

AKC 11/30/23

Sample Name: FWN-DU-1A Soil After processing Sampled: 11/21/23 09:30 (A3K1557-02)

Table with 4 columns: Analysis, Due, Expires, Comments. Row 1: 8151A Herbicides (SUB), 12/06/23 17:00, 12/05/23 09:30. Containers Supplied: (B)4 oz Glass Jar

Sample Name: FWN-DU-1B Soil After processing Sampled: 11/21/23 10:00 (A3K1557-04)

Table with 4 columns: Analysis, Due, Expires, Comments. Row 1: 8151A Herbicides (SUB), 12/06/23 17:00, 12/05/23 10:00. Containers Supplied: (B)4 oz Glass Jar

Sample Name: FWN-DU-1C Soil After processing Sampled: 11/21/23 10:30 (A3K1557-06)

Table with 4 columns: Analysis, Due, Expires, Comments. Row 1: 8151A Herbicides (SUB), 12/06/23 17:00, 12/05/23 10:30. Containers Supplied: (B)4 oz Glass Jar

Sample Name: FWN-DU-2 Soil After processing Sampled: 11/21/23 11:00 (A3K1557-08)

Table with 4 columns: Analysis, Due, Expires, Comments. Row 1: 8151A Herbicides (SUB), 12/06/23 17:00, 12/05/23 11:00. Containers Supplied: (B)4 oz Glass Jar

Standard TAT

Released By [Signature] Date 11-30-23 Received By [Signature] Date 12/1/23
Released By [Signature] Date 11-30-23 Received By [Signature] Date 12/1/23

Fed Ex (Shipper)

Login Sample Receipt Checklist

Client: Apex Laboratories LLC

Job Number: 570-162733-1

Login Number: 162733

List Number: 1

Creator: Vitente, Precy

List Source: Eurofins Calscience

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	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?	N/A	Received project as a subcontract.
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

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Tuesday, December 5, 2023

Nick Thornton
PBS Engineering and Environmental
4412 S Corbett Ave
Portland, OR 97239

RE: A3K1488 - Bull Run Filtration Facility - 24433.000

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A3K1488, which was received by the laboratory on 11/20/2023 at 12:28:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: jwoodcock@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.
(See Cooler Receipt Form for details)
Cooler #1 2.0 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.

All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



Apex Laboratories

Handwritten signature of Jason Woodcock

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1488 - 12 05 23 1035
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FWC-DU-1	A3K1488-01	Soil	11/20/23 10:00	11/20/23 12:28
FWC-DU-1	A3K1488-02	Soil	11/20/23 10:00	11/20/23 12:28
FWC-DU-2	A3K1488-03	Soil	11/20/23 11:00	11/20/23 12:28
FWC-DU-2	A3K1488-04	Soil	11/20/23 11:00	11/20/23 12:28

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Jason Woodcock, Project Manager



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503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u>	Project: <u>Bull Run Filtration Facility</u>	<u>Report ID:</u>
4412 S Corbett Ave	Project Number: 24433.000	A3K1488 - 12 05 23 1035
Portland, OR 97239	Project Manager: Nick Thornton	

ANALYTICAL CASE NARRATIVE

Work Order: A3K1488	Apex Laboratories
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Subcontract

This report is complete only if it includes the attached subcontract laboratory report from Eurofins Calscience.

Apex Laboratories

Jason Woodcock, Project Manager

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ANALYTICAL REPORT

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1488 - 12 05 23 1035
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ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWC-DU-1 (A3K1488-02)				Matrix: Soil		Batch: 23K1078		PRO
Diesel	ND	---	19.6	mg/kg dry	1	12/01/23 01:54	NWTPH-Dx	
Oil	95.7	---	39.3	mg/kg dry	1	12/01/23 01:54	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 80 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/01/23 01:54</i>	<i>NWTPH-Dx</i>	<i>Q-41</i>
FWC-DU-2 (A3K1488-04)				Matrix: Soil		Batch: 23K1078		PRO
Diesel	ND	---	19.5	mg/kg dry	1	12/01/23 02:35	NWTPH-Dx	
Oil	ND	---	39.0	mg/kg dry	1	12/01/23 02:35	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 84 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/01/23 02:35</i>	<i>NWTPH-Dx</i>	<i>Q-41</i>

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Jason Woodcock, Project Manager



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ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1488 - 12 05 23 1035
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ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWC-DU-1 (A3K1488-02RE1)				Matrix: Soil		Batch: 23K1102		C-05, PRO
Aldrin [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
alpha-BHC [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
beta-BHC [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
delta-BHC [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
gamma-BHC (Lindane) [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
cis-Chlordane [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
trans-Chlordane [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
4,4'-DDD [2C]	0.00421	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
4,4'-DDE [2C]	0.0731	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	Q-42
4,4'-DDT [2C]	0.0760	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	Q-42
Dieldrin [2C]	0.0185	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	Q-42
Endosulfan I [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
Endosulfan II [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
Endosulfan sulfate [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
Endrin	ND	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
Endrin aldehyde	ND	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
Endrin ketone [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
Heptachlor [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
Heptachlor epoxide [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
Methoxychlor	ND	---	0.00590	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
Chlordane (Technical) [2C]	ND	---	0.0590	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
Toxaphene (Total) [2C]	ND	---	0.0590	mg/kg dry	1	12/01/23 13:13	EPA 8081B	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 58 %</i>	<i>Limits: 42-129 %</i>	<i>1</i>	<i>12/01/23 13:13</i>	<i>EPA 8081B</i>	
<i>Decachlorobiphenyl (Surr)</i>			<i>89 %</i>	<i>55-130 %</i>	<i>1</i>	<i>12/01/23 13:13</i>	<i>EPA 8081B</i>	

FWC-DU-2 (A3K1488-04RE1)				Matrix: Soil		Batch: 23K1102		C-05, PRO
Aldrin [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
alpha-BHC [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
beta-BHC [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
delta-BHC [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
gamma-BHC (Lindane) [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
cis-Chlordane [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
trans-Chlordane [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
4,4'-DDD [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
4,4'-DDE [2C]	0.00995	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
4,4'-DDT [2C]	0.00781	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
Dieldrin	ND	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1488 - 12 05 23 1035
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ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWC-DU-2 (A3K1488-04RE1)				Matrix: Soil		Batch: 23K1102		C-05, PRO
Endosulfan I [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
Endosulfan II [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
Endosulfan sulfate [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
Endrin	ND	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
Endrin aldehyde [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
Endrin ketone [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
Heptachlor [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
Heptachlor epoxide [2C]	ND	---	0.00197	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
Methoxychlor [2C]	ND	---	0.00592	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
Chlordane (Technical) [2C]	ND	---	0.0592	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
Toxaphene (Total) [2C]	ND	---	0.0592	mg/kg dry	1	12/01/23 13:47	EPA 8081B	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 47 %</i>	<i>Limits: 42-129 %</i>	<i>1</i>	<i>12/01/23 13:47</i>	<i>EPA 8081B</i>	
<i>Decachlorobiphenyl (Surr)</i>			<i>75 %</i>	<i>55-130 %</i>	<i>1</i>	<i>12/01/23 13:47</i>	<i>EPA 8081B</i>	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1488 - 12 05 23 1035
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ANALYTICAL SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWC-DU-1 (A3K1488-02RE1)				Matrix: Soil		Batch: 23K1061		PRO
Azinphos methyl (Guthion)	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Chlorpyrifos	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Coumaphos	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Demeton O	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Demeton S	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Diazinon	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Dichlorvos	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Dimethoate	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Disulfoton	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
EPN	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Ethoprop	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Fensulfothion	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Fenthion	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Malathion	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Merphos	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Methyl parathion	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Mevinphos (Phosdrin)	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Monocrotophos	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Naled (Dibrom)	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Parathion, ethyl	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Phorate	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Ronnel (Fenclorophos)	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Sulfotep	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Sulprofos (Bolstar)	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
TEPP	ND	---	0.195	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Tetrachlorvinphos (Rabon)	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Tokuthion (Prothiofos)	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
Trichloronate	ND	---	0.0488	mg/kg dry	1	11/29/23 23:08	EPA 8270E OPPs	
<i>Surrogate: Tributyl phosphate (Surr)</i>		<i>Recovery: 30 %</i>		<i>Limits: 10-136 %</i>		<i>1</i>	<i>11/29/23 23:08</i>	<i>EPA 8270E OPPs</i>
<i>Triphenyl phosphate (Surr)</i>		<i>78 %</i>		<i>34-121 %</i>		<i>1</i>	<i>11/29/23 23:08</i>	<i>EPA 8270E OPPs</i>

FWC-DU-2 (A3K1488-04)				Matrix: Soil		Batch: 23K1061		PRO
Azinphos methyl (Guthion)	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	
Chlorpyrifos	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	
Coumaphos	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	
Demeton O	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	
Demeton S	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	Q-42

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1488 - 12 05 23 1035
--	---	---

ANALYTICAL SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWC-DU-2 (A3K1488-04)				Matrix: Soil		Batch: 23K1061		PRO
Diazinon	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	Q-42
Dichlorvos	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	Q-42
Dimethoate	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	Q-42
Disulfoton	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	
EPN	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	Q-42
Ethoprop	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	Q-42
Fensulfothion	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	Q-42
Fenthion	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	Q-42
Malathion	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	
Merphos	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	Q-42
Methyl parathion	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	
Mevinphos (Phosdrin)	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	Q-42
Monocrotophos	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	Q-42
Naled (Dibrom)	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	Q-42
Parathion, ethyl	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	
Phorate	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	
Ronnel (Fenclorophos)	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	
Sulfotep	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	
Sulprofos (Bolstar)	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	Q-42
TEPP	ND	---	0.200	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	Q-42
Tetrachlorvinphos (Rabon)	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	Q-42
Tokuthion (Prothiofos)	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	
Trichloronate	ND	---	0.0499	mg/kg dry	1	11/29/23 20:15	EPA 8270E OPPs	
<i>Surrogate: Tributyl phosphate (Surr)</i>		<i>Recovery: 14 %</i>		<i>Limits: 10-136 %</i>		<i>1</i>	<i>11/29/23 20:15</i>	<i>EPA 8270E OPPs</i>
<i>Triphenyl phosphate (Surr)</i>		<i>54 %</i>		<i>34-121 %</i>		<i>1</i>	<i>11/29/23 20:15</i>	<i>EPA 8270E OPPs</i>

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1488 - 12 05 23 1035
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWC-DU-1 (A3K1488-02)				Matrix: Soil				
Batch: 23K1101								
Arsenic	4.18	---	0.986	mg/kg dry	10	11/30/23 19:58	EPA 6020B	PRO
Barium	182	---	0.986	mg/kg dry	10	11/30/23 19:58	EPA 6020B	PRO
Beryllium	0.705	---	0.197	mg/kg dry	10	11/30/23 19:58	EPA 6020B	PRO
Cadmium	ND	---	0.197	mg/kg dry	10	11/30/23 19:58	EPA 6020B	PRO
Chromium	23.1	---	0.986	mg/kg dry	10	11/30/23 19:58	EPA 6020B	PRO
Cobalt	10.2	---	0.986	mg/kg dry	10	11/30/23 19:58	EPA 6020B	PRO
Copper	19.4	---	1.97	mg/kg dry	10	11/30/23 19:58	EPA 6020B	PRO
Lead	10.0	---	0.197	mg/kg dry	10	11/30/23 19:58	EPA 6020B	PRO
Mercury	0.0800	---	0.0789	mg/kg dry	10	11/30/23 19:58	EPA 6020B	PRO
Molybdenum	ND	---	0.986	mg/kg dry	10	11/30/23 19:58	EPA 6020B	PRO
Nickel	11.5	---	1.97	mg/kg dry	10	11/30/23 19:58	EPA 6020B	PRO
Selenium	ND	---	0.986	mg/kg dry	10	11/30/23 19:58	EPA 6020B	PRO
Silver	ND	---	0.197	mg/kg dry	10	11/30/23 19:58	EPA 6020B	PRO
Thallium	ND	---	0.197	mg/kg dry	10	11/30/23 19:58	EPA 6020B	PRO
Vanadium	57.3	---	1.97	mg/kg dry	10	11/30/23 19:58	EPA 6020B	PRO
Zinc	55.8	---	3.95	mg/kg dry	10	11/30/23 19:58	EPA 6020B	PRO

FWC-DU-1 (A3K1488-02RE1)				Matrix: Soil				
Batch: 23K1101								
Antimony	ND	---	0.986	mg/kg dry	10	12/01/23 12:23	EPA 6020B	PRO

FWC-DU-2 (A3K1488-04)				Matrix: Soil				
Batch: 23K1101								
Arsenic	3.67	---	1.05	mg/kg dry	10	11/30/23 20:03	EPA 6020B	PRO
Barium	157	---	1.05	mg/kg dry	10	11/30/23 20:03	EPA 6020B	PRO
Beryllium	0.816	---	0.210	mg/kg dry	10	11/30/23 20:03	EPA 6020B	PRO
Cadmium	ND	---	0.210	mg/kg dry	10	11/30/23 20:03	EPA 6020B	PRO
Chromium	27.1	---	1.05	mg/kg dry	10	11/30/23 20:03	EPA 6020B	PRO
Cobalt	12.2	---	1.05	mg/kg dry	10	11/30/23 20:03	EPA 6020B	PRO
Copper	14.3	---	2.10	mg/kg dry	10	11/30/23 20:03	EPA 6020B	PRO
Lead	10.1	---	0.210	mg/kg dry	10	11/30/23 20:03	EPA 6020B	PRO
Mercury	ND	---	0.0839	mg/kg dry	10	11/30/23 20:03	EPA 6020B	PRO
Molybdenum	ND	---	1.05	mg/kg dry	10	11/30/23 20:03	EPA 6020B	PRO
Nickel	11.4	---	2.10	mg/kg dry	10	11/30/23 20:03	EPA 6020B	PRO
Selenium	ND	---	1.05	mg/kg dry	10	11/30/23 20:03	EPA 6020B	PRO

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Jason Woodcock, Project Manager



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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1488 - 12 05 23 1035
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWC-DU-2 (A3K1488-04)				Matrix: Soil				
Silver	ND	---	0.210	mg/kg dry	10	11/30/23 20:03	EPA 6020B	PRO
Thallium	ND	---	0.210	mg/kg dry	10	11/30/23 20:03	EPA 6020B	PRO
Vanadium	69.5	---	2.10	mg/kg dry	10	11/30/23 20:03	EPA 6020B	PRO
Zinc	40.7	---	4.19	mg/kg dry	10	11/30/23 20:03	EPA 6020B	PRO
FWC-DU-2 (A3K1488-04RE1)				Matrix: Soil				
Batch: 23K1101								
Antimony	ND	---	1.05	mg/kg dry	10	12/01/23 12:28	EPA 6020B	PRO

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ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWC-DU-1 (A3K1488-02)				Matrix: Soil		Batch: 23K0996		PRO
% Solids	98.8	---	1.00	%	1	11/29/23 05:20	EPA 8000D	
FWC-DU-2 (A3K1488-04)				Matrix: Soil		Batch: 23K0996		PRO
% Solids	99.0	---	1.00	%	1	11/29/23 05:20	EPA 8000D	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1078 - EPA 3546 (Fuels)						Soil						
Blank (23K1078-BLK1)		Prepared: 11/30/23 04:59 Analyzed: 11/30/23 07:24										
<u>NWTPH-Dx</u>												
Diesel	ND	---	20.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	---	40.0	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 87%</i>			<i>Limits: 50-150%</i>		<i>Dilution: 1x</i>					
LCS (23K1078-BS1)		Prepared: 11/30/23 04:59 Analyzed: 11/30/23 07:47										
<u>NWTPH-Dx</u>												
Diesel	111	---	20.0	mg/kg wet	1	125	---	89	38 - 132%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 86%</i>			<i>Limits: 50-150%</i>		<i>Dilution: 1x</i>					

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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PBS Engineering and Environmental	Project: Bull Run Filtration Facility	
4412 S Corbett Ave	Project Number: 24433.000	Report ID:
Portland, OR 97239	Project Manager: Nick Thornton	A3K1488 - 12 05 23 1035

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1102 - EPA 3546/3640A (GPC)						Soil						
Blank (23K1102-BLK1)						Prepared: 11/30/23 06:26 Analyzed: 12/01/23 12:38						C-05
EPA 8081B												
Aldrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
alpha-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
beta-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
delta-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
gamma-BHC (Lindane)	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
cis-Chlordane	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
trans-Chlordane	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
4,4'-DDD	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
4,4'-DDE	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
4,4'-DDT	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Dieldrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endosulfan I	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endosulfan II	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endosulfan sulfate	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endrin aldehyde	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endrin ketone	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Heptachlor	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Heptachlor epoxide	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Methoxychlor	ND	---	0.00600	mg/kg wet	1	---	---	---	---	---	---	
Chlordane (Technical)	ND	---	0.0600	mg/kg wet	1	---	---	---	---	---	---	
Toxaphene (Total)	ND	---	0.0600	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 59 %</i>		<i>Limits: 42-129 %</i>		<i>Dilution: 1x</i>					
<i>Decachlorobiphenyl (Surr)</i>			<i>93 %</i>		<i>55-130 %</i>		<i>"</i>					

LCS (23K1102-BS1)						Prepared: 11/30/23 06:26 Analyzed: 12/01/23 12:56						C-05
EPA 8081B												
Aldrin	0.0383	---	0.00200	mg/kg wet	1	0.0500	---	77	45 - 136%	---	---	
alpha-BHC	0.0391	---	0.00200	mg/kg wet	1	0.0500	---	78	45 - 137%	---	---	
beta-BHC	0.0388	---	0.00200	mg/kg wet	1	0.0500	---	78	50 - 136%	---	---	
delta-BHC	0.0461	---	0.00200	mg/kg wet	1	0.0500	---	92	47 - 139%	---	---	
gamma-BHC (Lindane)	0.0413	---	0.00200	mg/kg wet	1	0.0500	---	83	49 - 135%	---	---	
cis-Chlordane	0.0445	---	0.00200	mg/kg wet	1	0.0500	---	89	54 - 133%	---	---	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental	Project: Bull Run Filtration Facility	
4412 S Corbett Ave	Project Number: 24433.000	Report ID:
Portland, OR 97239	Project Manager: Nick Thornton	A3K1488 - 12 05 23 1035

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1102 - EPA 3546/3640A (GPC)						Soil						
LCS (23K1102-BS1)						Prepared: 11/30/23 06:26 Analyzed: 12/01/23 12:56						C-05
trans-Chlordane	0.0453	---	0.00200	mg/kg wet	1	0.0500	---	91	53 - 135%	---	---	
4,4'-DDD	0.0590	---	0.00200	mg/kg wet	1	0.0500	---	118	56 - 139%	---	---	
4,4'-DDE	0.0529	---	0.00200	mg/kg wet	1	0.0500	---	106	56 - 134%	---	---	
4,4'-DDT	0.0650	---	0.00200	mg/kg wet	1	0.0500	---	130	50 - 141%	---	---	
Dieldrin	0.0503	---	0.00200	mg/kg wet	1	0.0500	---	101	56 - 136%	---	---	
Endosulfan I	0.0464	---	0.00200	mg/kg wet	1	0.0500	---	93	53 - 132%	---	---	
Endosulfan II	0.0560	---	0.00200	mg/kg wet	1	0.0500	---	112	53 - 134%	---	---	
Endosulfan sulfate	0.0600	---	0.00200	mg/kg wet	1	0.0500	---	120	55 - 136%	---	---	
Endrin	0.0541	---	0.00200	mg/kg wet	1	0.0500	---	108	57 - 140%	---	---	
Endrin aldehyde	0.0529	---	0.00200	mg/kg wet	1	0.0500	---	106	35 - 137%	---	---	
Endrin ketone	0.0636	---	0.00200	mg/kg wet	1	0.0500	---	127	55 - 136%	---	---	
Heptachlor	0.0398	---	0.00200	mg/kg wet	1	0.0500	---	80	47 - 136%	---	---	
Heptachlor epoxide	0.0436	---	0.00200	mg/kg wet	1	0.0500	---	87	52 - 136%	---	---	
Methoxychlor	0.0756	---	0.00600	mg/kg wet	1	0.0500	---	151	52 - 143%	---	---	Q-29
<i>Surr: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 73 %</i>		<i>Limits: 42-129 %</i>		<i>Dilution: 1x</i>						
<i>Decachlorobiphenyl (Surr)</i>		<i>110 %</i>		<i>55-130 %</i>		<i>"</i>						

Duplicate (23K1102-DUP1)						Prepared: 11/30/23 06:26 Analyzed: 12/01/23 13:30						C-05, PRO
QC Source Sample: FWC-DU-1 (A3K1488-02RE1)												
EPA 8081B												
Aldrin	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
alpha-BHC	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
beta-BHC	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
delta-BHC	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
gamma-BHC (Lindane)	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
cis-Chlordane	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
trans-Chlordane	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
4,4'-DDD	0.00687	---	0.00200	mg/kg dry	1	---	0.00421	---	---	48	30%	Q-05
4,4'-DDE	0.111	---	0.00200	mg/kg dry	1	---	0.0731	---	---	41	30%	Q-17
4,4'-DDT	0.108	---	0.00200	mg/kg dry	1	---	0.0760	---	---	35	30%	Q-17
Dieldrin	0.0284	---	0.00200	mg/kg dry	1	---	0.0185	---	---	42	30%	Q-17
Endosulfan I	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
Endosulfan II	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
Endosulfan sulfate	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes	
Batch 23K1102 - EPA 3546/3640A (GPC)						Soil							
Duplicate (23K1102-DUP1)		Prepared: 11/30/23 06:26 Analyzed: 12/01/23 13:30						C-05, PRO					
QC Source Sample: FWC-DU-1 (A3K1488-02RE1)													
Endrin	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%		
Endrin aldehyde	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%		
Endrin ketone	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%		
Heptachlor	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%		
Heptachlor epoxide	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%		
Methoxychlor	ND	---	0.00601	mg/kg dry	1	---	ND	---	---	---	30%		
Chlordane (Technical)	ND	---	0.0601	mg/kg dry	1	---	ND	---	---	---	30%		
Toxaphene (Total)	ND	---	0.0601	mg/kg dry	1	---	ND	---	---	---	30%		
<i>Surr: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 63 %</i>		<i>Limits: 42-129 %</i>		<i>Dilution: 1x</i>							
<i>Decachlorobiphenyl (Surr)</i>		<i>96 %</i>		<i>55-130 %</i>		<i>"</i>							

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Jason Woodcock, Project Manager



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--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1061 - EPA 3546						Soil						
Blank (23K1061-BLK1)		Prepared: 11/29/23 11:53 Analyzed: 11/29/23 16:43										
<u>EPA 8270E OPPs</u>												
Azinphos methyl (Guthion)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Chlorpyrifos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Coumaphos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Demeton O	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Demeton S	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Diazinon	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Dichlorvos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Dimethoate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Disulfoton	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
EPN	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Ethoprop	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Fensulfothion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Fenthion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Malathion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Merphos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Methyl parathion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Mevinphos (Phosdrin)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Monocrotophos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Naled (Dibrom)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Parathion, ethyl	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Phorate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Ronnel (Fenclorphos)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Sulfotep	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Sulprofos (Bolstar)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
TEPP	ND	---	0.200	mg/kg wet	1	---	---	---	---	---	---	---
Tetrachlorvinphos (Rabon)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Tokuthion (Prothiofos)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Trichloronate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
<i>Surr: Tributyl phosphate (Surr)</i>		<i>Recovery: 67 %</i>		<i>Limits: 10-136 %</i>		<i>Dilution: 1x</i>						
<i>Triphenyl phosphate (Surr)</i>		<i>85 %</i>		<i>34-121 %</i>		<i>"</i>						

LCS (23K1061-BS1) Prepared: 11/29/23 11:53 Analyzed: 11/29/23 17:18

EPA 8270E OPPs

Apex Laboratories

Jason Woodcock, Project Manager

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ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323

ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1488 - 12 05 23 1035
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1061 - EPA 3546						Soil						
LCS (23K1061-BS1)			Prepared: 11/29/23 11:53 Analyzed: 11/29/23 17:18									
Azinphos methyl (Guthion)	0.511	---	0.0500	mg/kg wet	1	0.400	---	128	38 - 156%	---	---	
Chlorpyrifos	0.433	---	0.0500	mg/kg wet	1	0.400	---	108	47 - 140%	---	---	
Coumaphos	0.488	---	0.0500	mg/kg wet	1	0.400	---	122	37 - 160%	---	---	
Demeton O	0.217	---	0.0500	mg/kg wet	1	0.184	---	118	66 - 127%	---	---	
Demeton S	0.204	---	0.0500	mg/kg wet	1	0.194	---	105	70 - 121%	---	---	
Diazinon	0.467	---	0.0500	mg/kg wet	1	0.400	---	117	42 - 134%	---	---	
Dichlorvos	0.407	---	0.0500	mg/kg wet	1	0.400	---	102	39 - 142%	---	---	
Dimethoate	0.413	---	0.0500	mg/kg wet	1	0.400	---	103	16 - 139%	---	---	
Disulfoton	0.439	---	0.0500	mg/kg wet	1	0.400	---	110	28 - 145%	---	---	
EPN	0.526	---	0.0500	mg/kg wet	1	0.400	---	132	44 - 137%	---	---	Q-41
Ethoprop	0.435	---	0.0500	mg/kg wet	1	0.400	---	109	47 - 128%	---	---	
Fensulfothion	0.486	---	0.0500	mg/kg wet	1	0.400	---	122	27 - 147%	---	---	Q-41
Fenthion	0.465	---	0.0500	mg/kg wet	1	0.400	---	116	44 - 134%	---	---	
Malathion	0.401	---	0.0500	mg/kg wet	1	0.400	---	100	46 - 137%	---	---	
Merphos	0.459	---	0.0500	mg/kg wet	1	0.400	---	115	66 - 131%	---	---	
Methyl parathion	0.491	---	0.0500	mg/kg wet	1	0.400	---	123	49 - 138%	---	---	
Mevinphos (Phosdrin)	0.456	---	0.0500	mg/kg wet	1	0.400	---	114	12 - 176%	---	---	
Monocrotophos	0.362	---	0.0500	mg/kg wet	1	0.400	---	90	10 - 153%	---	---	
Naled (Dibrom)	0.454	---	0.0500	mg/kg wet	1	0.400	---	113	10 - 174%	---	---	
Parathion, ethyl	0.471	---	0.0500	mg/kg wet	1	0.400	---	118	50 - 139%	---	---	
Phorate	0.444	---	0.0500	mg/kg wet	1	0.400	---	111	23 - 142%	---	---	
Ronnel (Fenclorphos)	0.461	---	0.0500	mg/kg wet	1	0.400	---	115	45 - 138%	---	---	
Sulfotep	0.434	---	0.0500	mg/kg wet	1	0.400	---	108	52 - 126%	---	---	
Sulprofos (Bolstar)	0.424	---	0.0500	mg/kg wet	1	0.400	---	106	48 - 139%	---	---	
TEPP	0.576	---	0.200	mg/kg wet	1	0.400	---	144	16 - 126%	---	---	Q-29, Q-41
Tetrachlorvinphos (Rabon)	0.465	---	0.0500	mg/kg wet	1	0.400	---	116	54 - 129%	---	---	
Tokuthion (Prothiofos)	0.431	---	0.0500	mg/kg wet	1	0.400	---	108	45 - 136%	---	---	
Trichloronate	0.431	---	0.0500	mg/kg wet	1	0.400	---	108	37 - 140%	---	---	
<i>Surr: Tributyl phosphate (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 10-136 %</i>		<i>Dilution: 1x</i>						
<i>Triphenyl phosphate (Surr)</i>		<i>100 %</i>		<i>34-121 %</i>		<i>"</i>						

Matrix Spike (23K1061-MS1) Prepared: 11/29/23 11:53 Analyzed: 11/29/23 20:50 **PRO**

QC Source Sample: FWC-DU-2 (A3K1488-04)

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Jason Woodcock, Project Manager



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ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1488 - 12 05 23 1035
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QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1061 - EPA 3546						Soil						
Matrix Spike (23K1061-MS1)			Prepared: 11/29/23 11:53 Analyzed: 11/29/23 20:50				PRO					
QC Source Sample: FWC-DU-2 (A3K1488-04)												
EPA 8270E OPPs												
Azinphos methyl (Guthion)	0.420	---	0.0492	mg/kg dry	1	0.393	ND	107	38 - 156%	---	---	
Chlorpyrifos	0.375	---	0.0492	mg/kg dry	1	0.393	ND	95	47 - 140%	---	---	
Coumaphos	0.436	---	0.0492	mg/kg dry	1	0.393	ND	111	37 - 160%	---	---	
Demeton O	0.198	---	0.0492	mg/kg dry	1	0.181	ND	109	66 - 127%	---	---	
Demeton S	ND	---	0.0492	mg/kg dry	1	0.191	ND	19	70 - 121%	---	---	Q-01
Diazinon	ND	---	0.0492	mg/kg dry	1	0.393	ND		42 - 134%	---	---	Q-01
Dichlorvos	ND	---	0.0492	mg/kg dry	1	0.393	ND		39 - 142%	---	---	Q-01
Dimethoate	ND	---	0.0492	mg/kg dry	1	0.393	ND	11	16 - 139%	---	---	Q-01
Disulfoton	0.394	---	0.0492	mg/kg dry	1	0.393	ND	100	28 - 145%	---	---	
EPN	0.542	---	0.0492	mg/kg dry	1	0.393	ND	138	44 - 137%	---	---	Q-01, Q-41
Ethoprop	0.0984	---	0.0492	mg/kg dry	1	0.393	ND	25	47 - 128%	---	---	Q-01
Fensulfothion	0.0617	---	0.0492	mg/kg dry	1	0.393	ND	16	27 - 147%	---	---	Q-01, Q-41
Fenthion	ND	---	0.0492	mg/kg dry	1	0.393	ND		44 - 134%	---	---	Q-01
Malathion	0.303	---	0.0492	mg/kg dry	1	0.393	ND	77	46 - 137%	---	---	
Merphos	ND	---	0.0492	mg/kg dry	1	0.393	ND	12	66 - 131%	---	---	Q-01
Methyl parathion	0.463	---	0.0492	mg/kg dry	1	0.393	ND	118	49 - 138%	---	---	
Mevinphos (Phosdrin)	ND	---	0.0492	mg/kg dry	1	0.393	ND		12 - 176%	---	---	Q-01
Monocrotophos	ND	---	0.0492	mg/kg dry	1	0.393	ND	9	10 - 153%	---	---	Q-01
Naled (Dibrom)	ND	---	0.0492	mg/kg dry	1	0.393	ND		10 - 174%	---	---	Q-01
Parathion, ethyl	0.413	---	0.0492	mg/kg dry	1	0.393	ND	105	50 - 139%	---	---	
Phorate	0.385	---	0.0492	mg/kg dry	1	0.393	ND	98	23 - 142%	---	---	
Ronnel (Fenclorphos)	0.403	---	0.0492	mg/kg dry	1	0.393	ND	102	45 - 138%	---	---	
Sulfotep	0.342	---	0.0492	mg/kg dry	1	0.393	ND	87	52 - 126%	---	---	
Sulprofos (Bolstar)	ND	---	0.0492	mg/kg dry	1	0.393	ND		48 - 139%	---	---	Q-01
TEPP	ND	---	0.197	mg/kg dry	1	0.393	ND		16 - 126%	---	---	Q-01, Q-41
Tetrachlorvinphos (Rabon)	0.201	---	0.0492	mg/kg dry	1	0.393	ND	51	54 - 129%	---	---	Q-01
Tokuthion (Prothiofos)	0.397	---	0.0492	mg/kg dry	1	0.393	ND	101	45 - 136%	---	---	
Trichloronate	0.376	---	0.0492	mg/kg dry	1	0.393	ND	96	37 - 140%	---	---	

Surr: Tributyl phosphate (Surr) Recovery: 16% Limits: 10-136% Dilution: 1x
 Triphenyl phosphate (Surr) 61% 34-121% "

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1488 - 12 05 23 1035
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QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1061 - EPA 3546						Soil						

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1101 - EPA 3051A						Soil						
Blank (23K1101-BLK1)			Prepared: 11/30/23 10:56 Analyzed: 11/30/23 18:25									
EPA 6020B												
Arsenic	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Barium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Beryllium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	
Cadmium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	
Chromium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Cobalt	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Copper	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	
Lead	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	
Mercury	ND	---	0.0800	mg/kg wet	10	---	---	---	---	---	---	
Molybdenum	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Nickel	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	
Selenium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Silver	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	
Thallium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	
Vanadium	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	
Zinc	ND	---	4.00	mg/kg wet	10	---	---	---	---	---	---	
Blank (23K1101-BLK6)			Prepared: 11/30/23 10:56 Analyzed: 12/01/23 11:00									
EPA 6020B												
Antimony	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	Q-16
LCS (23K1101-BS1)			Prepared: 11/30/23 10:56 Analyzed: 11/30/23 18:51									
EPA 6020B												
Arsenic	50.2	---	1.00	mg/kg wet	10	50.0	---	100	80 - 120%	---	---	
Barium	51.2	---	1.00	mg/kg wet	10	50.0	---	102	80 - 120%	---	---	
Beryllium	24.1	---	0.200	mg/kg wet	10	25.0	---	96	80 - 120%	---	---	
Cadmium	50.7	---	0.200	mg/kg wet	10	50.0	---	101	80 - 120%	---	---	
Chromium	49.2	---	1.00	mg/kg wet	10	50.0	---	98	80 - 120%	---	---	
Cobalt	50.0	---	1.00	mg/kg wet	10	50.0	---	100	80 - 120%	---	---	
Copper	51.4	---	2.00	mg/kg wet	10	50.0	---	103	80 - 120%	---	---	
Lead	51.0	---	0.200	mg/kg wet	10	50.0	---	102	80 - 120%	---	---	
Mercury	0.974	---	0.0800	mg/kg wet	10	1.00	---	97	80 - 120%	---	---	
Molybdenum	24.6	---	1.00	mg/kg wet	10	25.0	---	98	80 - 120%	---	---	

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Jason Woodcock, Project Manager



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--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1101 - EPA 3051A						Soil						
LCS (23K1101-BS1)		Prepared: 11/30/23 10:56 Analyzed: 11/30/23 18:51										
Nickel	50.8	---	2.00	mg/kg wet	10	50.0	---	102	80 - 120%	---	---	
Selenium	24.8	---	1.00	mg/kg wet	10	25.0	---	99	80 - 120%	---	---	
Silver	26.7	---	0.200	mg/kg wet	10	25.0	---	107	80 - 120%	---	---	
Thallium	24.2	---	0.200	mg/kg wet	10	25.0	---	97	80 - 120%	---	---	
Vanadium	49.1	---	2.00	mg/kg wet	10	50.0	---	98	80 - 120%	---	---	
Zinc	50.4	---	4.00	mg/kg wet	10	50.0	---	101	80 - 120%	---	---	
LCS (23K1101-BS2)		Prepared: 11/30/23 10:56 Analyzed: 12/01/23 11:26										
EPA 6020B												
Antimony	23.7	---	1.00	mg/kg wet	10	25.0	---	95	80 - 120%	---	---	Q-16

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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---	--	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0996 - Total Solids (Dry Weight) - 2022						Soil						

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Prep: EPA 3546 (Fuels)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K1078</u>							
A3K1488-02	Soil	NWTPH-Dx	11/20/23 10:00	11/30/23 06:23	10.3g/5mL	10g/5mL	0.97
A3K1488-04	Soil	NWTPH-Dx	11/20/23 11:00	11/30/23 06:23	10.37g/5mL	10g/5mL	0.96

Organochlorine Pesticides by EPA 8081B

Prep: EPA 3546/3640A (GPC)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K1102</u>							
A3K1488-02RE1	Soil	EPA 8081B	11/20/23 10:00	11/30/23 06:26	10.29g/10mL	10g/5mL	1.94
A3K1488-04RE1	Soil	EPA 8081B	11/20/23 11:00	11/30/23 06:26	10.25g/10mL	10g/5mL	1.95

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Prep: EPA 3546					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K1061</u>							
A3K1488-02RE1	Soil	EPA 8270E OPPs	11/20/23 10:00	11/29/23 11:53	10.37g/5mL	10g/5mL	0.96
A3K1488-04	Soil	EPA 8270E OPPs	11/20/23 11:00	11/29/23 11:53	10.12g/5mL	10g/5mL	0.99

Total Metals by EPA 6020B (ICPMS)

Prep: EPA 3051A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K1101</u>							
A3K1488-02	Soil	EPA 6020B	11/20/23 10:00	11/30/23 10:56	0.513g/50mL	0.5g/50mL	0.98
A3K1488-02RE1	Soil	EPA 6020B	11/20/23 10:00	11/30/23 10:56	0.513g/50mL	0.5g/50mL	0.98
A3K1488-04	Soil	EPA 6020B	11/20/23 11:00	11/30/23 10:56	0.482g/50mL	0.5g/50mL	1.04
A3K1488-04RE1	Soil	EPA 6020B	11/20/23 11:00	11/30/23 10:56	0.482g/50mL	0.5g/50mL	1.04

Percent Dry Weight

Prep: Total Solids (Dry Weight) - 2022					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K0996</u>							
A3K1488-02	Soil	EPA 8000D	11/20/23 10:00	11/28/23 09:19			NA
A3K1488-04	Soil	EPA 8000D	11/20/23 11:00	11/28/23 09:19			NA

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---	--	---

SAMPLE PREPARATION INFORMATION

Percent Dry Weight

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1488 - 12 05 23 1035
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QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

- C-05** Extract has undergone a GPC (Gel-Permeation Chromatography) cleanup per EPA 3640A. Reporting levels may be raised due to dilution necessary for cleanup. Sample Final Volume includes the GPC dilution factor, see the Prep page for details.
- PRO** Sample has undergone sample processing prior to extraction and analysis.
- Q-01** Spike recovery and/or RPD is outside acceptance limits.
- Q-05** Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
- Q-16** Reanalysis of an original Batch QC sample.
- Q-17** RPD between original and duplicate sample, or spike duplicates, is outside of established control limits.
- Q-29** Recovery for Lab Control Spike (LCS) is above the upper control limit. Data may be biased high.
- Q-41** Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
- Q-42** Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)

Apex Laboratories

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1488 - 12 05 23 1035
---	--	---

REPORTING NOTES AND CONVENTIONS:

Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported.
- RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as "dry", "wet", or " " (blank) designation.
- "dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.
- "wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
- " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) are not included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to 1/2 the Reporting Limit (RL).
-For Blank hits falling between 1/2 the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.

Apex Laboratories

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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

Apex Laboratories

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation)
EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation
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All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental	Project: Bull Run Filtration Facility	Report ID:
4412 S Corbett Ave	Project Number: 24433.000	A3K1488 - 12 05 23 1035
Portland, OR 97239	Project Manager: Nick Thornton	

APEX LABS
6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

Company: **PBS**

Address: **Portland, OR**

Sampled by: **David Rukki**

Site Location: _____

State: **OR**

County: **Multnomah**

SAMPLE ID

FWC-DU-1

FWC-DU-2

Project Mgr: **Nick Thornton**

Project Name: **Bull Run**

Phone: _____

Email: **nick.thornton@pbsusa.com**

Project #: **24433.000**

PO # _____

ANALYSIS REQUEST

DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Cx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCPA Metals (9)	Priority Metals (13)	AL, Sb, As, Ba, Be, Cd, Cr, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, TL, V, Zn	TOTAL DISS. TCLP	TCLP Metals (9)	Organophosphate Pesticides EPA 814A	Chlorinated Herbicides EPA 3151	17 Ag Metals EPA 5000/7000 strc	Hold Sample	Frozen Archive	
11-20-13	1000	S	1		X									X											
↓	1100	S	1		X									X											

Project #: **24433.000**

Project Name: **Bull Run**

Phone: _____

Email: **nick.thornton@pbsusa.com**

Project #: **24433.000**

PO # _____

ANALYSIS REQUEST

DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Cx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCPA Metals (9)	Priority Metals (13)	AL, Sb, As, Ba, Be, Cd, Cr, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, TL, V, Zn	TOTAL DISS. TCLP	TCLP Metals (9)	Organophosphate Pesticides EPA 814A	Chlorinated Herbicides EPA 3151	17 Ag Metals EPA 5000/7000 strc	Hold Sample	Frozen Archive	
11-20-13	1000	S	1		X									X											
↓	1100	S	1		X									X											

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): **5 Day** 1 Day 2 Day 3 Day Other: _____

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature: <i>David Rukki</i> Date: 11/20/13 Printed Name: David Rukki Company: PBS	RECEIVED BY: Signature: <i>Michael Pate</i> Date: 11/20/13 Printed Name: Michael Pate Company: Apex	RELINQUISHED BY: Signature: _____ Date: _____ Printed Name: _____ Company: _____
---	--	--

Apex Laboratories

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1488 - 12 05 23 1035
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APEX LABS COOLER RECEIPT FORM

Client: PBS Element WO#: A3 h1488

Project/Project #: BA11 Run / 24433.00
RVP 11-20

Delivery Info:

Date/time received: 11/20/23 @ 1228 By: RVP

Delivered by: Apex Client ESS FedEx UPS Radio Morgan SDS Evergreen Other

Cooler Inspection Date/time inspected: 11/20/23 @ 1230 By: RVP

Chain of Custody included? Yes No

Signed/dated by client? Yes No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>20</u>						
Custody seals? (Y/N)	<u>N</u>						
Received on ice? (Y/N)	<u>Y</u>						
Temp. blanks? (Y/N)	<u>Y</u>						
Ice type: (Gel/Real/Other)	<u>Real</u>						
Condition (In/Out):	<u>IN</u>						

Cooler out of temp? (Y/N) Possible reason why: _____

Green dots applied to out of temperature samples? Yes No

Out of temperature samples form initiated? Yes No

Sample Inspection: Date/time inspected: 11/20/23 @ 13:07 By: APW

All samples intact? Yes No Comments: _____

Bottle labels/COCs agree? Yes No Comments: _____

COC/container discrepancies form initiated? Yes No

Containers/volumes received appropriate for analysis? Yes No Comments: _____

Do VOA vials have visible headspace? Yes No NA

Comments: _____

Water samples: pH checked: Yes No NA pH appropriate? Yes No NA pH ID: _____

Comments: _____

Additional information: _____

Labeled by: APW Witness: DJS Cooler Inspected by: APW
Form Y-003 R-01

Apex Laboratories

Jason Woodcock, Project Manager

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ANALYTICAL REPORT

PREPARED FOR

Attn: Jason Woodcock
Apex Laboratories LLC
6700 SW Sandburg St.
Tigard, Oregon 97223

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JOB DESCRIPTION

A3K1488

JOB NUMBER

570-162186-1

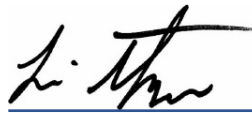
Eurofins Calscience

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 Calscience Project Manager.

Authorization



Authorized for release by
Lori Thompson, Project Manager I
Lori.Thompson@et.eurofinsus.com
(657)212-3035

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Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Detection Summary	6
Client Sample Results	7
Surrogate Summary	8
QC Sample Results	9
QC Association Summary	11
Lab Chronicle	12
Certification Summary	13
Method Summary	14
Sample Summary	15
Chain of Custody	16
Receipt Checklists	17

Definitions/Glossary

Client: Apex Laboratories LLC
Project/Site: A3K1488

Job ID: 570-162186-1

Qualifiers

GC Semi 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.
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
S1+	Surrogate recovery exceeds control limits, high biased.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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

Case Narrative

Client: Apex Laboratories LLC
Project/Site: A3K1488

Job ID: 570-162186-1

Job ID: 570-162186-1

Laboratory: Eurofins Calscience

Narrative

Job Narrative 570-162186-1

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 are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample 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 11/28/2023 9:45 AM. 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 0.9°C

Herbicides

Method 8151A: The 2,4-Dichlorophenylacetic acid surrogate recovery for the following samples was outside acceptance limits (high biased) on the primary column due to matrix interference: FWC-DU-1 (570-162186-1). The recovery is within acceptance limits on the other column, indicating that the extraction process was in control.

Method 8151A: The matrix spike / matrix spike duplicate / sample duplicate (MS/MSD/DUP) precision for preparation batch 570-387367 and analytical batch 570-388335 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 8151A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-387367 and analytical batch 570-388335 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.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Apex Laboratories LLC
Project/Site: A3K1488

Job ID: 570-162186-1

Client Sample ID: FWC-DU-1

Lab Sample ID: 570-162186-1

No Detections.

Client Sample ID: FWC-DU-2

Lab Sample ID: 570-162186-2

No Detections.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1488

Job ID: 570-162186-1

Method: SW846 8151A - Herbicides (GC)

Client Sample ID: FWC-DU-1
Date Collected: 11/20/23 10:00
Date Received: 11/28/23 09:45

Lab Sample ID: 570-162186-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.7	ug/Kg	☼	11/28/23 13:47	11/30/23 22:38	1
2,4,5-TP (Silvex)	ND		10	7.6	ug/Kg	☼	11/28/23 13:47	11/30/23 22:38	1
2,4-D	ND		100	49	ug/Kg	☼	11/28/23 13:47	11/30/23 22:38	1
2,4-DB	ND		100	100	ug/Kg	☼	11/28/23 13:47	11/30/23 22:38	1
Dalapon	ND		250	73	ug/Kg	☼	11/28/23 13:47	11/30/23 22:38	1
Dicamba	ND		10	4.8	ug/Kg	☼	11/28/23 13:47	11/30/23 22:38	1
Dichlorprop	ND		100	50	ug/Kg	☼	11/28/23 13:47	11/30/23 22:38	1
Dinoseb	ND		100	59	ug/Kg	☼	11/28/23 13:47	11/30/23 22:38	1
MCPA	ND		10000	4900	ug/Kg	☼	11/28/23 13:47	11/30/23 22:38	1
MCPP	ND		10000	6700	ug/Kg	☼	11/28/23 13:47	11/30/23 22:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	204	S1+	20 - 163				11/28/23 13:47	11/30/23 22:38	1

Client Sample ID: FWC-DU-2
Date Collected: 11/20/23 11:00
Date Received: 11/28/23 09:45

Lab Sample ID: 570-162186-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		9.7	3.6	ug/Kg	☼	11/28/23 13:47	11/30/23 23:00	1
2,4,5-TP (Silvex)	ND		9.7	7.3	ug/Kg	☼	11/28/23 13:47	11/30/23 23:00	1
2,4-D	ND		97	47	ug/Kg	☼	11/28/23 13:47	11/30/23 23:00	1
2,4-DB	ND		97	97	ug/Kg	☼	11/28/23 13:47	11/30/23 23:00	1
Dalapon	ND		240	70	ug/Kg	☼	11/28/23 13:47	11/30/23 23:00	1
Dicamba	ND		9.7	4.6	ug/Kg	☼	11/28/23 13:47	11/30/23 23:00	1
Dichlorprop	ND		97	48	ug/Kg	☼	11/28/23 13:47	11/30/23 23:00	1
Dinoseb	ND		97	57	ug/Kg	☼	11/28/23 13:47	11/30/23 23:00	1
MCPA	ND		9700	4700	ug/Kg	☼	11/28/23 13:47	11/30/23 23:00	1
MCPP	ND		9700	6400	ug/Kg	☼	11/28/23 13:47	11/30/23 23:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	127		20 - 163				11/28/23 13:47	11/30/23 23:00	1

Surrogate Summary

Client: Apex Laboratories LLC
Project/Site: A3K1488

Job ID: 570-162186-1

Method: 8151A - Herbicides (GC)

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (20-163)
570-162186-1	FWC-DU-1	204 S1+
570-162186-2	FWC-DU-2	127
LCS 570-387367/2-A	Lab Control Sample	53 p
LCSD 570-387367/3-A	Lab Control Sample Dup	49 p
MB 570-387367/1-A	Method Blank	64

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

QC Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1488

Job ID: 570-162186-1

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 570-387367/1-A
Matrix: Solid
Analysis Batch: 387706

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387367

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.7	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
2,4,5-TP (Silvex)	ND		10	7.5	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
2,4-D	ND		100	49	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
2,4-DB	ND		100	100	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
Dalapon	ND		250	72	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
Dicamba	ND		10	4.7	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
Dichlorprop	ND		100	49	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
Dinoseb	ND		100	59	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
MCPA	ND		10000	4900	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
MCPP	ND		10000	6600	ug/Kg		11/28/23 13:44	11/29/23 14:30	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	64		20 - 163	11/28/23 13:44	11/29/23 14:30	1

Lab Sample ID: LCS 570-387367/2-A
Matrix: Solid
Analysis Batch: 387706

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387367

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,4,5-T	20.0	14.12		ug/Kg		71	26 - 180
2,4,5-TP (Silvex)	20.0	12.69		ug/Kg		63	10 - 180
2,4-D	200	188.3		ug/Kg		94	13 - 180
2,4-DB	200	155.2		ug/Kg		78	10 - 180
Dalapon	500	382.4		ug/Kg		76	10 - 176
Dicamba	20.0	13.17		ug/Kg		66	21 - 164
Dichlorprop	200	139.1		ug/Kg		70	10 - 175
Dinoseb	100	96.21	J	ug/Kg		96	10 - 180
MCPA	20000	26130		ug/Kg		131	22 - 180
MCPP	20000	16400		ug/Kg		82	18 - 180

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4-Dichlorophenylacetic acid	53	p	20 - 163

Lab Sample ID: LCSD 570-387367/3-A
Matrix: Solid
Analysis Batch: 387706

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387367

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
2,4,5-T	20.0	11.40		ug/Kg		57	26 - 180	21	40
2,4,5-TP (Silvex)	20.0	11.48		ug/Kg		57	10 - 180	10	40
2,4-D	200	163.8		ug/Kg		82	13 - 180	14	40
2,4-DB	200	156.5		ug/Kg		78	10 - 180	1	40
Dalapon	500	337.6		ug/Kg		68	10 - 176	12	40
Dicamba	20.0	11.81		ug/Kg		59	21 - 164	11	40
Dichlorprop	200	127.3		ug/Kg		64	10 - 175	9	40
Dinoseb	100	87.90	J	ug/Kg		88	10 - 180	9	40
MCPA	20000	24390		ug/Kg		122	22 - 180	7	40
MCPP	20000	15040		ug/Kg		75	18 - 180	9	40

Eurofins Calscience
39 of 47

QC Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1488

Job ID: 570-162186-1

Method: 8151A - Herbicides (GC) (Continued)

<i>Surrogate</i>	<i>LCS D</i>	<i>LCS D</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
2,4-Dichlorophenylacetic acid	49	p	20 - 163

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QC Association Summary

Client: Apex Laboratories LLC
Project/Site: A3K1488

Job ID: 570-162186-1

GC Semi VOA

Prep Batch: 387367

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-162186-1	FWC-DU-1	Total/NA	Solid	8151A	
570-162186-2	FWC-DU-2	Total/NA	Solid	8151A	
MB 570-387367/1-A	Method Blank	Total/NA	Solid	8151A	
LCS 570-387367/2-A	Lab Control Sample	Total/NA	Solid	8151A	
LCSD 570-387367/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	

Analysis Batch: 387706

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 570-387367/1-A	Method Blank	Total/NA	Solid	8151A	387367
LCS 570-387367/2-A	Lab Control Sample	Total/NA	Solid	8151A	387367
LCSD 570-387367/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	387367

Analysis Batch: 388335

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-162186-1	FWC-DU-1	Total/NA	Solid	8151A	387367
570-162186-2	FWC-DU-2	Total/NA	Solid	8151A	387367

Lab Chronicle

Client: Apex Laboratories LLC
Project/Site: A3K1488

Job ID: 570-162186-1

Client Sample ID: FWC-DU-1

Lab Sample ID: 570-162186-1

Date Collected: 11/20/23 10:00

Matrix: Solid

Date Received: 11/28/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			50.03 g	5 mL	387367	11/28/23 13:47	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	388335	11/30/23 22:38	J7WE	EET CAL 4

Instrument ID: GC41

Client Sample ID: FWC-DU-2

Lab Sample ID: 570-162186-2

Date Collected: 11/20/23 11:00

Matrix: Solid

Date Received: 11/28/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			52.16 g	5 mL	387367	11/28/23 13:47	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	388335	11/30/23 23:00	J7WE	EET CAL 4

Instrument ID: GC41

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

Accreditation/Certification Summary

Client: Apex Laboratories LLC
Project/Site: A3K1488

Job ID: 570-162186-1

Laboratory: Eurofins Calscience

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	4175	02-02-24
Washington	State	C916-18	10-11-23 *

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* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Apex Laboratories LLC
Project/Site: A3K1488

Job ID: 570-162186-1

Method	Method Description	Protocol	Laboratory
8151A	Herbicides (GC)	SW846	EET CAL 4
8151A	Extraction (Herbicides)	SW846	EET CAL 4

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

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Sample Summary

Client: Apex Laboratories LLC
Project/Site: A3K1488

Job ID: 570-162186-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-162186-1	FWC-DU-1	Solid	11/20/23 10:00	11/28/23 09:45
570-162186-2	FWC-DU-2	Solid	11/20/23 11:00	11/28/23 09:45

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Login Sample Receipt Checklist

Client: Apex Laboratories LLC

Job Number: 570-162186-1

Login Number: 162186

List Source: Eurofins Calscience

List Number: 1

Creator: Vitente, Precy

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	N/A	Received project as a subcontract.
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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ANALYTICAL REPORT

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Wednesday, December 6, 2023
Nick Thornton
PBS Engineering and Environmental
4412 S Corbett Ave
Portland, OR 97239

RE: A3K1408 - Bull Run Filtration Facility - 24433.000

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A3K1408, which was received by the laboratory on 11/16/2023 at 2:25:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: jwoodcock@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.
(See Cooler Receipt Form for details)
Cooler #1 2.4 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.

All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



Apex Laboratories

Handwritten signature of Jason Woodcock

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1408 - 12 06 23 1550
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FWS-DU-1	A3K1408-01	Soil	11/16/23 12:00	11/16/23 14:25
FWS-DU-1	A3K1408-02	Soil	11/16/23 12:00	11/16/23 14:25
FWS-DU-2	A3K1408-03	Soil	11/16/23 12:15	11/16/23 14:25
FWS-DU-2	A3K1408-04	Soil	11/16/23 12:15	11/16/23 14:25

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

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503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u>	Project: <u>Bull Run Filtration Facility</u>	<u>Report ID:</u>
4412 S Corbett Ave	Project Number: 24433.000	A3K1408 - 12 06 23 1550
Portland, OR 97239	Project Manager: Nick Thornton	

ANALYTICAL CASE NARRATIVE

Work Order: A3K1408	Apex Laboratories
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Subcontract

This report is complete only if it includes the attached subcontract laboratory report from Eurofins Calscience.

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1408 - 12 06 23 1550
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ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWS-DU-1 (A3K1408-02)				Matrix: Soil		Batch: 23L0177		H-02, PRO
Diesel	ND	---	19.9	mg/kg dry	1	12/05/23 21:11	NWTPH-Dx	
Oil	156	---	39.9	mg/kg dry	1	12/05/23 21:11	NWTPH-Dx	F-03
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 73 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/05/23 21:11</i>	<i>NWTPH-Dx</i>	
FWS-DU-2 (A3K1408-04RE1)				Matrix: Soil		Batch: 23L0177		H-02, PRO
Diesel	ND	---	18.3	mg/kg dry	1	12/06/23 06:35	NWTPH-Dx	
Oil	ND	---	36.6	mg/kg dry	1	12/06/23 06:35	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 90 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/06/23 06:35</i>	<i>NWTPH-Dx</i>	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1408 - 12 06 23 1550
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ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWS-DU-1 (A3K1408-02RE1)				Matrix: Soil		Batch: 23K0963		C-05, PRO
Aldrin	ND	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
alpha-BHC	ND	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
beta-BHC	ND	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
delta-BHC	ND	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
gamma-BHC (Lindane)	ND	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
cis-Chlordane	ND	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
trans-Chlordane	ND	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
4,4'-DDD	ND	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
4,4'-DDE	0.0112	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
Dieldrin	ND	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
Endosulfan I	ND	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
Endosulfan II	ND	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
Endosulfan sulfate	ND	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
Endrin	ND	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
Endrin aldehyde	ND	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
Endrin ketone	ND	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
Heptachlor	ND	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
Heptachlor epoxide	ND	---	0.00201	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
Methoxychlor	ND	---	0.00603	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
Chlordane (Technical)	ND	---	0.0603	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
Toxaphene (Total)	ND	---	0.0603	mg/kg dry	1	11/29/23 20:27	EPA 8081B	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 56 %</i>	<i>Limits: 42-129 %</i>	<i>1</i>	<i>11/29/23 20:27</i>	<i>EPA 8081B</i>	
<i>Decachlorobiphenyl (Surr)</i>			<i>83 %</i>	<i>55-130 %</i>	<i>1</i>	<i>11/29/23 20:27</i>	<i>EPA 8081B</i>	

FWS-DU-1 (A3K1408-02RE2)				Matrix: Soil		Batch: 23K0963		C-05, PRO
4,4'-DDT [2C]	0.0214	---	0.00201	mg/kg dry	1	11/30/23 12:04	EPA 8081B	

FWS-DU-2 (A3K1408-04RE1)				Matrix: Soil		Batch: 23K0963		C-05, PRO
Aldrin	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
alpha-BHC	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
beta-BHC	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
delta-BHC	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
gamma-BHC (Lindane)	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
cis-Chlordane	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
trans-Chlordane	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
4,4'-DDD	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1408 - 12 06 23 1550
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ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWS-DU-2 (A3K1408-04RE1)				Matrix: Soil		Batch: 23K0963		C-05, PRO
4,4'-DDE	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
Dieldrin	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
Endosulfan I	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
Endosulfan II	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
Endosulfan sulfate	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
Endrin	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
Endrin aldehyde	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
Endrin ketone	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
Heptachlor	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
Heptachlor epoxide	ND	---	0.00199	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
Methoxychlor	ND	---	0.00598	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
Chlordane (Technical)	ND	---	0.0598	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
Toxaphene (Total)	ND	---	0.0598	mg/kg dry	1	11/29/23 20:44	EPA 8081B	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 58 %</i>		<i>Limits: 42-129 %</i>		<i>1</i>	<i>11/29/23 20:44</i>	<i>EPA 8081B</i>
<i>Decachlorobiphenyl (Surr)</i>		<i>93 %</i>		<i>55-130 %</i>		<i>1</i>	<i>11/29/23 20:44</i>	<i>EPA 8081B</i>
FWS-DU-2 (A3K1408-04RE2)				Matrix: Soil		Batch: 23K0963		C-05, PRO
4,4'-DDT	ND	---	0.00199	mg/kg dry	1	11/30/23 12:21	EPA 8081B	

Apex Laboratories

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1408 - 12 06 23 1550
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ANALYTICAL SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWS-DU-1 (A3K1408-02RE1)				Matrix: Soil		Batch: 23K1061		PRO
Azinphos methyl (Guthion)	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Chlorpyrifos	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Coumaphos	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Demeton O	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Demeton S	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Diazinon	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Dichlorvos	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Dimethoate	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Disulfoton	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
EPN	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Ethoprop	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Fensulfothion	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Fenthion	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Malathion	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Merphos	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Methyl parathion	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Mevinphos (Phosdrin)	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Monocrotophos	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Naled (Dibrom)	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Parathion, ethyl	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Phorate	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Ronnel (Fenclorophos)	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Sulfotep	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Sulprofos (Bolstar)	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
TEPP	ND	---	0.195	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Tetrachlorvinphos (Rabon)	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Tokuthion (Prothiofos)	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
Trichloronate	ND	---	0.0488	mg/kg dry	1	11/29/23 19:05	EPA 8270E OPPs	
<i>Surrogate: Tributyl phosphate (Surr)</i>		<i>Recovery: 19 %</i>		<i>Limits: 10-136 %</i>		<i>1</i>	<i>11/29/23 19:05</i>	<i>EPA 8270E OPPs</i>
<i>Triphenyl phosphate (Surr)</i>		<i>68 %</i>		<i>34-121 %</i>		<i>1</i>	<i>11/29/23 19:05</i>	<i>EPA 8270E OPPs</i>

FWS-DU-2 (A3K1408-04)				Matrix: Soil		Batch: 23K1061		PRO
Azinphos methyl (Guthion)	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Chlorpyrifos	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Coumaphos	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Demeton O	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Demeton S	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	

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ANALYTICAL REPORT

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1408 - 12 06 23 1550
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ANALYTICAL SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWS-DU-2 (A3K1408-04)				Matrix: Soil		Batch: 23K1061		PRO
Diazinon	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Dichlorvos	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Dimethoate	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Disulfoton	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
EPN	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Ethoprop	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Fensulfothion	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Fenthion	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Malathion	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Merphos	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Methyl parathion	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Mevinphos (Phosdrin)	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Monocrotophos	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Naled (Dibrom)	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Parathion, ethyl	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Phorate	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Ronnel (Fenclorpos)	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Sulfotep	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Sulprofos (Bolstar)	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
TEPP	ND	---	0.195	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Tetrachlorvinphos (Rabon)	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Tokuthion (Prothiofos)	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
Trichloronate	ND	---	0.0487	mg/kg dry	1	11/29/23 21:24	EPA 8270E OPPs	
<i>Surrogate: Tributyl phosphate (Surr)</i>			<i>Recovery: 11 %</i>	<i>Limits: 10-136 %</i>	<i>1</i>	<i>11/29/23 21:24</i>	<i>EPA 8270E OPPs</i>	
<i>Triphenyl phosphate (Surr)</i>			<i>27 %</i>	<i>34-121 %</i>	<i>1</i>	<i>11/29/23 21:24</i>	<i>EPA 8270E OPPs</i>	<i>S-03</i>

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ANALYTICAL REPORT

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1408 - 12 06 23 1550
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWS-DU-1 (A3K1408-02)				Matrix: Soil				
Batch: 23K1010								
Antimony	ND	---	1.02	mg/kg dry	10	11/29/23 20:26	EPA 6020B	PRO
Arsenic	4.40	---	1.02	mg/kg dry	10	11/29/23 20:26	EPA 6020B	PRO
Barium	171	---	1.02	mg/kg dry	10	11/29/23 20:26	EPA 6020B	PRO
Beryllium	0.784	---	0.205	mg/kg dry	10	11/29/23 20:26	EPA 6020B	PRO
Cadmium	ND	---	0.205	mg/kg dry	10	11/29/23 20:26	EPA 6020B	PRO
Chromium	30.7	---	1.02	mg/kg dry	10	11/29/23 20:26	EPA 6020B	PRO
Cobalt	13.9	---	1.02	mg/kg dry	10	11/29/23 20:26	EPA 6020B	PRO
Copper	26.4	---	2.05	mg/kg dry	10	11/29/23 20:26	EPA 6020B	PRO
Lead	28.3	---	0.205	mg/kg dry	10	11/29/23 20:26	EPA 6020B	PRO
Molybdenum	ND	---	1.02	mg/kg dry	10	11/29/23 20:26	EPA 6020B	PRO
Nickel	17.6	---	2.05	mg/kg dry	10	11/29/23 20:26	EPA 6020B	PRO
Selenium	ND	---	1.02	mg/kg dry	10	11/29/23 20:26	EPA 6020B	PRO
Silver	ND	---	0.205	mg/kg dry	10	11/29/23 20:26	EPA 6020B	PRO
Thallium	ND	---	0.205	mg/kg dry	10	11/29/23 20:26	EPA 6020B	PRO
Vanadium	91.1	---	2.05	mg/kg dry	10	11/29/23 20:26	EPA 6020B	PRO
Zinc	59.0	---	4.10	mg/kg dry	10	11/29/23 20:26	EPA 6020B	PRO
FWS-DU-1 (A3K1408-02RE1)				Matrix: Soil				
Batch: 23K1010								
Mercury	ND	---	0.0819	mg/kg dry	10	11/30/23 15:16	EPA 6020B	PRO
FWS-DU-2 (A3K1408-04)				Matrix: Soil				
Batch: 23K1010								
Antimony	ND	---	1.04	mg/kg dry	10	11/29/23 20:31	EPA 6020B	PRO
Arsenic	4.85	---	1.04	mg/kg dry	10	11/29/23 20:31	EPA 6020B	PRO
Barium	170	---	1.04	mg/kg dry	10	11/29/23 20:31	EPA 6020B	PRO
Beryllium	0.846	---	0.208	mg/kg dry	10	11/29/23 20:31	EPA 6020B	PRO
Cadmium	ND	---	0.208	mg/kg dry	10	11/29/23 20:31	EPA 6020B	PRO
Chromium	36.5	---	1.04	mg/kg dry	10	11/29/23 20:31	EPA 6020B	PRO
Cobalt	13.7	---	1.04	mg/kg dry	10	11/29/23 20:31	EPA 6020B	PRO
Copper	23.0	---	2.08	mg/kg dry	10	11/29/23 20:31	EPA 6020B	PRO
Lead	12.0	---	0.208	mg/kg dry	10	11/29/23 20:31	EPA 6020B	PRO
Molybdenum	ND	---	1.04	mg/kg dry	10	11/29/23 20:31	EPA 6020B	PRO
Nickel	18.2	---	2.08	mg/kg dry	10	11/29/23 20:31	EPA 6020B	PRO
Silver	ND	---	0.208	mg/kg dry	10	11/29/23 20:31	EPA 6020B	PRO

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PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1408 - 12 06 23 1550
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWS-DU-2 (A3K1408-04)				Matrix: Soil				
Thallium	ND	---	0.208	mg/kg dry	10	11/29/23 20:31	EPA 6020B	PRO
Vanadium	92.2	---	2.08	mg/kg dry	10	11/29/23 20:31	EPA 6020B	PRO
Zinc	48.8	---	4.17	mg/kg dry	10	11/29/23 20:31	EPA 6020B	PRO
FWS-DU-2 (A3K1408-04RE1)				Matrix: Soil				
Batch: 23K1010								
Mercury	ND	---	0.0833	mg/kg dry	10	11/30/23 15:21	EPA 6020B	PRO
Selenium	ND	---	1.04	mg/kg dry	10	11/29/23 20:41	EPA 6020B	PRO

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---	--	---

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FWS-DU-1 (A3K1408-02)				Matrix: Soil		Batch: 23K0850		PRO
% Solids	99.3	---	1.00	%	1	11/22/23 07:44	EPA 8000D	
FWS-DU-2 (A3K1408-04)				Matrix: Soil		Batch: 23K0850		PRO
% Solids	100	---	1.00	%	1	11/22/23 07:44	EPA 8000D	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23L0177 - EPA 3546 (Fuels)						Soil						
Blank (23L0177-BLK1)		Prepared: 12/05/23 17:23 Analyzed: 12/05/23 20:30										
<u>NWTPH-Dx</u>												
Diesel	ND	---	20.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	---	40.0	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 84 %		Limits: 50-150 %		<i>Dilution: 1x</i>						
LCS (23L0177-BS1)		Prepared: 12/05/23 17:23 Analyzed: 12/05/23 20:51										
<u>NWTPH-Dx</u>												
Diesel	114	---	20.0	mg/kg wet	1	125	---	91	38 - 132%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 87 %		Limits: 50-150 %		<i>Dilution: 1x</i>						
Duplicate (23L0177-DUP1)		Prepared: 12/05/23 17:23 Analyzed: 12/05/23 21:32										PRO
<u>QC Source Sample: FWS-DU-1 (A3K1408-02)</u>												
<u>NWTPH-Dx</u>												
Diesel	ND	---	18.7	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	172	---	37.3	mg/kg dry	1	---	156	---	---	10	30%	F-03
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 79 %		Limits: 50-150 %		<i>Dilution: 1x</i>						

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PBS Engineering and Environmental	Project: Bull Run Filtration Facility	
4412 S Corbett Ave	Project Number: 24433.000	Report ID:
Portland, OR 97239	Project Manager: Nick Thornton	A3K1408 - 12 06 23 1550

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0963 - EPA 3546/3640A (GPC)						Soil						
Blank (23K0963-BLK1)						Prepared: 11/27/23 06:50 Analyzed: 11/29/23 17:27						C-05
EPA 8081B												
Aldrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
alpha-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
beta-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
delta-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
gamma-BHC (Lindane)	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
cis-Chlordane	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
trans-Chlordane	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
4,4'-DDD	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
4,4'-DDE	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
4,4'-DDT	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Dieldrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endosulfan I	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endosulfan II	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endosulfan sulfate	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endrin aldehyde	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endrin ketone	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Heptachlor	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Heptachlor epoxide	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Methoxychlor	ND	---	0.00600	mg/kg wet	1	---	---	---	---	---	---	
Chlordane (Technical)	ND	---	0.0600	mg/kg wet	1	---	---	---	---	---	---	
Toxaphene (Total)	ND	---	0.0600	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 62 %</i>	<i>Limits: 42-129 %</i>		<i>Dilution: 1x</i>						
<i>Decachlorobiphenyl (Surr)</i>			<i>104 %</i>	<i>55-130 %</i>		<i>"</i>						

LCS (23K0963-BS1)						Prepared: 11/27/23 06:50 Analyzed: 11/29/23 17:44						C-05
EPA 8081B												
Aldrin	0.0370	---	0.00200	mg/kg wet	1	0.0500	---	74	45 - 136%	---	---	
alpha-BHC	0.0376	---	0.00200	mg/kg wet	1	0.0500	---	75	45 - 137%	---	---	
beta-BHC	0.0397	---	0.00200	mg/kg wet	1	0.0500	---	79	50 - 136%	---	---	
delta-BHC	0.0464	---	0.00200	mg/kg wet	1	0.0500	---	93	47 - 139%	---	---	
gamma-BHC (Lindane)	0.0376	---	0.00200	mg/kg wet	1	0.0500	---	75	49 - 135%	---	---	
cis-Chlordane	0.0410	---	0.00200	mg/kg wet	1	0.0500	---	82	54 - 133%	---	---	

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--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0963 - EPA 3546/3640A (GPC)						Soil						
LCS (23K0963-BS1)	Prepared: 11/27/23 06:50 Analyzed: 11/29/23 17:44											C-05
trans-Chlordane	0.0420	---	0.00200	mg/kg wet	1	0.0500	---	84	53 - 135%	---	---	
4,4'-DDD	0.0566	---	0.00200	mg/kg wet	1	0.0500	---	113	56 - 139%	---	---	
4,4'-DDE	0.0516	---	0.00200	mg/kg wet	1	0.0500	---	103	56 - 134%	---	---	
4,4'-DDT	0.0509	---	0.00200	mg/kg wet	1	0.0500	---	102	50 - 141%	---	---	
Dieldrin	0.0473	---	0.00200	mg/kg wet	1	0.0500	---	95	56 - 136%	---	---	
Endosulfan I	0.0442	---	0.00200	mg/kg wet	1	0.0500	---	88	53 - 132%	---	---	
Endosulfan II	0.0510	---	0.00200	mg/kg wet	1	0.0500	---	102	53 - 134%	---	---	
Endosulfan sulfate	0.0506	---	0.00200	mg/kg wet	1	0.0500	---	101	55 - 136%	---	---	
Endrin	0.0501	---	0.00200	mg/kg wet	1	0.0500	---	100	57 - 140%	---	---	
Endrin aldehyde	0.0490	---	0.00200	mg/kg wet	1	0.0500	---	98	35 - 137%	---	---	
Endrin ketone	0.0490	---	0.00200	mg/kg wet	1	0.0500	---	98	55 - 136%	---	---	
Heptachlor	0.0375	---	0.00200	mg/kg wet	1	0.0500	---	75	47 - 136%	---	---	
Heptachlor epoxide	0.0422	---	0.00200	mg/kg wet	1	0.0500	---	84	52 - 136%	---	---	
Methoxychlor	0.0578	---	0.00600	mg/kg wet	1	0.0500	---	116	52 - 143%	---	---	
<i>Surr: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 68 %</i>		<i>Limits: 42-129 %</i>		<i>Dilution: 1x</i>						
<i>Decachlorobiphenyl (Surr)</i>		<i>105 %</i>		<i>55-130 %</i>		<i>"</i>						

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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Jason Woodcock, Project Manager



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--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1061 - EPA 3546						Soil						
Blank (23K1061-BLK1)		Prepared: 11/29/23 11:53 Analyzed: 11/29/23 16:43										
<u>EPA 8270E OPPs</u>												
Azinphos methyl (Guthion)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Chlorpyrifos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Coumaphos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Demeton O	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Demeton S	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Diazinon	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Dichlorvos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Dimethoate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Disulfoton	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
EPN	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Ethoprop	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Fensulfothion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Fenthion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Malathion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Merphos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Methyl parathion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Mevinphos (Phosdrin)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Monocrotophos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Naled (Dibrom)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Parathion, ethyl	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Phorate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Ronnel (Fenclorphos)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Sulfotep	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Sulprofos (Bolstar)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
TEPP	ND	---	0.200	mg/kg wet	1	---	---	---	---	---	---	---
Tetrachlorvinphos (Rabon)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Tokuthion (Prothiofos)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Trichloronate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
<i>Surr: Tributyl phosphate (Surr)</i>		<i>Recovery: 67 %</i>		<i>Limits: 10-136 %</i>		<i>Dilution: 1x</i>						
<i>Triphenyl phosphate (Surr)</i>		<i>85 %</i>		<i>34-121 %</i>		<i>"</i>						

LCS (23K1061-BS1) Prepared: 11/29/23 11:53 Analyzed: 11/29/23 17:18

EPA 8270E OPPs

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Jason Woodcock, Project Manager

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15 of 45
Page 15 of 28



ANALYTICAL REPORT

Apex Laboratories, LLC

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Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1408 - 12 06 23 1550
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1061 - EPA 3546						Soil						
LCS (23K1061-BS1)			Prepared: 11/29/23 11:53 Analyzed: 11/29/23 17:18									
Azinphos methyl (Guthion)	0.511	---	0.0500	mg/kg wet	1	0.400	---	128	38 - 156%	---	---	
Chlorpyrifos	0.433	---	0.0500	mg/kg wet	1	0.400	---	108	47 - 140%	---	---	
Coumaphos	0.488	---	0.0500	mg/kg wet	1	0.400	---	122	37 - 160%	---	---	
Demeton O	0.217	---	0.0500	mg/kg wet	1	0.184	---	118	66 - 127%	---	---	
Demeton S	0.204	---	0.0500	mg/kg wet	1	0.194	---	105	70 - 121%	---	---	
Diazinon	0.467	---	0.0500	mg/kg wet	1	0.400	---	117	42 - 134%	---	---	
Dichlorvos	0.407	---	0.0500	mg/kg wet	1	0.400	---	102	39 - 142%	---	---	
Dimethoate	0.413	---	0.0500	mg/kg wet	1	0.400	---	103	16 - 139%	---	---	
Disulfoton	0.439	---	0.0500	mg/kg wet	1	0.400	---	110	28 - 145%	---	---	
EPN	0.526	---	0.0500	mg/kg wet	1	0.400	---	132	44 - 137%	---	---	Q-41
Ethoprop	0.435	---	0.0500	mg/kg wet	1	0.400	---	109	47 - 128%	---	---	
Fensulfothion	0.486	---	0.0500	mg/kg wet	1	0.400	---	122	27 - 147%	---	---	Q-41
Fenthion	0.465	---	0.0500	mg/kg wet	1	0.400	---	116	44 - 134%	---	---	
Malathion	0.401	---	0.0500	mg/kg wet	1	0.400	---	100	46 - 137%	---	---	
Merphos	0.459	---	0.0500	mg/kg wet	1	0.400	---	115	66 - 131%	---	---	
Methyl parathion	0.491	---	0.0500	mg/kg wet	1	0.400	---	123	49 - 138%	---	---	
Mevinphos (Phosdrin)	0.456	---	0.0500	mg/kg wet	1	0.400	---	114	12 - 176%	---	---	
Monocrotophos	0.362	---	0.0500	mg/kg wet	1	0.400	---	90	10 - 153%	---	---	
Naled (Dibrom)	0.454	---	0.0500	mg/kg wet	1	0.400	---	113	10 - 174%	---	---	
Parathion, ethyl	0.471	---	0.0500	mg/kg wet	1	0.400	---	118	50 - 139%	---	---	
Phorate	0.444	---	0.0500	mg/kg wet	1	0.400	---	111	23 - 142%	---	---	
Ronnel (Fenchlorphos)	0.461	---	0.0500	mg/kg wet	1	0.400	---	115	45 - 138%	---	---	
Sulfotep	0.434	---	0.0500	mg/kg wet	1	0.400	---	108	52 - 126%	---	---	
Sulprofos (Bolstar)	0.424	---	0.0500	mg/kg wet	1	0.400	---	106	48 - 139%	---	---	
TEPP	0.576	---	0.200	mg/kg wet	1	0.400	---	144	16 - 126%	---	---	Q-29, Q-41
Tetrachlorvinphos (Rabon)	0.465	---	0.0500	mg/kg wet	1	0.400	---	116	54 - 129%	---	---	
Tokuthion (Prothiofos)	0.431	---	0.0500	mg/kg wet	1	0.400	---	108	45 - 136%	---	---	
Trichloronate	0.431	---	0.0500	mg/kg wet	1	0.400	---	108	37 - 140%	---	---	
<i>Surr: Tributyl phosphate (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 10-136 %</i>		<i>Dilution: 1x</i>						
<i>Triphenyl phosphate (Surr)</i>		<i>100 %</i>		<i>34-121 %</i>		<i>"</i>						

Duplicate (23K1061-DUP1) Prepared: 11/29/23 11:53 Analyzed: 11/29/23 19:40 **PRO**

QC Source Sample: FWS-DU-1 (A3K1408-02RE1)

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1408 - 12 06 23 1550
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QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1061 - EPA 3546						Soil						
Duplicate (23K1061-DUP1)						Prepared: 11/29/23 11:53 Analyzed: 11/29/23 19:40						PRO
QC Source Sample: FWS-DU-1 (A3K1408-02RE1)												
EPA 8270E OPPs												
Azinphos methyl (Guthion)	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Chlorpyrifos	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Coumaphos	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Demeton O	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Demeton S	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Diazinon	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Dichlorvos	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Dimethoate	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Disulfoton	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
EPN	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Ethoprop	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Fensulfothion	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Fenthion	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Malathion	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Merphos	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Methyl parathion	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Mevinphos (Phosdrin)	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Monocrotophos	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Naled (Dibrom)	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Parathion, ethyl	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Phorate	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Ronnel (Fenchlorphos)	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Sulfotep	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Sulprofos (Bolstar)	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
TEPP	ND	---	0.201	mg/kg dry	1	---	ND	---	---	---	30%	
Tetrachlorvinphos (Rabon)	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Tokuthion (Prothiofos)	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
Trichloronate	ND	---	0.0501	mg/kg dry	1	---	ND	---	---	---	30%	
<i>Surr: Tributyl phosphate (Surr)</i>		<i>Recovery: 22 %</i>		<i>Limits: 10-136 %</i>		<i>Dilution: 1x</i>						
<i>Triphenyl phosphate (Surr)</i>		<i>70 %</i>		<i>34-121 %</i>		<i>"</i>						

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1408 - 12 06 23 1550
---	--	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1010 - EPA 3051A												
Soil												
Blank (23K1010-BLK1)												
Prepared: 11/28/23 12:00 Analyzed: 11/29/23 18:21												
<u>EPA 6020B</u>												
Antimony	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Arsenic	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Barium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Beryllium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	
Cadmium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	
Chromium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Cobalt	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Copper	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	
Lead	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	
Mercury	ND	---	0.0800	mg/kg wet	10	---	---	---	---	---	---	
Molybdenum	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Selenium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Silver	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	
Thallium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	
Vanadium	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	
Zinc	ND	---	4.00	mg/kg wet	10	---	---	---	---	---	---	
Blank (23K1010-BLK4)												
Prepared: 11/28/23 12:00 Analyzed: 11/30/23 14:45												
<u>EPA 6020B</u>												
Nickel	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	Q-16
LCS (23K1010-BS1)												
Prepared: 11/28/23 12:00 Analyzed: 11/29/23 18:35												
<u>EPA 6020B</u>												
Antimony	26.6	---	1.00	mg/kg wet	10	25.0	---	106	80 - 120%	---	---	
Arsenic	49.0	---	1.00	mg/kg wet	10	50.0	---	98	80 - 120%	---	---	
Barium	48.6	---	1.00	mg/kg wet	10	50.0	---	97	80 - 120%	---	---	
Beryllium	24.7	---	0.200	mg/kg wet	10	25.0	---	99	80 - 120%	---	---	
Cadmium	50.4	---	0.200	mg/kg wet	10	50.0	---	101	80 - 120%	---	---	
Chromium	48.8	---	1.00	mg/kg wet	10	50.0	---	98	80 - 120%	---	---	
Cobalt	49.3	---	1.00	mg/kg wet	10	50.0	---	99	80 - 120%	---	---	
Copper	51.4	---	2.00	mg/kg wet	10	50.0	---	103	80 - 120%	---	---	
Lead	50.7	---	0.200	mg/kg wet	10	50.0	---	101	80 - 120%	---	---	
Mercury	1.01	---	0.0800	mg/kg wet	10	1.00	---	101	80 - 120%	---	---	

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Jason Woodcock, Project Manager



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--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1010 - EPA 3051A						Soil						
LCS (23K1010-BS1)		Prepared: 11/28/23 12:00 Analyzed: 11/29/23 18:35										
Molybdenum	24.5	---	1.00	mg/kg wet	10	25.0	---	98	80 - 120%	---	---	
Nickel	50.2	---	2.00	mg/kg wet	10	50.0	---	100	80 - 120%	---	---	
Selenium	25.7	---	1.00	mg/kg wet	10	25.0	---	103	80 - 120%	---	---	
Silver	28.2	---	0.200	mg/kg wet	10	25.0	---	113	80 - 120%	---	---	
Thallium	25.8	---	0.200	mg/kg wet	10	25.0	---	103	80 - 120%	---	---	
Vanadium	48.1	---	2.00	mg/kg wet	10	50.0	---	96	80 - 120%	---	---	
Zinc	50.2	---	4.00	mg/kg wet	10	50.0	---	100	80 - 120%	---	---	

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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---	--	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
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Batch 23K0850 - Total Solids (Dry Weight) - 2022

Soil

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Prep: EPA 3546 (Fuels)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 23L0177</u>							
A3K1408-02	Soil	NWTPH-Dx	11/16/23 12:00	12/05/23 17:23	10.11g/5mL	10g/5mL	0.99
A3K1408-04RE1	Soil	NWTPH-Dx	11/16/23 12:15	12/05/23 17:23	10.92g/5mL	10g/5mL	0.92

Organochlorine Pesticides by EPA 8081B

Prep: EPA 3546/3640A (GPC)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 23K0963</u>							
A3K1408-02RE1	Soil	EPA 8081B	11/16/23 12:00	11/27/23 06:50	10.03g/10mL	10g/5mL	1.99
A3K1408-02RE2	Soil	EPA 8081B	11/16/23 12:00	11/27/23 06:50	10.03g/10mL	10g/5mL	1.99
A3K1408-04RE1	Soil	EPA 8081B	11/16/23 12:15	11/27/23 06:50	10.03g/10mL	10g/5mL	1.99
A3K1408-04RE2	Soil	EPA 8081B	11/16/23 12:15	11/27/23 06:50	10.03g/10mL	10g/5mL	1.99

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 23K1061</u>							
A3K1408-02RE1	Soil	EPA 8270E OPPs	11/16/23 12:00	11/29/23 11:53	10.32g/5mL	10g/5mL	0.97
A3K1408-04	Soil	EPA 8270E OPPs	11/16/23 12:15	11/29/23 11:53	10.27g/5mL	10g/5mL	0.97

Total Metals by EPA 6020B (ICPMS)

Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 23K1010</u>							
A3K1408-02	Soil	EPA 6020B	11/16/23 12:00	11/28/23 12:00	0.492g/50mL	0.5g/50mL	1.02
A3K1408-02RE1	Soil	EPA 6020B	11/16/23 12:00	11/28/23 12:00	0.492g/50mL	0.5g/50mL	1.02
A3K1408-04	Soil	EPA 6020B	11/16/23 12:15	11/28/23 12:00	0.48g/50mL	0.5g/50mL	1.04
A3K1408-04RE1	Soil	EPA 6020B	11/16/23 12:15	11/28/23 12:00	0.48g/50mL	0.5g/50mL	1.04

Percent Dry Weight

Prep: Total Solids (Dry Weight) - 2022

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 23K0850</u>							

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Jason Woodcock, Project Manager



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---	--	---

SAMPLE PREPARATION INFORMATION

Percent Dry Weight

Prep: Total Solids (Dry Weight) - 2022

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A3K1408-02	Soil	EPA 8000D	11/16/23 12:00	11/21/23 09:53			NA
A3K1408-04	Soil	EPA 8000D	11/16/23 12:15	11/21/23 09:53			NA

Apex Laboratories

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental

4412 S Corbett Ave
Portland, OR 97239

Project: **Bull Run Filtration Facility**

Project Number: **24433.000**

Project Manager: **Nick Thornton**

Report ID:

A3K1408 - 12 06 23 1550

QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

- C-05** Extract has undergone a GPC (Gel-Permeation Chromatography) cleanup per EPA 3640A. Reporting levels may be raised due to dilution necessary for cleanup. Sample Final Volume includes the GPC dilution factor, see the Prep page for details.
- F-03** The result for this hydrocarbon range is elevated due to the presence of individual analyte peaks in the quantitation range that are not representative of the fuel pattern reported.
- H-02** This sample was extracted outside of the recommended holding time.
- PRO** Sample has undergone sample processing prior to extraction and analysis.
- Q-16** Reanalysis of an original Batch QC sample.
- Q-29** Recovery for Lab Control Spike (LCS) is above the upper control limit. Data may be biased high.
- Q-41** Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
- S-03** Sample re-extract, or the analysis of an associated Batch QC sample, confirms surrogate failure due to sample matrix effect.

Apex Laboratories

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Jason Woodcock, Project Manager



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<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1408 - 12 06 23 1550
---	--	---

REPORTING NOTES AND CONVENTIONS:

Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported.
- RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as "dry", "wet", or " " (blank) designation.
- "dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.
- "wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
- " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) are not included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to 1/2 the Reporting Limit (RL).
-For Blank hits falling between 1/2 the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.

Apex Laboratories

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1408 - 12 06 23 1550
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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

Apex Laboratories

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1408 - 12 06 23 1550
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LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation)
EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation
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All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

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Jason Woodcock, Project Manager

PBS Engineering and Environmental	Project: Bull Run Filtration Facility	
4412 S Corbett Ave	Project Number: 24433.000	Report ID:
Portland, OR 97239	Project Manager: Nick Thornton	A3K1408 - 12 06 23 1550

APEX LABS
6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

CHAIN OF CUSTODY

Lab # A3K1408 coc 1 of 1

Company: **PBS** Project Mgr: **NICK THORNTON** Project Name: **BULL RUN FILTRATION** Project #: **24433.000**

Address: **PDX OFFICE** Phone: **503 417 7410** Email: **NICK.THORNTON** PO #

Sampled by: **RILEY MARTIN**

Site Location: State OR Country _____

SAMPLE ID: FWS-DV-1 DATE: 11/16/23 TIME: 1200 MATRIX: S # OF CONTAINERS: 1

FWS-DV-2 DATE: 11/16/23 TIME: 1215 MATRIX: S # OF CONTAINERS: 1

ANALYSIS REQUEST	Standard Turn Around Time (TAT) = 10 Business Days		
	1 Day	2 Day	3 Day
AL, Sb, As, Ba, Be, Bi, Cd, Cr, Cs, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Ti, V, Zn, TCDF, TCDF, TCDF, TCDF			
Priority Metals (13)			
TCDF Metals (8)			
8081 Pesticides			
8082 PCBs			
8270 Semi-Vols Full List			
8270 SIM PAHs			
8260 VOCs Full List			
8260 Halo VOCs			
8260 RMDM VOCs			
8260 BTEX			
NWTPH-GX			
NWTPH-DX	<input checked="" type="checkbox"/>		
NWTPH-HCID	<input checked="" type="checkbox"/>		
HERMETS 8151			<input checked="" type="checkbox"/>
Ag. METALS 6007000			<input checked="" type="checkbox"/>
PESTICIDES 8270			<input checked="" type="checkbox"/>

SPECIAL INSTRUCTIONS: 8270 METHOD FOR PESTICIDES IS STATE

TAT Requested (circle): 1 Day 2 Day 3 Day 5 Day Other: _____

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: _____	RECEIVED BY: _____
Signature: _____	Signature: _____
Date: <u>11-16-23</u>	Date: <u>11/16/23</u>
Printed Name: <u>RILEY MARTIN</u>	Printed Name: <u>Riley Martin</u>
Time: <u>1424</u>	Time: <u>1425</u>
Company: <u>PBS</u>	Company: <u>Apex</u>

Form Y-002 R-00



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323

ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1408 - 12 06 23 1550
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APEX LABS COOLER RECEIPT FORM

Client: PBS Element WO#: A3 KM08

Project/Project #: Bull Run Filtration / 24433.000

Delivery Info:

Date/time received: 11/16/23 @ 1425 By: AJM

Delivered by: Apex Client ESS FedEx UPS Radio Morgan SDS Evergreen Other

Cooler Inspection Date/time inspected: 11/16/23 @ 1432 By: AJM

Chain of Custody included? Yes No

Signed/dated by client? Yes No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>2.4</u>						
Custody seals? (Y/N)	<u>N</u>						
Received on ice? (Y/N)	<u>Y</u>						
Temp. blanks? (Y/N)	<u>Y</u>						
Ice type: (Gel/Real/Other)	<u>Real</u>						
Condition (In/Out):	<u>In</u>						

Cooler out of temp? (Y/N) Possible reason why: _____

Green dots applied to out of temperature samples? Yes No

Out of temperature samples form initiated? Yes No

Sample Inspection: Date/time inspected: 11/16/23 @ 14:40 By: APW

All samples intact? Yes No Comments: _____

Bottle labels/COCs agree? Yes No Comments: _____

COC/container discrepancies form initiated? Yes No

Containers/volumes received appropriate for analysis? Yes No Comments: _____

Do VOA vials have visible headspace? Yes No NA

Comments: _____

Water samples: pH checked: Yes No NA pH appropriate? Yes No NA pH ID: _____

Comments: _____

Additional information: _____

Labeled by: APW

Witness: DSS

Cooler Inspected by: APW

Form Y-003 R-01

Apex Laboratories

Jason Woodcock, Project Manager

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ANALYTICAL REPORT

PREPARED FOR

Attn: Jason Woodcock
Apex Laboratories LLC
6700 SW Sandburg St.
Tigard, Oregon 97223

Generated 12/4/2023 5:34:31 PM

JOB DESCRIPTION

A3K1408

JOB NUMBER

570-161869-1

Eurofins Calscience

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 Calscience Project Manager.

Authorization



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12/4/2023 5:34:31 PM

Authorized for release by
Lori Thompson, Project Manager I
Lori.Thompson@et.eurofinsus.com
(657)212-3035



Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Detection Summary	6
Client Sample Results	7
Surrogate Summary	8
QC Sample Results	9
QC Association Summary	11
Lab Chronicle	12
Certification Summary	13
Method Summary	14
Sample Summary	15
Chain of Custody	16
Receipt Checklists	17

Definitions/Glossary

Client: Apex Laboratories LLC
Project/Site: A3K1408

Job ID: 570-161869-1

Qualifiers

GC Semi 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.
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
S1+	Surrogate recovery exceeds control limits, high biased.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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

Case Narrative

Client: Apex Laboratories LLC
Project/Site: A3K1408

Job ID: 570-161869-1

Job ID: 570-161869-1

Laboratory: Eurofins Calscience

Narrative

Job Narrative 570-161869-1

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 are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample 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 11/22/2023 9:40 AM. 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 1.5°C

Herbicides

Method 8151A: Elevated reporting limits are provided for the following sample due to insufficient sample provided for preparation: FWS-DU-1 (570-161869-1). The initial mass was changed from 50g to 38g.

Method 8151A: The 2,4-Dichlorophenylacetic acid surrogate recovery for the following samples was outside acceptance limits (high biased) on the primary column due to matrix interference: FWS-DU-2 (570-161869-2). The recovery is within acceptance limits on the other column, indicating that the extraction process was in control.

Method 8151A: The matrix spike / matrix spike duplicate / sample duplicate (MS/MSD/DUP) precision for preparation batch 570-387367 and analytical batch 570-388335 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 8151A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-387367 and analytical batch 570-388335 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.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Apex Laboratories LLC
Project/Site: A3K1408

Job ID: 570-161869-1

Client Sample ID: FWS-DU-1

Lab Sample ID: 570-161869-1

No Detections.

Client Sample ID: FWS-DU-2

Lab Sample ID: 570-161869-2

No Detections.

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This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1408

Job ID: 570-161869-1

Method: SW846 8151A - Herbicides (GC)

Client Sample ID: FWS-DU-1
Date Collected: 11/16/23 12:00
Date Received: 11/22/23 09:40

Lab Sample ID: 570-161869-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		13	4.9	ug/Kg	☼	11/28/23 13:47	11/30/23 21:31	1
2,4,5-TP (Silvex)	ND		13	10	ug/Kg	☼	11/28/23 13:47	11/30/23 21:31	1
2,4-D	ND		130	64	ug/Kg	☼	11/28/23 13:47	11/30/23 21:31	1
2,4-DB	ND		130	130	ug/Kg	☼	11/28/23 13:47	11/30/23 21:31	1
Dalapon	ND		330	96	ug/Kg	☼	11/28/23 13:47	11/30/23 21:31	1
Dicamba	ND		13	6.3	ug/Kg	☼	11/28/23 13:47	11/30/23 21:31	1
Dichlorprop	ND		130	65	ug/Kg	☼	11/28/23 13:47	11/30/23 21:31	1
Dinoseb	ND		130	78	ug/Kg	☼	11/28/23 13:47	11/30/23 21:31	1
MCPA	ND		13000	6400	ug/Kg	☼	11/28/23 13:47	11/30/23 21:31	1
MCPP	ND		13000	8700	ug/Kg	☼	11/28/23 13:47	11/30/23 21:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	138		20 - 163				11/28/23 13:47	11/30/23 21:31	1

Client Sample ID: FWS-DU-2
Date Collected: 11/16/23 12:15
Date Received: 11/22/23 09:40

Lab Sample ID: 570-161869-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.7	ug/Kg	☼	11/28/23 13:47	11/30/23 21:53	1
2,4,5-TP (Silvex)	ND		10	7.6	ug/Kg	☼	11/28/23 13:47	11/30/23 21:53	1
2,4-D	ND		100	49	ug/Kg	☼	11/28/23 13:47	11/30/23 21:53	1
2,4-DB	ND		100	100	ug/Kg	☼	11/28/23 13:47	11/30/23 21:53	1
Dalapon	ND		250	73	ug/Kg	☼	11/28/23 13:47	11/30/23 21:53	1
Dicamba	ND		10	4.8	ug/Kg	☼	11/28/23 13:47	11/30/23 21:53	1
Dichlorprop	ND		100	50	ug/Kg	☼	11/28/23 13:47	11/30/23 21:53	1
Dinoseb	ND		100	59	ug/Kg	☼	11/28/23 13:47	11/30/23 21:53	1
MCPA	ND		10000	4900	ug/Kg	☼	11/28/23 13:47	11/30/23 21:53	1
MCPP	ND		10000	6600	ug/Kg	☼	11/28/23 13:47	11/30/23 21:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	213	S1+	20 - 163				11/28/23 13:47	11/30/23 21:53	1

Surrogate Summary

Client: Apex Laboratories LLC
Project/Site: A3K1408

Job ID: 570-161869-1

Method: 8151A - Herbicides (GC)

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (20-163)
570-161869-1	FWS-DU-1	138
570-161869-2	FWS-DU-2	213 S1+
LCS 570-387367/2-A	Lab Control Sample	53 p
LCSD 570-387367/3-A	Lab Control Sample Dup	49 p
MB 570-387367/1-A	Method Blank	64

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
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QC Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1408

Job ID: 570-161869-1

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 570-387367/1-A
Matrix: Solid
Analysis Batch: 387706

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387367

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.7	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
2,4,5-TP (Silvex)	ND		10	7.5	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
2,4-D	ND		100	49	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
2,4-DB	ND		100	100	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
Dalapon	ND		250	72	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
Dicamba	ND		10	4.7	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
Dichlorprop	ND		100	49	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
Dinoseb	ND		100	59	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
MCPA	ND		10000	4900	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
MCPP	ND		10000	6600	ug/Kg		11/28/23 13:44	11/29/23 14:30	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	64		20 - 163	11/28/23 13:44	11/29/23 14:30	1

Lab Sample ID: LCS 570-387367/2-A
Matrix: Solid
Analysis Batch: 387706

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387367

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,4,5-T	20.0	14.12		ug/Kg		71	26 - 180
2,4,5-TP (Silvex)	20.0	12.69		ug/Kg		63	10 - 180
2,4-D	200	188.3		ug/Kg		94	13 - 180
2,4-DB	200	155.2		ug/Kg		78	10 - 180
Dalapon	500	382.4		ug/Kg		76	10 - 176
Dicamba	20.0	13.17		ug/Kg		66	21 - 164
Dichlorprop	200	139.1		ug/Kg		70	10 - 175
Dinoseb	100	96.21	J	ug/Kg		96	10 - 180
MCPA	20000	26130		ug/Kg		131	22 - 180
MCPP	20000	16400		ug/Kg		82	18 - 180

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4-Dichlorophenylacetic acid	53	p	20 - 163

Lab Sample ID: LCSD 570-387367/3-A
Matrix: Solid
Analysis Batch: 387706

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387367

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
2,4,5-T	20.0	11.40		ug/Kg		57	26 - 180	21	40
2,4,5-TP (Silvex)	20.0	11.48		ug/Kg		57	10 - 180	10	40
2,4-D	200	163.8		ug/Kg		82	13 - 180	14	40
2,4-DB	200	156.5		ug/Kg		78	10 - 180	1	40
Dalapon	500	337.6		ug/Kg		68	10 - 176	12	40
Dicamba	20.0	11.81		ug/Kg		59	21 - 164	11	40
Dichlorprop	200	127.3		ug/Kg		64	10 - 175	9	40
Dinoseb	100	87.90	J	ug/Kg		88	10 - 180	9	40
MCPA	20000	24390		ug/Kg		122	22 - 180	7	40
MCPP	20000	15040		ug/Kg		75	18 - 180	9	40

Eurofins Calscience
37 of 45

QC Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1408

Job ID: 570-161869-1

Method: 8151A - Herbicides (GC) (Continued)

<i>Surrogate</i>	<i>LCS</i>	<i>D</i>	<i>LCS</i>	<i>D</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>			
<i>2,4-Dichlorophenylacetic acid</i>	49	p			20 - 163

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QC Association Summary

Client: Apex Laboratories LLC
Project/Site: A3K1408

Job ID: 570-161869-1

GC Semi VOA

Prep Batch: 387367

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-161869-1	FWS-DU-1	Total/NA	Solid	8151A	
570-161869-2	FWS-DU-2	Total/NA	Solid	8151A	
MB 570-387367/1-A	Method Blank	Total/NA	Solid	8151A	
LCS 570-387367/2-A	Lab Control Sample	Total/NA	Solid	8151A	
LCSD 570-387367/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	

Analysis Batch: 387706

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 570-387367/1-A	Method Blank	Total/NA	Solid	8151A	387367
LCS 570-387367/2-A	Lab Control Sample	Total/NA	Solid	8151A	387367
LCSD 570-387367/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	387367

Analysis Batch: 388335

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-161869-1	FWS-DU-1	Total/NA	Solid	8151A	387367
570-161869-2	FWS-DU-2	Total/NA	Solid	8151A	387367

Lab Chronicle

Client: Apex Laboratories LLC
Project/Site: A3K1408

Job ID: 570-161869-1

Client Sample ID: FWS-DU-1

Lab Sample ID: 570-161869-1

Date Collected: 11/16/23 12:00

Matrix: Solid

Date Received: 11/22/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			38.49 g	5 mL	387367	11/28/23 13:47	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	388335	11/30/23 21:31	J7WE	EET CAL 4

Instrument ID: GC41

Client Sample ID: FWS-DU-2

Lab Sample ID: 570-161869-2

Date Collected: 11/16/23 12:15

Matrix: Solid

Date Received: 11/22/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			50.12 g	5 mL	387367	11/28/23 13:47	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	388335	11/30/23 21:53	J7WE	EET CAL 4

Instrument ID: GC41

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

Accreditation/Certification Summary

Client: Apex Laboratories LLC
Project/Site: A3K1408

Job ID: 570-161869-1

Laboratory: Eurofins Calscience

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	4175	02-02-24
Washington	State	C916-18	10-11-23 *

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* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Apex Laboratories LLC
Project/Site: A3K1408

Job ID: 570-161869-1

Method	Method Description	Protocol	Laboratory
8151A	Herbicides (GC)	SW846	EET CAL 4
8151A	Extraction (Herbicides)	SW846	EET CAL 4

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494



Sample Summary

Client: Apex Laboratories LLC
Project/Site: A3K1408

Job ID: 570-161869-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-161869-1	FWS-DU-1	Solid	11/16/23 12:00	11/22/23 09:40
570-161869-2	FWS-DU-2	Solid	11/16/23 12:15	11/22/23 09:40

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SUBCONTRACT ORDER

EST

Loc: 570
161869

Apex Laboratories
A3K1408

ANAL 11/16/23

SENDING LABORATORY:

Apex Laboratories
6700 S.W. Sandburg Street
Tigard, OR 97223
Phone: (503) 718-2323
Fax: (503) 336-0745
Project Manager: Jason Woodcock

RECEIVING LABORATORY:

Eurofins_CalScience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Phone : (714) 895-5494
Fax: (714) 894-7501

MWNA

Sample Name: FWS-DU-1 Soil After Processing
Sampled: 11/16/23 12:00 (A3K1408-02)

Analysis	Due	Expires	Comments
8151A Herbicides (SUB) Containers Supplied: (B)4 oz Glass Jar	12/01/23 17:00	11/30/23 12:00	

Sample Name: FWS-DU-2 Soil After Processing
Sampled: 11/16/23 12:15 (A3K1408-04)

Analysis	Due	Expires	Comments
8151A Herbicides (SUB) Containers Supplied: (B)4 oz Glass Jar	12/01/23 17:00	11/30/23 12:15	

Standard TAT



570-161869 Chain of Custody

SC12
1.6/1.5

Fed Ex (Shipper)

Released By	Date	Received By	Date
	11-21-23		11/22/23 0940
Released By	Date	Received By	Date
Fed Ex (Shipper)			

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161869

Login Sample Receipt Checklist

Client: Apex Laboratories LLC

Job Number: 570-161869-1

Login Number: 161869

List Number: 1

Creator: Gutierrez, Rebecca

List Source: Eurofins Calscience

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	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

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Tuesday, December 5, 2023
Nick Thornton
PBS Engineering and Environmental
4412 S Corbett Ave
Portland, OR 97239

RE: A3K1363 - Bull Run Filtration Facility - 24433.000

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A3K1363, which was received by the laboratory on 11/15/2023 at 4:20:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: jwoodcock@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.
(See Cooler Receipt Form for details)
Cooler #1 3.7 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report. All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



Apex Laboratories

Handwritten signature of Jason Woodcock

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1363 - 12 05 23 0944
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SWDC-DU-1	A3K1363-01	Soil	11/15/23 12:00	11/15/23 16:20
SWDC-DU-1	A3K1363-02	Soil	11/15/23 12:00	11/15/23 16:20

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental	Project: Bull Run Filtration Facility	Report ID:
4412 S Corbett Ave	Project Number: 24433.000	A3K1363 - 12 05 23 0944
Portland, OR 97239	Project Manager: Nick Thornton	

ANALYTICAL CASE NARRATIVE

Work Order: A3K1363	Apex Laboratories
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Subcontract

This report is complete only if it includes the attached subcontract laboratory report from Eurofins Calscience.

Apex Laboratories

Jason Woodcock, Project Manager

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ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1363 - 12 05 23 0944
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ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
SWDC-DU-1 (A3K1363-02)				Matrix: Soil		Batch: 23K0769		PRO
Diesel	ND	---	19.9	mg/kg dry	1	11/20/23 21:31	NWTPH-Dx	
Oil	ND	---	39.9	mg/kg dry	1	11/20/23 21:31	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 77 %</i>		<i>Limits: 50-150 %</i>	<i>1</i>	<i>11/20/23 21:31</i>	<i>NWTPH-Dx</i>	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1363 - 12 05 23 0944
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ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
SWDC-DU-1 (A3K1363-02RE1)				Matrix: Soil		Batch: 23K0963		C-05, PRO
Aldrin	ND	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
alpha-BHC	ND	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
beta-BHC	ND	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
delta-BHC	ND	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
gamma-BHC (Lindane)	ND	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
cis-Chlordane	ND	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
trans-Chlordane	ND	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
4,4'-DDD	ND	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
4,4'-DDE	0.00624	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
4,4'-DDT	0.00269	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
Dieldrin	0.00708	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
Endosulfan I	ND	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
Endosulfan II	ND	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
Endosulfan sulfate	ND	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
Endrin	ND	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
Endrin aldehyde	ND	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
Endrin ketone	ND	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
Heptachlor	ND	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
Heptachlor epoxide	ND	---	0.00200	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
Methoxychlor	ND	---	0.00601	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
Chlordane (Technical)	ND	---	0.0601	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
Toxaphene (Total)	ND	---	0.0601	mg/kg dry	1	11/29/23 18:02	EPA 8081B	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 54 %</i>	<i>Limits: 42-129 %</i>	<i>1</i>	<i>11/29/23 18:02</i>	<i>EPA 8081B</i>	
<i>Decachlorobiphenyl (Surr)</i>			<i>84 %</i>	<i>55-130 %</i>	<i>1</i>	<i>11/29/23 18:02</i>	<i>EPA 8081B</i>	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1363 - 12 05 23 0944
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ANALYTICAL SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
SWDC-DU-1 (A3K1363-02)				Matrix: Soil		Batch: 23K0804		PRO
Azinphos methyl (Guthion)	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	Q-42
Chlorpyrifos	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	
Coumaphos	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	
Demeton O	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	Q-42
Demeton S	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	Q-42
Diazinon	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	Q-42
Dichlorvos	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	Q-42
Dimethoate	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	Q-42
Disulfoton	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	
EPN	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	
Ethoprop	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	Q-42
Fensulfothion	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	Q-42
Fenthion	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	
Malathion	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	Q-42
Merphos	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	Q-42
Methyl parathion	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	
Mevinphos (Phosdrin)	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	Q-42
Monocrotophos	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	Q-42
Naled (Dibrom)	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	Q-42
Parathion, ethyl	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	
Phorate	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	
Ronnel (Fenclorophos)	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	
Sulfotep	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	Q-42
Sulprofos (Bolstar)	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	
TEPP	ND	---	0.199	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	Q-42
Tetrachlorvinphos (Rabon)	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	Q-42
Tokuthion (Prothiofos)	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	
Trichloronate	ND	---	0.0498	mg/kg dry	1	11/21/23 12:46	EPA 8270E OPPs	
<i>Surrogate: Tributyl phosphate (Surr)</i>			<i>Recovery: 15 %</i>	<i>Limits: 10-136 %</i>	<i>1</i>	<i>11/21/23 12:46</i>	<i>EPA 8270E OPPs</i>	
<i>Triphenyl phosphate (Surr)</i>			<i>30 %</i>	<i>34-121 %</i>	<i>1</i>	<i>11/21/23 12:46</i>	<i>EPA 8270E OPPs</i>	<i>S-03</i>

Apex Laboratories

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1363 - 12 05 23 0944
--	---	---

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
SWDC-DU-1 (A3K1363-02RE1)				Matrix: Soil				
Batch: 23K0926								
Antimony	ND	---	1.06	mg/kg dry	10	11/28/23 13:38	EPA 6020B	PRO
Arsenic	4.16	---	1.06	mg/kg dry	10	11/28/23 13:38	EPA 6020B	PRO
Barium	192	---	1.06	mg/kg dry	10	11/28/23 13:38	EPA 6020B	PRO
Beryllium	0.807	---	0.213	mg/kg dry	10	11/28/23 13:38	EPA 6020B	PRO
Cadmium	ND	---	0.213	mg/kg dry	10	11/28/23 13:38	EPA 6020B	PRO
Chromium	28.7	---	1.06	mg/kg dry	10	11/28/23 13:38	EPA 6020B	PRO
Cobalt	14.5	---	1.06	mg/kg dry	10	11/28/23 13:38	EPA 6020B	PRO
Copper	18.6	---	2.13	mg/kg dry	10	11/28/23 13:38	EPA 6020B	PRO
Lead	14.5	---	0.213	mg/kg dry	10	11/28/23 13:38	EPA 6020B	PRO
Mercury	ND	---	0.0851	mg/kg dry	10	11/28/23 13:38	EPA 6020B	PRO
Molybdenum	ND	---	1.06	mg/kg dry	10	11/28/23 13:38	EPA 6020B	PRO
Nickel	13.7	---	2.13	mg/kg dry	10	11/28/23 13:38	EPA 6020B	PRO
Selenium	ND	---	1.06	mg/kg dry	10	11/28/23 13:38	EPA 6020B	PRO
Silver	ND	---	0.213	mg/kg dry	10	11/28/23 13:38	EPA 6020B	PRO
Thallium	ND	---	0.213	mg/kg dry	10	11/28/23 13:38	EPA 6020B	PRO
Vanadium	74.6	---	2.13	mg/kg dry	10	11/28/23 13:38	EPA 6020B	PRO
Zinc	54.5	---	4.25	mg/kg dry	10	11/28/23 13:38	EPA 6020B	PRO

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1363 - 12 05 23 0944
---	--	---

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
SWDC-DU-1 (A3K1363-02)				Matrix: Soil		Batch: 23K0786		PRO
% Solids	99.6	---	1.00	%	1	11/21/23 07:21	EPA 8000D	

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ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1363 - 12 05 23 0944
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0769 - EPA 3546 (Fuels)						Soil						
Blank (23K0769-BLK1)		Prepared: 11/20/23 07:32 Analyzed: 11/20/23 19:50										
NWTPH-Dx												
Diesel	ND	---	20.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	---	40.0	mg/kg wet	1	---	---	---	---	---	---	
Mineral Oil	ND	---	40.0	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 84 %</i>			<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>					
LCS (23K0769-BS1)		Prepared: 11/20/23 07:32 Analyzed: 11/20/23 20:10										
NWTPH-Dx												
Diesel	119	---	20.0	mg/kg wet	1	125	---	95	38 - 132%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 90 %</i>			<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>					

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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Jason Woodcock, Project Manager



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ORELAP ID: OR100062

PBS Engineering and Environmental	Project: Bull Run Filtration Facility	
4412 S Corbett Ave	Project Number: 24433.000	Report ID:
Portland, OR 97239	Project Manager: Nick Thornton	A3K1363 - 12 05 23 0944

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0963 - EPA 3546/3640A (GPC)						Soil						
Blank (23K0963-BLK1)						Prepared: 11/27/23 06:50 Analyzed: 11/29/23 17:27						C-05
EPA 8081B												
Aldrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
alpha-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
beta-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
delta-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
gamma-BHC (Lindane)	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
cis-Chlordane	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
trans-Chlordane	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
4,4'-DDD	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
4,4'-DDE	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
4,4'-DDT	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Dieldrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endosulfan I	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endosulfan II	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endosulfan sulfate	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endrin aldehyde	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Endrin ketone	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Heptachlor	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Heptachlor epoxide	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Methoxychlor	ND	---	0.00600	mg/kg wet	1	---	---	---	---	---	---	
Chlordane (Technical)	ND	---	0.0600	mg/kg wet	1	---	---	---	---	---	---	
Toxaphene (Total)	ND	---	0.0600	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 62 %</i>	<i>Limits: 42-129 %</i>		<i>Dilution: 1x</i>						
<i>Decachlorobiphenyl (Surr)</i>			<i>104 %</i>	<i>55-130 %</i>		<i>"</i>						

LCS (23K0963-BS1)						Prepared: 11/27/23 06:50 Analyzed: 11/29/23 17:44						C-05
EPA 8081B												
Aldrin	0.0370	---	0.00200	mg/kg wet	1	0.0500	---	74	45 - 136%	---	---	
alpha-BHC	0.0376	---	0.00200	mg/kg wet	1	0.0500	---	75	45 - 137%	---	---	
beta-BHC	0.0397	---	0.00200	mg/kg wet	1	0.0500	---	79	50 - 136%	---	---	
delta-BHC	0.0464	---	0.00200	mg/kg wet	1	0.0500	---	93	47 - 139%	---	---	
gamma-BHC (Lindane)	0.0376	---	0.00200	mg/kg wet	1	0.0500	---	75	49 - 135%	---	---	
cis-Chlordane	0.0410	---	0.00200	mg/kg wet	1	0.0500	---	82	54 - 133%	---	---	

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ANALYTICAL REPORT

Apex Laboratories, LLC

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental	Project: Bull Run Filtration Facility	
4412 S Corbett Ave	Project Number: 24433.000	Report ID:
Portland, OR 97239	Project Manager: Nick Thornton	A3K1363 - 12 05 23 0944

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0963 - EPA 3546/3640A (GPC)						Soil						
LCS (23K0963-BS1)						Prepared: 11/27/23 06:50 Analyzed: 11/29/23 17:44						C-05
trans-Chlordane	0.0420	---	0.00200	mg/kg wet	1	0.0500	---	84	53 - 135%	---	---	
4,4'-DDD	0.0566	---	0.00200	mg/kg wet	1	0.0500	---	113	56 - 139%	---	---	
4,4'-DDE	0.0516	---	0.00200	mg/kg wet	1	0.0500	---	103	56 - 134%	---	---	
4,4'-DDT	0.0509	---	0.00200	mg/kg wet	1	0.0500	---	102	50 - 141%	---	---	
Dieldrin	0.0473	---	0.00200	mg/kg wet	1	0.0500	---	95	56 - 136%	---	---	
Endosulfan I	0.0442	---	0.00200	mg/kg wet	1	0.0500	---	88	53 - 132%	---	---	
Endosulfan II	0.0510	---	0.00200	mg/kg wet	1	0.0500	---	102	53 - 134%	---	---	
Endosulfan sulfate	0.0506	---	0.00200	mg/kg wet	1	0.0500	---	101	55 - 136%	---	---	
Endrin	0.0501	---	0.00200	mg/kg wet	1	0.0500	---	100	57 - 140%	---	---	
Endrin aldehyde	0.0490	---	0.00200	mg/kg wet	1	0.0500	---	98	35 - 137%	---	---	
Endrin ketone	0.0490	---	0.00200	mg/kg wet	1	0.0500	---	98	55 - 136%	---	---	
Heptachlor	0.0375	---	0.00200	mg/kg wet	1	0.0500	---	75	47 - 136%	---	---	
Heptachlor epoxide	0.0422	---	0.00200	mg/kg wet	1	0.0500	---	84	52 - 136%	---	---	
Methoxychlor	0.0578	---	0.00600	mg/kg wet	1	0.0500	---	116	52 - 143%	---	---	
<i>Surr: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 68 %</i>		<i>Limits: 42-129 %</i>		<i>Dilution: 1x</i>						
<i>Decachlorobiphenyl (Surr)</i>		<i>105 %</i>		<i>55-130 %</i>		<i>"</i>						

Duplicate (23K0963-DUP1) Prepared: 11/27/23 06:50 Analyzed: 11/29/23 18:19 **C-05, PRO**

QC Source Sample: SWDC-DU-1 (A3K1363-02RE1)												
EPA 8081B												
Aldrin	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
alpha-BHC	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
beta-BHC	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
delta-BHC	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
gamma-BHC (Lindane)	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
cis-Chlordane	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
trans-Chlordane	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
4,4'-DDD	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
4,4'-DDE	0.00587	---	0.00200	mg/kg dry	1	---	0.00624	---	---	6	30%	
4,4'-DDT	0.00274	---	0.00200	mg/kg dry	1	---	0.00269	---	---	2	30%	
Dieldrin	0.00652	---	0.00200	mg/kg dry	1	---	0.00708	---	---	8	30%	
Endosulfan I	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
Endosulfan II	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	
Endosulfan sulfate	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%	

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ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1363 - 12 05 23 0944
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes	
Batch 23K0963 - EPA 3546/3640A (GPC)						Soil							
Duplicate (23K0963-DUP1)			Prepared: 11/27/23 06:50 Analyzed: 11/29/23 18:19						C-05, PRO				
QC Source Sample: SWDC-DU-1 (A3K1363-02RE1)													
Endrin	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%		
Endrin aldehyde	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%		
Endrin ketone	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%		
Heptachlor	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%		
Heptachlor epoxide	ND	---	0.00200	mg/kg dry	1	---	ND	---	---	---	30%		
Methoxychlor	ND	---	0.00601	mg/kg dry	1	---	ND	---	---	---	30%		
Chlordane (Technical)	ND	---	0.0601	mg/kg dry	1	---	ND	---	---	---	30%		
Toxaphene (Total)	ND	---	0.0601	mg/kg dry	1	---	ND	---	---	---	30%		
<i>Surr: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 53 %</i>		<i>Limits: 42-129 %</i>		<i>Dilution: 1x</i>							
<i>Decachlorobiphenyl (Surr)</i>		<i>115 %</i>		<i>55-130 %</i>		<i>"</i>							

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Jason Woodcock, Project Manager



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--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0804 - EPA 3546						Soil						
Blank (23K0804-BLK1)		Prepared: 11/20/23 13:40 Analyzed: 11/21/23 11:35										
EPA 8270E OPPs												
Azinphos methyl (Guthion)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Chlorpyrifos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Coumaphos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Demeton O	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Demeton S	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Diazinon	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Dichlorvos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Dimethoate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Disulfoton	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
EPN	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Ethoprop	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Fensulfothion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Fenthion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Malathion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Merphos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Methyl parathion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Mevinphos (Phosdrin)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Monocrotophos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Naled (Dibrom)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Parathion, ethyl	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Phorate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Ronnel (Fenchlorphos)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Sulfotep	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Sulprofos (Bolstar)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
TEPP	ND	---	0.200	mg/kg wet	1	---	---	---	---	---	---	
Tetrachlorvinphos (Rabon)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Tokuthion (Prothiofos)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Trichloronate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	
Surr: Tributyl phosphate (Surr)		Recovery: 81 %		Limits: 10-136 %		Dilution: 1x						
Triphenyl phosphate (Surr)		96 %		34-121 %		"						

LCS (23K0804-BS1)	Prepared: 11/20/23 13:40 Analyzed: 11/21/23 12:10
EPA 8270E OPPs	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1363 - 12 05 23 0944
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0804 - EPA 3546						Soil						
LCS (23K0804-BS1)		Prepared: 11/20/23 13:40 Analyzed: 11/21/23 12:10										
Azinphos methyl (Guthion)	0.446	---	0.0500	mg/kg wet	1	0.400	---	112	38 - 156%	---	---	
Chlorpyrifos	0.417	---	0.0500	mg/kg wet	1	0.400	---	104	47 - 140%	---	---	
Coumaphos	0.458	---	0.0500	mg/kg wet	1	0.400	---	115	37 - 160%	---	---	
Demeton O	0.202	---	0.0500	mg/kg wet	1	0.184	---	110	66 - 127%	---	---	
Demeton S	0.202	---	0.0500	mg/kg wet	1	0.194	---	104	70 - 121%	---	---	
Diazinon	0.459	---	0.0500	mg/kg wet	1	0.400	---	115	42 - 134%	---	---	
Dichlorvos	0.419	---	0.0500	mg/kg wet	1	0.400	---	105	39 - 142%	---	---	
Dimethoate	0.404	---	0.0500	mg/kg wet	1	0.400	---	101	16 - 139%	---	---	
Disulfoton	0.421	---	0.0500	mg/kg wet	1	0.400	---	105	28 - 145%	---	---	
EPN	0.494	---	0.0500	mg/kg wet	1	0.400	---	123	44 - 137%	---	---	Q-41
Ethoprop	0.415	---	0.0500	mg/kg wet	1	0.400	---	104	47 - 128%	---	---	
Fensulfothion	0.498	---	0.0500	mg/kg wet	1	0.400	---	125	27 - 147%	---	---	Q-41
Fenthion	0.442	---	0.0500	mg/kg wet	1	0.400	---	110	44 - 134%	---	---	
Malathion	0.391	---	0.0500	mg/kg wet	1	0.400	---	98	46 - 137%	---	---	
Merphos	0.471	---	0.0500	mg/kg wet	1	0.400	---	118	66 - 131%	---	---	
Methyl parathion	0.471	---	0.0500	mg/kg wet	1	0.400	---	118	49 - 138%	---	---	
Mevinphos (Phosdrin)	0.446	---	0.0500	mg/kg wet	1	0.400	---	111	12 - 176%	---	---	
Monocrotophos	0.346	---	0.0500	mg/kg wet	1	0.400	---	87	10 - 153%	---	---	
Naled (Dibrom)	0.422	---	0.0500	mg/kg wet	1	0.400	---	106	10 - 174%	---	---	
Parathion, ethyl	0.451	---	0.0500	mg/kg wet	1	0.400	---	113	50 - 139%	---	---	
Phorate	0.400	---	0.0500	mg/kg wet	1	0.400	---	100	23 - 142%	---	---	
Ronnel (Fenchlorphos)	0.452	---	0.0500	mg/kg wet	1	0.400	---	113	45 - 138%	---	---	
Sulfotep	0.402	---	0.0500	mg/kg wet	1	0.400	---	100	52 - 126%	---	---	
Sulprofos (Bolstar)	0.412	---	0.0500	mg/kg wet	1	0.400	---	103	48 - 139%	---	---	
TEPP	0.527	---	0.200	mg/kg wet	1	0.400	---	132	16 - 126%	---	---	Q-29, Q-41
Tetrachlorvinphos (Rabon)	0.451	---	0.0500	mg/kg wet	1	0.400	---	113	54 - 129%	---	---	
Tokuthion (Prothiofos)	0.407	---	0.0500	mg/kg wet	1	0.400	---	102	45 - 136%	---	---	
Trichloronate	0.421	---	0.0500	mg/kg wet	1	0.400	---	105	37 - 140%	---	---	
<i>Surr: Tributyl phosphate (Surr)</i>		<i>Recovery: 101 %</i>		<i>Limits: 10-136 %</i>		<i>Dilution: 1x</i>						
<i>Triphenyl phosphate (Surr)</i>		<i>98 %</i>		<i>34-121 %</i>		<i>"</i>						

Duplicate (23K0804-DUP1) Prepared: 11/20/23 13:40 Analyzed: 11/21/23 13:22 **PRO**

QC Source Sample: SWDC-DU-1 (A3K1363-02)

Apex Laboratories

Jason Woodcock, Project Manager

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14 of 46
Page 14 of 26



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental	Project: Bull Run Filtration Facility	
4412 S Corbett Ave	Project Number: 24433.000	Report ID:
Portland, OR 97239	Project Manager: Nick Thornton	A3K1363 - 12 05 23 0944

QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0804 - EPA 3546						Soil						
Duplicate (23K0804-DUP1)						Prepared: 11/20/23 13:40 Analyzed: 11/21/23 13:22						PRO
<u>QC Source Sample: SWDC-DU-1 (A3K1363-02)</u>												
<u>EPA 8270E OPPs</u>												
Azinphos methyl (Guthion)	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Chlorpyrifos	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Coumaphos	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Demeton O	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Demeton S	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Diazinon	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Dichlorvos	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Dimethoate	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Disulfoton	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
EPN	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Ethoprop	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Fensulfothion	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Fenthion	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Malathion	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Merphos	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Methyl parathion	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Mevinphos (Phosdrin)	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Monocrotophos	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Naled (Dibrom)	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Parathion, ethyl	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Phorate	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Ronnel (Fenclorophos)	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Sulfotep	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Sulprofos (Bolstar)	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
TEPP	ND	---	0.199	mg/kg dry	1	---	ND	---	---	---	30%	
Tetrachlorvinphos (Rabon)	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Tokuthion (Prothiofos)	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
Trichloronate	ND	---	0.0497	mg/kg dry	1	---	ND	---	---	---	30%	
<i>Surr: Tributyl phosphate (Surr)</i>		<i>Recovery: 20 %</i>		<i>Limits: 10-136 %</i>		<i>Dilution: 1x</i>						
<i>Triphenyl phosphate (Surr)</i>		<i>31 %</i>		<i>34-121 %</i>		<i>"</i>						
												S-03

Matrix Spike (23K0804-MS1)	Prepared: 11/20/23 13:40 Analyzed: 11/21/23 13:58	PRO
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ANALYTICAL REPORT

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1363 - 12 05 23 0944
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QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes	
Batch 23K0804 - EPA 3546						Soil							
Matrix Spike (23K0804-MS1)		Prepared: 11/20/23 13:40 Analyzed: 11/21/23 13:58						PRO					
QC Source Sample: SWDC-DU-1 (A3K1363-02)													
EPA 8270E OPPs													
Azinphos methyl (Guthion)	0.138	---	0.0499	mg/kg dry	1	0.400	ND	35	38 - 156%	---	---	Q-01	
Chlorpyrifos	0.311	---	0.0499	mg/kg dry	1	0.400	ND	78	47 - 140%	---	---		
Coumaphos	0.372	---	0.0499	mg/kg dry	1	0.400	ND	93	37 - 160%	---	---		
Demeton O	ND	---	0.0499	mg/kg dry	1	0.184	ND	25	66 - 127%	---	---	Q-01	
Demeton S	ND	---	0.0499	mg/kg dry	1	0.194	ND		70 - 121%	---	---	Q-01	
Diazinon	ND	---	0.0499	mg/kg dry	1	0.400	ND		42 - 134%	---	---	Q-01	
Dichlorvos	ND	---	0.0499	mg/kg dry	1	0.400	ND		39 - 142%	---	---	Q-01	
Dimethoate	ND	---	0.0499	mg/kg dry	1	0.400	ND	7	16 - 139%	---	---	Q-01	
Disulfoton	0.388	---	0.0499	mg/kg dry	1	0.400	ND	97	28 - 145%	---	---		
EPN	0.409	---	0.0499	mg/kg dry	1	0.400	ND	102	44 - 137%	---	---	Q-41	
Ethoprop	0.0889	---	0.0499	mg/kg dry	1	0.400	ND	22	47 - 128%	---	---	Q-01	
Fensulfothion	0.101	---	0.0499	mg/kg dry	1	0.400	ND	25	27 - 147%	---	---	Q-01, Q-41	
Fenthion	0.420	---	0.0499	mg/kg dry	1	0.400	ND	105	44 - 134%	---	---		
Malathion	0.110	---	0.0499	mg/kg dry	1	0.400	ND	28	46 - 137%	---	---	Q-01	
Merphos	0.121	---	0.0499	mg/kg dry	1	0.400	ND	30	66 - 131%	---	---	Q-01	
Methyl parathion	0.406	---	0.0499	mg/kg dry	1	0.400	ND	102	49 - 138%	---	---		
Mevinphos (Phosdrin)	ND	---	0.0499	mg/kg dry	1	0.400	ND		12 - 176%	---	---	Q-01	
Monocrotophos	ND	---	0.0499	mg/kg dry	1	0.400	ND	7	10 - 153%	---	---	Q-01	
Naled (Dibrom)	ND	---	0.0499	mg/kg dry	1	0.400	ND	7	10 - 174%	---	---	Q-01	
Parathion, ethyl	0.454	---	0.0499	mg/kg dry	1	0.400	ND	114	50 - 139%	---	---		
Phorate	0.256	---	0.0499	mg/kg dry	1	0.400	ND	64	23 - 142%	---	---		
Ronnel (Fenchlorphos)	0.418	---	0.0499	mg/kg dry	1	0.400	ND	105	45 - 138%	---	---		
Sulfotep	0.183	---	0.0499	mg/kg dry	1	0.400	ND	46	52 - 126%	---	---	Q-01	
Sulprofos (Bolstar)	0.446	---	0.0499	mg/kg dry	1	0.400	ND	112	48 - 139%	---	---		
TEPP	ND	---	0.200	mg/kg dry	1	0.400	ND		16 - 126%	---	---	Q-01, Q-41	
Tetrachlorvinphos (Rabon)	0.0802	---	0.0499	mg/kg dry	1	0.400	ND	20	54 - 129%	---	---	Q-01	
Tokuthion (Prothiofos)	0.391	---	0.0499	mg/kg dry	1	0.400	ND	98	45 - 136%	---	---		
Trichloronate	0.336	---	0.0499	mg/kg dry	1	0.400	ND	84	37 - 140%	---	---		
<i>Surr: Tributyl phosphate (Surr)</i>		<i>Recovery: 21 %</i>		<i>Limits: 10-136 %</i>		<i>Dilution: 1x</i>							
<i>Triphenyl phosphate (Surr)</i>		<i>43 %</i>		<i>34-121 %</i>		<i>"</i>							

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ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1363 - 12 05 23 0944
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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0926 - EPA 3051A						Soil						
Blank (23K0926-BLK4)			Prepared: 11/22/23 15:31 Analyzed: 11/28/23 12:11									
EPA 6020B												
Antimony	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	Q-16
Arsenic	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	Q-16
Barium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	Q-16
Beryllium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	Q-16
Cadmium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	Q-16
Chromium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	Q-16
Cobalt	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	Q-16
Copper	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	Q-16
Lead	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	Q-16
Mercury	ND	---	0.0800	mg/kg wet	10	---	---	---	---	---	---	Q-16
Molybdenum	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	B-02, Q-16
Nickel	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	Q-16
Selenium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	Q-16
Silver	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	Q-16
Thallium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	Q-16
Vanadium	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	Q-16
Zinc	ND	---	4.00	mg/kg wet	10	---	---	---	---	---	---	Q-16
LCS (23K0926-BS3)						Prepared: 11/22/23 15:31 Analyzed: 11/28/23 12:25						
EPA 6020B												
Antimony	28.3	---	1.00	mg/kg wet	10	25.0	---	113	80 - 120%	---	---	Q-16
Arsenic	51.7	---	1.00	mg/kg wet	10	50.0	---	103	80 - 120%	---	---	Q-16
Barium	52.2	---	1.00	mg/kg wet	10	50.0	---	104	80 - 120%	---	---	Q-16
Beryllium	27.6	---	0.200	mg/kg wet	10	25.0	---	110	80 - 120%	---	---	Q-16
Cadmium	53.7	---	0.200	mg/kg wet	10	50.0	---	107	80 - 120%	---	---	Q-16
Chromium	51.5	---	1.00	mg/kg wet	10	50.0	---	103	80 - 120%	---	---	Q-16
Cobalt	51.7	---	1.00	mg/kg wet	10	50.0	---	103	80 - 120%	---	---	Q-16
Copper	53.9	---	2.00	mg/kg wet	10	50.0	---	108	80 - 120%	---	---	Q-16
Lead	51.7	---	0.200	mg/kg wet	10	50.0	---	103	80 - 120%	---	---	Q-16
Mercury	1.07	---	0.0800	mg/kg wet	10	1.00	---	107	80 - 120%	---	---	Q-16
Molybdenum	26.9	---	1.00	mg/kg wet	10	25.0	---	108	80 - 120%	---	---	B-02, Q-16
Nickel	53.3	---	2.00	mg/kg wet	10	50.0	---	107	80 - 120%	---	---	Q-16
Selenium	27.2	---	1.00	mg/kg wet	10	25.0	---	109	80 - 120%	---	---	Q-16

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ANALYTICAL REPORT

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1363 - 12 05 23 0944
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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0926 - EPA 3051A						Soil						
LCS (23K0926-BS3)		Prepared: 11/22/23 15:31 Analyzed: 11/28/23 12:25										
Silver	29.8	---	0.200	mg/kg wet	10	25.0	---	119	80 - 120%	---	---	Q-16
Thallium	27.5	---	0.200	mg/kg wet	10	25.0	---	110	80 - 120%	---	---	Q-16
Vanadium	51.4	---	2.00	mg/kg wet	10	50.0	---	103	80 - 120%	---	---	Q-16
Zinc	52.8	---	4.00	mg/kg wet	10	50.0	---	106	80 - 120%	---	---	Q-16

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0786 - Total Solids (Dry Weight) - 2022						Soil						

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1363 - 12 05 23 0944
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SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Prep: EPA 3546 (Fuels)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K0769</u>							
A3K1363-02	Soil	NWTPH-Dx	11/15/23 12:00	11/20/23 07:32	10.07g/5mL	10g/5mL	0.99

Organochlorine Pesticides by EPA 8081B

Prep: EPA 3546/3640A (GPC)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K0963</u>							
A3K1363-02RE1	Soil	EPA 8081B	11/15/23 12:00	11/27/23 06:50	10.03g/10mL	10g/5mL	1.99

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Prep: EPA 3546					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K0804</u>							
A3K1363-02	Soil	EPA 8270E OPPs	11/15/23 12:00	11/20/23 13:40	10.08g/5mL	10g/5mL	0.99

Total Metals by EPA 6020B (ICPMS)

Prep: EPA 3051A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K0926</u>							
A3K1363-02RE1	Soil	EPA 6020B	11/15/23 12:00	11/22/23 15:31	0.472g/50mL	0.5g/50mL	1.06

Percent Dry Weight

Prep: Total Solids (Dry Weight) - 2022					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K0786</u>							
A3K1363-02	Soil	EPA 8000D	11/15/23 12:00	11/20/23 09:56			NA

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QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

- B-02** Analyte detected in an associated blank at a level between one-half the MRL and the MRL. (See Notes and Conventions below.)
- C-05** Extract has undergone a GPC (Gel-Permeation Chromatography) cleanup per EPA 3640A. Reporting levels may be raised due to dilution necessary for cleanup. Sample Final Volume includes the GPC dilution factor, see the Prep page for details.
- PRO** Sample has undergone sample processing prior to extraction and analysis.
- Q-01** Spike recovery and/or RPD is outside acceptance limits.
- Q-16** Reanalysis of an original Batch QC sample.
- Q-29** Recovery for Lab Control Spike (LCS) is above the upper control limit. Data may be biased high.
- Q-41** Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
- Q-42** Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)
- S-03** Sample re-extract, or the analysis of an associated Batch QC sample, confirms surrogate failure due to sample matrix effect.

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported.
- RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as "dry", "wet", or " " (blank) designation.
- "dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.
- "wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
- " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) are not included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to ½ the Reporting Limit (RL).
-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1363 - 12 05 23 0944
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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1363 - 12 05 23 0944
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LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation)
EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation
--------	----------	--------	---------	--------	---------------

All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

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--	---	---

APEX LABS
6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

CHAIN OF CUSTODY

Lab # ASH1803 coc 1 of 1

Company: <u>PBS</u>	Project Mgr: <u>NICK THORNTON</u>	Project Name: <u>BULL RUN FILTRATION FACILITY</u>	Project #: <u>24433 000</u>	
Address: <u>PDX OFFICE</u>		Phone: <u>503 917 7610</u>	Email: <u>NICK.THORNTON@PBSUSA.COM</u>	PO #
Sampled by: <u>DAVID RUKKI</u>				
Site Location:				
State: <u>OR</u>	County:	SAMPLE ID: <u>SWDC-DU-1</u>		
DATE: <u>11-15-23</u>	TIME: <u>11:06</u>	MATRIX: <u>S</u>	# OF CONTAINERS: <u>1</u>	
		NWTPH-GX		
		NWTPH-DX		
		NWTPH-HCID		
		8260 BTEX		
		8260 RBDM VOCs		
		8260 Halo VOCs		
		8260 VOCs Full List		
		8270 SIM PAHs		
		8270 Semi-Vols Full List		
		8082 PCBs		
		8081 Pesticides		
		RCRA Metals (9)		
		Priority Metals (13)		
		AL, Sb, As, Ba, Be, Cd, Ca, Cr, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Ti, V, Zn, TCIP		
		TOTAL DISS. TCIP		
		TCIP Metals (8)		
		Pesticides 8081A		
		Pesticides 8141A		
		HERBICIDES 8151		
		Ag METALS 60001		
		Hold Sample		
		Frozen Archive		

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day 2 Day 3 Day 5 Day Standard Other: _____

SPECIAL INSTRUCTIONS:

RECEIVED BY: Signature: <u>David Rukki</u> Date: <u>11-15-23</u> Printed Name: <u>David Rukki</u> Time: <u>16:20</u> Company: <u>PBS</u>	RECEIVED BY: Signature: _____ Date: _____ Printed Name: _____ Time: _____ Company: _____
---	---

Form Y-002 R-00

Apex Laboratories

Jason Woodcock, Project Manager

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ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1363 - 12 05 23 0944
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APEX LABS COOLER RECEIPT FORM

Client: PBS Element WO#: A3/K1363

Project/Project #: Bull Run Filtration Facility / 24433.000

Delivery Info:

Date/time received: 11-15-23 @ 1620 By: DJJ

Delivered by: Apex Client ESS FedEx UPS Radio Morgan SDS Evergreen Other

Cooler Inspection Date/time inspected: 11-15-23 @ 1620 By: DJJ

Chain of Custody included? Yes No

Signed/dated by client? Yes No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>3.7</u>						
Custody seals? (Y/N)	<u>N</u>						
Received on ice? (Y/N)	<u>Y</u>						
Temp. blanks? (Y/N)	<u>N</u>						
Ice type: (Gel/Real/Other)	<u>Real</u>						
Condition (In/Out):	<u>In</u>						

Cooler out of temp? (Y/N) Possible reason why: _____

Green dots applied to out of temperature samples? Yes No

Out of temperature samples form initiated? Yes No

Sample Inspection: Date/time inspected: 11/15/23 @ 16:28 By: APW

All samples intact? Yes No Comments: _____

Bottle labels/COCs agree? Yes No Comments: _____

COC/container discrepancies form initiated? Yes No

Containers/volumes received appropriate for analysis? Yes No Comments: _____

Do VOA vials have visible headspace? Yes No NA

Comments: _____

Water samples: pH checked: Yes No NA pH appropriate? Yes No NA pH ID: _____

Comments: _____

Additional information: _____

Labeled by: APW Witness: DJJ Cooler Inspected by: APW

Form Y-003 R-01

Apex Laboratories

Jason Woodcock, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.



ANALYTICAL REPORT

PREPARED FOR

Attn: Jason Woodcock
Apex Laboratories LLC
6700 SW Sandburg St.
Tigard, Oregon 97223

Generated 12/4/2023 5:33:44 PM

JOB DESCRIPTION

A3K1363

JOB NUMBER

570-161749-1

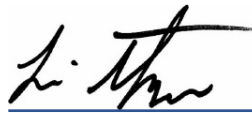
Eurofins Calscience

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 Calscience Project Manager.

Authorization



Generated
12/4/2023 5:33:44 PM

Authorized for release by
Lori Thompson, Project Manager I
Lori.Thompson@et.eurofinsus.com
(657)212-3035



Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Detection Summary	6
Client Sample Results	7
Surrogate Summary	8
QC Sample Results	9
QC Association Summary	11
Lab Chronicle	12
Certification Summary	13
Method Summary	14
Sample Summary	15
Chain of Custody	16
Receipt Checklists	20

Definitions/Glossary

Client: Apex Laboratories LLC
Project/Site: A3K1363

Job ID: 570-161749-1

Qualifiers

GC Semi 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.
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
S1+	Surrogate recovery exceeds control limits, high biased.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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

Case Narrative

Client: Apex Laboratories LLC
Project/Site: A3K1363

Job ID: 570-161749-1

Job ID: 570-161749-1

Laboratory: Eurofins Calscience

Narrative

Job Narrative 570-161749-1

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 are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample 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 sample was received on 11/21/2023 9:40 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.4°C

Herbicides

Method 8151A: The 2,4-Dichlorophenylacetic acid surrogate recovery for the following samples was outside acceptance limits (high biased) on the primary column due to matrix interference: SWDC-DU-1 (570-161749-1). The recovery is within acceptance limits on the other column, indicating that the extraction process was in control.

Method 8151A: The matrix spike / matrix spike duplicate / sample duplicate (MS/MSD/DUP) precision for preparation batch 570-387367 and analytical batch 570-388335 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 8151A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-387367 and analytical batch 570-388335 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.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Apex Laboratories LLC
Project/Site: A3K1363

Job ID: 570-161749-1

Client Sample ID: SWDC-DU-1

Lab Sample ID: 570-161749-1

No Detections.

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This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Apex Laboratories LLC
 Project/Site: A3K1363

Job ID: 570-161749-1

Method: SW846 8151A - Herbicides (GC)

Client Sample ID: SWDC-DU-1
Date Collected: 11/15/23 12:00
Date Received: 11/21/23 09:40

Lab Sample ID: 570-161749-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.7	ug/Kg	☼	11/28/23 13:47	12/01/23 00:07	1
2,4,5-TP (Silvex)	ND		10	7.6	ug/Kg	☼	11/28/23 13:47	12/01/23 00:07	1
2,4-D	ND		100	49	ug/Kg	☼	11/28/23 13:47	12/01/23 00:07	1
2,4-DB	ND		100	100	ug/Kg	☼	11/28/23 13:47	12/01/23 00:07	1
Dalapon	ND		250	73	ug/Kg	☼	11/28/23 13:47	12/01/23 00:07	1
Dicamba	ND		10	4.8	ug/Kg	☼	11/28/23 13:47	12/01/23 00:07	1
Dichlorprop	ND		100	50	ug/Kg	☼	11/28/23 13:47	12/01/23 00:07	1
Dinoseb	ND		100	59	ug/Kg	☼	11/28/23 13:47	12/01/23 00:07	1
MCPA	ND		10000	4900	ug/Kg	☼	11/28/23 13:47	12/01/23 00:07	1
MCPP	ND		10000	6600	ug/Kg	☼	11/28/23 13:47	12/01/23 00:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	262	S1+	20 - 163	11/28/23 13:47	12/01/23 00:07	1

Surrogate Summary

Client: Apex Laboratories LLC
Project/Site: A3K1363

Job ID: 570-161749-1

Method: 8151A - Herbicides (GC)

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (20-163)
570-161749-1	SWDC-DU-1	262 S1+
LCS 570-387367/2-A	Lab Control Sample	53 p
LCSD 570-387367/3-A	Lab Control Sample Dup	49 p
MB 570-387367/1-A	Method Blank	64

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

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QC Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1363

Job ID: 570-161749-1

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 570-387367/1-A
Matrix: Solid
Analysis Batch: 387706

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387367

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.7	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
2,4,5-TP (Silvex)	ND		10	7.5	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
2,4-D	ND		100	49	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
2,4-DB	ND		100	100	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
Dalapon	ND		250	72	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
Dicamba	ND		10	4.7	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
Dichlorprop	ND		100	49	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
Dinoseb	ND		100	59	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
MCPA	ND		10000	4900	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
MCPP	ND		10000	6600	ug/Kg		11/28/23 13:44	11/29/23 14:30	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	64		20 - 163	11/28/23 13:44	11/29/23 14:30	1

Lab Sample ID: LCS 570-387367/2-A
Matrix: Solid
Analysis Batch: 387706

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387367

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,4,5-T	20.0	14.12		ug/Kg		71	26 - 180
2,4,5-TP (Silvex)	20.0	12.69		ug/Kg		63	10 - 180
2,4-D	200	188.3		ug/Kg		94	13 - 180
2,4-DB	200	155.2		ug/Kg		78	10 - 180
Dalapon	500	382.4		ug/Kg		76	10 - 176
Dicamba	20.0	13.17		ug/Kg		66	21 - 164
Dichlorprop	200	139.1		ug/Kg		70	10 - 175
Dinoseb	100	96.21	J	ug/Kg		96	10 - 180
MCPA	20000	26130		ug/Kg		131	22 - 180
MCPP	20000	16400		ug/Kg		82	18 - 180

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4-Dichlorophenylacetic acid	53	p	20 - 163

Lab Sample ID: LCSD 570-387367/3-A
Matrix: Solid
Analysis Batch: 387706

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387367

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,4,5-T	20.0	11.40		ug/Kg		57	26 - 180	21	40
2,4,5-TP (Silvex)	20.0	11.48		ug/Kg		57	10 - 180	10	40
2,4-D	200	163.8		ug/Kg		82	13 - 180	14	40
2,4-DB	200	156.5		ug/Kg		78	10 - 180	1	40
Dalapon	500	337.6		ug/Kg		68	10 - 176	12	40
Dicamba	20.0	11.81		ug/Kg		59	21 - 164	11	40
Dichlorprop	200	127.3		ug/Kg		64	10 - 175	9	40
Dinoseb	100	87.90	J	ug/Kg		88	10 - 180	9	40
MCPA	20000	24390		ug/Kg		122	22 - 180	7	40
MCPP	20000	15040		ug/Kg		75	18 - 180	9	40

Eurofins Calscience
35 of 46

QC Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1363

Job ID: 570-161749-1

Method: 8151A - Herbicides (GC) (Continued)

<i>Surrogate</i>	<i>LCS D</i>	<i>LCS D</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
2,4-Dichlorophenylacetic acid	49	p	20 - 163

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QC Association Summary

Client: Apex Laboratories LLC
Project/Site: A3K1363

Job ID: 570-161749-1

GC Semi VOA

Prep Batch: 387367

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-161749-1	SWDC-DU-1	Total/NA	Solid	8151A	
MB 570-387367/1-A	Method Blank	Total/NA	Solid	8151A	
LCS 570-387367/2-A	Lab Control Sample	Total/NA	Solid	8151A	
LCSD 570-387367/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	

Analysis Batch: 387706

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 570-387367/1-A	Method Blank	Total/NA	Solid	8151A	387367
LCS 570-387367/2-A	Lab Control Sample	Total/NA	Solid	8151A	387367
LCSD 570-387367/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	387367

Analysis Batch: 388335

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-161749-1	SWDC-DU-1	Total/NA	Solid	8151A	387367

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- 2
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Lab Chronicle

Client: Apex Laboratories LLC
Project/Site: A3K1363

Job ID: 570-161749-1

Client Sample ID: SWDC-DU-1

Lab Sample ID: 570-161749-1

Date Collected: 11/15/23 12:00

Matrix: Solid

Date Received: 11/21/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			50.38 g	5 mL	387367	11/28/23 13:47	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	388335	12/01/23 00:07	J7WE	EET CAL 4

Instrument ID: GC41

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

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Accreditation/Certification Summary

Client: Apex Laboratories LLC
Project/Site: A3K1363

Job ID: 570-161749-1

Laboratory: Eurofins Calscience

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	4175	02-02-24
Washington	State	C916-18	10-11-23 *

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* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Apex Laboratories LLC
Project/Site: A3K1363

Job ID: 570-161749-1

Method	Method Description	Protocol	Laboratory
8151A	Herbicides (GC)	SW846	EET CAL 4
8151A	Extraction (Herbicides)	SW846	EET CAL 4

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494



Sample Summary

Client: Apex Laboratories LLC
Project/Site: A3K1363

Job ID: 570-161749-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-161749-1	SWDC-DU-1	Solid	11/15/23 12:00	11/21/23 09:40

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SUBCONTRACT ORDER

Loc: 570
161749

Apex Laboratories

A3K1363

AKC 11/15/23

SENDING LABORATORY:

Apex Laboratories
6700 S.W. Sandburg Street
Tigard, OR 97223
Phone: (503) 718-2323
Fax: (503) 336-0745
Project Manager: Jason Woodcock

RECEIVING LABORATORY:

Eurofins_CalScience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Phone : (714) 895-5494
Fax: (714) 894-7501

AKC

Sample Name: SWDC-DU-1	Soil	After Processing	
		Sampled: 11/15/23 12:00	(A3K1363-02)
Analysis	Due	Expires	Comments
8151A Herbicides (SUB) Containers Supplied: (B)4 oz Glass Jar	11/30/23 17:00	11/29/23 12:00	

Standard TAT



570-161749 Chain of Custody

	11-20-23	Fed Ex (Shipper)	
Released By	Date	Received By	Date
Fed Ex (Shipper)			11/21/23 5:40
Released By	Date	Received By	Date
			1-5/12-4 5612

SUBCONTRACT ORDER

Loc: 570
161749

Apex Laboratories

A3K1363

AKC 11/15/23

SENDING LABORATORY:

RECEIVING LABORATORY:

Apex Laboratories
6700 S.W. Sandburg Street
Tigard, OR 97223
Phone: (503) 718-2323
Fax: (503) 336-0745
Project Manager: Jason Woodcock

Eurofins_CalScience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Phone : (714) 895-5494
Fax: (714) 894-7501

AKC

After Processing

Sample Name: SWDC-DU-1 Soil Sampled: 11/15/23 12:00 (A3K1363-02)

Analysis	Due	Expires	Comments
8151A Herbicides (SUB) Containers Supplied: (B)4 oz Glass Jar	11/30/23 17:00	11/29/23 12:00	

Standard TAT



570-161749 Chain of Custody

Fed Ex (Shipper)

Released By _____ Date 11-20-23 Received By _____ Date _____

Released By Fed Ex (Shipper) Received By _____ Date 11/21/23 5:40

Released By _____ Date _____ Received By _____ Date 1-5/11-4 SC12

161749



570-161749 Waybill

ORIGIN ID: BNOA (503) 718-2323
SAMPLE CONTROL
APEX LABS
6700 SW SANDBURG ST.

SHIP DATE: 20NOV23
ACTWGT: 11.00 LB
CAD: 4716258/INET4535
DIMS: 12x8x11 IN

TIGARD, OR 97223
UNITED STATES US

BILL SENDER

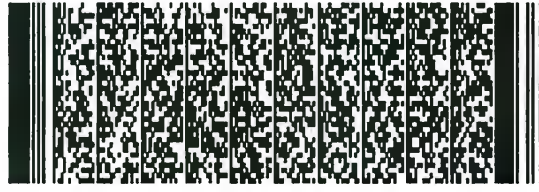
TO DANIELLE GONSMAN
EUROFINS_CALSCIENCE
2841 DOW AVENUE
SUITE 100
TUSTIN CA 92780

(714) 895-5494
INV:
PO:

REF:

DEPT:

583J5F0B29AE3

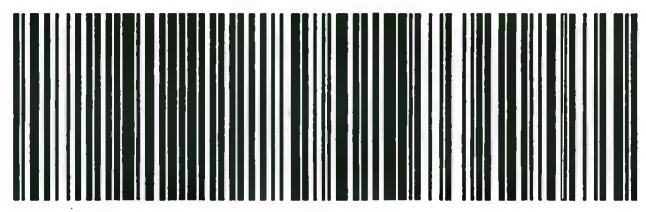


TUE - 21 NOV 10:30A
PRIORITY OVERNIGHT

TRK# 7741 7531 2817
0201

WZ DTHA

92780
CA-US SNA



Login Sample Receipt Checklist

Client: Apex Laboratories LLC

Job Number: 570-161749-1

Login Number: 161749

List Source: Eurofins Calscience

List Number: 1

Creator: Vitente, Precy

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	N/A	Received project as a subcontract.
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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ANALYTICAL REPORT

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Tuesday, December 5, 2023
Nick Thornton
PBS Engineering and Environmental
4412 S Corbett Ave
Portland, OR 97239

RE: A3K1449 - Bull Run Filtration Facility - 24433.000

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A3K1449, which was received by the laboratory on 11/17/2023 at 1:30:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: jwoodcock@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.
(See Cooler Receipt Form for details)
Default Cooler 1.4 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report. All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



Apex Laboratories

Handwritten signature of Jason Woodcock

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
RWE-DU-1	A3K1449-01	Soil	11/17/23 12:00	11/17/23 13:30
RWE-DU-1	A3K1449-02	Soil	11/17/23 12:00	11/17/23 13:30
RWE-DU-2	A3K1449-03	Soil	11/17/23 12:05	11/17/23 13:30
RWE-DU-2	A3K1449-04	Soil	11/17/23 12:05	11/17/23 13:30

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Jason Woodcock, Project Manager



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ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u>	Project: <u>Bull Run Filtration Facility</u>	<u>Report ID:</u>
4412 S Corbett Ave	Project Number: 24433.000	A3K1449 - 12 05 23 1023
Portland, OR 97239	Project Manager: Nick Thornton	

ANALYTICAL CASE NARRATIVE

Work Order: A3K1449	Apex Laboratories
----------------------------	--------------------------

Subcontract

This report is complete only if it includes the attached subcontract laboratory report from Eurofins Calscience.

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Jason Woodcock, Project Manager



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ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
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ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
RWE-DU-1 (A3K1449-02)				Matrix: Soil		Batch: 23K1078		PRO
Diesel	ND	---	20.0	mg/kg dry	1	12/01/23 00:54	NWTPH-Dx	
Oil	ND	---	40.0	mg/kg dry	1	12/01/23 00:54	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 79 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/01/23 00:54</i>	<i>NWTPH-Dx</i>	<i>Q-41</i>
RWE-DU-2 (A3K1449-04)				Matrix: Soil		Batch: 23K1078		PRO
Diesel	ND	---	19.6	mg/kg dry	1	12/01/23 01:34	NWTPH-Dx	
Oil	ND	---	39.2	mg/kg dry	1	12/01/23 01:34	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 92 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/01/23 01:34</i>	<i>NWTPH-Dx</i>	<i>Q-41</i>

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
--	---	---

ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
RWE-DU-1 (A3K1449-02RE1)				Matrix: Soil		Batch: 23K0963		C-05, PRO
Aldrin	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
alpha-BHC	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
beta-BHC	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
delta-BHC	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
gamma-BHC (Lindane)	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
cis-Chlordane	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
trans-Chlordane	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
4,4'-DDD	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
4,4'-DDE	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
Dieldrin	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
Endosulfan I	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
Endosulfan II	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
Endosulfan sulfate	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
Endrin	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
Endrin aldehyde	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
Endrin ketone	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
Heptachlor	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
Heptachlor epoxide	ND	---	0.00203	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
Methoxychlor	ND	---	0.00610	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
Chlordane (Technical)	ND	---	0.0610	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
Toxaphene (Total)	ND	---	0.0610	mg/kg dry	1	11/29/23 21:01	EPA 8081B	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 58 %</i>	<i>Limits: 42-129 %</i>	<i>1</i>	<i>11/29/23 21:01</i>	<i>EPA 8081B</i>	
<i>Decachlorobiphenyl (Surr)</i>			<i>99 %</i>	<i>55-130 %</i>	<i>1</i>	<i>11/29/23 21:01</i>	<i>EPA 8081B</i>	

RWE-DU-1 (A3K1449-02RE2)				Matrix: Soil		Batch: 23K0963		C-05, PRO
4,4'-DDT	ND	---	0.00203	mg/kg dry	1	11/30/23 12:38	EPA 8081B	

RWE-DU-2 (A3K1449-04RE1)				Matrix: Soil		Batch: 23K0963		C-05, PRO
Aldrin	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
alpha-BHC	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
beta-BHC	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
delta-BHC	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
gamma-BHC (Lindane)	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
cis-Chlordane	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
trans-Chlordane	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
4,4'-DDD	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
--	---	---

ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
RWE-DU-2 (A3K1449-04RE1)				Matrix: Soil		Batch: 23K0963		C-05, PRO
4,4'-DDE	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
Dieldrin	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
Endosulfan I	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
Endosulfan II	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
Endosulfan sulfate	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
Endrin	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
Endrin aldehyde	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
Endrin ketone	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
Heptachlor	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
Heptachlor epoxide	ND	---	0.00204	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
Methoxychlor	ND	---	0.00613	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
Chlordane (Technical)	ND	---	0.0613	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
Toxaphene (Total)	ND	---	0.0613	mg/kg dry	1	11/29/23 21:19	EPA 8081B	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 61 %</i>		<i>Limits: 42-129 %</i>		<i>1</i>	<i>11/29/23 21:19</i>	<i>EPA 8081B</i>
<i>Decachlorobiphenyl (Surr)</i>		<i>99 %</i>		<i>55-130 %</i>		<i>1</i>	<i>11/29/23 21:19</i>	<i>EPA 8081B</i>
RWE-DU-2 (A3K1449-04RE2)				Matrix: Soil		Batch: 23K0963		C-05, PRO
4,4'-DDT	ND	---	0.00204	mg/kg dry	1	11/30/23 12:55	EPA 8081B	

Apex Laboratories

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
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ANALYTICAL SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
RWE-DU-1 (A3K1449-02)				Matrix: Soil		Batch: 23K1061		PRO
Azinphos methyl (Guthion)	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Chlorpyrifos	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Coumaphos	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Demeton O	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Demeton S	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Diazinon	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Dichlorvos	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Dimethoate	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Disulfoton	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
EPN	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Ethoprop	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Fensulfothion	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Fenthion	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Malathion	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Merphos	ND	---	0.111	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	R-02
Methyl parathion	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Mevinphos (Phosdrin)	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Monocrotophos	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Naled (Dibrom)	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Parathion, ethyl	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Phorate	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Ronnel (Fenclorophos)	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Sulfotep	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Sulprofos (Bolstar)	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
TEPP	ND	---	0.199	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Tetrachlorvinphos (Rabon)	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Tokuthion (Prothiofos)	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
Trichloronate	ND	---	0.0498	mg/kg dry	1	11/29/23 21:59	EPA 8270E OPPs	
<i>Surrogate: Tributyl phosphate (Surr)</i>		<i>Recovery: 23 %</i>		<i>Limits: 10-136 %</i>		<i>1</i>	<i>11/29/23 21:59</i>	<i>EPA 8270E OPPs</i>
<i>Triphenyl phosphate (Surr)</i>		<i>84 %</i>		<i>34-121 %</i>		<i>1</i>	<i>11/29/23 21:59</i>	<i>EPA 8270E OPPs</i>

RWE-DU-2 (A3K1449-04)				Matrix: Soil		Batch: 23K1061		PRO
Azinphos methyl (Guthion)	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Chlorpyrifos	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Coumaphos	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Demeton O	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Demeton S	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
--	---	---

ANALYTICAL SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
RWE-DU-2 (A3K1449-04)				Matrix: Soil		Batch: 23K1061		PRO
Diazinon	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Dichlorvos	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Dimethoate	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Disulfoton	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
EPN	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Ethoprop	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Fensulfothion	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Fenthion	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Malathion	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Merphos	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Methyl parathion	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Mevinphos (Phosdrin)	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Monocrotophos	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Naled (Dibrom)	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Parathion, ethyl	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Phorate	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Ronnel (Fenclorophos)	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Sulfotep	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Sulprofos (Bolstar)	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
TEPP	ND	---	0.198	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Tetrachlorvinphos (Rabon)	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Tokuthion (Prothiofos)	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
Trichloronate	ND	---	0.0496	mg/kg dry	1	11/29/23 22:34	EPA 8270E OPPs	
<i>Surrogate: Tributyl phosphate (Surr)</i>		<i>Recovery: 16 %</i>		<i>Limits: 10-136 %</i>		<i>1</i>	<i>11/29/23 22:34</i>	<i>EPA 8270E OPPs</i>
<i>Triphenyl phosphate (Surr)</i>		<i>60 %</i>		<i>34-121 %</i>		<i>1</i>	<i>11/29/23 22:34</i>	<i>EPA 8270E OPPs</i>

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
RWE-DU-1 (A3K1449-02)				Matrix: Soil				
<u>Batch: 23K1101</u>								
Arsenic	3.04	---	0.987	mg/kg dry	10	11/30/23 19:43	EPA 6020B	PRO
Barium	163	---	0.987	mg/kg dry	10	11/30/23 19:43	EPA 6020B	PRO
Beryllium	1.05	---	0.197	mg/kg dry	10	11/30/23 19:43	EPA 6020B	PRO
Cadmium	ND	---	0.197	mg/kg dry	10	11/30/23 19:43	EPA 6020B	PRO
Chromium	31.0	---	0.987	mg/kg dry	10	11/30/23 19:43	EPA 6020B	PRO
Cobalt	13.3	---	0.987	mg/kg dry	10	11/30/23 19:43	EPA 6020B	PRO
Copper	20.3	---	1.97	mg/kg dry	10	11/30/23 19:43	EPA 6020B	PRO
Lead	11.8	---	0.197	mg/kg dry	10	11/30/23 19:43	EPA 6020B	PRO
Mercury	ND	---	0.0790	mg/kg dry	10	11/30/23 19:43	EPA 6020B	PRO
Molybdenum	ND	---	0.987	mg/kg dry	10	11/30/23 19:43	EPA 6020B	PRO
Nickel	12.9	---	1.97	mg/kg dry	10	11/30/23 19:43	EPA 6020B	PRO
Selenium	ND	---	0.987	mg/kg dry	10	11/30/23 19:43	EPA 6020B	PRO
Silver	ND	---	0.197	mg/kg dry	10	11/30/23 19:43	EPA 6020B	PRO
Thallium	ND	---	0.197	mg/kg dry	10	11/30/23 19:43	EPA 6020B	PRO
Vanadium	75.2	---	1.97	mg/kg dry	10	11/30/23 19:43	EPA 6020B	PRO
Zinc	54.2	---	3.95	mg/kg dry	10	11/30/23 19:43	EPA 6020B	PRO
RWE-DU-1 (A3K1449-02RE1)				Matrix: Soil				
<u>Batch: 23K1101</u>								
Antimony	ND	---	0.987	mg/kg dry	10	12/01/23 12:07	EPA 6020B	PRO
RWE-DU-2 (A3K1449-04)				Matrix: Soil				
<u>Batch: 23K1101</u>								
Arsenic	3.25	---	1.03	mg/kg dry	10	11/30/23 19:48	EPA 6020B	PRO
Barium	135	---	1.03	mg/kg dry	10	11/30/23 19:48	EPA 6020B	PRO
Beryllium	1.07	---	0.205	mg/kg dry	10	11/30/23 19:48	EPA 6020B	PRO
Cadmium	ND	---	0.205	mg/kg dry	10	11/30/23 19:48	EPA 6020B	PRO
Chromium	34.9	---	1.03	mg/kg dry	10	11/30/23 19:48	EPA 6020B	PRO
Cobalt	14.6	---	1.03	mg/kg dry	10	11/30/23 19:48	EPA 6020B	PRO
Copper	17.2	---	2.05	mg/kg dry	10	11/30/23 19:48	EPA 6020B	PRO
Lead	10.6	---	0.205	mg/kg dry	10	11/30/23 19:48	EPA 6020B	PRO
Mercury	ND	---	0.0821	mg/kg dry	10	11/30/23 19:48	EPA 6020B	PRO
Molybdenum	ND	---	1.03	mg/kg dry	10	11/30/23 19:48	EPA 6020B	PRO
Nickel	12.5	---	2.05	mg/kg dry	10	11/30/23 19:48	EPA 6020B	PRO
Selenium	ND	---	1.03	mg/kg dry	10	11/30/23 19:48	EPA 6020B	PRO

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
RWE-DU-2 (A3K1449-04)				Matrix: Soil				
Silver	ND	---	0.205	mg/kg dry	10	11/30/23 19:48	EPA 6020B	PRO
Thallium	ND	---	0.205	mg/kg dry	10	11/30/23 19:48	EPA 6020B	PRO
Vanadium	89.9	---	2.05	mg/kg dry	10	11/30/23 19:48	EPA 6020B	PRO
Zinc	37.6	---	4.10	mg/kg dry	10	11/30/23 19:48	EPA 6020B	PRO
RWE-DU-2 (A3K1449-04RE1)				Matrix: Soil				
Batch: 23K1101								
Antimony	ND	---	1.03	mg/kg dry	10	12/01/23 12:12	EPA 6020B	PRO

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ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
RWE-DU-1 (A3K1449-02)				Matrix: Soil		Batch: 23K0946		PRO
% Solids	98.1	---	1.00	%	1	11/28/23 07:40	EPA 8000D	
RWE-DU-2 (A3K1449-04)				Matrix: Soil		Batch: 23K0946		PRO
% Solids	97.6	---	1.00	%	1	11/28/23 07:40	EPA 8000D	

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--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1078 - EPA 3546 (Fuels)						Soil						
Blank (23K1078-BLK1)		Prepared: 11/30/23 04:59 Analyzed: 11/30/23 07:24										
<u>NWTPH-Dx</u>												
Diesel	ND	---	20.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	---	40.0	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 87%</i>		<i>Limits: 50-150%</i>		<i>Dilution: 1x</i>						
LCS (23K1078-BS1)		Prepared: 11/30/23 04:59 Analyzed: 11/30/23 07:47										
<u>NWTPH-Dx</u>												
Diesel	111	---	20.0	mg/kg wet	1	125	---	89	38 - 132%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 86%</i>		<i>Limits: 50-150%</i>		<i>Dilution: 1x</i>						
Duplicate (23K1078-DUP2)		Prepared: 11/30/23 06:23 Analyzed: 12/01/23 01:14										PRO
<u>QC Source Sample: RWE-DU-1 (A3K1449-02)</u>												
<u>NWTPH-Dx</u>												
Diesel	ND	---	19.7	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	ND	---	39.5	mg/kg dry	1	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 83%</i>		<i>Limits: 50-150%</i>		<i>Dilution: 1x</i>						Q-41

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--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes	
Batch 23K0963 - EPA 3546/3640A (GPC)						Soil							
Blank (23K0963-BLK1)			Prepared: 11/27/23 06:50 Analyzed: 11/29/23 17:27						C-05				
EPA 8081B													
Aldrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
alpha-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
beta-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
delta-BHC	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
gamma-BHC (Lindane)	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
cis-Chlordane	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
trans-Chlordane	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
4,4'-DDD	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
4,4'-DDE	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
4,4'-DDT	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
Dieldrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
Endosulfan I	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
Endosulfan II	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
Endosulfan sulfate	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
Endrin	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
Endrin aldehyde	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
Endrin ketone	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
Heptachlor	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
Heptachlor epoxide	ND	---	0.00200	mg/kg wet	1	---	---	---	---	---	---		
Methoxychlor	ND	---	0.00600	mg/kg wet	1	---	---	---	---	---	---		
Chlordane (Technical)	ND	---	0.0600	mg/kg wet	1	---	---	---	---	---	---		
Toxaphene (Total)	ND	---	0.0600	mg/kg wet	1	---	---	---	---	---	---		
<i>Surr: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 62 %</i>	<i>Limits: 42-129 %</i>		<i>Dilution: 1x</i>							
<i>Decachlorobiphenyl (Surr)</i>			<i>104 %</i>	<i>55-130 %</i>		<i>"</i>							

LCS (23K0963-BS1)						C-05						
EPA 8081B												
Aldrin	0.0370	---	0.00200	mg/kg wet	1	0.0500	---	74	45 - 136%	---	---	
alpha-BHC	0.0376	---	0.00200	mg/kg wet	1	0.0500	---	75	45 - 137%	---	---	
beta-BHC	0.0397	---	0.00200	mg/kg wet	1	0.0500	---	79	50 - 136%	---	---	
delta-BHC	0.0464	---	0.00200	mg/kg wet	1	0.0500	---	93	47 - 139%	---	---	
gamma-BHC (Lindane)	0.0376	---	0.00200	mg/kg wet	1	0.0500	---	75	49 - 135%	---	---	
cis-Chlordane	0.0410	---	0.00200	mg/kg wet	1	0.0500	---	82	54 - 133%	---	---	

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PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0963 - EPA 3546/3640A (GPC)						Soil						
LCS (23K0963-BS1)	Prepared: 11/27/23 06:50 Analyzed: 11/29/23 17:44											C-05
trans-Chlordane	0.0420	---	0.00200	mg/kg wet	1	0.0500	---	84	53 - 135%	---	---	
4,4'-DDD	0.0566	---	0.00200	mg/kg wet	1	0.0500	---	113	56 - 139%	---	---	
4,4'-DDE	0.0516	---	0.00200	mg/kg wet	1	0.0500	---	103	56 - 134%	---	---	
4,4'-DDT	0.0509	---	0.00200	mg/kg wet	1	0.0500	---	102	50 - 141%	---	---	
Dieldrin	0.0473	---	0.00200	mg/kg wet	1	0.0500	---	95	56 - 136%	---	---	
Endosulfan I	0.0442	---	0.00200	mg/kg wet	1	0.0500	---	88	53 - 132%	---	---	
Endosulfan II	0.0510	---	0.00200	mg/kg wet	1	0.0500	---	102	53 - 134%	---	---	
Endosulfan sulfate	0.0506	---	0.00200	mg/kg wet	1	0.0500	---	101	55 - 136%	---	---	
Endrin	0.0501	---	0.00200	mg/kg wet	1	0.0500	---	100	57 - 140%	---	---	
Endrin aldehyde	0.0490	---	0.00200	mg/kg wet	1	0.0500	---	98	35 - 137%	---	---	
Endrin ketone	0.0490	---	0.00200	mg/kg wet	1	0.0500	---	98	55 - 136%	---	---	
Heptachlor	0.0375	---	0.00200	mg/kg wet	1	0.0500	---	75	47 - 136%	---	---	
Heptachlor epoxide	0.0422	---	0.00200	mg/kg wet	1	0.0500	---	84	52 - 136%	---	---	
Methoxychlor	0.0578	---	0.00600	mg/kg wet	1	0.0500	---	116	52 - 143%	---	---	
<i>Surr: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 68 %</i>		<i>Limits: 42-129 %</i>		<i>Dilution: 1x</i>						
<i>Decachlorobiphenyl (Surr)</i>		<i>105 %</i>		<i>55-130 %</i>		<i>"</i>						

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

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ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1061 - EPA 3546						Soil						
Blank (23K1061-BLK1)		Prepared: 11/29/23 11:53 Analyzed: 11/29/23 16:43										
EPA 8270E OPPs												
Azinphos methyl (Guthion)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Chlorpyrifos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Coumaphos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Demeton O	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Demeton S	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Diazinon	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Dichlorvos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Dimethoate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Disulfoton	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
EPN	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Ethoprop	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Fensulfothion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Fenthion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Malathion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Merphos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Methyl parathion	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Mevinphos (Phosdrin)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Monocrotophos	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Naled (Dibrom)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Parathion, ethyl	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Phorate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Ronnel (Fenclorphos)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Sulfotep	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Sulprofos (Bolstar)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
TEPP	ND	---	0.200	mg/kg wet	1	---	---	---	---	---	---	---
Tetrachlorvinphos (Rabon)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Tokuthion (Prothiofos)	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
Trichloronate	ND	---	0.0500	mg/kg wet	1	---	---	---	---	---	---	---
<i>Surr: Tributyl phosphate (Surr)</i>		<i>Recovery: 67 %</i>		<i>Limits: 10-136 %</i>		<i>Dilution: 1x</i>						
<i>Triphenyl phosphate (Surr)</i>		<i>85 %</i>		<i>34-121 %</i>		<i>"</i>						

LCS (23K1061-BS1) Prepared: 11/29/23 11:53 Analyzed: 11/29/23 17:18

EPA 8270E OPPs

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Jason Woodcock, Project Manager

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15 of 44
Page 15 of 27



ANALYTICAL REPORT

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QUALITY CONTROL (QC) SAMPLE RESULTS

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1061 - EPA 3546						Soil						
LCS (23K1061-BS1)			Prepared: 11/29/23 11:53 Analyzed: 11/29/23 17:18									
Azinphos methyl (Guthion)	0.511	---	0.0500	mg/kg wet	1	0.400	---	128	38 - 156%	---	---	
Chlorpyrifos	0.433	---	0.0500	mg/kg wet	1	0.400	---	108	47 - 140%	---	---	
Coumaphos	0.488	---	0.0500	mg/kg wet	1	0.400	---	122	37 - 160%	---	---	
Demeton O	0.217	---	0.0500	mg/kg wet	1	0.184	---	118	66 - 127%	---	---	
Demeton S	0.204	---	0.0500	mg/kg wet	1	0.194	---	105	70 - 121%	---	---	
Diazinon	0.467	---	0.0500	mg/kg wet	1	0.400	---	117	42 - 134%	---	---	
Dichlorvos	0.407	---	0.0500	mg/kg wet	1	0.400	---	102	39 - 142%	---	---	
Dimethoate	0.413	---	0.0500	mg/kg wet	1	0.400	---	103	16 - 139%	---	---	
Disulfoton	0.439	---	0.0500	mg/kg wet	1	0.400	---	110	28 - 145%	---	---	
EPN	0.526	---	0.0500	mg/kg wet	1	0.400	---	132	44 - 137%	---	---	Q-41
Ethoprop	0.435	---	0.0500	mg/kg wet	1	0.400	---	109	47 - 128%	---	---	
Fensulfothion	0.486	---	0.0500	mg/kg wet	1	0.400	---	122	27 - 147%	---	---	Q-41
Fenthion	0.465	---	0.0500	mg/kg wet	1	0.400	---	116	44 - 134%	---	---	
Malathion	0.401	---	0.0500	mg/kg wet	1	0.400	---	100	46 - 137%	---	---	
Merphos	0.459	---	0.0500	mg/kg wet	1	0.400	---	115	66 - 131%	---	---	
Methyl parathion	0.491	---	0.0500	mg/kg wet	1	0.400	---	123	49 - 138%	---	---	
Mevinphos (Phosdrin)	0.456	---	0.0500	mg/kg wet	1	0.400	---	114	12 - 176%	---	---	
Monocrotophos	0.362	---	0.0500	mg/kg wet	1	0.400	---	90	10 - 153%	---	---	
Naled (Dibrom)	0.454	---	0.0500	mg/kg wet	1	0.400	---	113	10 - 174%	---	---	
Parathion, ethyl	0.471	---	0.0500	mg/kg wet	1	0.400	---	118	50 - 139%	---	---	
Phorate	0.444	---	0.0500	mg/kg wet	1	0.400	---	111	23 - 142%	---	---	
Ronnel (Fenchlorphos)	0.461	---	0.0500	mg/kg wet	1	0.400	---	115	45 - 138%	---	---	
Sulfotep	0.434	---	0.0500	mg/kg wet	1	0.400	---	108	52 - 126%	---	---	
Sulprofos (Bolstar)	0.424	---	0.0500	mg/kg wet	1	0.400	---	106	48 - 139%	---	---	
TEPP	0.576	---	0.200	mg/kg wet	1	0.400	---	144	16 - 126%	---	---	Q-29, Q-41
Tetrachlorvinphos (Rabon)	0.465	---	0.0500	mg/kg wet	1	0.400	---	116	54 - 129%	---	---	
Tokuthion (Prothiofos)	0.431	---	0.0500	mg/kg wet	1	0.400	---	108	45 - 136%	---	---	
Trichloronate	0.431	---	0.0500	mg/kg wet	1	0.400	---	108	37 - 140%	---	---	
<i>Surr: Tributyl phosphate (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 10-136 %</i>		<i>Dilution: 1x</i>						
<i>Triphenyl phosphate (Surr)</i>		<i>100 %</i>		<i>34-121 %</i>		<i>"</i>						

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1101 - EPA 3051A						Soil						
Blank (23K1101-BLK1)			Prepared: 11/30/23 10:56 Analyzed: 11/30/23 18:25									
EPA 6020B												
Arsenic	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	---
Barium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	---
Beryllium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	---
Cadmium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	---
Chromium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	---
Cobalt	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	---
Copper	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	---
Lead	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	---
Mercury	ND	---	0.0800	mg/kg wet	10	---	---	---	---	---	---	---
Molybdenum	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	---
Nickel	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	---
Selenium	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	---
Silver	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	---
Thallium	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	---
Vanadium	ND	---	2.00	mg/kg wet	10	---	---	---	---	---	---	---
Zinc	ND	---	4.00	mg/kg wet	10	---	---	---	---	---	---	---
Blank (23K1101-BLK6)			Prepared: 11/30/23 10:56 Analyzed: 12/01/23 11:00									
EPA 6020B												
Antimony	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	Q-16
LCS (23K1101-BS1)			Prepared: 11/30/23 10:56 Analyzed: 11/30/23 18:51									
EPA 6020B												
Arsenic	50.2	---	1.00	mg/kg wet	10	50.0	---	100	80 - 120%	---	---	---
Barium	51.2	---	1.00	mg/kg wet	10	50.0	---	102	80 - 120%	---	---	---
Beryllium	24.1	---	0.200	mg/kg wet	10	25.0	---	96	80 - 120%	---	---	---
Cadmium	50.7	---	0.200	mg/kg wet	10	50.0	---	101	80 - 120%	---	---	---
Chromium	49.2	---	1.00	mg/kg wet	10	50.0	---	98	80 - 120%	---	---	---
Cobalt	50.0	---	1.00	mg/kg wet	10	50.0	---	100	80 - 120%	---	---	---
Copper	51.4	---	2.00	mg/kg wet	10	50.0	---	103	80 - 120%	---	---	---
Lead	51.0	---	0.200	mg/kg wet	10	50.0	---	102	80 - 120%	---	---	---
Mercury	0.974	---	0.0800	mg/kg wet	10	1.00	---	97	80 - 120%	---	---	---
Molybdenum	24.6	---	1.00	mg/kg wet	10	25.0	---	98	80 - 120%	---	---	---

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

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503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K1101 - EPA 3051A						Soil						
LCS (23K1101-BS1)		Prepared: 11/30/23 10:56 Analyzed: 11/30/23 18:51										
Nickel	50.8	---	2.00	mg/kg wet	10	50.0	---	102	80 - 120%	---	---	
Selenium	24.8	---	1.00	mg/kg wet	10	25.0	---	99	80 - 120%	---	---	
Silver	26.7	---	0.200	mg/kg wet	10	25.0	---	107	80 - 120%	---	---	
Thallium	24.2	---	0.200	mg/kg wet	10	25.0	---	97	80 - 120%	---	---	
Vanadium	49.1	---	2.00	mg/kg wet	10	50.0	---	98	80 - 120%	---	---	
Zinc	50.4	---	4.00	mg/kg wet	10	50.0	---	101	80 - 120%	---	---	
LCS (23K1101-BS2)		Prepared: 11/30/23 10:56 Analyzed: 12/01/23 11:26										
EPA 6020B												
Antimony	23.7	---	1.00	mg/kg wet	10	25.0	---	95	80 - 120%	---	---	Q-16

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23K0946 - Total Solids (Dry Weight) - 2022						Soil						

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
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SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Prep: EPA 3546 (Fuels)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K1078</u>							
A3K1449-02	Soil	NWTPH-Dx	11/17/23 12:00	11/30/23 06:23	10.19g/5mL	10g/5mL	0.98
A3K1449-04	Soil	NWTPH-Dx	11/17/23 12:05	11/30/23 06:23	10.45g/5mL	10g/5mL	0.96

Organochlorine Pesticides by EPA 8081B

Prep: EPA 3546/3640A (GPC)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K0963</u>							
A3K1449-02RE1	Soil	EPA 8081B	11/17/23 12:00	11/27/23 06:50	10.03g/10mL	10g/5mL	1.99
A3K1449-02RE2	Soil	EPA 8081B	11/17/23 12:00	11/27/23 06:50	10.03g/10mL	10g/5mL	1.99
A3K1449-04RE1	Soil	EPA 8081B	11/17/23 12:05	11/27/23 06:50	10.03g/10mL	10g/5mL	1.99
A3K1449-04RE2	Soil	EPA 8081B	11/17/23 12:05	11/27/23 06:50	10.03g/10mL	10g/5mL	1.99

Organophosphorus Pesticides (OPPs) by EPA 8270E (GC/MS)

Prep: EPA 3546					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K1061</u>							
A3K1449-02	Soil	EPA 8270E OPPs	11/17/23 12:00	11/29/23 11:53	10.23g/5mL	10g/5mL	0.98
A3K1449-04	Soil	EPA 8270E OPPs	11/17/23 12:05	11/29/23 11:53	10.32g/5mL	10g/5mL	0.97

Total Metals by EPA 6020B (ICPMS)

Prep: EPA 3051A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K1101</u>							
A3K1449-02	Soil	EPA 6020B	11/17/23 12:00	11/30/23 10:56	0.516g/50mL	0.5g/50mL	0.97
A3K1449-02RE1	Soil	EPA 6020B	11/17/23 12:00	11/30/23 10:56	0.516g/50mL	0.5g/50mL	0.97
A3K1449-04	Soil	EPA 6020B	11/17/23 12:05	11/30/23 10:56	0.499g/50mL	0.5g/50mL	1.00
A3K1449-04RE1	Soil	EPA 6020B	11/17/23 12:05	11/30/23 10:56	0.499g/50mL	0.5g/50mL	1.00

Percent Dry Weight

Prep: Total Solids (Dry Weight) - 2022					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 23K0946</u>							

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503-718-2323
ORELAP ID: OR100062

<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
---	--	---

SAMPLE PREPARATION INFORMATION

Percent Dry Weight

Prep: Total Solids (Dry Weight) - 2022

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A3K1449-02	Soil	EPA 8000D	11/17/23 12:00	11/27/23 09:20			NA
A3K1449-04	Soil	EPA 8000D	11/17/23 12:05	11/27/23 09:20			NA

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ORELAP ID: OR100062

PBS Engineering and Environmental

4412 S Corbett Ave
Portland, OR 97239

Project: **Bull Run Filtration Facility**

Project Number: **24433.000**

Project Manager: **Nick Thornton**

Report ID:

A3K1449 - 12 05 23 1023

QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

- C-05** Extract has undergone a GPC (Gel-Permeation Chromatography) cleanup per EPA 3640A. Reporting levels may be raised due to dilution necessary for cleanup. Sample Final Volume includes the GPC dilution factor, see the Prep page for details.
- PRO** Sample has undergone sample processing prior to extraction and analysis.
- Q-16** Reanalysis of an original Batch QC sample.
- Q-29** Recovery for Lab Control Spike (LCS) is above the upper control limit. Data may be biased high.
- Q-41** Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
- R-02** The Reporting Limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported.
- RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as "dry", "wet", or " " (blank) designation.
 - "dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.
 - "wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
 - " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) are not included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to 1/2 the Reporting Limit (RL).
-For Blank hits falling between 1/2 the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.

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<u>PBS Engineering and Environmental</u> 4412 S Corbett Ave Portland, OR 97239	Project: <u>Bull Run Filtration Facility</u> Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

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Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Table with project details: PBS Engineering and Environmental, Project: Bull Run Filtration Facility, Project Number: 24433.000, Project Manager: Nick Thornton, Report ID: A3K1449 - 12 05 23 1023

LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation)
EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

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Table header with columns: Matrix, Analysis, TNI_ID, Analyte, TNI_ID, Accreditation

All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

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Handwritten signature of Jason Woodcock

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PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
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APEX LABS
6700 SW Sandburg St., Tigard, OR 97223 Ph. 503-718-2323

CHAIN OF CUSTODY

Lab # A3K1449 coc 1 of 1

Company: PBS	Project Name: BULL RUN FILTRATION FACILITY	Project #:	Project #:	Project #:	Project #:
Address: PDX OFFICE	Phone: 503-417-7610	Email: NICK.THORNTON@PBSUSA.COM	PO #		
Sampled by: RILEY MARTIN	ANALYSIS REQUEST				
Site Location:	Priority Metals (13) AL, Sb, As, Ba, Be, Bi, Cd, Cr, Co, Cu, Fe, Pb, Hg, Mn, Mo, Ni, K, Sg, Ag, Na, Ti, V, Zn, TCPLP TCPLP Metals (8) RCR Metals (8) 8081 Pesticides 8082 PCBs 8270 Semi-Vols Full List 8270 SIM PAHs 8269 VOCs Full List 8269 Halo VOCs 8269 RBDM VOCs 8260 BTEX NWTPH-Gx NWTPH-Dx NWTPH-ACID # OF CONTAINERS MATRIX TIME DATE				
State: <u>OR</u>	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-ACID
County:	11/7/23	1200	S	1	NWTPH-Dx
SAMPLE ID	11/7/23	1205	S	1	NWTPH-Gx
<u>RWE-DU-1</u>					8260 BTEX
<u>RWE-DU-2</u>					8269 RBDM VOCs
					8269 Halo VOCs
					8269 VOCs Full List
					8270 SIM PAHs
					8270 Semi-Vols Full List
					8082 PCBs
					8081 Pesticides
					RCR Metals (8)
					Priority Metals (13)
					AL, Sb, As, Ba, Be, Bi, Cd, Cr, Co, Cu, Fe, Pb, Hg, Mn, Mo, Ni, K, Sg, Ag, Na, Ti, V, Zn, TCPLP
					TCPLP Metals (8)
					Pesticides 8081A
					Pesticides 8270
					HFPesticides 8151
					As, METALS 7000
					Hold Sample
					Frozen Archive

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day 2 Day 3 Day 5 Day **Standard** Other: _____

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature: <u>[Signature]</u> Printed Name: RILEY MARTIN Company: PBS	Date: <u>11-17-23</u> Time: <u>1330</u>	RECEIVED BY: Signature: <u>[Signature]</u> Printed Name: <u>[Signature]</u> Company: <u>[Signature]</u>	Date: _____ Time: _____
---	--	--	----------------------------

Form V-002 R-00

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

Jason Woodcock, Project Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

PBS Engineering and Environmental 4412 S Corbett Ave Portland, OR 97239	Project: Bull Run Filtration Facility Project Number: 24433.000 Project Manager: Nick Thornton	Report ID: A3K1449 - 12 05 23 1023
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APEXLABS COOLER RECEIPT FORM

Client: PBS Element WO#: A3K1449

Project/Project #: Bull Run Filtration Facility / 24433.000

Delivery Info:

Date/time received: 11-17-23 @ 1330 By: DJS

Delivered by: Apex Client ESS FedEx UPS Radio Morgan SDS Evergreen Other

Cooler Inspection Date/time inspected: 11-17-23 @ 1331 By: DJS

Chain of Custody included? Yes No

Signed/dated by client? Yes No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>1.4</u>						
Custody seals? (Y/N)	<u>N</u>						
Received on ice? (Y/N)	<u>Y</u>						
Temp. blanks? (Y/N)	<u>N</u>						
Ice type: (Gel/Real/Other)	<u>Real</u>						
Condition (In/Out):	<u>In</u>						

Cooler out of temp? (Y/N) No Possible reason why: _____

Green dots applied to out of temperature samples? Yes No

Out of temperature samples form initiated? Yes No

Sample Inspection: Date/time inspected: 11/17/23 @ 13:43 By: RAM

All samples intact? Yes No Comments: _____

Bottle labels/COCs agree? Yes No Comments: _____

COC/container discrepancies form initiated? Yes No

Containers/volumes received appropriate for analysis? Yes No Comments: RWEDU 1

is 1/3 full, RWEDU-2 is 1/4 full

Do VOA vials have visible headspace? Yes No NA

Comments: _____

Water samples: pH checked: Yes No NA pH appropriate? Yes No NA pH ID: _____

Comments: _____

Additional information: _____

Labeled by: RAM

Witness: [Signature]

Cooler Inspected by: RAM

Form Y-003 R-01

Apex Laboratories

Jason Woodcock, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

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ANALYTICAL REPORT

PREPARED FOR

Attn: Jason Woodcock
Apex Laboratories LLC
6700 SW Sandburg St.
Tigard, Oregon 97223

Generated 12/4/2023 5:36:08 PM

JOB DESCRIPTION

A3K1449

JOB NUMBER

570-162188-1

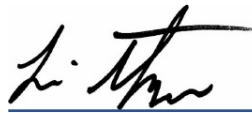
Eurofins Calscience

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 Calscience Project Manager.

Authorization



Generated
12/4/2023 5:36:08 PM

Authorized for release by
Lori Thompson, Project Manager I
Lori.Thompson@et.eurofinsus.com
(657)212-3035



Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Detection Summary	6
Client Sample Results	7
Surrogate Summary	8
QC Sample Results	9
QC Association Summary	11
Lab Chronicle	12
Certification Summary	13
Method Summary	14
Sample Summary	15
Chain of Custody	16
Receipt Checklists	17

Definitions/Glossary

Client: Apex Laboratories LLC
Project/Site: A3K1449

Job ID: 570-162188-1

Qualifiers

GC Semi 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.
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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

Case Narrative

Client: Apex Laboratories LLC
Project/Site: A3K1449

Job ID: 570-162188-1

Job ID: 570-162188-1

Laboratory: Eurofins Calscience

Narrative

Job Narrative 570-162188-1

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 are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample 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 11/28/2023 9:45 AM. 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 0.9°C

Herbicides

Method 8151A: The matrix spike / matrix spike duplicate / sample duplicate (MS/MSD/DUP) precision for preparation batch 570-387367 and analytical batch 570-388335 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 8151A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-387367 and analytical batch 570-388335 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.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Apex Laboratories LLC
Project/Site: A3K1449

Job ID: 570-162188-1

Client Sample ID: RWE-DU-1

Lab Sample ID: 570-162188-1

No Detections.

Client Sample ID: RWE-DU-2

Lab Sample ID: 570-162188-2

No Detections.

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This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1449

Job ID: 570-162188-1

Method: SW846 8151A - Herbicides (GC)

Client Sample ID: RWE-DU-1
Date Collected: 11/17/23 12:00
Date Received: 11/28/23 09:45

Lab Sample ID: 570-162188-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.7	ug/Kg	☼	11/28/23 13:47	11/30/23 23:22	1
2,4,5-TP (Silvex)	ND		10	7.5	ug/Kg	☼	11/28/23 13:47	11/30/23 23:22	1
2,4-D	ND		100	49	ug/Kg	☼	11/28/23 13:47	11/30/23 23:22	1
2,4-DB	ND		100	100	ug/Kg	☼	11/28/23 13:47	11/30/23 23:22	1
Dalapon	ND		250	72	ug/Kg	☼	11/28/23 13:47	11/30/23 23:22	1
Dicamba	ND		10	4.7	ug/Kg	☼	11/28/23 13:47	11/30/23 23:22	1
Dichlorprop	ND		100	49	ug/Kg	☼	11/28/23 13:47	11/30/23 23:22	1
Dinoseb	ND		100	59	ug/Kg	☼	11/28/23 13:47	11/30/23 23:22	1
MCPA	ND		10000	4900	ug/Kg	☼	11/28/23 13:47	11/30/23 23:22	1
MCPP	ND		10000	6600	ug/Kg	☼	11/28/23 13:47	11/30/23 23:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	141		20 - 163				11/28/23 13:47	11/30/23 23:22	1

Client Sample ID: RWE-DU-2
Date Collected: 11/17/23 12:05
Date Received: 11/28/23 09:45

Lab Sample ID: 570-162188-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.8	ug/Kg	☼	11/28/23 13:47	11/30/23 23:44	1
2,4,5-TP (Silvex)	ND		10	7.8	ug/Kg	☼	11/28/23 13:47	11/30/23 23:44	1
2,4-D	ND		100	50	ug/Kg	☼	11/28/23 13:47	11/30/23 23:44	1
2,4-DB	ND		100	100	ug/Kg	☼	11/28/23 13:47	11/30/23 23:44	1
Dalapon	ND		260	75	ug/Kg	☼	11/28/23 13:47	11/30/23 23:44	1
Dicamba	ND		10	4.9	ug/Kg	☼	11/28/23 13:47	11/30/23 23:44	1
Dichlorprop	ND		100	51	ug/Kg	☼	11/28/23 13:47	11/30/23 23:44	1
Dinoseb	ND		100	61	ug/Kg	☼	11/28/23 13:47	11/30/23 23:44	1
MCPA	ND		10000	5000	ug/Kg	☼	11/28/23 13:47	11/30/23 23:44	1
MCPP	ND		10000	6800	ug/Kg	☼	11/28/23 13:47	11/30/23 23:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	128		20 - 163				11/28/23 13:47	11/30/23 23:44	1

Surrogate Summary

Client: Apex Laboratories LLC
Project/Site: A3K1449

Job ID: 570-162188-1

Method: 8151A - Herbicides (GC)

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (20-163)
570-162188-1	RWE-DU-1	141
570-162188-2	RWE-DU-2	128
LCS 570-387367/2-A	Lab Control Sample	53 p
LCSD 570-387367/3-A	Lab Control Sample Dup	49 p
MB 570-387367/1-A	Method Blank	64

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

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QC Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1449

Job ID: 570-162188-1

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 570-387367/1-A
Matrix: Solid
Analysis Batch: 387706

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387367

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		10	3.7	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
2,4,5-TP (Silvex)	ND		10	7.5	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
2,4-D	ND		100	49	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
2,4-DB	ND		100	100	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
Dalapon	ND		250	72	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
Dicamba	ND		10	4.7	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
Dichlorprop	ND		100	49	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
Dinoseb	ND		100	59	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
MCPA	ND		10000	4900	ug/Kg		11/28/23 13:44	11/29/23 14:30	1
MCPP	ND		10000	6600	ug/Kg		11/28/23 13:44	11/29/23 14:30	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	64		20 - 163	11/28/23 13:44	11/29/23 14:30	1

Lab Sample ID: LCS 570-387367/2-A
Matrix: Solid
Analysis Batch: 387706

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387367

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,4,5-T	20.0	14.12		ug/Kg		71	26 - 180
2,4,5-TP (Silvex)	20.0	12.69		ug/Kg		63	10 - 180
2,4-D	200	188.3		ug/Kg		94	13 - 180
2,4-DB	200	155.2		ug/Kg		78	10 - 180
Dalapon	500	382.4		ug/Kg		76	10 - 176
Dicamba	20.0	13.17		ug/Kg		66	21 - 164
Dichlorprop	200	139.1		ug/Kg		70	10 - 175
Dinoseb	100	96.21	J	ug/Kg		96	10 - 180
MCPA	20000	26130		ug/Kg		131	22 - 180
MCPP	20000	16400		ug/Kg		82	18 - 180

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4-Dichlorophenylacetic acid	53	p	20 - 163

Lab Sample ID: LCS D 570-387367/3-A
Matrix: Solid
Analysis Batch: 387706

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387367

Analyte	Spike Added	LCS D Result	LCS D Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
2,4,5-T	20.0	11.40		ug/Kg		57	26 - 180	21	40
2,4,5-TP (Silvex)	20.0	11.48		ug/Kg		57	10 - 180	10	40
2,4-D	200	163.8		ug/Kg		82	13 - 180	14	40
2,4-DB	200	156.5		ug/Kg		78	10 - 180	1	40
Dalapon	500	337.6		ug/Kg		68	10 - 176	12	40
Dicamba	20.0	11.81		ug/Kg		59	21 - 164	11	40
Dichlorprop	200	127.3		ug/Kg		64	10 - 175	9	40
Dinoseb	100	87.90	J	ug/Kg		88	10 - 180	9	40
MCPA	20000	24390		ug/Kg		122	22 - 180	7	40
MCPP	20000	15040		ug/Kg		75	18 - 180	9	40

QC Sample Results

Client: Apex Laboratories LLC
Project/Site: A3K1449

Job ID: 570-162188-1

Method: 8151A - Herbicides (GC) (Continued)

<i>Surrogate</i>	<i>LCS D</i>	<i>LCS D</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
<i>2,4-Dichlorophenylacetic acid</i>	49	p	20 - 163

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QC Association Summary

Client: Apex Laboratories LLC
Project/Site: A3K1449

Job ID: 570-162188-1

GC Semi VOA

Prep Batch: 387367

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-162188-1	RWE-DU-1	Total/NA	Solid	8151A	
570-162188-2	RWE-DU-2	Total/NA	Solid	8151A	
MB 570-387367/1-A	Method Blank	Total/NA	Solid	8151A	
LCS 570-387367/2-A	Lab Control Sample	Total/NA	Solid	8151A	
LCSD 570-387367/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	

Analysis Batch: 387706

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 570-387367/1-A	Method Blank	Total/NA	Solid	8151A	387367
LCS 570-387367/2-A	Lab Control Sample	Total/NA	Solid	8151A	387367
LCSD 570-387367/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	387367

Analysis Batch: 388335

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-162188-1	RWE-DU-1	Total/NA	Solid	8151A	387367
570-162188-2	RWE-DU-2	Total/NA	Solid	8151A	387367

Lab Chronicle

Client: Apex Laboratories LLC
Project/Site: A3K1449

Job ID: 570-162188-1

Client Sample ID: RWE-DU-1

Lab Sample ID: 570-162188-1

Date Collected: 11/17/23 12:00

Matrix: Solid

Date Received: 11/28/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			50.92 g	5 mL	387367	11/28/23 13:47	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	388335	11/30/23 23:22	J7WE	EET CAL 4

Instrument ID: GC41

Client Sample ID: RWE-DU-2

Lab Sample ID: 570-162188-2

Date Collected: 11/17/23 12:05

Matrix: Solid

Date Received: 11/28/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			49.41 g	5 mL	387367	11/28/23 13:47	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	388335	11/30/23 23:44	J7WE	EET CAL 4

Instrument ID: GC41

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

Accreditation/Certification Summary

Client: Apex Laboratories LLC
Project/Site: A3K1449

Job ID: 570-162188-1

Laboratory: Eurofins Calscience

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	4175	02-02-24
Washington	State	C916-18	10-11-23 *

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* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Apex Laboratories LLC
Project/Site: A3K1449

Job ID: 570-162188-1

Method	Method Description	Protocol	Laboratory
8151A	Herbicides (GC)	SW846	EET CAL 4
8151A	Extraction (Herbicides)	SW846	EET CAL 4

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494



Sample Summary

Client: Apex Laboratories LLC
Project/Site: A3K1449

Job ID: 570-162188-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-162188-1	RWE-DU-1	Solid	11/17/23 12:00	11/28/23 09:45
570-162188-2	RWE-DU-2	Solid	11/17/23 12:05	11/28/23 09:45

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SUBCONTRACT ORDER

Loc: 570
162188

Apex Laboratories

A3K1449

ARC 11/17/23

SJS

SENDING LABORATORY:

Apex Laboratories
6700 S.W. Sandburg Street
Tigard, OR 97223
Phone: (503) 718-2323
Fax: (503) 336-0745
Project Manager: Jason Woodcock

RECEIVING LABORATORY:

Eurofins_CalScience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Phone : (714) 895-5494
Fax: (714) 894-7501

Sample Name: RWE-DU-1 **Soil** **After Processing**
Sampled: 11/17/23 12:00 (A3K1449-02)

Analysis	Due	Expires	Comments
8151A Herbicides (SUB) Containers Supplied: (B)4 oz Glass Jar	12/04/23 17:00	12/01/23 12:00	

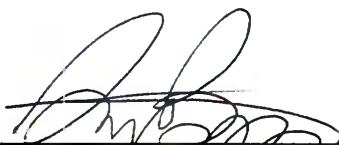

Sample Name: RWE-DU-2 **Soil** **After Processing**
Sampled: 11/17/23 12:05 (A3K1449-04)

Analysis	Due	Expires	Comments
8151A Herbicides (SUB) Containers Supplied: (B)4 oz Glass Jar	12/04/23 17:00	12/01/23 12:05	

Standard TAT



570-162188 Chain of Custody

Released By:  Date: 11/27/23
 Received By:  Date: 11/28/23 9:45
 Released By: Fed Ex (Shipper) Date: _____
 Received By: _____ Date: _____

Login Sample Receipt Checklist

Client: Apex Laboratories LLC

Job Number: 570-162188-1

Login Number: 162188

List Source: Eurofins Calscience

List Number: 1

Creator: Vitente, Precy

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	N/A	Received project as a subcontract.
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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix D

Multnomah County Right-of-Way Permit



October 16, 2023

Department of Community Services
Land Use & Transportation Program
Right-Of-Way Permit Section
1620 SE 190th Avenue
Portland, Oregon 97233

Via email: ROW.Permits@multco.us

Regarding: Right of Way Permit Application
Bull Run Filtration Project
Gresham, Oregon
PBS Project 24433.000

PBS Engineering and Environmental, Inc. (PBS) is supporting development of the Bull Run Filtration Plant and will be completing a clean fill determination along several Right-Of-Ways (ROWs) that are planned for future underground piping installations. The planned ROWs include SE Altman Road, SE Lusted Road and SE Dodge Park Boulevard. To complete the clean fill determination, PBS will advance forty 3.25-inch diameter borings with a direct-push drilling rig. Each boring will be advanced to a maximum depth of 5 feet bgs to collect soil samples for the clean fill determination. Public and private underground utility locates will be completed prior to initiating the sampling. All borings will be completed in shoulder soils just off the paved roadways. A summary of the planned ROW borings is as follows:

SE Altman Road:	15 borings
SE Lusted Roads:	15 borings
<u>SE Dodge Park Boulevard:</u>	<u>10 borings</u>
Total:	40 borings

A general description of proposed boring locations is described on the attached ROW Application and is illustrated in Figure 3 and Figure 5. The soil sampling activities located within the Multnomah County ROW are anticipated to occur between November 6, 2023 and November 17, 2023.

Please feel free to contact me at 503.417.7610 or nick.thornton@pbsusa.com with any questions or comments.

Sincerely,

Nick Thornton
Project Manager

Attachment(s):
ROW Permit Application
Figure 3. Finished Water North
Figure 5. Finished Water South



MULTNOMAH COUNTY, OREGON

DEPARTMENT OF COMMUNITY SERVICES LAND USE & TRANSPORTATION PROGRAM RIGHT-OF-WAY PERMIT SECTION 1620 SE 190TH AVENUE PORTLAND, OREGON 97233 503-988-3582 - FAX: 503-988-3389	APPLICATION FOR A PERMIT TO USE PUBLIC ROAD RIGHT OF WAY UNDER THE JURISDICTION OF MULTNOMAH COUNTY	(COUNTY TO FILL OUT THIS SECTION) Permit No. <u>864815YES</u> District: <u>\$1,370.00N/</u> County Maintained: <u>AN/AYES</u> Application Fee: _____ Deposit: _____ Check No.: _____ Ins. Req'd: _____
--	--	---

FOR APPLICANT: (Please print)

Name: _____ E-mail Address: _____
 Address: _____ Phone/Fax: _____
 _____ Contact Person: _____

ROADS AND LOCATIONS COVERED BY THIS PERMIT:

Road	Specific Location	Side of Road	Distance from		Buried Cable or Pipe	
			Center Line	R/W Line	Depth	Size & Kind

GENERAL APPLICATION/PERMIT TERMS:

- Upon approval of this Application by Multnomah County by the indicated signature below, this page shall become the first page of the Permit and the Applicant shall become the "Permittee."
- Permittee must notify Multnomah County at 503-988-3582, at least one business day (24 hours) before commencing work under this permit.
- Except as allowed under the Multnomah County Road Rules Section 18, Subsection 18.250, Permittee must complete any authorized demolition, installation, construction, placement, or similar work activities in the road right-of-way not later than 120 days after Permit Effective Date. Any extension of time beyond that period is subject to the sole discretion of Multnomah County.
- Any Permit issued pursuant to this Application shall be applicable only to the specific public road right(s)-of-way under the Jurisdiction of Multnomah County authorized and identified herein. Applicant must obtain an additional permit or consent from Multnomah County for the use of any other public road right(s)-of-way under the County's Jurisdiction.
- Applicant must obtain the consent from the appropriate authority for the use of any roads, highways, and streets that are not under Multnomah County's Jurisdiction.
- This Permit shall not be effective until a construction plan; specifications or other similar documentation has been reviewed and approved by the County Engineer or designate and incorporated into the Permit.
- This Permit includes the "Permit Provisions" attached hereto and which are incorporated by this reference.

(Authority: ORS 374.305-ORS 374.330; MCC Chapters 27 and 29)

<p>APPLICANT: By the authorized signature below, Applicant (Permittee) accepts and agrees to all the requirements, terms, conditions and provisions of this Permit.</p> <p>Authorized Signature: <u>Nick Thornton</u></p> <p>Print Name: _____</p> <p>Title: _____</p> <p>Date of Application: _____</p>	<p>MULTNOMAH COUNTY DEPARTMENT OF COMMUNITY SERVICES:</p> <p>Permit Approved By: <u>[Signature]</u></p> <p>Print Name: <u>RICK BUENENGINEER</u></p> <p>Title: <u>210/25/2023 - 02/24/2024</u></p> <p>Permit Effective Date: _____</p>
---	---

RIGHT-OF-WAY USE PERMIT PROVISIONS

1. (A) This Permit is issued by Multnomah County as a jurisdictional authority (hereinafter “County”) over the Right-of- Way described on Page 1 of this Permit (the “Right-of-Way”) to the Permittee (County and Permittee hereinafter collectively referred to as the “Parties”) and controls all aspects of the Right-of-Way Use(s) set forth on Page 1, and as further provided in and subject to:

1. If applicable, **Exhibit A**, which shall consist of any plans, specifications, drawings, or other design documents (collectively referred to as the “Plans”) attached hereto, or as the Parties agree in writing to amend or revise said **Exhibit A** and which shall not be changed, altered, or modified without first obtaining the written consent of the County Engineer or the County Engineer’s designate;
2. If applicable, the Miscellaneous Provisions in Section 15.A. or as renumbered in this document;
3. To the extent applicable, **Exhibit A** is hereby incorporated as a part of this Permit.

(B) This Permit does not authorize any activity on privately owned property. Should Permittee’s activities encroach beyond the boundaries of the Right-of-Way covered under this Permit or otherwise exceed the jurisdictional authority of the County; Permittee shall obtain written consent from any owners of property abutting the Right-of-Way before beginning any work under this Permit.

(C) This Permit is subject to ORS Chapter 374 and incorporates the following rules adopted by Multnomah County pursuant to Multnomah County Code Chapters 27 and 29:

1. **The Multnomah County Road Rules (MCRR)**, dated March 27, 2018 or as the MCRR shall be amended, and
2. **The Multnomah County Design and Construction Manual (DCM)**, and as the DCM shall be amended.

(D) For purposes of this Permit, the term “Permittee” shall refer to all parties acting under this Permit, including the property owner, the developer (if different than the owner) and any contractor responsible for or performing the work authorized under this Permit. All such parties acting through authorized representatives with the authority to bind each party shall sign this Permit. No action or work of any kind may proceed under this Permit without the binding signatures of all the parties as Permittees. The use of the term “Permittee” or “Permittees” in this Permit shall be used interchangeably and shall not be intended to limit the number of parties that are Permittees on this Permit.

2. (A) The County contact to coordinate work activities on the Right-of-Way shall be: phone: [\(503\) 988-3582](tel:5039883582), e-mail: ROW.Permits@multco.us, or as listed in [Miscellaneous Provisions](#).

(B) Permittee contact person shall be listed on the cover page or under the Miscellaneous Provisions.

3. (A) Prior to beginning any work or activities under this Permit, the Permittee shall confirm in writing to the County that all Permittees have obtained a commercial general liability insurance policy that provides: (i) for a combined single limit of not less than \$1,000,000 per each incident or occurrence, and with an annual aggregate limit of not less than \$2,000,000 ; (ii) for extended reporting period coverage for claims made within two years after the activities, work or associated work authorized under this Permit is completed; (iii) for the County, its officers, employees and agents to be named as additional named insureds for all activities, work or associated work being authorized under this Permit. This Permit is automatically revoked without further action if the insurance is permitted to lapse, is canceled, or for any other reason becomes inoperative. Insurance policy limits quoted herein are minimums set for 2014 and shall be subject to County review and adjustment annually.

(B) Alternatively, if Permittee is self-insured for the risks for which insurance is required under this Permit, and if Permittee’s self-insurance verification is submitted to the County, Permittee shall not be required to procure insurance as required under Subsection 3(A). For the duration of this Permit, Permittee shall annually provide written verification of self-insurance to the County. This requirement may be waived for governmental entities who have previously provided their verification of self-insurance.

4. (A) To the extent allowed under the Oregon Constitution and the Oregon Tort Claims Act, the Permittee agrees to defend, indemnify, and hold harmless the County, its officers, employees, and agents (the "Indemnitees") from all claims, demands, suits, liabilities, damages, losses, costs, or expenses including, but not limited to, attorney's fees:

1. that the Indemnitees may sustain or incur on account of any damage to or destruction of any property that the County may own or in which it may have an interest;
2. on account of any damage to or destruction of any property belonging to any person, firm or corporation; and
3. on account of any damage resulting from injury to or death of any person or persons,

which arise out of or are in any way connected with the activities conducted or work performed under this Permit by the Permittees, their officers, employees, contractors, agents, or invitees.

(B) To the extent allowed under the Oregon Constitution and the Oregon Tort Claims Act, the Permittees agree to defend, indemnify, and hold harmless the Indemnitees from all claims, demands, suits, liabilities, damages, losses, costs, or expenses which arise out of or are in any way connected with the use, generation, manufacture, storage, discharge, release, disposal, transportation, or possession of Hazardous Materials by the Permittee, its, employees, contractors, agents, lessees, or invitees at any time during the term of this Permit at the Permit Site. "Hazardous Materials" means:

(a) any petroleum, including crude oil or any fraction thereof, natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel, or any mixture thereof, flammable substances, explosives, radioactive materials, hazardous wastes or substances, toxic wastes, wastes or substances or any other materials or pollutants which:

- (1) pose a hazard to the Permit Site or to persons on or about the Permit Site, or
- (2) cause the Permit Site to be in violation of any federal, state, or local law, ordinance, regulation, code, or rule relating to Hazardous Materials;

(b) asbestos in any form which is or could become friable, urea formaldehyde foam insulation, transformers, or other equipment which contain dielectric fluid containing levels of polychlorinated biphenyls in excess of fifty (50) parts per million;

(c) any chemical, material, or substance defined as or included in the definition of "hazardous substances," "hazardous wastes," "hazardous materials," "extremely hazardous waste," "restricted hazardous waste," "waste" or "toxic substances," or words of similar import under any applicable local, state, or federal law or under the regulations adopted or publications promulgated pursuant thereto including, but not limited to, the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 U.S.C. § 9601, et seq.; the Hazardous Materials Transportation Act, as amended, 49 U.S.C. § 1801, et seq.; the Resource Conservation and Recovery Act, as amended, 42 U.S.C. § 6901, et seq.; the Federal Water Pollution Control Act, as amended, 33 U.S.C. § 1251, et seq.; and

(d) any other chemical, material or substance, exposure to which is prohibited, limited, or regulated by any governmental authority or may or could pose a hazard to the health and safety of the owners and/or occupants of property adjacent to or surrounding the Permit Site.

(C) The Permittees obligations under Section 3 and Section 4 herein, shall survive the termination of this Permit to the fullest extent as allowed or recognized under applicable law, statutes, codes or regulations.

5. Traffic control is the responsibility of the Permittee and shall be performed in accordance with the Manual of Uniform Traffic Control Devices and Oregon Supplements. The Permittee shall submit a copy of the traffic control plan for County review and approval not less than five working days prior to the date the activities or work authorized under this Permit are scheduled to begin. Work or activities shall not begin until written approval of the traffic control plan is obtained from the County Engineer or the County Engineer's designate.
6. The Permittee shall provide the name and telephone contact number for its Project inspector and a 24-hour emergency telephone number(s) for its contractor prior to beginning activities or work under this Permit.

7. ATTENTION: Oregon law requires you to follow rules adopted by the Oregon Utility Notification Center (the “Center”). Those rules are set forth in OAR 952-001-0010 through OAR 952-001-0090. You may obtain copies of the rules by calling the Center. The telephone number for the Center is (503) 232-1987.
8. No modification shall be made to any fixture or installation as shown on Exhibit A and authorized under this Permit without prior approval from the County.
9. The Permittee shall restore the Right of Way to an equal or better condition than existed prior to the activities or work authorized under this Permit. The Permittee is responsible for quality control of all demolition or new construction made to the Right of Way. The County may perform spot inspections to monitor quality control. The Permittee shall correct all construction work that does not conform to County standards. The County may require additional work to return the Right of Way to “as good” or “better” condition.
10. The Permittee shall be in compliance with all federal, interstate, state, regional, and local laws, regulations, rules, and ordinances, pertaining to all the activities or work performed under this Permit including, but not limited to, obtaining all necessary and applicable construction and erosion control permits and approvals prior to beginning the activities or work authorized under this Permit and compliance with all applicable business licenses, OSHA rules and regulations.
11. County shall have the right, without notice, at any time including during any of Permittee’s activities or work of any kind in the Right of Way, to enter and occupy the entire or any part of the Right of Way for the purpose of inspecting, maintaining, repairing, renewing, replacing or reconstructing the Right of Way, or any replacement facility thereto as County in its sole discretion shall deem necessary and appropriate.
12. County’s activities described in Section 11 may require Permittee or its officers, employees, contractors, agents, vendors, lessees, sub-lessees or invitees (collectively “Permittee Parties”) to remove any fixtures, installations or personal property including but not limited to , vehicles, machines, tools and equipment from the Right of Way. Upon entry, County shall, without liability to Permittee Parties, have the right to remove any such fixtures, installations or personal property from the Right of Way as may be necessary to accomplish the required work. County shall have no obligation to restore or repair any improvements removed or damaged in the performance of County’s work. Permittee Parties agree that County shall have no obligation to restore the Right of Way or Permittee Parties’ improvements and County shall have no liability to Permittee Parties for any disruption of Permittee Parties’ business, for loss of Permittee Parties’ real or personal property, for Permittee Parties’ lost profits or for any other loss incurred by Permittee Parties as a result of such entry or as a result of Permittee Parties being required to vacate the Right of Way pursuant to the terms of this Section 12.
13. Either Subsection 13 (A) or (B) shall be applicable depending on the location.

(A) For Certain Utility Work in Roads in Unincorporated Areas: If this Permit has been issued in connection with work done in the public road that is authorized pursuant to the provisions of ORS 758.010(1) “...to construct, maintain and operate its water, gas, electric or communication service lines, fixtures and other facilities...” along said public road; the County reserves all the rights under ORS 758.010(2) to direct the Permittee to relocate any such fixture, line or facility in the subject public road.

(B) For Other Uses and For Uses in Roads in Cities: The County reserves the right to **revoke this Permit at any time** in the event the County determines the permitted work or activities, including any fixtures, installations or personal properties in the Right of Way; are in conflict with a County improvement project; public need requires it, or the Permittee fails to comply with the conditions of this Permit. No expenditure of money, lapse of time, or other act or thing shall operate as an estoppel against the County or be held to give the Permittee any vested or other right. Upon revocation of this Permit, the Permittee shall within 30 days of receiving notification, remove, relocate, or abandon (if consented to by the County), all fixtures, installations or personal property in the Right of Way and restore the Right of Way as directed by, and to the satisfaction of, the County.

14. Consistent with ORS 374.309:

(A) The Permittee shall bear the duties imposed under ORS 374.315 to ORS 374.320 with respect to maintenance, repair or removal, as applicable to the type of Project authorized under this Permit, and such duties shall include any work on adjacent property affected by the permitted work

(B) The Permittee shall complete the work in a timely manner to the satisfaction of the County and as may be described elsewhere in this Permit. Any substantial change in scope of work requiring further County resources will result in additional fees in accordance with the adopted fee schedule and the MCRR. Any additional work required by the Permittee to correct or repair damages caused by the Permittee's activities will be subject to the same time limits as the original work unless the County grants additional time.

(C) As provided in the MCRR Subsections 18.250 D. and 18.700, the County may require surety bonds as performance and maintenance guarantees if deemed necessary by the County Engineer for the work proposed under this Permit.

(D) As provided in the MCRR Subsection 18.135: "The time limits provided in a permit to complete construction, placement, installation or similar activities shall be controlling; if the authorized activities are not completed within the specified time the permit shall expire. A permit may be extended at the discretion of the County Engineer for good cause shown upon timely written request of the permittee prior to the original expiration date and the payment of any applicable extension fee as established by the Board of County Commissioners." The County may require a schedule for work completion and assess damages for delays. Damages resulting from delays may include but are not limited to impacts to County capital projects, community impacts, and additional County resources.

(E) As provided by MCRR Subsection 18.475 B., in the event the Permittee fails to perform and the County incurs reasonable and necessary expense to correct, mitigate, or abate damages related to the Permit, the Permittee shall reimburse the County within 10 days of receiving a bill.

(F) As provided by MCRR Subsection 18.450, the County reserves the right to stop the activities or work performed under this Permit for failure to comply. All costs associated with activities or work stoppage or revocation as provided herein are the responsibility of the Permittee, and all costs shall be borne by the Permittee.

(G) As provided in the MCRR Subsection 18.130: "A permit may be revoked at any time by mutual consent; for failure of the applicant to abide by the terms and conditions of the permit as determined in the sole discretion of the County Engineer; to protect public safety or to serve the best public interest as determined by the County Engineer; or by the operation of law."

15. (A) Miscellaneous Provisions.

(B) Permittee's Initials for Signature: _____

(Add any specific special terms or conditions unique to the Permit Site here. Permittee must initial here to indicate acceptance of the additional special terms and conditions. Add additional sheets as necessary.)



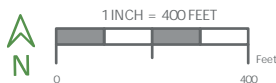
Finished Water North

Bull Run Filtration Facility

Date: August 2023 | Project: 24433.000

Figure: 3

 Proposed ISM Sampling Area (Borings to be Determined)



This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



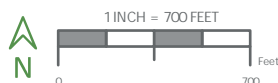
Finished Water South

Bull Run Filtration Facility

Date: August 2023 | Project: 24433.000

Figure: 5

 Proposed ISM Sampling Area (Borings to be Determined)



This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Appendix E

Applicable Tables and Figures from AAI's Filtration Site Supplemental Report

Table 1
Summary of Shallow Soil Analytical Results
Priority Pollutant Metals
Composite Areas A-J

Composite Location	Sample Date	Depth (feet bgs)	Sample Results (mg/kg)											Mercury by EPA 7471B	
			Metals by EPA 6020B											Mercury	
			Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Nickel	Selenium	Silver	Thallium	Zinc	Mercury
Background Reference Levels ==>			0.67 ¹	19 ¹	2.1 ¹	0.54 ¹	200 ¹	73 ¹	34 ¹	110 ¹	0.52 ¹	0.17 ¹	2.8 ¹	170 ¹	0.24 ¹
Clean Fill Reference Levels ==>			0.67 ²	19 ²	21 ²	0.54 ²	200 ²	73 ²	34 ²	110 ²	0.52 ²	4.2 ²	2.8 ²	170 ²	0.24 ²
EPA Generic Regional Screening Levels ==>			470 ³	580 ³	2,300 ³	1,200 ³	1,800,000 ³	47,000 ³	380 ³	13,000 ³	5,800 ³	5,800 ³	12 ³	350,000 ³	120 ³
Oregon Occupational Risk-Based Concentration ==>			--	1.9 ⁴	2,300 ⁴	1,100 ⁴	>Max ⁴	47,000 ⁴	800 ⁴	22,000 ⁴	--	5,800 ⁴	--	--	350 ⁴
A	18-Feb-19	0.0 - 0.5	2.51 U	3.41	0.618	0.628 U	35.0	26.8	10.4	25.8	2.51 U	1.26 U	2.51 U	89.8	0.0506
B	18-Feb-19	0.0 - 0.5	2.54 U	4.95	0.644	0.636 U	34.9	32.9	10.7	26.3	2.54 U	1.27 U	2.54 U	96.6	0.0673
C	18-Feb-19	0.0 - 0.5	2.49 U	3.90	0.549	0.623 U	32.2	30.9	11.1	25.3	2.49 U	1.25 U	2.49 U	85.1	0.0642
D	19-Feb-19	0.0 - 0.5	2.50 U	4.06	0.664	0.626 U	35.0	26.7	11.5	28.0	2.50 U	1.25 U	2.50 U	83.7	0.0665
E	19-Feb-19	0.0 - 0.5	2.53 U	4.08	0.641	0.633 U	37.6	29.1	11.1	28.0	2.53 U	1.27 U	2.53 U	96.5	0.0636
F	20-Feb-19	0.0 - 0.5	2.59 U	2.87	0.605	0.647 U	34.0	27.6	9.96	27.0	2.59 U	1.29 U	2.59 U	95.2	0.0641
G	19-Feb-19	0.0 - 0.5	2.48 U	2.98	0.624	0.620 U	35.3	26.3	10.6	26.2	2.48 U	1.24 U	2.48 U	82.9	0.0559
H	20-Feb-19	0.0 - 0.5	2.63 U	2.63 U	0.576	0.656 U	34.1	29.9	12.6	28.1	2.63 U	1.31 U	2.63 U	101	0.0637
I	21-Feb-19	0.0 - 0.5	3.31 U	3.31	0.619	0.657 U	36.4	29.1	10.6	26.7	2.63 U	1.31 U	2.63 U	102	0.0699
J	21-Feb-19	0.0 - 0.5	2.68 U	3.41	0.632	0.671 U	34.9	29.8	11.0	28.5	2.68 U	1.34 U	2.68 U	96.6	0.0771
A-J	5-Dec-19	0.0 - 0.5	0.0892	3.29		0.161					0.354	0.117			
A-J	5-Dec-19	0.5 - 1.0	0.302	2.95		0.148					0.412	0.143			

-- = Analyte not listed in ODEQ RBCs Tables
 U = analyte not detected above reported detection limit
 bgs = below ground surface
 >Max = The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg or 1,000,000 mg/L. Therefore, this substance is deemed not to pose risks in this scenario.
 DEQ = Oregon Department of Environmental Quality
 mg/kg = milligrams/kilogram

- Notes:**
 1 = Factsheet, Background Levels of Metals in Soils for Cleanups, Cascade Range, last updated January 25, 2018
 2 = Based on ODEQ Clean Fill Table for Uplands, June 17, 2019
 3 = Based on EPA Generic Industrial Regional Ingestion Noncancer Screening Levels (THQ= 1.0, Updated November 2018)
 4 = Based on ODEQ Occupational Risk-Based Concentration for Soil Ingestion, Dermal Contact, and Inhalation (Updated November 1, 2015)

TABLE 2
 Summary of Shallow Soil Analytical Results
 Pesticides
 Composite Areas A-J

Composite Location	Sample Date	Depth (feet bgs)		Sample Results (mg/kg)						
				Pesticides by EPA 8081B						
				Aldrin	Alpha BHC	Beta BHC	Delta BHC	Gamma BHC (Lindane)	Chlordane	4,4-DDD
ODEQ Risk-Based Reference Levels ==>				0.13 ¹	0.36 ¹	--	--	2.1 ¹	7.4 ¹	12 ¹
EPA Generic Regional Screening Levels ==>				35 ²	350 ²	1.8 ²	--	350 ²	580 ²	35 ²
Clean Fill Reference Levels ==>				0.023 ³	0.0063 ³	0.009 ³	--	0.0095 ³	0.91 ³	0.0063 ³
A	18-Feb-19	0.0	- 0.5	0.0251 U	0.0251 U	0.0251 U	0.0251 U	0.0251 U	0.251 U	0.0251 U
B	18-Feb-19	0.0	- 0.5	0.0254 U	0.0254 U	0.0254 U	0.0254 U	0.0254 U	0.254 U	0.0254 U
C	18-Feb-19	0.0	- 0.5	0.0249 U	0.0249 U	0.0249 U	0.0249 U	0.0249 U	0.249 U	0.0249 U
D	19-Feb-19	0.0	- 0.5	0.0250 U	0.0250 U	0.0250 U	0.0250 U	0.0250 U	0.250 U	0.0250 U
E	19-Feb-19	0.0	- 0.5	0.0253 U	0.0253 U	0.0253 U	0.0253 U	0.0253 U	0.253 U	0.0253 U
F	20-Feb-19	0.0	- 0.5	0.0259 U	0.0259 U	0.0259 U	0.0259 U	0.0259 U	0.259 U	0.0259 U
G	19-Feb-19	0.0	- 0.5	0.0248 U	0.0248 U	0.0248 U	0.0248 U	0.0248 U	0.248 U	0.0248 U
H	20-Feb-19	0.0	- 0.5	0.0263 U	0.0263 U	0.0263 U	0.0263 U	0.0263 U	0.263 U	0.0263 U
I	21-Feb-19	0.0	- 0.5	0.0263 U	0.0263 U	0.0263 U	0.0263 U	0.0263 U	0.263 U	0.0263 U
J	21-Feb-19	0.0	- 0.5	0.0268 U	0.0268 U	0.0268 U	0.0268 U	0.0268 U	0.268 U	0.0268 U
A-J	5-Dec-19	0.0	- 0.5	0.0000351 U	0.0000581 U	0.0000329 U	0.0000203 U	0.0000395 U	0.00133 U	0.000607
A-J	5-Dec-19	0.5	1.0	0.0000351 U	0.0000581 U	0.0000329 U	0.0000203 U	0.0000395 U	0.00133 U	0.0000175 U

bgs = below ground surface
 DEQ = Oregon Department of Environmental Quality
 mg/kg = milligrams/kilogram
 U = analyte not detected above specified reporting limit
 -- = Analyte not listed in published reference table(s)

Notes:
¹ = Based on ODEQ Risk-Based Concentrations for Occupational Soil Ingestion, Dermal Contact, and Inhalation
² = Based on EPA Generic Industrial Regional Ingestion Noncancer Screening Levels (THQ= 1.0, Updated November 2018)
³ = Based on ODEQ Clean Fill Table for Uplands, June 17, 2019

TABLE 2
 Summary of Shallow Soil Analytical Results
 Pesticides
 Composite Areas A-J

Composite Location	Sample Date	Depth (feet bgs)		Sample Results (mg/kg)						
				Pesticides by EPA 8081B						
				4,4-DDE	4,4-DDT	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin
ODEQ Risk-Based Reference Levels ==>				8.2 ¹	8.5 ¹	0.14 ¹	4,900 ¹	--	--	250 ¹
EPA Generic Regional Screening Levels ==>				350 ²	580 ²	580 ²	7,000 ²	--	--	350 ²
Clean Fill Reference Levels ==>				0.01 ³	0.01 ³	0.0045 ³	0.64 ³	--	--	0.0014 ³
A	18-Feb-19	0.0	- 0.5	0.0251 U	0.0251 U	0.0251 U	0.0251 U	0.0251 U	0.0251 U	0.0251 U
B	18-Feb-19	0.0	- 0.5	0.0254 U	0.0254 U	0.0254 U	0.0254 U	0.0254 U	0.0254 U	0.0254 U
C	18-Feb-19	0.0	- 0.5	0.0249 U	0.0249 U	0.0249 U	0.0249 U	0.0249 U	0.0249 U	0.0249 U
D	19-Feb-19	0.0	- 0.5	0.0250 U	0.0250 U	0.0250 U	0.0250 U	0.0250 U	0.0250 U	0.0250 U
E	19-Feb-19	0.0	- 0.5	0.0253 U	0.0253 U	0.0253 U	0.0253 U	0.0253 U	0.0253 U	0.0253 U
F	20-Feb-19	0.0	- 0.5	0.0259 U	0.0259 U	0.0259 U	0.0259 U	0.0259 U	0.0259 U	0.0259 U
G	19-Feb-19	0.0	- 0.5	0.0248 U	0.0248 U	0.0248 U	0.0248 U	0.0248 U	0.0248 U	0.0248 U
H	20-Feb-19	0.0	- 0.5	0.0263 U	0.0263 U	0.0263 U	0.0263 U	0.0263 U	0.0263 U	0.0263 U
I	21-Feb-19	0.0	- 0.5	0.0263 U	0.0263 U	0.0263 U	0.0263 U	0.0263 U	0.0263 U	0.0263 U
J	21-Feb-19	0.0	- 0.5	0.0268 U	0.0268 U	0.0268 U	0.0268 U	0.0268 U	0.0268 U	0.0268 U
A-J	5-Dec-19	0.0	- 0.5	0.0186	0.0318	0.0175	0.0000171 U	0.0000107 U	0.0000131 U	0.0000525 U
A-J	5-Dec-19	0.5	1.0	0.00974	0.00927	0.00917	0.0000171 U	0.0000107 U	0.0000131 U	0.0000525 U

bgs = below ground surface
 DEQ = Oregon Department of Environmental Quality
 mg/kg = milligrams/kilogram
 U = analyte not detected above specified reporting limit
 -- = Analyte not listed in published reference table(s)

Notes:
¹ = Based on ODEQ Risk-Based Concentrations for Occupational Soil Ingestion, Dermal Contact, and Inhalation
² = Based on EPA Generic Industrial Regional Ingestion Noncancer Screening Levels (THQ= 1.0, Updated November 2018)
³ = Based on ODEQ Clean Fill Table for Uplands, June 17, 2019

TABLE 2
 Summary of Shallow Soil Analytical Results
 Pesticides
 Composite Areas A-J

Composite Location	Sample Date	Depth (feet bgs)			Sample Results (mg/kg)						
					Pesticides by EPA 8081B						
					Endrin aldehyde	Endrin ketone	Hexachlorobenzene	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene
ODEQ Risk-Based Reference Levels ==>					--	--	0.93 ¹	0.45 ¹	0.024 ¹	--	2.1 ¹
EPA Generic Regional Screening Levels ==>					--	--	930 ²	580 ²	15 ²	5,800 ²	110 ²
Clean Fill Reference Levels ==>					--	--	0.018 ³	0.017 ³	0.042 ³	310 ³	0.44 ³
A	18-Feb-19	0.0	-	0.5	0.0251 U	0.0251 U	0.0251 U	0.0251 U	0.0251 U	0.0251 U	0.502 U
B	18-Feb-19	0.0	-	0.5	0.0254 U	0.0254 U	0.0254 U	0.0254 U	0.0254 U	0.0254 U	0.509 U
C	18-Feb-19	0.0	-	0.5	0.0249 U	0.0249 U	0.0249 U	0.0249 U	0.0249 U	0.0249 U	0.498 U
D	19-Feb-19	0.0	-	0.5	0.0250 U	0.0250 U	0.0250 U	0.0250 U	0.0250 U	0.0250 U	0.501 U
E	19-Feb-19	0.0	-	0.5	0.0253 U	0.0253 U	0.0253 U	0.0253 U	0.0253 U	0.0253 U	0.506 U
F	20-Feb-19	0.0	-	0.5	0.0259 U	0.0259 U	0.0259 U	0.0259 U	0.0259 U	0.0259 U	0.517 U
G	19-Feb-19	0.0	-	0.5	0.0248 U	0.0248 U	0.0248 U	0.0248 U	0.0248 U	0.0248 U	0.496 U
H	20-Feb-19	0.0	-	0.5	0.0263 U	0.0263 U	0.0263 U	0.0263 U	0.0263 U	0.0263 U	0.525 U
I	21-Feb-19	0.0	-	0.5	0.0263 U	0.0263 U	0.0263 U	0.0263 U	0.0263 U	0.0263 U	0.525 U
J	21-Feb-19	0.0	-	0.5	0.0268 U	0.0268 U	0.0268 U	0.0268 U	0.0268 U	0.0268 U	0.536 U
A-J	5-Dec-19	0.0	-	0.5	0.0000199 U	0.0000368 U	0.0000235 U	0.0000321 U	0.0000256 U	0.0000255 U	0.00133 U
A-J	5-Dec-19	0.5	-	1.0	0.0000199 U	0.0000368 U	0.0000235 U	0.0000321 U	0.0000256 U	0.0000255 U	0.00133 U

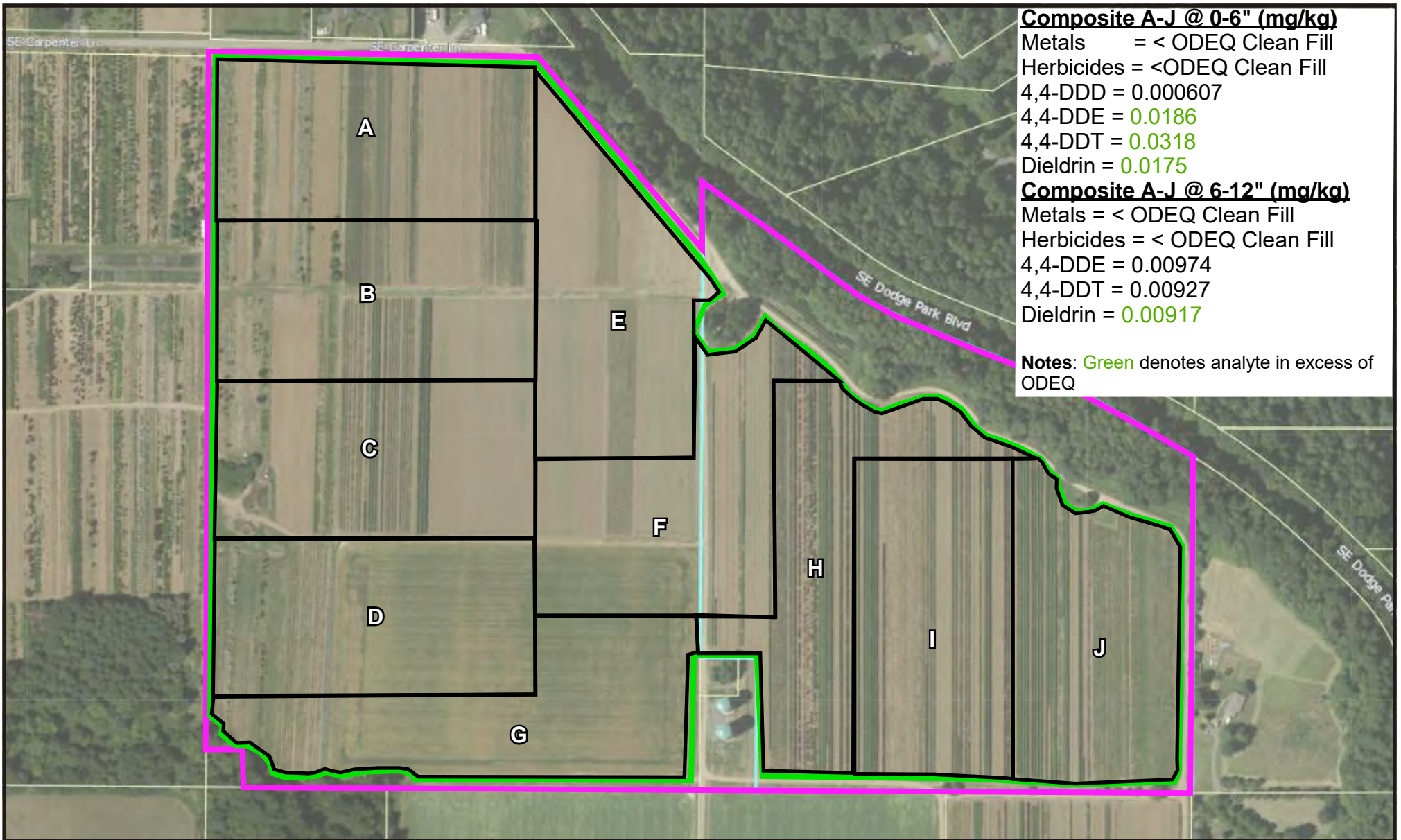
bgs = below ground surface
 DEQ = Oregon Department of Environmental Quality
 mg/kg = milligrams/kilogram
 U = analyte not detected above specified reporting limit
 -- = Analyte not listed in published reference table(s)

Notes:
¹ = Based on ODEQ Risk-Based Concentrations for Occupational Soil Ingestion, Dermal Contact, and Inhalation
² = Based on EPA Generic Industrial Regional Ingestion Noncancer Screening Levels (THQ= 1.0, Updated November 2018)
³ = Based on ODEQ Clean Fill Table for Uplands, June 17, 2019

TABLE 3
 Summary of Shallow Soil Analytical Results
 Chlorinated Acid Herbicides
 Composite Areas A-J

Composite Location	Sample Date	Depth (feet bgs)	Sample Results (mg/kg)									
			Chlorinated Acid Herbicides by EPA 8151A									
			2,4-D	Dalapon	2,4-DB	Dicamba	Dichloroprop	Dinoseb	MCPA	MCPD	2,4,5-T	2,4,5-TP
Risk-Based Reference Levels ==>			8,200 ¹	--	--	--	--	--	410 ¹	--	--	--
Clean Fill Reference Levels ==>			1.3 ²	7.2 ²	4.8 ²	9 ²	--	7.8 ²	0.097 ²	0.28 ²	4.1 ²	3.7 ²
A	18-Feb-19	0.0 - 0.5	0.0879 U	0.0879 U	0.0879 U	0.0879 U	0.0879 U	0.0879 U	8.17 U	8.17 U	0.0879 U	0.0879 U
B	18-Feb-19	0.0 - 0.5	0.0890 U	0.0890 U	0.0890 U	0.0890 U	0.0890 U	0.0890 U	8.27 U	8.27 U	0.0890 U	0.0890 U
C	18-Feb-19	0.0 - 0.5	0.0872 U	0.0872 U	0.0872 U	0.0872 U	0.0872 U	0.0872 U	8.09 U	8.09 U	0.0872 U	0.0872 U
D	19-Feb-19	0.0 - 0.5	0.0876 U	0.0876 U	0.0876 U	0.0876 U	0.0876 U	0.0876 U	8.14 U	8.14 U	0.0876 U	0.0876 U
E	19-Feb-19	0.0 - 0.5	0.0886 U	0.0886 U	0.0886 U	0.0886 U	0.0886 U	0.0886 U	8.22 U	8.22 U	0.0886 U	0.0886 U
F	20-Feb-19	0.0 - 0.5	0.0905 U	0.0905 U	0.0905 U	0.0905 U	0.0905 U	0.0905 U	8.41 U	8.41 U	0.0905 U	0.0905 U
G	19-Feb-19	0.0 - 0.5	0.0868 U	0.0868 U	0.0868 U	0.0868 U	0.0868 U	0.0868 U	8.06 U	8.06 U	0.0868 U	0.0868 U
H	20-Feb-19	0.0 - 0.5	0.0919 U	0.0919 U	0.0919 U	0.0919 U	0.0919 U	0.0919 U	8.53 U	8.53 U	0.0919 U	0.0919 U
I	21-Feb-19	0.0 - 0.5	0.0920 U	0.0920 U	0.0920 U	0.0920 U	0.0920 U	0.0920 U	8.54 U	8.54 U	0.0920 U	0.0920 U
J	21-Feb-19	0.0 - 0.5	0.0939 U	0.0939 U	0.0939 U	0.0939 U	0.0939 U	0.0939 U	8.72 U	87.2 U	0.0939 U	0.0939 U
A-J	5-Dec-19	0.0 - 0.5	0.00133 U	0.00333 U	0.00133 U	0.00100 U	0.00127 U	0.00127 U	0.0662 U	0.119 U	0.00113 U	0.00140 U
A-J	5-Dec-19	0.5 - 1.0	0.0000200 U	0.00333 U	0.0000200 U	0.0000150 U	0.0000190 U	0.0000190 U	0.000993 U	0.00179 U	0.0000170 U	0.0000210 U

bgs = below ground surface
 DEQ = Oregon Department of Environmental Quality
 mg/kg = milligrams/kilogram
 ND = Not detected above referenced laboratory method reporting limit
 -- = Analyte not listed
 Notes:
¹ = Based on ODEQ Risk-Based Concentrations for Occupational Soil Ingestion, Dermal Contact, and Inhalation (November 1, 2015)
² = Based on ODEQ Clean Fill Table for Uplands, June 17, 2019



Composite A-J @ 0-6" (mg/kg)

Metals = < ODEQ Clean Fill
 Herbicides = < ODEQ Clean Fill
 4,4-DDD = 0.000607
 4,4-DDE = 0.0186
 4,4-DDT = 0.0318
 Dieldrin = 0.0175

Composite A-J @ 6-12" (mg/kg)

Metals = < ODEQ Clean Fill
 Herbicides = < ODEQ Clean Fill
 4,4-DDE = 0.00974
 4,4-DDT = 0.00927
 Dieldrin = 0.00917

Notes: Green denotes analyte in excess of ODEQ

2015 Aerial Photograph Source: Google Earth

LEGEND

- 93.49-Acre Property Boundary
- 80-Acre Study Area
- 8-Acre Soil Sample Composite Areas
- A Sample Location

FIGURE 2. Sampling Grid - 1 Acre Squares
 Phase II Environmental Site Assessment
 93.49-Acre Future Water Treatment Plant Property
 35050 SE Carpenter Lane, Gresham, Oregon

NORTH

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