



Stantec Consulting Services, Inc.
11130 Northeast 33rd Place, Suite 200
Bellevue, Washington 98004
(858) 751-1200

December 18, 2018
File: 185751153

Attention: Mr. Randy Lewis
Director of Environmental and Engineering Services
Port of Grays Harbor
111 South Wooding Street
Aberdeen, Washington 98520

Reference: Limited Phase II Environmental Site Assessment
Terminal 3 Site
Hoquiam, Washington

Dear Mr. Lewis,

On behalf of the Port of Grays Harbor (the "Port"), Stantec has prepared the following report describing the results of soil assessment activities conducted at the Proposed Terminal 3 property (the "Site") located in Hoquiam, Grays Harbor County, Washington (**Figure 1**). We understand that the Site is being considered for a long-term lease and redevelopment as a potash export facility.

Scope of Work

- Prepared a site-specific Health and Safety Plan (HASP);
- Notified One Call, a municipal underground utility location service, to identify subsurface municipal utilities located in the public right-of-way in the vicinity of the Site;
- Supervised the advancement of seven soil boreholes (B-11 through B-17), at the locations shown on **Figure 3**;
- Collected soil samples and logged the lithology of soil samples during drilling operations;
- Laboratory analysis for dioxins and furans of soil samples collected at selected depths in each borehole; and,
- Prepared this report, which includes our findings and conclusions.

Background

The Site is approximately 200 acres in size and is located on Airport Way between Paulson Road and South Adams Street near the Hoquiam Municipal Airport. Based on information provided in the Phase I Environmental Site Assessment (ESA) Report of the Site prepared by BergerABAM dated July 2017, the Site was occupied by a foundry for pulp and paper equipment (Lamb Grays Harbor Company) and a log storage and export facility (Former Rayonier). Currently, the majority of the Site is vacant with a log storage and wood chipping facility (Willis Enterprises) occupying most of the southeast portion of the Site. The City of Hoquiam operates an inert waste landfill on the east portion of the Site and there is a former wastewater pond on the southwest portion of the Site. A whisky distillery currently occupies the northeast portion of the Site.

Design with community in mind

Reference: Phase II Environmental Site Assessment

The Phase I ESA identified three former uses of the Site as Recognized Environmental Concerns (RECs):

- Former Rayonier log export facility;
- Former Lamb Grays Harbor Company foundry, and;
- The City of Hoquiam inert waste landfill.

A Phase II ESA soil and groundwater investigation of the identified REC areas was conducted in August/September 2017. Three permanent groundwater monitoring wells (MW-1, MW-2, and MW-3) were installed in March 2018 to investigate groundwater conditions at the Site. One well (MW-4) had been installed previously. Three additional monitoring wells (MW-5, MW-6, and MW-7) were installed in June 2018 to investigate groundwater conditions in the northwest portion of the Site. There are currently seven permanent ground monitoring wells on the Site. During the June 2018 investigation, 10 direct-push soil borings were completed and two surface water samples were collected from drainage ditches at the northwest portion of the Site planned for redevelopment. The area of investigation and a summary of soil sampling results are presented in **Figure 2**.

Dioxin and furan analysis of the 10 soil samples collected in June 2018 indicated Total Toxic Equivalency (TEQ min) dioxin and furan concentrations ranging from 0.19 nanograms per kilogram (ng/kg) to 67.8 ng/kg. Five of the soil samples exceeded the Washington Department of Ecology Model Toxics Control Act (MTCA) Method B Soil Cleanup Level (CUL) for dioxins/furans of 12.8 ng/kg. No explanation for the distribution of the dioxin/furan concentrations was offered in the July 2018 Phase II report. The report concluded:

“Dioxins/furans in soil could result from historical burning of wood or wood waste associated with the mill operations. Additionally, the site was filled using dredge material from Grays Harbor and the Chehalis River navigation channel. There is the potential that the dioxins/furans present in site soil could be from the dredge material placed at the site resulting from historical operations of pulp and paper mills in the area”.

The previous Phase II ESAs did not investigate the wooded areas along the north and east sides of the former log storage area where rig access was restricted. The Port retained Stantec to collect additional soil samples in these areas which area within the footprint of potential future development. Additional samples were proposed along the central drainage channel to delineate dioxin/furan concentrations previously identified.

Subsurface Investigation

Drilling

A Site-specific HASP was prepared to address potential hazards during the proposed drilling activities. Stantec personnel and subcontractors were required to acknowledge the HASP prior to the field work.

All field activities and soil descriptions were completed by a Washington State Licensed Geologist and Hydrogeologist (WA LG/LHG No. 674).

Reference: Phase II Environmental Site Assessment

Utility Clearance

One Call was notified of the subsurface investigation work a minimum of 48 hours prior to drilling as required by law. One Call notified local utility companies of the planned work in order to identify subsurface municipal utilities located in the public right-of-way. The subsurface investigation work was conducted entirely within the Site boundary avoiding any municipal rights-of way. No utilities were identified in the immediate vicinity of any of the soil borings.

Soil Boring Advancement

On October 10 and 11, 2018, boreholes B-11, B-12, B-13, B-14, B-15, and B-17 were advanced to depths of 16 feet below ground surface (bgs) in the locations depicted on **Figure 3**. Boring B-16 was located in a wooded area on the east side of the former log storage area and was completed to a depth of 8 feet bgs. Probe refusal was encountered at 8' bgs due to dense wood fragments at this depth. Drilling operations were contracted to Environmental Services Network Northwest, Inc. (ESN). ESN also conducted the drilling and monitoring well installation during BergerABAM's June 2018 Phase II subsurface investigation. All borings were completed using a limited-access Power Probe 9100-P direct-push probe rig. The soil was logged continuously and examined for the presence of discoloration, odor, and/or sheen.

Subsurface material encountered in B-11, B-12, and B-17, in the cleared former log storage yard consisted of up to 4 feet of imported gravel and coarse railroad ballast-type rock fill material overlying dark gray silty sand with organic material and wood fragments that appeared to be native soil. The native soil consisted of interbedded layers of silty sand, sandy silt, and silt with organic material typical of near shore estuary deposits. The shallow soils in the wooded or relatively undisturbed areas (B-13, B-14, B-15, and B-16) consisted of orange-colored hydric soil and dark gray silt to a depth of 4 to 5 feet bgs and underlain by the interbedded silty sands and silt. The soil was saturated below approximately 7 feet bgs in most of the borings. No evidence of discoloration, sheen, or odor was noted during the screening of the soil samples. No groundwater samples were collected as part of the investigation.

All equipment was decontaminated between borings using high-pressure steam cleaning equipment. Sampling equipment was decontaminated prior to the collection of each sample with a solution of Alconox® detergent and water and rinsed with clean water to prevent cross-contamination between boreholes.

Following collection of soil samples, the soil borings were backfilled with bentonite to surface.

Soil Sampling

Soil samples were collected from the 4' long plastic sleeve in accordance with United States Environmental Protection Agency (EPA) Method 5035A. Relatively undisturbed soils were collected from the center of the split-spoon using a syringe-type sampler. The samples were then placed directly into 40-mililiter vials preserved with methanol supplied by the analytical laboratory. Additional soil was collected and placed

Reference: Phase II Environmental Site Assessment

directly into clean 4-ounce glass jars. Care was taken to obtain representative soil samples and to place the soils directly and quickly into the sample container to minimize loss of volatile constituents.

The threads of the sample jars were wiped clean of soil particles that would interfere with an airtight seal, and a Teflon-lined screw closure lid was immediately placed on the jars. The sample jars were labeled with borehole name, depth, type of analysis, date, and time of sampling and placed in a cooler on ice for subsequent transport under chain-of-custody (COC) protocol to ESN's analytical laboratory, an Ecology-accredited fix-based environmental laboratory located in Olympia, Washington. EPA recommended protocols for sample management, including COC procedures and documentation, were observed during all sampling activities.

The remaining soil was used for soil type classification and field screening analysis for petroleum hydrocarbon impacts. Field screening consisted of visual observations of potential hydrocarbon contamination and headspace analysis for volatile organic vapors. Headspace testing for volatile organic vapors was completed using a photoionization detector (PID) which monitors volatile vapors given off by the sampled soil. A sample of the soil matrix was placed in a re-sealable plastic bag and allowed to equilibrate for approximately ten minutes. The probe of the PID was used to pierce the plastic and was extended into the headspace above the soil surface. The greatest vapor reading obtained during the next 60 seconds was then recorded. Prior to use, the PID was calibrated to known concentrations of isobutylene, in accordance with the manufacturer's specifications.

A total of 24 soil samples were collected and submitted for laboratory analysis. In borings B-11, B-12, B-13, B-14, B-15, and B-17, laboratory soil samples were collected from depths of 3', 6', 9', and 15' bgs. In boring B-16, laboratory soil samples were collected from depths of 2', 5', and 8' bgs.

Analytical Methods and Sample Results

Soil Samples

All soil samples were analyzed for the following:

- Dioxins and Furans by EPA Method 8290A.

The sample collected from the 11' bgs depth in B-11 was also submitted for analysis of:

- Phenols using EPA Method 8270.

Dioxin/furan concentrations in soil samples were below Ecology's MTCA Method B Cleanup Levels for dioxins/furans in soil with the exception of those listed in the table below. The certified analytical laboratory report and COC documentation is provided as **Appendix A** and is summarized in **Table 1** and on **Figures 2 and 3**.

Reference: Phase II Environmental Site Assessment

Sample Name	Sample Date	Sample Depth (feet bgs)	PID Reading (ppm)	Total TEQ (ng/kg)
B-12 (3')	10/11/18	3	2	15.0
B-13 (3')	10/11/18	3	4	20.3
B-13 (9')	10/11/18	9	2	20.1
B-14 (9')	10/11/18	9	3	24.8
B-14 (15')	10/11/18	15	3	13.0
B-16 (2')	10/11/18	2	2	15.0
MTCA Method B Soil Cleanup Level (Total TEQ min)				12.8

Nanogram/kilogram or pg/g

Summary and Conclusions

A total of seven soil borings were completed in the northwest portion of the Site as part of this Phase II subsurface investigation. Boring locations were selected to delineate the lateral and horizontal extent of dioxin/furans impacts identified in the July 2018 Phase II ESA conducted by BergerABAM and to investigate areas within the footprint of potential future development. Preliminary plans for the main storage building show that it would extend along the existing railroad line that forms the northern boundary of the Site. Borings B-13, B-14, B-15, and B-16 all lie within this potential building's footprint and represent areas where shallow soils would likely be exposed during building construction.

Of the 24 soil samples collected, six had dioxin/furan concentrations above the MTCA Method B Soil CUL of 12.8 ng/kg. Concentrations of dioxin above the CUL were detected to a depth of 9' bgs in B-13, to a depth of at least 15' bgs in B-14, and in the shallow soils at B-16 (2') all within the potential footprint of the storage building. Dioxin was also detected at the 3' depth in B-12 which is located near the western boundary of the Site and outside of the potential building footprints. The highest detected dioxin concentrations were located in B-13, B-14, and B-16 in the wooded area near the railroad tracks that appears to have been outside of the historically occupied portions of the Site. Neither the former equipment foundry (Lamb Grays Harbor Property) nor the former log storage yard for the Rayonier mill appears to have used this portion of the Site as part of their historical operations. In addition, this area appears to be covered with native vegetation and does not appear to have received imported dredge material based on the review of Site operations.

December 18, 2018
Mr. Randy Lewis
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Reference: Phase II Environmental Site Assessment

Limitations

This report has been prepared for the exclusive use of the Port of Grays Harbor as it pertains to potential development on the Terminal 3 site in Hoquiam, Washington. The findings and conclusions rendered in this report are opinions based primarily on laboratory testing of soil samples collected during this project. This report does not reflect subsurface variations which may exist between sampling points. These variations cannot be anticipated, nor can they be entirely accounted for even with exhaustive additional testing.

All work has been performed with the degree of skill generally exercised by practicing engineers and geologists in the environmental field. Stantec makes no other warranty, either expressed or implied, concerning the conclusions and professional advice which is contained within the body of this report.

If you have any questions regarding this report, please contact the undersigned.

Regards,

STANTEC CONSULTING SERVICES INC.

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Senior Geologist
Phone: (425) 922-6392
Greg.mccormick@stantec.com

Marc Sauze PE
Principal Engineer
Phone: (425) 894-2329
Marc.sauze@stantec.com

Attachments: Table 1 – Dioxins/Furans in Soil
Figure 1 – Site Location Map
Figure 2 – Investigation Area and Soil Sampling Results
Figure 3 – Horizontal Delineation of Dioxins/Furans
Attachment A – Laboratory Analytical Report and Chain-of-Custody Documentation

TABLE 1

TABLE 1: DIOXINS/FURANS IN SOIL¹

PROPOSED TERMINAL 3 EXPORT FACILITY

HOQUIAM, WASHINGTON

Sample Identification	Depth (feet below the ground surface)	Date	DIOXINS/FURANS (ng/kg)	
			2,3,7,8 - TCDD	Total TEQ of dioxins/furans
B-1-7'	7	6/25/2018	4.51	14.1
B-2-6'	6	6/25/2018	1.51	67.8
B-3-6'	6	6/25/2018	5.55	17.7
B-4-8'	8	6/25/2018	2.92	9.89
B-5A-7.5'	7.5	6/25/2018	3.61	10.8
B-6-7'	7	6/25/2018	<0.446	0.106
B-7-7'	7	6/25/2018	4.4	13
B-8-6'	6	6/25/2018	<0.4	1.22
B-9-7'	7	6/25/2018	<0.431	0.19
B-10-6'	6	6/25/2018	4.42	13.9
B-11-3'	3	10/11/2018	<0.453	0.0
B-11-6'	6	10/11/2018	3.98	12.4
B-11-9'	9	10/11/2018	<0.441	0.0521
B-11-15'	15	10/11/2018	2.41	3.21
B-12-3'	3	10/11/2018	4.4	15
B-12-6'	6	10/11/2018	<0.488	0.00762
B-12-9'	9	10/11/2018	3.11	8.89
B-12-15'	15	10/11/2018	<0.406	0.0420
B-13-3'	3	10/11/2018	<0.457	20.3
B-13-6'	6	10/11/2018	<0.429	0.965
B-13-9'	9	10/11/2018	5.7	20.1
B-13-15'	15	10/11/2018	3.45	6.80
B-14-3'	3	10/11/2018	3.42	6.42
B-14-6'	6	10/11/2018	<0.411	3.06
B-14-9'	9	10/11/2018	11.1	24.8
B-14-15'	15	10/11/2018	3.04	13.0
B-15-3'	3	10/11/2018	<0.435	0.556
B-15-6'	6	10/11/2018	2.06	4.33
B-15-9'	9	10/11/2018	<0.424	2.82
B-15-15'	15	10/11/2018	4.2	8.77
B-16-2'	2	10/11/2018	5.03	15.0
B-16-5'	5	10/11/2018	3.3	9.18
B-16-8'	8	10/11/2018	1.59	3.14
B-17-3'	3	10/11/2018	<0.448	0.0

Table continued on next page

Table 1 Continued

B-17-6'	6	10/11/2018	<0.485	0.00224
B-17-9'	9	10/11/2018	5.22	9.33
B-17-15'	15	10/11/2018	<0.364	0.132
MTCA Method A Soil Cleanup Level ²			NE	NE
MTCA Method B Soil Cleanup Level ²			12.8	12.8
MTCA Method C Soil Cleanup Level*			16.8	16.8

Notes:

¹ Chemical Analysis was performed by Ceres Analytical Laboratory, Inc. The laboratory report and chain-of-custody is included as Appendix C

² Washington State Department of Ecology Model Toxics Control Act (MTCA) Cleanup Levels. Cancer values are used unless otherwise noted. <https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx>

*The MTCA Method C industrial clean up level is listed because the MTCA Method A industrial clean up level is not established.

Bold indicates the analyte was detected at a concentration greater than the laboratory method reporting limits.

24.8

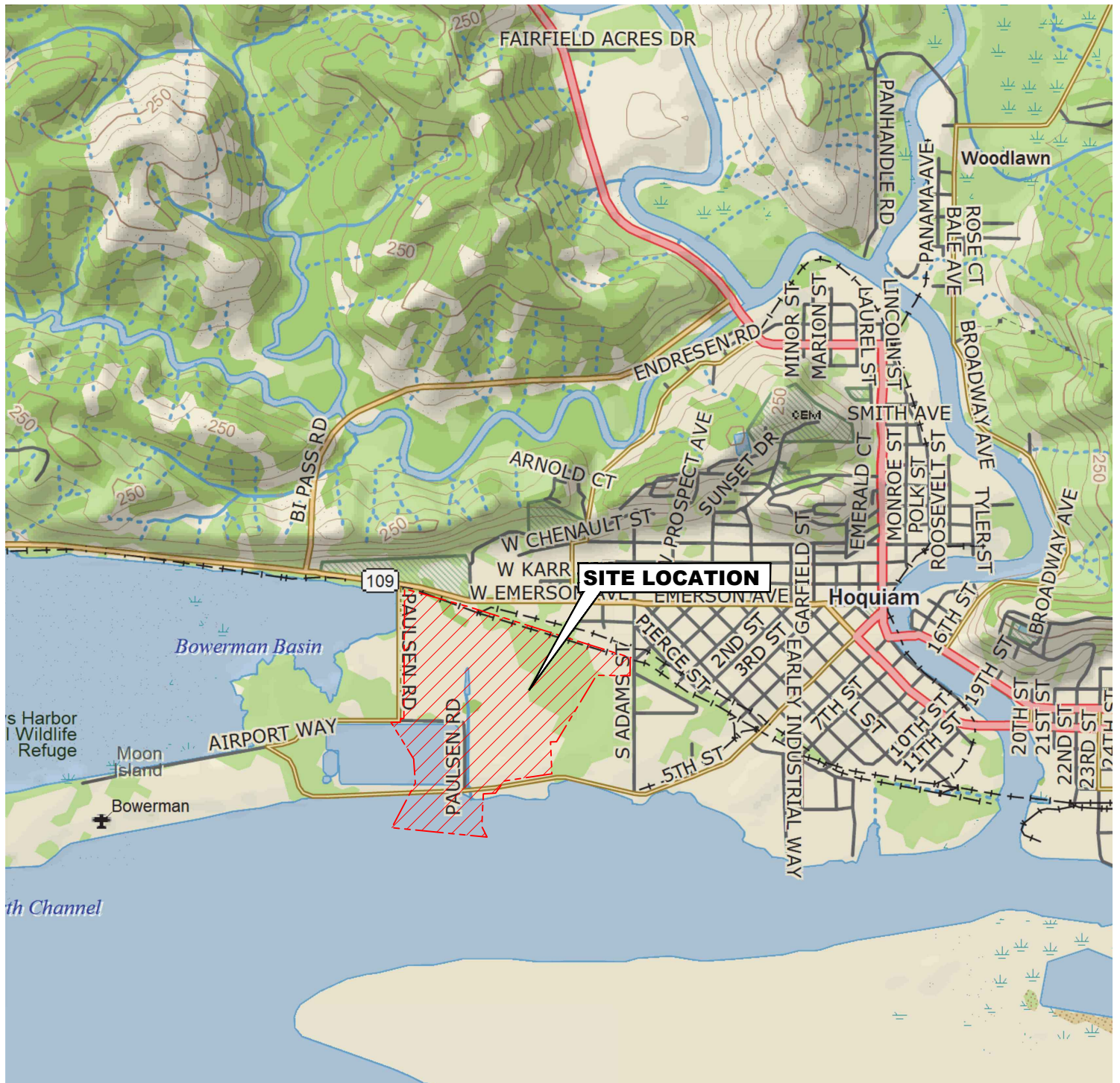
Shaded value indicates the Total TEQ concentration exceeds the MTCA Method B Cleanup Level of 12.8 ng/kg.

NE = Not established

<0.4 = The analyte was not detected. The associated numerical value is the sample quantitation limit.

ng/kg = nanogram per kilogram - equivalent to pg/g concentration.

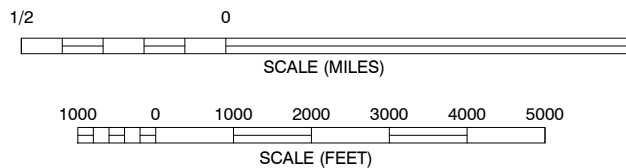
FIGURES



North



WASHINGTON



REFERENCE: USGS 7.5 MINUTE QUADRANGLE, ABERDEEN, WASHINGTON



11130 NE 33RD PLACE, SUITE 200
BELLEVUE, WASHINGTON
PHONE: (425) 869-9448 FAX: (425) 869-1190

FOR:
PORT OF GRAYS HARBOR
PROPOSED TERMINAL 3 FACILITY
AIRPORT WAY
HOQUIAM, WASHINGTON

JOB NUMBER:
185751153

DRAWN BY:
MDR

CHECKED BY:
GMC

APPROVED BY:
MS

FIGURE:

1

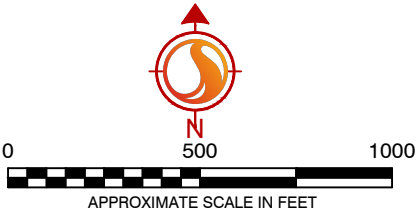
DATE:
DEC 2018



- LEGEND:
- MW-1 GROUNDWATER MONITORING WELL
 - B-4 SOIL BORING (NO COC EXCEEDENCE)
 - B-1 SOIL SAMPLE ABOVE MTCA METHOD B CLEANUP LEVEL OF 12.8 NANOGRAMS PER KILOGRAM (ng/kg) FOR DIOXINS/FURANS
 - SS-1 SURFACE WATER SAMPLES

NOTE: BORINGS B-1 THROUGH B-10 COMPLETED 6/25/18 BY: BERGER/ABAM
BORINGS B-11 THROUGH B-17 COMPLETED 10/11/18 BY: STANTEC

- PROPOSED STORMWATER PONDS
- PROPOSED TEMPORARY CONSTRUCTION STAGING AREAS
- PROPOSED SWALE
- PROPOSED BUILDINGS



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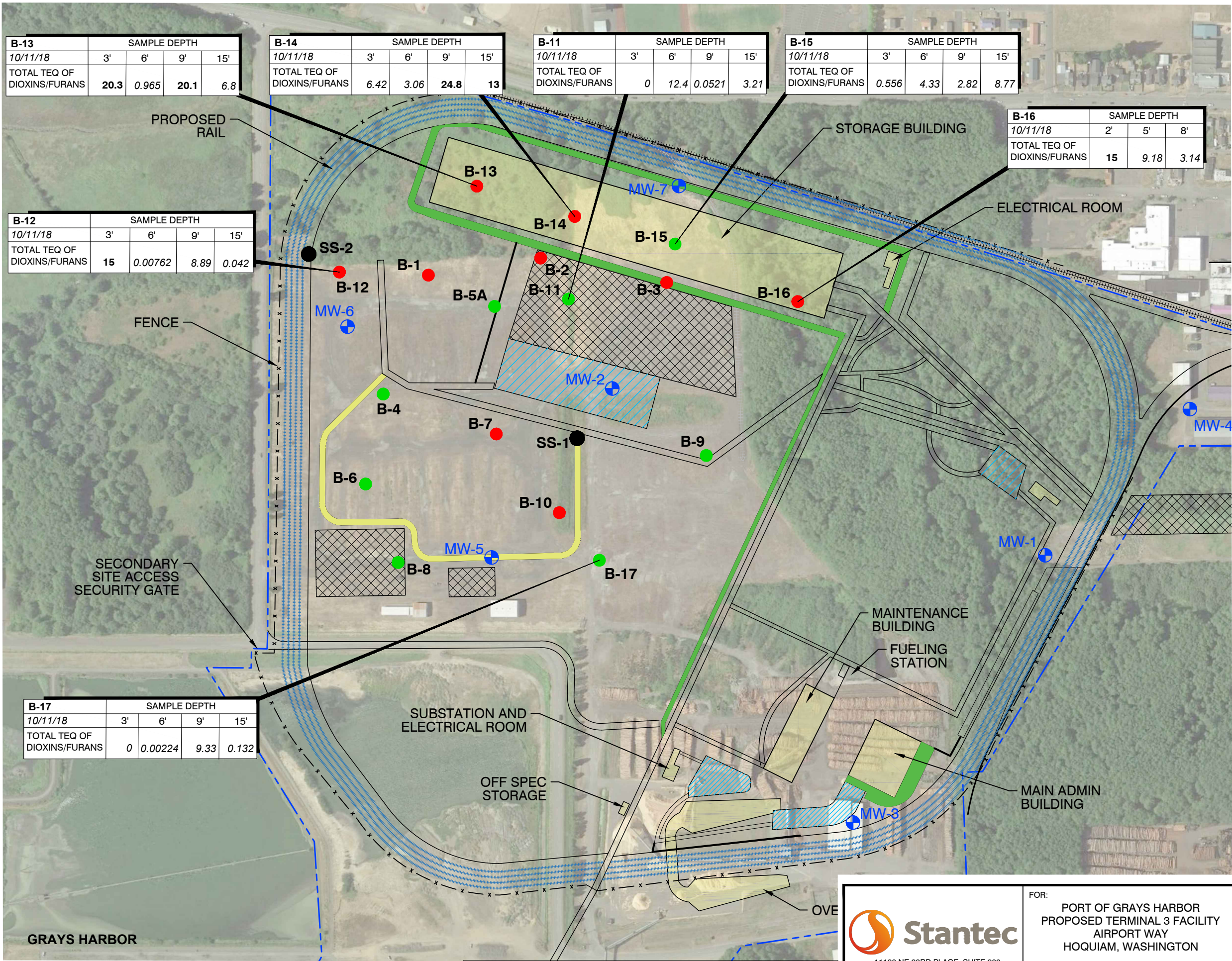
DRAWN BY:
MDR

INVESTIGATION AREA AND
SOIL SAMPLE RESULTS

CHECKED BY:
GMC

APPROVED BY:
MS

FIGURE:
2
DATE:
DEC 2018



- LEGEND:
- MW-1 GROUNDWATER MONITORING WELL
 - B-4 SOIL BORING (NO COC EXCEEDENCE)
 - B-1 SOIL SAMPLE ABOVE MTCA METHOD B CLEANUP LEVEL OF 12.8 NANOGRAMS PER KILOGRAM (ng/kg) FOR DIOXINS/FURANS
 - SS-1 SURFACE WATER SAMPLES

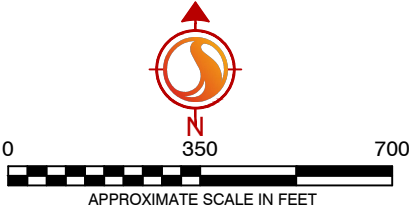
NOTE: BORINGS B-1THROUGH B-10 COMPLETED 6/25/18 BY: BERGER/ABAM
BORINGS B-11 THROUGH B-17 COMPLETED 10/11/18 BY: STANTEC

- PROPOSED STORMWATER PONDS
- PROPOSED TEMPORARY CONSTRUCTION STAGING AREAS
- PROPOSED SWALE
- PROPOSED BUILDINGS

SAMPLE ID	B-11				
SAMPLE DATE	10/11/18	3'	6'	9'	15'
TOTAL TEQ OF DIOXINS/FURANS	0.556	0.556	0.556	0.556	0.556

ALL RESULTS IN ng/kg
< NOT DETECTED AT OR ABOVE THE LABORATORY REPORTING LIMIT
ng/kg NANOGRAMS PER KILOGRAM
BOLD VALUES EXCEED MTCA METHOD B CLEANUP LEVELS

ANALYTES:	MTCA METHOD B CUL (ng/kg)
TOTAL TEQ OF DIOXINS/FURANS	12.8



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PORT OF GRAYS HARBOR
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HOQUIAM, WASHINGTON

JOB NUMBER:
185751153

DRAWN BY:
MDR

HORIZONTAL DELINEATION OF
DIOXINS/FURANS

CHECKED BY:
GMC

APPROVED BY:
MS

FIGURE:
3
DATE:
DEC 2018

ATTACHMENT A

**LABORATORY ANALYTICAL REPORT AND CHAIN-OF-CUSTODY
DOCUMENTATION**



CERES Analytical Laboratory, Inc.

4919 Windplay Dr. Suite 1, El Dorado Hills, CA 95762



October 30, 2018

Ceres ID: 12395

ESN Northwest, Inc.
1210 Eastside Street SE
Olympia, WA 98501

The following report contains the results for the twenty-seven soil samples and one aqueous sample received on October 16, 2018. These samples were analyzed for tetra through octa chlorinated dibenzo-p-dioxins and dibenzofurans by EPA method 8290A. Routine turn-around time was provided for this work.

This work was authorized under the Project Name: Terminal 3.

Soil sample results are reported on a dry weight basis.

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

The report consists of a Cover Letter, Sample Inventory (Section I), Data Summary (Section II), Sample Tracking (Section VI), and Qualifiers/Abbreviations (Section VII). Raw Data (Section III), Continuing Calibration (Section IV), and Initial Calibration (Section V) are available in a full report (.pdf format) upon request.

If you have any questions regarding this report, please feel free to contact me at (916)932-5011.

Sincerely,

James M. Hedin
Director of Operations/CEO
jhedin@ceres-lab.com

Section I: Sample Inventory

<u>Ceres Sample ID:</u>	<u>Sample ID</u>	<u>Date Received</u>	<u>Collection Date & Time</u>
12395-001	B-11 0-3'	10/16/2018	10/11/2018 12:35
12395-002	B-11 3-6'	10/16/2018	10/11/2018 12:40
12395-003	B-11 6-9'	10/16/2018	10/11/2018 12:45
12395-004	B-11 15'	10/16/2018	10/11/2018 12:55
12395-005	B-12 0-3'	10/16/2018	10/11/2018 11:30
12395-006	B-12 3-6'	10/16/2018	10/11/2018 11:35
12395-007	B-12 6-9'	10/16/2018	10/11/2018 11:40
12395-008	B-12 15'	10/16/2018	10/11/2018 11:45
12395-009	B-13 0-3'	10/16/2018	10/11/2018 3:10
12395-010	B-13 3-6'	10/16/2018	10/11/2018 3:15
12395-011	B-13 6-9'	10/16/2018	10/11/2018 3:20
12395-012	B-13 15'	10/16/2018	10/11/2018 3:30
12395-013	B-14 0-3'	10/16/2018	10/11/2018 1:55
12395-014	B-14 3-6'	10/16/2018	10/11/2018 2:10
12395-015	B-14 6-9'	10/16/2018	10/11/2018 2:15
12395-016	B-14 15'	10/16/2018	10/11/2018 2:30
12395-017	B-15 0-3'	10/16/2018	10/11/2018 3:30
12395-018	B-15 3-6'	10/16/2018	10/11/2018 3:35
12395-019	B-15 6-9'	10/16/2018	10/11/2018 3:45
12395-020	B-15 15'	10/16/2018	10/11/2018 4:00
12395-021	B-16 2'	10/16/2018	10/11/2018 4:50
12395-022	B-16 5'	10/16/2018	10/11/2018 4:55
12395-023	B-16 8'	10/16/2018	10/11/2018 5:00
12395-024	B-17 0-3'	10/16/2018	10/11/2018 10:00
12395-025	B-17 3-6'	10/16/2018	10/11/2018 10:05
12395-026	B-17 6-9'	10/16/2018	10/11/2018 10:10
12395-027	B-17 15'	10/16/2018	10/11/2018 10:20
12395-028	Decon Water	10/16/2018	10/11/2018 5:30

Section II: Data Summary



EPA Method 8290A

Quality Assurance Sample Method Blank Project ID: Terminal 3	QC Batch #: 1877 Matrix: Soil Sample Size: 10.00 g	Date Received: NA Date Extracted: 10/18/2018 ZB-5MS Analysis: 10/19/2018
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Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 0.361	0.172	0.500		13C-2378-TCDD	106	40-135	
12378-PeCDD	DL= 0.825	0.327	2.50		13C-12378-PeCDD	61.0	40-135	
123478-HxCDD	DL= 0.761	0.327	2.50		13C-123478-HxCDD	66.3	40-135	
123678-HxCDD	DL= 0.704	0.655	2.50		13C-123678-HxCDD	79.6	40-135	
123789-HxCDD	DL= 0.714	0.315	2.50		13C-1234678-HpCDD	69.4	40-135	
1234678-HpCDD	DL= 1.52	0.409	2.50		13C-OCDD	78.0	40-135	
OCDD	DL= 1.77	1.01	5.00		13C-2378-TCDF	90.5	40-135	
2,3,7,8-TCDF	DL= 0.316	0.0886	0.500		13C-12378-PeCDF	60.9	40-135	
12378-PeCDF	DL= 0.666	0.412	2.50		13C-23478-PeCDF	59.3	40-135	
23478-PeCDF	DL= 0.676	0.422	2.50		13C-123478-HxCDF	96.7	40-135	
123478-HxCDF	DL= 0.741	0.518	2.50		13C-123678-HxCDF	117	40-135	
123678-HxCDF	DL= 0.568	0.533	2.50		13C-234678-HxCDF	78.4	40-135	
234678-HxCDF	DL= 1.06	0.319	2.50		13C-123789-HxCDF	67.7	40-135	
123789-HxCDF	DL= 1.50	0.425	2.50		13C-1234678-HpCDF	82.7	40-135	
1234678-HpCDF	DL= 0.820	0.279	2.50		13C-1234789-HpCDF	77.7	40-135	
1234789-HpCDF	DL= 1.21	0.378	2.50					
OCDF	DL= 2.66	0.461	5.00					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	DL= 0.361				37CI4-2378-TCDD	99.3	40-135	
Total PeCDD	DL= 0.825				DL - Signifies Non-Detect (ND) at sample specific detection limit. EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure. (a) - Lower control limit - Upper control limit (b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.			
Total HxCDD	DL= 0.761							
Total HpCDD	DL= 1.52							
Total TCDF	DL= 0.316							
Total PeCDF	DL= 0.676							
Total HxCDF	DL= 1.50							
Total HpCDF	DL= 1.21							

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Quality Assurance Samples Laboratory Control Samples Project ID: Terminal 3	QC Batch #: 1877 Matrix: Soil Sample Size: 10.00 g	Date Received: NA Date Extracted: 10/18/2018 ZB-5MS Analysis: 10/19/2018
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Analyte	LCS1 % Rec.	LCS2 % Rec.	%RSD	Labeled Standards	LCS1 % Rec.	LCS2 % Rec	Limits (a)
2,3,7,8-TCDD	110	112	1.27	13C-2378-TCDD	110	126	40-135
12378-PeCDD	108	109	0.65	13C-12378-PeCDD	99.9	111	40-135
123478-HxCDD	124	99.8	15.29	13C-123478-HxCDD	63.2	92.6	40-135
123678-HxCDD	98	117	12.50	13C-123678-HxCDD	98.7	77.9	40-135
123789-HxCDD	133	131	1.07	13C-1234678-HpCDD	77.8	118	40-135
1234678-HpCDD	111	114	1.89	13C-OCDD	75.8	107	40-135
OCDD	110	116	3.75	13C-2378-TCDF	104	99.7	40-135
2,3,7,8-TCDF	121	122	0.58	13C-12378-PeCDF	83.0	96.0	40-135
12378-PeCDF	114	115	0.62	13C-23478-PeCDF	82.8	91.7	40-135
23478-PeCDF	109	112	1.92	13C-123478-HxCDF	104	133	40-135
123478-HxCDF	118	123	2.93	13C-123678-HxCDF	119	123	40-135
123678-HxCDF	98.8	99.8	0.71	13C-234678-HxCDF	80.6	84.5	40-135
234678-HxCDF	107	109	1.31	13C-123789-HxCDF	63.9	83.3	40-135
123789-HxCDF	110	112	1.27	13C-1234678-HpCDF	76.1	103	40-135
1234678-HpCDF	102	104	1.37	13C-1234789-HpCDF	78.3	106	40-135
1234789-HpCDF	101	104	2.07				
OCDF	110	117	4.36				
				CRS			
				37Cl4-2378-TCDD	101	127	40-135
				(a) Limits based on method acceptance criteria.			

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-11 0-3'		
Project ID: Terminal 3	Ceres Sample ID: 12395-001	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1877	Date Extracted: 10/18/2018
Time Collected: 12:35	Matrix: Soil	ZB-5MS Analysis: 10/19/2018
	Sample Size: 10.41 g % Solids: 95.8	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 0.453	0.172	0.502		13C-2378-TCDD	113	40-135	
12378-PeCDD	DL= 0.555	0.327	2.51		13C-12378-PeCDD	87.7	40-135	
123478-HxCDD	DL= 1.44	0.327	2.51		13C-123478-HxCDD	117	40-135	
123678-HxCDD	DL= 1.92	0.655	2.51		13C-123678-HxCDD	89.5	40-135	
123789-HxCDD	DL= 1.61	0.315	2.51		13C-1234678-HpCDD	104	40-135	
1234678-HpCDD	DL= 1.88	0.409	2.51		13C-OCDD	66.6	40-135	
OCDD	DL= 2.86	1.01	5.02		13C-2378-TCDF	112	40-135	
2,3,7,8-TCDF	DL= 0.342	0.0886	0.502		13C-12378-PeCDF	84.6	40-135	
12378-PeCDF	DL= 0.668	0.412	2.51		13C-23478-PeCDF	73.9	40-135	
23478-PeCDF	DL= 0.723	0.422	2.51		13C-123478-HxCDF	126	40-135	
123478-HxCDF	DL= 0.882	0.518	2.51		13C-123678-HxCDF	133	40-135	
123678-HxCDF	DL= 0.877	0.533	2.51		13C-234678-HxCDF	106	40-135	
234678-HxCDF	DL= 1.31	0.319	2.51		13C-123789-HxCDF	76.0	40-135	
123789-HxCDF	DL= 2.24	0.425	2.51		13C-1234678-HpCDF	84.4	40-135	
1234678-HpCDF	DL= 1.10	0.279	2.51		13C-1234789-HpCDF	97.0	40-135	
1234789-HpCDF	DL= 1.24	0.378	2.51					
OCDF	DL= 2.60	0.461	5.02					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	DL= 0.453				37Cl4-2378-TCDD	124	40-135	
Total PeCDD	DL= 0.555							
Total HxCDD	DL= 1.92							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	DL= 1.88							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	DL= 0.342							(a) - Lower control limit - Upper control limit
Total PeCDF	DL= 0.723							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	DL= 2.24							
Total HpCDF	DL= 1.24							

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-11 3-6'		
Project ID: Terminal 3	Ceres Sample ID: 12395-002	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1877	Date Extracted: 10/18/2018
Time Collected: 12:40	Matrix: Soil	ZB-5MS Analysis: 10/19/2018
	Sample Size: 19.11 g % Solids: 52.3	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	3.98	0.172	0.501		13C-2378-TCDD	108	40-135	
12378-PeCDD	4.18	0.327	2.50		13C-12378-PeCDD	80.1	40-135	
123478-HxCDD	2.91	0.327	2.50		13C-123478-HxCDD	88.1	40-135	
123678-HxCDD	5.87	0.655	2.50		13C-123678-HxCDD	74.5	40-135	
123789-HxCDD	12.5	0.315	2.50		13C-1234678-HpCDD	92.5	40-135	
1234678-HpCDD	115	0.409	2.50		13C-OCDD	70.1	40-135	
OCDD	897	1.01	5.01		13C-2378-TCDF	98.6	40-135	
2,3,7,8-TCDF	1.00	0.0886	0.501		13C-12378-PeCDF	71.9	40-135	
12378-PeCDF	DL= 0.995	0.412	2.50		13C-23478-PeCDF	63.8	40-135	
23478-PeCDF	DL= 0.968	0.422	2.50		13C-123478-HxCDF	94.4	40-135	
123478-HxCDF	3.27	0.518	2.50		13C-123678-HxCDF	91.2	40-135	
123678-HxCDF	DL= 1.21	0.533	2.50		13C-234678-HxCDF	80.8	40-135	
234678-HxCDF	DL= 1.57	0.319	2.50		13C-123789-HxCDF	85.4	40-135	
123789-HxCDF	DL= 1.76	0.425	2.50		13C-1234678-HpCDF	66.7	40-135	
1234678-HpCDF	28.0	0.279	2.50		13C-1234789-HpCDF	41.5	40-135	
1234789-HpCDF	DL= 1.67	0.378	2.50					
OCDF	84.7	0.461	5.01					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	22.1				37Cl4-2378-TCDD	118	40-135	
Total PeCDD	25.3							
Total HxCDD	91.9							
Total HpCDD	212							
Total TCDF	36.0	39.4						
Total PeCDF	16.8							
Total HxCDF	46.7							
Total HpCDF	113							

DL - Signifies Non-Detect (ND) at sample specific detection limit.
 EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
 (a) - Lower control limit - Upper control limit
 (b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 12.4 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-11 6-9'		
Project ID: Terminal 3	Ceres Sample ID: 12395-003	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1877	Date Extracted: 10/18/2018
Time Collected: 12:45	Matrix: Soil	ZB-5MS Analysis: 10/19/2018
	Sample Size: 17.09 g % Solids: 59.1	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 0.441	0.172	0.495		13C-2378-TCDD	98.5	40-135	
12378-PeCDD	DL= 1.05	0.327	2.48		13C-12378-PeCDD	86.3	40-135	
123478-HxCDD	DL= 1.54	0.327	2.48		13C-123478-HxCDD	92.6	40-135	
123678-HxCDD	DL= 1.89	0.655	2.48		13C-123678-HxCDD	74.3	40-135	
123789-HxCDD	DL= 1.66	0.315	2.48		13C-1234678-HpCDD	99.5	40-135	
1234678-HpCDD	4.75	0.409	2.48		13C-OCDD	64.1	40-135	
OCDD	15.2	1.01	4.95		13C-2378-TCDF	101	40-135	
2,3,7,8-TCDF	DL= 0.484	0.0886	0.495		13C-12378-PeCDF	61.5	40-135	
12378-PeCDF	DL= 0.503	0.412	2.48		13C-23478-PeCDF	63.5	40-135	
23478-PeCDF	DL= 0.412	0.422	2.48		13C-123478-HxCDF	108	40-135	
123478-HxCDF	DL= 0.934	0.518	2.48		13C-123678-HxCDF	114	40-135	
123678-HxCDF	DL= 0.966	0.533	2.48		13C-234678-HxCDF	82.2	40-135	
234678-HxCDF	DL= 1.52	0.319	2.48		13C-123789-HxCDF	87.4	40-135	
123789-HxCDF	DL= 1.72	0.425	2.48		13C-1234678-HpCDF	69.1	40-135	
1234678-HpCDF	DL= 1.36	0.279	2.48		13C-1234789-HpCDF	83.3	40-135	
1234789-HpCDF	DL= 1.39	0.378	2.48					
OCDF	DL= 1.92	0.461	4.95					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	3.31				37CI4-2378-TCDD	105	40-135	
Total PeCDD	DL= 1.05				DL - Signifies Non-Detect (ND) at sample specific detection limit. EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure. (a) - Lower control limit - Upper control limit (b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.			
Total HxCDD	9.48							
Total HpCDD	8.74							
Total TCDF	DL= 0.484							
Total PeCDF	DL= 0.503							
Total HxCDF	DL= 1.72							
Total HpCDF	DL= 1.39							

Total Toxic Equivalency (TEQ min.) (b): 0.0521 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-11 15'		
Project ID: Terminal 3	Ceres Sample ID: 12395-004	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1877	Date Extracted: 10/18/2018
Time Collected: 12:55	Matrix: Soil	ZB-5MS Analysis: 10/19/2018
	Sample Size: 16.97 g % Solids: 58.9	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	2.41	0.172	0.500		13C-2378-TCDD	113	40-135	
12378-PeCDD	DL= 0.799	0.327	2.50		13C-12378-PeCDD	65.9	40-135	
123478-HxCDD	DL= 1.10	0.327	2.50		13C-123478-HxCDD	90.7	40-135	
123678-HxCDD	DL= 1.31	0.655	2.50		13C-123678-HxCDD	73.8	40-135	
123789-HxCDD	7.07	0.315	2.50		13C-1234678-HpCDD	104	40-135	
1234678-HpCDD	8.78	0.409	2.50		13C-OCDD	76.3	40-135	
OCDD	20.9	1.01	5.00		13C-2378-TCDF	94.1	40-135	
2,3,7,8-TCDF	DL= 0.415	0.0886	0.500		13C-12378-PeCDF	55.0	40-135	
12378-PeCDF	DL= 1.24	0.412	2.50		13C-23478-PeCDF	62.4	40-135	
23478-PeCDF	DL= 0.980	0.422	2.50		13C-123478-HxCDF	109	40-135	
123478-HxCDF	DL= 0.702	0.518	2.50		13C-123678-HxCDF	129	40-135	
123678-HxCDF	DL= 0.624	0.533	2.50		13C-234678-HxCDF	89.1	40-135	
234678-HxCDF	DL= 1.00	0.319	2.50		13C-123789-HxCDF	87.6	40-135	
123789-HxCDF	DL= 1.27	0.425	2.50		13C-1234678-HpCDF	82.1	40-135	
1234678-HpCDF	DL= 1.40	0.279	2.50		13C-1234789-HpCDF	96.2	40-135	
1234789-HpCDF	DL= 1.62	0.378	2.50					
OCDF	DL= 2.35	0.461	5.00					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	13.3				37CI4-2378-TCDD	124	40-135	
Total PeCDD	7.47							
Total HxCDD	32.3							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	16.7							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	2.36							(a) - Lower control limit - Upper control limit
Total PeCDF	DL= 1.24							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	DL= 1.27							
Total HpCDF	DL= 1.62							

Total Toxic Equivalency (TEQ min.) (b): 3.21 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-12 0-3'		
Project ID: Terminal 3	Ceres Sample ID: 12395-005	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1877	Date Extracted: 10/18/2018
Time Collected: 11:30	Matrix: Soil	ZB-5MS Analysis: 10/19/2018
	Sample Size: 17.55 g % Solids: 57.1	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	4.40	0.172	0.499		13C-2378-TCDD	116	40-135	
12378-PeCDD	4.99	0.327	2.50		13C-12378-PeCDD	86.1	40-135	
123478-HxCDD	3.51	0.327	2.50		13C-123478-HxCDD	84.5	40-135	
123678-HxCDD	7.71	0.655	2.50		13C-123678-HxCDD	79.9	40-135	
123789-HxCDD	14.6	0.315	2.50		13C-1234678-HpCDD	94.4	40-135	
1234678-HpCDD	99.0	0.409	2.50		13C-OCDD	71.4	40-135	
OCDD	761	1.01	4.99		13C-2378-TCDF	118	40-135	
2,3,7,8-TCDF	0.911	0.0886	0.499		13C-12378-PeCDF	55.4	40-135	
12378-PeCDF	DL= 0.652	0.412	2.50		13C-23478-PeCDF	70.8	40-135	
23478-PeCDF	2.00	0.422	2.50	J	13C-123478-HxCDF	113	40-135	
123478-HxCDF	6.24	0.518	2.50		13C-123678-HxCDF	110	40-135	
123678-HxCDF	DL= 1.49	0.533	2.50		13C-234678-HxCDF	77.0	40-135	
234678-HxCDF	DL= 2.37	0.319	2.50		13C-123789-HxCDF	91.0	40-135	
123789-HxCDF	DL= 2.39	0.425	2.50		13C-1234678-HpCDF	73.7	40-135	
1234678-HpCDF	42.9	0.279	2.50		13C-1234789-HpCDF	77.7	40-135	
1234789-HpCDF	DL= 2.07	0.378	2.50					
OCDF	112	0.461	4.99					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	33.7				37CI4-2378-TCDD	115	40-135	
Total PeCDD	28.1	32.1						
Total HxCDD	74.6							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	210							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	49.8	59.2						(a) - Lower control limit - Upper control limit
Total PeCDF	40.6							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	73.3							
Total HpCDF	142							

Total Toxic Equivalency (TEQ min.) (b): 15.0 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-12 3-6"		
Project ID: Terminal 3	Ceres Sample ID: 12395-006	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1877	Date Extracted: 10/18/2018
Time Collected: 11:35	Matrix: Soil	ZB-5MS Analysis: 10/20/2018
	Sample Size: 10.98 g % Solids: 90.2	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 0.488	0.172	0.505		13C-2378-TCDD	97.5	40-135	
12378-PeCDD	DL= 0.791	0.327	2.53		13C-12378-PeCDD	86.9	40-135	
123478-HxCDD	DL= 0.779	0.327	2.53		13C-123478-HxCDD	106	40-135	
123678-HxCDD	DL= 0.871	0.655	2.53		13C-123678-HxCDD	70.5	40-135	
123789-HxCDD	DL= 0.805	0.315	2.53		13C-1234678-HpCDD	98.2	40-135	
1234678-HpCDD	DL= 1.68	0.409	2.53		13C-OCDD	66.0	40-135	
OCDD	25.4	1.01	5.05		13C-2378-TCDF	116	40-135	
2,3,7,8-TCDF	DL= 0.365	0.0886	0.505		13C-12378-PeCDF	61.6	40-135	
12378-PeCDF	DL= 0.869	0.412	2.53		13C-23478-PeCDF	67.1	40-135	
23478-PeCDF	DL= 0.799	0.422	2.53		13C-123478-HxCDF	128	40-135	
123478-HxCDF	DL= 0.762	0.518	2.53		13C-123678-HxCDF	131	40-135	
123678-HxCDF	DL= 0.941	0.533	2.53		13C-234678-HxCDF	99.9	40-135	
234678-HxCDF	DL= 1.03	0.319	2.53		13C-123789-HxCDF	105	40-135	
123789-HxCDF	DL= 1.29	0.425	2.53		13C-1234678-HpCDF	86.6	40-135	
1234678-HpCDF	DL= 1.34	0.279	2.53		13C-1234789-HpCDF	91.2	40-135	
1234789-HpCDF	DL= 1.66	0.378	2.53					
OCDF	DL= 3.42	0.461	5.05					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	DL= 0.484				37CI4-2378-TCDD	109	40-135	
Total PeCDD	DL= 0.791							
Total HxCDD	DL= 0.871							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	DL= 1.68							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	DL= 0.365							(a) - Lower control limit - Upper control limit
Total PeCDF	DL= 0.869							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	DL= 1.29							
Total HpCDF	DL= 1.66							

Total Toxic Equivalency (TEQ min.) (b): 0.00762 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-12 6-9'		
Project ID: Terminal 3	Ceres Sample ID: 12395-007	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1877	Date Extracted: 10/18/2018
Time Collected: 11:40	Matrix: Soil	ZB-5MS Analysis: 10/20/2018
	Sample Size: 16.99 g % Solids: 59.9	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	3.11	0.172	0.491		13C-2378-TCDD	112	40-135	
12378-PeCDD	2.68	0.327	2.46		13C-12378-PeCDD	93.4	40-135	
123478-HxCDD	DL= 1.92	0.327	2.46		13C-123478-HxCDD	50.6	40-135	
123678-HxCDD	6.07	0.655	2.46		13C-123678-HxCDD	93.1	40-135	
123789-HxCDD	10.5	0.315	2.46		13C-1234678-HpCDD	106	40-135	
1234678-HpCDD	67.4	0.409	2.46		13C-OCDD	73.1	40-135	
OCDD	501	1.01	4.91		13C-2378-TCDF	117	40-135	
2,3,7,8-TCDF	0.951	0.0886	0.491		13C-12378-PeCDF	71.8	40-135	
12378-PeCDF	DL= 0.825	0.412	2.46		13C-23478-PeCDF	74.2	40-135	
23478-PeCDF	DL= 0.691	0.422	2.46		13C-123478-HxCDF	121	40-135	
123478-HxCDF	2.87	0.518	2.46		13C-123678-HxCDF	128	40-135	
123678-HxCDF	DL= 0.965	0.533	2.46		13C-234678-HxCDF	92.2	40-135	
234678-HxCDF	DL= 1.56	0.319	2.46		13C-123789-HxCDF	95.1	40-135	
123789-HxCDF	DL= 1.84	0.425	2.46		13C-1234678-HpCDF	75.9	40-135	
1234678-HpCDF	21.9	0.279	2.46		13C-1234789-HpCDF	92.7	40-135	
1234789-HpCDF	DL= 1.68	0.378	2.46					
OCDF	48.0	0.461	4.91					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	15.5				37CI4-2378-TCDD	126	40-135	
Total PeCDD	21.8							
Total HxCDD	86.8							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	137							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	22.1	23.9						(a) - Lower control limit - Upper control limit
Total PeCDF	12.1							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	30.7							
Total HpCDF	62.1							

Total Toxic Equivalency (TEQ min.) (b):	8.89 pg/g
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Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-12 15'		
Project ID: Terminal 3	Ceres Sample ID: 12395-008	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1877	Date Extracted: 10/18/2018
Time Collected: 11:45	Matrix: Soil	ZB-5MS Analysis: 10/21/2018
	Sample Size: 15.21 g % Solids: 66.6	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 0.406	0.172	0.494		13C-2378-TCDD	112	40-135	
12378-PeCDD	DL= 0.816	0.327	2.47		13C-12378-PeCDD	101	40-135	
123478-HxCDD	DL= 1.04	0.327	2.47		13C-123478-HxCDD	93.0	40-135	
123678-HxCDD	DL= 1.10	0.655	2.47		13C-123678-HxCDD	89.6	40-135	
123789-HxCDD	DL= 1.05	0.315	2.47		13C-1234678-HpCDD	97.5	40-135	
1234678-HpCDD	3.77	0.409	2.47		13C-OCDD	83.7	40-135	
OCDD	14.4	1.01	4.94		13C-2378-TCDF	118	40-135	
2,3,7,8-TCDF	DL= 0.464	0.0886	0.494		13C-12378-PeCDF	103	40-135	
12378-PeCDF	DL= 0.579	0.412	2.47		13C-23478-PeCDF	102	40-135	
23478-PeCDF	DL= 0.491	0.422	2.47		13C-123478-HxCDF	125	40-135	
123478-HxCDF	DL= 0.429	0.518	2.47		13C-123678-HxCDF	124	40-135	
123678-HxCDF	DL= 0.468	0.533	2.47		13C-234678-HxCDF	111	40-135	
234678-HxCDF	DL= 0.499	0.319	2.47		13C-123789-HxCDF	96.1	40-135	
123789-HxCDF	DL= 0.745	0.425	2.47		13C-1234678-HpCDF	75.6	40-135	
1234678-HpCDF	DL= 1.03	0.279	2.47		13C-1234789-HpCDF	111	40-135	
1234789-HpCDF	DL= 0.909	0.378	2.47					
OCDF	DL= 1.12	0.461	4.94					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	2.28				37Cl4-2378-TCDD	124	40-135	
Total PeCDD	DL= 0.816							
Total HxCDD	11.4							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	7.93							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	DL= 0.464							(a) - Lower control limit - Upper control limit
Total PeCDF	DL= 0.579							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	DL= 0.745							
Total HpCDF	DL= 1.03							

Total Toxic Equivalency (TEQ min.) (b): 0.0420 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-13 0-3'		
Project ID: Terminal 3	Ceres Sample ID: 12395-009	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1877	Date Extracted: 10/18/2018
Time Collected: 3:10	Matrix: Soil	ZB-5MS Analysis: 10/21/2018
	Sample Size: 14.19 g % Solids: 70.2	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 0.457	0.172	0.502		13C-2378-TCDD	92.6	40-135	
12378-PeCDD	5.29	0.327	2.51		13C-12378-PeCDD	99.6	40-135	
123478-HxCDD	DL= 0.789	0.327	2.51		13C-123478-HxCDD	86.1	40-135	
123678-HxCDD	91.3	0.655	2.51		13C-123678-HxCDD	87.3	40-135	
123789-HxCDD	7.63	0.315	2.51		13C-1234678-HpCDD	98.7	40-135	
1234678-HpCDD	159	0.409	2.51		13C-OCDD	62.2	40-135	
OCDD	253	1.01	5.02		13C-2378-TCDF	119	40-135	
2,3,7,8-TCDF	0.960	0.0886	0.502		13C-12378-PeCDF	102	40-135	
12378-PeCDF	4.41	0.412	2.51		13C-23478-PeCDF	110	40-135	
23478-PeCDF	6.64	0.422	2.51		13C-123478-HxCDF	128	40-135	
123478-HxCDF	3.16	0.518	2.51		13C-123678-HxCDF	123	40-135	
123678-HxCDF	2.98	0.533	2.51		13C-234678-HxCDF	119	40-135	
234678-HxCDF	2.88	0.319	2.51		13C-123789-HxCDF	103	40-135	
123789-HxCDF	DL= 0.630	0.425	2.51		13C-1234678-HpCDF	105	40-135	
1234678-HpCDF	35.6	0.279	2.51		13C-1234789-HpCDF	124	40-135	
1234789-HpCDF	DL= 0.581	0.378	2.51					
OCDF	11.8	0.461	5.02					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	5.60				37Cl4-2378-TCDD	96.5	40-135	
Total PeCDD	41.4				DL - Signifies Non-Detect (ND) at sample specific detection limit. EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure. (a) - Lower control limit - Upper control limit (b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.			
Total HxCDD	354							
Total HpCDD	276							
Total TCDF	71.1							
Total PeCDF	164							
Total HxCDF	248							
Total HpCDF	97.2							

Total Toxic Equivalency (TEQ min.) (b): 20.3 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Quality Assurance Sample Method Blank Project ID: Terminal 3	QC Batch #: 1878 Matrix: Soil Sample Size: 10.00 g	Date Received: NA Date Extracted: 10/20/2018 ZB-5MS Analysis: 10/21/2018
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Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 0.400	0.172	0.500		13C-2378-TCDD	109	40-135	
12378-PeCDD	DL= 1.15	0.327	2.50		13C-12378-PeCDD	101	40-135	
123478-HxCDD	DL= 1.05	0.327	2.50		13C-123478-HxCDD	59.3	40-135	
123678-HxCDD	DL= 0.987	0.655	2.50		13C-123678-HxCDD	100	40-135	
123789-HxCDD	DL= 0.980	0.315	2.50		13C-1234678-HpCDD	92.1	40-135	
1234678-HpCDD	DL= 0.746	0.409	2.50		13C-OCDD	92.1	40-135	
OCDD	DL= 2.19	1.01	5.00		13C-2378-TCDF	103	40-135	
2,3,7,8-TCDF	DL= 0.391	0.0886	0.500		13C-12378-PeCDF	93.1	40-135	
12378-PeCDF	DL= 0.753	0.412	2.50		13C-23478-PeCDF	83.8	40-135	
23478-PeCDF	DL= 0.741	0.422	2.50		13C-123478-HxCDF	128	40-135	
123478-HxCDF	DL= 0.481	0.518	2.50		13C-123678-HxCDF	128	40-135	
123678-HxCDF	DL= 0.503	0.533	2.50		13C-234678-HxCDF	98.0	40-135	
234678-HxCDF	DL= 0.690	0.319	2.50		13C-123789-HxCDF	94.3	40-135	
123789-HxCDF	DL= 0.884	0.425	2.50		13C-1234678-HpCDF	103	40-135	
1234678-HpCDF	DL= 0.704	0.279	2.50		13C-1234789-HpCDF	103	40-135	
1234789-HpCDF	DL= 0.955	0.378	2.50					
OCDF	DL= 2.59	0.461	5.00					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	DL= 0.400				37Cl4-2378-TCDD	107	40-135	
Total PeCDD	DL= 1.15							
Total HxCDD	DL= 1.05							
Total HpCDD	DL= 0.746							
Total TCDF	DL= 0.391							
Total PeCDF	DL= 0.753							
Total HxCDF	DL= 0.884							
Total HpCDF	DL= 0.955							

DL - Signifies Non-Detect (ND) at sample specific detection limit.
 EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
 (a) - Lower control limit - Upper control limit
 (b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Quality Assurance Samples Laboratory Control Samples Project ID: Terminal 3	QC Batch #: 1878 Matrix: Soil Sample Size: 10.00 g	Date Received: NA Date Extracted: 10/20/2018 ZB-5MS Analysis: 10/21/2018
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Analyte	LCS1 % Rec.	LCS2 % Rec.	%RSD	Labeled Standards	LCS1 % Rec.	LCS2 % Rec	Limits (a)
2,3,7,8-TCDD	116	118	1.21	13C-2378-TCDD	111	123	40-135
12378-PeCDD	109	109	0.00	13C-12378-PeCDD	112	113	40-135
123478-HxCDD	124	116	4.71	13C-123478-HxCDD	69.8	74.8	40-135
123678-HxCDD	123	120	1.75	13C-123678-HxCDD	105	119	40-135
123789-HxCDD	126	127	0.56	13C-1234678-HpCDD	93.7	61.4	40-135
1234678-HpCDD	122	114	4.79	13C-OCDD	81.9	95.8	40-135
OCDD	117	120	1.79	13C-2378-TCDF	113	114	40-135
2,3,7,8-TCDF	120	124	2.32	13C-12378-PeCDF	94.4	101	40-135
12378-PeCDF	127	128	0.55	13C-23478-PeCDF	101	109	40-135
23478-PeCDF	116	113	1.85	13C-123478-HxCDF	126	132	40-135
123478-HxCDF	119	117	1.20	13C-123678-HxCDF	131	117	40-135
123678-HxCDF	108	103	3.35	13C-234678-HxCDF	100	92.0	40-135
234678-HxCDF	111	109	1.29	13C-123789-HxCDF	97.0	105	40-135
123789-HxCDF	120	118	1.19	13C-1234678-HpCDF	100	98.4	40-135
1234678-HpCDF	102	101	0.70	13C-1234789-HpCDF	99.5	108	40-135
1234789-HpCDF	105	104	0.68				
OCDF	125	126	0.56				
				CRS			
				37Cl4-2378-TCDD	111	128	40-135
				(a) Limits based on method acceptance criteria.			

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-13 3-6'		
Project ID: Terminal 3	Ceres Sample ID: 12395-010	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1878	Date Extracted: 10/20/2018
Time Collected: 3:15	Matrix: Soil	ZB-5MS Analysis: 10/21/2018
	Sample Size: 19.69 g % Solids: 50.7	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 0.429	0.172	0.501		13C-2378-TCDD	100	40-135	
12378-PeCDD	DL= 0.507	0.327	2.51		13C-12378-PeCDD	126	40-135	
123478-HxCDD	DL= 0.760	0.327	2.51		13C-123478-HxCDD	71.1	40-135	
123678-HxCDD	7.18	0.655	2.51		13C-123678-HxCDD	74.0	40-135	
123789-HxCDD	DL= 0.757	0.315	2.51		13C-1234678-HpCDD	106	40-135	
1234678-HpCDD	14.0	0.409	2.51		13C-OCDD	67.7	40-135	
OCDD	45.4	1.01	5.01		13C-2378-TCDF	114	40-135	
2,3,7,8-TCDF	0.560	0.0886	0.501		13C-12378-PeCDF	108	40-135	
12378-PeCDF	DL= 0.636	0.412	2.51		13C-23478-PeCDF	98.9	40-135	
23478-PeCDF	DL= 0.665	0.422	2.51		13C-123478-HxCDF	128	40-135	
123478-HxCDF	DL= 0.481	0.518	2.51		13C-123678-HxCDF	118	40-135	
123678-HxCDF	DL= 0.564	0.533	2.51		13C-234678-HxCDF	95.2	40-135	
234678-HxCDF	DL= 0.697	0.319	2.51		13C-123789-HxCDF	94.0	40-135	
123789-HxCDF	DL= 0.905	0.425	2.51		13C-1234678-HpCDF	92.0	40-135	
1234678-HpCDF	3.71	0.279	2.51		13C-1234789-HpCDF	116	40-135	
1234789-HpCDF	DL= 0.771	0.378	2.51					
OCDF	DL= 2.50	0.461	5.01					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	DL= 0.429				37CI4-2378-TCDD	115	40-135	
Total PeCDD	DL= 0.507							
Total HxCDD	28.6							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	24.3							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	8.06							(a) - Lower control limit - Upper control limit
Total PeCDF	9.20							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	16.1							
Total HpCDF	8.91							

Total Toxic Equivalency (TEQ min.) (b): 0.965 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-13 6-9'		
Project ID: Terminal 3	Ceres Sample ID: 12395-011	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1878	Date Extracted: 10/20/2018
Time Collected: 3:20	Matrix: Soil	ZB-5MS Analysis: 10/21/2018
	Sample Size: 19.4 g % Solids: 51.6	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	5.70	0.172	0.500		13C-2378-TCDD	110	40-135	
12378-PeCDD	4.25	0.327	2.50		13C-12378-PeCDD	126	40-135	
123478-HxCDD	3.24	0.327	2.50		13C-123478-HxCDD	83.9	40-135	
123678-HxCDD	15.2	0.655	2.50		13C-123678-HxCDD	88.0	40-135	
123789-HxCDD	16.2	0.315	2.50		13C-1234678-HpCDD	109	40-135	
1234678-HpCDD	169	0.409	2.50		13C-OCDD	75.8	40-135	
OCDD	1,370	1.01	5.00		13C-2378-TCDF	125	40-135	
2,3,7,8-TCDF	0.941	0.0886	0.500		13C-12378-PeCDF	109	40-135	
12378-PeCDF	1.99	0.412	2.50	J	13C-23478-PeCDF	116	40-135	
23478-PeCDF	3.48	0.422	2.50		13C-123478-HxCDF	130	40-135	
123478-HxCDF	11.7	0.518	2.50		13C-123678-HxCDF	116	40-135	
123678-HxCDF	3.11	0.533	2.50		13C-234678-HxCDF	111	40-135	
234678-HxCDF	6.42	0.319	2.50		13C-123789-HxCDF	97.8	40-135	
123789-HxCDF	DL= 1.78	0.425	2.50		13C-1234678-HpCDF	90.0	40-135	
1234678-HpCDF	116	0.279	2.50		13C-1234789-HpCDF	121	40-135	
1234789-HpCDF	5.51	0.378	2.50					
OCDF	207	0.461	5.00					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	38.5				37CI4-2378-TCDD	126	40-135	
Total PeCDD	33.0							
Total HxCDD	135							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	323							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	86.9	89.4						(a) - Lower control limit - Upper control limit
Total PeCDF	63.9							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	171							
Total HpCDF	306							

Total Toxic Equivalency (TEQ min.) (b): 20.1 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-13 15'		
Project ID: Terminal 3	Ceres Sample ID: 12395-012	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1878	Date Extracted: 10/20/2018
Time Collected: 3:30	Matrix: Soil	ZB-5MS Analysis: 10/21/2018
	Sample Size: 18.01 g % Solids: 55.3	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	3.45	0.172	0.502		13C-2378-TCDD	92.7	40-135	
12378-PeCDD	2.47	0.327	2.51	J	13C-12378-PeCDD	107	40-135	
123478-HxCDD	DL= 0.940	0.327	2.51		13C-123478-HxCDD	84.5	40-135	
123678-HxCDD	DL= 0.984	0.655	2.51		13C-123678-HxCDD	87.2	40-135	
123789-HxCDD	7.18	0.315	2.51		13C-1234678-HpCDD	111	40-135	
1234678-HpCDD	9.69	0.409	2.51		13C-OCDD	81.6	40-135	
OCDD	31.7	1.01	5.02		13C-2378-TCDF	130	40-135	
2,3,7,8-TCDF	DL= 0.274	0.0886	0.502		13C-12378-PeCDF	94.2	40-135	
12378-PeCDF	DL= 0.539	0.412	2.51		13C-23478-PeCDF	106	40-135	
23478-PeCDF	DL= 0.424	0.422	2.51		13C-123478-HxCDF	135	40-135	
123478-HxCDF	DL= 0.545	0.518	2.51		13C-123678-HxCDF	124	40-135	
123678-HxCDF	DL= 0.647	0.533	2.51		13C-234678-HxCDF	112	40-135	
234678-HxCDF	DL= 0.724	0.319	2.51		13C-123789-HxCDF	114	40-135	
123789-HxCDF	DL= 0.846	0.425	2.51		13C-1234678-HpCDF	77.8	40-135	
1234678-HpCDF	5.97	0.279	2.51		13C-1234789-HpCDF	133	40-135	
1234789-HpCDF	DL= 1.07	0.378	2.51					
OCDF	DL= 2.97	0.461	5.02					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	11.8				37CI4-2378-TCDD	105	40-135	
Total PeCDD	14.1							
Total HxCDD	36.7							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	19.4							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	8.16	9.2						(a) - Lower control limit - Upper control limit
Total PeCDF	DL= 0.539							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	3.78							
Total HpCDF	9.74							

Total Toxic Equivalency (TEQ min.) (b): 6.80 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-14 0-3'		
Project ID: Terminal 3	Ceres Sample ID: 12395-013	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1878	Date Extracted: 10/20/2018
Time Collected: 1:55	Matrix: Soil	ZB-5MS Analysis: 10/22/2018
	Sample Size: 13.3 g % Solids: 74.9	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	3.42	0.172	0.502		13C-2378-TCDD	87.2	40-135	
12378-PeCDD	2.67	0.327	2.51		13C-12378-PeCDD	104	40-135	
123478-HxCDD	DL= 0.898	0.327	2.51		13C-123478-HxCDD	88.6	40-135	
123678-HxCDD	DL= 0.929	0.655	2.51		13C-123678-HxCDD	81.8	40-135	
123789-HxCDD	2.87	0.315	2.51		13C-1234678-HpCDD	76.6	40-135	
1234678-HpCDD	3.73	0.409	2.51		13C-OCDD	55.6	40-135	
OCDD	16.7	1.01	5.02		13C-2378-TCDF	130	40-135	
2,3,7,8-TCDF	DL= 0.408	0.0886	0.502		13C-12378-PeCDF	97.2	40-135	
12378-PeCDF	DL= 0.430	0.412	2.51		13C-23478-PeCDF	112	40-135	
23478-PeCDF	DL= 0.282	0.422	2.51		13C-123478-HxCDF	93.5	40-135	
123478-HxCDF	DL= 0.504	0.518	2.51		13C-123678-HxCDF	91.1	40-135	
123678-HxCDF	DL= 0.612	0.533	2.51		13C-234678-HxCDF	88.4	40-135	
234678-HxCDF	DL= 0.676	0.319	2.51		13C-123789-HxCDF	93.1	40-135	
123789-HxCDF	DL= 0.737	0.425	2.51		13C-1234678-HpCDF	79.2	40-135	
1234678-HpCDF	DL= 1.18	0.279	2.51		13C-1234789-HpCDF	94.4	40-135	
1234789-HpCDF	DL= 1.34	0.378	2.51					
OCDF	DL= 1.81	0.461	5.02					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	29.0				37CI4-2378-TCDD	109	40-135	
Total PeCDD	7.78							
Total HxCDD	18.5							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	9.23							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	1.40	3.52						(a) - Lower control limit - Upper control limit
Total PeCDF	DL= 0.430							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	DL= 0.737							
Total HpCDF	DL= 1.34							

Total Toxic Equivalency (TEQ min.) (b): 6.42 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-14 3-6'		
Project ID: Terminal 3	Ceres Sample ID: 12395-014	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1878	Date Extracted: 10/20/2018
Time Collected: 2:10	Matrix: Soil	ZB-5MS Analysis: 10/21/2018
	Sample Size: 15.74 g % Solids: 63.6	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 0.411	0.172	0.500		13C-2378-TCDD	97.0	40-135	
12378-PeCDD	DL= 1.27	0.327	2.50		13C-12378-PeCDD	120	40-135	
123478-HxCDD	DL= 1.38	0.327	2.50		13C-123478-HxCDD	86.7	40-135	
123678-HxCDD	8.34	0.655	2.50		13C-123678-HxCDD	89.2	40-135	
123789-HxCDD	10.5	0.315	2.50		13C-1234678-HpCDD	96.6	40-135	
1234678-HpCDD	67.2	0.409	2.50		13C-OCDD	73.0	40-135	
OCDD	557	1.01	5.00		13C-2378-TCDF	126	40-135	
2,3,7,8-TCDF	0.963	0.0886	0.500		13C-12378-PeCDF	106	40-135	
12378-PeCDF	DL= 0.932	0.412	2.50		13C-23478-PeCDF	117	40-135	
23478-PeCDF	DL= 0.895	0.422	2.50		13C-123478-HxCDF	134	40-135	
123478-HxCDF	DL= 0.837	0.518	2.50		13C-123678-HxCDF	125	40-135	
123678-HxCDF	DL= 0.891	0.533	2.50		13C-234678-HxCDF	120	40-135	
234678-HxCDF	DL= 0.903	0.319	2.50		13C-123789-HxCDF	131	40-135	
123789-HxCDF	DL= 1.04	0.425	2.50		13C-1234678-HpCDF	111	40-135	
1234678-HpCDF	22.9	0.279	2.50		13C-1234789-HpCDF	104	40-135	
1234789-HpCDF	DL= 1.08	0.378	2.50					
OCDF	49.4	0.461	5.00					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	38.2				37CI4-2378-TCDD	120	40-135	
Total PeCDD	12.4				DL - Signifies Non-Detect (ND) at sample specific detection limit. EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure. (a) - Lower control limit - Upper control limit (b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.			
Total HxCDD	71.0							
Total HpCDD	154							
Total TCDF	24.3							
Total PeCDF	10.2							
Total HxCDF	29.6							
Total HpCDF	63.0							

Total Toxic Equivalency (TEQ min.) (b): 3.06 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-14 6-9'		
Project ID: Terminal 3	Ceres Sample ID: 12395-015	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1878	Date Extracted: 10/20/2018
Time Collected: 2:15	Matrix: Soil	ZB-5MS Analysis: 10/21/2018
	Sample Size: 17.72 g % Solids: 56.8	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	11.1	0.172	0.497		13C-2378-TCDD	102	40-135	
12378-PeCDD	5.82	0.327	2.49		13C-12378-PeCDD	121	40-135	
123478-HxCDD	3.14	0.327	2.49		13C-123478-HxCDD	68.0	40-135	
123678-HxCDD	18.2	0.655	2.49		13C-123678-HxCDD	63.9	40-135	
123789-HxCDD	20.6	0.315	2.49		13C-1234678-HpCDD	93.4	40-135	
1234678-HpCDD	200	0.409	2.49		13C-OCDD	73.7	40-135	
OCDD	1,740	1.01	4.97		13C-2378-TCDF	124	40-135	
2,3,7,8-TCDF	0.813	0.0886	0.497		13C-12378-PeCDF	99.9	40-135	
12378-PeCDF	DL= 0.492	0.412	2.49		13C-23478-PeCDF	97.9	40-135	
23478-PeCDF	DL= 0.468	0.422	2.49		13C-123478-HxCDF	125	40-135	
123478-HxCDF	4.52	0.518	2.49		13C-123678-HxCDF	98.0	40-135	
123678-HxCDF	1.41	0.533	2.49	J	13C-234678-HxCDF	98.9	40-135	
234678-HxCDF	0.779	0.319	2.49	J	13C-123789-HxCDF	101	40-135	
123789-HxCDF	DL= 0.764	0.425	2.49		13C-1234678-HpCDF	102	40-135	
1234678-HpCDF	38.5	0.279	2.49		13C-1234789-HpCDF	113	40-135	
1234789-HpCDF	3.02	0.378	2.49					
OCDF	127	0.461	4.97					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	48.8	53.2			37CI4-2378-TCDD	112	40-135	
Total PeCDD	30.7	34.9						
Total HxCDD	195							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	464							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	62.3	64.3						(a) - Lower control limit - Upper control limit
Total PeCDF	24.3	28.3						(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	72.8							
Total HpCDF	154							

Total Toxic Equivalency (TEQ min.) (b): 24.8 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-14 15'		
Project ID: Terminal 3	Ceres Sample ID: 12395-016	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1878	Date Extracted: 10/20/2018
Time Collected: 2:30	Matrix: Soil	ZB-5MS Analysis: 10/22/2018
	Sample Size: 17.5 g % Solids: 57.2	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	3.04	0.172	0.495		13C-2378-TCDD	121	40-135	
12378-PeCDD	3.36	0.327	2.48		13C-12378-PeCDD	83.6	40-135	
123478-HxCDD	2.88	0.327	2.48		13C-123478-HxCDD	77.9	40-135	
123678-HxCDD	5.97	0.655	2.48		13C-123678-HxCDD	79.4	40-135	
123789-HxCDD	9.37	0.315	2.48		13C-1234678-HpCDD	96.6	40-135	
1234678-HpCDD	75.7	0.409	2.48		13C-OCDD	68.5	40-135	
OCDD	629	1.01	4.95		13C-2378-TCDF	109	40-135	
2,3,7,8-TCDF	0.990	0.0886	0.495		13C-12378-PeCDF	71.1	40-135	
12378-PeCDF	DL= 0.612	0.412	2.48		13C-23478-PeCDF	71.0	40-135	
23478-PeCDF	1.58	0.422	2.48	J	13C-123478-HxCDF	108	40-135	
123478-HxCDF	5.78	0.518	2.48		13C-123678-HxCDF	115	40-135	
123678-HxCDF	4.26	0.533	2.48		13C-234678-HxCDF	81.3	40-135	
234678-HxCDF	6.22	0.319	2.48		13C-123789-HxCDF	75.1	40-135	
123789-HxCDF	DL= 1.64	0.425	2.48		13C-1234678-HpCDF	69.8	40-135	
1234678-HpCDF	159	0.279	2.48		13C-1234789-HpCDF	97.8	40-135	
1234789-HpCDF	DL= 1.21	0.378	2.48					
OCDF	143	0.461	4.95					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	19.3				37CI4-2378-TCDD	128	40-135	
Total PeCDD	24.1				DL - Signifies Non-Detect (ND) at sample specific detection limit. EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure. (a) - Lower control limit - Upper control limit (b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.			
Total HxCDD	54.4							
Total HpCDD	141							
Total TCDF	55.7							
Total PeCDF	59.2							
Total HxCDF	118							
Total HpCDF	299							

Total Toxic Equivalency (TEQ min.) (b): 13.0 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-15 0-3'		
Project ID: Terminal 3	Ceres Sample ID: 12395-017	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1878	Date Extracted: 10/20/2018
Time Collected: 3:30	Matrix: Soil	ZB-5MS Analysis: 10/22/2018
	Sample Size: 18.96 g % Solids: 52.7	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 0.435	0.172	0.501		13C-2378-TCDD	105	40-135	
12378-PeCDD	DL= 0.655	0.327	2.50		13C-12378-PeCDD	80.6	40-135	
123478-HxCDD	DL= 1.11	0.327	2.50		13C-123478-HxCDD	65.4	40-135	
123678-HxCDD	DL= 1.16	0.655	2.50		13C-123678-HxCDD	94.4	40-135	
123789-HxCDD	DL= 1.12	0.315	2.50		13C-1234678-HpCDD	108	40-135	
1234678-HpCDD	39.1	0.409	2.50		13C-OCDD	83.1	40-135	
OCDD	351	1.01	5.01		13C-2378-TCDF	107	40-135	
2,3,7,8-TCDF	DL= 0.432	0.0886	0.501		13C-12378-PeCDF	80.9	40-135	
12378-PeCDF	DL= 0.778	0.412	2.50		13C-23478-PeCDF	76.1	40-135	
23478-PeCDF	DL= 0.744	0.422	2.50		13C-123478-HxCDF	102	40-135	
123478-HxCDF	DL= 0.978	0.518	2.50		13C-123678-HxCDF	121	40-135	
123678-HxCDF	DL= 0.923	0.533	2.50		13C-234678-HxCDF	89.8	40-135	
234678-HxCDF	DL= 1.32	0.319	2.50		13C-123789-HxCDF	92.1	40-135	
123789-HxCDF	DL= 1.60	0.425	2.50		13C-1234678-HpCDF	89.5	40-135	
1234678-HpCDF	5.53	0.279	2.50		13C-1234789-HpCDF	115	40-135	
1234789-HpCDF	DL= 1.41	0.378	2.50					
OCDF	13.7	0.461	5.01					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	DL= 0.435				37CI4-2378-TCDD	109	40-135	
Total PeCDD	DL= 0.655							
Total HxCDD	12.3							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	88.7							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	DL= 0.432							(a) - Lower control limit - Upper control limit
Total PeCDF	2.76							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	7.63							
Total HpCDF	14.8							

Total Toxic Equivalency (TEQ min.) (b): 0.556 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-15 3-6'		
Project ID: Terminal 3	Ceres Sample ID: 12395-018	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1878	Date Extracted: 10/20/2018
Time Collected: 3:35	Matrix: Soil	ZB-5MS Analysis: 10/22/2018
	Sample Size: 13.06 g % Solids: 76.5	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	2.06	0.172	0.501		13C-2378-TCDD	96.9	40-135	
12378-PeCDD	1.97	0.327	2.50	J	13C-12378-PeCDD	101	40-135	
123478-HxCDD	DL= 1.90	0.327	2.50		13C-123478-HxCDD	96.8	40-135	
123678-HxCDD	DL= 1.97	0.655	2.50		13C-123678-HxCDD	80.1	40-135	
123789-HxCDD	DL= 1.90	0.315	2.50		13C-1234678-HpCDD	98.2	40-135	
1234678-HpCDD	14.2	0.409	2.50		13C-OCDD	59.9	40-135	
OCDD	88.2	1.01	5.01		13C-2378-TCDF	110	40-135	
2,3,7,8-TCDF	0.919	0.0886	0.501		13C-12378-PeCDF	92.3	40-135	
12378-PeCDF	DL= 0.712	0.412	2.50		13C-23478-PeCDF	96.5	40-135	
23478-PeCDF	DL= 0.570	0.422	2.50		13C-123478-HxCDF	116	40-135	
123478-HxCDF	DL= 0.647	0.518	2.50		13C-123678-HxCDF	109	40-135	
123678-HxCDF	DL= 0.698	0.533	2.50		13C-234678-HxCDF	101	40-135	
234678-HxCDF	DL= 0.811	0.319	2.50		13C-123789-HxCDF	93.0	40-135	
123789-HxCDF	DL= 1.13	0.425	2.50		13C-1234678-HpCDF	85.3	40-135	
1234678-HpCDF	3.50	0.279	2.50		13C-1234789-HpCDF	104	40-135	
1234789-HpCDF	DL= 0.978	0.378	2.50					
OCDF	DL= 3.02	0.461	5.01					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	11.4				37CI4-2378-TCDD	114	40-135	
Total PeCDD	8.64	10.4						
Total HxCDD	26.6							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	29.9							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	1.89							(a) - Lower control limit - Upper control limit
Total PeCDF	DL= 0.712							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	5.52							
Total HpCDF	9.13							

Total Toxic Equivalency (TEQ min.) (b): 4.33 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Quality Assurance Sample Method Blank Project ID: Terminal 3	QC Batch #: 1879 Matrix: Soil Sample Size: 10.00 g	Date Received: NA Date Extracted: 10/22/2018 ZB-5MS Analysis: 10/28/2018
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Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 0.422	0.172	0.500		13C-2378-TCDD	96.6	40-135	
12378-PeCDD	DL= 1.34	0.327	2.50		13C-12378-PeCDD	110	40-135	
123478-HxCDD	DL= 1.57	0.327	2.50		13C-123478-HxCDD	73.9	40-135	
123678-HxCDD	DL= 1.88	0.655	2.50		13C-123678-HxCDD	76.3	40-135	
123789-HxCDD	DL= 1.69	0.315	2.50		13C-1234678-HpCDD	84.3	40-135	
1234678-HpCDD	DL= 1.11	0.409	2.50		13C-OCDD	89.7	40-135	
OCDD	DL= 1.59	1.01	5.00		13C-2378-TCDF	93.7	40-135	
2,3,7,8-TCDF	DL= 0.420	0.0886	0.500		13C-12378-PeCDF	108	40-135	
12378-PeCDF	DL= 0.842	0.412	2.50		13C-23478-PeCDF	94.6	40-135	
23478-PeCDF	DL= 0.875	0.422	2.50		13C-123478-HxCDF	111	40-135	
123478-HxCDF	DL= 1.29	0.518	2.50		13C-123678-HxCDF	93.4	40-135	
123678-HxCDF	DL= 1.59	0.533	2.50		13C-234678-HxCDF	76.6	40-135	
234678-HxCDF	DL= 1.94	0.319	2.50		13C-123789-HxCDF	83.6	40-135	
123789-HxCDF	DL= 2.18	0.425	2.50		13C-1234678-HpCDF	83.4	40-135	
1234678-HpCDF	DL= 0.803	0.279	2.50		13C-1234789-HpCDF	83.4	40-135	
1234789-HpCDF	DL= 1.19	0.378	2.50					
OCDF	DL= 1.58	0.461	5.00					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	DL= 0.422				37Cl4-2378-TCDD	93.6	40-135	
Total PeCDD	DL= 1.34							
Total HxCDD	DL= 1.88							
Total HpCDD	DL= 1.11							
Total TCDF	DL= 0.420							
Total PeCDF	DL= 0.875							
Total HxCDF	DL= 2.18							
Total HpCDF	DL= 1.19							
				DL - Signifies Non-Detect (ND) at sample specific detection limit. EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure. (a) - Lower control limit - Upper control limit (b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.				

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Quality Assurance Samples Laboratory Control Samples Project ID: Terminal 3	QC Batch #: 1879 Matrix: Soil Sample Size: 10.00 g	Date Received: NA Date Extracted: 10/22/2018 ZB-5MS Analysis: 10/28/2018
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Analyte	LCS1 % Rec.	LCS2 % Rec.	%RSD	Labeled Standards	LCS1 % Rec.	LCS2 % Rec	Limits (a)
2,3,7,8-TCDD	117	115	1.22	13C-2378-TCDD	109	110	40-135
12378-PeCDD	113	111	1.26	13C-12378-PeCDD	120	95.5	40-135
123478-HxCDD	118	116	1.21	13C-123478-HxCDD	98.5	85.0	40-135
123678-HxCDD	116	118	1.21	13C-123678-HxCDD	90.6	87.6	40-135
123789-HxCDD	117	124	4.11	13C-1234678-HpCDD	103	85.5	40-135
1234678-HpCDD	114	112	1.25	13C-OCDD	105	87.6	40-135
OCDD	121	112	5.46	13C-2378-TCDF	118	97.4	40-135
2,3,7,8-TCDF	121	125	2.30	13C-12378-PeCDF	109	89.3	40-135
12378-PeCDF	123	122	0.58	13C-23478-PeCDF	106	93.6	40-135
23478-PeCDF	112	120	4.88	13C-123478-HxCDF	115	133	40-135
123478-HxCDF	110	110	0.00	13C-123678-HxCDF	111	113	40-135
123678-HxCDF	105	106	0.67	13C-234678-HxCDF	104	91.1	40-135
234678-HxCDF	105	106	0.67	13C-123789-HxCDF	101	89.6	40-135
123789-HxCDF	110	114	2.53	13C-1234678-HpCDF	105	91.5	40-135
1234678-HpCDF	100	98.4	1.14	13C-1234789-HpCDF	93.9	93.2	40-135
1234789-HpCDF	102	95.4	4.73				
OCDF	120	113	4.25				
				CRS			
				37Cl4-2378-TCDD	107	105	40-135
				(a) Limits based on method acceptance criteria.			

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-15 6-9'		
Project ID: Terminal 3	Ceres Sample ID: 12395-019	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1879	Date Extracted: 10/22/2018
Time Collected: 3:45	Matrix: Soil	ZB-5MS Analysis: 10/28/2018
	Sample Size: 12.83 g % Solids: 77.8	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 0.424	0.172	0.501		13C-2378-TCDD	114	40-135	
12378-PeCDD	1.95	0.327	2.51	J	13C-12378-PeCDD	100	40-135	
123478-HxCDD	DL= 1.00	0.327	2.51		13C-123478-HxCDD	91.9	40-135	
123678-HxCDD	DL= 1.02	0.655	2.51		13C-123678-HxCDD	87.9	40-135	
123789-HxCDD	4.83	0.315	2.51		13C-1234678-HpCDD	88.0	40-135	
1234678-HpCDD	27.4	0.409	2.51		13C-OCDD	75.7	40-135	
OCDD	139	1.01	5.01		13C-2378-TCDF	92.7	40-135	
2,3,7,8-TCDF	DL= 0.453	0.0886	0.501		13C-12378-PeCDF	100	40-135	
12378-PeCDF	DL= 0.975	0.412	2.51		13C-23478-PeCDF	98.8	40-135	
23478-PeCDF	DL= 0.958	0.422	2.51		13C-123478-HxCDF	124	40-135	
123478-HxCDF	DL= 0.973	0.518	2.51		13C-123678-HxCDF	99.5	40-135	
123678-HxCDF	DL= 1.28	0.533	2.51		13C-234678-HxCDF	89.9	40-135	
234678-HxCDF	DL= 1.43	0.319	2.51		13C-123789-HxCDF	90.3	40-135	
123789-HxCDF	DL= 1.75	0.425	2.51		13C-1234678-HpCDF	89.4	40-135	
1234678-HpCDF	6.42	0.279	2.51		13C-1234789-HpCDF	111	40-135	
1234789-HpCDF	DL= 2.35	0.378	2.51					
OCDF	12.7	0.461	5.01					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	DL= 0.424				37CI4-2378-TCDD	110	40-135	
Total PeCDD	5.17							
Total HxCDD	31.3							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	54.7							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	DL= 0.453							(a) - Lower control limit - Upper control limit
Total PeCDF	DL= 0.975							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	7.86							
Total HpCDF	18.7							

Total Toxic Equivalency (TEQ min.) (b): 2.82 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-15 15'		
Project ID: Terminal 3	Ceres Sample ID: 12395-020	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1879	Date Extracted: 10/22/2018
Time Collected: 4:00	Matrix: Soil	ZB-5MS Analysis: 10/28/2018
	Sample Size: 16.52 g % Solids: 60.9	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	4.20	0.172	0.497		13C-2378-TCDD	107	40-135	
12378-PeCDD	3.38	0.327	2.49		13C-12378-PeCDD	91.8	40-135	
123478-HxCDD	DL= 1.05	0.327	2.49		13C-123478-HxCDD	91.5	40-135	
123678-HxCDD	DL= 1.11	0.655	2.49		13C-123678-HxCDD	84.1	40-135	
123789-HxCDD	7.66	0.315	2.49		13C-1234678-HpCDD	83.7	40-135	
1234678-HpCDD	16.4	0.409	2.49		13C-OCDD	70.8	40-135	
OCDD	104	1.01	4.97		13C-2378-TCDF	92.1	40-135	
2,3,7,8-TCDF	0.969	0.0886	0.497		13C-12378-PeCDF	102	40-135	
12378-PeCDF	DL= 0.712	0.412	2.49		13C-23478-PeCDF	110	40-135	
23478-PeCDF	DL= 0.667	0.422	2.49		13C-123478-HxCDF	131	40-135	
123478-HxCDF	DL= 0.572	0.518	2.49		13C-123678-HxCDF	101	40-135	
123678-HxCDF	DL= 0.768	0.533	2.49		13C-234678-HxCDF	91.5	40-135	
234678-HxCDF	DL= 0.911	0.319	2.49		13C-123789-HxCDF	91.5	40-135	
123789-HxCDF	DL= 1.01	0.425	2.49		13C-1234678-HpCDF	83.1	40-135	
1234678-HpCDF	13.1	0.279	2.49		13C-1234789-HpCDF	90.3	40-135	
1234789-HpCDF	DL= 1.31	0.378	2.49					
OCDF	14.5	0.461	4.97					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	26.2				37CI4-2378-TCDD	113	40-135	
Total PeCDD	26.6							
Total HxCDD	35.8							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	34.7							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	64.5							(a) - Lower control limit - Upper control limit
Total PeCDF	13.1							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	13.6							
Total HpCDF	25.5							

Total Toxic Equivalency (TEQ min.) (b): 8.77 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-16 2'		
Project ID: Terminal 3	Ceres Sample ID: 12395-021	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1879	Date Extracted: 10/22/2018
Time Collected: 4:50	Matrix: Soil	ZB-5MS Analysis: 10/28/2018
	Sample Size: 17.71 g % Solids: 57.1	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	5.03	0.172	0.495		13C-2378-TCDD	114	40-135	
12378-PeCDD	4.86	0.327	2.47		13C-12378-PeCDD	114	40-135	
123478-HxCDD	2.34	0.327	2.47	J	13C-123478-HxCDD	94.2	40-135	
123678-HxCDD	9.07	0.655	2.47		13C-123678-HxCDD	94.4	40-135	
123789-HxCDD	16.3	0.315	2.47		13C-1234678-HpCDD	92.4	40-135	
1234678-HpCDD	98.5	0.409	2.47		13C-OCDD	68.9	40-135	
OCDD	667	1.01	4.95		13C-2378-TCDF	104	40-135	
2,3,7,8-TCDF	0.701	0.0886	0.495		13C-12378-PeCDF	105	40-135	
12378-PeCDF	DL= 0.605	0.412	2.47		13C-23478-PeCDF	97.6	40-135	
23478-PeCDF	1.59	0.422	2.47	J	13C-123478-HxCDF	106	40-135	
123478-HxCDF	DL= 1.18	0.518	2.47		13C-123678-HxCDF	97.1	40-135	
123678-HxCDF	DL= 1.45	0.533	2.47		13C-234678-HxCDF	92.5	40-135	
234678-HxCDF	DL= 1.38	0.319	2.47		13C-123789-HxCDF	83.8	40-135	
123789-HxCDF	DL= 1.83	0.425	2.47		13C-1234678-HpCDF	78.7	40-135	
1234678-HpCDF	55.4	0.279	2.47		13C-1234789-HpCDF	95.8	40-135	
1234789-HpCDF	DL= 1.31	0.378	2.47					
OCDF	74.6	0.461	4.95					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	29.2				37CI4-2378-TCDD	122	40-135	
Total PeCDD	31.8							
Total HxCDD	115							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	192							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	18.9	22.7						(a) - Lower control limit - Upper control limit
Total PeCDF	15.4							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	38.0							
Total HpCDF	117							

Total Toxic Equivalency (TEQ min.) (b): 15.0 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-16 5'		
Project ID: Terminal 3	Ceres Sample ID: 12395-022	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1879	Date Extracted: 10/22/2018
Time Collected: 4:55	Matrix: Soil	ZB-5MS Analysis: 10/28/2018
	Sample Size: 16.51 g % Solids: 60.4	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	3.30	0.172	0.502		13C-2378-TCDD	106	40-135	
12378-PeCDD	3.48	0.327	2.51		13C-12378-PeCDD	108	40-135	
123478-HxCDD	DL= 1.30	0.327	2.51		13C-123478-HxCDD	72.6	40-135	
123678-HxCDD	5.50	0.655	2.51		13C-123678-HxCDD	74.2	40-135	
123789-HxCDD	10.1	0.315	2.51		13C-1234678-HpCDD	82.8	40-135	
1234678-HpCDD	51.6	0.409	2.51		13C-OCDD	77.7	40-135	
OCDD	330	1.01	5.02		13C-2378-TCDF	90.0	40-135	
2,3,7,8-TCDF	0.924	0.0886	0.502		13C-12378-PeCDF	93.0	40-135	
12378-PeCDF	DL= 0.812	0.412	2.51		13C-23478-PeCDF	100	40-135	
23478-PeCDF	DL= 0.633	0.422	2.51		13C-123478-HxCDF	134	40-135	
123478-HxCDF	DL= 0.724	0.518	2.51		13C-123678-HxCDF	90.8	40-135	
123678-HxCDF	DL= 1.21	0.533	2.51		13C-234678-HxCDF	80.9	40-135	
234678-HxCDF	DL= 1.29	0.319	2.51		13C-123789-HxCDF	81.7	40-135	
123789-HxCDF	DL= 1.57	0.425	2.51		13C-1234678-HpCDF	78.2	40-135	
1234678-HpCDF	12.8	0.279	2.51		13C-1234789-HpCDF	84.8	40-135	
1234789-HpCDF	DL= 1.62	0.378	2.51					
OCDF	31.9	0.461	5.02					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	17.9				37CI4-2378-TCDD	111	40-135	
Total PeCDD	20.5							
Total HxCDD	69.3							
Total HpCDD	110							
Total TCDF	19.2	20.8						
Total PeCDF	8.96							
Total HxCDF	21.2							
Total HpCDF	38.0							

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 9.18 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-16 8'		
Project ID: Terminal 3	Ceres Sample ID: 12395-023	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1879	Date Extracted: 10/22/2018
Time Collected: 5:00	Matrix: Soil	ZB-5MS Analysis: 10/28/2018
	Sample Size: 18.37 g % Solids: 54.6	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	1.59	0.172	0.499		13C-2378-TCDD	96.0	40-135	
12378-PeCDD	DL= 1.58	0.327	2.49		13C-12378-PeCDD	101	40-135	
123478-HxCDD	DL= 1.53	0.327	2.49		13C-123478-HxCDD	81.3	40-135	
123678-HxCDD	3.69	0.655	2.49		13C-123678-HxCDD	79.6	40-135	
123789-HxCDD	6.18	0.315	2.49		13C-1234678-HpCDD	101	40-135	
1234678-HpCDD	31.3	0.409	2.49		13C-OCDD	95.0	40-135	
OCDD	226	1.01	4.99		13C-2378-TCDF	85.4	40-135	
2,3,7,8-TCDF	0.759	0.0886	0.499		13C-12378-PeCDF	95.9	40-135	
12378-PeCDF	DL= 1.38	0.412	2.49		13C-23478-PeCDF	83.8	40-135	
23478-PeCDF	DL= 1.42	0.422	2.49		13C-123478-HxCDF	125	40-135	
123478-HxCDF	DL= 0.792	0.518	2.49		13C-123678-HxCDF	96.0	40-135	
123678-HxCDF	DL= 1.02	0.533	2.49		13C-234678-HxCDF	92.8	40-135	
234678-HxCDF	DL= 1.04	0.319	2.49		13C-123789-HxCDF	93.0	40-135	
123789-HxCDF	DL= 1.23	0.425	2.49		13C-1234678-HpCDF	97.2	40-135	
1234678-HpCDF	9.64	0.279	2.49		13C-1234789-HpCDF	107	40-135	
1234789-HpCDF	DL= 1.35	0.378	2.49					
OCDF	21.1	0.461	4.99					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	6.40				37CI4-2378-TCDD	101	40-135	
Total PeCDD	5.07							
Total HxCDD	41.8							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	63.6							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	13.9	15.3						(a) - Lower control limit - Upper control limit
Total PeCDF	DL= 1.42							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	13.7							
Total HpCDF	27.4							

Total Toxic Equivalency (TEQ min.) (b): 3.14 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-17 0-3'		
Project ID: Terminal 3	Ceres Sample ID: 12395-024	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1879	Date Extracted: 10/22/2018
Time Collected: 10:00	Matrix: Soil	ZB-5MS Analysis: 10/28/2018
	Sample Size: 12.09 g % Solids: 83.2	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 0.448	0.172	0.497		13C-2378-TCDD	100	40-135	
12378-PeCDD	DL= 1.10	0.327	2.49		13C-12378-PeCDD	103	40-135	
123478-HxCDD	DL= 1.66	0.327	2.49		13C-123478-HxCDD	86.1	40-135	
123678-HxCDD	DL= 1.93	0.655	2.49		13C-123678-HxCDD	82.4	40-135	
123789-HxCDD	DL= 1.76	0.315	2.49		13C-1234678-HpCDD	104	40-135	
1234678-HpCDD	DL= 1.25	0.409	2.49		13C-OCDD	82.3	40-135	
OCDD	DL= 2.23	1.01	4.97		13C-2378-TCDF	104	40-135	
2,3,7,8-TCDF	DL= 0.474	0.0886	0.497		13C-12378-PeCDF	92.3	40-135	
12378-PeCDF	DL= 0.640	0.412	2.49		13C-23478-PeCDF	88.6	40-135	
23478-PeCDF	DL= 0.524	0.422	2.49		13C-123478-HxCDF	130	40-135	
123478-HxCDF	DL= 0.511	0.518	2.49		13C-123678-HxCDF	115	40-135	
123678-HxCDF	DL= 0.614	0.533	2.49		13C-234678-HxCDF	108	40-135	
234678-HxCDF	DL= 0.653	0.319	2.49		13C-123789-HxCDF	90.7	40-135	
123789-HxCDF	DL= 0.963	0.425	2.49		13C-1234678-HpCDF	94.5	40-135	
1234678-HpCDF	DL= 0.922	0.279	2.49		13C-1234789-HpCDF	96.5	40-135	
1234789-HpCDF	DL= 1.22	0.378	2.49					
OCDF	DL= 2.64	0.461	4.97					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	DL= 0.448				37CI4-2378-TCDD	110	40-135	
Total PeCDD	DL= 1.10							
Total HxCDD	DL= 1.93							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	DL= 1.25							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	DL= 0.474							(a) - Lower control limit - Upper control limit
Total PeCDF	DL= 0.640							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	DL= 0.963							
Total HpCDF	DL= 1.22							

Total Toxic Equivalency (TEQ min.) (b):	0.0 pg/g
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Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-17 3-6'		
Project ID: Terminal 3	Ceres Sample ID: 12395-025	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1879	Date Extracted: 10/22/2018
Time Collected: 10:05	Matrix: Soil	ZB-5MS Analysis: 10/28/2018
	Sample Size: 12.4 g % Solids: 81.4	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 0.485	0.172	0.496		13C-2378-TCDD	112	40-135	
12378-PeCDD	DL= 1.02	0.327	2.48		13C-12378-PeCDD	111	40-135	
123478-HxCDD	DL= 2.07	0.327	2.48		13C-123478-HxCDD	77.7	40-135	
123678-HxCDD	DL= 2.23	0.655	2.48		13C-123678-HxCDD	78.6	40-135	
123789-HxCDD	DL= 2.10	0.315	2.48		13C-1234678-HpCDD	86.8	40-135	
1234678-HpCDD	DL= 1.69	0.409	2.48		13C-OCDD	69.3	40-135	
OCDD	7.45	1.01	4.96		13C-2378-TCDF	122	40-135	
2,3,7,8-TCDF	DL= 0.481	0.0886	0.496		13C-12378-PeCDF	112	40-135	
12378-PeCDF	DL= 0.941	0.412	2.48		13C-23478-PeCDF	107	40-135	
23478-PeCDF	DL= 0.855	0.422	2.48		13C-123478-HxCDF	123	40-135	
123478-HxCDF	DL= 0.660	0.518	2.48		13C-123678-HxCDF	104	40-135	
123678-HxCDF	DL= 0.814	0.533	2.48		13C-234678-HxCDF	93.9	40-135	
234678-HxCDF	DL= 0.856	0.319	2.48		13C-123789-HxCDF	82.7	40-135	
123789-HxCDF	DL= 1.04	0.425	2.48		13C-1234678-HpCDF	68.4	40-135	
1234678-HpCDF	DL= 1.23	0.279	2.48		13C-1234789-HpCDF	95.6	40-135	
1234789-HpCDF	DL= 1.17	0.378	2.48					
OCDF	DL= 3.04	0.461	4.96					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	DL= 0.485				37CI4-2378-TCDD	98.3	40-135	
Total PeCDD	DL= 1.02							
Total HxCDD	DL= 2.23							
Total HpCDD	DL= 1.69							
Total TCDF	DL= 0.481							
Total PeCDF	DL= 0.941							
Total HxCDF	DL= 1.04							
Total HpCDF	6.78							

DL - Signifies Non-Detect (ND) at sample specific detection limit.

EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.

(a) - Lower control limit - Upper control limit

(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.00224 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-17 6-9'		
Project ID: Terminal 3	Ceres Sample ID: 12395-026	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1879	Date Extracted: 10/22/2018
Time Collected: 10:10	Matrix: Soil	ZB-5MS Analysis: 10/28/2018
	Sample Size: 14.99 g % Solids: 66.8	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	5.22	0.172	0.500		13C-2378-TCDD	80.1	40-135	
12378-PeCDD	2.52	0.327	2.52		13C-12378-PeCDD	103	40-135	
123478-HxCDD	DL= 1.68	0.327	2.52		13C-123478-HxCDD	65.6	40-135	
123678-HxCDD	3.10	0.655	2.52		13C-123678-HxCDD	62.8	40-135	
123789-HxCDD	6.58	0.315	2.52		13C-1234678-HpCDD	82.8	40-135	
1234678-HpCDD	34.7	0.409	2.52		13C-OCDD	71.7	40-135	
OCDD	242	1.01	5.00		13C-2378-TCDF	94.6	40-135	
2,3,7,8-TCDF	0.690	0.0886	0.500		13C-12378-PeCDF	95.6	40-135	
12378-PeCDF	DL= 0.694	0.412	2.52		13C-23478-PeCDF	95.4	40-135	
23478-PeCDF	DL= 0.602	0.422	2.52		13C-123478-HxCDF	133	40-135	
123478-HxCDF	DL= 0.751	0.518	2.52		13C-123678-HxCDF	85.4	40-135	
123678-HxCDF	DL= 1.28	0.533	2.52		13C-234678-HxCDF	93.4	40-135	
234678-HxCDF	DL= 1.02	0.319	2.52		13C-123789-HxCDF	71.1	40-135	
123789-HxCDF	DL= 1.77	0.425	2.52		13C-1234678-HpCDF	79.6	40-135	
1234678-HpCDF	13.1	0.279	2.52		13C-1234789-HpCDF	88.8	40-135	
1234789-HpCDF	DL= 1.51	0.378	2.52					
OCDF	17.7	0.461	5.00					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	10.9				37Cl4-2378-TCDD	92.4	40-135	
Total PeCDD	12.6							
Total HxCDD	50.3							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	73.0							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	10.5	13.7						(a) - Lower control limit - Upper control limit
Total PeCDF	7.71							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	16.8							
Total HpCDF	30.5							

Total Toxic Equivalency (TEQ min.) (b): 9.33 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: B-17 15'		
Project ID: Terminal 3	Ceres Sample ID: 12395-027	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1879	Date Extracted: 10/22/2018
Time Collected: 10:20	Matrix: Soil	ZB-5MS Analysis: 10/28/2018
	Sample Size: 12.51 g % Solids: 80.9	Q-225 Analysis: NA

Analyte	Conc. (pg/g)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 0.364	0.172	0.494		13C-2378-TCDD	113	40-135	
12378-PeCDD	DL= 1.05	0.327	2.47		13C-12378-PeCDD	126	40-135	
123478-HxCDD	DL= 1.74	0.327	2.47		13C-123478-HxCDD	71.9	40-135	
123678-HxCDD	DL= 1.95	0.655	2.47		13C-123678-HxCDD	67.6	40-135	
123789-HxCDD	DL= 1.80	0.315	2.47		13C-1234678-HpCDD	89.5	40-135	
1234678-HpCDD	8.37	0.409	2.47		13C-OCDD	71.1	40-135	
OCDD	51.1	1.01	4.94		13C-2378-TCDF	109	40-135	
2,3,7,8-TCDF	DL= 0.437	0.0886	0.494		13C-12378-PeCDF	112	40-135	
12378-PeCDF	DL= 0.432	0.412	2.47		13C-23478-PeCDF	124	40-135	
23478-PeCDF	DL= 0.385	0.422	2.47		13C-123478-HxCDF	120	40-135	
123478-HxCDF	DL= 0.649	0.518	2.47		13C-123678-HxCDF	107	40-135	
123678-HxCDF	DL= 0.687	0.533	2.47		13C-234678-HxCDF	93.9	40-135	
234678-HxCDF	DL= 0.760	0.319	2.47		13C-123789-HxCDF	83.6	40-135	
123789-HxCDF	DL= 1.02	0.425	2.47		13C-1234678-HpCDF	85.9	40-135	
1234678-HpCDF	3.08	0.279	2.47		13C-1234789-HpCDF	96.5	40-135	
1234789-HpCDF	DL= 0.742	0.378	2.47					
OCDF	6.47	0.461	4.94					
Totals	Conc. (pg/g)	EMPC			CRS			
Total TCDD	DL= 0.364				37Cl4-2378-TCDD	117	40-135	
Total PeCDD	DL= 1.05							
Total HxCDD	12.8							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	16.8							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	DL= 0.437							(a) - Lower control limit - Upper control limit
Total PeCDF	DL= 0.432							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.
Total HxCDF	2.84							
Total HpCDF	8.90							

Total Toxic Equivalency (TEQ min.) (b): 0.132 pg/g

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Quality Assurance Sample Method Blank Project ID: Terminal 3	QC Batch #: 1876 Matrix: Aqueous Sample Size: 0.500 L	Date Received: NA Date Extracted: 10/24/2018 ZB-5MS Analysis: 10/30/2018
---	--	---

Analyte	Conc. (pg/L)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 9.74	0.887	10.0		13C-2378-TCDD	101	40-135	
12378-PeCDD	DL= 12.4	2.56	50.0		13C-12378-PeCDD	97.9	40-135	
123478-HxCDD	DL= 27.0	3.08	50.0		13C-123478-HxCDD	80.0	40-135	
123678-HxCDD	DL= 26.4	5.29	50.0		13C-123678-HxCDD	88.3	40-135	
123789-HxCDD	DL= 26.1	13.1	50.0		13C-1234678-HpCDD	87.3	40-135	
1234678-HpCDD	DL= 21.5	5.15	50.0		13C-OCDD	90.5	40-135	
OCDD	DL= 28.7	8.50	100		13C-2378-TCDF	80.4	40-135	
2,3,7,8-TCDF	DL= 9.26	0.733	10.0		13C-12378-PeCDF	73.9	40-135	
12378-PeCDF	DL= 21.7	2.96	50.0		13C-23478-PeCDF	72.0	40-135	
23478-PeCDF	DL= 21.7	5.40	50.0		13C-123478-HxCDF	92.0	40-135	
123478-HxCDF	DL= 10.5	3.93	50.0		13C-123678-HxCDF	75.9	40-135	
123678-HxCDF	DL= 13.0	2.94	50.0		13C-234678-HxCDF	71.2	40-135	
234678-HxCDF	DL= 13.4	4.32	50.0		13C-123789-HxCDF	74.5	40-135	
123789-HxCDF	DL= 14.8	4.70	50.0		13C-1234678-HpCDF	64.6	40-135	
1234678-HpCDF	DL= 17.4	4.24	50.0		13C-1234789-HpCDF	77.2	40-135	
1234789-HpCDF	DL= 17.9	5.74	50.0					
OCDF	DL= 46.6	11.7	100					
Totals	Conc. (pg/L)	EMPC			CRS			
Total TCDD	DL= 9.74				37CI4-2378-TCDD	108	40-135	
Total PeCDD	DL= 12.4							
Total HxCDD	DL= 27.0							
Total HpCDD	DL= 21.5							
Total TCDF	DL= 9.26							
Total PeCDF	DL= 21.7							
Total HxCDF	DL= 14.8							
Total HpCDF	DL= 17.9							

DL - Signifies Non-Detect (ND) at sample specific detection limit.
 EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
 (a) - Lower control limit - Upper control limit
 (b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Quality Assurance Samples Laboratory Control Samples Project ID: Terminal 3	QC Batch #: 1876 Matrix: Aqueous Sample Size: 0.500 L	Date Received: NA Date Extracted: 10/24/2018 ZB-5MS Analysis: 10/30/2018
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Analyte	LCS1 % Rec.	LCS2 % Rec.	%RSD	Labeled Standards	LCS1 % Rec.	LCS2 % Rec	Limits (a)
2,3,7,8-TCDD	116	99.4	10.90	13C-2378-TCDD	128	118	40-135
12378-PeCDD	101	104	2.07	13C-12378-PeCDD	118	89.1	40-135
123478-HxCDD	102	101	0.70	13C-123478-HxCDD	87.3	117	40-135
123678-HxCDD	116	107	5.71	13C-123678-HxCDD	95.1	127	40-135
123789-HxCDD	113	93	13.73	13C-1234678-HpCDD	92.3	94.4	40-135
1234678-HpCDD	97	123	16.71	13C-OCDD	83.0	103	40-135
OCDD	108	113	3.20	13C-2378-TCDF	110	92.4	40-135
2,3,7,8-TCDF	116	101	9.78	13C-12378-PeCDF	87.1	85.3	40-135
12378-PeCDF	107	113	3.86	13C-23478-PeCDF	98.1	85.3	40-135
23478-PeCDF	98.2	90.2	6.01	13C-123478-HxCDF	120	115	40-135
123478-HxCDF	106	107	0.66	13C-123678-HxCDF	116	101	40-135
123678-HxCDF	99	96.6	1.74	13C-234678-HxCDF	88.2	110	40-135
234678-HxCDF	100	99.8	0.14	13C-123789-HxCDF	85.1	103	40-135
123789-HxCDF	104	109	3.32	13C-1234678-HpCDF	89.4	96.0	40-135
1234678-HpCDF	92.6	106	9.54	13C-1234789-HpCDF	76.9	91.3	40-135
1234789-HpCDF	91.2	90.2	0.78				
OCDF	79.5	100	16.15				
				CRS			
				37CI4-2378-TCDD	119	123	40-135
				(a) Limits based on method acceptance criteria.			

Analyst: JMH

Reviewed by: BS



EPA Method 8290A

Client Sample ID: Decon Water		
Project ID: Terminal 3	Ceres Sample ID: 12395-028	Date Received: 10/16/2018
Date Collected: 10/11/2018	QC Batch #: 1876	Date Extracted: 10/24/2018
Time Collected: 5:30	Matrix: Aqueous	ZB-5MS Analysis: 10/30/2018
	Sample Size: 0.492 L	Q-225 Analysis: NA

Analyte	Conc. (pg/L)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 8.90	0.887	10.2		13C-2378-TCDD	70.6	40-135	
12378-PeCDD	DL= 36.6	2.56	50.8		13C-12378-PeCDD	45.9	40-135	
123478-HxCDD	DL= 34.8	3.08	50.8		13C-123478-HxCDD	50.6	40-135	
123678-HxCDD	283	5.29	50.8		13C-123678-HxCDD	54.8	40-135	
123789-HxCDD	383	13.1	50.8		13C-1234678-HpCDD	39.7	40-135	
1234678-HpCDD	3,460	5.15	50.8		13C-OCDD	35.8	40-135	
OCDD	23,600	8.50	102		13C-2378-TCDF	57.0	40-135	
2,3,7,8-TCDF	DL= 8.05	0.733	10.2		13C-12378-PeCDF	37.4	40-135	
12378-PeCDF	DL= 19.8	2.96	50.8		13C-23478-PeCDF	37.9	40-135	
23478-PeCDF	DL= 19.4	5.40	50.8		13C-123478-HxCDF	52.5	40-135	
123478-HxCDF	DL= 29.4	3.93	50.8		13C-123678-HxCDF	50.3	40-135	
123678-HxCDF	DL= 31.2	2.94	50.8		13C-234678-HxCDF	48.1	40-135	
234678-HxCDF	DL= 30.3	4.32	50.8		13C-123789-HxCDF	45.8	40-135	
123789-HxCDF	DL= 43.8	4.70	50.8		13C-1234678-HpCDF	40.7	40-135	
1234678-HpCDF	1,540	4.24	50.8		13C-1234789-HpCDF	39.2	40-135	
1234789-HpCDF	DL= 46.6	5.74	50.8					
OCDF	2,040	11.7	102					
Totals	Conc. (pg/L)	EMPC			CRS			
Total TCDD	DL= 8.90				37Cl4-2378-TCDD	131	40-135	
Total PeCDD	DL= 36.6							
Total HxCDD	2,710							DL - Signifies Non-Detect (ND) at sample specific detection limit.
Total HpCDD	8,450							EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
Total TCDF	DL= 8.05							(a) - Lower control limit - Upper control limit
Total PeCDF	376							(b) - TEQ based on (2005) World Health Organization (WHO) Toxic
Total HxCDF	1,310							Equivalent Factors.
Total HpCDF	3,380							

Total Toxic Equivalency (TEQ min.) (b): 93.2 pg/L

Analyst: JMH

Reviewed by: BS

Section VI: Sample Tracking

CHAIN-OF-CUSTODY RECORD

CLIENT: ESN Northwest
1210 Eastside Street SE, Suite 200
ADDRESS: Olympia, WA 98501
PHONE: _____

DATE: 10-11-18 PAGE 1 OF 2
PROJECT NAME: Terminal 3
LOCATION: Hoquiam, WA
COLLECTOR: _____ DATE OF COLLECTION: 10-11-18

CLIENT PROJECT #: _____ PROJECT MANAGER: _____

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES																		NOTES	Total Number of Containers	Laboratory Note Number			
					TPH - HClD	TPH - Diesel & Oil	TPH - Gasoline	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos - PLM	GRO Suite	DRO Suite	WO Suite	Dioxin				Phenol		
1. B-11	0-3	1235	S	4.0Z																			X					
2. B-11	3-6	1240																										
3. B-11	6-9	1245																						X				
4. B-11	15	1255																										
5. B-12	0-3	1130																										
6. B-12	3-6	1135																										
7. B-12	6-9	1140																										
8. B-12	15	1145																										
9. B-13	0-3	310																										
10. B-13	3-6	315																										
11. B-13	6-9	320																										
12. B-13	15	330																										
13. B-14	0-3	155																										
14. B-14	3-6	210																										
15. B-14	6-9	215																										
16. B-14	15	230																										
17. B-15	0-3	330																										
18. B-15	3-10	335																										

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME	SAMPLE RECEIPT		LABORATORY NOTES: STD TAT
<i>Jenna Amed</i>	10-15-18	<i>Jan 17</i>	10/16/18	TOTAL NUMBER OF CONTAINERS		
				CHAIN OF CUSTODY SEALS Y/N/NA		
				SEALS INTACT? Y/N/NA		
				RECEIVED GOOD COND./COLD		Turn Around Time: 24 HR 48 HR 5 DAY
				NOTES:		

CHAIN-OF-CUSTODY RECORD

CLIENT: — ESN Northwest
ADDRESS: — 1210 Eastside Street SE, Suite 200
 Olympia, WA 98501
PHONE:

DATE: 10-11-18 PAGE 2 OF 2

PROJECT NAME: Terminal 3

LOCATION: Hoguenam, WA DATE OF 10-10-11

CLIENT PROJECT #: _____ **PROJECT MANAGER:** _____

COLLECTOR: _____ DATE OF COLLECTION: 10-10-81

[illegible]

Sample Receipt Check List Logged by: J (initials)

Ceres ID: <u>12395</u>		Date/Time: <u>10/16/18 11:25</u>
Client Project ID: <u>Terminal 3</u>		Received Temp: <u>39</u> °C Acceptable: <u>(Y)</u> / N
Chain of Custody Relinquished by signed?		<u>(Y)</u> / N
Chain of Custody Received by signed?		<u>(Y)</u> / N
Custody Seals?	Present?	Y / N
	Intact?	Y / N
	NA:	<u>(NA)</u>
Unlabeled / Illegible Samples		Y / <u>(N)</u>
Proper Containers:		<u>(Y)</u> / N
Preservation Acceptable (Chemical or <u>Temperature</u>)?		<u>(Y)</u> / N
Drinking Water, Sodium Thiosulfate present?		Y / N / <u>(NA)</u>
Residual Cl?		Y / <u>(N)</u>
Aqueous sample pH: <u>#28-6</u>		
List COC discrepancies: <u>Dacon water 10/11/18 5:30</u> <u>J 10/16/18</u>		
List Damaged Samples: <u>J 10/16/18</u>		

Section VII: Qualifiers/Abbreviations

J	Concentration found below the lower quantitation limit but greater than zero.
B	Analyte present in the associated Method Blank.
E	Concentration found exceeds the Calibration range of the HRGC/HRMS.
D	This analyte concentration was calculated from a dilution.
X	The concentration found is the estimated maximum possible concentration due to chlorinated diphenyl ethers present in the sample.
H	Recovery limits exceeded. See cover letter.
*	Results taken from dilution.
I	Interference. See cover letter.
Conc.	Concentration Found
DL	Calculated Detection Limit
ND	Non-Detect
% Rec.	Percent Recovery

ESN NORTHWEST CHEMISTRY LABORATORY

Stantec
 TERMINAL 3 PROJECT
 Client Project #185751074
 Hoquiam, Washington

ESN Northwest
 1210 Eastside Street SE Suite 200
 Olympia, WA 98501
 (360) 459-4670 (360) 459-3432 Fax
 lab@esnnw.com

Analysis of Semivolatile Organic Compounds in Soil by Method 8270
Analytical Results

	RL	MTH BLK	LCS	B-11
Date extracted		11/07/18	11/07/18	11/07/18
Date analyzed	(mg/kg)	11/07/18	11/07/18	11/07/18
Pyridine	1.0	nd		nd
Aniline	1.0	nd		nd
Phenol	1.0	nd	117%	nd
2-Chlorophenol	1.0	nd		nd
Bis (2-chloroethyl) ether	1.0	nd		nd
1,3-Dichlorobenzene	1.0	nd		nd
1,4-Dichlorobenzene	1.0	nd	115%	nd
1,2-Dichlorobenzene	1.0	nd		nd
Benzyl alcohol	1.0	nd		nd
Hexachlorethane	1.0	nd		nd
N-Nitroso-di-n-propylamine	1.0	nd	114%	nd
3,4-Methylphenol (m,p-cresol)	1.0	nd		nd
2-Methylphenol (o-cresol)	1.0	nd		nd
Bis (2-chloroisopropyl) ether	5.0	nd		nd
Nitrobenzene	1.0	nd		nd
Isophorone	1.0	nd		nd
2-Nitrophenol	5.0	nd	83%	nd
2,4-Dimethylphenol	1.0	nd		nd
Bis (2-chloroethoxy) methane	1.0	nd		nd
2,4-Dichlorophenol	5.0	nd		nd
1,2,4-Trichlorobenzene	1.0	nd	110%	nd
Naphthalene	1.0	nd		nd
4-Chloroaniline	5.0	nd		nd
Hexachlorobutadiene	1.0	nd	104%	nd
4-Chloro-3-methylphenol	5.0	nd	100%	nd
2-Methylnaphthalene	1.0	nd		nd
1-Methylnaphthalene	1.0	nd		nd
Hexachlorocyclopentadiene	1.0	nd		nd
2,4,6-Trichlorophenol	5.0	nd	123%	nd
2,4,5-Trichlorophenol	5.0	nd		nd
2-Chloronaphthalene	1.0	nd		nd
2-Nitroaniline	5.0	nd		nd
1,4-Dinitrobenzene	5.0	nd		nd
Acenaphthylene	0.1	nd		nd
1,3-Dinitrobenzene	5.0	nd		nd
Dimethylphthalate	1.0	nd		nd
2,6-Dinitrotoluene	1.0	nd		nd
1,2-Dinitrobenzene	1.0	nd		nd
Acenaphthene	0.1	nd	100%	nd
2,4-Dinitrophenol	5.0	nd		nd
2,4-Dinitrotoluene	1.0	nd	104%	nd
4-Nitrophenol	5.0	nd	125%	nd
Dibenzofuran	1.0	nd		nd
2,3,4,6-Tetrachlorophenol	1.0	nd		nd
2,3,5,6-Tetrachlorophenol	1.0	nd		nd
Fluorene	0.1	nd		nd

ESN NORTHWEST CHEMISTRY LABORATORY

Stantec
 TERMINAL 3 PROJECT
 Client Project #185751074
 Hoquiam, Washington

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 lab@esnw.com

Analysis of Semivolatile Organic Compounds in Soil by Method 8270

Analytical Results

	RL	MTH BLK	LCS	B-11
Date extracted		11/07/18	11/07/18	11/07/18
Date analyzed	(mg/kg)	11/07/18	11/07/18	11/07/18
4-Chlorophenylphenylether	1.0	nd		nd
Diethylphthalate	1.0	nd		nd
4-Nitroaniline	5.0	nd		nd
4,6-Dinitro-2-methylphenol	5.0	nd		nd
N-nitrosodiphenylamine	1.0	nd		nd
Azobenzene	1.0	nd		nd
4-Bromophenylphenylether	1.0	nd		nd
Hexachlorobenzene	1.0	nd		nd
Pentachlorophenol	5.0	nd	50%	nd
Phenanthrene	0.1	nd		nd
Anthracene	0.1	nd		nd
Carbazole	1.0	nd		nd
Di-n-butylphthalate	1.0	nd		nd
Fluoranthene	0.1	nd		nd
Pyrene	0.1	nd	98%	nd
Butylbenzylphthalate	1.0	nd		nd
Bis(2-ethylhexyl) adipate	1.0	nd		nd
Benzo(a)anthracene	0.1	nd		nd
Chrysene	0.1	nd		nd
Bis (2-ethylhexyl) phthalate	1.0	nd		nd
Di-n-octyl phthalate	1.0	nd	104%	nd
Benzo(b)fluoranthene	0.1	nd		nd
Benzo(k)fluoranthene	0.1	nd		nd
Benzo(a)pyrene	0.1	nd	57%	nd
Dibenzo(a,h)anthracene	0.1	nd		nd
Benzo(ghi)perylene	0.1	nd		nd
Indeno(1,2,3-cd)pyrene	0.1	nd		nd

Surrogate recoveries

2-Fluorophenol	61%	92%	63%
Phenol-d6	21%	90%	79%
Nitrobenzene-d5	84%	99%	88%
2-Fluorobiphenyl	89%	99%	97%
2,4,6-Tribromophenol	39%	74%	53%
4-Terphenyl-d14	113%	107%	117%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

Acceptable Recovery limits:

2-Fluorophenol: 10-135 %

Phenol - d5: 10-135 %

2,4,6- tribromophenol: 29-159%

Nitrobenzene - d5: 20-120 %

2-Fluorobiphenyl: 50-150%

p-Terphenyl-d14: 50-150%

Acceptable RPD limit: 35%