2012 Sediment Quality
Cascade Pole Site
Olympia, Washington

January 13, 2014

Prepared for

Port of Olympia
915 Washington Street NE

LANDAU ASSOCIATES

130 2nd Avenue South
Edmonds, WA 98020
(425) 778-0907

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

LIST OF ABBREVIATIONS AND ACRONYMS

ARI	Analytical Resources, Incorporated
BGS	Below Ground Surface
CAP	Cleanup Action Plan
cPAH	Carcinogenic Polycyclic Aromatic Hydrocarbons
CSL	Cleanup Screening Level
COPC	Chemical of Potential Concern
Ecology	Washington State Department of Ecology
GPS	Global Positioning System
LPAH	Low Molecular Weight PAHs
MBL	Multiple Benefits Line
MSS	Marine Sampling Systems, Inc.
ng/kg	Nanograms per kilogram
OC	Organic Carbon Normalized
PAH	Polycyclic Aromatic Hydrocarbons
Port	Port of Olympia
QA/QC	Quality Assurance/Quality Control
RSS	Research Support Services
SMS	Sediment Quality Standard
SQS	Sediment Quality Standard
SOU	Sediments Operable Unit
TEQ	Toxicity Equivalency Quotient
TOC	Total Organic Carbon

1.0 INTRODUCTION

This report presents the results of the 2012 performance sediment quality monitoring event and two subsequent sampling events conducted for the Port of Olympia (Port) at the Cascade Pole Site Sediments Operable Unit (SOU). Sediment sampling activities were conducted as part of the long term monitoring of the sediment cleanup area in Budd Inlet per Amendment No. 1 to the Agreed Order (No. DE 00TCPSR-753) between the Port and the Washington State Department of Ecology (Ecology).

1.1 BACKGROUND

The former Cascade Pole Company wood-treatment site (Site) is located on Budd Inlet, approximately one mile north of downtown Olympia, as shown on Figure 1. The Port owns the upland property where the Site is located, as well as adjacent upland parcels and some of the aquatic lands immediately adjacent to the upland Site. The Cascade Pole SOU includes the intertidal and subtidal sediments north and east of the Site. A detailed site history can be found in the *Cascade Pole Remedial Investigation* and the *Cascade Pole Feasibility Study* reports (Landau Associates 1993a,b).

In April 2000, the Port entered into the Agreed Order with Ecology to remediate the Cascade Pole SOU. The Ecology-selected cleanup action included excavation of contaminated sediments, containment of the contaminated sediments in an upland cell, containment of shoreline soil and sediment within a sheet pile barrier, incorporation of institutional controls, shoreline improvements, and the establishment of a compliance monitoring program.

1.1.1 CLEANUP ACTION

Cleanup of contaminated sediments was implemented between 2000 and 2002. The cleanup action included excavation or dredging of contaminated sediments within the multiple benefits line (MBL), placement of clean granular backfill within the MBL to return the elevation to pre-excavation grade, and implementation of a compliance monitoring program. The location of the MBL line is shown on Figure 2. The *Sediments Remedial Action Compliance Monitoring Plan* (Landau Associates 2001) includes sediment monitoring, provides specific details for implementing the overall compliance monitoring program, and addresses protection of human health and the environment during cleanup activities, performance of the remedial action in meeting cleanup standards, and confirmation of the long-term effectiveness of the cleanup action.

1.1.2 PREVIOUS PERFORMANCE MONITORING

In-water cleanup activities at the Site were completed by February 2002 and post-construction sediment compliance monitoring was conducted in April 2002 and September 2003. In July 2004, the Agreed Order was amended (Amendment 1) to include monitoring of the sediment in Budd Inlet every 5 years. The first 5-year review was conducted in 2007.

1.1.2.1 Post-Construction Sediment Monitoring

The results of the post-construction monitoring in 2002 confirmed that the sediment removal and backfilling activities at the Site were successful in achieving the goals of the CAP with a few isolated exceptions (Landau Associates 2002). The concentrations of Constituents of Potential Concern (COPC) exceeded the cleanup levels or cleanup action levels at three locations (locations CP-06, CP-14, and CP-15) at the dredge interface. The dredge interface is located beneath the overlying backfill within the upper layer of the remaining sediment. Initial confirmation monitoring at these three locations demonstrated that COPCs were not present at significant concentrations in the overlying backfill material. Additional confirmation monitoring was performed at these three locations in September 2003, in accordance with the Compliance Monitoring Plan (Landau Associates 2003). The results of the follow-up sediment compliance monitoring in September 2003 were consistent with the April 2002 results, and the cleanup was determined to be successful in achieving the goals of the CAP.

1.1.2.2 Prior Performance Monitoring Event

In October 2007, Landau Associates performed the first sediment quality monitoring event stipulated under Amendment 1 to the Agreed Order (Landau Associates 2008). As in the 2002 sampling event, 15 sediment cores were collected from the interior of the backfill layer that caps the dredged surface within the MBL (locations CP-01 through CP-015), and five surface grab samples (0-10 centimeters) were collected from outside of the MBL (locations CP-16 through CP-20), as shown on Figure 2. Analytical results from all backfill samples from within the MBL, with the exception of CP-04, indicated COPC concentrations were not detected at the reporting limit or present at low-level concentrations below the cleanup screening level (CSL). Results from CP-04 (2.0 to 2.5 ft below the mudline) indicated an acenapthene concentration [92 mg/kg (OC) organic carbon normalized] slightly above cleanup level (57 mg/kg OC); however, a deeper backfill sample indicated a low-level acenapthene concentration (29 mg/kg OC). Based on observations of sediment color, sediment odor, and the lower concentration in a deeper sample, the acenapthene concentration at CP-04 was interpreted as an isolated remnant within the upper portion of the backfill material. All samples collected outside of the MBL

indicated COPC concentrations were not detected at the laboratory reporting limit or reported at low-level concentrations below the CSL.

In comparison to the initial 2002 data, the 2007 sediment quality monitoring report noted decreasing trends in PAH levels among locations within the MBL and slight increasing trends in dioxin concentrations in the surface sediments outside of the MBL. Dioxin concentrations within the SOU were consistent with area-wide concentrations of dioxins in Budd Inlet analyzed by Ecology in 2007 (Ecology 2007) and were determined to be the result of transport and deposition of sediments from within the greater Budd Inlet area over the intervening five years.

1.2 REPORT ORGANIZATION

The remainder of this report will focus on the most recent sediment sampling event, which was conducted in late 2012 and early 2013. This sampling event constitutes the second 5-year post-construction event as required in the Amendment No. 1 between Ecology and the Port. This report is organized into the following sections: Sediment Monitoring Approach (Section 2.0), Monitoring Results (Section 3.0), Evaluation of Cleanup Effectiveness (Section 4.0), Use of This Report (Section 5.0), and References (Section 6.0).

2.0 SEDIMENT MONITORING APPROACH

Three phases of sampling activities were completed in 2012 and 2013. The first phase of sampling addressed the scope specified in Amendment 1 to the Agreed Order, and the second two phases of investigation were conducted in follow up to elevated concentrations of cPAHs in surface sediment detected during the initial investigation phase. As discussed in subsequent sections of this report, the second and third phases of surface sediment characterization was conducted because a spreadsheet error in the carbon normalizing calculation resulted in erroneously high concentrations of cPAHs being reported. This error was discovered after the 3rd round of surface sediment monitoring was completed. This report includes only the corrected cPAHs concentrations.

Amendment 1 to the Agreed Order specified that the sampling locations, sampling protocols, and quality assurance/quality control (QA/QC) used for the 2002 sediment sampling event be applied to future five-year performance monitoring events. A Sampling and Analysis Plan (Landau Associates 2012) was prepared in preparation for the initial 2012 Performance Monitoring Event (Phase I) which included the following scope of work:

- Collection of 15 sediment cores (CP-01 through CP-15) from inside the multiple MBL to evaluate the long-term effectiveness of the CAP.
- Collection of five surface sediment grab samples (CP-16 through CP-20) from outside the MBL to evaluate whether surface sediment quality changed appreciably since the CAP was implemented.
- Comparison of the analytical results to the cleanup levels and cleanup action levels identified in Attachment B to the Agreed Order (Cleanup Action Plan (Ecology 2000), Sediments Operable Unit).
- Comparison of analytical results to the previous sampling events to evaluate the effectiveness of the cleanup.

In October 2012, Landau Associates performed the Phase I sediment monitoring event stipulated under Amendment 1. Within the multiple benefits line (MBL), 15 sediment cores were collected from the interior of the backfill layer that covers the dredged surface from the 2001/2002 sediment interim action. Surface grab samples (0-10 centimeters) were collected outside of the MBL from five locations (CP-16 through CP-20) along its perimeter, as shown on Figure 2. Samples were analyzed for polycyclic aromatic hydrocarbons (PAH); dibenzofuran, dioxins, and total organic carbon (TOC).

Elevated PAHs concentrations were observed in surface sediment samples during the Phase I sampling event. As indicated above, a calculation error resulted in the reported concentrations being much more elevated than they actually were. However, based on these erroneous results, a Phase II investigation was conducted, which consisted of the collection of 17 surface sediment samples (CP-21 through CP-37), as shown on Figure 3.

Because the Phase II results did not show a clear source or trend in the (erroneously) elevated surface sediment cPAH concentrations, a Phase III sampling event was conducted to confirm the PAH surface sediment concentrations at the five original Phase I locations outside the MBL (CP-16 through CP-20). Additionally, three subsurface samples were collected at each of these locations (each sample representing a 1 ft interval) to evaluate whether the elevated concentrations were originating from subsurface sediment in the vicinity of the original sampling locations. The location of the Phase III sampling locations are shown on Figure 4. Phase III sampling was conducted in conjunction with the Budd Inlet dioxin study by the Port's consultant for that project, Anchor QEA.

Following completion of the Phase III investigation, a review of the analytical data indicated a corrupted macro was utilized in the calculations of the PAHs normalized to organic carbon (OC normalized) for the Phase I and Phase II results. The macro was corrected and PAH results were recalculated and submitted to Ecology (Landau Associates 2013). The corrected data indicated much lower cPAH results, as previously indicated and discussed in Section 3.0.

2.1 SAMPLE COLLECTION

The Phase I, II, and III sampling coordinates were verified prior to collection using a Global Positioning System (GPS) unit provided by the subcontractor, Research Support Services, Inc. (RSS) of Bainbridge Island, Washington during Phases I and II, or by Marine Sampling Systems, Inc. (MSS) of Port Orchard, Washington during the Phase III investigation. Position coordinates and current mudline elevations are provided in Table 1.

2.1.1 SUBSURFACE SEDIMENT SAMPLING PROCEDURES

Sediment cores during Phase I and Phase III (locations CP-01 through CP-15 and locations CP-16 through CP-20, respectively) were collected using a vibracore pneumatic coring device with an aluminum core tube attached. Core lengths ranged from 5 to 10 ft long, depending on both the thickness of accumulated native sediments and the thickness of the backfill layer. Cores were capped and stored upright on ice. Sediment physical characteristics (lithology, color, odor, relative density and consistency, etc.) were recorded by a qualified field technician during core processing. Exploration logs for the subsurface cores are included in Appendix A.

During Phase I, sediment cores were collected from the interior of the backfill layer that covers the dredged surface from the cleanup action. Interior backfill samples were collected from 1 to 1.5 ft above the bottom of the backfill. When the backfill thickness was less than 2 ft thick, the sample was taken from the middle of the backfill. During Phase III, core samples were collected, each representing a

1-ft interval below the sediment surface. The upper sample interval (1 to 2 ft below the sediment surface) was analyzed, while the remaining samples were archived at the laboratory.

Samples were collected from the open core using a stainless-steel spoon and placed in a stainless-steel mixing bowl. Samples were homogenized in the mixing bowl with a spoon until the sediment appeared uniform in color and texture. The homogenized sediment was placed in the appropriate sample containers and stored in a cooler on ice. All non-disposal sampling equipment was decontaminated between sampling intervals using a three phase wash of alconox soap and tap water, followed by a tap water rinse and a distilled water wash.

2.1.2 SURFACE SEDIMENT SAMPLING PROCEDURES

Sediment surface samples during all three investigative phases (locations CP-16 through CP-37) were collected using a decontaminated stainless-steel power grab sampler. Surface samples were collected from the top 10 cm (the biologically active zone) of sediment contained in the power-grab sampler. Samples were collected using a clean stainless-steel spoon and placed in a stainless-steel mixing bowl. Sediment physical characteristics (lithology, color, odor, relative density and consistency, etc.) were recorded by a qualified field technician. Samples were homogenized in the mixing bowl with a clean spoon until the sediment appeared uniform in color and texture. The homogenized sediment was placed in the appropriate sample containers and stored in a cooler on ice. All sampling equipment was decontaminated between sampling intervals.

2.2 SAMPLE ANALYSIS

Sediment samples were submitted to Analytical Resource Inc (ARI) for laboratory analyses. Phase I, samples from the surface and backfill material were analyzed for polycyclic aromatic hydrocarbons, dioxins, dibenzofurans, and TOC. Phases II and III samples were analyzed for PAHs and TOC only. The raw data include PAH and dibenzofuran data on a dry weight basis, and the full list of dioxin congeners, rather than only the dioxin congeners used to calculate the toxicity equivalency quotient (TEQ). Landau Associates maintains the laboratory reports in its files.

Upon receipt of the laboratory data, Landau Associates performed a data quality evaluation of the analytical results. Based on the data quality evaluation, all of the data were determined to be acceptable as qualified. No data were rejected and the completeness of the data was 100 percent.

3.0 MONITORING RESULTS

The following sections provide a description of the subsurface conditions and the analytical results from the late 2012 to early 2013 sampling events.

3.1 SEDIMENT PHYSICAL CHARACTERISTICS

Field logs for the sediment cores including sample location, sample date, sampler penetration depth, and sediment characteristics from Phase I are provided in the Sediment Exploration Logs contained in Appendix A. Field logs for sediment cores collected during Phase III by Anchor QEA are provided in Appendix B. Photographs of all cores and grab samples are on file with Landau Associates.

Underlying native material was encountered at all subsurface coring locations; however, a few cores had no overlying sediment accumulation. Backfill thickness ranged from 0.9 to 2.7 feet, with the majority of locations possessing backfill layers over 2 feet thick. Backfill material was generally brown, fine to coarse (or medium to coarse) sand with gravel. All cores had clear horizons with underlying native material and the majority had clear horizons with overlying, accumulated sediments when present. The upper 1 foot of backfill material at CP-11 and CP-15 displayed some mixing with the overlying accumulated sediment. Native material generally consisted of dark grey, silty, fine sand to sandy silt with shell fragments or woody debris. Marine worms, live clams, and minor vegetation in the overlying sediment were observed at some of the subsurface core locations.

3.2 ANALYTICAL RESULTS

Analytical results for the interior backfill samples collected during the Phase I sampling event and the subsurface sediment sample results collected during the verification Phase III sampling event are summarized in Table 2. Analytical results from the surface sediment samples collected during the three phases are summarized in Table 3.

3.2.1 INTERIOR BACKFILL AND SUBSURFACE SEDIMENT RESULTS

Analytical results from the interior backfill samples indicate that dioxin TEQ values, and PAHs and TOC concentrations were below the respective sediment quality standard (SQS) and the cleanup screening level (CSL), with the exception of one sample collected at CP-04. The acenapthene concentration from the interior backfill material at CP-04 was 19.6 mg/kg OC, which slightly exceeds the SQS (16 mg/kg OC), but not the CSL (57 mg/kg OC).

In 2007, the CP-04 location had an acenapthene concentration of 92 mg/kg OC (above the CSL) in a shallow backfill sample and a low-level acenapthene concentration of 29 mg/kg OC in a deeper

sample. This was interpreted as an isolated remnant within the upper portion of the backfill material. Current concentrations are well below the CSL and show a decreasing concentration trend from the 2007 results.

The Phase III investigation included the collection of subsurface sediment samples from the corroborative surface samples locations (CP-16 through CP-20). No PAHs exceeded the SQS values in the subsurface samples collected from the 1- to 2-ft sample interval. No deeper core samples were tested due to the lack of elevated concentrations in the 1- to 2-ft interval.

3.2.2 SURFACE SEDIMENT RESULTS

A total of twenty-seven surface samples were collected during Phased investigation in late 2012 and early 2013. Dibenzofurans and dioxins were analyzed for in the Phase I investigation.

The dioxin TEQ concentrations ranged from about 1.2 to about 34 ng/kg. These concentrations were all below the 80 ng/kg action level used for the sediment interim action.

As indicated in Table 3, several PAH concentrations, primarily LPAHs, were above their respective SQS values, a couple exceeded the CSL [at locations CP-17 and CP-20 (duplicate sample)], and naphthalene exceeded the SQS at CP-18. However, only two slight exceedances of the SQS at CP-17 (acenaphthylene) and CP-18 (naphthalene) were detected in the Phase III re-sampling of the original surface sediment sampling locations. Based on these results, the original surface sediment sampling results appear anomalous and not indicative of a trend in increasing PAH concentrations in surface sediment.

4.0 EVALUATION OF CLEANUP EFFECTIVENESS

To evaluate the continued effectiveness of the cleanup within the SOU, Ecology requires that interior backfill samples and surface sediment samples be collected on a 5-year interval. The late 2012 and early 2013 sampling event is the third sampling event since the completion of the cleanup, and the second 5-year review sampling event. The analytical results from the past sampling events are summarized in Appendix C.

Surface sediment samples collected from outside the MBL indicate a decreasing dioxin TEQ concentration trend for 2012 compared to both the 2007 and 2002 sample results. The dioxin TEQ concentrations for the interior backfill material samples did not indicate a general trend; however, concentrations from the 2012 event were generally within the range of previous events.

The results of the late 2012/early 2013 sediment compliance monitoring are generally consistent with previous compliance monitoring results and show that the sediment removal and backfilling activities at the CPC Site were successful in achieving the goals of the sediment interim action CAP. Constituents of concern do not appear to be migrating from the dredge interface into the backfill. No constituents of concern exceeded the cleanup levels within the backfill. During the Phase I sampling, exceedances of the SQS and/or CSL SMS criteria occurred at locations CP-17, CP-18, and CP-20 (duplicate sample). However, during Phase III, corroborative surface samples were collected at locations CP-16 through CP-20 and analytical results indicated no exceedances of the CSL at these locations, and only two minor exceedances of the SQS.

5.0 USE OF THIS REPORT

This report has been prepared for the exclusive use of the Port of Olympia. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of Landau Associates. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by Landau Associates, shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

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This document has been prepared under the supervision and direction of the following key staff.

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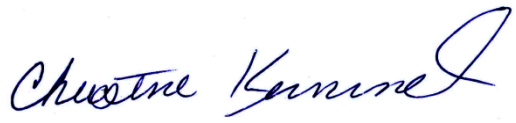

Christine B. Kimmel, L.G.
Associate

CBK/rgm

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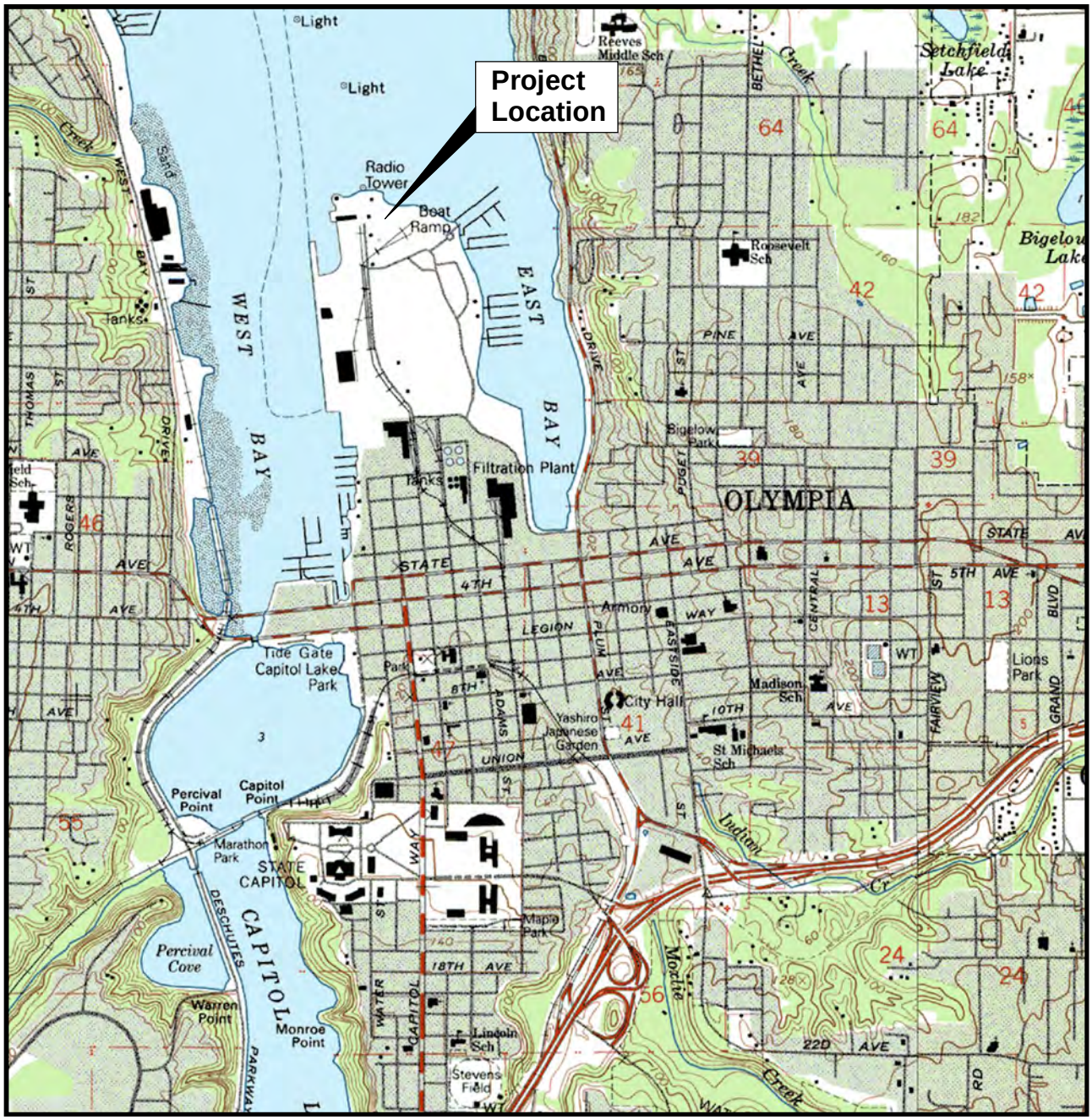

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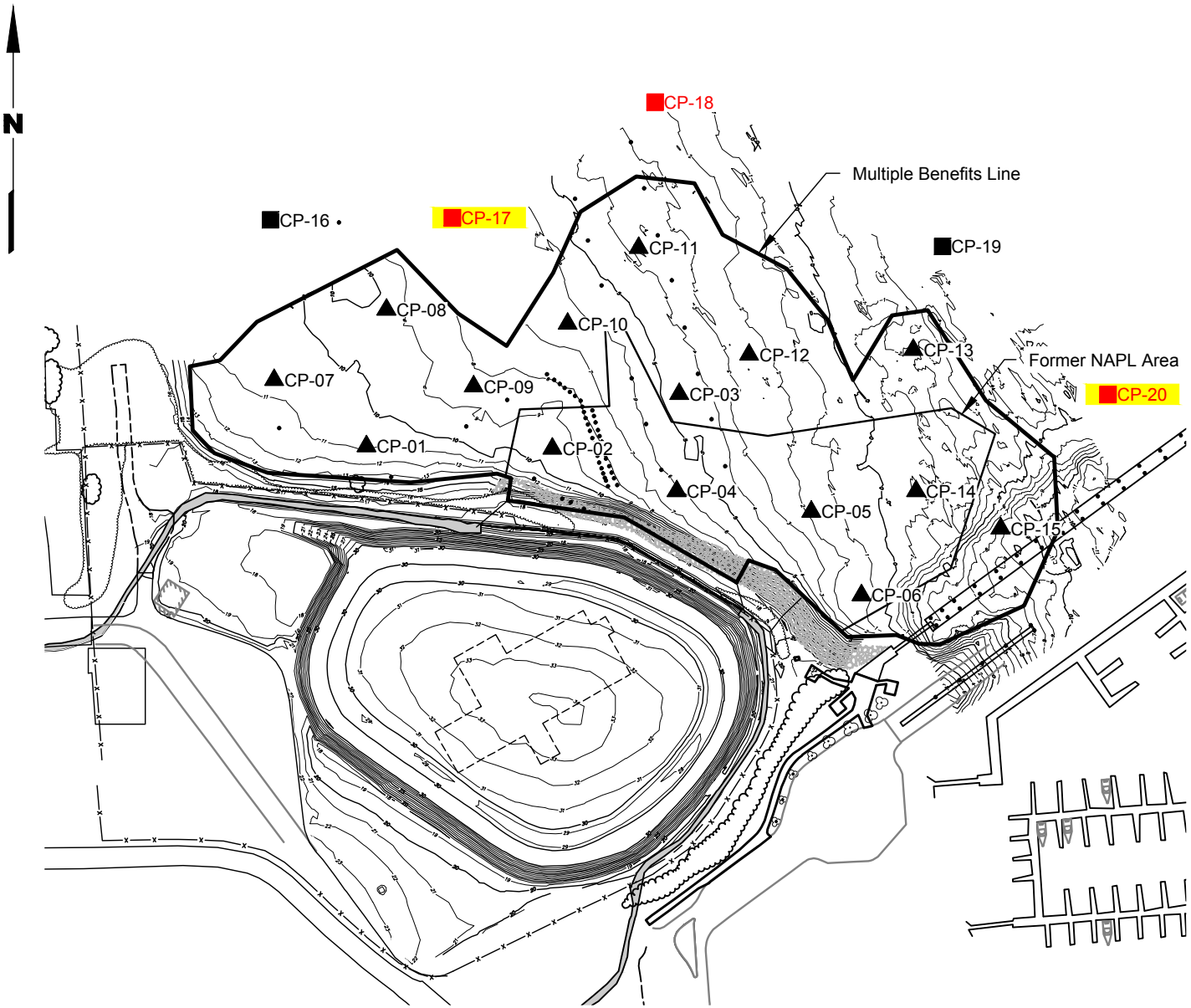
Cascade Pole Site Olympia, Washington	**Vicinity Map**	Figure 1



Legend

- Phase I Backfill Sample Location
- Phase I Surface Sample Location

Notes

1. Locations shown in black indicate LPAHs and HPAHs concentrations below the SQS.
2. Locations shown in **RED** indicate total LPAH or individual PAH concentrations above the SQS but below the CSL.
3. Highlighted locations indicate individual PAH concentrations above the CSL.
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 200 400

Scale in Feet

Source: Bathymetric Contours based on Survey by Magedorn, Inc. on September 13, 2002

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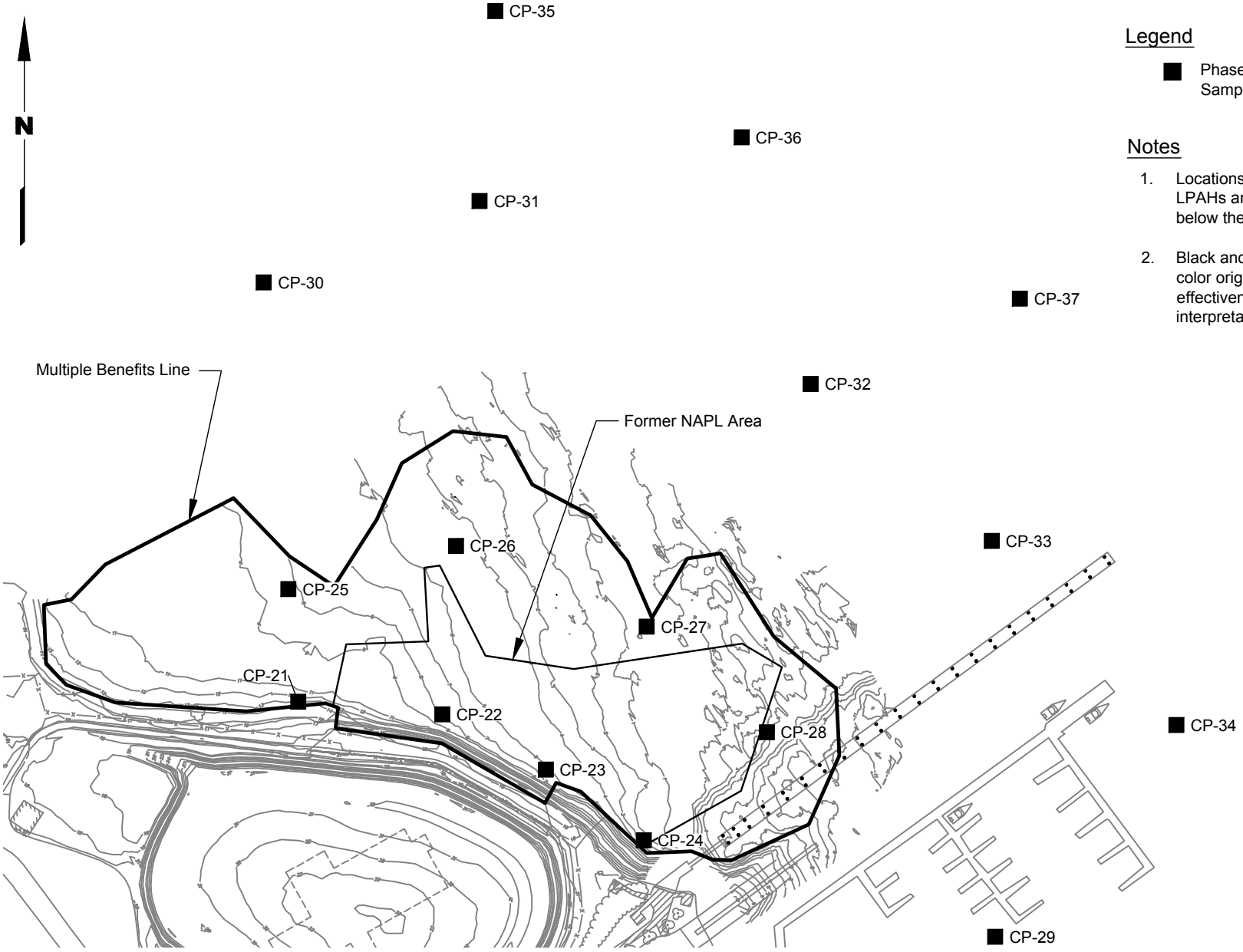
Cascade Pole Site
Olympia, Washington

2012 Sediment Quality - Phase I Sample Locations

Figure 2



Legend

- Phase II Surface Sample Location

Notes

1. Locations shown in black indicate LPAHs and HPAHs concentrations below the SQS.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Source: Port of Olympia 2012, Magedorn, Inc. 2002

0 200 400
Scale in Feet

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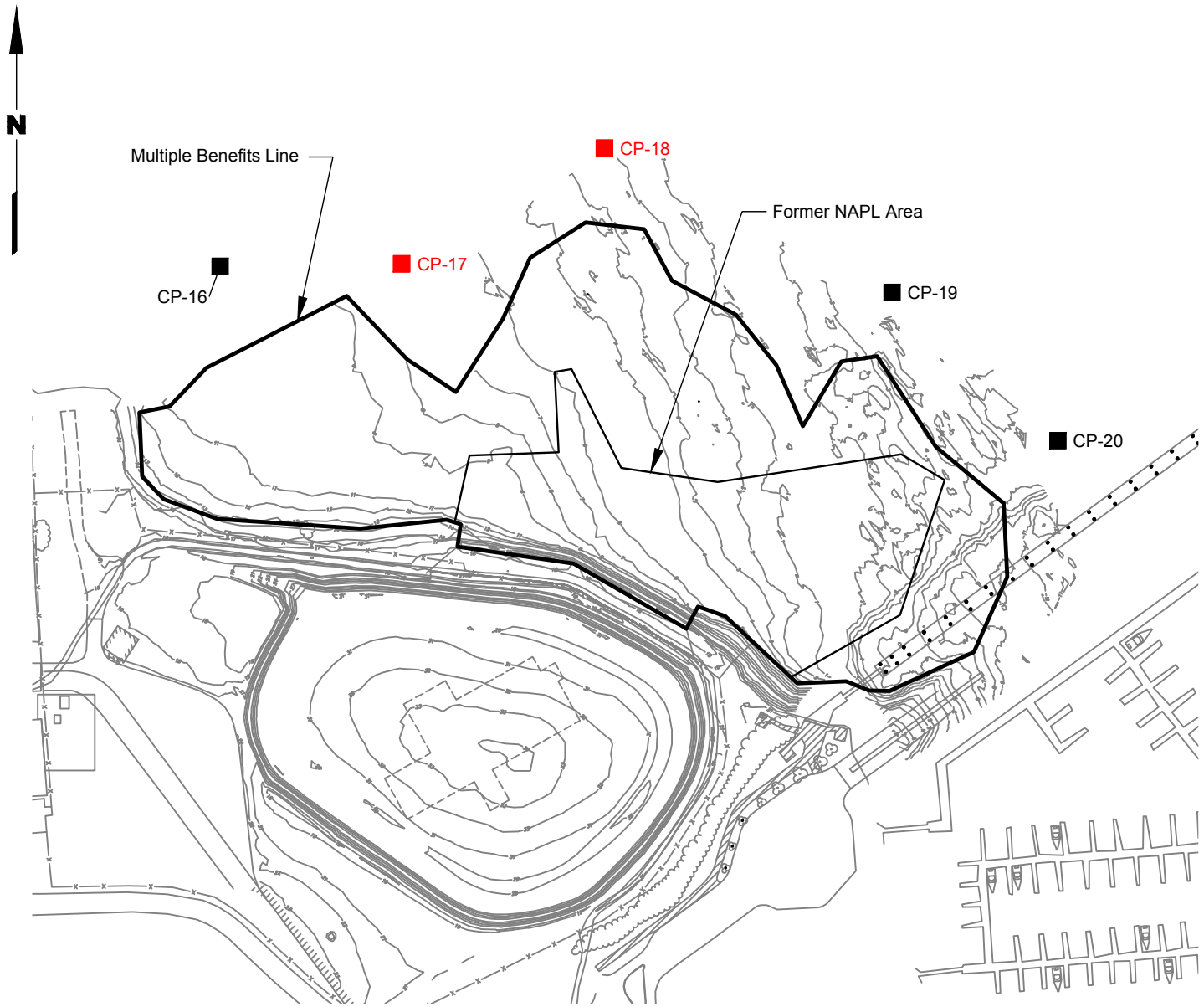
Cascade Pole Site
Olympia, Washington

2012 Sediment Quality - Phase II Surface Sample Locations

Figure 3



Legend

- Phase III Surface and Subsurface Sample Location

Notes

1. Locations shown in black indicate LPAHs and HPAHs concentrations below the SQS.
2. Locations shown in **RED** indicate individual PAH concentrations in surface sample above the SQS but below the CSL. No subsurface samples had PAH concentrations above the SQS.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Source: Port of Olympia 2012, Magedorn, Inc. 2002

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0 200 400
Scale in Feet

Cascade Pole Site
Olympia, Washington

2012 Sediment Quality - Phase III Surface Sample Locations

Figure
4

TABLE 1
SAMPLE LOCATION COORDINATES
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Sample Location	Mudline Elevation (MLLW) (a)	Northing (b)	Easting (b)
Subsurface Sediment Samples			
CP-01	9.1	638205	1041884
CP-02	7.9	638216	1042099
CP-03	4.7	638259	1042236
CP-04	6.0	638131	1042243
CP-05	1.6	638115	1042402
CP-06	0.5	638004	1042467
CP-07	10.1	638285	1041765
CP-08	9.1	638377	1041833
CP-09	7.7	638275	1041979
CP-10	5.7	638348	1042091
CP-11	3.7	638439	1042189
CP-12	1.7	638308	1042340
CP-13	-2.5	638311	1042521
CP-14	-1.5	638144	1042534
CP-15	-7.6	638094	1042634
Surface Sediment Samples			
CP-16	9.2	638476	1041728
CP-17	5.0 (c)	638479	1041955
CP-18	2.5	638623	1042208
CP-19	-2.4	638444	1042565
CP-20	-5.2	638259	1042772
CP-21	12.5	638164	1041974
CP-22	8.0	638146	1042170
CP-23	6.3	638072	1042310
CP-24	4.0	637975	1042443
CP-25	7.8	638317	1041961
CP-26	3.7	638375	1042188
CP-27	-0.6	638265	1042447
CP-28	-4.1	638122	1042610
CP-29	-12.5	637844	1042921
CP-30	4.7	638733	1041927
CP-31	0.8	638844	1042220
CP-32	-4.4	638595	1042670
CP-33	-7.3	638382	1042916
CP-34	-16.9	638132	1043166
CP-35	-9.0	639102	1042242
CP-36	-5.3	638930	1042576
CP-37	-15.3	638711	1042954

(a) Approximate elevation calculated from water depth and tide level datum
(b) Washington State Plane South Zone NAD 83, survey feet
(c) Mudline not measured at this location--mudline is reported from 2007

TABLE 2
INTERIOR BACKFILL AND SUBSURFACE SEDIMENT RESULTS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	SMS Criteria		Agreed Order Interior Backfill Sample Results														
	Sediment Quality Standard (a)	Cleanup Screening Level (b)	CP-01-M2 VO23B 10/18/2012	CP-02-M2 VO29C 10/18/2012	CP-03-M2 VO23H 10/18/2012	CP-04-M2 VO23C 10/18/2012	Dup of CP-04-M2 DUP-2 VO23G 10/18/2012	CP-05-M2 VO29D 10/18/2012	CP-06-M2 VO23F 10/18/2012	CP-07-M2 VO23E 10/18/2012	CP-08-M2 VO29F 10/18/2012	CP-09-M2 VO23D 10/18/2012	CP-10-M2 VO29A 10/18/2012	CP-11-M2 VO29E 10/18/2012	CP-12-M2 VO29B 10/18/2012	CP-13-M2 VO23I 10/18/2012	CP-14-M2 VO23J 10/18/2012	CP-15-M2 VO23A 10/18/2012
DIOXINS (pg/g TEQ dry weight)		80	**1.358**	**1.449**	**0.601**	**0.446**	**0.625**	**0.015**	**0.140**	**0.935**	**0.470**	**0.173**	**0.893**	**0.308**	**0.422**	**0.183**	**0.163**	**0.490**
PAHs (mg/kg OC)																		
Naphthalene	99	170	14.5 U	18.0 U	9.1 U	**49.5**	**53.3**	20.2 U	8.1 U	10.3 U	**19.4**	19.8 U	**6.4** J	9.2 U	9.4 U	8.5 U	10.7 U	6.2 U
Acenaphthylene	66	66	14.5 U	18.0 U	9.1 U	18.6 U	21.1 U	20.2 U	8.1 U	10.3 U	5.2 U	19.8 U	12.5 U	9.2 U	9.4 U	8.5 U	10.7 U	6.2 U
Acenaphthene	16	57	14.5 U	18.0 U	9.1 U	**19.6**	**14.4** J	20.2 U	8.1 U	10.3 U	**6.4**	19.8 U	12.5 U	9.2 U	9.4 U	8.5 U	10.7 U	6.2 U
Fluorene	23	79	14.5 U	18.0 U	9.1 U	18.6 U	21.1 U	20.2 U	8.1 U	10.3 U	**5.8**	19.8 U	12.5 U	9.2 U	9.4 U	8.5 U	10.7 U	6.2 U
Phenanthrene	100	480	14.5 U	18.0 U	9.1 U	**9.5** J	21.1 U	20.2 U	8.1 U	10.3 U	**23.5**	19.8 U	12.5 U	9.2 U	9.4 U	8.5 U	10.7 U	6.2 U
Anthracene	220	1,200	14.5 U	18.0 U	9.1 U	18.6 U	21.1 U	20.2 U	8.1 U	10.3 U	**6.1**	19.8 U	12.5 U	9.2 U	9.4 U	8.5 U	10.7 U	6.2 U
2-Methylnaphthalene	38	64	14.5 U	18.0 U	9.1 U	18.6 U	21.1 U	20.2 U	8.1 U	10.3 U	**2.6** J	19.8 U	12.5 U	9.2 U	9.4 U	8.5 U	10.7 U	6.2 U
LPAH (c,d)	370	780	14.5 U	18.0 U	9.1 U	**78.6** J	**67.8** J	20.2 U	8.1 U	10.3 U	**61.2**	19.8 U	**6.4** J	9.2 U	9.4 U	8.5 U	10.7 U	6.2 U
Fluoranthene	160	1,200	14.5 U	18.0 U	9.1 U	18.6 U	21.1 U	20.2 U	8.1 U	10.3 U	**15.9**	19.8 U	12.5 U	9.2 U	9.4 U	8.5 U	10.7 U	6.2 U
Pyrene	1,000	1,400	**8.1** J	18.0 U	9.1 U	18.6 U	21.1 U	20.2 U	8.1 U	10.3 U	**15.9**	19.8 U	12.5 U	9.2 U	9.4 U	8.5 U	10.7 U	6.2 U
Benzo(a)anthracene	110	270	14.5 U	18.0 U	9.1 U	18.6 U	21.1 U	20.2 U	8.1 U	10.3 U	**4.3** J	19.8 U	12.5 U	9.2 U	9.4 U	8.5 U	10.7 U	6.2 U
Chrysene	110	460	14.5 U	18.0 U	9.1 U	18.6 U	21.1 U	20.2 U	8.1 U	10.3 U	**6.7**	19.8 U	12.5 U	9.2 U	9.4 U	8.5 U	10.7 U	6.2 U
Total Benzofluoranthenes	230	450	29.8 U	36.0 U	18.3 U	38.1 U	43.3 U	40.4 U	16.1 U	20.1 U	**7.2** J	38.5 U	25.7 U	18.9 U	18.8 U	17.1 U	21.3 U	12.5 U
Benzo(a)pyrene	99	210	14.5 U	18.0 U	9.1 U	18.6 U	21.1 U	20.2 U	8.1 U	10.3 U	**3.5** J	19.8 U	12.5 U	9.2 U	9.4 U	8.5 U	10.7 U	6.2 U
Indeno(1,2,3-cd)pyrene	34	88	14.5 U	18.0 U	9.1 U	18.6 U	21.1 U	20.2 U	8.1 U	10.3 U	5.2 U	19.8 U	12.5 U	9.2 U	9.4 U	8.5 U	10.7 U	6.2 U
Dibenz(a,h)anthracene	12	33	14.5 U	18.0 U	9.1 U	18.6 U	21.1 U	20.2 U	8.1 U	10.3 U	5.2 U	19.8 U	12.5 U	9.2 U	9.4 U	8.5 U	10.7 U	6.2 U
Benzo(g,h,i)perylene	31	78	14.5 U	18.0 U	9.1 U	18.6 U	21.1 U	20.2 U	8.1 U	10.3 U	5.2 U	19.8 U	12.5 U	9.2 U	9.4 U	8.5 U	10.7 U	6.2 U
HPAH (c,e,f)	960	5,300	**8.1** J	18.0 U	9.1 U	18.6 U	21.1 U	20.2 U	8.1 U	10.3 U	**53.6** J	19.8 U	12.5 U	9.2 U	9.4 U	8.5 U	10.7 U	6.2 U
CONVENTIONALS (%)																		
Total Organic Carbon (SW9060M)	10 (g)	10 (g)	0.124	0.100	0.197	0.097	0.0900	0.089	0.223	0.184	0.345	0.096	0.144	0.196	0.192	0.211	0.169	0.289
Total Solids (SM2540B)	---	---	88.80	90.20	89.40	87.90	88.90	85.90	88.00	87.50	85.90	88.00	88.90	87.10	87.00	86.60	87.00	88.10

TABLE 2
INTERIOR BACKFILL AND SUBSURFACE SEDIMENT RESULTS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	SMS Criteria		Subsurface Sediment Verification Sample Results					
	Sediment Quality Standard (a)	Cleanup Screening Level (b)	CP-16-1-2 WF91B 3/4/2013	CP-17-1-2 WF91A 3/4/2013	CP-18-1-2 WF91F 3/4/2013	CP-19-1-2 WF91E 3/4/2013	CP-20-1-2 WF91C 3/4/2013	Dup of CP-20 CP-20-1-2DUP WF91D 3/4/2013
DIOXINS (pg/g TEQ dry weight)		80	NA	NA	NA	NA	NA	NA
PAHs (mg/kg OC)								
Naphthalene	99	170	**12.1**	**20.3**	**69.9**	**40.4**	**1.9** J	**2.8** J
Acenaphthylene	66	66	**2.2**	**0.4** J	**0.8**	**6.3**	**0.2**	**0.1** J
Acenaphthene	16	57	**1.6**	**4.4**	**3.3**	**4.4**	**0.3** J	**0.7** J
Fluorene	23	79	**1.6**	**3.7**	**1.9**	**5.7**	**0.4**	**0.5**
Phenanthrene	100	480	**6.4**	**4.7**	**4.6**	**18.3**	**1.5**	**1.3**
Anthracene	220	1,200	**2.2**	**3.5**	**2.3**	**5.4**	**0.6**	**0.5**
2-Methylnaphthalene	38	64	**2.2**	**3.1**	**3.6**	**6.0**	**0.3** J	**0.6** J
LPAH (c,d)	370	780	**26.0**	**37.0**	**82.8**	**80.5**	**4.9**	**5.8**
Fluoranthene	160	1,200	**8.3**	**8.9**	**8.7**	**17.3**	**1.7**	**1.1**
Pyrene	1,000	1,400	**11.2**	**9.8**	**9.5**	**23.1**	**2.3**	**1.5**
Benzo(a)anthracene	110	270	**2.0**	**2.0**	**2.6**	**3.9**	**0.6**	**0.6**
Chrysene	110	460	**2.1**	**2.1**	**2.6**	**4.2**	**0.6** J	**1.2** J
Total Benzofluoranthenes	230	450	**3.7**	**3.6**	**4.6**	**8.3**	**1.0**	**1.0**
Benzo(a)pyrene	99	210	**1.6**	**1.3**	**1.9**	**3.9**	**0.5**	**0.5**
Indeno(1,2,3-cd)pyrene	34	88	**0.9**	**0.6**	**0.9**	**2.2**	**0.2**	**0.2**
Dibenz(a,h)anthracene	12	33	0.4 U	0.4 U	0.5 U	**0.5** J	0.2 U	**0.1** J
Benzo(g,h,i)perylene	31	78	**1.5**	**1.0**	**1.2**	**3.4**	**0.2**	**0.2**
HPAH (c,e,f)	960	5,300	**31.2**	**29.3**	**32.1**	**66.8**	**7.1**	**6.5**
CONVENTIONALS (%)								
Total Organic Carbon (SW9060M)	10 (g)	10 (g)	2.66	1.65	0.988	2.80	0.868 J	1.52
Total Solids (SM2540B)	---	---	78.90	65.90	76.50	43.70	48.20	48.70

FOOTNOTES

U = Indicates the compound was not detected at the reported concentration.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate.
Bold = Detected compound.
Box = Exceeds SQS
Shade = Exceeds CSL

(a) SMS Sediment Quality Standard (Chapter 173-204 WAC).
(b) SMS Cleanup Screening Level (Chapter 173-204 WAC).
(c) Where chemical criteria in this table represent the sum of individual compounds or isomers, the following methods shall be applied:
  (i) Where chemical analyses identify an undetected value for every individual compound/isomer, then the single highest detection limit shall represent the sum of the respective compounds/isomers.
  (ii) Where chemical analyses detect one or more individual compounds/isomers, only the detected concentrations will be added to represent the group sum.
(d) The LPAH criterion represents the sum of the following "low molecular weight polynuclear aromatic hydrocarbon" compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene. The LPAH criterion is not the sum of the criteria values for the individual LPAH compounds listed.
(e) The total benzofluoranthenes criterion represents the sum of the concentrations of the "B," "J," and "K" isomers.
(f) The HPAH criterion represents the sum of the following "high molecular weight polynuclear aromatic hydrocarbon" compounds: fluoranthene, pyrene, benzo(a)anthracene, chrysene, total benzofluoranthenes, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene. The HPAH criterion is not the sum of the criteria values for the individual HPAH compounds as listed.
(g) DMMP clarification paper and SMS technical information memorandum: Management of Wood Waste Under Dredged Material Management Program and the SMS Cleanup Program.

TABLE 3
SURFACE SEDIMENT RESULTS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	SMS Criteria		Agreed Order Sample Results-Phase I						Verification Sample Results-Phase II													
	Sediment Quality Standard (a)	Cleanup Screening Level (b)	CP-16-M2 VO23L 10/15/2012	CP-17-M2 VO23M 10/15/2012	CP-18-M2 VO23P 10/15/2012	CP-19-M2 VO23O 10/15/2012	CP-20-M2 VO23K 10/15/2012	Dup of CP-20-M2 DUP-1 VO23N 10/15/2012	CP-21 VY94J 1/8/2013	CP-22 VY94I 1/8/2013	CP-23 VY94H 1/8/2013	CP-24 VY94G 1/8/2013	CP-25 VY94F 1/8/2013	CP-26 VY94A 1/8/2013	CP-27 VY94B 1/8/2013	CP-28 VY94C 1/8/2013	Dup of CP-28 DUP-1 VY94K 1/8/2013	CP-29 VY94D 1/8/2013	CP-30 VY94L 1/8/2013	CP-31 VY94M 1/8/2013	CP-32 VY94N 1/8/2013	CP-33 VY94O 1/8/2013	CP-34 VY94E 1/8/2013
DIOXINS (pg/g TEQ dry weight)		80	**12.294**	**10.794**	**14.283**	**1.189**	**18.150**	**34.071**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs (mg/kg OC)																						
Naphthalene	99	170	**20.2**	**358.2**	**121.5**	**15.8**	**35.0** J	**335.9** J	1.7 U	**13.5**	**7.1**	**2.0**	**40.0**	**4.9**	**0.7**	**0.4**	**0.5**	**3.8**	**7.6**	**46.5**	**19.1**	**7.5**	**2.7**
Acenaphthylene	66	66	**0.8** J	**6.9**	**3.4**	**0.8**	**2.0** J	**5.8**	1.7 U	**0.3** J	**0.1** J	**0.2**	**0.8**	**0.2** J	0.2 U	0.2 U	**0.1** J	**0.6**	**0.4** J	**2.1**	**1.4**	**0.7**	**0.3**
Acenaphthene	16	57	**2.3**	**59.0**	**15.9**	**1.8**	**4.2** J	**40.6** J	1.7 U	**2.7**	**1.0**	**0.4**	**7.1**	**0.8**	**0.2** J	**0.1** J	**0.1** J	**0.9**	**1.3**	**8.8**	**2.8**	**1.0**	**0.4**
Fluorene	23	79	**2.2**	**53.7**	**11.2**	**2.0**	**3.3** J	**39.8** J	1.7 U	**1.9**	**0.8**	**0.4**	**6.0**	**0.7**	**0.2** J	**0.1** J	**0.1** J	**0.9**	**1.1**	**5.6**	**1.8**	**0.8**	**0.4**
Phenanthrene	100	480	**6.0**	**104.5**	**30.8**	**8.9**	**17.7** J	**78.1** J	1.7 U	**5.1**	**1.6**	**1.5**	**15.0**	**2.2**	**0.5**	**0.5**	**0.9**	**5.5**	**3.7**	**14.0**	**5.9**	**2.7**	**1.6**
Anthracene	220	1,200	**2.7**	**51.5**	**12.1**	**4.6**	**3.5** J	**37.5** J	1.7 U	**2.5**	**0.8**	**0.6**	**7.9**	**1.0**	**0.2**	**0.2**	**0.3**	**2.0**	**1.3**	**5.7**	**2.1**	**1.0**	**0.6**
2-Methylnaphthalene	38	64	**5.6**	**38.8**	**15.9**	**2.1**	**3.7** J	**27.3** J	1.7 U	**1.3**	**0.8**	**0.4**	**3.7**	**0.7**	**0.2** J	**0.1** J	**0.2** J	**1.1**	**1.1**	**8.1**	**2.2**	**1.1**	**0.5**
LPAH (c,d)	370	780	**34.1** J	**633.8**	**195.0**	**33.9**	**65.8** J	**537.8** J	1.7 U	**25.9** J	**11.6** J	**5.2**	**76.8**	**9.8** J	**1.8** J	**1.2** J	**2.1** J	**13.6**	**15.3** J	**82.7**	**33.0**	**13.7**	**6.1**
Fluoranthene	160	1,200	**6.6**	**179.1**	**32.7**	**6.9**	**27.7** J	**117.2** J	1.7 U	**4.7**	**1.6**	**3.5**	**13.6**	**2.6**	**0.7** J	**0.8** J	**5.5** J	**12.5**	**3.8**	**14.0**	**4.3**	**3.6**	**1.4**
Pyrene	1,000	1,400	**6.7**	**306.0**	**42.1**	**10.5**	**23.8** J	**179.7** J	**4.1**	**6.9**	**2.6**	**4.4**	**15.0**	**4.1**	**1.2**	**1.3** J	**5.9** J	**12.0**	**5.7**	**24.6**	**10.9**	**5.3**	**2.7**
Benzo(a)anthracene	110	270	**1.9**	**38.8**	**6.4**	**12.5**	**5.8** J	**21.9** J	**0.9** J	**2.2**	**0.7**	**1.0**	**5.9**	**0.9**	**0.2**	**0.3**	**0.7**	**2.8**	**0.9**	**4.0**	**2.0**	**1.5**	**1.0**
Chrysene	110	460	**2.3**	**89.6**	**8.3**	**17.1**	**10.8** J	**36.7** J	**3.7**	**6.1**	**1.0**	**3.9**	**12.9**	**1.3**	**0.3**	**0.5** J	**2.1** J	**6.0**	**1.2**	**5.9**	**3.0**	**1.8**	**1.5**
Total Benzofluoranthenes	230	450	**5.6**	**97.0**	**14.0**	**16.1**	**16.2** J	**67.2** J	**6.3**	**4.7**	**1.8**	**3.0**	**10.0**	**2.4**	**0.8**	**1.0** J	**3.1** J	**9.0**	**2.6**	**10.5**	**6.4**	**4.5**	**3.1**
Benzo(a)pyrene	99	210	**3.9**	**50.0**	**6.1**	**7.9**	**6.9** J	**32.8** J	**1.4** J	**1.7**	**0.5**	**0.8**	**4.1**	**0.8**	**0.3**	**0.3**	**0.6**	**2.6**	**0.8**	**4.2**	**2.2**	**1.5**	**1.0**
Indeno(1,2,3-cd)pyrene	34	88	**1.8**	**16.4**	**2.6**	**2.4**	**3.1** J	**12.5** J	1.7 U	**1.1**	**0.4**	**0.6**	**2.7**	**0.5**	**0.2**	**0.2**	**0.5**	**1.3**	**0.7**	**2.6**	**1.5**	**0.9**	**0.7**
Dibenz(a,h)anthracene	12	33	1.5 U	**7.5**	1.8 U	**1.0**	**1.1** J	**4.6**	1.7 U	**0.3** J	**0.1** J	**0.1** J	**1.0**	**0.2** J	0.2 U	0.2 U	**0.1** J	**0.3**	0.4 U	**0.7**	**0.4**	**0.2**	**0.2**
Benzo(g,h,i)perylene	31	78	**2.6**	**18.7**	**2.9**	**2.3**	**3.5** J	**13.3** J	1.7 U	**1.2**	**0.4**	**0.6**	**2.7**	**0.6**	**0.3**	**0.2**	**0.5**	**1.3**	**0.9**	**3.2**	**1.6**	**0.9**	**0.9**
HPAH (c,e,f)	960	5,300	**31**	**803**	**115**	**77**	**99** J	**486** J	**16** J	**29** J	**9.0** J	**18** J	**68**	**13** J	**4.1**	**4.5**	**19.1** J	**47.7**	**16.6**	**69.8**	**32.2**	**20.2**	**12.4**
CONVENTIONALS (%)																							
Total Organic Carbon (SW9060M)	10 (g)	10 (g)	1.24	1.34	1.07	3.04	2.60	1.28	0.268	0.890	3.36	2.51	1.40	1.97	2.57	2.87	2.19	2.00	1.04	1.14	2.20	3.58	3.57
Total Solids (SM2540B)	---	---	67.90	61.40	67.60	49.50	44.00	61.20	87.40	76.90	66.80	63.00	66.30	74.10	80.40	79.30	79.50	25.40	73.40	65.00	44.00	44.10	31.30

TABLE 3
SURFACE SEDIMENT RESULTS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	SMS Criteria		Verification Sample Results-Phase III								
								Dup of CP18-0-10			
	Sediment Quality Standard (a)	Cleanup Screening Level (b)	CP-35 WD00A 1/9/2013	CP-36 WD00B 1/9/2013	CP-37 WD00C 1/9/2013	CP16-0-10 WG94E 3/8/2013	CP17-0-10 WG94D 3/8/2013	CP18-0-10 WG94A 3/8/2013	CP18DUP-0-10 WG94F 3/8/2013	CP19-0-10 WG94B 3/8/2013	CP20-0-10 WG94C 3/8/2013
DIOXINS (pg/g TEQ dry weight)		80	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs (mg/kg OC)											
Naphthalene	99	170	**14.2**	**16.9**	**2.2**	**12.1**	**71.5**	**106.8**	**93.3**	**20.8** J	**21.3**
Acenaphthylene	66	66	0.2 U	**1.7**	0.1 U	**0.8**	**1.1**	**2.2**	**2.6**	**0.8**	**1.4**
Acenaphthene	16	57	**1.4**	**2.0**	**0.3**	**2.4**	**18.7**	**14.6**	**11.5**	**3.2** J	**3.0**
Fluorene	23	79	**1.1**	**1.5**	**0.3**	**2.1**	**13.0**	**11.7**	**8.5**	**2.5** J	**2.3**
Phenanthrene	100	480	**3.2**	**5.0**	**1.1**	**5.9**	**17.9**	**23.3**	**18.3**	**5.5** J	**6.9**
Anthracene	220	1,200	**1.7**	**1.9**	**0.5**	**3.1**	**11.4**	**12.6**	**9.6**	**2.5** J	**3.0**
2-Methylnaphthalene	38	64	**2.0**	**2.7**	**0.4**	**1.9**	**6.1**	**12.6**	**10.6**	**3.0**	**2.3**
LPAH (c,d)	370	780	**21.6**	**29.0**	**4.4**	**26.4**	**133.7**	**171.2**	**143.8**	**35.3**	**37.9**
Fluoranthene	160	1,200	**4.6**	**5.8**	**2.9**	**8.6**	**27.6**	**30.1**	**28.8**	**7.6**	**12.2**
Pyrene	1,000	1,400	**7.3**	**8.5**	**3.2**	**9.5**	**27.6**	**39.8**	**40.4**	**12.8**	**16.3**
Benzo(a)anthracene	110	270	**1.4** J	**2.0** J	**0.7** J	**1.8**	**6.5**	**6.5**	**6.3**	**4.5** J	**6.4**
Chrysene	110	460	**2.8**	**3.5**	**1.1**	**2.1**	**8.9**	**7.7**	**8.7**	**5.2** J	**7.2**
Total Benzofluoranthenes	230	450	**3.6**	**3.8**	**2.0**	**3.7**	**12.2**	**13.6**	**15.4**	**10.4** J	**10.8**
Benzo(a)pyrene	99	210	**1.2**	**1.6**	**0.6**	**1.3**	**4.4**	**4.7**	**5.3**	**4.2** J	**5.8**
Indeno(1,2,3-cd)pyrene	34	88	**0.6**	**0.8**	**0.4**	**0.8**	**2.4**	**2.0**	**2.7**	**2.0** J	**3.3**
Dibenz(a,h)anthracene	12	33	**0.2** J	**0.2**	**0.1** J	**0.2** J	**0.7**	**0.6**	**0.8**	**0.6**	**0.8**
Benzo(g,h,i)perylene	31	78	**0.8**	**1.1**	**0.5**	**1.0**	**2.8**	**3.1**	**3.5**	**2.0** J	**3.9**
HPAH (c,e,f)	960	5,300	**22.5**	**27.3**	**11.6**	**29.0**	**93.2**	**108.0**	**111.8**	**49.2**	**66.5**
CONVENTIONALS (%)											
Total Organic Carbon (SW9060M)	10 (g)	10 (g)	2.18	2.60	3.74	1.16	1.23	1.03	1.04	2.89	3.62
Total Solids (SM2540B)	---	---	49.90	48.90	29.70	69.50	60.30	64.40	63.60	46.40	42.30

NA = Not Analyzed
U = Indicates the compound was not detected at the reported concentration.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Bold = Detected compound.
Box = Exceeds SQS
Shade = Exceeds CSL

(a) SMS Sediment Quality Standard (Chapter 173-204 WAC).
(b) SMS Cleanup Screening Level (Chapter 173-204 WAC).
(c) Where chemical criteria in this table represent the sum of individual compounds or isomers, the following methods shall be applied:
  (i) Where chemical analyses identify an undetected value for every individual compound/isomer, then the single highest detection limit shall represent the sum of the respective compounds/isomers.
  (ii) Where chemical analyses detect one or more individual compounds/isomers, only the detected concentrations will be added to represent the group sum.
(d) The LPAH criterion represents the sum of the following "low molecular weight polynuclear aromatic hydrocarbon" compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene. The LPAH criterion is not the sum of the criteria values for the individual LPAH compounds listed.
(e) The total benzofluoranthenes criterion represents the sum of the concentrations of the "B," "J," and "K" isomers.
(f) The HPAH criterion represents the sum of the following "high molecular weight polynuclear aromatic hydrocarbon" compounds: fluoranthene, pyrene, benzo(a)anthracene, chrysene, total benzofluoranthenes, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene. The HPAH criterion is not the sum of the criteria values for the individual HPAH compounds as listed.
(g) DMMP clarification paper and SMS technical information memorandum: Management of Wood Waste Under Dredged Material Management Program and the SMS Cleanup Program.

APPENDIX A

Sediment Exploration Logs

Soil Classification System

MAJOR DIVISIONS			GRAPHIC SYMBOL	USCS LETTER SYMBOL[1]	TYPICAL DESCRIPTIONS [2][3]
COARSE-GRAINED SOIL (More than 50% of material is larger than No. 200 sieve size)	GRAVEL AND GRAVELLY SOIL (More than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (Little or no fines)		GW	Well-graded gravel; gravel/sand mixture(s); little or no fines
				GP	Poorly graded gravel; gravel/sand mixture(s); little or no fines
		GRAVEL WITH FINES (Appreciable amount of fines)		GM	Silty gravel; gravel/sand/silt mixture(s)
				GC	Clayey gravel; gravel/sand/clay mixture(s)
	SAND AND SANDY SOIL (More than 50% of coarse fraction passed through No. 4 sieve)	CLEAN SAND (Little or no fines)		SW	Well-graded sand; gravelly sand; little or no fines
				SP	Poorly graded sand; gravelly sand; little or no fines
		SAND WITH FINES (Appreciable amount of fines)		SM	Silty sand; sand/silt mixture(s)
				SC	Clayey sand; sand/clay mixture(s)
FINE-GRAINED SOIL (More than 50% of material is smaller than No. 200 sieve size)	SILT AND CLAY (Liquid limit less than 50)			ML	Inorganic silt and very fine sand; rock flour; silty or clayey fine sand or clayey silt with slight plasticity
				CL	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; lean clay
				OL	Organic silt; organic, silty clay of low plasticity
	SILT AND CLAY (Liquid limit greater than 50)			MH	Inorganic silt; micaceous or diatomaceous fine sand
				CH	Inorganic clay of high plasticity; fat clay
				OH	Organic clay of medium to high plasticity; organic silt
	HIGHLY ORGANIC SOIL			PT	Peat; humus; swamp soil with high organic content

OTHER MATERIALS	GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
PAVEMENT		AC or PC	Asphalt concrete pavement or Portland cement pavement
ROCK		RK	Rock (See Rock Classification)
WOOD		WD	Wood, lumber, wood chips
DEBRIS		DB	Construction debris, garbage

Notes:
1. USCS letter symbols correspond to symbols used by the Unified Soil Classification System and ASTM classification methods. Dual letter symbols (e.g., SP-SM for sand or gravel) indicate soil with an estimated 5-15% fines. Multiple letter symbols (e.g., ML/CL) indicate borderline or multiple soil classifications.
2. Soil descriptions are based on the general approach presented in the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), outlined in ASTM D 2488. Where laboratory index testing has been conducted, soil classifications are based on the Standard Test Method for Classification of Soils for Engineering Purposes, as outlined in ASTM D 2487.
3. Soil description terminology is based on visual estimates (in the absence of laboratory test data) of the percentages of each soil type and is defined as follows:

Primary Constituent:	> 50%	"GRAVEL," "SAND," "SILT," "CLAY," etc.
Secondary Constituents:	> 30% and ≤ 50%	"very gravelly," "very sandy," "very silty," etc.
	> 15% and ≤ 30%	"gravelly," "sandy," "silty," etc.
Additional Constituents:	> 5% and ≤ 15%	"with gravel," "with sand," "with silt," etc.
	≤ 5%	"with trace gravel," "with trace sand," "with trace silt," etc., or not noted.

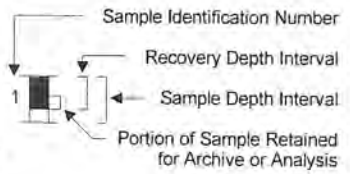
4. Soil density or consistency descriptions are based on judgement using a combination of sampler penetration blow counts, drilling or excavating conditions, field tests, and laboratory tests, as appropriate.

Drilling and Sampling Key

SAMPLER TYPE

Code	Description
a	3.25-inch O.D., 2.42-inch I.D. Split Spoon
b	2.00-inch O.D., 1.50-inch I.D. Split Spoon
c	Shelby Tube
d	Grab Sample
e	Single-Tube Core Barrel
f	Double-Tube Core Barrel
g	2.50-inch O.D., 2.00-inch I.D. WSDOT
h	3.00-inch O.D., 2.375-inch I.D. Mod. California
i	Other - See text if applicable
1	300-lb Hammer, 30-inch Drop
2	140-lb Hammer, 30-inch Drop
3	Pushed
4	Vibrocore (Rotosonic/Geoprobe)
5	Other - See text if applicable

SAMPLE NUMBER & INTERVAL



Field and Lab Test Data

Code	Description
PP = 1.0	Pocket Penetrometer, tsf
TV = 0.5	Torvane, tsf
PID = 100	Photoionization Detector VOC screening, ppm
W = 10	Moisture Content, %
D = 120	Dry Density, pcf
-200 = 60	Material smaller than No. 200 sieve, %
GS	Grain Size - See separate figure for data
AL	Atterberg Limits - See separate figure for data
GT	Other Geotechnical Testing
CA	Chemical Analysis

Groundwater

▽ Approximate water level at time of drilling (ATD)

▼ Approximate water level at time other than ATD

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Soil Classification System and Key

Figure A-1

CP-01

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Vibracorer Ground Elevation (ft): 9.1 Drilled By: RSS	
0						SM	Dark gray, very silty fine SAND (slight sulfur odor, no sheen) (soft, wet)	
						SP	**(MARINE DEPOSITS)**	
	CP-01-M2	d4					Brown, fine to coarse SAND with trace gravel (no odor, no sheen) (loose, wet) **(BACKFILL)**	
2						SM	Dark gray, very silty fine SAND with shells (no odor, no sheen) (medium stiff, wet) **(NATIVE)** -grades to silty, fine to medium SAND with shells	
4								
6								
8								
10								

Boring Completed 10/15/12
Total Depth of Boring = 4.3 ft.

Point located at State Plane Coordinates:
North: 638205.00
East: 1041884.00

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0021039.070.071 1/10/14 N:\PROJECTS\0021039.070.071.GPJ SOIL BORING LOG

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Log of Boring CP-01

Figure
A-2

CP-02

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Vibracorer Ground Elevation (ft): 7.9 Drilled By: RSS	
0						SP	Brown, fine to coarse SAND with gravel (no odor, no sheen) (loose, wet) **(BACKFILL)**	
	CP-02-M2	d4						
2						SM	Dark gray, silty fine SAND with shell fragments (sulfur odor, no sheen) (very stiff, wet) **(NATIVE)**	
4								
6								
8								
10								

Boring Completed 10/16/12
Total Depth of Boring = 4.9 ft.

Point located at State Plane Coordinates:
North: 638216.00
East: 1042099.00

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring CP-02

Figure
A-3

CP-03

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	
0						SM	Dark gray, very silty fine to medium SAND (no odor, no sheen) (loose, wet) **(MARINE DEPOSITS)**
						SP	Brown, fine to coarse SAND with gravel (no odor, no sheen) (loose, wet) **(BACKFILL)**
	CP-03-M2	d4					
2						ML	Dark gray, SILT with shells, trace woody debris (sulfur odor, no sheen) (stiff, wet) **(NATIVE)**
4							-pulverized shells
6							
8							
10							

Drilling Method: Vibracorer

Ground Elevation (ft): 4.7

Drilled By: RSS

Boring Completed 10/17/12
Total Depth of Boring = 7.1 ft.

Point located at State Plane Coordinates:
North: 638259.00
East: 1042236.00

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring CP-03

Figure
A-4

CP-04

SAMPLE DATA					SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Vibracorer Ground Elevation (ft): 6.0 Drilled By: RSS	
0						SM	Dark gray, silty fine SAND (sulfur odor, no sheen) (soft, wet)	
							(MARINE DEPOSITS)	
						SP	Brown, fine to coarse SAND with gravel (no odor, no sheen) (loose, wet)	
							(BACKFILL)	
	CP-04-M2	d4						
2								
						ML	gray, SILT (sulfur odor, no sheen) (stiff, wet)	
							(NATIVE)	
4							-grades sandy SILT	
6								
8								
10								

Boring Completed 10/16/12
Total Depth of Boring = 5.2 ft.

Point located at State Plane Coordinates:
North: 638131.00
East: 1042243.00

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring CP-04

Figure
A-5

CP-05

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Vibracorer Ground Elevation (ft): 1.6 Drilled By: RSS	
0						ML	Dark gray, sandy SILT (no odor, no sheen) (soft, wet)	
						SP	**(MARINE DEPOSITS)** Brown, fine to coarse SAND with gravel (no odor, no sheen) (loose, wet) **(BACKFILL)**	
	CP-05-M2	d4						
2								
						ML	Dark gray, SILT with sand (strong sulfur odor, no sheen) (medium stiff, wet) **(NATIVE)**	
4								
6								
8								
10								

Boring Completed 10/16/12
Total Depth of Boring = 4.0 ft.

Point located at State Plane Coordinates:
North: 638115.00
East: 1042402.00

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring CP-05

Figure
A-6

CP-06

SAMPLE DATA					SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Vibracorer Ground Elevation (ft): 0.5 Drilled By: RSS	
0						ML	Dark gray, sandy SILT (sulfur odor, no sheen) (soft, wet) **(MARINE DEPOSITS)**	
						SP	Brown, fine to coarse SAND with gravel (no odor, no sheen) (loose, wet) **(BACKFILL)**	
	CP-06-M2	d4						
2						ML	Dark gray, SILT with shells (sulfur odor, no sheen) (stiff, wet) **(NATIVE)**	
4								
6								
8								
10								

Boring Completed 10/17/12
Total Depth of Boring = 5.9 ft.

Point located at State Plane Coordinates:
North: 638004.00
East: 1042467.00

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring CP-06

Figure
A-7

CP-07

SAMPLE DATA					SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Vibracorer Ground Elevation (ft): 10.1 Drilled By: RSS	
0						SM	Dark gray, very silty SAND (sulfur odor, no sheen) (loose, wet)	
						SP	**(MARINE DEPOSITS)**	
	CP-07-M2	d4					Brown, fine to coarse SAND with gravel (no odor, no sheen) (loose, wet)	
							(BACKFILL)	
2						SM	Dark gray, silty SAND with shell fragments (sulfur odor, no sheen) (loose, wet)	
							(NATIVE)	
4								
6								
8								
10								

Boring Completed 10/16/12
Total Depth of Boring = 5.3 ft.

Point located at State Plane Coordinates:
North: 638285.00
East: 1041765.00

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring CP-07

Figure
A-8

CP-08

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Vibracorer Ground Elevation (ft): 9.1 Drilled By: RSS	
0	CP-08-M2	d4				GP	Brown, sandy GRAVEL (no odor, no sheen) (loose, wet) **(BACKFILL)**	
						SM	Dark gray, silty SAND with shell fragments (no odor, no sheen) (dense, wet) **(NATIVE)**	
2							-grades trace shell fragments	
4							-grades with woody debris	
							-grades with shell fragments	
6							-grades with trace shell fragments	
8								
10								

Boring Completed 10/17/12
Total Depth of Boring = 7.8 ft.

Point located at State Plane Coordinates:
North: 638377.00
East: 1041833.00

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring CP-08

Figure
A-9

CP-09

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Vibracorer Ground Elevation (ft): 7.7 Drilled By: RSS	
0						ML	Dark gray, very sandy SILT (sulfur odor, no sheen) (soft, wet) **(MARINE DEPOSITS)**	
						GP	Brown, very sandy GRAVEL (no odor, no sheen) (loose, wet) **(BACKFILL)**	
	CP-09-M2	d4						
2								
						ML	Dark gray, very sandy SILT (sulfur odor, no sheen) (stiff, wet) **(NATIVE)**	
4								
6								
8								
10								

Boring Completed 10/16/12
Total Depth of Boring = 5.4 ft.

Point located at State Plane Coordinates:
North: 638275.00
East: 1041979.00

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring CP-09

Figure
A-10

CP-10

SAMPLE DATA					SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Vibracorer Ground Elevation (ft): 5.7 Drilled By: RSS	
0						ML	Dark gray, sandy SILT (no odor, no sheen) (medium stiff, wet) **(MARINE DEPOSITS)**	
	CP-10-M2	d4				SP	Brown, gravelly fine to coarse SAND (no odor, no sheen) (medium dense, wet) **(BACKFILL)**	
2						ML	Dark gray, SILT with sand, trace shell fragments (sulfur odor, no sheen) (stiff, wet)	
						SP-SM	Dark gray, fine to medium SAND with silt lenses (no odor, no sheen) (stiff, wet) **(NATIVE)**	
4								
6								
8								
10								

Boring Completed 10/15/12
Total Depth of Boring = 3.3 ft.

Point located at State Plane Coordinates:
North: 638348.00
East: 1042091.00

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring CP-10

Figure
A-11

CP-11

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Vibracorer Ground Elevation (ft): 3.7 Drilled By: RSS	
0						SM	Dark gray, silty fine SAND with trace shells (sulfur odor, no sheen) (loose, wet) **(MARINE DEPOSITS)**	
						SP	gray, fine to coarse SAND (sulfur odor, no sheen) (loose, wet) **(BACKFILL)**	
	CP-11-M2	d4					-grades brown, with no odor	
2						ML	Dark gray SILT with fine sand (sulfur odor, no sheen) (stiff, wet) **(NATIVE)**	
4								
6								
8								
10								

Boring Completed 10/16/12
Total Depth of Boring = 4.9 ft.

Point located at State Plane Coordinates:
North: 638439.00
East: 1042189.00

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring CP-11

Figure
A-12

CP-12

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	
0						SM	Dark gray, silty fine SAND (no odor, no sheen) (soft, wet) **(MARINE DEPOSITS)**
						SP	Brown, gravelly fine to coarse SAND (no odor, no sheen) (loose, wet) **(BACKFILL)**
	CP-12-M2	d4					
2						ML	Dark gray, sandy SILT with shells (no odor, no sheen) (medium stiff, wet) **(NATIVE)**
4							
6							
8							
10							

Drilling Method: Vibracorer

Ground Elevation (ft): 1.7

Drilled By: RSS

Boring Completed 10/16/12
Total Depth of Boring = 4.0 ft.

Point located at State Plane Coordinates:
North: 638308.00
East: 1042340.00

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring CP-12

Figure
A-13

CP-13

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Vibracorer Ground Elevation (ft): -2.5 Drilled By: RSS	
0						SM	Dark gray, very silty fie to medium SAND (sulfur odor, no sheen) (loose, wet) **(MARINE DEPOSITS)**	
						SP	Brown, fine to coarse SAND with gravel (no odor, no sheen) (loose, wet) **(BACKFILL)**	
	CP-13-M2	d4						
2						ML	Dark gray, SILT with shells (sulfur odor, no sheen) (stiff, wet) **(NATIVE)**	
4								
6								
8								
10								

Boring Completed 10/16/12
Total Depth of Boring = 3.9 ft.

Point located at State Plane Coordinates:
North: 638311.00
East: 1042521.00

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring CP-13

Figure
A-14

CP-14

SAMPLE DATA					SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Vibracorer Ground Elevation (ft): -1.5 Drilled By: RSS	
0						SM	Dark gray, very silty fine to medium SAND (no odor, no sheen) (loose, wet)	
						SP	**(MARINE DEPOSITS)**	
	CP-14-M2	d4					Brown, fine to coarse SAND with gravel (no odor, no sheen) (loose, wet) **(BACKFILL)**	
2						ML	Dark gray SILT with shells and trace woody debris (sulfur odor, no sheen) (stiff, wet) **(NATIVE)**	
							-grades with pulverized shells and whole shells	
4								
6								
8								
10								

Boring Completed 10/15/12
Total Depth of Boring = 5.4 ft.

Point located at State Plane Coordinates:
North: 638144.00
East: 1042534.00

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0021039.070.071 1/10/14 N:\PROJECTS\0021039.070.071.GPJ SOIL BORING LOG

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Performance Monitoring
Olympia, Washington

Log of Boring CP-14

Figure
A-15

CP-15

SAMPLE DATA					SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Vibracorer Ground Elevation (ft): -7.6 Drilled By: RSS	
0						ML	Dark gray, sandy SILT (sulfur odor, no sheen) (soft, wet) **(MARINE DEPOSITS)**	
2	CP-15-M2	d4				SP	Brown, fine to coarse SAND with trace gravel (no odor, no sheen) (loose, wet) **(BACKFILL)** -top 0.75 ft is mixed with overlying sediment	
4						ML	Dark gray SILT with sand with trace shell fragments (sulfur odor, no sheen) (stiff, wet) **(NATIVE)**	
6								
8								
10								

Boring Completed 10/15/12
Total Depth of Boring = 5.9 ft.

Point located at State Plane Coordinates:
North: 638094.00
East: 1042634.00

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES

Cascade Pole 2012
Performance Monitoring
Olympia, Washington

Log of Boring CP-15

Figure
A-16

APPENDIX B

Analytical Laboratory Reports

Analytical Resources, Incorporated
Analytical Chemists and Consultants

November 13, 2012

Chris Kimmel
Landau Associates, Inc.
130 2nd Avenue S.
Edmonds, WA 98020

RE: Project No: 0021039.070.071
Project Name: Cascade Pole Sed Sampling 1012
ARI Job No: VO23

Dear Chris:

Please find enclosed the chain of custody (COC) documentation and the final results from the project referenced above. Analytical Resources, Inc. accepted sixteen sediment samples in good condition on October 18, 2012.

The samples were analyzed for PAHs plus Dibenzofuran, TOC and Dioxins/Furans, as requested on the COC.

The method blank for Dioxin/Furans contained reportable responses below the reporting limit. No qualifiers were applied to sample results that were greater than ten times the levels found in the method blank.

There were no other anomalies associated with the samples.

A copy of this report and all corresponding raw data will remain on file electronically with ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
(206) 695-6211
kellyb@arilabs.com

Enclosures

LANDAU ASSOCIATES

☒ Seattle/Edmonds (425) 778-0907
☐ Tacoma (253) 926-2493
☐ Spokane (509) 327-9737
☐ Portland (503) 542-1080
☐ _____

Date 10/18/12
Page 1 of 2

Chain-of-Custody Record

Project Name Cascade Pole Sed Sampling 2012 Project No. 002039.070.071
Project Location/Event Olympia, WA
Sampler's Name Steve Shaw, Lauren McIntire
Project Contact Chris Kimmel
Send Results To " ", Anne Helwig

Turnaround Time
☒ Standard
☐ Accelerated
☐ _____

Testing Parameters: Dioxins (8290), PAHs (8270), TOC (9060), Dibenzofuran (8270)

Sample I.D.	Date	Time	Matrix	No. of Containers	Dioxins (8290)	PAHs (8270)	TOC (9060)	Dibenzofuran (8270)	Observations/Comments
CP-15-M2	10/18/12	1000	SED	2	X	X	X	X	← run MS/MSD
CP-01-M2	10/18/12	1030	SED	2	X	X	X	X	~~AAAAA~~
CP-04-M2	10/18/12	1100	SED	2	X	X	X	X	
CP-09-M2	10/18/12	1130	SED	2	X	X	X	X	
CP-07-M2	10/18/12	1200	SED	2	X	X	X	X	
CP-06-M2	10/18/12	1230	SED	2	X	X	X	X	
DUP-2	10/18/12	1115	SED	2	X	X	X	X	
CP-03-M2	10/18/12	1330	SED	2	X	X	X	X	
CP-13-M2	10/18/12	1430	SED	2	X	X	X	X	
CP-14-M2	10/18/12	1500	SED	2	X	X	X	X	
CP-20-M2	10/15/12	1000	SED	3	X	X	X	X	
CP-16-M2	10/15/12	0830	SED	3	X	X	X	X	
CP-17-M2	10/17/12	0815	SED	3	X	X	X	X	
DUP-1	10/15/12	1005	SED	3	X	X	X	X	
CP-19-M2	10/15/12	0930	SED	3	X	X	X	X	

~~X Allow water samples to settle, collect aliquot from clear portion~~ SDS 10/18/12
~~X NWTPH-Dx - run acid wash/silica gel cleanup~~

___ run samples standardized to _____ product
___ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt

___ Dissolved metal water samples field filtered

Other _____

Special Shipment/Handling or Storage Requirements: cool + ice

Method of Shipment: delivery

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Printed Name: STEVEN D. SHAW	Printed Name: Jennifer Millsap	Printed Name	Printed Name
Company: LANDAU ASSOC.	Company: ARI	Company	Company
Date: 10/18/12 Time: 1741	Date: 10/18/12 Time: 1741	Date: _____ Time: _____	Date: _____ Time: _____

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative

Rev 8/09

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: VO23
Client: Landau Associates, Inc.
Project Event: 0021039.070.071
Project Name: Cascade Pole Sed Sampling 2012

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	CP-15-M2	VO23A	12-20540	Sediment	10/18/12 10:00	10/18/12 17:41
2.	CP-01-M2	VO23B	12-20541	Sediment	10/18/12 10:30	10/18/12 17:41
3.	CP-04-M2	VO23C	12-20542	Sediment	10/18/12 11:00	10/18/12 17:41
4.	CP-09-M2	VO23D	12-20543	Sediment	10/18/12 11:30	10/18/12 17:41
5.	CP-07-M2	VO23E	12-20544	Sediment	10/18/12 12:00	10/18/12 17:41
6.	CP-06-M2	VO23F	12-20545	Sediment	10/18/12 12:30	10/18/12 17:41
7.	DUP-2	VO23G	12-20546	Sediment	10/18/12 11:15	10/18/12 17:41
8.	CP-03-M2	VO23H	12-20547	Sediment	10/18/12 13:30	10/18/12 17:41
9.	CP-13-M2	VO23I	12-20548	Sediment	10/18/12 14:30	10/18/12 17:41
10.	CP-14-M2	VO23J	12-20549	Sediment	10/18/12 15:00	10/18/12 17:41
11.	CP-20-M2	VO23K	12-20550	Sediment	10/15/12 10:00	10/18/12 17:41
12.	CP-16-M2	VO23L	12-20551	Sediment	10/15/12 08:30	10/18/12 17:41
13.	CP-17-M2	VO23M	12-20552	Sediment	10/15/12 08:15	10/18/12 17:41
14.	DUP-1	VO23N	12-20553	Sediment	10/15/12 10:05	10/18/12 17:41
15.	CP-19-M2	VO23O	12-20554	Sediment	10/15/12 09:30	10/18/12 17:41
16.	CP-18-M2	VO23P	12-20555	Sediment	10/15/12 09:15	10/18/12 17:41

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau

Project Name: Cascade Pole Sed Sampling 2012

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No.: V023

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry): 5.6

If cooler temperature is out of compliance fill out form 00070F — Temp Gun ID#: 90877952

Cooler Accepted by: JM Date: 10/18/12 Time: 1741

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other: _____		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		YES	(NO)
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs).	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI.	(NA)		_____

Was Sample Split by ARI: (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: _____ Date: _____ Time: _____

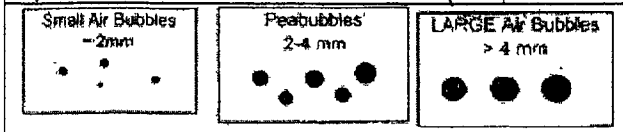
***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

Sample CP-18-M12 was not on COC. - 10/15/12 @ 915

By: JM Date: 10/19/12



Small → "sm"	
Peabubbles → "pb"	
Large → "lg"	
Headspace → "hs"	

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-15-M2**

Lab Sample ID: VO23A
LIMS ID: 12-20540
Matrix: Sediment
Data Release Authorized:
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 11:57
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.84	0.65-0.89		0.996	0.0890	J
2,3,7,8-TCDD		0.65-0.89	0.462	0.996	< 0.462	U
1,2,3,7,8-PeCDF	2.13	1.32-1.78		1.99	0.0857	JEMPC
2,3,4,7,8-PeCDF	1.00	1.32-1.78		0.996	0.0618	JEMPC
1,2,3,7,8-PeCDD	0.56	1.32-1.78		0.996	0.108	JEMPC
1,2,3,4,7,8-HxCDF	1.27	1.05-1.43		1.99	0.311	J
1,2,3,6,7,8-HxCDF	1.41	1.05-1.43		1.99	0.154	J
2,3,4,6,7,8-HxCDF	0.95	1.05-1.43		1.99	0.189	JEMPC
1,2,3,7,8,9-HxCDF		1.05-1.43	0.367	1.99	< 0.367	U
1,2,3,4,7,8-HxCDD	1.09	1.05-1.43		1.99	0.210	J
1,2,3,6,7,8-HxCDD	1.37	1.05-1.43		1.99	0.900	J
1,2,3,7,8,9-HxCDD	1.16	1.05-1.43		1.99	0.411	J
1,2,3,4,6,7,8-HpCDF	1.01	0.88-1.20		1.99	4.15	
1,2,3,4,7,8,9-HpCDF	0.92	0.88-1.20		1.99	0.165	J
1,2,3,4,6,7,8-HpCDD	1.04	0.88-1.20		1.99	19.7	
OCDF	0.80	0.76-1.02		4.98	5.71	
OCDD	0.89	0.76-1.02		4.98	137	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		0.996	0.428	0.671
Total TCDD	0.462	0.996	0.394	0.870
Total PeCDF		1.99	1.31	1.72
Total PeCDD		0.996	0.0518	0.872
Total HxCDF		1.99	4.99	5.84
Total HxCDD		1.99	6.97	7.55
Total HpCDF		1.99	9.66	9.74
Total HpCDD		1.99	44.8	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.64

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.89

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-15-M2**

Lab Sample ID: VO23A
LIMS ID: 12-20540
Matrix: Sediment
Data Release Authorized:
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 11:57
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.77	0.65-0.89	94.6	40-135	
13C-2,3,7,8-TCDD	0.77	0.65-0.89	102	40-135	
13C-1,2,3,7,8-PeCDF	1.57	1.32-1.78	95.2	40-135	
13C-2,3,4,7,8-PeCDF	1.58	1.32-1.78	92.2	40-135	
13C-1,2,3,7,8-PeCDD	1.55	1.32-1.78	94.6	40-135	
13C-1,2,3,4,7,8-HxCDF	0.53	0.43-0.59	108	40-135	
13C-1,2,3,6,7,8-HxCDF	0.52	0.43-0.59	110	40-135	
13C-2,3,4,6,7,8-HxCDF	0.53	0.43-0.59	94.9	40-135	
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	94.1	40-135	
13C-1,2,3,4,7,8-HxCDD	1.26	1.05-1.43	105	40-135	
13C-1,2,3,6,7,8-HxCDD	1.25	1.05-1.43	104	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	90.2	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	91.6	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.06	0.88-1.20	103	40-135	
13C-OCDD	0.89	0.76-1.02	94.5	40-135	
37Cl4-2,3,7,8-TCDD			104	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-01-M2**

Lab Sample ID: VO23B
LIMS ID: 12-20541
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 12:48
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.6 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.98	0.65-0.89		0.948	0.106	JEMPC
2,3,7,8-TCDD	0.20	0.65-0.89		0.948	0.157	JEMPC
1,2,3,7,8-PeCDF	1.71	1.32-1.78		1.90	0.181	J
2,3,4,7,8-PeCDF	2.03	1.32-1.78		0.948	0.188	JEMPC
1,2,3,7,8-PeCDD	1.31	1.32-1.78		0.948	0.209	JEMPC
1,2,3,4,7,8-HxCDF	1.04	1.05-1.43		1.90	0.756	JEMPC
1,2,3,6,7,8-HxCDF	1.86	1.05-1.43		1.90	0.334	JEMPC
2,3,4,6,7,8-HxCDF	1.34	1.05-1.43		1.90	0.344	J
1,2,3,7,8,9-HxCDF		1.05-1.43	1.10	1.90	< 1.10	U
1,2,3,4,7,8-HxCDD	2.30	1.05-1.43		1.90	0.428	JEMPC
1,2,3,6,7,8-HxCDD	1.41	1.05-1.43		1.90	2.79	
1,2,3,7,8,9-HxCDD	1.08	1.05-1.43		1.90	0.978	J
1,2,3,4,6,7,8-HpCDF	1.11	0.88-1.20		1.90	6.18	
1,2,3,4,7,8,9-HpCDF	1.81	0.88-1.20		1.90	0.364	JEMPC
1,2,3,4,6,7,8-HpCDD	1.02	0.88-1.20		1.90	69.1	
OCDF	0.80	0.76-1.02		4.74	7.96	
OCDD	0.86	0.76-1.02		4.74	622	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC	
Total TCDF		0.948	< 0.106	0.367	U
Total TCDD		0.948	0.417	0.714	
Total PeCDF		1.90	3.77	4.72	
Total PeCDD		0.948	0.184	1.02	
Total HxCDF		1.90	14.3	15.3	
Total HxCDD		1.90	16.3	17.3	
Total HpCDF		1.90	18.1	18.4	
Total HpCDD		1.90	161		

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 1.95

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 2.00

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-01-M2**

Lab Sample ID: VO23B
LIMS ID: 12-20541
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 12:48
Instrument/Analyst: AS1/PK

Sample Amount: 10.6 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.77	0.65-0.89	78.1	40-135	
13C-2,3,7,8-TCDD	0.78	0.65-0.89	84.1	40-135	
13C-1,2,3,7,8-PeCDF	1.52	1.32-1.78	79.0	40-135	
13C-2,3,4,7,8-PeCDF	1.58	1.32-1.78	71.6	40-135	
13C-1,2,3,7,8-PeCDD	1.58	1.32-1.78	75.9	40-135	
13C-1,2,3,4,7,8-HxCDF	0.51	0.43-0.59	101	40-135	
13C-1,2,3,6,7,8-HxCDF	0.53	0.43-0.59	103	40-135	
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	85.9	40-135	
13C-1,2,3,7,8,9-HxCDF	0.51	0.43-0.59	78.0	40-135	
13C-1,2,3,4,7,8-HxCDD	1.26	1.05-1.43	95.9	40-135	
13C-1,2,3,6,7,8-HxCDD	1.24	1.05-1.43	96.9	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	81.2	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.44	0.37-0.51	74.7	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20	91.2	40-135	
13C-OCDD	0.87	0.76-1.02	76.7	40-135	
37Cl4-2,3,7,8-TCDD			89.2	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-04-M2**

Lab Sample ID: VO23C
LIMS ID: 12-20542
Matrix: Sediment
Data Release Authorized:
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 13:41
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF		0.65-0.89	0.138	0.999	< 0.138	U
2,3,7,8-TCDD		0.65-0.89	0.418	0.999	< 0.418	U
1,2,3,7,8-PeCDF	3.41	1.32-1.78		2.00	0.0919	JEMPC
2,3,4,7,8-PeCDF		1.32-1.78	0.227	0.999	< 0.227	U
1,2,3,7,8-PeCDD		1.32-1.78	0.189	0.999	< 0.189	U
1,2,3,4,7,8-HxCDF	0.79	1.05-1.43		2.00	0.184	JEMPC
1,2,3,6,7,8-HxCDF	0.71	1.05-1.43		2.00	0.116	JEMPC
2,3,4,6,7,8-HxCDF	1.09	1.05-1.43		2.00	0.118	J
1,2,3,7,8,9-HxCDF		1.05-1.43	0.400	2.00	< 0.400	U
1,2,3,4,7,8-HxCDD		1.05-1.43	0.630	2.00	< 0.630	U
1,2,3,6,7,8-HxCDD	1.20	1.05-1.43		2.00	0.825	J
1,2,3,7,8,9-HxCDD	1.12	1.05-1.43		2.00	0.246	J
1,2,3,4,6,7,8-HpCDF	1.06	0.88-1.20		2.00	2.18	
1,2,3,4,7,8,9-HpCDF	1.21	0.88-1.20		2.00	0.170	JEMPC
1,2,3,4,6,7,8-HpCDD	1.00	0.88-1.20		2.00	23.6	
OCDF	0.87	0.76-1.02		5.00	3.50	J
OCDD	0.89	0.76-1.02		5.00	228	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC	
Total TCDF	0.138	0.999	< 0.138	0.105	U
Total TCDD	0.418	0.999	0.283		
Total PeCDF		2.00	1.09	1.27	
Total PeCDD	0.189	0.999	0.0939	0.132	
Total HxCDF		2.00	3.08	5.00	
Total HxCDD		2.00	4.34	4.56	
Total HpCDF		2.00	6.99	7.15	
Total HpCDD		2.00	53.5		

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.48

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.88

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-04-M2**

Lab Sample ID: VO23C
LIMS ID: 12-20542
Matrix: Sediment
Data Release Authorized:
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 13:41
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.77	0.65-0.89	69.3	40-135	
13C-2,3,7,8-TCDD	0.75	0.65-0.89	76.8	40-135	
13C-1,2,3,7,8-PeCDF	1.59	1.32-1.78	73.9	40-135	
13C-2,3,4,7,8-PeCDF	1.56	1.32-1.78	68.3	40-135	
13C-1,2,3,7,8-PeCDD	1.57	1.32-1.78	72.5	40-135	
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	90.6	40-135	
13C-1,2,3,6,7,8-HxCDF	0.53	0.43-0.59	91.4	40-135	
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	77.6	40-135	
13C-1,2,3,7,8,9-HxCDF	0.53	0.43-0.59	73.0	40-135	
13C-1,2,3,4,7,8-HxCDD	1.27	1.05-1.43	91.3	40-135	
13C-1,2,3,6,7,8-HxCDD	1.23	1.05-1.43	88.2	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.44	0.37-0.51	74.1	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.44	0.37-0.51	65.7	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20	81.6	40-135	
13C-OCDD	0.89	0.76-1.02	69.1	40-135	
37Cl4-2,3,7,8-TCDD			80.7	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-09-M2**

Lab Sample ID: VO23D
LIMS ID: 12-20543
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 14:35
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF		0.65-0.89	0.0237	0.991	< 0.0237	U
2,3,7,8-TCDD		0.65-0.89	0.328	0.991	< 0.328	U
1,2,3,7,8-PeCDF	0.77	1.32-1.78		1.98	0.0357	JEMPC
2,3,4,7,8-PeCDF	0.47	1.32-1.78		0.991	0.0515	JEMPC
1,2,3,7,8-PeCDD		1.32-1.78	0.165	0.991	< 0.165	U
1,2,3,4,7,8-HxCDF	1.45	1.05-1.43		1.98	0.117	JEMPC
1,2,3,6,7,8-HxCDF		1.05-1.43	0.234	1.98	< 0.234	U
2,3,4,6,7,8-HxCDF		1.05-1.43	0.343	1.98	< 0.343	U
1,2,3,7,8,9-HxCDF		1.05-1.43	0.167	1.98	< 0.167	U
1,2,3,4,7,8-HxCDD	1.98	1.05-1.43		1.98	0.0634	JEMPC
1,2,3,6,7,8-HxCDD	1.41	1.05-1.43		1.98	0.372	J
1,2,3,7,8,9-HxCDD	1.37	1.05-1.43		1.98	0.176	J
1,2,3,4,6,7,8-HpCDF	0.91	0.88-1.20		1.98	1.02	J
1,2,3,4,7,8,9-HpCDF		0.88-1.20	0.303	1.98	< 0.303	U
1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20		1.98	8.82	
OCDF	0.90	0.76-1.02		4.96	1.08	J
OCDD	0.90	0.76-1.02		4.96	63.9	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC	
Total TCDF	0.0237	0.991	0.165		
Total TCDD	0.328	0.991	0.0396	0.245	
Total PeCDF		1.98	< 0.0515	0.646	U
Total PeCDD	0.165	0.991	< 0.165	0.164	U
Total HxCDF		1.98	0.834	1.82	
Total HxCDD		1.98	1.86	3.21	
Total HpCDF		1.98	2.48		
Total HpCDD		1.98	22.6	22.7	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.21

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.49

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-09-M2**

Lab Sample ID: VO23D
LIMS ID: 12-20543
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 14:35
Instrument/Analyst: AS1/PK

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.77	0.65-0.89	67.2	40-135	
13C-2,3,7,8-TCDD	0.77	0.65-0.89	76.7	40-135	
13C-1,2,3,7,8-PeCDF	1.56	1.32-1.78	77.6	40-135	
13C-2,3,4,7,8-PeCDF	1.56	1.32-1.78	72.8	40-135	
13C-1,2,3,7,8-PeCDD	1.61	1.32-1.78	76.8	40-135	
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	83.8	40-135	
13C-1,2,3,6,7,8-HxCDF	0.52	0.43-0.59	86.0	40-135	
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	75.2	40-135	
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	72.7	40-135	
13C-1,2,3,4,7,8-HxCDD	1.28	1.05-1.43	85.9	40-135	
13C-1,2,3,6,7,8-HxCDD	1.28	1.05-1.43	84.2	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.44	0.37-0.51	75.3	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.44	0.37-0.51	68.4	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.04	0.88-1.20	81.7	40-135	
13C-OCDD	0.88	0.76-1.02	66.9	40-135	
37Cl4-2,3,7,8-TCDD			81.8	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290
Page 1 of 1

Sample ID: CP-07-M2

Lab Sample ID: VO23E
LIMS ID: 12-20544
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 15:28
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.78	0.65-0.89		0.996	0.193	J
2,3,7,8-TCDD	0.14	0.65-0.89		0.996	0.171	JEMPC
1,2,3,7,8-PeCDF	0.91	1.32-1.78		1.99	0.255	JEMPC
2,3,4,7,8-PeCDF	1.19	1.32-1.78		0.996	0.201	JEMPC
1,2,3,7,8-PeCDD	2.08	1.32-1.78		0.996	0.251	JEMPC
1,2,3,4,7,8-HxCDF	0.87	1.05-1.43		1.99	0.520	JEMPC
1,2,3,6,7,8-HxCDF	0.80	1.05-1.43		1.99	0.303	JEMPC
2,3,4,6,7,8-HxCDF	1.51	1.05-1.43		1.99	0.428	JEMPC
1,2,3,7,8,9-HxCDF	1.31	1.05-1.43		1.99	0.167	J
1,2,3,4,7,8-HxCDD	1.45	1.05-1.43		1.99	0.424	JEMPC
1,2,3,6,7,8-HxCDD	1.16	1.05-1.43		1.99	2.09	
1,2,3,7,8,9-HxCDD	1.59	1.05-1.43		1.99	0.801	JEMPC
1,2,3,4,6,7,8-HpCDF	1.01	0.88-1.20		1.99	6.59	
1,2,3,4,7,8,9-HpCDF	1.15	0.88-1.20		1.99	0.253	J
1,2,3,4,6,7,8-HpCDD	1.01	0.88-1.20		1.99	49.5	
OCDF	0.90	0.76-1.02		4.98	7.25	
OCDD	0.88	0.76-1.02		4.98	413	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		0.996	1.17	3.75
Total TCDD		0.996	1.24	2.23
Total PeCDF		1.99	3.64	4.79
Total PeCDD		0.996	0.496	2.71
Total HxCDF		1.99	11.0	12.1
Total HxCDD		1.99	14.2	16.6
Total HpCDF		1.99	16.6	
Total HpCDD		1.99	117	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 1.67

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.67

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-07-M2**

Lab Sample ID: VO23E
LIMS ID: 12-20544
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 15:28
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.78	0.65-0.89	70.1	40-135	
13C-2,3,7,8-TCDD	0.77	0.65-0.89	76.6	40-135	
13C-1,2,3,7,8-PeCDF	1.56	1.32-1.78	74.0	40-135	
13C-2,3,4,7,8-PeCDF	1.57	1.32-1.78	68.7	40-135	
13C-1,2,3,7,8-PeCDD	1.58	1.32-1.78	72.2	40-135	
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	86.1	40-135	
13C-1,2,3,6,7,8-HxCDF	0.54	0.43-0.59	85.1	40-135	
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	75.1	40-135	
13C-1,2,3,7,8,9-HxCDF	0.53	0.43-0.59	73.5	40-135	
13C-1,2,3,4,7,8-HxCDD	1.25	1.05-1.43	85.9	40-135	
13C-1,2,3,6,7,8-HxCDD	1.25	1.05-1.43	83.1	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.46	0.37-0.51	72.5	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	66.1	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.04	0.88-1.20	78.4	40-135	
13C-OCDD	0.92	0.76-1.02	66.5	40-135	
37Cl4-2,3,7,8-TCDD			80.7	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-06-M2**

Lab Sample ID: VO23F
LIMS ID: 12-20545
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 16:21
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF		0.65-0.89	0.137	0.994	< 0.137	U
2,3,7,8-TCDD		0.65-0.89	0.394	0.994	< 0.394	U
1,2,3,7,8-PeCDF		1.32-1.78	0.166	1.99	< 0.166	U
2,3,4,7,8-PeCDF		1.32-1.78	0.155	0.994	< 0.155	U
1,2,3,7,8-PeCDD		1.32-1.78	0.202	0.994	< 0.202	U
1,2,3,4,7,8-HxCDF	0.87	1.05-1.43		1.99	0.117	JEMPC
1,2,3,6,7,8-HxCDF	1.45	1.05-1.43		1.99	0.0775	JEMPC
2,3,4,6,7,8-HxCDF	1.71	1.05-1.43		1.99	0.0636	JEMPC
1,2,3,7,8,9-HxCDF		1.05-1.43	0.300	1.99	< 0.300	U
1,2,3,4,7,8-HxCDD	1.27	1.05-1.43		1.99	0.0994	J
1,2,3,6,7,8-HxCDD	1.83	1.05-1.43		1.99	0.338	JEMPC
1,2,3,7,8,9-HxCDD	1.05	1.05-1.43		1.99	0.185	JEMPC
1,2,3,4,6,7,8-HpCDF	1.03	0.88-1.20		1.99	1.89	J
1,2,3,4,7,8,9-HpCDF		0.88-1.20	0.470	1.99	< 0.470	U
1,2,3,4,6,7,8-HpCDD	1.07	0.88-1.20		1.99	9.12	
OCDF	1.02	0.76-1.02		4.97	2.35	J
OCDD	0.92	0.76-1.02		4.97	65.2	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC	
Total TCDF	0.137	0.994	0.0417	0.221	
Total TCDD	0.394	0.994	0.926	1.13	
Total PeCDF	0.166	1.99	0.811	0.855	
Total PeCDD	0.202	0.994	< 0.202	0.408	U
Total HxCDF		1.99	1.90	2.36	
Total HxCDD		1.99	3.06	3.54	
Total HpCDF		1.99	4.39		
Total HpCDD		1.99	21.7		

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.22

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.57

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-06-M2**

Lab Sample ID: VO23F
LIMS ID: 12-20545
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 16:21
Instrument/Analyst: AS1/PK

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.77	0.65-0.89	71.3	40-135	
13C-2,3,7,8-TCDD	0.78	0.65-0.89	77.6	40-135	
13C-1,2,3,7,8-PeCDF	1.57	1.32-1.78	79.0	40-135	
13C-2,3,4,7,8-PeCDF	1.56	1.32-1.78	71.4	40-135	
13C-1,2,3,7,8-PeCDD	1.61	1.32-1.78	75.7	40-135	
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	83.7	40-135	
13C-1,2,3,6,7,8-HxCDF	0.51	0.43-0.59	86.0	40-135	
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	73.8	40-135	
13C-1,2,3,7,8,9-HxCDF	0.53	0.43-0.59	71.5	40-135	
13C-1,2,3,4,7,8-HxCDD	1.31	1.05-1.43	86.1	40-135	
13C-1,2,3,6,7,8-HxCDD	1.25	1.05-1.43	84.6	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	72.6	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	65.9	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.06	0.88-1.20	82.2	40-135	
13C-OCDD	0.89	0.76-1.02	66.5	40-135	
37Cl4-2,3,7,8-TCDD			83.1	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: DUP-2**

Lab Sample ID: VO23G
LIMS ID: 12-20546
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 17:14
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.2 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.66	0.65-0.89		0.984	0.0413	J
2,3,7,8-TCDD		0.65-0.89	0.402	0.984	< 0.402	U
1,2,3,7,8-PeCDF	0.93	1.32-1.78		1.97	0.0965	JEMPC
2,3,4,7,8-PeCDF	1.17	1.32-1.78		0.984	0.0669	JEMPC
1,2,3,7,8-PeCDD		1.32-1.78	0.196	0.984	< 0.196	U
1,2,3,4,7,8-HxCDF	1.25	1.05-1.43		1.97	0.315	J
1,2,3,6,7,8-HxCDF	0.98	1.05-1.43		1.97	0.114	JEMPC
2,3,4,6,7,8-HxCDF	0.73	1.05-1.43		1.97	0.146	JEMPC
1,2,3,7,8,9-HxCDF	1.20	1.05-1.43		1.97	0.154	J
1,2,3,4,7,8-HxCDD	1.09	1.05-1.43		1.97	0.163	J
1,2,3,6,7,8-HxCDD	1.31	1.05-1.43		1.97	1.19	J
1,2,3,7,8,9-HxCDD	1.22	1.05-1.43		1.97	0.252	J
1,2,3,4,6,7,8-HpCDF	0.97	0.88-1.20		1.97	2.92	
1,2,3,4,7,8,9-HpCDF	2.60	0.88-1.20		1.97	0.118	JEMPC
1,2,3,4,6,7,8-HpCDD	1.01	0.88-1.20		1.97	29.8	
OCDF	0.85	0.76-1.02		4.92	4.29	J
OCDD	0.88	0.76-1.02		4.92	283	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		0.984	0.0413	0.118
Total TCDD	0.402	0.984	0.301	
Total PeCDF		1.97	1.13	1.57
Total PeCDD	0.196	0.984	0.0315	0.100
Total HxCDF		1.97	6.25	6.46
Total HxCDD		1.97	3.97	5.60
Total HpCDF		1.97	8.74	8.81
Total HpCDD		1.97	66.1	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.68

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.97

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: DUP-2**

Lab Sample ID: VO23G
LIMS ID: 12-20546
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 17:14
Instrument/Analyst: AS1/PK

Sample Amount: 10.2 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.78	0.65-0.89	80.0	40-135	
13C-2,3,7,8-TCDD	0.77	0.65-0.89	82.1	40-135	
13C-1,2,3,7,8-PeCDF	1.56	1.32-1.78	83.4	40-135	
13C-2,3,4,7,8-PeCDF	1.57	1.32-1.78	76.7	40-135	
13C-1,2,3,7,8-PeCDD	1.58	1.32-1.78	81.2	40-135	
13C-1,2,3,4,7,8-HxCDF	0.53	0.43-0.59	88.6	40-135	
13C-1,2,3,6,7,8-HxCDF	0.51	0.43-0.59	90.7	40-135	
13C-2,3,4,6,7,8-HxCDF	0.53	0.43-0.59	78.7	40-135	
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	75.9	40-135	
13C-1,2,3,4,7,8-HxCDD	1.28	1.05-1.43	91.3	40-135	
13C-1,2,3,6,7,8-HxCDD	1.21	1.05-1.43	88.2	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	78.4	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	73.3	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20	89.8	40-135	
13C-OCDD	0.90	0.76-1.02	73.4	40-135	
37Cl4-2,3,7,8-TCDD			86.0	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-03-M2**

Lab Sample ID: VO23H
LIMS ID: 12-20547
Matrix: Sediment
Data Release Authorized:
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 18:08
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.82	0.65-0.89		0.998	0.0938	J
2,3,7,8-TCDD	0.12	0.65-0.89		0.998	0.134	JEMPC
1,2,3,7,8-PeCDF	1.53	1.32-1.78		2.00	0.130	J
2,3,4,7,8-PeCDF		1.32-1.78	0.304	0.998	< 0.304	U
1,2,3,7,8-PeCDD	0.92	1.32-1.78		0.998	0.0878	JEMPC
1,2,3,4,7,8-HxCDF	1.19	1.05-1.43		2.00	0.513	J
1,2,3,6,7,8-HxCDF	1.10	1.05-1.43		2.00	0.198	J
2,3,4,6,7,8-HxCDF	2.11	1.05-1.43		2.00	0.176	JEMPC
1,2,3,7,8,9-HxCDF		1.05-1.43	0.629	2.00	< 0.629	U
1,2,3,4,7,8-HxCDD	0.82	1.05-1.43		2.00	0.188	JEMPC
1,2,3,6,7,8-HxCDD	0.89	1.05-1.43		2.00	1.30	JEMPC
1,2,3,7,8,9-HxCDD	1.35	1.05-1.43		2.00	0.479	J
1,2,3,4,6,7,8-HpCDF	0.99	0.88-1.20		2.00	3.91	
1,2,3,4,7,8,9-HpCDF	0.50	0.88-1.20		2.00	0.224	JEMPC
1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20		2.00	34.1	
OCDF	0.77	0.76-1.02		4.99	5.60	
OCDD	0.91	0.76-1.02		4.99	290	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		0.998	0.138	0.479
Total TCDD		0.998	0.381	0.617
Total PeCDF		2.00	1.88	2.28
Total PeCDD		0.998	0.160	0.513
Total HxCDF		2.00	8.22	8.41
Total HxCDD		2.00	6.89	8.23
Total HpCDF		2.00	11.3	11.4
Total HpCDD		2.00	75.0	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.99

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.07

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-03-M2**

Lab Sample ID: VO23H
LIMS ID: 12-20547
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 18:08
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.78	0.65-0.89	70.6	40-135	
13C-2,3,7,8-TCDD	0.77	0.65-0.89	75.3	40-135	
13C-1,2,3,7,8-PeCDF	1.58	1.32-1.78	73.9	40-135	
13C-2,3,4,7,8-PeCDF	1.60	1.32-1.78	70.3	40-135	
13C-1,2,3,7,8-PeCDD	1.58	1.32-1.78	72.6	40-135	
13C-1,2,3,4,7,8-HxCDF	0.51	0.43-0.59	86.4	40-135	
13C-1,2,3,6,7,8-HxCDF	0.53	0.43-0.59	86.5	40-135	
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	76.4	40-135	
13C-1,2,3,7,8,9-HxCDF	0.51	0.43-0.59	76.3	40-135	
13C-1,2,3,4,7,8-HxCDD	1.28	1.05-1.43	84.8	40-135	
13C-1,2,3,6,7,8-HxCDD	1.25	1.05-1.43	84.4	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.44	0.37-0.51	74.0	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	71.6	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.04	0.88-1.20	82.6	40-135	
13C-OCDD	0.86	0.76-1.02	69.4	40-135	
37Cl4-2,3,7,8-TCDD			77.8	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-13-M2**

Lab Sample ID: VO23I
LIMS ID: 12-20548
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 20:02
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.2 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF		0.65-0.89	0.130	0.981	< 0.130	U
2,3,7,8-TCDD		0.65-0.89	0.332	0.981	< 0.332	U
1,2,3,7,8-PeCDF		1.32-1.78	0.190	1.96	< 0.190	U
2,3,4,7,8-PeCDF	2.90	1.32-1.78		0.981	0.0667	JEMPC
1,2,3,7,8-PeCDD	1.14	1.32-1.78		0.981	0.126	JEMPC
1,2,3,4,7,8-HxCDF	0.95	1.05-1.43		1.96	0.206	JEMPC
1,2,3,6,7,8-HxCDF	0.77	1.05-1.43		1.96	0.114	JEMPC
2,3,4,6,7,8-HxCDF	1.93	1.05-1.43		1.96	0.116	JEMPC
1,2,3,7,8,9-HxCDF		1.05-1.43	0.484	1.96	< 0.484	U
1,2,3,4,7,8-HxCDD		1.05-1.43	0.675	1.96	< 0.675	U
1,2,3,6,7,8-HxCDD	1.36	1.05-1.43		1.96	0.385	J
1,2,3,7,8,9-HxCDD	1.85	1.05-1.43		1.96	0.261	JEMPC
1,2,3,4,6,7,8-HpCDF	0.99	0.88-1.20		1.96	2.31	
1,2,3,4,7,8,9-HpCDF	0.43	0.88-1.20		1.96	0.0785	JEMPC
1,2,3,4,6,7,8-HpCDD	1.12	0.88-1.20		1.96	9.95	
OCDF	0.88	0.76-1.02		4.91	2.24	J
OCDD	0.88	0.76-1.02		4.91	69.6	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC	
Total TCDF	0.130	0.981	0.247	0.412	
Total TCDD	0.332	0.981	0.106	0.712	
Total PeCDF		1.96	0.758	0.956	
Total PeCDD		0.981	< 0.126	0.292	U
Total HxCDF		1.96	2.24	3.01	
Total HxCDD		1.96	2.22	3.39	
Total HpCDF		1.96	4.96	5.00	
Total HpCDD		1.96	23.1		

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.40

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.63

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-13-M2**

Lab Sample ID: VO23I
LIMS ID: 12-20548
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 20:02
Instrument/Analyst: AS1/PK

Sample Amount: 10.2 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.76	0.65-0.89	67.5	40-135	
13C-2,3,7,8-TCDD	0.79	0.65-0.89	75.0	40-135	
13C-1,2,3,7,8-PeCDF	1.59	1.32-1.78	77.6	40-135	
13C-2,3,4,7,8-PeCDF	1.57	1.32-1.78	71.1	40-135	
13C-1,2,3,7,8-PeCDD	1.58	1.32-1.78	75.6	40-135	
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	87.8	40-135	
13C-1,2,3,6,7,8-HxCDF	0.53	0.43-0.59	89.1	40-135	
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	77.4	40-135	
13C-1,2,3,7,8,9-HxCDF	0.51	0.43-0.59	75.2	40-135	
13C-1,2,3,4,7,8-HxCDD	1.26	1.05-1.43	88.5	40-135	
13C-1,2,3,6,7,8-HxCDD	1.22	1.05-1.43	88.1	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.44	0.37-0.51	77.5	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	69.0	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.07	0.88-1.20	84.2	40-135	
13C-OCDD	0.89	0.76-1.02	67.8	40-135	
37Cl4-2,3,7,8-TCDD			78.9	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-14-M2**

Lab Sample ID: VO23J
LIMS ID: 12-20549
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 20:59
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF		0.65-0.89	0.154	0.998	< 0.154	U
2,3,7,8-TCDD	0.26	0.65-0.89		0.998	0.158	JEMPC
1,2,3,7,8-PeCDF	1.54	1.32-1.78		2.00	0.0998	J
2,3,4,7,8-PeCDF		1.32-1.78	0.172	0.998	< 0.172	U
1,2,3,7,8-PeCDD	0.63	1.32-1.78		0.998	0.0739	JEMPC
1,2,3,4,7,8-HxCDF	1.16	1.05-1.43		2.00	0.0419	J
1,2,3,6,7,8-HxCDF	0.91	1.05-1.43		2.00	0.0359	JEMPC
2,3,4,6,7,8-HxCDF	1.23	1.05-1.43		2.00	0.0978	J
1,2,3,7,8,9-HxCDF		1.05-1.43	0.169	2.00	< 0.169	U
1,2,3,4,7,8-HxCDD		1.05-1.43	0.363	2.00	< 0.363	U
1,2,3,6,7,8-HxCDD	0.67	1.05-1.43		2.00	0.289	JEMPC
1,2,3,7,8,9-HxCDD	1.31	1.05-1.43		2.00	0.214	J
1,2,3,4,6,7,8-HpCDF	0.94	0.88-1.20		2.00	1.76	J
1,2,3,4,7,8,9-HpCDF		0.88-1.20	0.420	2.00	< 0.420	U
1,2,3,4,6,7,8-HpCDD	1.10	0.88-1.20		2.00	8.76	
OCDF	1.01	0.76-1.02		4.99	2.35	J
OCDD	0.90	0.76-1.02		4.99	62.0	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC	
Total TCDF	0.154	0.998	0.130		
Total TCDD		0.998	< 0.158	0.657	U
Total PeCDF		2.00	0.0998	0.816	
Total PeCDD		0.998	0.114	0.204	
Total HxCDF		2.00	1.93	2.18	
Total HxCDD		2.00	0.467	3.20	
Total HpCDF		2.00	4.13		
Total HpCDD		2.00	21.0		

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.43

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.49

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-14-M2**

Lab Sample ID: VO23J
LIMS ID: 12-20549
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 20:59
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.78	0.65-0.89	72.5	40-135	
13C-2,3,7,8-TCDD	0.77	0.65-0.89	76.4	40-135	
13C-1,2,3,7,8-PeCDF	1.56	1.32-1.78	73.8	40-135	
13C-2,3,4,7,8-PeCDF	1.55	1.32-1.78	70.3	40-135	
13C-1,2,3,7,8-PeCDD	1.58	1.32-1.78	71.9	40-135	
13C-1,2,3,4,7,8-HxCDF	0.51	0.43-0.59	84.5	40-135	
13C-1,2,3,6,7,8-HxCDF	0.53	0.43-0.59	83.9	40-135	
13C-2,3,4,6,7,8-HxCDF	0.53	0.43-0.59	76.2	40-135	
13C-1,2,3,7,8,9-HxCDF	0.51	0.43-0.59	73.1	40-135	
13C-1,2,3,4,7,8-HxCDD	1.25	1.05-1.43	83.2	40-135	
13C-1,2,3,6,7,8-HxCDD	1.27	1.05-1.43	82.9	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	76.0	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	69.5	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.08	0.88-1.20	82.6	40-135	
13C-OCDD	0.88	0.76-1.02	63.0	40-135	
37Cl4-2,3,7,8-TCDD			79.9	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-20-M2**

Lab Sample ID: VO23K
LIMS ID: 12-20550
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 21:52
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.67	0.65-0.89		0.999	2.38	
2,3,7,8-TCDD	0.51	0.65-0.89		0.999	0.629	JEMPC
1,2,3,7,8-PeCDF	1.49	1.32-1.78		2.00	2.23	
2,3,4,7,8-PeCDF	1.50	1.32-1.78		0.999	2.40	
1,2,3,7,8-PeCDD	1.59	1.32-1.78		0.999	3.57	
1,2,3,4,7,8-HxCDF	1.22	1.05-1.43		2.00	8.83	
1,2,3,6,7,8-HxCDF	1.37	1.05-1.43		2.00	3.60	
2,3,4,6,7,8-HxCDF	1.52	1.05-1.43		2.00	4.06	EMPC
1,2,3,7,8,9-HxCDF	1.20	1.05-1.43		2.00	2.56	
1,2,3,4,7,8-HxCDD	1.19	1.05-1.43		2.00	4.46	
1,2,3,6,7,8-HxCDD	1.24	1.05-1.43		2.00	23.5	
1,2,3,7,8,9-HxCDD	1.16	1.05-1.43		2.00	9.88	
1,2,3,4,6,7,8-HpCDF	0.99	0.88-1.20		2.00	115	
1,2,3,4,7,8,9-HpCDF	1.06	0.88-1.20		2.00	4.82	
1,2,3,4,6,7,8-HpCDD	1.04	0.88-1.20		2.00	579	
OCDF	0.84	0.76-1.02		5.00	159	
OCDD	0.90	0.76-1.02		25.0	4,120	#

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		0.999	47.2	49.3
Total TCDD		0.999	24.0	28.0
Total PeCDF		2.00	77.4	78.2
Total PeCDD		0.999	48.6	49.4
Total HxCDF		2.00	167	171
Total HxCDD		2.00	239	
Total HpCDF		2.00	305	
Total HpCDD		2.00	1,430	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 19.2

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 19.2

#-Result from diluted secondary analysis.

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-20-M2**

Lab Sample ID: VO23K
LIMS ID: 12-20550
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 21:52
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.77	0.65-0.89	75.2	40-135	
13C-2,3,7,8-TCDD	0.79	0.65-0.89	79.0	40-135	
13C-1,2,3,7,8-PeCDF	1.58	1.32-1.78	78.3	40-135	
13C-2,3,4,7,8-PeCDF	1.55	1.32-1.78	76.9	40-135	
13C-1,2,3,7,8-PeCDD	1.59	1.32-1.78	76.6	40-135	
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	88.3	40-135	
13C-1,2,3,6,7,8-HxCDF	0.51	0.43-0.59	85.4	40-135	
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	76.8	40-135	
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	104	40-135	
13C-1,2,3,4,7,8-HxCDD	1.24	1.05-1.43	84.5	40-135	
13C-1,2,3,6,7,8-HxCDD	1.23	1.05-1.43	82.1	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	80.8	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.44	0.37-0.51	74.8	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20	85.6	40-135	
13C-OCDD	0.92	0.76-1.02	79.9	40-135	
37Cl4-2,3,7,8-TCDD			87.2	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-20-M2**
Page 1 of 1 **DILUTION**

Lab Sample ID: VO23K
LIMS ID: 12-20550
Matrix: Sediment
Data Release Authorized:
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/09/12 12:08
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 5.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-OCDD	0.90	0.76-1.02	74.3	40-135	
37Cl4-2,3,7,8-TCDD			92.6	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-16-M2**

Lab Sample ID: VO23L
LIMS ID: 12-20551
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 22:45
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.64	0.65-0.89		0.994	1.36	EMPC
2,3,7,8-TCDD	0.46	0.65-0.89		0.994	0.664	JEMPC
1,2,3,7,8-PeCDF	1.61	1.32-1.78		1.99	1.32	J
2,3,4,7,8-PeCDF	1.36	1.32-1.78		0.994	2.16	
1,2,3,7,8-PeCDD	1.59	1.32-1.78		0.994	2.46	
1,2,3,4,7,8-HxCDF	1.19	1.05-1.43		1.99	8.55	
1,2,3,6,7,8-HxCDF	1.25	1.05-1.43		1.99	3.43	
2,3,4,6,7,8-HxCDF	1.10	1.05-1.43		1.99	5.49	
1,2,3,7,8,9-HxCDF	1.12	1.05-1.43		1.99	1.64	J
1,2,3,4,7,8-HxCDD	1.21	1.05-1.43		1.99	3.28	
1,2,3,6,7,8-HxCDD	1.26	1.05-1.43		1.99	12.6	
1,2,3,7,8,9-HxCDD	1.25	1.05-1.43		1.99	7.32	
1,2,3,4,6,7,8-HpCDF	0.99	0.88-1.20		1.99	89.0	
1,2,3,4,7,8,9-HpCDF	0.95	0.88-1.20		1.99	4.17	
1,2,3,4,6,7,8-HpCDD	1.03	0.88-1.20		1.99	326	
OCDF	0.85	0.76-1.02		4.97	123	
OCDD	0.89	0.76-1.02		4.97	2,290	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		0.994	26.3	29.1
Total TCDD		0.994	17.4	18.6
Total PeCDF		1.99	50.9	51.4
Total PeCDD		0.994	29.1	29.6
Total HxCDF		1.99	128	
Total HxCDD		1.99	138	
Total HpCDF		1.99	225	
Total HpCDD		1.99	793	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 13.1

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 13.1

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-16-M2**

Lab Sample ID: VO23L
LIMS ID: 12-20551
Matrix: Sediment
Data Release Authorized:
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 22:45
Instrument/Analyst: AS1/PK

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.77	0.65-0.89	80.6	40-135	
13C-2,3,7,8-TCDD	0.76	0.65-0.89	86.9	40-135	
13C-1,2,3,7,8-PeCDF	1.57	1.32-1.78	87.9	40-135	
13C-2,3,4,7,8-PeCDF	1.57	1.32-1.78	85.9	40-135	
13C-1,2,3,7,8-PeCDD	1.59	1.32-1.78	87.6	40-135	
13C-1,2,3,4,7,8-HxCDF	0.51	0.43-0.59	94.9	40-135	
13C-1,2,3,6,7,8-HxCDF	0.52	0.43-0.59	90.9	40-135	
13C-2,3,4,6,7,8-HxCDF	0.53	0.43-0.59	82.6	40-135	
13C-1,2,3,7,8,9-HxCDF	0.53	0.43-0.59	94.2	40-135	
13C-1,2,3,4,7,8-HxCDD	1.30	1.05-1.43	93.9	40-135	
13C-1,2,3,6,7,8-HxCDD	1.25	1.05-1.43	90.1	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	86.5	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.46	0.37-0.51	81.2	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20	94.1	40-135	
13C-OCDD	0.91	0.76-1.02	80.4	40-135	
37Cl4-2,3,7,8-TCDD			92.8	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-17-M2**

Lab Sample ID: VO23M
LIMS ID: 12-20552
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 23:39
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.2 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.82	0.65-0.89		0.984	1.02	
2,3,7,8-TCDD	0.49	0.65-0.89		0.984	0.335	JEMPC
1,2,3,7,8-PeCDF	1.31	1.32-1.78		1.97	1.12	JEMPC
2,3,4,7,8-PeCDF	1.44	1.32-1.78		0.984	1.39	
1,2,3,7,8-PeCDD	1.60	1.32-1.78		0.984	1.28	
1,2,3,4,7,8-HxCDF	1.09	1.05-1.43		1.97	4.78	
1,2,3,6,7,8-HxCDF	1.18	1.05-1.43		1.97	1.73	J
2,3,4,6,7,8-HxCDF	1.29	1.05-1.43		1.97	1.87	J
1,2,3,7,8,9-HxCDF	1.10	1.05-1.43		1.97	1.30	J
1,2,3,4,7,8-HxCDD	1.07	1.05-1.43		1.97	1.85	J
1,2,3,6,7,8-HxCDD	1.25	1.05-1.43		1.97	11.5	
1,2,3,7,8,9-HxCDD	1.20	1.05-1.43		1.97	4.64	
1,2,3,4,6,7,8-HpCDF	0.98	0.88-1.20		1.97	74.4	
1,2,3,4,7,8,9-HpCDF	1.11	0.88-1.20		1.97	2.52	
1,2,3,4,6,7,8-HpCDD	1.03	0.88-1.20		1.97	437	
OCDF	0.87	0.76-1.02		4.92	138	
OCDD	0.88	0.76-1.02		4.92	3,490	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		0.984	16.2	20.2
Total TCDD		0.984	13.9	14.6
Total PeCDF		1.97	31.4	35.2
Total PeCDD		0.984	14.3	15.8
Total HxCDF		1.97	95.0	96.3
Total HxCDD		1.97	110	
Total HpCDF		1.97	213	214
Total HpCDD		1.97	1,150	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 11.2

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 11.2

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-17-M2**

Lab Sample ID: VO23M
LIMS ID: 12-20552
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/08/12 23:39
Instrument/Analyst: AS1/PK

Sample Amount: 10.2 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.77	0.65-0.89	67.7	40-135	
13C-2,3,7,8-TCDD	0.79	0.65-0.89	71.7	40-135	
13C-1,2,3,7,8-PeCDF	1.62	1.32-1.78	73.5	40-135	
13C-2,3,4,7,8-PeCDF	1.57	1.32-1.78	70.7	40-135	
13C-1,2,3,7,8-PeCDD	1.58	1.32-1.78	70.7	40-135	
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	80.7	40-135	
13C-1,2,3,6,7,8-HxCDF	0.51	0.43-0.59	78.2	40-135	
13C-2,3,4,6,7,8-HxCDF	0.51	0.43-0.59	70.6	40-135	
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	116	40-135	
13C-1,2,3,4,7,8-HxCDD	1.28	1.05-1.43	79.3	40-135	
13C-1,2,3,6,7,8-HxCDD	1.26	1.05-1.43	74.0	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	74.8	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.44	0.37-0.51	68.9	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.04	0.88-1.20	77.9	40-135	
13C-OCDD	0.88	0.76-1.02	64.6	40-135	
37Cl4-2,3,7,8-TCDD			82.2	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: DUP-1**

Lab Sample ID: VO23N
LIMS ID: 12-20553
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/09/12 00:32
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.77	0.65-0.89		0.991	3.30	
2,3,7,8-TCDD	0.66	0.65-0.89		0.991	0.821	J
1,2,3,7,8-PeCDF	1.48	1.32-1.78		1.98	3.07	
2,3,4,7,8-PeCDF	1.49	1.32-1.78		0.991	3.80	
1,2,3,7,8-PeCDD	1.47	1.32-1.78		0.991	4.41	
1,2,3,4,7,8-HxCDF	1.13	1.05-1.43		1.98	11.8	
1,2,3,6,7,8-HxCDF	1.11	1.05-1.43		1.98	4.89	
2,3,4,6,7,8-HxCDF	1.29	1.05-1.43		1.98	5.50	
1,2,3,7,8,9-HxCDF	1.12	1.05-1.43		1.98	2.49	
1,2,3,4,7,8-HxCDD	1.26	1.05-1.43		1.98	7.33	
1,2,3,6,7,8-HxCDD	1.23	1.05-1.43		1.98	33.0	
1,2,3,7,8,9-HxCDD	1.21	1.05-1.43		1.98	13.8	
1,2,3,4,6,7,8-HpCDF	1.00	0.88-1.20		1.98	236	
1,2,3,4,7,8,9-HpCDF	0.95	0.88-1.20		1.98	6.55	
1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20		1.98	1,380	
OCDF	0.86	0.76-1.02		4.96	371	
OCDD	0.89	0.76-1.02		24.8	10,200	#

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		0.991	53.8	
Total TCDD		0.991	32.3	34.8
Total PeCDF		1.98	96.6	100
Total PeCDD		0.991	50.0	
Total HxCDF		1.98	240	243
Total HxCDD		1.98	342	
Total HpCDF		1.98	630	633
Total HpCDD		1.98	3,590	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 34.1

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 34.1

#-Result from diluted secondary analysis.

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: DUP-1**

Lab Sample ID: VO23N
LIMS ID: 12-20553
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/09/12 00:32
Instrument/Analyst: AS1/PK

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.77	0.65-0.89	70.9	40-135	
13C-2,3,7,8-TCDD	0.78	0.65-0.89	74.5	40-135	
13C-1,2,3,7,8-PeCDF	1.59	1.32-1.78	83.5	40-135	
13C-2,3,4,7,8-PeCDF	1.56	1.32-1.78	81.8	40-135	
13C-1,2,3,7,8-PeCDD	1.59	1.32-1.78	79.7	40-135	
13C-1,2,3,4,7,8-HxCDF	0.51	0.43-0.59	85.1	40-135	
13C-1,2,3,6,7,8-HxCDF	0.52	0.43-0.59	77.7	40-135	
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	74.0	40-135	
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	122	40-135	
13C-1,2,3,4,7,8-HxCDD	1.28	1.05-1.43	93.4	40-135	
13C-1,2,3,6,7,8-HxCDD	1.24	1.05-1.43	78.1	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	87.3	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	83.1	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.03	0.88-1.20	102	40-135	
13C-OCDD	0.91	0.76-1.02	89.9	40-135	
37Cl4-2,3,7,8-TCDD			80.4	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: DUP-1**
Page 1 of 1 **DILUTION**

Lab Sample ID: VO23N
LIMS ID: 12-20553
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/09/12 13:00
Instrument/Analyst: AS1/PK

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 5.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-OCDD	0.94	0.76-1.02	78.6	40-135	
37Cl4-2,3,7,8-TCDD			82.1	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-19-M2**

Lab Sample ID: VO23O
LIMS ID: 12-20554
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/09/12 01:25
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.63	0.65-0.89		1.00	0.206	JEMPC
2,3,7,8-TCDD	0.27	0.65-0.89		1.00	0.200	JEMPC
1,2,3,7,8-PeCDF	1.06	1.32-1.78		2.00	0.170	JEMPC
2,3,4,7,8-PeCDF	1.44	1.32-1.78		1.00	0.160	J
1,2,3,7,8-PeCDD	2.32	1.32-1.78		1.00	0.246	JEMPC
1,2,3,4,7,8-HxCDF	1.12	1.05-1.43		2.00	0.692	J
1,2,3,6,7,8-HxCDF	1.16	1.05-1.43		2.00	0.282	J
2,3,4,6,7,8-HxCDF	1.29	1.05-1.43		2.00	0.546	J
1,2,3,7,8,9-HxCDF	0.91	1.05-1.43		2.00	0.136	JEMPC
1,2,3,4,7,8-HxCDD	0.86	1.05-1.43		2.00	0.304	JEMPC
1,2,3,6,7,8-HxCDD	1.28	1.05-1.43		2.00	1.93	J
1,2,3,7,8,9-HxCDD	1.13	1.05-1.43		2.00	0.826	J
1,2,3,4,6,7,8-HpCDF	0.93	0.88-1.20		2.00	9.03	
1,2,3,4,7,8,9-HpCDF	0.64	0.88-1.20		2.00	0.226	JEMPC
1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20		2.00	50.8	
OCDF	0.89	0.76-1.02		5.00	13.6	
OCDD	0.90	0.76-1.02		5.00	371	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		1.00	0.614	1.93
Total TCDD		1.00	0.688	1.66
Total PeCDF		2.00	4.25	4.98
Total PeCDD		1.00	0.324	2.54
Total HxCDF		2.00	13.3	13.5
Total HxCDD		2.00	15.7	17.2
Total HpCDF		2.00	22.1	22.5
Total HpCDD		2.00	121	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 1.71

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.71

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-19-M2**

Lab Sample ID: VO23O
LIMS ID: 12-20554
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/09/12 01:25
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.78	0.65-0.89	74.5	40-135	
13C-2,3,7,8-TCDD	0.78	0.65-0.89	68.4	40-135	
13C-1,2,3,7,8-PeCDF	1.56	1.32-1.78	73.1	40-135	
13C-2,3,4,7,8-PeCDF	1.58	1.32-1.78	67.0	40-135	
13C-1,2,3,7,8-PeCDD	1.58	1.32-1.78	68.5	40-135	
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	76.2	40-135	
13C-1,2,3,6,7,8-HxCDF	0.53	0.43-0.59	73.4	40-135	
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	65.4	40-135	
13C-1,2,3,7,8,9-HxCDF	0.50	0.43-0.59	71.2	40-135	
13C-1,2,3,4,7,8-HxCDD	1.24	1.05-1.43	72.9	40-135	
13C-1,2,3,6,7,8-HxCDD	1.23	1.05-1.43	71.5	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.46	0.37-0.51	70.2	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	66.4	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20	76.0	40-135	
13C-OCDD	0.88	0.76-1.02	58.8	40-135	
37Cl4-2,3,7,8-TCDD			85.1	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-18-M2**
Page 1 of 1

Lab Sample ID: VO23P
LIMS ID: 12-20555
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/09/12 02:18
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.70	0.65-0.89		1.00	2.98	
2,3,7,8-TCDD	0.46	0.65-0.89		1.00	0.782	JEMPC
1,2,3,7,8-PeCDF	1.48	1.32-1.78		2.00	2.30	
2,3,4,7,8-PeCDF	1.47	1.32-1.78		1.00	2.89	
1,2,3,7,8-PeCDD	1.29	1.32-1.78		1.00	3.33	EMPC
1,2,3,4,7,8-HxCDF	1.20	1.05-1.43		2.00	6.83	
1,2,3,6,7,8-HxCDF	1.38	1.05-1.43		2.00	3.22	
2,3,4,6,7,8-HxCDF	1.21	1.05-1.43		2.00	5.30	
1,2,3,7,8,9-HxCDF	1.18	1.05-1.43		2.00	2.46	
1,2,3,4,7,8-HxCDD	1.23	1.05-1.43		2.00	4.65	
1,2,3,6,7,8-HxCDD	1.19	1.05-1.43		2.00	24.6	
1,2,3,7,8,9-HxCDD	1.17	1.05-1.43		2.00	9.42	
1,2,3,4,6,7,8-HpCDF	1.00	0.88-1.20		2.00	65.1	
1,2,3,4,7,8,9-HpCDF	0.88	0.88-1.20		2.00	2.99	EMPC
1,2,3,4,6,7,8-HpCDD	1.03	0.88-1.20		2.00	549	
OCDF	0.86	0.76-1.02		5.00	71.0	
OCDD	0.87	0.76-1.02		25.0	4,130	#

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		1.00	45.9	49.0
Total TCDD		1.00	34.2	36.8
Total PeCDF		2.00	57.9	62.9
Total PeCDD		1.00	39.2	42.9
Total HxCDF		2.00	131	134
Total HxCDD		2.00	177	
Total HpCDF		2.00	174	
Total HpCDD		2.00	1,210	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 18.4

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 18.4

#-Result from diluted secondary analysis.

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-18-M2**

Lab Sample ID: VO23P
LIMS ID: 12-20555
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/09/12 02:18
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.79	0.65-0.89	71.7	40-135	
13C-2,3,7,8-TCDD	0.78	0.65-0.89	78.0	40-135	
13C-1,2,3,7,8-PeCDF	1.57	1.32-1.78	81.8	40-135	
13C-2,3,4,7,8-PeCDF	1.57	1.32-1.78	80.2	40-135	
13C-1,2,3,7,8-PeCDD	1.57	1.32-1.78	80.3	40-135	
13C-1,2,3,4,7,8-HxCDF	0.51	0.43-0.59	88.8	40-135	
13C-1,2,3,6,7,8-HxCDF	0.52	0.43-0.59	84.2	40-135	
13C-2,3,4,6,7,8-HxCDF	0.53	0.43-0.59	77.6	40-135	
13C-1,2,3,7,8,9-HxCDF	0.53	0.43-0.59	105	40-135	
13C-1,2,3,4,7,8-HxCDD	1.25	1.05-1.43	85.8	40-135	
13C-1,2,3,6,7,8-HxCDD	1.22	1.05-1.43	84.6	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	82.7	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.44	0.37-0.51	80.8	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20	92.6	40-135	
13C-OCDD	0.90	0.76-1.02	82.5	40-135	
37Cl4-2,3,7,8-TCDD			80.1	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290
Page 1 of 1

Sample ID: CP-18-M2
DILUTION

Lab Sample ID: VO23P
LIMS ID: 12-20555
Matrix: Sediment
Data Release Authorized:
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 11/01/12
Date Analyzed: 11/09/12 13:53
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 5.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-OCDD	0.87	0.76-1.02	60.4	40-135	
37Cl4-2,3,7,8-TCDD			72.1	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: MB-110112**

Lab Sample ID: MB-110112
LIMS ID: 12-20540
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: NA
Date Received: NA

Date Extracted: 11/01/12
Date Analyzed: 11/05/12 14:54
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF		0.65-0.89	0.0982	1.00	< 0.0982	U
2,3,7,8-TCDD		0.65-0.89	0.283	1.00	< 0.283	U
1,2,3,7,8-PeCDF		1.32-1.78	0.163	2.00	< 0.163	U
2,3,4,7,8-PeCDF		1.32-1.78	0.101	1.00	< 0.101	U
1,2,3,7,8-PeCDD		1.32-1.78	0.147	1.00	< 0.147	U
1,2,3,4,7,8-HxCDF		1.05-1.43	0.154	2.00	< 0.154	U
1,2,3,6,7,8-HxCDF		1.05-1.43	0.0923	2.00	< 0.0923	U
2,3,4,6,7,8-HxCDF		1.05-1.43	0.0392	2.00	< 0.0392	U
1,2,3,7,8,9-HxCDF		1.05-1.43	0.187	2.00	< 0.187	U
1,2,3,4,7,8-HxCDD		1.05-1.43	0.0570	2.00	< 0.0570	U
1,2,3,6,7,8-HxCDD		1.05-1.43	0.161	2.00	< 0.161	U
1,2,3,7,8,9-HxCDD		1.05-1.43	0.102	2.00	< 0.102	U
1,2,3,4,6,7,8-HpCDF	0.43	0.88-1.20		2.00	0.0720	JEMPC
1,2,3,4,7,8,9-HpCDF		0.88-1.20	0.166	2.00	< 0.166	U
1,2,3,4,6,7,8-HpCDD	1.66	0.88-1.20		2.00	0.166	JEMPC
OCDF		0.76-1.02	0.347	5.00	< 0.347	U
OCDD	0.90	0.76-1.02		5.00	0.992	J

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC	
Total TCDF	0.0982	1.00	< 0.0982	0.0300	U
Total TCDD	0.283	1.00	< 0.283	0.0380	U
Total PeCDF	0.163	2.00	< 0.163		U
Total PeCDD	0.147	1.00	< 0.147		U
Total HxCDF	0.187	2.00	< 0.187		U
Total HxCDD	0.161	2.00	< 0.161		U
Total HpCDF		2.00	< 0.166	0.0420	U
Total HpCDD		2.00	< 0.166	0.286	U

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.00

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.28

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: MB-110112**

Lab Sample ID: MB-110112
LIMS ID: 12-20540
Matrix: Sediment
Data Release Authorized: mwl
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: NA
Date Received: NA

Date Extracted: 11/01/12
Date Analyzed: 11/05/12 14:54
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.80	0.65-0.89	97.0	40-135	
13C-2,3,7,8-TCDD	0.78	0.65-0.89	102	40-135	
13C-1,2,3,7,8-PeCDF	1.54	1.32-1.78	96.1	40-135	
13C-2,3,4,7,8-PeCDF	1.58	1.32-1.78	89.0	40-135	
13C-1,2,3,7,8-PeCDD	1.58	1.32-1.78	95.4	40-135	
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	110	40-135	
13C-1,2,3,6,7,8-HxCDF	0.53	0.43-0.59	109	40-135	
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	95.2	40-135	
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	90.0	40-135	
13C-1,2,3,4,7,8-HxCDD	1.26	1.05-1.43	110	40-135	
13C-1,2,3,6,7,8-HxCDD	1.23	1.05-1.43	108	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	88.3	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	82.0	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.04	0.88-1.20	102	40-135	
13C-OCDD	0.92	0.76-1.02	71.5	40-135	
37C14-2,3,7,8-TCDD			105	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: OPR-110112**

Lab Sample ID: OPR-110112
LIMS ID: 12-20540
Matrix: Sediment
Data Release Authorized:
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: NA
Date Received: NA

Date Extracted: 11/01/12
Date Analyzed: 11/05/12 15:45
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	RL	Result
2,3,7,8-TCDF	0.74	0.65-0.89	1.00	22.3
2,3,7,8-TCDD	0.77	0.65-0.89	1.00	21.0
1,2,3,7,8-PeCDF	1.52	1.32-1.78	2.00	109
2,3,4,7,8-PeCDF	1.51	1.32-1.78	1.00	108
1,2,3,7,8-PeCDD	1.52	1.32-1.78	1.00	108
1,2,3,4,7,8-HxCDF	1.22	1.05-1.43	2.00	109
1,2,3,6,7,8-HxCDF	1.20	1.05-1.43	2.00	110
2,3,4,6,7,8-HxCDF	1.21	1.05-1.43	2.00	118
1,2,3,7,8,9-HxCDF	1.18	1.05-1.43	2.00	109
1,2,3,4,7,8-HxCDD	1.24	1.05-1.43	2.00	105
1,2,3,6,7,8-HxCDD	1.23	1.05-1.43	2.00	105
1,2,3,7,8,9-HxCDD	1.23	1.05-1.43	2.00	108
1,2,3,4,6,7,8-HpCDF	1.01	0.88-1.20	2.00	120
1,2,3,4,7,8,9-HpCDF	1.03	0.88-1.20	2.00	112
1,2,3,4,6,7,8-HpCDD	1.04	0.88-1.20	2.00	105
OCDF	0.89	0.76-1.02	5.00	194
OCDD	0.90	0.76-1.02	5.00	212

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		1.00	22.5	23.3
Total TCDD		1.00	21.0	21.6
Total PeCDF		2.00	219	222
Total PeCDD		1.00	108	109
Total HxCDF		2.00	447	448
Total HxCDD		2.00	318	319
Total HpCDF		2.00	233	234
Total HpCDD		2.00	108	

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: OPR-110112**

Lab Sample ID: OPR-110112
LIMS ID: 12-20540
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: NA
Date Received: NA

Date Extracted: 11/01/12
Date Analyzed: 11/05/12 15:45
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.77	0.65-0.89	90.0	40-135	
13C-2,3,7,8-TCDD	0.78	0.65-0.89	86.3	40-135	
13C-1,2,3,7,8-PeCDF	1.56	1.32-1.78	84.2	40-135	
13C-2,3,4,7,8-PeCDF	1.56	1.32-1.78	81.4	40-135	
13C-1,2,3,7,8-PeCDD	1.58	1.32-1.78	84.3	40-135	
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	87.7	40-135	
13C-1,2,3,6,7,8-HxCDF	0.52	0.43-0.59	89.5	40-135	
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	80.1	40-135	
13C-1,2,3,7,8,9-HxCDF	0.51	0.43-0.59	79.6	40-135	
13C-1,2,3,4,7,8-HxCDD	1.26	1.05-1.43	91.2	40-135	
13C-1,2,3,6,7,8-HxCDD	1.24	1.05-1.43	87.0	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	78.6	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.44	0.37-0.51	74.8	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20	88.1	40-135	
13C-OCDD	0.87	0.76-1.02	63.7	40-135	
37Cl4-2,3,7,8-TCDD			88.3	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: OPR-110112**

Lab Sample ID: OPR-110112
LIMS ID: 12-20540
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/12/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: NA
Date Received: NA

Date Extracted: 11/01/12
Date Analyzed: 11/05/12 15:45
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	OPR	Spiked	Recovery	Limits
2,3,7,8-TCDF	22.3	20.0	112	30-160
2,3,7,8-TCDD	21.0	20.0	105	30-160
1,2,3,7,8-PeCDF	109	100	109	30-160
2,3,4,7,8-PeCDF	108	100	108	30-160
1,2,3,7,8-PeCDD	108	100	108	30-160
1,2,3,4,7,8-HxCDF	109	100	109	30-160
1,2,3,6,7,8-HxCDF	110	100	110	30-160
2,3,4,6,7,8-HxCDF	118	100	118	30-160
1,2,3,7,8,9-HxCDF	109	100	109	30-160
1,2,3,4,7,8-HxCDD	105	100	105	30-160
1,2,3,6,7,8-HxCDD	105	100	105	30-160
1,2,3,7,8,9-HxCDD	108	100	108	30-160
1,2,3,4,6,7,8-HpCDF	120	100	120	30-160
1,2,3,4,7,8,9-HpCDF	112	100	112	30-160
1,2,3,4,6,7,8-HpCDD	105	100	105	30-160
OCDF	194	200	97.0	30-160
OCDD	212	200	106	30-160

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-15-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO23A
LIMS ID: 12-20540
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/03/12 21:29
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 11.23 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 11.7%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	18	< 18 U
91-57-6	2-Methylnaphthalene	18	< 18 U
208-96-8	Acenaphthylene	18	< 18 U
83-32-9	Acenaphthene	18	< 18 U
132-64-9	Dibenzofuran	18	< 18 U
86-73-7	Fluorene	18	< 18 U
85-01-8	Phenanthrene	18	< 18 U
86-74-8	Carbazole	18	< 18 U
120-12-7	Anthracene	18	< 18 U
206-44-0	Fluoranthene	18	< 18 U
129-00-0	Pyrene	18	< 18 U
56-55-3	Benzo(a)anthracene	18	< 18 U
218-01-9	Chrysene	18	< 18 U
50-32-8	Benzo(a)pyrene	18	< 18 U
193-39-5	Indeno(1,2,3-cd)pyrene	18	< 18 U
53-70-3	Dibenz(a,h)anthracene	18	< 18 U
191-24-2	Benzo(g,h,i)perylene	18	< 18 U
90-12-0	1-Methylnaphthalene	18	< 18 U
TOTBFA	Total Benzofluoranthenes	36	< 36 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	64.6%
d14-p-Terphenyl	88.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-15-M2**
Extraction Method: SW3546 **MATRIX SPIKE**

Lab Sample ID: VO23A
LIMS ID: 12-20540
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/03/12 22:06
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 11.25 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 11.7%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	18	---
91-57-6	2-Methylnaphthalene	18	---
208-96-8	Acenaphthylene	18	---
83-32-9	Acenaphthene	18	---
132-64-9	Dibenzofuran	18	---
86-73-7	Fluorene	18	---
85-01-8	Phenanthrene	18	---
86-74-8	Carbazole	18	---
120-12-7	Anthracene	18	---
206-44-0	Fluoranthene	18	---
129-00-0	Pyrene	18	---
56-55-3	Benzo(a)anthracene	18	---
218-01-9	Chrysene	18	---
50-32-8	Benzo(a)pyrene	18	---
193-39-5	Indeno(1,2,3-cd)pyrene	18	---
53-70-3	Dibenz(a,h)anthracene	18	---
191-24-2	Benzo(g,h,i)perylene	18	---
90-12-0	1-Methylnaphthalene	18	---
TOTBFA	Total Benzofluoranthenes	36	---

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	68.2%
d14-p-Terphenyl	88.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-15-M2**
Extraction Method: SW3546 **MATRIX SPIKE DUPLICATE**

Lab Sample ID: VO23A
LIMS ID: 12-20540
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/03/12 22:42
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.98 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 11.7%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	18	---
91-57-6	2-Methylnaphthalene	18	---
208-96-8	Acenaphthylene	18	---
83-32-9	Acenaphthene	18	---
132-64-9	Dibenzofuran	18	---
86-73-7	Fluorene	18	---
85-01-8	Phenanthrene	18	---
86-74-8	Carbazole	18	---
120-12-7	Anthracene	18	---
206-44-0	Fluoranthene	18	---
129-00-0	Pyrene	18	---
56-55-3	Benzo(a)anthracene	18	---
218-01-9	Chrysene	18	---
50-32-8	Benzo(a)pyrene	18	---
193-39-5	Indeno(1,2,3-cd)pyrene	18	---
53-70-3	Dibenz(a,h)anthracene	18	---
191-24-2	Benzo(g,h,i)perylene	18	---
90-12-0	1-Methylnaphthalene	18	---
TOTBFA	Total Benzofluoranthenes	36	---

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	69.2%
d14-p-Terphenyl	84.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-01-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO23B
LIMS ID: 12-20541
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/03/12 23:18
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.92 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 10.6%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	18	< 18 U
91-57-6	2-Methylnaphthalene	18	< 18 U
208-96-8	Acenaphthylene	18	< 18 U
83-32-9	Acenaphthene	18	< 18 U
132-64-9	Dibenzofuran	18	< 18 U
86-73-7	Fluorene	18	< 18 U
85-01-8	Phenanthrene	18	< 18 U
86-74-8	Carbazole	18	< 18 U
120-12-7	Anthracene	18	< 18 U
206-44-0	Fluoranthene	18	< 18 U
129-00-0	**Pyrene**	**18**	**10 J**
56-55-3	Benzo(a)anthracene	18	< 18 U
218-01-9	Chrysene	18	< 18 U
50-32-8	Benzo(a)pyrene	18	< 18 U
193-39-5	Indeno(1,2,3-cd)pyrene	18	< 18 U
53-70-3	Dibenz(a,h)anthracene	18	< 18 U
191-24-2	Benzo(g,h,i)perylene	18	< 18 U
90-12-0	1-Methylnaphthalene	18	< 18 U
TOTBFA	Total Benzofluoranthenes	37	< 37 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	64.8%
d14-p-Terphenyl	81.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-04-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO23C
LIMS ID: 12-20542
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/03/12 23:54
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.87 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 11.1%

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**18**	**48**
91-57-6	2-Methylnaphthalene	18	< 18 U
208-96-8	Acenaphthylene	18	< 18 U
83-32-9	**Acenaphthene**	**18**	**19**
132-64-9	Dibenzofuran	18	< 18 U
86-73-7	Fluorene	18	< 18 U
85-01-8	**Phenanthrene**	**18**	**9.2 J**
86-74-8	**Carbazole**	**18**	**18 J**
120-12-7	Anthracene	18	< 18 U
206-44-0	Fluoranthene	18	< 18 U
129-00-0	Pyrene	18	< 18 U
56-55-3	Benzo(a)anthracene	18	< 18 U
218-01-9	Chrysene	18	< 18 U
50-32-8	Benzo(a)pyrene	18	< 18 U
193-39-5	Indeno(1,2,3-cd)pyrene	18	< 18 U
53-70-3	Dibenz(a,h)anthracene	18	< 18 U
191-24-2	Benzo(g,h,i)perylene	18	< 18 U
90-12-0	**1-Methylnaphthalene**	**18**	**14 J**
TOTBFA	Total Benzofluoranthenes	37	< 37 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	64.2%
d14-p-Terphenyl	88.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-09-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO23D
LIMS ID: 12-20543
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/04/12 00:30
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.71 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 10.8%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	19	< 19 U
91-57-6	2-Methylnaphthalene	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	< 19 U
132-64-9	Dibenzofuran	19	< 19 U
86-73-7	Fluorene	19	< 19 U
85-01-8	Phenanthrene	19	< 19 U
86-74-8	Carbazole	19	< 19 U
120-12-7	Anthracene	19	< 19 U
206-44-0	Fluoranthene	19	< 19 U
129-00-0	Pyrene	19	< 19 U
56-55-3	Benzo(a)anthracene	19	< 19 U
218-01-9	Chrysene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	Benzo(g,h,i)perylene	19	< 19 U
90-12-0	1-Methylnaphthalene	19	< 19 U
TOTBFA	Total Benzofluoranthenes	37	< 37 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	58.6%
d14-p-Terphenyl	85.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-07-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO23E
LIMS ID: 12-20544
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/04/12 01:06
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.73 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 13.6%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	19	< 19 U
91-57-6	2-Methylnaphthalene	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	< 19 U
132-64-9	Dibenzofuran	19	< 19 U
86-73-7	Fluorene	19	< 19 U
85-01-8	Phenanthrene	19	< 19 U
86-74-8	Carbazole	19	< 19 U
120-12-7	Anthracene	19	< 19 U
206-44-0	Fluoranthene	19	< 19 U
129-00-0	Pyrene	19	< 19 U
56-55-3	Benzo(a)anthracene	19	< 19 U
218-01-9	Chrysene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	Benzo(g,h,i)perylene	19	< 19 U
90-12-0	1-Methylnaphthalene	19	< 19 U
TOTBFA	Total Benzofluoranthenes	37	< 37 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	63.8%
d14-p-Terphenyl	84.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-06-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO23F
LIMS ID: 12-20545
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/04/12 01:42
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 11.22 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 9.5%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	18	< 18 U
91-57-6	2-Methylnaphthalene	18	< 18 U
208-96-8	Acenaphthylene	18	< 18 U
83-32-9	Acenaphthene	18	< 18 U
132-64-9	Dibenzofuran	18	< 18 U
86-73-7	Fluorene	18	< 18 U
85-01-8	Phenanthrene	18	< 18 U
86-74-8	Carbazole	18	< 18 U
120-12-7	Anthracene	18	< 18 U
206-44-0	Fluoranthene	18	< 18 U
129-00-0	Pyrene	18	< 18 U
56-55-3	Benzo(a)anthracene	18	< 18 U
218-01-9	Chrysene	18	< 18 U
50-32-8	Benzo(a)pyrene	18	< 18 U
193-39-5	Indeno(1,2,3-cd)pyrene	18	< 18 U
53-70-3	Dibenz(a,h)anthracene	18	< 18 U
191-24-2	Benzo(g,h,i)perylene	18	< 18 U
90-12-0	1-Methylnaphthalene	18	< 18 U
TOTBFA	Total Benzofluoranthenes	36	< 36 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	65.6%
d14-p-Terphenyl	84.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: DUP-2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO23G
LIMS ID: 12-20546
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/04/12 01:18
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.31 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 8.9%

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**19**	**48**
91-57-6	2-Methylnaphthalene	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	**Acenaphthene**	**19**	**13 J**
132-64-9	Dibenzofuran	19	< 19 U
86-73-7	Fluorene	19	< 19 U
85-01-8	Phenanthrene	19	< 19 U
86-74-8	**Carbazole**	**19**	**11 J**
120-12-7	Anthracene	19	< 19 U
206-44-0	Fluoranthene	19	< 19 U
129-00-0	Pyrene	19	< 19 U
56-55-3	Benzo(a)anthracene	19	< 19 U
218-01-9	Chrysene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	Benzo(g,h,i)perylene	19	< 19 U
90-12-0	1-Methylnaphthalene	19	< 19 U
TOTBFA	Total Benzofluoranthenes	39	< 39 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	71.2%
d14-p-Terphenyl	85.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-03-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO23H
LIMS ID: 12-20547
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/04/12 01:54
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 11.02 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 10.2%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	18	< 18 U
91-57-6	2-Methylnaphthalene	18	< 18 U
208-96-8	Acenaphthylene	18	< 18 U
83-32-9	Acenaphthene	18	< 18 U
132-64-9	Dibenzofuran	18	< 18 U
86-73-7	Fluorene	18	< 18 U
85-01-8	Phenanthrene	18	< 18 U
86-74-8	Carbazole	18	< 18 U
120-12-7	Anthracene	18	< 18 U
206-44-0	Fluoranthene	18	< 18 U
129-00-0	Pyrene	18	< 18 U
56-55-3	Benzo(a)anthracene	18	< 18 U
218-01-9	Chrysene	18	< 18 U
50-32-8	Benzo(a)pyrene	18	< 18 U
193-39-5	Indeno(1,2,3-cd)pyrene	18	< 18 U
53-70-3	Dibenz(a,h)anthracene	18	< 18 U
191-24-2	Benzo(g,h,i)perylene	18	< 18 U
90-12-0	1-Methylnaphthalene	18	< 18 U
TOTBFA	Total Benzofluoranthenes	36	< 36 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	63.2%
d14-p-Terphenyl	81.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-13-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO23I
LIMS ID: 12-20548
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/04/12 02:30
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 11.09 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 10.1%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	18	< 18 U
91-57-6	2-Methylnaphthalene	18	< 18 U
208-96-8	Acenaphthylene	18	< 18 U
83-32-9	Acenaphthene	18	< 18 U
132-64-9	Dibenzofuran	18	< 18 U
86-73-7	Fluorene	18	< 18 U
85-01-8	Phenanthrene	18	< 18 U
86-74-8	Carbazole	18	< 18 U
120-12-7	Anthracene	18	< 18 U
206-44-0	Fluoranthene	18	< 18 U
129-00-0	Pyrene	18	< 18 U
56-55-3	Benzo(a)anthracene	18	< 18 U
218-01-9	Chrysene	18	< 18 U
50-32-8	Benzo(a)pyrene	18	< 18 U
193-39-5	Indeno(1,2,3-cd)pyrene	18	< 18 U
53-70-3	Dibenz(a,h)anthracene	18	< 18 U
191-24-2	Benzo(g,h,i)perylene	18	< 18 U
90-12-0	1-Methylnaphthalene	18	< 18 U
TOTBFA	Total Benzofluoranthenes	36	< 36 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	64.4%
d14-p-Terphenyl	89.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-14-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO23J
LIMS ID: 12-20549
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/04/12 03:06
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.98 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 11.7%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	18	< 18 U
91-57-6	2-Methylnaphthalene	18	< 18 U
208-96-8	Acenaphthylene	18	< 18 U
83-32-9	Acenaphthene	18	< 18 U
132-64-9	Dibenzofuran	18	< 18 U
86-73-7	Fluorene	18	< 18 U
85-01-8	Phenanthrene	18	< 18 U
86-74-8	Carbazole	18	< 18 U
120-12-7	Anthracene	18	< 18 U
206-44-0	Fluoranthene	18	< 18 U
129-00-0	Pyrene	18	< 18 U
56-55-3	Benzo(a)anthracene	18	< 18 U
218-01-9	Chrysene	18	< 18 U
50-32-8	Benzo(a)pyrene	18	< 18 U
193-39-5	Indeno(1,2,3-cd)pyrene	18	< 18 U
53-70-3	Dibenz(a,h)anthracene	18	< 18 U
191-24-2	Benzo(g,h,i)perylene	18	< 18 U
90-12-0	1-Methylnaphthalene	18	< 18 U
TOTBFA	Total Benzofluoranthenes	36	< 36 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	62.4%
d14-p-Terphenyl	83.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-20-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO23K
LIMS ID: 12-20550
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/04/12 03:42
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.39 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 3.00
Percent Moisture: 55.4%

CAS Number	Analyte	RL	Result	
91-20-3	Naphthalene	58	910	
91-57-6	2-Methylnaphthalene	58	95	
208-96-8	Acenaphthylene	58	52	J
83-32-9	Acenaphthene	58	110	
132-64-9	Dibenzofuran	58	84	
86-73-7	Fluorene	58	87	
85-01-8	Phenanthrene	58	460	
86-74-8	Carbazole	58	40	J
120-12-7	Anthracene	58	92	
206-44-0	Fluoranthene	58	720	
129-00-0	Pyrene	58	620	
56-55-3	Benzo(a)anthracene	58	150	
218-01-9	Chrysene	58	280	
50-32-8	Benzo(a)pyrene	58	180	
193-39-5	Indeno(1,2,3-cd)pyrene	58	81	
53-70-3	Dibenz(a,h)anthracene	58	29	J
191-24-2	Benzo(g,h,i)perylene	58	90	
90-12-0	1-Methylnaphthalene	58	69	
TOTBFA	Total Benzofluoranthenes	120	420	

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	72.6%
d14-p-Terphenyl	79.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-16-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO23L
LIMS ID: 12-20551
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/04/12 04:18
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.74 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 29.8%

CAS Number	Analyte	RL	Result	
91-20-3	**Naphthalene**	**19**	**250**	
91-57-6	**2-Methylnaphthalene**	**19**	**70**	
208-96-8	**Acenaphthylene**	**19**	**10**	**J**
83-32-9	**Acenaphthene**	**19**	**28**	
132-64-9	**Dibenzofuran**	**19**	**23**	
86-73-7	**Fluorene**	**19**	**27**	
85-01-8	**Phenanthrene**	**19**	**74**	
86-74-8	Carbazole	19	< 19	U
120-12-7	**Anthracene**	**19**	**34**	
206-44-0	**Fluoranthene**	**19**	**82**	
129-00-0	**Pyrene**	**19**	**83**	
56-55-3	**Benzo(a)anthracene**	**19**	**24**	
218-01-9	**Chrysene**	**19**	**28**	
50-32-8	**Benzo(a)pyrene**	**19**	**48**	
193-39-5	**Indeno(1,2,3-cd)pyrene**	**19**	**22**	
53-70-3	Dibenz(a,h)anthracene	19	< 19	U
191-24-2	**Benzo(g,h,i)perylene**	**19**	**32**	
90-12-0	**1-Methylnaphthalene**	**19**	**35**	
TOTBFA	**Total Benzofluoranthenes**	**37**	**70**	

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	71.4%
d14-p-Terphenyl	84.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-17-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO23M
LIMS ID: 12-20552
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/04/12 04:54
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.40 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 39.1%

CAS Number	Analyte	RL	Result	
91-20-3	Naphthalene	19	4,800	E
91-57-6	2-Methylnaphthalene	19	520	
208-96-8	Acenaphthylene	19	93	
83-32-9	Acenaphthene	19	790	
132-64-9	Dibenzofuran	19	570	
86-73-7	Fluorene	19	720	
85-01-8	Phenanthrene	19	1,400	
86-74-8	Carbazole	19	150	
120-12-7	Anthracene	19	690	
206-44-0	Fluoranthene	19	2,600	E
129-00-0	Pyrene	19	3,900	E
56-55-3	Benzo(a)anthracene	19	520	
218-01-9	Chrysene	19	1,200	
50-32-8	Benzo(a)pyrene	19	670	
193-39-5	Indeno(1,2,3-cd)pyrene	19	220	
53-70-3	Dibenz(a,h)anthracene	19	100	
191-24-2	Benzo(g,h,i)perylene	19	250	
90-12-0	1-Methylnaphthalene	19	550	
TOTBFA	Total Benzofluoranthenes	38	1,300	

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	73.6%
d14-p-Terphenyl	80.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-17-M2**
Extraction Method: SW3546 **DILUTION**

Lab Sample ID: VO23M
LIMS ID: 12-20552
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/07/12 03:22
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.40 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 5.00
Percent Moisture: 39.1%

CAS Number	Analyte	RL	Result	
91-20-3	**Naphthalene**	**96**	**4,800**	
91-57-6	**2-Methylnaphthalene**	**96**	**520**	
208-96-8	**Acenaphthylene**	**96**	**91**	**J**
83-32-9	**Acenaphthene**	**96**	**820**	
132-64-9	**Dibenzofuran**	**96**	**560**	
86-73-7	**Fluorene**	**96**	**670**	
85-01-8	**Phenanthrene**	**96**	**1,400**	
86-74-8	Carbazole	96	< 96	U
120-12-7	**Anthracene**	**96**	**680**	
206-44-0	**Fluoranthene**	**96**	**2,400**	
129-00-0	**Pyrene**	**96**	**4,100**	
56-55-3	**Benzo(a)anthracene**	**96**	**540**	
218-01-9	**Chrysene**	**96**	**1,200**	
50-32-8	**Benzo(a)pyrene**	**96**	**680**	
193-39-5	**Indeno(1,2,3-cd)pyrene**	**96**	**230**	
53-70-3	**Dibenz(a,h)anthracene**	**96**	**82**	**J**
191-24-2	**Benzo(g,h,i)perylene**	**96**	**260**	
90-12-0	**1-Methylnaphthalene**	**96**	**570**	
TOTBFA	**Total Benzofluoranthenes**	**190**	**1,300**	

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	77.0%
d14-p-Terphenyl	80.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: DUP-1**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO23N
LIMS ID: 12-20553
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/04/12 05:30
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.48 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 37.5%

CAS Number	Analyte	RL	Result	
91-20-3	Naphthalene	19	4,500	E
91-57-6	2-Methylnaphthalene	19	350	
208-96-8	Acenaphthylene	19	74	
83-32-9	Acenaphthene	19	520	
132-64-9	Dibenzofuran	19	430	
86-73-7	Fluorene	19	510	
85-01-8	Phenanthrene	19	1,000	
86-74-8	Carbazole	19	110	
120-12-7	Anthracene	19	480	
206-44-0	Fluoranthene	19	1,500	
129-00-0	Pyrene	19	2,300	E
56-55-3	Benzo(a)anthracene	19	280	
218-01-9	Chrysene	19	470	
50-32-8	Benzo(a)pyrene	19	420	
193-39-5	Indeno(1,2,3-cd)pyrene	19	160	
53-70-3	Dibenz(a,h)anthracene	19	59	
191-24-2	Benzo(g,h,i)perylene	19	170	
90-12-0	1-Methylnaphthalene	19	410	
TOTBFA	Total Benzofluoranthenes	38	860	

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	79.0%
d14-p-Terphenyl	80.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: DUP-1**
Extraction Method: SW3546 **DILUTION**

Lab Sample ID: VO23N
LIMS ID: 12-20553
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/07/12 03:55
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.48 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 5.00
Percent Moisture: 37.5%

CAS Number	Analyte	RL	Result	
91-20-3	**Naphthalene**	**95**	**4,300**	
91-57-6	**2-Methylnaphthalene**	**95**	**340**	
208-96-8	**Acenaphthylene**	**95**	**72**	**J**
83-32-9	**Acenaphthene**	**95**	**520**	
132-64-9	**Dibenzofuran**	**95**	**420**	
86-73-7	**Fluorene**	**95**	**490**	
85-01-8	**Phenanthrene**	**95**	**1,000**	
86-74-8	Carbazole	95	< 95	U
120-12-7	**Anthracene**	**95**	**440**	
206-44-0	**Fluoranthene**	**95**	**1,300**	
129-00-0	**Pyrene**	**95**	**2,300**	
56-55-3	**Benzo(a)anthracene**	**95**	**290**	
218-01-9	**Chrysene**	**95**	**470**	
50-32-8	**Benzo(a)pyrene**	**95**	**430**	
193-39-5	**Indeno(1,2,3-cd)pyrene**	**95**	**150**	
53-70-3	**Dibenz(a,h)anthracene**	**95**	**48**	**J**
191-24-2	**Benzo(g,h,i)perylene**	**95**	**190**	
90-12-0	**1-Methylnaphthalene**	**95**	**420**	
TOTBFA	**Total Benzofluoranthenes**	**190**	**840**	

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	77.0%
d14-p-Terphenyl	80.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-19-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO23O
LIMS ID: 12-20554
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/07/12 16:35
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.73 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 50.2%

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**19**	**480**
91-57-6	**2-Methylnaphthalene**	**19**	**64**
208-96-8	**Acenaphthylene**	**19**	**24**
83-32-9	**Acenaphthene**	**19**	**56**
132-64-9	**Dibenzofuran**	**19**	**60**
86-73-7	**Fluorene**	**19**	**61**
85-01-8	**Phenanthrene**	**19**	**270**
86-74-8	Carbazole	19	< 19 U
120-12-7	**Anthracene**	**19**	**140**
206-44-0	**Fluoranthene**	**19**	**210**
129-00-0	**Pyrene**	**19**	**320**
56-55-3	**Benzo(a)anthracene**	**19**	**380**
218-01-9	**Chrysene**	**19**	**520**
50-32-8	**Benzo(a)pyrene**	**19**	**240**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**19**	**73**
53-70-3	**Dibenz(a,h)anthracene**	**19**	**29**
191-24-2	**Benzo(g,h,i)perylene**	**19**	**70**
90-12-0	**1-Methylnaphthalene**	**19**	**47**
TOTBFA	**Total Benzofluoranthenes**	**37**	**490**

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	70.6%
d14-p-Terphenyl	80.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-18-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO23P
LIMS ID: 12-20555
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Date Extracted: 10/25/12
Date Analyzed: 11/07/12 20:54
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.52 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 31.7%

CAS Number	Analyte	RL	Result	
91-20-3	**Naphthalene**	**19**	**1,300**	
91-57-6	**2-Methylnaphthalene**	**19**	**170**	
208-96-8	**Acenaphthylene**	**19**	**36**	
83-32-9	**Acenaphthene**	**19**	**170**	
132-64-9	**Dibenzofuran**	**19**	**130**	
86-73-7	**Fluorene**	**19**	**120**	
85-01-8	**Phenanthrene**	**19**	**330**	
86-74-8	Carbazole	19	< 19	U
120-12-7	**Anthracene**	**19**	**130**	
206-44-0	**Fluoranthene**	**19**	**350**	
129-00-0	**Pyrene**	**19**	**450**	
56-55-3	**Benzo(a)anthracene**	**19**	**69**	
218-01-9	**Chrysene**	**19**	**89**	
50-32-8	**Benzo(a)pyrene**	**19**	**65**	
193-39-5	**Indeno(1,2,3-cd)pyrene**	**19**	**28**	
53-70-3	Dibenz(a,h)anthracene	19	< 19	U
191-24-2	**Benzo(g,h,i)perylene**	**19**	**31**	
90-12-0	**1-Methylnaphthalene**	**19**	**120**	
TOTBFA	**Total Benzofluoranthenes**	**38**	**150**	

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	82.8%
d14-p-Terphenyl	85.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: MB-102512**
Extraction Method: SW3546 **METHOD BLANK**

Lab Sample ID: MB-102512
LIMS ID: 12-20540
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: NA
Date Received: NA

Date Extracted: 10/25/12
Date Analyzed: 11/03/12 19:41
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.00 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
83-32-9	Acenaphthene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U
86-73-7	Fluorene	20	< 20 U
85-01-8	Phenanthrene	20	< 20 U
86-74-8	Carbazole	20	< 20 U
120-12-7	Anthracene	20	< 20 U
206-44-0	Fluoranthene	20	< 20 U
129-00-0	Pyrene	20	< 20 U
56-55-3	Benzo(a)anthracene	20	< 20 U
218-01-9	Chrysene	20	< 20 U
50-32-8	Benzo(a)pyrene	20	< 20 U
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U
191-24-2	Benzo(g,h,i)perylene	20	< 20 U
90-12-0	1-Methylnaphthalene	20	< 20 U
TOTBFA	Total Benzofluoranthenes	40	< 40 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	68.0%
d14-p-Terphenyl	89.8%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES SOIL/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071

Client ID	FBP	TPH	TOT OUT
MB-102512	68.0%	89.8%	0
LCS-102512	69.2%	86.4%	0
LCSD-102512	74.0%	89.0%	0
CP-15-M2	64.6%	88.2%	0
CP-15-M2 MS	68.2%	88.2%	0
CP-15-M2 MSD	69.2%	84.0%	0
CP-01-M2	64.8%	81.4%	0
CP-04-M2	64.2%	88.0%	0
CP-09-M2	58.6%	85.6%	0
CP-07-M2	63.8%	84.6%	0
CP-06-M2	65.6%	84.8%	0
DUP-2	71.2%	85.6%	0
CP-03-M2	63.2%	81.8%	0
CP-13-M2	64.4%	89.4%	0
CP-14-M2	62.4%	83.8%	0
CP-20-M2	72.6%	79.8%	0
CP-16-M2	71.4%	84.2%	0
CP-17-M2	73.6%	80.0%	0
CP-17-M2 DL	77.0%	80.0%	0
DUP-1	79.0%	80.4%	0
DUP-1 DL	77.0%	80.0%	0
CP-19-M2	70.6%	80.0%	0
CP-18-M2	82.8%	85.6%	0

	LCS/MB LIMITS	QC LIMITS
(FBP) = 2-Fluorobiphenyl	(30-160)	(30-160)
(TPH) = d14-p-Terphenyl	(30-160)	(30-160)

Prep Method: SW3546
Log Number Range: 12-20540 to 12-20555

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: LCS-102512**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-102512 QC Report No: VO23-Landau Associates, Inc.
LIMS ID: 12-20540 Project: Cascade Pole Sed Sampling 2012
Matrix: Sediment 0021039.070.071
Data Release Authorized: Date Sampled: 10/18/12
Reported: 11/08/12 Date Received: 10/18/12

Date Extracted LCS/LCSD: 10/25/12 Sample Amount LCS: 10.00 g
LCSD: 10.00 g
Date Analyzed LCS: 11/03/12 20:17 Final Extract Volume LCS: 1.0 mL
LCSD: 11/03/12 20:53 LCSD: 1.0 mL
Instrument/Analyst LCS: NT10/VTS Dilution Factor LCS: 1.00
LCSD: NT10/VTS LCSD: 1.00
GPC Cleanup: No Percent Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	322	500	64.4%	355	500	71.0%	9.7%
2-Methylnaphthalene	358	500	71.6%	382	500	76.4%	6.5%
Acenaphthylene	332	500	66.4%	366	500	73.2%	9.7%
Acenaphthene	338	500	67.6%	374	500	74.8%	10.1%
Dibenzofuran	361	500	72.2%	398	500	79.6%	9.7%
Fluorene	364	500	72.8%	429	500	85.8%	16.4%
Phenanthrene	390	500	78.0%	405	500	81.0%	3.8%
Carbazole	432	500	86.4%	452	500	90.4%	4.5%
Anthracene	379	500	75.8%	409	500	81.8%	7.6%
Fluoranthene	413	500	82.6%	433	500	86.6%	4.7%
Pyrene	397	500	79.4%	409	500	81.8%	3.0%
Benzo(a)anthracene	420	500	84.0%	426	500	85.2%	1.4%
Chrysene	388	500	77.6%	404	500	80.8%	4.0%
Benzo(a)pyrene	393	500	78.6%	409	500	81.8%	4.0%
Indeno(1,2,3-cd)pyrene	407	500	81.4%	438	500	87.6%	7.3%
Dibenz(a,h)anthracene	425	500	85.0%	450	500	90.0%	5.7%
Benzo(g,h,i)perylene	434	500	86.8%	452	500	90.4%	4.1%
1-Methylnaphthalene	369	500	73.8%	395	500	79.0%	6.8%
Total Benzofluoranthenes	772	1000	77.2%	813	1000	81.3%	5.2%

Semivolatile Surrogate Recovery

	LCS	LCSD
2-Fluorobiphenyl	69.2%	74.0%
d14-p-Terphenyl	86.4%	89.0%

Reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-15-M2**
Page 1 of 1 **MS/MSD**

Lab Sample ID: VO23A
LIMS ID: 12-20540
Matrix: Sediment
Data Release Authorized:
Reported: 11/08/12

QC Report No: VO23-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted MS/MSD: 10/25/12

Sample Amount MS: 11.25 g-dry-wt
MSD: 10.98 g-dry-wt

Date Analyzed MS: 11/03/12 22:06
MSD: 11/03/12 22:42

Final Extract Volume MS: 1.0 mL
MSD: 1.0 mL

Instrument/Analyst MS: NT10/VTS
MSD: NT10/VTS

Dilution Factor MS: 1.00
MSD: 1.00

GPC Cleanup: No

Percent Moisture: 11.7 %

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Naphthalene	< 18 U	281	444	63.3%	301	455	66.2%	6.9%
2-Methylnaphthalene	< 18 U	315	444	70.9%	352	455	77.4%	11.1%
Acenaphthylene	< 18 U	306	444	68.9%	314	455	69.0%	2.6%
Acenaphthene	< 18 U	314	444	70.7%	330	455	72.5%	5.0%
Dibenzofuran	< 18 U	337	444	75.9%	344	455	75.6%	2.1%
Fluorene	< 18 U	380	444	85.6%	346	455	76.0%	9.4%
Phenanthrene	< 18 U	362	444	81.5%	375	455	82.4%	3.5%
Carbazole	< 18 U	389	444	87.6%	401	455	88.1%	3.0%
Anthracene	< 18 U	352	444	79.3%	359	455	78.9%	2.0%
Fluoranthene	< 18 U	380	444	85.6%	409	455	89.9%	7.4%
Pyrene	< 18 U	372	444	83.8%	384	455	84.4%	3.2%
Benzo(a)anthracene	< 18 U	378	444	85.1%	389	455	85.5%	2.9%
Chrysene	< 18 U	358	444	80.6%	380	455	83.5%	6.0%
Benzo(a)pyrene	< 18 U	362	444	81.5%	374	455	82.2%	3.3%
Indeno(1,2,3-cd)pyrene	< 18 U	372	444	83.8%	394	455	86.6%	5.7%
Dibenz(a,h)anthracene	< 18 U	387	444	87.2%	402	455	88.4%	3.8%
Benzo(g,h,i)perylene	< 18 U	395	444	89.0%	397	455	87.3%	0.5%
1-Methylnaphthalene	< 18 U	327	444	73.6%	342	455	75.2%	4.5%
Total Benzofluoranthenes	< 36 U	692	889	77.8%	732	911	80.4%	5.6%

Reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

SAMPLE RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Client ID: CP-15-M2
ARI ID: 12-20540 VO23A

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	88.10
Total Organic Carbon	10/25/12 102512#1	EPA 9060M	Percent	0.020	0.289

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Client ID: CP-01-M2
ARI ID: 12-20541 VO23B

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	88.80
Total Organic Carbon	10/24/12 102412#1	EPA 9060M	Percent	0.020	0.124

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Client ID: CP-04-M2
ARI ID: 12-20542 VO23C

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	87.90
Total Organic Carbon	10/24/12 102412#1	EPA 9060M	Percent	0.020	0.097

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Client ID: CP-09-M2
ARI ID: 12-20543 VO23D

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	88.00
Total Organic Carbon	10/24/12 102412#1	EPA 9060M	Percent	0.020	0.096

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Client ID: CP-07-M2
ARI ID: 12-20544 VO23E

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	87.50
Total Organic Carbon	10/24/12 102412#1	EPA 9060M	Percent	0.020	0.184

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Client ID: CP-06-M2
ARI ID: 12-20545 VO23F

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	88.00
Total Organic Carbon	10/24/12 102412#1	EPA 9060M	Percent	0.020	0.223

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Client ID: DUP-2
ARI ID: 12-20546 VO23G

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	88.90
Total Organic Carbon	10/24/12 102412#1	EPA 9060M	Percent	0.020	0.090

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Client ID: CP-03-M2
ARI ID: 12-20547 VO23H

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	89.40
Total Organic Carbon	10/24/12 102412#1	EPA 9060M	Percent	0.020	0.197

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Client ID: CP-13-M2
ARI ID: 12-20548 VO23I

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	86.60
Total Organic Carbon	10/24/12 102412#1	EPA 9060M	Percent	0.020	0.211

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Client ID: CP-14-M2
ARI ID: 12-20549 VO23J

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	87.00
Total Organic Carbon	10/25/12 102512#1	EPA 9060M	Percent	0.020	0.169

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Client ID: CP-20-M2
ARI ID: 12-20550 VO23K

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	44.00
Total Organic Carbon	10/25/12 102512#1	EPA 9060M	Percent	0.020	2.60

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Client ID: CP-16-M2
ARI ID: 12-20551 VO23L

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	67.90
Total Organic Carbon	10/25/12 102512#1	EPA 9060M	Percent	0.020	1.24

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Client ID: CP-17-M2
ARI ID: 12-20552 VO23M

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	61.40
Total Organic Carbon	10/25/12 102512#1	EPA 9060M	Percent	0.020	1.34

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Client ID: DUP-1
ARI ID: 12-20553 VO23N

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	61.20
Total Organic Carbon	10/25/12 102512#1	EPA 9060M	Percent	0.020	1.28

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Client ID: CP-19-M2
ARI ID: 12-20554 VO230

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	49.50
Total Organic Carbon	10/25/12 102512#1	EPA 9060M	Percent	0.020	3.04

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/15/12
Date Received: 10/18/12

Client ID: CP-18-M2
ARI ID: 12-20555 VO23P

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	67.60
Total Organic Carbon	10/25/12 102512#1	EPA 9060M	Percent	0.020	1.07

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	10/22/12	Percent	< 0.01 U
Total Organic Carbon	10/24/12	Percent	< 0.020 U
	10/25/12		< 0.020 U

LAB CONTROL RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: NA
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
Total Organic Carbon	ICVL	10/24/12	Percent	0.100	0.100	100.0%
EPA 9060M	ICVL	10/25/12		0.090	0.100	90.0%

STANDARD REFERENCE RESULTS-CONVENTIONALS
V023-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
Total Organic Carbon	10/24/12	Percent	2.53	2.99	84.6%
NIST 1941B	10/25/12		3.00	2.99	100.3%

REPLICATE RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: VO23A Client ID: CP-15-M2					
Total Solids	10/22/12	Percent	88.10	89.50 89.30	0.9%
Total Organic Carbon	10/25/12	Percent	0.289	0.274 0.294	3.6%

MS/MSD RESULTS-CONVENTIONALS
VO23-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: VO23A Client ID: CP-15-M2						
Total Organic Carbon	10/25/12	Percent	0.289	0.726	0.392	111.5%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

November 15, 2012

Chris Kimmel
Landau Associates, Inc.
130 2nd Avenue S.
Edmonds, WA 98020

RE: Project No: 0021039.070.071
Project Name: Cascade Pole Sed Sampling 1012
ARI Job No: VO29

Dear Chris:

Please find enclosed the chain of custody (COC) documentation and the final results from the project referenced above. Analytical Resources, Inc. accepted six sediment samples in good condition on October 18, 2012.

The samples were analyzed for PAHs plus Dibenzofuran, TOC and Dioxins/Furans, as requested on the COC.

The method blank for Dioxin/Furans contained reportable responses below the reporting limit. No "B" qualifiers were applied to sample results that were greater than ten times the levels found in the method blank.

There were no other anomalies associated with the samples.

A copy of this report and all corresponding raw data will remain on file electronically with ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.
Kelly Bottem
Client Services Manager
(206) 695-6211
kellyb@arilabs.com

Enclosures

LANDAU ASSOCIATES

☒ Seattle/Edmonds (425) 778-0907
☐ Tacoma (253) 926-2493
☐ Spokane (509) 327-9737
☐ Portland (503) 542-1080
☐ _____

Date 10/18/12
Page 2 of 2

Chain-of-Custody Record

Project Name Cascade Pole Sed Sampling 2012
Project No. 0021039.070.07H
Project Location/Event Olympia, WA
Sampler's Name Steve Shaw, Lauren McIntire
Project Contact Chris Kimmel
Send Results To " ", Anne Halvorsen

Turnaround Time
☒ Standard
☐ Accelerated
☐ _____

Sample I.D.	Date	Time	Matrix	No. of Containers	Dioxins (8270)	PAHs (8270)	TOC (9060)	Dibenzofuran (8270)	Observations/Comments
CP-10-MZ	10/18/12	1530	SED	2	X	X	X	X	~~X Allow water samples to settle, collect aliquot from clear portion~~ SDS 10/18/12
CP-12-MZ	10/18/12	1600	SED	2	X	X	X	X	~~X NWTPH-Dx - run acid wash/silica gel cleanup~~
CP-02-MZ	10/18/12	1630	SED	2	X	X	X	X	
CP-05-MZ	10/18/12	1645	SED	2	X	X	X	X	
CP-11-MZ	10/18/12	1700	SED	2	X	X	X	X	
CP-08-MZ	10/18/12	1730	SED	2	X	X	X	X	

Testing Parameters

___ run samples standardized to _____ product
___ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt

___ Dissolved metal water samples field filtered

Other _____

Special Shipment/Handling or Storage Requirements cool + ice

Method of Shipment delivery

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Printed Name STEVEN D SHAW	Printed Name Jennifer Millsap	Printed Name	Printed Name
Company LANDAU ASSOC.	Company ARI	Company	Company
Date 10/18/12 Time 1741	Date 10/18/12 Time 1741	Date _____ Time _____	Date _____ Time _____

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative Rev 8/09

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau

Project Name: Cascade Pole Sediment Sampling

COC No(s): (NA)

Delivered by: Fed-Ex UPS Courier (Hand Delivered) Other:

Assigned ARI Job No: VD29

Tracking No: (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (NO)

Were custody papers included with the cooler? (YES) NO

Were custody papers properly filled out (ink, signed, etc.) (YES) NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry): 9.3

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90877952

Cooler Accepted by: JM Date: 10/18/12 Time: 1741

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)

What kind of packing material was used? Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other:

Was sufficient ice used (if appropriate)? NA YES (NO)

Were all bottles sealed in individual plastic bags? YES (NO)

Did all bottles arrive in good condition (unbroken)? (YES) NO

Were all bottle labels complete and legible? (YES) NO

Did the number of containers listed on COC match with the number of containers received? (YES) NO

Did all bottle labels and tags agree with custody papers? (YES) NO

Were all bottles used correct for the requested analyses? (YES) NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) (NA) YES NO

Were all VOC vials free of air bubbles? (NA) YES NO

Was sufficient amount of sample sent in each bottle? (YES) NO

Date VOC Trip Blank was made at ARI: (NA)

Was Sample Split by ARI (NA) YES Date/Time: Equipment: Split by:

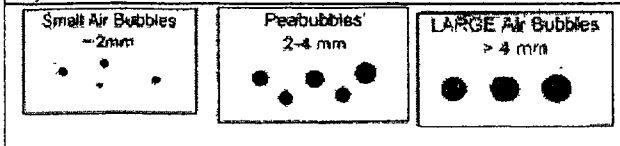
Samples Logged by: JM Date: 10/19/12 Time: 1446

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Temperature Compliance Form

V029

Cooler#: 1	Temperature(°C): 9.3	
Sample ID	**Bottle Count**	**Bottle Type**
All samples associated with this job were received at a temp greater than 6°C.		

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Completed by: JM Date: 10/19/12 Time: 1446

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: VO29
Client: Landau Associates, Inc.
Project Event: 0021039.070.071
Project Name: Cascade Pole Sed Sampling 2012

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	CP-10-M2	VO29A	12-20594	Sediment	10/18/12 15:30	10/18/12 17:41
2.	CP-12-M2	VO29B	12-20595	Sediment	10/18/12 16:00	10/18/12 17:41
3.	CP-02-M2	VO29C	12-20596	Sediment	10/18/12 16:30	10/18/12 17:41
4.	CP-05-M2	VO29D	12-20597	Sediment	10/18/12 16:45	10/18/12 17:41
5.	CP-11-M2	VO29E	12-20598	Sediment	10/18/12 17:00	10/18/12 17:41
6.	CP-08-M2	VO29F	12-20599	Sediment	10/18/12 17:30	10/18/12 17:41

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-10-M2**

Lab Sample ID: VO29A
LIMS ID: 12-20594
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 16:47
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.42	0.65-0.89		0.999	0.0879	BJEMPC
2,3,7,8-TCDD		0.65-0.89	0.439	0.999	< 0.439	U
1,2,3,7,8-PeCDF	1.34	1.32-1.78		2.00	0.182	J
2,3,4,7,8-PeCDF	1.89	1.32-1.78		0.999	0.204	JEMPC
1,2,3,7,8-PeCDD	0.58	1.32-1.78		0.999	0.112	JEMPC
1,2,3,4,7,8-HxCDF	1.29	1.05-1.43		2.00	0.545	J
1,2,3,6,7,8-HxCDF	1.05	1.05-1.43		2.00	0.306	JEMPC
2,3,4,6,7,8-HxCDF	0.85	1.05-1.43		2.00	0.226	JEMPC
1,2,3,7,8,9-HxCDF	0.96	1.05-1.43		2.00	0.116	JEMPC
1,2,3,4,7,8-HxCDD	2.15	1.05-1.43		2.00	0.230	JEMPC
1,2,3,6,7,8-HxCDD	1.26	1.05-1.43		2.00	1.64	J
1,2,3,7,8,9-HxCDD	1.40	1.05-1.43		2.00	0.527	BJ
1,2,3,4,6,7,8-HpCDF	1.00	0.88-1.20		2.00	4.73	
1,2,3,4,7,8,9-HpCDF	0.88	0.88-1.20		2.00	0.246	JEMPC
1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20		2.00	44.3	
OCDF	0.77	0.76-1.02		5.00	7.18	
OCDD	0.88	0.76-1.02		5.00	412	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC	
Total TCDF		0.999	< 0.0879	0.262	U
Total TCDD	0.439	0.999	0.340	0.573	
Total PeCDF		2.00	2.54	3.41	
Total PeCDD		0.999	0.404	0.501	
Total HxCDF		2.00	9.84	10.4	
Total HxCDD		2.00	9.49	10.2	
Total HpCDF		2.00	13.4	13.6	
Total HpCDD		2.00	95.7		

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 1.16

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.38

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-10-M2**

Lab Sample ID: VO29A
LIMS ID: 12-20594
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 16:47
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.78	0.65-0.89	62.9	40-135	
13C-2,3,7,8-TCDD	0.79	0.65-0.89	71.4	40-135	
13C-1,2,3,7,8-PeCDF	1.55	1.32-1.78	64.4	40-135	
13C-2,3,4,7,8-PeCDF	1.56	1.32-1.78	59.6	40-135	
13C-1,2,3,7,8-PeCDD	1.60	1.32-1.78	61.9	40-135	
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	83.4	40-135	
13C-1,2,3,6,7,8-HxCDF	0.51	0.43-0.59	80.9	40-135	
13C-2,3,4,6,7,8-HxCDF	0.53	0.43-0.59	70.0	40-135	
13C-1,2,3,7,8,9-HxCDF	0.51	0.43-0.59	65.8	40-135	
13C-1,2,3,4,7,8-HxCDD	1.26	1.05-1.43	79.2	40-135	
13C-1,2,3,6,7,8-HxCDD	1.25	1.05-1.43	77.0	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.44	0.37-0.51	67.0	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.46	0.37-0.51	64.6	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.01	0.88-1.20	76.2	40-135	
13C-OCDD	0.88	0.76-1.02	60.9	40-135	
37Cl4-2,3,7,8-TCDD			74.6	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-12-M2**

Lab Sample ID: VO29B
LIMS ID: 12-20595
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 17:40
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	1.32	0.65-0.89		0.999	0.0719	BJEMPC
2,3,7,8-TCDD	0.15	0.65-0.89		0.999	0.164	BJEMPC
1,2,3,7,8-PeCDF	1.83	1.32-1.78		2.00	0.114	JEMPC
2,3,4,7,8-PeCDF	1.53	1.32-1.78		0.999	0.0739	J
1,2,3,7,8-PeCDD		1.32-1.78	0.230	0.999	< 0.230	U
1,2,3,4,7,8-HxCDF	0.58	1.05-1.43		2.00	0.232	JEMPC
1,2,3,6,7,8-HxCDF	1.09	1.05-1.43		2.00	0.150	J
2,3,4,6,7,8-HxCDF		1.05-1.43	0.321	2.00	< 0.321	U
1,2,3,7,8,9-HxCDF	0.59	1.05-1.43		2.00	0.0979	JEMPC
1,2,3,4,7,8-HxCDD	0.66	1.05-1.43		2.00	0.172	JEMPC
1,2,3,6,7,8-HxCDD	1.46	1.05-1.43		2.00	0.865	JEMPC
1,2,3,7,8,9-HxCDD	1.25	1.05-1.43		2.00	0.368	BJ
1,2,3,4,6,7,8-HpCDF	0.95	0.88-1.20		2.00	3.17	
1,2,3,4,7,8,9-HpCDF	0.58	0.88-1.20		2.00	0.150	JEMPC
1,2,3,4,6,7,8-HpCDD	1.03	0.88-1.20		2.00	25.1	
OCDF	0.95	0.76-1.02		5.00	5.62	
OCDD	0.89	0.76-1.02		5.00	211	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		0.999	0.0340	0.420
Total TCDD		0.999	0.505	0.657
Total PeCDF		2.00	1.38	1.81
Total PeCDD	0.230	0.999	0.288	0.529
Total HxCDF		2.00	3.20	5.35
Total HxCDD		2.00	5.36	6.67
Total HpCDF		2.00	8.85	9.00
Total HpCDD		2.00	59.3	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.73

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.87

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-12-M2**

Lab Sample ID: VO29B
LIMS ID: 12-20595
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 17:40
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.76	0.65-0.89	67.8	40-135	
13C-2,3,7,8-TCDD	0.78	0.65-0.89	73.1	40-135	
13C-1,2,3,7,8-PeCDF	1.58	1.32-1.78	66.5	40-135	
13C-2,3,4,7,8-PeCDF	1.56	1.32-1.78	61.8	40-135	
13C-1,2,3,7,8-PeCDD	1.59	1.32-1.78	64.5	40-135	
13C-1,2,3,4,7,8-HxCDF	0.50	0.43-0.59	88.6	40-135	
13C-1,2,3,6,7,8-HxCDF	0.50	0.43-0.59	88.9	40-135	
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	75.4	40-135	
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	71.6	40-135	
13C-1,2,3,4,7,8-HxCDD	1.27	1.05-1.43	85.9	40-135	
13C-1,2,3,6,7,8-HxCDD	1.21	1.05-1.43	84.9	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.44	0.37-0.51	70.7	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.43	0.37-0.51	66.1	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20	79.8	40-135	
13C-OCDD	0.89	0.76-1.02	61.7	40-135	
37Cl4-2,3,7,8-TCDD			76.5	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-02-M2**

Lab Sample ID: VO29C
LIMS ID: 12-20596
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 18:33
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF		0.65-0.89	0.158	0.993	< 0.158	U
2,3,7,8-TCDD		0.65-0.89	0.367	0.993	< 0.367	U
1,2,3,7,8-PeCDF	1.53	1.32-1.78		1.99	0.232	J
2,3,4,7,8-PeCDF	1.25	1.32-1.78		0.993	0.232	JEMPC
1,2,3,7,8-PeCDD	2.45	1.32-1.78		0.993	0.165	JEMPC
1,2,3,4,7,8-HxCDF	1.23	1.05-1.43		1.99	0.870	J
1,2,3,6,7,8-HxCDF	1.09	1.05-1.43		1.99	0.363	J
2,3,4,6,7,8-HxCDF	0.91	1.05-1.43		1.99	0.298	JEMPC
1,2,3,7,8,9-HxCDF	1.05	1.05-1.43		1.99	0.328	JEMPC
1,2,3,4,7,8-HxCDD	1.50	1.05-1.43		1.99	0.379	JEMPC
1,2,3,6,7,8-HxCDD	1.24	1.05-1.43		1.99	3.01	
1,2,3,7,8,9-HxCDD	1.01	1.05-1.43		1.99	0.824	JEMPC
1,2,3,4,6,7,8-HpCDF	0.95	0.88-1.20		1.99	6.70	
1,2,3,4,7,8,9-HpCDF	1.24	0.88-1.20		1.99	0.322	JEMPC
1,2,3,4,6,7,8-HpCDD	0.99	0.88-1.20		1.99	74.6	
OCDF	0.91	0.76-1.02		4.97	11.3	
OCDD	0.88	0.76-1.02		4.97	670	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC	
Total TCDF	0.158	0.993	0.109	0.226	
Total TCDD	0.367	0.993	< 0.367	0.250	U
Total PeCDF		1.99	3.48	4.65	
Total PeCDD		0.993	< 0.165	0.880	U
Total HxCDF		1.99	16.0	16.6	
Total HxCDD		1.99	14.0	15.1	
Total HpCDF		1.99	20.8	21.1	
Total HpCDD		1.99	161		

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 1.87

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 2.06

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-02-M2**

Lab Sample ID: VO29C
LIMS ID: 12-20596
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 18:33
Instrument/Analyst: AS1/PK

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.77	0.65-0.89	71.4	40-135	
13C-2,3,7,8-TCDD	0.78	0.65-0.89	76.7	40-135	
13C-1,2,3,7,8-PeCDF	1.56	1.32-1.78	68.9	40-135	
13C-2,3,4,7,8-PeCDF	1.57	1.32-1.78	64.9	40-135	
13C-1,2,3,7,8-PeCDD	1.60	1.32-1.78	67.3	40-135	
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	88.1	40-135	
13C-1,2,3,6,7,8-HxCDF	0.54	0.43-0.59	85.9	40-135	
13C-2,3,4,6,7,8-HxCDF	0.51	0.43-0.59	75.5	40-135	
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	73.2	40-135	
13C-1,2,3,4,7,8-HxCDD	1.26	1.05-1.43	84.3	40-135	
13C-1,2,3,6,7,8-HxCDD	1.27	1.05-1.43	83.1	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	73.7	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	72.3	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.04	0.88-1.20	85.0	40-135	
13C-OCDD	0.90	0.76-1.02	72.6	40-135	
37Cl4-2,3,7,8-TCDD			79.6	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-05-M2**

Lab Sample ID: VO29D
LIMS ID: 12-20597
Matrix: Sediment
Data Release Authorized:
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 19:26
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF		0.65-0.89	0.0623	0.994	< 0.0623	U
2,3,7,8-TCDD		0.65-0.89	0.401	0.994	< 0.401	U
1,2,3,7,8-PeCDF		1.32-1.78	0.124	1.99	< 0.124	U
2,3,4,7,8-PeCDF		1.32-1.78	0.114	0.994	< 0.114	U
1,2,3,7,8-PeCDD		1.32-1.78	0.154	0.994	< 0.154	U
1,2,3,4,7,8-HxCDF		1.05-1.43	0.104	1.99	< 0.104	U
1,2,3,6,7,8-HxCDF		1.05-1.43	0.100	1.99	< 0.100	U
2,3,4,6,7,8-HxCDF		1.05-1.43	0.0901	1.99	< 0.0901	U
1,2,3,7,8,9-HxCDF		1.05-1.43	0.0857	1.99	< 0.0857	U
1,2,3,4,7,8-HxCDD		1.05-1.43	0.144	1.99	< 0.144	U
1,2,3,6,7,8-HxCDD		1.05-1.43	0.236	1.99	< 0.236	U
1,2,3,7,8,9-HxCDD		1.05-1.43	0.114	1.99	< 0.114	U
1,2,3,4,6,7,8-HpCDF	1.69	0.88-1.20		1.99	0.189	JEMPC
1,2,3,4,7,8,9-HpCDF		0.88-1.20	0.305	1.99	< 0.305	U
1,2,3,4,6,7,8-HpCDD	1.04	0.88-1.20		1.99	1.27	BJ
OCDF		0.76-1.02	0.638	4.97	< 0.638	U
OCDD	0.81	0.76-1.02		4.97	8.55	B

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC	
Total TCDF	0.0623	0.994	< 0.0623		U
Total TCDD	0.401	0.994	< 0.401	0.362	U
Total PeCDF	0.124	1.99	< 0.124	0.0199	U
Total PeCDD	0.154	0.994	< 0.154		U
Total HxCDF	0.104	1.99	< 0.104	0.0934	U
Total HxCDD	0.236	1.99	< 0.236	0.360	U
Total HpCDF		1.99	< 0.305	0.344	U
Total HpCDD		1.99	2.67		

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.02

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.36

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-05-M2**

Lab Sample ID: VO29D
LIMS ID: 12-20597
Matrix: Sediment
Data Release Authorized:
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 19:26
Instrument/Analyst: AS1/PK

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.78	0.65-0.89	68.4	40-135	
13C-2,3,7,8-TCDD	0.77	0.65-0.89	70.4	40-135	
13C-1,2,3,7,8-PeCDF	1.58	1.32-1.78	64.2	40-135	
13C-2,3,4,7,8-PeCDF	1.57	1.32-1.78	59.3	40-135	
13C-1,2,3,7,8-PeCDD	1.55	1.32-1.78	62.4	40-135	
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	83.1	40-135	
13C-1,2,3,6,7,8-HxCDF	0.53	0.43-0.59	82.4	40-135	
13C-2,3,4,6,7,8-HxCDF	0.51	0.43-0.59	71.0	40-135	
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	70.3	40-135	
13C-1,2,3,4,7,8-HxCDD	1.27	1.05-1.43	80.6	40-135	
13C-1,2,3,6,7,8-HxCDD	1.23	1.05-1.43	78.0	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.44	0.37-0.51	73.7	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	69.7	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.07	0.88-1.20	82.9	40-135	
13C-OCDD	0.90	0.76-1.02	66.5	40-135	
37Cl4-2,3,7,8-TCDD			74.1	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-11-M2**

Lab Sample ID: VO29E
LIMS ID: 12-20598
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 20:20
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF		0.65-0.89	0.176	0.990	< 0.176	U
2,3,7,8-TCDD	0.22	0.65-0.89		0.990	0.121	BJEMPC
1,2,3,7,8-PeCDF		1.32-1.78	0.198	1.98	< 0.198	U
2,3,4,7,8-PeCDF		1.32-1.78	0.279	0.990	< 0.279	U
1,2,3,7,8-PeCDD	2.06	1.32-1.78		0.990	0.0891	JEMPC
1,2,3,4,7,8-HxCDF	1.07	1.05-1.43		1.98	0.194	J
1,2,3,6,7,8-HxCDF	1.15	1.05-1.43		1.98	0.0970	J
2,3,4,6,7,8-HxCDF		1.05-1.43	0.499	1.98	< 0.499	U
1,2,3,7,8,9-HxCDF	0.80	1.05-1.43		1.98	0.0891	JEMPC
1,2,3,4,7,8-HxCDD		1.05-1.43	0.614	1.98	< 0.614	U
1,2,3,6,7,8-HxCDD	1.32	1.05-1.43		1.98	0.653	J
1,2,3,7,8,9-HxCDD	2.10	1.05-1.43		1.98	0.301	BJEMPC
1,2,3,4,6,7,8-HpCDF	1.00	0.88-1.20		1.98	2.00	
1,2,3,4,7,8,9-HpCDF	1.00	0.88-1.20		1.98	0.0907	J
1,2,3,4,6,7,8-HpCDD	1.04	0.88-1.20		1.98	15.4	
OCDF	0.97	0.76-1.02		4.95	2.63	J
OCDD	0.91	0.76-1.02		4.95	125	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC	
Total TCDF	0.176	0.990	< 0.176	0.373	U
Total TCDD		0.990	< 0.121	1.23	U
Total PeCDF	0.279	1.98	1.25	1.36	
Total PeCDD		0.990	< 0.0891	1.24	U
Total HxCDF		1.98	3.32	3.77	
Total HxCDD		1.98	3.21	4.90	
Total HpCDF		1.98	5.45		
Total HpCDD		1.98	34.6		

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.56

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.67

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-11-M2**

Lab Sample ID: VO29E
LIMS ID: 12-20598
Matrix: Sediment
Data Release Authorized:
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 20:20
Instrument/Analyst: AS1/PK

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.77	0.65-0.89	66.7	40-135	
13C-2,3,7,8-TCDD	0.78	0.65-0.89	72.1	40-135	
13C-1,2,3,7,8-PeCDF	1.57	1.32-1.78	65.3	40-135	
13C-2,3,4,7,8-PeCDF	1.57	1.32-1.78	62.0	40-135	
13C-1,2,3,7,8-PeCDD	1.59	1.32-1.78	62.7	40-135	
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	82.3	40-135	
13C-1,2,3,6,7,8-HxCDF	0.51	0.43-0.59	81.9	40-135	
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	72.1	40-135	
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	71.8	40-135	
13C-1,2,3,4,7,8-HxCDD	1.24	1.05-1.43	78.9	40-135	
13C-1,2,3,6,7,8-HxCDD	1.25	1.05-1.43	76.7	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	69.8	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.44	0.37-0.51	74.1	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.03	0.88-1.20	79.5	40-135	
13C-OCDD	0.89	0.76-1.02	63.8	40-135	
37Cl4-2,3,7,8-TCDD			75.5	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-08-M2**

Lab Sample ID: VO29F
LIMS ID: 12-20599
Matrix: Sediment
Data Release Authorized:
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 21:13
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	1.02	0.65-0.89		0.997	0.106	BJEMPC
2,3,7,8-TCDD	0.23	0.65-0.89		0.997	0.140	BJEMPC
1,2,3,7,8-PeCDF	1.72	1.32-1.78		1.99	0.114	J
2,3,4,7,8-PeCDF		1.32-1.78	0.367	0.997	< 0.367	U
1,2,3,7,8-PeCDD	1.84	1.32-1.78		0.997	0.0798	JEMPC
1,2,3,4,7,8-HxCDF	1.04	1.05-1.43		1.99	0.365	JEMPC
1,2,3,6,7,8-HxCDF	1.07	1.05-1.43		1.99	0.158	J
2,3,4,6,7,8-HxCDF	0.46	1.05-1.43		1.99	0.167	JEMPC
1,2,3,7,8,9-HxCDF		1.05-1.43	0.452	1.99	< 0.452	U
1,2,3,4,7,8-HxCDD	1.20	1.05-1.43		1.99	0.203	J
1,2,3,6,7,8-HxCDD	1.13	1.05-1.43		1.99	0.857	J
1,2,3,7,8,9-HxCDD	0.94	1.05-1.43		1.99	0.550	JEMPC
1,2,3,4,6,7,8-HpCDF	0.97	0.88-1.20		1.99	4.75	
1,2,3,4,7,8,9-HpCDF	1.10	0.88-1.20		1.99	0.215	J
1,2,3,4,6,7,8-HpCDD	1.01	0.88-1.20		1.99	24.2	
OCDF	0.86	0.76-1.02		4.99	6.91	
OCDD	0.88	0.76-1.02		4.99	169	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		0.997	0.116	0.897
Total TCDD		0.997	0.606	0.983
Total PeCDF		1.99	1.97	2.56
Total PeCDD		0.997	0.235	1.32
Total HxCDF		1.99	6.38	6.81
Total HxCDD		1.99	5.17	9.09
Total HpCDF		1.99	11.9	
Total HpCDD		1.99	58.0	58.1

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.81

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.89

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CP-08-M2**

Lab Sample ID: VO29F
LIMS ID: 12-20599
Matrix: Sediment
Data Release Authorized:
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 21:13
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.79	0.65-0.89	76.4	40-135	
13C-2,3,7,8-TCDD	0.77	0.65-0.89	75.7	40-135	
13C-1,2,3,7,8-PeCDF	1.57	1.32-1.78	68.8	40-135	
13C-2,3,4,7,8-PeCDF	1.58	1.32-1.78	63.1	40-135	
13C-1,2,3,7,8-PeCDD	1.56	1.32-1.78	64.7	40-135	
13C-1,2,3,4,7,8-HxCDF	0.51	0.43-0.59	82.4	40-135	
13C-1,2,3,6,7,8-HxCDF	0.52	0.43-0.59	82.0	40-135	
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	72.9	40-135	
13C-1,2,3,7,8,9-HxCDF	0.53	0.43-0.59	75.9	40-135	
13C-1,2,3,4,7,8-HxCDD	1.25	1.05-1.43	81.8	40-135	
13C-1,2,3,6,7,8-HxCDD	1.28	1.05-1.43	80.7	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.44	0.37-0.51	76.0	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.44	0.37-0.51	74.4	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.07	0.88-1.20	85.1	40-135	
13C-OCDD	0.88	0.76-1.02	66.4	40-135	
37Cl4-2,3,7,8-TCDD			81.2	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: MB-110712**

Lab Sample ID: MB-110712
LIMS ID: 12-20594
Matrix: Sediment
Data Release Authorized:
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: NA
Date Received: NA

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 14:09
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	1.24	0.65-0.89		1.00	0.0420	JEMPC
2,3,7,8-TCDD	0.14	0.65-0.89		1.00	0.104	JEMPC
1,2,3,7,8-PeCDF		1.32-1.78	0.160	2.00	< 0.160	U
2,3,4,7,8-PeCDF		1.32-1.78	0.0831	1.00	< 0.0831	U
1,2,3,7,8-PeCDD		1.32-1.78	0.114	1.00	< 0.114	U
1,2,3,4,7,8-HxCDF		1.05-1.43	0.108	2.00	< 0.108	U
1,2,3,6,7,8-HxCDF		1.05-1.43	0.136	2.00	< 0.136	U
2,3,4,6,7,8-HxCDF		1.05-1.43	0.136	2.00	< 0.136	U
1,2,3,7,8,9-HxCDF		1.05-1.43	0.0989	2.00	< 0.0989	U
1,2,3,4,7,8-HxCDD		1.05-1.43	0.119	2.00	< 0.119	U
1,2,3,6,7,8-HxCDD		1.05-1.43	0.171	2.00	< 0.171	U
1,2,3,7,8,9-HxCDD	0.93	1.05-1.43		2.00	0.0520	JEMPC
1,2,3,4,6,7,8-HpCDF	0.88	0.88-1.20		2.00	0.0780	JEMPC
1,2,3,4,7,8,9-HpCDF		0.88-1.20	0.200	2.00	< 0.200	U
1,2,3,4,6,7,8-HpCDD	1.28	0.88-1.20		2.00	0.176	JEMPC
OCDF		0.76-1.02	0.288	5.00	< 0.288	U
OCDD	0.76	0.76-1.02		5.00	1.12	J

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC	
Total TCDF		1.00	< 0.0420	0.0680	U
Total TCDD		1.00	0.100	0.128	
Total PeCDF	0.160	2.00	< 0.160	0.0160	U
Total PeCDD	0.114	1.00	< 0.114		U
Total HxCDF	0.136	2.00	< 0.136		U
Total HxCDD		2.00	< 0.171	0.0840	U
Total HpCDF		2.00	< 0.200	0.0720	U
Total HpCDD		2.00	0.238	0.398	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.12

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.23

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: MB-110712**

Lab Sample ID: MB-110712
LIMS ID: 12-20594
Matrix: Sediment
Data Release Authorized:
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: NA
Date Received: NA

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 14:09
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.77	0.65-0.89	102	40-135	
13C-2,3,7,8-TCDD	0.78	0.65-0.89	103	40-135	
13C-1,2,3,7,8-PeCDF	1.55	1.32-1.78	91.3	40-135	
13C-2,3,4,7,8-PeCDF	1.56	1.32-1.78	85.4	40-135	
13C-1,2,3,7,8-PeCDD	1.61	1.32-1.78	88.0	40-135	
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	116	40-135	
13C-1,2,3,6,7,8-HxCDF	0.52	0.43-0.59	118	40-135	
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	100	40-135	
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	99.4	40-135	
13C-1,2,3,4,7,8-HxCDD	1.27	1.05-1.43	113	40-135	
13C-1,2,3,6,7,8-HxCDD	1.26	1.05-1.43	113	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	102	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.44	0.37-0.51	103	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.03	0.88-1.20	120	40-135	
13C-OCDD	0.90	0.76-1.02	97.7	40-135	
37Cl4-2,3,7,8-TCDD			106	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: OPR-110712**

Lab Sample ID: OPR-110712
LIMS ID: 12-20594
Matrix: Sediment
Data Release Authorized:
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: NA
Date Received: NA

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 15:00
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	RL	Result
2,3,7,8-TCDF	0.70	0.65-0.89	1.00	23.3
2,3,7,8-TCDD	0.73	0.65-0.89	1.00	22.3
1,2,3,7,8-PeCDF	1.50	1.32-1.78	2.00	113
2,3,4,7,8-PeCDF	1.48	1.32-1.78	1.00	108
1,2,3,7,8-PeCDD	1.55	1.32-1.78	1.00	112
1,2,3,4,7,8-HxCDF	1.18	1.05-1.43	2.00	108
1,2,3,6,7,8-HxCDF	1.16	1.05-1.43	2.00	106
2,3,4,6,7,8-HxCDF	1.14	1.05-1.43	2.00	118
1,2,3,7,8,9-HxCDF	1.16	1.05-1.43	2.00	112
1,2,3,4,7,8-HxCDD	1.26	1.05-1.43	2.00	107
1,2,3,6,7,8-HxCDD	1.23	1.05-1.43	2.00	111
1,2,3,7,8,9-HxCDD	1.25	1.05-1.43	2.00	108
1,2,3,4,6,7,8-HpCDF	0.97	0.88-1.20	2.00	120
1,2,3,4,7,8,9-HpCDF	0.99	0.88-1.20	2.00	113
1,2,3,4,6,7,8-HpCDD	1.07	0.88-1.20	2.00	108
OCDF	0.85	0.76-1.02	5.00	197
OCDD	0.89	0.76-1.02	5.00	216

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		1.00	23.8	24.1
Total TCDD		1.00	22.4	23.0
Total PeCDF		2.00	223	228
Total PeCDD		1.00	113	
Total HxCDF		2.00	445	446
Total HxCDD		2.00	326	
Total HpCDF		2.00	233	
Total HpCDD		2.00	110	

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: OPR-110712**

Lab Sample ID: OPR-110712
LIMS ID: 12-20594
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: NA
Date Received: NA

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 15:00
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.77	0.65-0.89	70.8	40-135	
13C-2,3,7,8-TCDD	0.77	0.65-0.89	76.4	40-135	
13C-1,2,3,7,8-PeCDF	1.58	1.32-1.78	70.2	40-135	
13C-2,3,4,7,8-PeCDF	1.58	1.32-1.78	65.4	40-135	
13C-1,2,3,7,8-PeCDD	1.58	1.32-1.78	66.9	40-135	
13C-1,2,3,4,7,8-HxCDF	0.51	0.43-0.59	94.9	40-135	
13C-1,2,3,6,7,8-HxCDF	0.52	0.43-0.59	95.0	40-135	
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	80.4	40-135	
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	75.2	40-135	
13C-1,2,3,4,7,8-HxCDD	1.26	1.05-1.43	90.6	40-135	
13C-1,2,3,6,7,8-HxCDD	1.26	1.05-1.43	87.9	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.44	0.37-0.51	78.9	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	77.7	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20	89.9	40-135	
13C-OCDD	0.86	0.76-1.02	74.6	40-135	
37Cl4-2,3,7,8-TCDD			78.8	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: OPR-110712**

Lab Sample ID: OPR-110712
LIMS ID: 12-20594
Matrix: Sediment
Data Release Authorized:
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: NA
Date Received: NA

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 15:00
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	OPR	Spiked	Recovery	Limits
2,3,7,8-TCDF	23.3	20.0	116	30-160
2,3,7,8-TCDD	22.3	20.0	112	30-160
1,2,3,7,8-PeCDF	113	100	113	30-160
2,3,4,7,8-PeCDF	108	100	108	30-160
1,2,3,7,8-PeCDD	112	100	112	30-160
1,2,3,4,7,8-HxCDF	108	100	108	30-160
1,2,3,6,7,8-HxCDF	106	100	106	30-160
2,3,4,6,7,8-HxCDF	118	100	118	30-160
1,2,3,7,8,9-HxCDF	112	100	112	30-160
1,2,3,4,7,8-HxCDD	107	100	107	30-160
1,2,3,6,7,8-HxCDD	111	100	111	30-160
1,2,3,7,8,9-HxCDD	108	100	108	30-160
1,2,3,4,6,7,8-HpCDF	120	100	120	30-160
1,2,3,4,7,8,9-HpCDF	113	100	113	30-160
1,2,3,4,6,7,8-HpCDD	108	100	108	30-160
OCDF	197	200	98.5	30-160
OCDD	216	200	108	30-160

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: SRM-110712**
Page 1 of 1 **NIST 1944**

Lab Sample ID: SRM-110712
LIMS ID: 12-20594
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/15/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: NA
Date Received: NA

Date Extracted: 11/07/12
Date Analyzed: 11/13/12 15:53
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 2.01 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result
2,3,7,8-TCDF	0.73	0.65-0.89		4.98	45.0
2,3,7,8-TCDD	0.78	0.65-0.89		4.98	132
1,2,3,7,8-PeCDF	1.44	1.32-1.78		9.95	50.3
2,3,4,7,8-PeCDF	1.55	1.32-1.78		4.98	44.2
1,2,3,7,8-PeCDD	1.54	1.32-1.78		4.98	26.2
1,2,3,4,7,8-HxCDF	1.22	1.05-1.43		9.95	190
1,2,3,6,7,8-HxCDF	1.22	1.05-1.43		9.95	88.9
2,3,4,6,7,8-HxCDF	1.10	1.05-1.43		9.95	64.1
1,2,3,7,8,9-HxCDF	1.15	1.05-1.43		9.95	16.9
1,2,3,4,7,8-HxCDD	1.26	1.05-1.43		9.95	23.5
1,2,3,6,7,8-HxCDD	1.20	1.05-1.43		9.95	60.1
1,2,3,7,8,9-HxCDD	1.16	1.05-1.43		9.95	41.7
1,2,3,4,6,7,8-HpCDF	0.97	0.88-1.20		9.95	1,020
1,2,3,4,7,8,9-HpCDF	1.03	0.88-1.20		9.95	48.1
1,2,3,4,6,7,8-HpCDD	1.03	0.88-1.20		9.95	999
OCDF	0.83	0.76-1.02		24.9	1,090
OCDD	0.88	0.76-1.02		24.9	7,430

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		4.98	953	962
Total TCDD		4.98	302	303
Total PeCDF		9.95	968	1,010
Total PeCDD		4.98	184	260
Total HxCDF		9.95	945	1,050
Total HxCDD		9.95	721	729
Total HpCDF		9.95	1,430	
Total HpCDD		9.95	3,080	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 249

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 249

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: SRM-110712**
Page 1 of 1 **NIST 1944**

Lab Sample ID: SRM-110712 QC Report No: VO29-Landau Associates, Inc.
LIMS ID: 12-20594 Project: Cascade Pole Sed Sampling 2012
Matrix: Sediment 0021039.070.071
Data Release Authorized: Date Sampled: NA
Reported: 11/15/12 Date Received: NA

Date Extracted: 11/07/12 Sample Amount: 2.01 g-dry-wt
Date Analyzed: 11/13/12 15:53 Final Extract Volume: 20 uL
Instrument/Analyst: AS1/PK Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits	Exceedance
13C-2,3,7,8-TCDF	0.78	0.65-0.89	70.0	40-135	
13C-2,3,7,8-TCDD	0.77	0.65-0.89	75.7	40-135	
13C-1,2,3,7,8-PeCDF	1.57	1.32-1.78	72.6	40-135	
13C-2,3,4,7,8-PeCDF	1.58	1.32-1.78	70.7	40-135	
13C-1,2,3,7,8-PeCDD	1.59	1.32-1.78	71.3	40-135	
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	91.0	40-135	
13C-1,2,3,6,7,8-HxCDF	0.52	0.43-0.59	84.5	40-135	
13C-2,3,4,6,7,8-HxCDF	0.53	0.43-0.59	78.9	40-135	
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	100	40-135	
13C-1,2,3,4,7,8-HxCDD	1.30	1.05-1.43	88.6	40-135	
13C-1,2,3,6,7,8-HxCDD	1.23	1.05-1.43	83.2	40-135	
13C-1,2,3,4,6,7,8-HpCDF	0.44	0.37-0.51	77.7	40-135	
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	73.9	40-135	
13C-1,2,3,4,6,7,8-HpCDD	1.04	0.88-1.20	79.3	40-135	
13C-OCDD	0.90	0.76-1.02	64.2	40-135	
37Cl4-2,3,7,8-TCDD			79.9	35-197	

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-10-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO29A
LIMS ID: 12-20594
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/07/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/29/12
Date Analyzed: 11/03/12 14:04
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.87 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 8.1%

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**18**	**9.2 J**
91-57-6	2-Methylnaphthalene	18	< 18 U
208-96-8	Acenaphthylene	18	< 18 U
83-32-9	Acenaphthene	18	< 18 U
132-64-9	Dibenzofuran	18	< 18 U
86-73-7	Fluorene	18	< 18 U
85-01-8	Phenanthrene	18	< 18 U
86-74-8	Carbazole	18	< 18 U
120-12-7	Anthracene	18	< 18 U
206-44-0	Fluoranthene	18	< 18 U
129-00-0	Pyrene	18	< 18 U
56-55-3	Benzo(a)anthracene	18	< 18 U
218-01-9	Chrysene	18	< 18 U
50-32-8	Benzo(a)pyrene	18	< 18 U
193-39-5	Indeno(1,2,3-cd)pyrene	18	< 18 U
53-70-3	Dibenz(a,h)anthracene	18	< 18 U
191-24-2	Benzo(g,h,i)perylene	18	< 18 U
90-12-0	1-Methylnaphthalene	18	< 18 U
TOTBFA	Total Benzofluoranthenes	37	< 37 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	74.8%
d14-p-Terphenyl	88.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-12-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO29B
LIMS ID: 12-20595
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/07/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/29/12
Date Analyzed: 11/03/12 14:40
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 11.13 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 13.3%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	18	< 18 U
91-57-6	2-Methylnaphthalene	18	< 18 U
208-96-8	Acenaphthylene	18	< 18 U
83-32-9	Acenaphthene	18	< 18 U
132-64-9	Dibenzofuran	18	< 18 U
86-73-7	Fluorene	18	< 18 U
85-01-8	Phenanthrene	18	< 18 U
86-74-8	Carbazole	18	< 18 U
120-12-7	Anthracene	18	< 18 U
206-44-0	Fluoranthene	18	< 18 U
129-00-0	Pyrene	18	< 18 U
56-55-3	Benzo(a)anthracene	18	< 18 U
218-01-9	Chrysene	18	< 18 U
50-32-8	Benzo(a)pyrene	18	< 18 U
193-39-5	Indeno(1,2,3-cd)pyrene	18	< 18 U
53-70-3	Dibenz(a,h)anthracene	18	< 18 U
191-24-2	Benzo(g,h,i)perylene	18	< 18 U
90-12-0	1-Methylnaphthalene	18	< 18 U
TOTBFA	Total Benzofluoranthenes	36	< 36 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	65.2%
d14-p-Terphenyl	85.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-02-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO29C
LIMS ID: 12-20596
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/07/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/29/12
Date Analyzed: 11/03/12 15:53
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 11.17 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 9.2%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	18	< 18 U
91-57-6	2-Methylnaphthalene	18	< 18 U
208-96-8	Acenaphthylene	18	< 18 U
83-32-9	Acenaphthene	18	< 18 U
132-64-9	Dibenzofuran	18	< 18 U
86-73-7	Fluorene	18	< 18 U
85-01-8	Phenanthrene	18	< 18 U
86-74-8	Carbazole	18	< 18 U
120-12-7	Anthracene	18	< 18 U
206-44-0	Fluoranthene	18	< 18 U
129-00-0	Pyrene	18	< 18 U
56-55-3	Benzo(a)anthracene	18	< 18 U
218-01-9	Chrysene	18	< 18 U
50-32-8	Benzo(a)pyrene	18	< 18 U
193-39-5	Indeno(1,2,3-cd)pyrene	18	< 18 U
53-70-3	Dibenz(a,h)anthracene	18	< 18 U
191-24-2	Benzo(g,h,i)perylene	18	< 18 U
90-12-0	1-Methylnaphthalene	18	< 18 U
TOTBFA	Total Benzofluoranthenes	36	< 36 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	64.0%
d14-p-Terphenyl	88.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-05-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO29D
LIMS ID: 12-20597
Matrix: Sediment
Data Release Authorized:
Reported: 11/07/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/29/12
Date Analyzed: 11/03/12 16:29
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 11.05 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 10.9%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	18	< 18 U
91-57-6	2-Methylnaphthalene	18	< 18 U
208-96-8	Acenaphthylene	18	< 18 U
83-32-9	Acenaphthene	18	< 18 U
132-64-9	Dibenzofuran	18	< 18 U
86-73-7	Fluorene	18	< 18 U
85-01-8	Phenanthrene	18	< 18 U
86-74-8	Carbazole	18	< 18 U
120-12-7	Anthracene	18	< 18 U
206-44-0	Fluoranthene	18	< 18 U
129-00-0	Pyrene	18	< 18 U
56-55-3	Benzo(a)anthracene	18	< 18 U
218-01-9	Chrysene	18	< 18 U
50-32-8	Benzo(a)pyrene	18	< 18 U
193-39-5	Indeno(1,2,3-cd)pyrene	18	< 18 U
53-70-3	Dibenz(a,h)anthracene	18	< 18 U
191-24-2	Benzo(g,h,i)perylene	18	< 18 U
90-12-0	1-Methylnaphthalene	18	< 18 U
TOTBFA	Total Benzofluoranthenes	36	< 36 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	66.2%
d14-p-Terphenyl	90.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-11-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO29E
LIMS ID: 12-20598
Matrix: Sediment
Data Release Authorized: MW
Reported: 11/07/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/29/12
Date Analyzed: 11/03/12 17:05
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.84 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 10.5%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	18	< 18 U
91-57-6	2-Methylnaphthalene	18	< 18 U
208-96-8	Acenaphthylene	18	< 18 U
83-32-9	Acenaphthene	18	< 18 U
132-64-9	Dibenzofuran	18	< 18 U
86-73-7	Fluorene	18	< 18 U
85-01-8	Phenanthrene	18	< 18 U
86-74-8	Carbazole	18	< 18 U
120-12-7	Anthracene	18	< 18 U
206-44-0	Fluoranthene	18	< 18 U
129-00-0	Pyrene	18	< 18 U
56-55-3	Benzo(a)anthracene	18	< 18 U
218-01-9	Chrysene	18	< 18 U
50-32-8	Benzo(a)pyrene	18	< 18 U
193-39-5	Indeno(1,2,3-cd)pyrene	18	< 18 U
53-70-3	Dibenz(a,h)anthracene	18	< 18 U
191-24-2	Benzo(g,h,i)perylene	18	< 18 U
90-12-0	1-Methylnaphthalene	18	< 18 U
TOTBFA	Total Benzofluoranthenes	37	< 37 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	70.6%
d14-p-Terphenyl	89.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: CP-08-M2**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VO29F
LIMS ID: 12-20599
Matrix: Sediment
Data Release Authorized:
Reported: 11/07/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted: 10/29/12
Date Analyzed: 11/03/12 17:41
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 11.06 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: 13.3%

CAS Number	Analyte	RL	Result	
91-20-3	**Naphthalene**	**18**	**67**	
91-57-6	**2-Methylnaphthalene**	**18**	**9.0**	**J**
208-96-8	Acenaphthylene	18	< 18	U
83-32-9	**Acenaphthene**	**18**	**22**	
132-64-9	**Dibenzofuran**	**18**	**14**	**J**
86-73-7	**Fluorene**	**18**	**20**	
85-01-8	**Phenanthrene**	**18**	**81**	
86-74-8	Carbazole	18	< 18	U
120-12-7	**Anthracene**	**18**	**21**	
206-44-0	**Fluoranthene**	**18**	**55**	
129-00-0	**Pyrene**	**18**	**55**	
56-55-3	**Benzo(a)anthracene**	**18**	**15**	**J**
218-01-9	**Chrysene**	**18**	**23**	
50-32-8	**Benzo(a)pyrene**	**18**	**12**	**J**
193-39-5	Indeno(1,2,3-cd)pyrene	18	< 18	U
53-70-3	Dibenz(a,h)anthracene	18	< 18	U
191-24-2	Benzo(g,h,i)perylene	18	< 18	U
90-12-0	**1-Methylnaphthalene**	**18**	**10**	**J**
TOTBFA	**Total Benzofluoranthenes**	**36**	**25**	**J**

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	68.2%
d14-p-Terphenyl	89.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: MB-102912**
Extraction Method: SW3546 **METHOD BLANK**

Lab Sample ID: MB-102912
LIMS ID: 12-20594
Matrix: Sediment
Data Release Authorized:
Reported: 11/07/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: NA
Date Received: NA

Date Extracted: 10/29/12
Date Analyzed: 11/03/12 11:39
Instrument/Analyst: NT10/VTS
GPC Cleanup: No

Sample Amount: 10.00 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
83-32-9	Acenaphthene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U
86-73-7	Fluorene	20	< 20 U
85-01-8	Phenanthrene	20	< 20 U
86-74-8	Carbazole	20	< 20 U
120-12-7	Anthracene	20	< 20 U
206-44-0	Fluoranthene	20	< 20 U
129-00-0	Pyrene	20	< 20 U
56-55-3	Benzo(a)anthracene	20	< 20 U
218-01-9	Chrysene	20	< 20 U
50-32-8	Benzo(a)pyrene	20	< 20 U
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U
191-24-2	Benzo(g,h,i)perylene	20	< 20 U
90-12-0	1-Methylnaphthalene	20	< 20 U
TOTBFA	Total Benzofluoranthenes	40	< 40 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	73.0%
d14-p-Terphenyl	93.4%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES SOIL/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071

Client ID	FBP	TPH	TOT OUT
MB-102912	73.0%	93.4%	0
LCS-102912	75.2%	92.2%	0
LCSD-102912	70.6%	92.8%	0
CP-10-M2	74.8%	88.0%	0
CP-12-M2	65.2%	85.4%	0
CP-02-M2	64.0%	88.4%	0
CP-05-M2	66.2%	90.4%	0
CP-11-M2	70.6%	89.6%	0
CP-08-M2	68.2%	89.6%	0

	LCS/MB LIMITS	QC LIMITS
(FBP) = 2-Fluorobiphenyl	(30-160)	(30-160)
(TPH) = d14-p-Terphenyl	(30-160)	(30-160)

Prep Method: SW3546
Log Number Range: 12-20594 to 12-20599

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: LCS-102912**
 LCS/LCSD

Lab Sample ID: LCS-102912
LIMS ID: 12-20594
Matrix: Sediment
Data Release Authorized:
Reported: 11/07/12

QC Report No: VO29-Landau Associates, Inc.
Project: Cascade Pole Sed Sampling 2012
0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Date Extracted LCS/LCSD: 10/29/12

Date Analyzed LCS: 11/03/12 12:15
LCSD: 11/03/12 12:51
Instrument/Analyst LCS: NT10/VTS
LCSD: NT10/VTS
GPC Cleanup: No

Sample Amount LCS: 10.00 g
LCSD: 10.00 g
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Percent Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	369	500	73.8%	318	500	63.6%	14.8%
2-Methylnaphthalene	400	500	80.0%	356	500	71.2%	11.6%
Acenaphthylene	368	500	73.6%	366	500	73.2%	0.5%
Acenaphthene	375	500	75.0%	376	500	75.2%	0.3%
Dibenzofuran	401	500	80.2%	402	500	80.4%	0.2%
Fluorene	399	500	79.8%	397	500	79.4%	0.5%
Phenanthrene	418	500	83.6%	434	500	86.8%	3.8%
Carbazole	441	500	88.2%	448	500	89.6%	1.6%
Anthracene	416	500	83.2%	420	500	84.0%	1.0%
Fluoranthene	438	500	87.6%	471	500	94.2%	7.3%
Pyrene	418	500	83.6%	427	500	85.4%	2.1%
Benzo(a)anthracene	439	500	87.8%	452	500	90.4%	2.9%
Chrysene	425	500	85.0%	422	500	84.4%	0.7%
Benzo(a)pyrene	418	500	83.6%	437	500	87.4%	4.4%
Indeno(1,2,3-cd)pyrene	426	500	85.2%	449	500	89.8%	5.3%
Dibenz(a,h)anthracene	447	500	89.4%	466	500	93.2%	4.2%
Benzo(g,h,i)perylene	443	500	88.6%	471	500	94.2%	6.1%
1-Methylnaphthalene	416	500	83.2%	370	500	74.0%	11.7%
Total Benzofluoranthenes	831	1000	83.1%	864	1000	86.4%	3.9%

Semivolatile Surrogate Recovery

	LCS	LCSD
2-Fluorobiphenyl	75.2%	70.6%
d14-p-Terphenyl	92.2%	92.8%

Reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

SAMPLE RESULTS-CONVENTIONALS
VO29-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Client ID: CP-10-M2
ARI ID: 12-20594 VO29A

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	88.90
Total Organic Carbon	10/24/12 102412#1	EPA 9060M	Percent	0.020	0.144

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO29-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Client ID: CP-12-M2
ARI ID: 12-20595 VO29B

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	87.00
Total Organic Carbon	10/24/12 102412#1	EPA 9060M	Percent	0.020	0.192

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO29-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Client ID: CP-02-M2
ARI ID: 12-20596 VO29C

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	90.20
Total Organic Carbon	10/24/12 102412#1	EPA 9060M	Percent	0.020	0.100

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO29-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Client ID: CP-05-M2
ARI ID: 12-20597 VO29D

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	85.90
Total Organic Carbon	10/24/12 102412#1	EPA 9060M	Percent	0.020	0.089

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO29-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Client ID: CP-11-M2
ARI ID: 12-20598 VO29E

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	87.10
Total Organic Carbon	10/24/12 102412#1	EPA 9060M	Percent	0.020	0.196

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VO29-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Client ID: CP-08-M2
ARI ID: 12-20599 VO29F

Analyte	Date	Method	Units	RL	Sample
Total Solids	10/22/12 102212#1	SM2540B	Percent	0.01	85.90
Total Organic Carbon	10/24/12 102412#1	EPA 9060M	Percent	0.020	0.345

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
VO29-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	10/22/12	Percent	< 0.01 U
Total Organic Carbon	10/24/12	Percent	< 0.020 U

LAB CONTROL RESULTS-CONVENTIONALS
VO29-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: NA
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
Total Organic Carbon EPA 9060M	ICVL	10/24/12	Percent	0.100	0.100	100.0%

STANDARD REFERENCE RESULTS-CONVENTIONALS
VO29-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
Total Organic Carbon NIST 1941B	10/24/12	Percent	2.53	2.99	84.6%

REPLICATE RESULTS-CONVENTIONALS
VO29-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: VO29A Client ID: CP-10-M2					
Total Solids	10/22/12	Percent	88.90	90.80 89.70	1.1%
Total Organic Carbon	10/24/12	Percent	0.144	0.146 0.115	12.9%

MS/MSD RESULTS-CONVENTIONALS
VO29-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 10/26/12

Project: Cascade Pole Sed Sampling 20
Event: 0021039.070.071
Date Sampled: 10/18/12
Date Received: 10/18/12

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: VO29A Client ID: CP-10-M2						
Total Organic Carbon	10/24/12	Percent	0.144	0.641	0.467	106.5%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

February 1, 2013

Chris Kimmel
Landau Associates, Inc.
130 2nd Avenue S.
Edmonds, WA 98020

RE: Project No: 021039.080.081
Project Name: Cascade Pole Sediment Sampling
ARI Job No: VY94

Dear Chris:

Please find enclosed the chain of custody (COC) documentation and the final results from the project referenced above. Analytical Resources, Inc. accepted eighteen sediment samples in good condition on January 9, 2013. Select samples were placed on hold pending further instructions. Please note that Landau Associates, Inc, requested TOC on 1/25/13 with a revised COC attached. The samples had been frozen and TOC was analyzed within method recommended holding time for frozen samples.

The samples were analyzed for TOC and PNAs, as requested on the COC and the revised COC.

The PNAs surrogate d14-Dibenzo (a,h) anthracene is out of control high in sample CP-22. The sample was re-analyzed with all surrogate recoveries in control and no further corrective action was taken.

The PNAs matrix spike and matrix spike duplicate are out of control low for fluoranthene. All other QC is in control and no further corrective action was taken.

There were no other anomalies associated with the samples.

A copy of this report and all corresponding raw data will remain on file electronically with ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
(206) 695-6211
kellyb@arilabs.com

Enclosures

PAGE 1 OF 20

LANDAU ASSOCIATES

☒ Seattle/Edmonds (425) 778-0907
☐ Tacoma (253) 926-2493
☐ Spokane (509) 327-9737
☐ Portland (503) 542-1080
☐ _____

Chain-of-Custody Record

vyql

Date 1/9/13

Page 1 of 1

Project Name Cascade Pole Project No. 021039.080.081

Project Location/Event Port of Olympia, Olympia, WA

Sampler's Name Steve Shaw, Evelyn Ives

Project Contact Chris Kimmel

Send Results To Chris Kimmel, Anne Helwrsen

Turnaround Time
☒ Standard
☐ Accelerated
☐ _____

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters: PAHs (EPA 8270 SIM)	Testing Parameters: Hold (freeze)	Observations/Comments
CP-26	1/8/13	1013	Sediment	1	X		~~X- Allow water samples to settle, collect aliquot from clear portion~~
CP-27		1026		1	X		~~X- NWTPH-Dx - run acid wash/silica gel cleanup~~
CP-28		1040		1	X		
CP-29		1052		1	X		
CP-34		1110		1	X		___ run samples standardized to _____ product
CP-25		1202		1	X		___ Analyze for EPH if no specific product identified
CP-24		1220		1	X		VOC/BTEX/VPH (soil):
CP-23		1240		1	X		___ non-preserved
CP-22		1255		1	X		___ preserved w/methanol
CP-21		1300		1	X		___ preserved w/sodium bisulfate
Dup-1		0900		1	X		___ Freeze upon receipt
CP-30		1330		1	X		___ Dissolved metal water samples field filtered
CP-31		1410		1	X		Other send bill to Don Becker : Port of Olympia
CP-32		1440		1	X		
CP-33	1/9/13	0850		1	X		
CP-35		0910		1		X	
CP-36		0920		1		X	
CP-37		1030		1		X	

Special Shipment/Handling or Storage Requirements: cool + ice

Method of Shipment: delivery

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Printed Name: STEVEN D SHAW	Printed Name: A. Volgardsen	Printed Name	Printed Name
Company: Landau Associates	Company: ARI	Company	Company
Date: 1/9/13 Time: 1413	Date: 1/9/13 Time: 1413	Date: _____ Time: _____	Date: _____ Time: _____

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative

Rev 8/09

vyql : 055052

LANDAU ASSOCIATES

☒ Seattle/Edmonds (425) 778-0907
☐ Tacoma (253) 926-2493
☐ Spokane (509) 327-9737
☐ Portland (503) 542-1080
☐ _____

Chain-of-Custody Record

Date 1/9/13
Page 1 of 1

Project Name Cascade Pole Project No. 021039 080.081
Project Location/Event Port of Olympic, Olympic WA
Sampler's Name Steve Shaw, Evelyn Ives
Project Contact Chris Kimmel
Send Results To Chris Kimmel, Anna Halvorsen

Turnaround Time
☒ Standard
☐ Accelerated
☐ _____

Sample I.D.	Date	Time	Matrix	No. of Containers	PAHs (EPA 8270)	Hold (freeze)	Add TOC (9060)	reanal SDS 1/25/13	Observations/Comments
CP-26	1/8/13	1013	Sediment	1	X		X		
CP-27		1026		1	X		X		
CP-28		1040		1	X		X		
CP-29		1052		1	X		X		
CP-34		1110		1	X		X		
CP-25		1202		1	X		X		
CP-24		1220		1	X		X		
CP-23		1240		1	X		X		
CP-22		1255		1	X		X		
CP-21		1300		1	X		X		
Dup-1		0900		1	X		X		
CP-30		1330		1	X		X		
CP-31		1410		1	X		X		
CP-32		1440		1	X		X		
CP-33	1/9/13	0850		1	X		X		
CP-35		0910		1		X	X		
CP-36		0920		1		X	X		
CP-37		1030		1		X	X		

Testing Parameters

~~X Allow water samples to settle, collect aliquot from clear portion~~

~~X NWTPH-Dx – run acid wash/silica gel cleanup~~

___ run samples standardized to _____ product

___ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt

___ Dissolved metal water samples field filtered

Other send bill to Don Becke : Port of Olympic

Special Shipment/Handling or Storage Requirements: Cool + Ice

Method of Shipment: Delivery

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Printed Name: Steven D. Shaw	Printed Name: A. Halvorsen	Printed Name	Printed Name
Company: Landau Associates	Company: ARI	Company	Company
Date: 1/9/13 Time: 1413	Date: 1/9/13 Time: 1413	Date _____ Time _____	Date _____ Time _____

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative Rev 8/09

U94:0002(c)

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client Landau Project Name Cascade Pole

COC No(s) _____ (NA) Delivered by Fed-Ex UPS Courier (Hand Delivered) Other _____

Assigned ARI Job No VY94 Tracking No. _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc)	(YES)	NO
Temperature of Cooler(s) (°C) (recommended 2 0-6 0 °C for chemistry)	0.4	
If cooler temperature is out of compliance fill out form 00070F	Temp Gun ID#	90E-7795

Cooler Accepted by AV Date 1/9/13 Time 1413

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI..	(NA)		

Was Sample Split by ARI : (NA) YES Date/Time _____ Equipment _____ Split by: _____

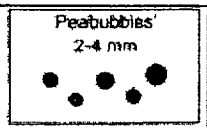
Samples Logged by JM Date 1/9/13 Time: 1413

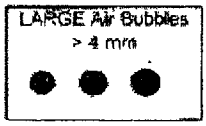
*** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By Date





Small → "sm"	
Peabubbles → "pb"	
Large → "lg"	
Headspace → "hs"	

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: VY94
Client: Landau Associates, Inc.
Project Event: 021039.080.081
Project Name: Cascade Pole

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	CP-26	VY94A	13-424	Sediment	01/08/13 10:13	01/09/13 14:13
2.	CP-27	VY94B	13-425	Sediment	01/08/13 10:26	01/09/13 14:13
3.	CP-28	VY94C	13-426	Sediment	01/08/13 10:40	01/09/13 14:13
4.	CP-29	VY94D	13-427	Sediment	01/08/13 10:52	01/09/13 14:13
5.	CP-34	VY94E	13-428	Sediment	01/08/13 11:10	01/09/13 14:13
6.	CP-25	VY94F	13-429	Sediment	01/08/13 12:02	01/09/13 14:13
7.	CP-24	VY94G	13-430	Sediment	01/08/13 12:20	01/09/13 14:13
8.	CP-23	VY94H	13-431	Sediment	01/08/13 12:40	01/09/13 14:13
9.	CP-22	VY94I	13-432	Sediment	01/08/13 12:55	01/09/13 14:13
10.	CP-21	VY94J	13-433	Sediment	01/08/13 13:00	01/09/13 14:13
11.	DUP-1	VY94K	13-434	Sediment	01/08/13 09:00	01/09/13 14:13
12.	CP-30	VY94L	13-435	Sediment	01/08/13 13:30	01/09/13 14:13
13.	CP-31	VY94M	13-436	Sediment	01/08/13 14:10	01/09/13 14:13
14.	CP-32	VY94N	13-437	Sediment	01/08/13 14:40	01/09/13 14:13
15.	CP-33	VY94O	13-438	Sediment	01/09/13 08:50	01/09/13 14:13
16.	CP-35	VY94P	13-439	Sediment	01/09/13 09:10	01/09/13 14:13
17.	CP-36	VY94Q	13-440	Sediment	01/09/13 09:20	01/09/13 14:13
18.	CP-37	VY94R	13-441	Sediment	01/09/13 10:30	01/09/13 14:13

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Duplicate RPD is not within established control limits
B	Reported value is less than the CRDL but ≥ the Reporting Limit
N	Matrix Spike recovery not within established control limits
NA	Not Applicable, analyte not spiked
H	The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
L	Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Flagged value is not within established control limits
B	Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
J	Estimated concentration when the value is less than ARI's established reporting limits
D	The spiked compound was not detected due to sample extract dilution
E	Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NR Spiked compound recovery is not reported due to chromatographic interference

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters This flag is used only for GC-MS analyses

M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**

Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions **(Dioxin/Furan analysis only)**

Geotechnical Data

A	The total of all fines fractions This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
F	Samples were frozen prior to particle size determination
SM	Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
SS	Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
W	Weight of sample in some pipette aliquots was below the level required for accurate weighting

DL, LOD, LOQ and Control Limits Summary
Analysis of Solid Samples for PNA EPA Method 8270 – SIM

Microwave (EPA 3546) or Sonication (EPA 3550C) Extraction using 10 g sample with extract with 0.5 mL final volume. ARI Bench Sheet 3060F or 3051F ARI Analyses: PNSSMI & PNSSCI

Analyte	DL[1] µg/kg	LOD[1] µg/kg	LOQ[1] µg/kg	LCS Control Limit[3,4]	Replicate RPD[5]
Naphthalene	2.63	**5.0**	**5.0**	37 – **100**	≤ 40
1-Methylnaphthalene	1.71	**2.5**	**5.0**	30 – 160[6]	≤ 40
2-Methylnaphthalene	1.52	**2.5**	**5.0**	37 – **100**	≤ 40
Biphenyl	1.44	**2.5**	**5.0**	30 – 160[6]	≤ 40
2,6-Dimethylnapthalene	0.75	**2.5**	**5.0**	30 – 160[6]	≤ 40
Acenaphthylene	1.26	**2.5**	**5.0**	35 – **100**	≤ 40
Acenaphthene	1.32	**2.5**	**5.0**	39 – **100**	≤ 40
Dibenzofuran	1.51	**2.5**	**5.0**	39 – **100**	≤ 40
1,6,7-Trimethylnaphthalene	0.42	**2.5**	**5.0**	30 – 160[6]	≤ 40
Fluorene	1.29	**2.5**	**5.0**	42 – **100**	≤ 40
Benzothiophene	0.43	**2.5**	**5.0**	30 – 160[6]	≤ 40
Phenanthrene	1.98	**2.5**	**5.0**	47 – **100**	≤ 40
Anthracene	1.46	**2.5**	**5.0**	41 – 106	≤ 40
Carbazole	0.62	**2.5**	**5.0**	30 – 160[6]	≤ 40
1-Methylphenanthrene	0.70	**2.5**	**5.0**	30 – 160[6]	≤ 40
Fluoranthene	1.77	**4.0**	**5.0**	52 – 109	≤ 40
Pyrene	2.22	**4.0**	**5.0**	47 – 111	≤ 40
Benzo(a)anthracene	1.60	**2.5**	**5.0**	47 – 114	≤ 40
Chrysene	1.88	**2.5**	**5.0**	51 – 106	≤ 40
Benzo(b)fluoranthene	1.90	**2.5**	**5.0**	30 – 160[6]	≤ 40
Benzo(k)fluoranthene	2.05	**2.5**	**5.0**	30 – 160[6]	≤ 40
Benzo(j)fluoranthene	1.98[7]	**2.5**	**5.0**	30 – 160[6]	≤ 40
Benzo(e)pyrene	0.65	**2.5**	**5.0**	30 – 160[6]	≤ 40
Benzo(a)pyrene	1.75	**2.5**	**5.0**	44 – 111	≤ 40
Indeno(1,2,3-cd)pyrene	3.47	**4.0**	**5.0**	41 – 114	≤ 40
Dibenz(a,h)anthracene	2.38	**4.0**	**5.0**	42 – 116	≤ 40
Benzo(g,h,i)perylene	3.05	**4.0**	**5.0**	37 – 115	≤ 40
Perylene	2.99	**4.0**	**5.0**	30 – 160[6]	≤ 40
Surrogate Recovery			**MB / LCS**	**Samples**	**RPD**
2-Methylnapthalene-d_{10}			35 – **100**	34 – **100**	≤ 40
Dibenzo(a,h)anthracene-d_{14}			37 – 120	**10** – 117	≤ 40

(1) Detection Limit (DL), Limit of Detection (LOD), Limit of Quantitation (LOQ) as defined in ARI SOP 1018S
(3) Highlighted control limits (**bold font**) are adjusted from the calculated values to reflect that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
(4) Control limits calculated using all data from 1/1/08 through 12/31/08.
(5) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then

$$RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$$

(6) Default limits pending generation of historic limits.
(7) Average of the (b) and (k) isomers used until sufficient data is available to calculate a DL.

Summary of Laboratory Control Limits

Default limits of 30-160% recovery and 30% RPD apply for all organic analytes when laboratory generated control limits are not available on ARI's web site. Default limits for all inorganic analytes are 75-125% recovery and 25% RPD.

ARI's laboratory generated Quality Control Limits may be superseded by project specific data quality objectives (DQO) provided by ARI's clients. The use of project specific DQO must be approved by ARI's Laboratory and QA Program Managers.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP-26
SAMPLE

Lab Sample ID: VY94A
LIMS ID: 13-424
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 00:16
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.59 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 26.0%

CAS Number	Analyte	RL	Result	
91-20-3	Naphthalene	4.7	97	
91-57-6	2-Methylnaphthalene	4.7	14	
90-12-0	1-Methylnaphthalene	4.7	9.1	
208-96-8	Acenaphthylene	4.7	4.2	J
83-32-9	Acenaphthene	4.7	15	
86-73-7	Fluorene	4.7	13	
85-01-8	Phenanthrene	4.7	43	
120-12-7	Anthracene	4.7	20	
206-44-0	Fluoranthene	4.7	51	
129-00-0	Pyrene	4.7	81	
56-55-3	Benzo(a)anthracene	4.7	18	
218-01-9	Chrysene	4.7	25	
50-32-8	Benzo(a)pyrene	4.7	16	
193-39-5	Indeno(1,2,3-cd)pyrene	4.7	10	
53-70-3	Dibenz(a,h)anthracene	4.7	3.1	J
191-24-2	Benzo(g,h,i)perylene	4.7	12	
132-64-9	Dibenzofuran	4.7	13	
TOTBFA	Total Benzofluoranthenes	4.7	48	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	61.0%
d10-2-Methylnaphthalene	68.3%
d14-Dibenzo(a,h)anthracen	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP-27
SAMPLE

Lab Sample ID: VY94B
LIMS ID: 13-425
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 00:46
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.52 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 20.0%

CAS Number	Analyte	RL	Result	
91-20-3	**Naphthalene**	**4.8**	**19**	
91-57-6	**2-Methylnaphthalene**	**4.8**	**4.7**	**J**
90-12-0	**1-Methylnaphthalene**	**4.8**	**2.5**	**J**
208-96-8	Acenaphthylene	4.8	< 4.8	U
83-32-9	**Acenaphthene**	**4.8**	**4.4**	**J**
86-73-7	**Fluorene**	**4.8**	**3.9**	**J**
85-01-8	**Phenanthrene**	**4.8**	**12**	
120-12-7	**Anthracene**	**4.8**	**5.8**	
206-44-0	**Fluoranthene**	**4.8**	**19**	
129-00-0	**Pyrene**	**4.8**	**32**	
56-55-3	**Benzo(a)anthracene**	**4.8**	**6.3**	
218-01-9	**Chrysene**	**4.8**	**8.4**	
50-32-8	**Benzo(a)pyrene**	**4.8**	**6.5**	
193-39-5	**Indeno(1,2,3-cd)pyrene**	**4.8**	**5.6**	
53-70-3	Dibenz(a,h)anthracene	4.8	< 4.8	U
191-24-2	**Benzo(g,h,i)perylene**	**4.8**	**6.9**	
132-64-9	**Dibenzofuran**	**4.8**	**4.2**	**J**
TOTBFA	**Total Benzofluoranthenes**	**4.8**	**21**	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	64.3%
d10-2-Methylnaphthalene	62.7%
d14-Dibenzo(a,h)anthracen	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP-28
SAMPLE

Lab Sample ID: VY94C
LIMS ID: 13-426
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 02:15
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.65 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 20.7%

CAS Number	Analyte	RL	Result	
91-20-3	**Naphthalene**	**4.7**	**12**	
91-57-6	**2-Methylnaphthalene**	**4.7**	**4.2**	**J**
90-12-0	1-Methylnaphthalene	4.7	< 4.7	U
208-96-8	Acenaphthylene	4.7	< 4.7	U
83-32-9	**Acenaphthene**	**4.7**	**2.4**	**J**
86-73-7	**Fluorene**	**4.7**	**2.9**	**J**
85-01-8	**Phenanthrene**	**4.7**	**13**	
120-12-7	**Anthracene**	**4.7**	**4.9**	
206-44-0	**Fluoranthene**	**4.7**	**23**	
129-00-0	**Pyrene**	**4.7**	**37**	
56-55-3	**Benzo(a)anthracene**	**4.7**	**7.9**	
218-01-9	**Chrysene**	**4.7**	**13**	
50-32-8	**Benzo(a)pyrene**	**4.7**	**7.9**	
193-39-5	**Indeno(1,2,3-cd)pyrene**	**4.7**	**5.7**	
53-70-3	Dibenz(a,h)anthracene	4.7	< 4.7	U
191-24-2	**Benzo(g,h,i)perylene**	**4.7**	**6.1**	
132-64-9	**Dibenzofuran**	**4.7**	**3.2**	**J**
TOTBFA	**Total Benzofluoranthenes**	**4.7**	**28**	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	63.3%
d10-2-Methylnaphthalene	73.3%
d14-Dibenzo(a,h)anthracen	115%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546

Sample ID: CP-29
SAMPLE

Lab Sample ID: VY94D
LIMS ID: 13-427
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 02:44
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.17 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 76.4%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	4.9	75
91-57-6	2-Methylnaphthalene	4.9	21
90-12-0	1-Methylnaphthalene	4.9	12
208-96-8	Acenaphthylene	4.9	12
83-32-9	Acenaphthene	4.9	17
86-73-7	Fluorene	4.9	18
85-01-8	Phenanthrene	4.9	110
120-12-7	Anthracene	4.9	40
206-44-0	Fluoranthene	4.9	250
129-00-0	Pyrene	4.9	240
56-55-3	Benzo(a)anthracene	4.9	56
218-01-9	Chrysene	4.9	120
50-32-8	Benzo(a)pyrene	4.9	51
193-39-5	Indeno(1,2,3-cd)pyrene	4.9	25
53-70-3	Dibenz(a,h)anthracene	4.9	6.8
191-24-2	Benzo(g,h,i)perylene	4.9	25
132-64-9	Dibenzofuran	4.9	19
TOTBFA	Total Benzofluoranthenes	4.9	180

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	62.3%
d10-2-Methylnaphthalene	63.3%
d14-Dibenzo(a,h)anthracen	71.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP-34
SAMPLE

Lab Sample ID: VY94E
LIMS ID: 13-428
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 11:11
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.38 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 69.0%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	4.8	98
91-57-6	2-Methylnaphthalene	4.8	18
90-12-0	1-Methylnaphthalene	4.8	11
208-96-8	Acenaphthylene	4.8	11
83-32-9	Acenaphthene	4.8	14
86-73-7	Fluorene	4.8	16
85-01-8	Phenanthrene	4.8	56
120-12-7	Anthracene	4.8	21
206-44-0	Fluoranthene	4.8	49
129-00-0	Pyrene	4.8	97
56-55-3	Benzo(a)anthracene	4.8	34
218-01-9	Chrysene	4.8	53
50-32-8	Benzo(a)pyrene	4.8	35
193-39-5	Indeno(1,2,3-cd)pyrene	4.8	26
53-70-3	Dibenz(a,h)anthracene	4.8	6.4
191-24-2	Benzo(g,h,i)perylene	4.8	32
132-64-9	Dibenzofuran	4.8	18
TOTBFA	Total Benzofluoranthenes	4.8	110

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	39.3%
d10-2-Methylnaphthalene	57.3%
d14-Dibenzo(a,h)anthracen	93.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546

Sample ID: CP-25
SAMPLE

Lab Sample ID: VY94F
LIMS ID: 13-429
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 11:41
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 11.08 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 33.4%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	4.5	530 E
91-57-6	2-Methylnaphthalene	4.5	52
90-12-0	1-Methylnaphthalene	4.5	56
208-96-8	Acenaphthylene	4.5	11
83-32-9	Acenaphthene	4.5	100
86-73-7	Fluorene	4.5	84
85-01-8	Phenanthrene	4.5	210
120-12-7	Anthracene	4.5	110
206-44-0	Fluoranthene	4.5	190
129-00-0	Pyrene	4.5	210
56-55-3	Benzo(a)anthracene	4.5	83
218-01-9	Chrysene	4.5	180
50-32-8	Benzo(a)pyrene	4.5	58
193-39-5	Indeno(1,2,3-cd)pyrene	4.5	38
53-70-3	Dibenz(a,h)anthracene	4.5	14
191-24-2	Benzo(g,h,i)perylene	4.5	38
132-64-9	Dibenzofuran	4.5	76
TOTBFA	Total Benzofluoranthenes	4.5	140

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	65.7%
d10-2-Methylnaphthalene	69.7%
d14-Dibenzo(a,h)anthracen	113%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546

Sample ID: CP-25
DILUTION

Lab Sample ID: VY94F
LIMS ID: 13-429
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 17:10
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 11.08 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 3.00
Percent Moisture: 33.4%

CAS Number	Analyte	RL	Result	
91-20-3	Naphthalene	14	560	
91-57-6	2-Methylnaphthalene	14	52	
90-12-0	1-Methylnaphthalene	14	56	
208-96-8	Acenaphthylene	14	10	J
83-32-9	Acenaphthene	14	100	
86-73-7	Fluorene	14	88	
85-01-8	Phenanthrene	14	210	
120-12-7	Anthracene	14	110	
206-44-0	Fluoranthene	14	230	
129-00-0	Pyrene	14	230	
56-55-3	Benzo(a)anthracene	14	83	
218-01-9	Chrysene	14	190	
50-32-8	Benzo(a)pyrene	14	57	
193-39-5	Indeno(1,2,3-cd)pyrene	14	36	
53-70-3	Dibenz(a,h)anthracene	14	12	J
191-24-2	Benzo(g,h,i)perylene	14	38	
132-64-9	Dibenzofuran	14	72	
TOTBFA	Total Benzofluoranthenes	14	140	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	78.0%
d10-2-Methylnaphthalene	67.0%
d14-Dibenzo(a,h)anthracen	109%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP-24
SAMPLE

Lab Sample ID: VY94G
LIMS ID: 13-430
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 12:11
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.79 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 34.7%

CAS Number	Analyte	RL	Result	
91-20-3	Naphthalene	4.6	50	
91-57-6	2-Methylnaphthalene	4.6	10	
90-12-0	1-Methylnaphthalene	4.6	6.2	
208-96-8	Acenaphthylene	4.6	4.7	
83-32-9	Acenaphthene	4.6	11	
86-73-7	Fluorene	4.6	11	
85-01-8	Phenanthrene	4.6	38	
120-12-7	Anthracene	4.6	15	
206-44-0	Fluoranthene	4.6	89	
129-00-0	Pyrene	4.6	110	
56-55-3	Benzo(a)anthracene	4.6	25	
218-01-9	Chrysene	4.6	98	
50-32-8	Benzo(a)pyrene	4.6	20	
193-39-5	Indeno(1,2,3-cd)pyrene	4.6	16	
53-70-3	Dibenz(a,h)anthracene	4.6	3.6	J
191-24-2	Benzo(g,h,i)perylene	4.6	16	
132-64-9	Dibenzofuran	4.6	11	
TOTBFA	Total Benzofluoranthenes	4.6	76	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	58.0%
d10-2-Methylnaphthalene	69.0%
d14-Dibenzo(a,h)anthracen	112%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP-23
SAMPLE

Lab Sample ID: VY94H
LIMS ID: 13-431
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 12:41
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.57 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 30.8%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	4.7	240
91-57-6	2-Methylnaphthalene	4.7	27
90-12-0	1-Methylnaphthalene	4.7	30
208-96-8	Acenaphthylene	4.7	4.7 J
83-32-9	Acenaphthene	4.7	35
86-73-7	Fluorene	4.7	28
85-01-8	Phenanthrene	4.7	54
120-12-7	Anthracene	4.7	28
206-44-0	Fluoranthene	4.7	55
129-00-0	Pyrene	4.7	86
56-55-3	Benzo(a)anthracene	4.7	23
218-01-9	Chrysene	4.7	33
50-32-8	Benzo(a)pyrene	4.7	18
193-39-5	Indeno(1,2,3-cd)pyrene	4.7	13
53-70-3	Dibenz(a,h)anthracene	4.7	2.7 J
191-24-2	Benzo(g,h,i)perylene	4.7	14
132-64-9	Dibenzofuran	4.7	35
TOTBFA	Total Benzofluoranthenes	4.7	59

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	46.7%
d10-2-Methylnaphthalene	64.7%
d14-Dibenzo(a,h)anthracen	109%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546

Sample ID: CP-22
SAMPLE

Lab Sample ID: VY94I
LIMS ID: 13-432
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 13:11
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.91 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 23.2%

CAS Number	Analyte	RL	Result	
91-20-3	Naphthalene	4.6	120	
91-57-6	2-Methylnaphthalene	4.6	12	
90-12-0	1-Methylnaphthalene	4.6	20	
208-96-8	Acenaphthylene	4.6	2.4	J
83-32-9	Acenaphthene	4.6	24	
86-73-7	Fluorene	4.6	17	
85-01-8	Phenanthrene	4.6	45	
120-12-7	Anthracene	4.6	22	
206-44-0	Fluoranthene	4.6	42	
129-00-0	Pyrene	4.6	61	
56-55-3	Benzo(a)anthracene	4.6	20	
218-01-9	Chrysene	4.6	54	
50-32-8	Benzo(a)pyrene	4.6	15	
193-39-5	Indeno(1,2,3-cd)pyrene	4.6	10	
53-70-3	Dibenz(a,h)anthracene	4.6	3.0	J
191-24-2	Benzo(g,h,i)perylene	4.6	11	
132-64-9	Dibenzofuran	4.6	18	
TOTBFA	Total Benzofluoranthenes	4.6	42	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	55.7%
d10-2-Methylnaphthalene	70.0%
d14-Dibenzo(a,h)anthracen	118%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP-22
DILUTION

Lab Sample ID: VY94I
LIMS ID: 13-432
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 18:09
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.91 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 3.00
Percent Moisture: 23.2%

CAS Number	Analyte	RL	Result	
91-20-3	**Naphthalene**	**14**	**120**	
91-57-6	**2-Methylnaphthalene**	**14**	**11**	**J**
90-12-0	**1-Methylnaphthalene**	**14**	**18**	
208-96-8	Acenaphthylene	14	< 14	U
83-32-9	**Acenaphthene**	**14**	**25**	
86-73-7	**Fluorene**	**14**	**17**	
85-01-8	**Phenanthrene**	**14**	**42**	
120-12-7	**Anthracene**	**14**	**23**	
206-44-0	**Fluoranthene**	**14**	**57**	
129-00-0	**Pyrene**	**14**	**62**	
56-55-3	**Benzo(a)anthracene**	**14**	**20**	
218-01-9	**Chrysene**	**14**	**53**	
50-32-8	**Benzo(a)pyrene**	**14**	**14**	**J**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**14**	**9.9**	**J**
53-70-3	Dibenz(a,h)anthracene	14	< 14	U
191-24-2	**Benzo(g,h,i)perylene**	**14**	**11**	**J**
132-64-9	**Dibenzofuran**	**14**	**16**	
TOTBFA	**Total Benzofluoranthenes**	**14**	**39**	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	74.0%
d10-2-Methylnaphthalene	66.0%
d14-Dibenzo(a,h)anthracen	113%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP-21
SAMPLE

Lab Sample ID: VY94J
LIMS ID: 13-433
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 13:41
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.85 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 10.0%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	4.6	< 4.6 U
91-57-6	2-Methylnaphthalene	4.6	< 4.6 U
90-12-0	1-Methylnaphthalene	4.6	< 4.6 U
208-96-8	Acenaphthylene	4.6	< 4.6 U
83-32-9	Acenaphthene	4.6	< 4.6 U
86-73-7	Fluorene	4.6	< 4.6 U
85-01-8	Phenanthrene	4.6	< 4.6 U
120-12-7	Anthracene	4.6	< 4.6 U
206-44-0	Fluoranthene	4.6	< 4.6 U
129-00-0	**Pyrene**	**4.6**	**11**
56-55-3	**Benzo(a)anthracene**	**4.6**	**2.4 J**
218-01-9	**Chrysene**	**4.6**	**9.8**
50-32-8	**Benzo(a)pyrene**	**4.6**	**3.7 J**
193-39-5	Indeno(1,2,3-cd)pyrene	4.6	< 4.6 U
53-70-3	Dibenz(a,h)anthracene	4.6	< 4.6 U
191-24-2	Benzo(g,h,i)perylene	4.6	< 4.6 U
132-64-9	Dibenzofuran	4.6	< 4.6 U
TOTBFA	**Total Benzofluoranthenes**	**4.6**	**17**

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	78.3%
d10-2-Methylnaphthalene	55.0%
d14-Dibenzo(a,h)anthracen	109%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: DUP-1
SAMPLE

Lab Sample ID: VY94K
LIMS ID: 13-434
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 14:10
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.56 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 20.4%

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**4.7**	**11**
91-57-6	**2-Methylnaphthalene**	**4.7**	**3.4 J**
90-12-0	1-Methylnaphthalene	4.7	< 4.7 U
208-96-8	**Acenaphthylene**	**4.7**	**2.6 J**
83-32-9	**Acenaphthene**	**4.7**	**2.4 J**
86-73-7	**Fluorene**	**4.7**	**2.8 J**
85-01-8	**Phenanthrene**	**4.7**	**20**
120-12-7	**Anthracene**	**4.7**	**6.5**
206-44-0	**Fluoranthene**	**4.7**	**120**
129-00-0	**Pyrene**	**4.7**	**130**
56-55-3	**Benzo(a)anthracene**	**4.7**	**16**
218-01-9	**Chrysene**	**4.7**	**46**
50-32-8	**Benzo(a)pyrene**	**4.7**	**14**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**4.7**	**11**
53-70-3	**Dibenz(a,h)anthracene**	**4.7**	**2.4 J**
191-24-2	**Benzo(g,h,i)perylene**	**4.7**	**11**
132-64-9	**Dibenzofuran**	**4.7**	**2.5 J**
TOTBFA	**Total Benzofluoranthenes**	**4.7**	**67**

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	59.7%
d10-2-Methylnaphthalene	64.0%
d14-Dibenzo(a,h)anthracen	116%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS **Sample ID: CP-30**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: VY94L
LIMS ID: 13-435
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 14:40
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.82 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 26.9%

CAS Number	Analyte	RL	Result	
91-20-3	**Naphthalene**	**4.6**	**79**	
91-57-6	**2-Methylnaphthalene**	**4.6**	**11**	
90-12-0	**1-Methylnaphthalene**	**4.6**	**6.9**	
208-96-8	**Acenaphthylene**	**4.6**	**4.6**	**J**
83-32-9	**Acenaphthene**	**4.6**	**13**	
86-73-7	**Fluorene**	**4.6**	**11**	
85-01-8	**Phenanthrene**	**4.6**	**38**	
120-12-7	**Anthracene**	**4.6**	**13**	
206-44-0	**Fluoranthene**	**4.6**	**40**	
129-00-0	**Pyrene**	**4.6**	**59**	
56-55-3	**Benzo(a)anthracene**	**4.6**	**9.4**	
218-01-9	**Chrysene**	**4.6**	**12**	
50-32-8	**Benzo(a)pyrene**	**4.6**	**8.8**	
193-39-5	**Indeno(1,2,3-cd)pyrene**	**4.6**	**7.3**	
53-70-3	Dibenz(a,h)anthracene	4.6	< 4.6	U
191-24-2	**Benzo(g,h,i)perylene**	**4.6**	**9.0**	
132-64-9	**Dibenzofuran**	**4.6**	**10**	
TOTBFA	**Total Benzofluoranthenes**	**4.6**	**27**	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	72.7%
d10-2-Methylnaphthalene	60.7%
d14-Dibenzo(a,h)anthracen	116%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP-31
SAMPLE

Lab Sample ID: VY94M
LIMS ID: 13-436
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 15:10
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.71 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 36.0%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	4.7	510 E
91-57-6	2-Methylnaphthalene	4.7	92
90-12-0	1-Methylnaphthalene	4.7	60
208-96-8	Acenaphthylene	4.7	24
83-32-9	Acenaphthene	4.7	100
86-73-7	Fluorene	4.7	64
85-01-8	Phenanthrene	4.7	160
120-12-7	Anthracene	4.7	65
206-44-0	Fluoranthene	4.7	160
129-00-0	Pyrene	4.7	280
56-55-3	Benzo(a)anthracene	4.7	46
218-01-9	Chrysene	4.7	67
50-32-8	Benzo(a)pyrene	4.7	48
193-39-5	Indeno(1,2,3-cd)pyrene	4.7	30
53-70-3	Dibenz(a,h)anthracene	4.7	7.6
191-24-2	Benzo(g,h,i)perylene	4.7	37
132-64-9	Dibenzofuran	4.7	58
TOTBFA	Total Benzofluoranthenes	4.7	120

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	51.0%
d10-2-Methylnaphthalene	61.7%
d14-Dibenzo(a,h)anthracen	106%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP-31
DILUTION

Lab Sample ID: VY94M
LIMS ID: 13-436
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 17:40
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.71 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 3.00
Percent Moisture: 36.0%

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**14**	**530**
91-57-6	**2-Methylnaphthalene**	**14**	**91**
90-12-0	**1-Methylnaphthalene**	**14**	**60**
208-96-8	**Acenaphthylene**	**14**	**25**
83-32-9	**Acenaphthene**	**14**	**110**
86-73-7	**Fluorene**	**14**	**68**
85-01-8	**Phenanthrene**	**14**	**160**
120-12-7	**Anthracene**	**14**	**69**
206-44-0	**Fluoranthene**	**14**	**220**
129-00-0	**Pyrene**	**14**	**310**
56-55-3	**Benzo(a)anthracene**	**14**	**46**
218-01-9	**Chrysene**	**14**	**69**
50-32-8	**Benzo(a)pyrene**	**14**	**47**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**14**	**29**
53-70-3	Dibenz(a,h)anthracene	14	< 14 U
191-24-2	**Benzo(g,h,i)perylene**	**14**	**35**
132-64-9	**Dibenzofuran**	**14**	**57**
TOTBFA	**Total Benzofluoranthenes**	**14**	**110**

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	70.0%
d10-2-Methylnaphthalene	60.0%
d14-Dibenzo(a,h)anthracen	103%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546

Sample ID: CP-32
SAMPLE

Lab Sample ID: VY94N
LIMS ID: 13-437
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 15:40
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.11 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 56.5%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	5.0	420
91-57-6	2-Methylnaphthalene	5.0	48
90-12-0	1-Methylnaphthalene	5.0	41
208-96-8	Acenaphthylene	5.0	30
83-32-9	Acenaphthene	5.0	61
86-73-7	Fluorene	5.0	39
85-01-8	Phenanthrene	5.0	130
120-12-7	Anthracene	5.0	47
206-44-0	Fluoranthene	5.0	94
129-00-0	Pyrene	5.0	240
56-55-3	Benzo(a)anthracene	5.0	45
218-01-9	Chrysene	5.0	66
50-32-8	Benzo(a)pyrene	5.0	48
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	32
53-70-3	Dibenz(a,h)anthracene	5.0	8.8
191-24-2	Benzo(g,h,i)perylene	5.0	35
132-64-9	Dibenzofuran	5.0	49
TOTBFA	Total Benzofluoranthenes	5.0	140

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	42.7%
d10-2-Methylnaphthalene	67.3%
d14-Dibenzo(a,h)anthracen	115%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP-33
SAMPLE

Lab Sample ID: VY940
LIMS ID: 13-438
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/09/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 16:10
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.20 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 56.4%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	4.9	270
91-57-6	2-Methylnaphthalene	4.9	38
90-12-0	1-Methylnaphthalene	4.9	28
208-96-8	Acenaphthylene	4.9	26
83-32-9	Acenaphthene	4.9	37
86-73-7	Fluorene	4.9	28
85-01-8	Phenanthrene	4.9	95
120-12-7	Anthracene	4.9	36
206-44-0	Fluoranthene	4.9	130
129-00-0	Pyrene	4.9	190
56-55-3	Benzo(a)anthracene	4.9	52
218-01-9	Chrysene	4.9	63
50-32-8	Benzo(a)pyrene	4.9	55
193-39-5	Indeno(1,2,3-cd)pyrene	4.9	32
53-70-3	Dibenz(a,h)anthracene	4.9	8.4
191-24-2	Benzo(g,h,i)perylene	4.9	34
132-64-9	Dibenzofuran	4.9	31
TOTBFA	Total Benzofluoranthenes	4.9	160

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	60.0%
d10-2-Methylnaphthalene	68.7%
d14-Dibenzo(a,h)anthracen	105%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
021039.080.081

Client ID	FLN	MNP	DBA	TOT OUT
CP-26	61.0%	68.3%	104%	0
MB-011513	96.7%	71.0%	114%	0
LCS-011513	111%	65.0%	88.3%	0
LCSD-011513	120%	66.7%	84.7%	0
CP-27	64.3%	62.7%	101%	0
CP-27 MS	70.7%	64.7%	107%	0
CP-27 MSD	66.3%	64.0%	106%	0
CP-28	63.3%	73.3%	115%	0
CP-29	62.3%	63.3%	71.0%	0
CP-34	39.3%	57.3%	93.3%	0
CP-25	65.7%	69.7%	113%	0
CP-25 DL	78.0%	67.0%	109%	0
CP-24	58.0%	69.0%	112%	0
CP-23	46.7%	64.7%	109%	0
CP-22	55.7%	70.0%	118%*	1
CP-22 DL	74.0%	66.0%	113%	0
CP-21	78.3%	55.0%	109%	0
DUP-1	59.7%	64.0%	116%	0
CP-30	72.7%	60.7%	116%	0
CP-31	51.0%	61.7%	106%	0
CP-31 DL	70.0%	60.0%	103%	0
CP-32	42.7%	67.3%	115%	0
CP-33	60.0%	68.7%	105%	0

	LCS/MB LIMITS	QC LIMITS
(FLN) = d10-Fluoranthene	(30-160)	(30-160)
(MNP) = d10-2-Methylnaphthalene	(35-100)	(34-100)
(DBA) = d14-Dibenzo(a,h)anthracene	(37-120)	(10-117)

Prep Method: SW3546
Log Number Range: 13-424 to 13-438

FORM-II SIM SW8270

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS

Sample ID: CP-27
MATRIX SPIKE

Lab Sample ID: VY94B
LIMS ID: 13-425
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted MS/MSD: 01/15/13

Date Analyzed MS: 01/18/13 01:15
MSD: 01/18/13 01:45
Instrument/Analyst MS: NT11/JZ
MSD: NT11/JZ

Sample Amount MS: 10.55 g-dry-wt
MSD: 10.62 g-dry-wt
Final Extract Volume MS: 0.50 mL
MSD: 0.50 mL
Dilution Factor MS: 1.00
MSD: 1.00

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Naphthalene	19	74.3	142	38.9%	79.0	141	42.6%	6.1%
2-Methylnaphthalene	4.7 J	64.3	142	42.0%	65.3	141	43.0%	1.5%
1-Methylnaphthalene	2.5 J	68.1	142	46.2%	69.0	141	47.2%	1.3%
Acenaphthylene	< 4.8 U	74.4	142	52.4%	74.1	141	52.6%	0.4%
Acenaphthene	4.4 J	71.6	142	47.3%	72.1	141	48.0%	0.7%
Fluorene	3.9 J	80.9	142	54.2%	81.9	141	55.3%	1.2%
Phenanthrene	12	97.0	142	59.9%	94.8	141	58.7%	2.3%
Anthracene	5.8	91.9	142	60.6%	92.5	141	61.5%	0.7%
Fluoranthene	19	90.5	142	50.4%	84.2	141	46.2%	7.2%
Pyrene	32	120	142	62.0%	119	141	61.7%	0.8%
Benzo(a)anthracene	6.3	94.1	142	61.8%	94.3	141	62.4%	0.2%
Chrysene	8.4	106	142	68.7%	96.7	141	62.6%	9.2%
Benzo(a)pyrene	6.5	85.6	142	55.7%	85.7	141	56.2%	0.1%
Indeno(1,2,3-cd)pyrene	5.6	98.8	142	65.6%	98.9	141	66.2%	0.1%
Dibenz(a,h)anthracene	< 4.8 U	91.8	142	64.6%	92.4	141	65.5%	0.7%
Benzo(g,h,i)perylene	6.9	92.3	142	60.1%	91.9	141	60.3%	0.4%
Dibenzofuran	4.2 J	74.3	142	49.4%	74.5	141	49.9%	0.3%
Total Benzofluoranthenes	21	309	427	67.4%	309	424	67.9%	0.0%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546

Sample ID: CP-27
MATRIX SPIKE

Lab Sample ID: VY94B
LIMS ID: 13-425
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 01:15
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.55 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 20.0%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	4.7	---
91-57-6	2-Methylnaphthalene	4.7	---
90-12-0	1-Methylnaphthalene	4.7	---
208-96-8	Acenaphthylene	4.7	---
83-32-9	Acenaphthene	4.7	---
86-73-7	Fluorene	4.7	---
85-01-8	Phenanthrene	4.7	---
120-12-7	Anthracene	4.7	---
206-44-0	Fluoranthene	4.7	---
129-00-0	Pyrene	4.7	---
56-55-3	Benzo(a)anthracene	4.7	---
218-01-9	Chrysene	4.7	---
50-32-8	Benzo(a)pyrene	4.7	---
193-39-5	Indeno(1,2,3-cd)pyrene	4.7	---
53-70-3	Dibenz(a,h)anthracene	4.7	---
191-24-2	Benzo(g,h,i)perylene	4.7	---
132-64-9	Dibenzofuran	4.7	---
TOTBFA	Total Benzofluoranthenes	4.7	---

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	70.7%
d10-2-Methylnaphthalene	64.7%
d14-Dibenzo(a,h)anthracen	107%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546

Sample ID: CP-27
MATRIX SPIKE DUPLICATE

Lab Sample ID: VY94B
LIMS ID: 13-425
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Date Extracted: 01/15/13
Date Analyzed: 01/18/13 01:45
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.62 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 20.0%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	4.7	---
91-57-6	2-Methylnaphthalene	4.7	---
90-12-0	1-Methylnaphthalene	4.7	---
208-96-8	Acenaphthylene	4.7	---
83-32-9	Acenaphthene	4.7	---
86-73-7	Fluorene	4.7	---
85-01-8	Phenanthrene	4.7	---
120-12-7	Anthracene	4.7	---
206-44-0	Fluoranthene	4.7	---
129-00-0	Pyrene	4.7	---
56-55-3	Benzo(a)anthracene	4.7	---
218-01-9	Chrysene	4.7	---
50-32-8	Benzo(a)pyrene	4.7	---
193-39-5	Indeno(1,2,3-cd)pyrene	4.7	---
53-70-3	Dibenz(a,h)anthracene	4.7	---
191-24-2	Benzo(g,h,i)perylene	4.7	---
132-64-9	Dibenzofuran	4.7	---
TOTBFA	Total Benzofluoranthenes	4.7	---

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	66.3%
d10-2-Methylnaphthalene	64.0%
d14-Dibenzo(a,h)anthracen	106%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS

Sample ID: LCS-011513
LAB CONTROL SAMPLE

Lab Sample ID: LCS-011513
LIMS ID: 13-425
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: NA
Date Received: NA

Date Extracted: 01/15/13

Date Analyzed LCS: 01/17/13 23:17
LCSD: 01/18/13 16:40
Instrument/Analyst LCS: NT11/JZ
LCSD: NT11/JZ

Sample Amount LCS: 10.00 g-dry-wt
LCSD: 10.00 g-dry-wt
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	67.2	150	44.8%	69.6	150	46.4%	3.5%
2-Methylnaphthalene	64.4	150	42.9%	66.0	150	44.0%	2.5%
1-Methylnaphthalene	69.9	150	46.6%	73.2	150	48.8%	4.6%
Acenaphthylene	71.8	150	47.9%	71.2	150	47.5%	0.8%
Acenaphthene	69.2	150	46.1%	68.6	150	45.7%	0.9%
Fluorene	77.8	150	51.9%	77.2	150	51.5%	0.8%
Phenanthrene	82.0	150	54.7%	81.6	150	54.4%	0.5%
Anthracene	82.8	150	55.2%	82.6	150	55.1%	0.2%
Fluoranthene	91.0	150	60.7%	86.6	150	57.7%	5.0%
Pyrene	89.7	150	59.8%	93.4	150	62.3%	4.0%
Benzo(a)anthracene	89.0	150	59.3%	88.8	150	59.2%	0.2%
Chrysene	89.6	150	59.7%	89.8	150	59.9%	0.2%
Benzo(a)pyrene	77.4	150	51.6%	79.6	150	53.1%	2.8%
Indeno(1,2,3-cd)pyrene	100	150	66.7%	108	150	72.0%	7.7%
Dibenz(a,h)anthracene	99.2	150	66.1%	110	150	73.3%	10.3%
Benzo(g,h,i)perylene	93.6	150	62.4%	101	150	67.3%	7.6%
Dibenzofuran	71.2	150	47.5%	71.0	150	47.3%	0.3%
Total Benzofluoranthenes	301	450	66.9%	293	450	65.1%	2.7%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-Fluoranthene	111%	120%
d10-2-Methylnaphthalene	65.0%	66.7%
d14-Dibenzo(a,h)anthracen	88.3%	84.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546

Sample ID: MB-011513
METHOD BLANK

Lab Sample ID: MB-011513
LIMS ID: 13-425
Matrix: Sediment
Data Release Authorized:
Reported: 01/21/13

QC Report No: VY94-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039.080.081
Date Sampled: NA
Date Received: NA

Date Extracted: 01/15/13
Date Analyzed: 01/17/13 22:47
Instrument/Analyst: NT11/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.00 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	5.0	< 5.0 U
90-12-0	1-Methylnaphthalene	5.0	< 5.0 U
208-96-8	Acenaphthylene	5.0	< 5.0 U
83-32-9	Acenaphthene	5.0	< 5.0 U
86-73-7	Fluorene	5.0	< 5.0 U
85-01-8	Phenanthrene	5.0	< 5.0 U
120-12-7	Anthracene	5.0	< 5.0 U
206-44-0	Fluoranthene	5.0	< 5.0 U
129-00-0	Pyrene	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	5.0	< 5.0 U
218-01-9	Chrysene	5.0	< 5.0 U
50-32-8	Benzo(a)pyrene	5.0	< 5.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	< 5.0 U
53-70-3	Dibenz(a,h)anthracene	5.0	< 5.0 U
191-24-2	Benzo(g,h,i)perylene	5.0	< 5.0 U
132-64-9	Dibenzofuran	5.0	< 5.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	96.7%
d10-2-Methylnaphthalene	71.0%
d14-Dibenzo(a,h)anthracen	114%

Extractions Total Solids-extts
Data By: Yen Luu
Created: 1/ 9/13

Worklist: 9340
Analyst: ALR
Comments:

Oven ID:_____

Balance ID:_____

Samples In: Date:_____ Time:_____ Temp:_____ Analyst:_____

Samples Out: Date:_____ Time:_____ Temp:_____ Analyst:_____

	ARI ID CLIENT ID	Tare Wt (g)	Wet Wt (g)	Dry Wt (g)	% Solids	pH
1.	VY94A 13-424 CP-26	1.17	12.38	9.47	74.0	NR
2.	VY94B 13-425 CP-27	1.16	11.73	9.62	80.0	NR
3.	VY94C 13-426 CP-28	1.18	12.65	10.28	79.3	NR
4.	VY94D 13-427 CP-29	1.16	12.03	3.73	23.6	NR
5.	VY94E 13-428 CP-34	1.17	12.25	4.61	31.0	NR
6.	VY94F 13-429 CP-25	1.18	12.00	8.39	66.6	NR
7.	VY94G 13-430 CP-24	1.17	13.30	9.09	65.3	NR
8.	VY94H 13-431 CP-23	1.15	12.57	9.05	69.2	NR
9.	VY94I 13-432 CP-22	1.16	13.10	10.33	76.8	NR
10.	VY94J 13-433 CP-21	1.17	12.52	11.38	90.0	NR
11.	VY94K 13-434 DUP-1	1.18	13.09	10.66	79.6	NR
12.	VY94L 13-435 CP-30	1.17	12.77	9.65	73.1	NR
13.	VY94M 13-436 CP-31	1.15	12.27	8.27	64.0	NR

Extractions Total Solids-extts
Data By: Yen Luu
Created: 1/ 9/13

Worklist: 9340
Analyst: ALR
Comments:

Oven ID:_____

Balance ID:_____

Samples In: Date:_____ Time:_____ Temp:_____ Analyst:_____

Samples Out: Date:_____ Time:_____ Temp:_____ Analyst:_____

	ARI ID CLIENT ID	Tare Wt (g)	Wet Wt (g)	Dry Wt (g)	% Solids	pH
14.	VY94N 13-437 CP-32	1.17	12.00	5.88	43.5	NR
15.	VY94O 13-438 CP-33	1.17	12.75	6.22	43.6	NR

Extractions Total Solids-extts
Data By: Yen Luu
Created: 1/ 9/13

Worklist: 9340
Analyst: YL
Comments:

Oven ID: ϕ15

Balance ID: B1392986ϕ2

Samples In: Date: 01/09/13 Time: 17:15 Temp: 105 Analyst: YL

Samples Out: Date: 01/10/13 Time: 07:45 Temp: 100°C Analyst: AR

	ARI ID / CLIENT ID	Tare Wt (g)	Wet Wt (g)	Dry Wt (g)	% Solids	pH
1.	VY94A 13-424 CP-26	1.17	12.38	9.47		NR
2.	VY94B 13-425 CP-27	1.16	11.73	9.62		NR
3.	VY94C 13-426 CP-28	1.18	12.65	10.28		NR
4.	VY94D 13-427 CP-29	1.16	12.03	3.73		NR
5.	VY94E 13-428 CP-34	1.17	12.25	4.61		NR
6.	VY94F 13-429 CP-25	1.18	12.00	8.39		NR
7.	VY94G 13-430 CP-24	1.17	13.30	9.09		NR
8.	VY94H 13-431 CP-23	1.15	12.57	9.05		NR
9.	VY94I 13-432 CP-22	1.16	13.10	10.33		NR
10.	VY94J 13-433 CP-21	1.17	12.52	11.38		NR
11.	VY94K 13-434 DUP-1	1.18	13.09	10.66		NR
12.	VY94L 13-435 CP-30	1.17	12.77	9.65		NR
13.	VY94M 13-436 CP-31	1.15	12.27	8.27		NR

Extractions Total Solids-extts
Data By: Yen Luu
Created: 1/ 9/13

Worklist: 9340
Analyst: YL
Comments:

Oven ID: ϕ15

Balance ID: B139298ϕϕ2

Samples In: Date: 01/09/13 Time: 17:15 Temp: 165 Analyst: YL

Samples Out: Date: 01/10/13 Time: 07:45 Temp: 100 °C Analyst: AR

	ARI ID / CLIENT ID	Tare Wt (g)	Wet Wt (g)	Dry Wt (g)	% Solids	pH
14.	VY94N 13-437 CP-32	1.17	12.ϕϕ	5.88		NR
15.	VY94O 13-438 CP-33	1.17	12.75	6.22		NR

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Client ID: CP-26
ARI ID: 13-424 VY94A

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	74.10
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	1.97

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Client ID: CP-27
ARI ID: 13-425 VY94B

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	80.40
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	2.57

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Client ID: CP-28
ARI ID: 13-426 VY94C

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	79.30
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	2.87

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Client ID: CP-29
ARI ID: 13-427 VY94D

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	25.40
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	2.00

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Client ID: CP-34
ARI ID: 13-428 VY94E

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	31.30
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	3.57

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Client ID: CP-25
ARI ID: 13-429 VY94F

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	66.30
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	1.40

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Client ID: CP-24
ARI ID: 13-430 VY94G

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	63.00
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	2.51

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Client ID: CP-23
ARI ID: 13-431 VY94H

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	66.80
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	3.36

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Client ID: CP-22
ARI ID: 13-432 VY94I

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	76.90
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	0.890

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Client ID: CP-21
ARI ID: 13-433 VY94J

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	87.40
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	0.268

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Client ID: DUP-1
ARI ID: 13-434 VY94K

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	79.50
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	2.19

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Client ID: CP-30
ARI ID: 13-435 VY94L

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	73.40
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	1.04

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Client ID: CP-31
ARI ID: 13-436 VY94M

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	65.00
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	1.14

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Client ID: CP-32
ARI ID: 13-437 VY94N

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	44.00
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	2.20

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/09/13
Date Received: 01/09/13

Client ID: CP-33
ARI ID: 13-438 VY940

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	44.10
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	3.58

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/09/13
Date Received: 01/09/13

Client ID: CP-35
ARI ID: 13-439 VY94P

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	49.90
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	2.18

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/09/13
Date Received: 01/09/13

Client ID: CP-36
ARI ID: 13-440 VY94Q

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	48.90
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	2.60

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/09/13
Date Received: 01/09/13

Client ID: CP-37
ARI ID: 13-441 VY94R

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/28/13 012813#1	SM2540B	Percent	0.01	29.70
Total Organic Carbon	01/31/13 013113#1	Plumb,1981	Percent	0.020	3.74

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	01/28/13	Percent	< 0.01 U
Total Organic Carbon	01/31/13	Percent	< 0.020 U

LAB CONTROL RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: NA
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
Total Organic Carbon Plumb,1981	ICVL	01/31/13	Percent	0.110	0.100	110.0%

STANDARD REFERENCE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
Total Organic Carbon NIST 1941B	01/31/13	Percent	3.18	2.99	106.4%

REPLICATE RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: VY94A Client ID: CP-26					
Total Solids	01/28/13	Percent	74.10	73.60 74.50	0.6%
Total Organic Carbon	01/31/13	Percent	1.97	2.18 1.76	10.7%

MS/MSD RESULTS-CONVENTIONALS
VY94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/31/13

Project: Cascade Pole
Event: 021039.080.081
Date Sampled: 01/08/13
Date Received: 01/09/13

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: VY94A Client ID: CP-26						
Total Organic Carbon	01/31/13	Percent	1.97	3.56	2.12	74.9%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

February 11, 2013

Chris Kimmel
Landau Associates, Inc.
130 2nd Avenue S.
Edmonds, WA 98020

RE: Project No: 021039.080.081
Project Name: Cascade Pole Sediment Sampling
ARI Job No: WD00

Dear Chris:

Please find enclosed the chain of custody (COC) documentation and the final results from the project referenced above. Analytical Resources, Inc. accepted eighteen sediment samples in good condition on January 9, 2013. Select samples were placed on frozen hold pending further instructions.

Please note that Landau Associates, Inc, requested additional PNA analysis on 2/7/13 with a revised COC attached.

The samples were analyzed for PNAs, as requested on the COC and the revised COC.

The CCAL is out of control high for Benzo (a) anthracene. All associated samples that contain analyte have been flagged with a "Q" qualifier.

There were no other anomalies associated with the samples.

A copy of this report and all corresponding raw data will remain on file electronically with ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
(206) 695-6211
kellyb@arilabs.com

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

V494
P-R

LANDAU ASSOCIATES

☒ Seattle/Edmonds (425) 778-0907
☐ Tacoma (253) 926-2493
☐ Spokane (509) 327-9737
☐ Portland (503) 542-1080
☐ ____________

Date 1/9/13
Page 1 of 1

Chain-of-Custody Record

Project Name Cascade Pole Project No. 021039.080.081
Project Location/Event Port of Olympia, Olympia WA
Sampler's Name Steve Shaw, Evelyn Ives
Project Contact Chris Kimmel
Send Results To Chris Kimmel, Anne Halvorsen

Turnaround Time
☒ Standard
☐ Accelerated
☐ ____

Follow up PAH on 3 day TAT.

Sample I.D.	Date	Time	Matrix	No. of Containers	PAHs (EPA 8270)	Hold (Freeze)	Add TOC (9060)	revised SDS 1/25/13	PAHs (8270)
CP-26	1/8/13	1013	Sediment	1	X		X		
CP-27	↓	1026	↓	1	X		X		
CP-28		1040		1	X		X		
CP-29		1052		1	X		X		
CP-34		1110		1	X		X		
CP-25		1202		1	X		X		
CP-24		1220		1	X		X		
CP-23		1240		1	X		X		
CP-22		1255		1	X		X		
CP-21		1300		1	X		X		
Dup-1		0900		1	X		X		
CP-30		1330		1	X		X		
CP-31		1410		1	X		X		
CP-32		1440		1	X		X		
439 CP-33	1/9/13	0850		1	X		X		
440 CP-35	↓	0910		1		X	X	X	
441 CP-36		0920		1		X	X	X	
CP-37		1030	↓	1		X	X	X	

Annotations: NO 1/25/13; CBK 2/7/13

Observations/Comments
X Allow water samples to settle, collect aliquot from clear portion (struck through)
X NWTPH-Dx - run acid wash/silica gel cleanup (struck through)
___ run samples standardized to ___ product
___ Analyze for EPH if no specific product identified
VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt
___ Dissolved metal water samples field filtered
Other send bill to Don Bache : Port of Olympia

Special Shipment/Handling or Storage Requirements Cooler + Ice

Method of Shipment Delivery

Relinquished by	Received by	Relinquished by	Received by
Signature [signature]	Signature A. Volquardsen	Signature	Signature
Printed Name STEVEN D. SHAW	Printed Name ARI	Printed Name	Printed Name
Company Landau Associates	Company	Company	Company
Date 1/9/13 Time 1413	Date 1/9/13 Time 1413	Date ____ Time ____	Date ____ Time ____

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative

Rev 8/09

WD00 : 00002

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: WD00
Client: Landau Associates, Inc.
Project Event: 021039-080.081
Project Name: Cascade Pole

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	CP-35	WD00A	13-2758	Sediment	01/09/13 09:10	01/09/13 14:13
2.	CP-36	WD00B	13-2759	Sediment	01/09/13 09:20	01/09/13 14:13
3.	CP-37	WD00C	13-2760	Sediment	01/09/13 10:30	01/09/13 14:13

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client Landau

COC No(s) _____ (NA)

Assigned ARI Job No VY94

Project Name Cascade Pole

Delivered by Fed-Ex UPS Courier (Hand Delivered) Other: _____

Tracking No _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (NO)

Were custody papers included with the cooler? (YES) NO

Were custody papers properly filled out (ink, signed, etc) (YES) NO

Temperature of Cooler(s) (°C) (recommended 2 0-6 0 °C for chemistry) 0.4

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID# 90E7795

Cooler Accepted by AV Date 1/9/13 Time 1413

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)

What kind of packing material was used? Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA (YES) NO

Were all bottles sealed in individual plastic bags? YES (NO)

Did all bottles arrive in good condition (unbroken)? (YES) NO

Were all bottle labels complete and legible? (YES) NO

Did the number of containers listed on COC match with the number of containers received? (YES) NO

Did all bottle labels and tags agree with custody papers? (YES) NO

Were all bottles used correct for the requested analyses? (YES) NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) (NA) YES NO

Were all VOC vials free of air bubbles? (NA) YES NO

Was sufficient amount of sample sent in each bottle? (YES) NO

Date VOC Trip Blank was made at ARI (NA)

Was Sample Split by ARI (NA) YES Date/Time _____ Equipment _____ Split by: _____

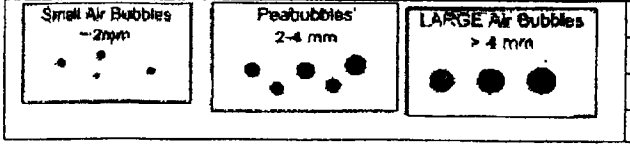
Samples Logged by JM Date 1/9/13 Time: 1413

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

VY94 : 00003

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP-35
SAMPLE

Lab Sample ID: WD00A
LIMS ID: 13-2758
Matrix: Sediment
Data Release Authorized:
Reported: 02/11/13

QC Report No: WD00-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039-080.081
Date Sampled: 01/09/13
Date Received: 01/09/13

Date Extracted: 02/09/13
Date Analyzed: 02/11/13 13:52
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.57 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 47.7%

CAS Number	Analyte	RL	Result	
91-20-3	**Naphthalene**	**4.7**	**310**	
91-57-6	**2-Methylnaphthalene**	**4.7**	**43**	
90-12-0	**1-Methylnaphthalene**	**4.7**	**28**	
208-96-8	Acenaphthylene	4.7	< 4.7	U
83-32-9	**Acenaphthene**	**4.7**	**30**	
86-73-7	**Fluorene**	**4.7**	**25**	
85-01-8	**Phenanthrene**	**4.7**	**70**	
120-12-7	**Anthracene**	**4.7**	**36**	
206-44-0	**Fluoranthene**	**4.7**	**100**	
129-00-0	**Pyrene**	**4.7**	**160**	
56-55-3	**Benzo(a)anthracene**	**4.7**	**30**	**Q**
218-01-9	**Chrysene**	**4.7**	**60**	
50-32-8	**Benzo(a)pyrene**	**4.7**	**26**	
193-39-5	**Indeno(1,2,3-cd)pyrene**	**4.7**	**13**	
53-70-3	**Dibenz(a,h)anthracene**	**4.7**	**4.2**	**J**
191-24-2	**Benzo(g,h,i)perylene**	**4.7**	**18**	
132-64-9	**Dibenzofuran**	**4.7**	**28**	
TOTBFA	**Total Benzofluoranthenes**	**4.7**	**79**	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	86.7%
d10-2-Methylnaphthalene	73.3%
d14-Dibenzo(a,h)anthracen	76.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS **Sample ID: CP-36**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: WD00B
LIMS ID: 13-2759
Matrix: Sediment
Data Release Authorized:
Reported: 02/11/13

QC Report No: WD00-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039-080.081
Date Sampled: 01/09/13
Date Received: 01/09/13

Date Extracted: 02/09/13
Date Analyzed: 02/11/13 14:19
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.24 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 49.5%

CAS Number	Analyte	RL	Result	
91-20-3	Naphthalene	4.9	440	
91-57-6	2-Methylnaphthalene	4.9	71	
90-12-0	1-Methylnaphthalene	4.9	57	
208-96-8	Acenaphthylene	4.9	43	
83-32-9	Acenaphthene	4.9	51	
86-73-7	Fluorene	4.9	40	
85-01-8	Phenanthrene	4.9	130	
120-12-7	Anthracene	4.9	50	
206-44-0	Fluoranthene	4.9	150	
129-00-0	Pyrene	4.9	220	
56-55-3	Benzo(a)anthracene	4.9	52	Q
218-01-9	Chrysene	4.9	92	
50-32-8	Benzo(a)pyrene	4.9	41	
193-39-5	Indeno(1,2,3-cd)pyrene	4.9	21	
53-70-3	Dibenz(a,h)anthracene	4.9	6.2	
191-24-2	Benzo(g,h,i)perylene	4.9	28	
132-64-9	Dibenzofuran	4.9	47	
TOTBFA	Total Benzofluoranthenes	4.9	100	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	85.3%
d10-2-Methylnaphthalene	68.3%
d14-Dibenzo(a,h)anthracen	71.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS **Sample ID: CP-37**
Extraction Method: SW3546 **SAMPLE**

Lab Sample ID: WD00C
LIMS ID: 13-2760
Matrix: Sediment
Data Release Authorized:
Reported: 02/11/13

QC Report No: WD00-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039-080.081
Date Sampled: 01/09/13
Date Received: 01/09/13

Date Extracted: 02/09/13
Date Analyzed: 02/11/13 14:47
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.34 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 67.8%

CAS Number	Analyte	RL	Result	
91-20-3	**Naphthalene**	**4.8**	**82**	
91-57-6	**2-Methylnaphthalene**	**4.8**	**14**	
90-12-0	**1-Methylnaphthalene**	**4.8**	**6.1**	
208-96-8	Acenaphthylene	4.8	< 4.8	U
83-32-9	**Acenaphthene**	**4.8**	**11**	
86-73-7	**Fluorene**	**4.8**	**12**	
85-01-8	**Phenanthrene**	**4.8**	**43**	
120-12-7	**Anthracene**	**4.8**	**18**	
206-44-0	**Fluoranthene**	**4.8**	**110**	
129-00-0	**Pyrene**	**4.8**	**120**	
56-55-3	**Benzo(a)anthracene**	**4.8**	**27**	**Q**
218-01-9	**Chrysene**	**4.8**	**42**	
50-32-8	**Benzo(a)pyrene**	**4.8**	**24**	
193-39-5	**Indeno(1,2,3-cd)pyrene**	**4.8**	**14**	
53-70-3	**Dibenz(a,h)anthracene**	**4.8**	**4.0**	**J**
191-24-2	**Benzo(g,h,i)perylene**	**4.8**	**19**	
132-64-9	**Dibenzofuran**	**4.8**	**13**	
TOTBFA	**Total Benzofluoranthenes**	**4.8**	**75**	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	83.0%
d10-2-Methylnaphthalene	67.7%
d14-Dibenzo(a,h)anthracen	66.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS **Sample ID: MB-020913**
Extraction Method: SW3546 **METHOD BLANK**

Lab Sample ID: MB-020913
LIMS ID: 13-2758
Matrix: Sediment
Data Release Authorized:
Reported: 02/11/13

QC Report No: WD00-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039-080.081
Date Sampled: NA
Date Received: NA

Date Extracted: 02/09/13
Date Analyzed: 02/11/13 12:29
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.00 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	5.0	< 5.0 U
90-12-0	1-Methylnaphthalene	5.0	< 5.0 U
208-96-8	Acenaphthylene	5.0	< 5.0 U
83-32-9	Acenaphthene	5.0	< 5.0 U
86-73-7	Fluorene	5.0	< 5.0 U
85-01-8	Phenanthrene	5.0	< 5.0 U
120-12-7	Anthracene	5.0	< 5.0 U
206-44-0	Fluoranthene	5.0	< 5.0 U
129-00-0	Pyrene	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	5.0	< 5.0 U
218-01-9	Chrysene	5.0	< 5.0 U
50-32-8	Benzo(a)pyrene	5.0	< 5.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	< 5.0 U
53-70-3	Dibenz(a,h)anthracene	5.0	< 5.0 U
191-24-2	Benzo(g,h,i)perylene	5.0	< 5.0 U
132-64-9	Dibenzofuran	5.0	< 5.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	83.3%
d10-2-Methylnaphthalene	65.7%
d14-Dibenzo(a,h)anthracen	83.0%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: WD00-Landau Associates, Inc.
Project: Cascade Pole
021039-080.081

Client ID	FLN	MNP	DBA	TOT OUT
MB-020913	83.3%	65.7%	83.0%	0
LCS-020913	85.0%	68.3%	80.0%	0
LCSD-020913	70.0%	47.3%	68.7%	0
CP-35	86.7%	73.3%	76.3%	0
CP-36	85.3%	68.3%	71.3%	0
CP-37	83.0%	67.7%	66.7%	0

	LCS/MB LIMITS	QC LIMITS
(FLN) = d10-Fluoranthene	(30-160)	(30-160)
(MNP) = d10-2-Methylnaphthalene	(35-100)	(34-100)
(DBA) = d14-Dibenzo(a,h)anthracene	(37-120)	(10-117)

Prep Method: SW3546
Log Number Range: 13-2758 to 13-2760

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS

Sample ID: LCS-020913
LAB CONTROL SAMPLE

Lab Sample ID: LCS-020913
LIMS ID: 13-2758
Matrix: Sediment
Data Release Authorized:
Reported: 02/11/13

QC Report No: WD00-Landau Associates, Inc.
Project: Cascade Pole
Event: 021039-080.081
Date Sampled: NA
Date Received: NA

Date Extracted: 02/09/13

Date Analyzed LCS: 02/11/13 12:56
LCSD: 02/11/13 13:24
Instrument/Analyst LCS: NT4/JZ
LCSD: NT4/JZ

Sample Amount LCS: 10.00 g-dry-wt
LCSD: 10.00 g-dry-wt
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	88.2	150	58.8%	61.8	150	41.2%	35.2%
2-Methylnaphthalene	82.4	150	54.9%	59.2	150	39.5%	32.8%
1-Methylnaphthalene	90.2	150	60.1%	64.4	150	42.9%	33.4%
Acenaphthylene	80.1	150	53.4%	59.0	150	39.3%	30.3%
Acenaphthene	85.5	150	57.0%	64.4	150	42.9%	28.2%
Fluorene	95.2	150	63.5%	73.6	150	49.1%	25.6%
Phenanthrene	96.0	150	64.0%	82.8	150	55.2%	14.8%
Anthracene	98.1	150	65.4%	84.0	150	56.0%	15.5%
Fluoranthene	107	150	71.3%	92.3	150	61.5%	14.8%
Pyrene	103	150	68.7%	90.6	150	60.4%	12.8%
Benzo(a)anthracene	95.3 Q	150	63.5%	82.6 Q	150	55.1%	14.3%
Chrysene	107	150	71.3%	92.4	150	61.6%	14.6%
Benzo(a)pyrene	88.4	150	58.9%	74.3	150	49.5%	17.3%
Indeno(1,2,3-cd)pyrene	102	150	68.0%	89.3	150	59.5%	13.3%
Dibenz(a,h)anthracene	104	150	69.3%	88.8	150	59.2%	15.8%
Benzo(g,h,i)perylene	98.6	150	65.7%	87.4	150	58.3%	12.0%
Dibenzofuran	92.2	150	61.5%	70.6	150	47.1%	26.5%
Total Benzofluoranthenes	354	450	78.7%	291	450	64.7%	19.5%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-Fluoranthene	85.0%	70.0%
d10-2-Methylnaphthalene	68.3%	47.3%
d14-Dibenzo(a,h)anthracen	80.0%	68.7%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

March 21, 2013

Chris Kimmel
Landau Associates, Inc.
130 2nd Avenue S.
Edmonds, WA 98020

RE: Project No:
Project Name: Cascade Pole Sediment Sampling
ARI Job No: WF91

Dear Chris:

Please find enclosed the chain of custody (COC) documentation and the final results from the project referenced above. Analytical Resources, Inc. accepted eighteen sediment samples in good condition on March 4, 2013. Select samples were placed on frozen hold pending further instructions.

The samples were analyzed for PNAs and TOC, as requested on the COC.

Due to a laboratory error, client specified QC was not analyzed.

There were no other anomalies associated with the samples.

A copy of this report and all corresponding raw data will remain on file electronically with ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
(206) 695-6211
kellyb@arilabs.com

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

ARI Assigned Number: WF91	Turn-around Requested:	Page: 1	of 2
ARI Client Company: Landau & Anchor	Phone:	Date:	Ice Present? X
Client Contact: Larry Beard		No. of Coolers: 1	Cooler Temps: 5.8
Client Project Name: 2013 Cascade Pole (Port of Olympia)			
Client Project #:	Samplers: AQ		

Sample ID	Date	Time	Matrix	No. Containers	TS, TOC	PAHs	Archive						Notes/Comments
CP-17-1-2	3.4.13	0930	SED	2	X	X							
CP-17-2-3	↓	0940	↓	1			X						
CP-17-3-4	↓	0945	↓	1			X						
CP-17-4-5	↓	0950	↓	1			X						
CP-16-1-2	↓	1020	↓	2	X	X							
CP-16-2-3	↓	1025	↓	1			X						
CP-16-3-4	↓	1030	↓	1			X						
CP-16-4-5	↓	1035	↓	1			X						
CP-20-1-2	↓	1100	↓	2	X	X							MS/MSD
CP-20-1-2DUP	↓	1105	↓	2	X	X							

Comments/Special Instructions	Relinquished by:	Received by:	Relinquished by:	Received by:
SMS list for PAHs	(Signature) [signature]	(Signature) [signature]	(Signature)	(Signature)
	Printed Name: D. Peterson	Printed Name: Taylor Streeter	Printed Name:	Printed Name:
	Company: AQ	Company: ARI	Company:	Company:
	Date & Time: 3/4/13 1330	Date & Time: 3-4-13 1330	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

ARI Assigned Number: WF91	Turn-around Requested:
ARI Client Company: Landau	Phone:
Client Contact: Larry Beard	
Client Project Name: 2013 Cascade Pole (Port of Olympia)	
Client Project #:	Samplers: AQ

Page: 2	of 2
Date:	Ice Present?
No. of Coolers:	Cooler Temps:

Sample ID	Date	Time	Matrix	No. Containers	TS, TOC	PAHs	Archive						Notes/Comments
CP-20-2-3	3.4.13	1110	SED	1			X						
CP-20-3-4	↓	1115	↓	1			X						
CP-19-1-2	↓	1230	↓	2	X	X							
CP-19-2-3	↓	1235	↓	1			X						
CP-19-3-4	↓	1240	↓	1			X						
CP-18-1-2	↓	1310	↓	2	X	X							
CP-18-2-3	↓	1315	↓	1			X						
CP-18-3-4	↓	1320	↓	1			X						

Comments/Special Instructions	Relinquished by:	Received by:	Relinquished by:	Received by:
	(Signature) [signature]	(Signature) [signature]	(Signature)	(Signature)
	Printed Name: D. Peterson	Printed Name: Taylor Streeter	Printed Name:	Printed Name:
	Company: AQ	Company: ARI	Company:	Company:
	Date & Time: 3/4/13 1330	Date & Time: 3/4/13 1330	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Anchor / Landau Project Name: 2013 Cascade Pole (Port of Olympia)

COC No(s): _____ NA Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: WF91 Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 5.8		

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90877952

Cooler Accepted by: TS Date: 3-4-13 Time: 1330

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ... Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other: _____			
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Was Sample Split by ARI : (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

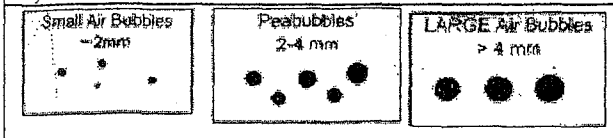
Samples Logged by: TS Date: 3-4-13 Time: 1509

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

WF91 : 00001

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: WF91
Client: Landau Associates, Inc.
Project Event: N/A
Project Name: 2013 Cascade Pole (Port of Olympia)

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	CP-17-1-2	WF91A	13-4115	Sediment	03/04/13 09:30	03/04/13 13:30
2.	CP-16-1-2	WF91B	13-4116	Sediment	03/04/13 10:20	03/04/13 13:30
3.	CP-20-1-2	WF91C	13-4117	Sediment	03/04/13 11:00	03/04/13 13:30
4.	CP-20-1-2DUP	WF91D	13-4118	Sediment	03/04/13 11:05	03/04/13 13:30
5.	CP-19-1-2	WF91E	13-4119	Sediment	03/04/13 12:30	03/04/13 13:30
6.	CP-18-1-2	WF91F	13-4120	Sediment	03/04/13 13:10	03/04/13 13:30
7.	CP-17-2-3	WF91G	13-4121	Sediment	03/04/13 09:40	03/04/13 13:30
8.	CP-17-3-4	WF91H	13-4122	Sediment	03/04/13 09:45	03/04/13 13:30
9.	CP-17-4-5	WF91I	13-4123	Sediment	03/04/13 09:50	03/04/13 13:30
10.	CP-16-2-3	WF91J	13-4124	Sediment	03/04/13 10:25	03/04/13 13:30
11.	CP-16-3-4	WF91K	13-4125	Sediment	03/04/13 10:30	03/04/13 13:30
12.	CP-16-4-5	WF91L	13-4126	Sediment	03/04/13 10:35	03/04/13 13:30
13.	CP-20-2-3	WF91M	13-4127	Sediment	03/04/13 11:10	03/04/13 13:30
14.	CP-20-3-4	WF91N	13-4128	Sediment	03/04/13 11:15	03/04/13 13:30
15.	CP-19-2-3	WF91O	13-4129	Sediment	03/04/13 12:35	03/04/13 13:30
16.	CP-19-3-4	WF91P	13-4130	Sediment	03/04/13 12:40	03/04/13 13:30
17.	CP-18-2-3	WF91Q	13-4131	Sediment	03/04/13 13:15	03/04/13 13:30
18.	CP-18-3-4	WF91R	13-4132	Sediment	03/04/13 13:20	03/04/13 13:30

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Duplicate RPD is not within established control limits

B — Reported value is less than the CRDL but ≥ the Reporting Limit

N — Matrix Spike recovery not within established control limits

NA — Not Applicable, analyte not spiked

H — The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible

L — Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Flagged value is not within established control limits

B — Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J — Estimated concentration when the value is less than ARI's established reporting limits

D — The spiked compound was not detected due to sample extract dilution

E — Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

Q — Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NR Spiked compound recovery is not reported due to chromatographic interference

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**

Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**

Geotechnical Data

A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.

F Samples were frozen prior to particle size determination

SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations

SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis

W Weight of sample in some pipette aliquots was below the level required for accurate weighting

Analytical Resources,Incorporated
Analytical Chemists and Consultants

PNA Analysis of Soil / Sediment Samples
DL, LOD, LOQ and Control Limits Summary
EPA Method 8270D-SIM

10 gram sample to 0.5 mL final volume – Microwave extraction (EPA Method 3546) with Silica Gel Clean-up

	DL[1,2,3] µg/kg	LOD[1] µg/kg	LOQ[1] µg/kg	LCS % Recovery[4]	Replicate RPD[5]
Naphthalene	0.413	0.50	**0.6**	30 – 160	≤ 40
2-Methylnaphthalene	0.087	0.25	**0.5**	30 – 160	≤ 40
Acenaphthylene	0.133	0.25	**0.5**	30 – 160	≤ 40
Acenaphthene	0.141	0.25	**0.5**	30 – 160	≤ 40
Dibenzofuran	0.105	0.25	**0.5**	30 – 160	≤ 40
Fluorene	0.129	0.25	**0.5**	30 – 160	≤ 40
Phenanthrene	0.204	0.25	**0.5**	30 – 160	≤ 40
Anthracene	0.132	0.25	**0.5**	30 – 160	≤ 40
Fluoranthene	0.236	0.25	**0.5**	30 – 160	≤ 40
Pyrene	0.287	0.50	**0.5**	30 – 160	≤ 40
Benzo(a)anthracene	0.208	0.25	**0.5**	30 – 160	≤ 40
Chrysene	0.266	0.50	**0.5**	30 – 160	≤ 40
Benzo(b)fluoranthene	0.164	0.25	**0.5**	30 – 160	≤ 40
Benzo(k)fluoranthene	0.153	0.25	**0.5**	30 – 160	≤ 40
Benzo(j)fluoranthene	0.104	0.25	**0.5**	30 – 160	≤ 40
Benzo(a)Pyrene	0.097	0.25	**0.5**	30 – 160	≤ 40
Indeno(1,2,3-cd)Pyrene	0.154	0.25	**0.5**	30 – 160	≤ 40
Dibenz(a,h)Anthracene	0.178	0.25	**0.5**	30 – 160	≤ 40
Benzo(g,h,i)Perylene	0.166	0.25	**0.5**	30 – 160	≤ 40
1-Methylnaphthalene	0.190	0.25	**0.5**	30 – 160	≤ 40
Perylene	0.118	0.25	**0.5**	30 – 160	≤ 40
Surrogate Standard Recovery			**MB/LCS**	**Samples**	**RPD**
2-Methylnapthalene-d_{10}			30 – 160	30 – 160	≤ 40
Dibenzo(a,h)anthracene-d_{14}			30 – 160	30 – 160	≤ 40
Fluoranthene-d_{10}			30 – 160	30 – 160	≤ 40

(1) DetectionLimit (DL),Limit of Detection (LOD) and Limit of Quantitation (LOQ) as defined in ARI SOP 1018S.
(2) Spike concentration used to calculate the DL is 0.5 ng/kg.
(3) DL study VM20 10/23/12
(4) 30 – 160 are default values used when there is insufficient data to calculate historic control limits.
(5) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then

$$RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$$

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Spike Recovery Control Limits for Conventional Wet Chemistry

Effective 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

	ARI's Control Limits	
Sample Matrix:	Water	Soil / Sediment
Matrix Spike Recoveries	% Recovery	% Recovery
Ammonia	75 - 125	75 - 125
Bromide	75 125	75 - 125
Chloride	75 125	75 - 125
Cyanide	75 - 125	75 - 125
Ferrous Iron	75 - 125	75 - 125
Fluoride	75 - 125	75 - 125
Formaldehyde	75 - 125	75 - 125
Hexane Extractable Material	-- - --	78 - 114
Hexavalent Chromium	75 - 125	75 - 125
Nitrate/Nitrite	75 - 125	75 - 125
Oil and Grease	75 - 125	75 - 125
Phenol	75 - 125	75 - 125
Phosphorous	75 - 125	75 - 125
Sulfate	75 - 125	75 - 125
Sulfide	75 - 125	75 - 125
Total Kjeldahl Nitrogen	75 - 125	75 - 125
Total Organic Carbon	75 - 125	75 - 125
Duplicate RPDs		
Acidity	±20%	±20%
Alkalinity	±20%	±20%
BOD	±20%	±20%
Cation Exchange	±20%	±20%
COD	±20%	±20%
Conductivity	±20%	±20%
Salinity	±20%	±20%
Solids	±20%	±20%
Turbidity	±20%	±20%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546

Sample ID: CP-17-1-2
SAMPLE

Lab Sample ID: WF91A
LIMS ID: 13-4115
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WF91-Landau Associates, Inc.
Project: 2013 Cascade Pole (Port of Olympia)
Event: NA
Date Sampled: 03/04/13
Date Received: 03/04/13

Date Extracted: 03/13/13
Date Analyzed: 03/15/13 18:27
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.40 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 20.1%

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**4.8**	**250**
91-57-6	**2-Methylnaphthalene**	**4.8**	**38**
90-12-0	**1-Methylnaphthalene**	**4.8**	**30**
208-96-8	**Acenaphthylene**	**4.8**	**4.7 J**
83-32-9	**Acenaphthene**	**4.8**	**54**
86-73-7	**Fluorene**	**4.8**	**46**
85-01-8	**Phenanthrene**	**4.8**	**58**
120-12-7	**Anthracene**	**4.8**	**43**
206-44-0	**Fluoranthene**	**4.8**	**110**
129-00-0	**Pyrene**	**4.8**	**120**
56-55-3	**Benzo(a)anthracene**	**4.8**	**24**
218-01-9	**Chrysene**	**4.8**	**26**
50-32-8	**Benzo(a)pyrene**	**4.8**	**16**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**4.8**	**7.9**
53-70-3	Dibenz(a,h)anthracene	4.8	< 4.8 U
191-24-2	**Benzo(g,h,i)perylene**	**4.8**	**12**
132-64-9	**Dibenzofuran**	**4.8**	**41**
TOTBFA	**Total Benzofluoranthenes**	**4.8**	**44**

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	90.0%
d10-2-Methylnaphthalene	69.3%
d14-Dibenzo(a,h)anthracen	73.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP-16-1-2
SAMPLE

Lab Sample ID: WF91B
LIMS ID: 13-4116
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WF91-Landau Associates, Inc.
Project: 2013 Cascade Pole (Port of Olympia)
Event: NA
Date Sampled: 03/04/13
Date Received: 03/04/13

Date Extracted: 03/13/13
Date Analyzed: 03/15/13 18:54
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.55 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 34.1%

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**4.7**	**140**
91-57-6	**2-Methylnaphthalene**	**4.7**	**26**
90-12-0	**1-Methylnaphthalene**	**4.7**	**19**
208-96-8	**Acenaphthylene**	**4.7**	**26**
83-32-9	**Acenaphthene**	**4.7**	**18**
86-73-7	**Fluorene**	**4.7**	**19**
85-01-8	**Phenanthrene**	**4.7**	**74**
120-12-7	**Anthracene**	**4.7**	**25**
206-44-0	**Fluoranthene**	**4.7**	**96**
129-00-0	**Pyrene**	**4.7**	**130**
56-55-3	**Benzo(a)anthracene**	**4.7**	**23**
218-01-9	**Chrysene**	**4.7**	**24**
50-32-8	**Benzo(a)pyrene**	**4.7**	**19**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**4.7**	**10**
53-70-3	Dibenz(a,h)anthracene	4.7	< 4.7 U
191-24-2	**Benzo(g,h,i)perylene**	**4.7**	**17**
132-64-9	**Dibenzofuran**	**4.7**	**18**
TOTBFA	**Total Benzofluoranthenes**	**4.7**	**43**

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	85.0%
d10-2-Methylnaphthalene	71.7%
d14-Dibenzo(a,h)anthracen	61.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP-20-1-2
SAMPLE

Lab Sample ID: WF91C
LIMS ID: 13-4117
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WF91-Landau Associates, Inc.
Project: 2013 Cascade Pole (Port of Olympia)
Event: NA
Date Sampled: 03/04/13
Date Received: 03/04/13

Date Extracted: 03/13/13
Date Analyzed: 03/15/13 19:22
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.07 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 52.1%

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**5.0**	**56**
91-57-6	**2-Methylnaphthalene**	**5.0**	**9.4**
90-12-0	**1-Methylnaphthalene**	**5.0**	**13**
208-96-8	**Acenaphthylene**	**5.0**	**5.0**
83-32-9	**Acenaphthene**	**5.0**	**8.4**
86-73-7	**Fluorene**	**5.0**	**11**
85-01-8	**Phenanthrene**	**5.0**	**42**
120-12-7	**Anthracene**	**5.0**	**18**
206-44-0	**Fluoranthene**	**5.0**	**49**
129-00-0	**Pyrene**	**5.0**	**67**
56-55-3	**Benzo(a)anthracene**	**5.0**	**17**
218-01-9	**Chrysene**	**5.0**	**16**
50-32-8	**Benzo(a)pyrene**	**5.0**	**14**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**5.0**	**5.7**
53-70-3	Dibenz(a,h)anthracene	5.0	< 5.0 U
191-24-2	**Benzo(g,h,i)perylene**	**5.0**	**7.2**
132-64-9	**Dibenzofuran**	**5.0**	**11**
TOTBFA	**Total Benzofluoranthenes**	**5.0**	**29**

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	89.7%
d10-2-Methylnaphthalene	68.3%
d14-Dibenzo(a,h)anthracen	81.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP-20-1-2DUP
SAMPLE

Lab Sample ID: WF91D
LIMS ID: 13-4118
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WF91-Landau Associates, Inc.
Project: 2013 Cascade Pole (Port of Olympia)
Event: NA
Date Sampled: 03/04/13
Date Received: 03/04/13

Date Extracted: 03/13/13
Date Analyzed: 03/15/13 19:50
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.25 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 51.3%

CAS Number	Analyte	RL	Result	
91-20-3	Naphthalene	4.9	100	
91-57-6	2-Methylnaphthalene	4.9	20	
90-12-0	1-Methylnaphthalene	4.9	16	
208-96-8	Acenaphthylene	4.9	3.8	J
83-32-9	Acenaphthene	4.9	24	
86-73-7	Fluorene	4.9	18	
85-01-8	Phenanthrene	4.9	46	
120-12-7	Anthracene	4.9	19	
206-44-0	Fluoranthene	4.9	41	
129-00-0	Pyrene	4.9	53	
56-55-3	Benzo(a)anthracene	4.9	22	
218-01-9	Chrysene	4.9	45	
50-32-8	Benzo(a)pyrene	4.9	18	
193-39-5	Indeno(1,2,3-cd)pyrene	4.9	7.2	
53-70-3	Dibenz(a,h)anthracene	4.9	3.1	J
191-24-2	Benzo(g,h,i)perylene	4.9	8.4	
132-64-9	Dibenzofuran	4.9	18	
TOTBFA	Total Benzofluoranthenes	4.9	38	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	94.0%
d10-2-Methylnaphthalene	69.7%
d14-Dibenzo(a,h)anthracen	84.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546

Sample ID: CP-19-1-2
SAMPLE

Lab Sample ID: WF91E
LIMS ID: 13-4119
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WF91-Landau Associates, Inc.
Project: 2013 Cascade Pole (Port of Olympia)
Event: NA
Date Sampled: 03/04/13
Date Received: 03/04/13

Date Extracted: 03/13/13
Date Analyzed: 03/15/13 20:17
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.25 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 55.5%

CAS Number	Analyte	RL	Result	
91-20-3	Naphthalene	4.9	420	
91-57-6	2-Methylnaphthalene	4.9	62	
90-12-0	1-Methylnaphthalene	4.9	40	
208-96-8	Acenaphthylene	4.9	66	
83-32-9	Acenaphthene	4.9	46	
86-73-7	Fluorene	4.9	59	
85-01-8	Phenanthrene	4.9	190	
120-12-7	Anthracene	4.9	56	
206-44-0	Fluoranthene	4.9	180	
129-00-0	Pyrene	4.9	240	
56-55-3	Benzo(a)anthracene	4.9	41	
218-01-9	Chrysene	4.9	44	
50-32-8	Benzo(a)pyrene	4.9	41	
193-39-5	Indeno(1,2,3-cd)pyrene	4.9	23	
53-70-3	Dibenz(a,h)anthracene	4.9	4.8	J
191-24-2	Benzo(g,h,i)perylene	4.9	35	
132-64-9	Dibenzofuran	4.9	73	
TOTBFA	Total Benzofluoranthenes	4.9	86	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	81.0%
d10-2-Methylnaphthalene	65.0%
d14-Dibenzo(a,h)anthracen	66.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP-18-1-2
SAMPLE

Lab Sample ID: WF91F
LIMS ID: 13-4120
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WF91-Landau Associates, Inc.
Project: 2013 Cascade Pole (Port of Olympia)
Event: NA
Date Sampled: 03/04/13
Date Received: 03/04/13

Date Extracted: 03/13/13
Date Analyzed: 03/15/13 20:45
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.52 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 25.1%

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**4.8**	**580 E**
91-57-6	**2-Methylnaphthalene**	**4.8**	**37**
90-12-0	**1-Methylnaphthalene**	**4.8**	**32**
208-96-8	**Acenaphthylene**	**4.8**	**8.2**
83-32-9	**Acenaphthene**	**4.8**	**34**
86-73-7	**Fluorene**	**4.8**	**20**
85-01-8	**Phenanthrene**	**4.8**	**47**
120-12-7	**Anthracene**	**4.8**	**24**
206-44-0	**Fluoranthene**	**4.8**	**90**
129-00-0	**Pyrene**	**4.8**	**98**
56-55-3	**Benzo(a)anthracene**	**4.8**	**27**
218-01-9	**Chrysene**	**4.8**	**27**
50-32-8	**Benzo(a)pyrene**	**4.8**	**20**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**4.8**	**9.3**
53-70-3	Dibenz(a,h)anthracene	4.8	< 4.8 U
191-24-2	**Benzo(g,h,i)perylene**	**4.8**	**12**
132-64-9	**Dibenzofuran**	**4.8**	**16**
TOTBFA	**Total Benzofluoranthenes**	**4.8**	**47**

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	91.3%
d10-2-Methylnaphthalene	69.3%
d14-Dibenzo(a,h)anthracen	84.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP-18-1-2
DILUTION

Lab Sample ID: WF91F
LIMS ID: 13-4120
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WF91-Landau Associates, Inc.
Project: 2013 Cascade Pole (Port of Olympia)
Event: NA
Date Sampled: 03/04/13
Date Received: 03/04/13

Date Extracted: 03/13/13
Date Analyzed: 03/19/13 15:23
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.52 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 3.00
Percent Moisture: 25.1%

CAS Number	Analyte	RL	Result	
91-20-3	**Naphthalene**	**14**	**720**	
91-57-6	**2-Methylnaphthalene**	**14**	**38**	
90-12-0	**1-Methylnaphthalene**	**14**	**33**	
208-96-8	**Acenaphthylene**	**14**	**8.6**	**J**
83-32-9	**Acenaphthene**	**14**	**34**	
86-73-7	**Fluorene**	**14**	**20**	
85-01-8	**Phenanthrene**	**14**	**50**	
120-12-7	**Anthracene**	**14**	**23**	
206-44-0	**Fluoranthene**	**14**	**89**	
129-00-0	**Pyrene**	**14**	**110**	
56-55-3	**Benzo(a)anthracene**	**14**	**26**	
218-01-9	**Chrysene**	**14**	**29**	
50-32-8	**Benzo(a)pyrene**	**14**	**18**	
193-39-5	Indeno(1,2,3-cd)pyrene	14	< 14	U
53-70-3	Dibenz(a,h)anthracene	14	< 14	U
191-24-2	**Benzo(g,h,i)perylene**	**14**	**11**	**J**
132-64-9	**Dibenzofuran**	**14**	**17**	
TOTBFA	**Total Benzofluoranthenes**	**14**	**48**	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	90.0%
d10-2-Methylnaphthalene	72.0%
d14-Dibenzo(a,h)anthracen	78.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546

Sample ID: MB-031313
METHOD BLANK

Lab Sample ID: MB-031313
LIMS ID: 13-4115
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WF91-Landau Associates, Inc.
Project: 2013 Cascade Pole (Port of Olympia)
Event: NA
Date Sampled: NA
Date Received: NA

Date Extracted: 03/13/13
Date Analyzed: 03/15/13 16:36
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.00 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	5.0	< 5.0 U
90-12-0	1-Methylnaphthalene	5.0	< 5.0 U
208-96-8	Acenaphthylene	5.0	< 5.0 U
83-32-9	Acenaphthene	5.0	< 5.0 U
86-73-7	Fluorene	5.0	< 5.0 U
85-01-8	Phenanthrene	5.0	< 5.0 U
120-12-7	Anthracene	5.0	< 5.0 U
206-44-0	Fluoranthene	5.0	< 5.0 U
129-00-0	Pyrene	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	5.0	< 5.0 U
218-01-9	Chrysene	5.0	< 5.0 U
50-32-8	Benzo(a)pyrene	5.0	< 5.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	< 5.0 U
53-70-3	Dibenz(a,h)anthracene	5.0	< 5.0 U
191-24-2	Benzo(g,h,i)perylene	5.0	< 5.0 U
132-64-9	Dibenzofuran	5.0	< 5.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	91.3%
d10-2-Methylnaphthalene	73.3%
d14-Dibenzo(a,h)anthracen	84.0%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: WF91-Landau Associates, Inc.
Project: 2013 Cascade Pole (Port of Olympia)

Client ID	FLN	MNP	DBA	TOT OUT
MB-031313	91.3%	73.3%	84.0%	0
LCS-031313	91.7%	71.7%	88.3%	0
LCSD-031313	91.7%	69.7%	90.7%	0
CP-17-1-2	90.0%	69.3%	73.0%	0
CP-16-1-2	85.0%	71.7%	61.3%	0
CP-20-1-2	89.7%	68.3%	81.3%	0
CP-20-1-2DUP	94.0%	69.7%	84.0%	0
CP-19-1-2	81.0%	65.0%	66.3%	0
CP-18-1-2	91.3%	69.3%	84.3%	0
CP-18-1-2 DL	90.0%	72.0%	78.0%	0

	LCS/MB LIMITS	QC LIMITS
(FLN) = d10-Fluoranthene	(30-160)	(30-160)
(MNP) = d10-2-Methylnaphthalene	(35-100)	(34-100)
(DBA) = d14-Dibenzo(a,h)anthracene	(37-120)	(10-117)

Prep Method: SW3546
Log Number Range: 13-4115 to 13-4120

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: LCS-031313
LAB CONTROL SAMPLE

Lab Sample ID: LCS-031313
LIMS ID: 13-4115
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WF91-Landau Associates, Inc.
Project: 2013 Cascade Pole (Port of Olympia)
Event: NA
Date Sampled: NA
Date Received: NA

Date Extracted: 03/13/13

Date Analyzed LCS: 03/15/13 17:04
LCSD: 03/15/13 17:31
Instrument/Analyst LCS: NT4/JZ
LCSD: NT4/JZ

Sample Amount LCS: 10.00 g-dry-wt
LCSD: 10.00 g-dry-wt
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	76.8	150	51.2%	75.8	150	50.5%	1.3%
2-Methylnaphthalene	80.6	150	53.7%	77.9	150	51.9%	3.4%
1-Methylnaphthalene	79.4	150	52.9%	77.2	150	51.5%	2.8%
Acenaphthylene	76.0	150	50.7%	73.2	150	48.8%	3.8%
Acenaphthene	78.2	150	52.1%	75.6	150	50.4%	3.4%
Fluorene	85.7	150	57.1%	83.8	150	55.9%	2.2%
Phenanthrene	84.8	150	56.5%	83.7	150	55.8%	1.3%
Anthracene	94.0	150	62.7%	94.2	150	62.8%	0.2%
Fluoranthene	100	150	66.7%	99.2	150	66.1%	0.8%
Pyrene	93.8	150	62.5%	94.8	150	63.2%	1.1%
Benzo(a)anthracene	99.0	150	66.0%	99.4	150	66.3%	0.4%
Chrysene	96.0	150	64.0%	97.9	150	65.3%	2.0%
Benzo(a)pyrene	90.2	150	60.1%	91.9	150	61.3%	1.9%
Indeno(1,2,3-cd)pyrene	92.4	150	61.6%	97.5	150	65.0%	5.4%
Dibenz(a,h)anthracene	91.0	150	60.7%	95.5	150	63.7%	4.8%
Benzo(g,h,i)perylene	90.2	150	60.1%	92.4	150	61.6%	2.4%
Dibenzofuran	81.0	150	54.0%	78.9	150	52.6%	2.6%
Total Benzofluoranthenes	298	450	66.2%	321	450	71.3%	7.4%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-Fluoranthene	91.7%	91.7%
d10-2-Methylnaphthalene	71.7%	69.7%
d14-Dibenzo(a,h)anthracen	88.3%	90.7%

SAMPLE RESULTS-CONVENTIONALS
WF91-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/18/13

Project: 2013 Cascade Pole (Port of O
Event: NA
Date Sampled: 03/04/13
Date Received: 03/04/13

Client ID: CP-17-1-2
ARI ID: 13-4115 WF91A

Analyte	Date	Method	Units	RL	Sample
Total Solids	03/07/13 030713#1	SM2540B	Percent	0.01	65.90
Total Organic Carbon	03/12/13 031213#1	Plumb,1981	Percent	0.020	1.65

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
WF91-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/18/13

Project: 2013 Cascade Pole (Port of O
Event: NA
Date Sampled: 03/04/13
Date Received: 03/04/13

Client ID: CP-16-1-2
ARI ID: 13-4116 WF91B

Analyte	Date	Method	Units	RL	Sample
Total Solids	03/07/13 030713#1	SM2540B	Percent	0.01	78.90
Total Organic Carbon	03/15/13 031513#1	Plumb,1981	Percent	0.020	2.66

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
WF91-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/18/13

Project: 2013 Cascade Pole (Port of O
Event: NA
Date Sampled: 03/04/13
Date Received: 03/04/13

Client ID: CP-20-1-2
ARI ID: 13-4117 WF91C

Analyte	Date	Method	Units	RL	Sample
Total Solids	03/07/13 030713#1	SM2540B	Percent	0.01	48.20
Total Organic Carbon	03/12/13 031213#1	Plumb,1981	Percent	0.020	0.868

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
WF91-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/18/13

Project: 2013 Cascade Pole (Port of O
Event: NA
Date Sampled: 03/04/13
Date Received: 03/04/13

Client ID: CP-20-1-2DUP
ARI ID: 13-4118 WF91D

Analyte	Date	Method	Units	RL	Sample
Total Solids	03/07/13 030713#1	SM2540B	Percent	0.01	48.70
Total Organic Carbon	03/12/13 031213#1	Plumb,1981	Percent	0.020	1.52

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
WF91-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/18/13

Project: 2013 Cascade Pole (Port of O
Event: NA
Date Sampled: 03/04/13
Date Received: 03/04/13

Client ID: CP-19-1-2
ARI ID: 13-4119 WF91E

Analyte	Date	Method	Units	RL	Sample
Total Solids	03/07/13 030713#1	SM2540B	Percent	0.01	43.70
Total Organic Carbon	03/12/13 031213#1	Plumb,1981	Percent	0.020	2.80

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
WF91-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/18/13

Project: 2013 Cascade Pole (Port of O
Event: NA
Date Sampled: 03/04/13
Date Received: 03/04/13

Client ID: CP-18-1-2
ARI ID: 13-4120 WF91F

Analyte	Date	Method	Units	RL	Sample
Total Solids	03/07/13 030713#1	SM2540B	Percent	0.01	76.50
Total Organic Carbon	03/12/13 031213#1	Plumb,1981	Percent	0.020	0.988

RL Analytical reporting limit
U Undetected at reported detection limit

LAB CONTROL RESULTS-CONVENTIONALS
WF91-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/18/13

Project: 2013 Cascade Pole (Port of O
Event: NA
Date Sampled: NA
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
Total Organic Carbon	ICVL	03/12/13	Percent	0.099	0.100	99.0%
Plumb,1981	ICVL	03/15/13		0.101	0.100	101.0%

METHOD BLANK RESULTS-CONVENTIONALS
WF91-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/18/13

Project: 2013 Cascade Pole (Port of O
Event: NA
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	03/07/13	Percent	< 0.01 U
Total Organic Carbon	03/12/13	Percent	< 0.020 U
	03/15/13		< 0.020 U

STANDARD REFERENCE RESULTS-CONVENTIONALS
WF91-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/18/13

Project: 2013 Cascade Pole (Port of O
Event: NA
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
Total Organic Carbon	03/12/13	Percent	2.97	2.99	99.3%
NIST 1941B	03/15/13		2.85	2.99	95.3%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

March 26, 2013

Chris Kimmel
Landau Associates, Inc.
130 2nd Avenue S.
Edmonds, WA 98020

RE: Project No:
Project Name: Cascade Pole Sediment Sampling
ARI Job No: WG94

Dear Chris:

Please find enclosed the chain of custody (COC) documentation and the final results from the project referenced above. Analytical Resources, Inc. accepted six sediment samples in good condition on March 8, 2013.

The samples were analyzed for PNAs and TOC, as requested on the COC.

The PNAs matrix spike and/or matrix spike duplicate are out of control both low and/or high for several analytes with several RPDs outside of the +/-40% control limits.

There were no other anomalies associated with the samples.

A copy of this report and all corresponding raw data will remain on file electronically with ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
(206) 695-6211
kellyb@arilabs.com

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

ARI Assigned Number: WG94	Turn-around Requested:	Page: 1 of 1	
ARI Client Company: Landau Associates Inc	Phone: 2069990690	Date: 03/08/2013	Ice Present? Y
Client Contact: Larry Beard		No. of Coolers: 1	Cooler Temps: 3.2
Client Project Name: Cascade Pole			
Client Project #:	Samplers: DG, DG, CP		

Sample ID	Date	Time	Matrix	No. Containers	PAHs	TS/TOC	MS/MSD						Notes/Comments
CP18-0-10-130308	03/08/13	0816	sed	2	X	X							
CP19-0-10-130308	03/08/13	0837	sed	2	X	X	X						
CP20-0-10-130308	03/08/13	0857	sed	2	X	X							
CP17-0-10-130308	03/08/13	1220	sed	2	X	X							
CP16-0-10-130308	03/08/13	1308	sed	2	X	X							
~~CP18~~ CP18dup-0-10-130308	03/08/13	0816	sed	2	X	X							

Comments/Special Instructions	Relinquished by:	Received by:	Relinquished by:	Received by:
	(Signature) [signature]	(Signature) [signature]	(Signature)	(Signature)
	Printed Name: D Gillingham	Printed Name: A Volgardsen	Printed Name:	Printed Name:
	Company: Anchor QEA	Company: ARI	Company:	Company:
	Date & Time: 3/8/13 1630	Date & Time: 3/8/13 1630	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau Project Name: Cascade Pole

COC No(s): _____ NA Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: WG94 Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)	3.2	

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90877952

Cooler Accepted by: AV Date: 3/8/13 Time: 1630

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	Bubble Wrap (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		(YES)	NO
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Was Sample Split by ARI: (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

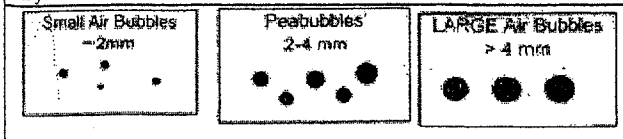
Samples Logged by: TL Date: 3-11-13 Time: 1312

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: WG94
Client: Landau Associates, Inc.
Project Event: N/A
Project Name: Cascade Pole

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	CP18-0-10-130308	WG94A	13-5003	Sediment	03/08/13 08:16	03/11/13 16:30
2.	CP19-0-10-130308	WG94B	13-5004	Sediment	03/08/13 08:37	03/11/13 16:30
3.	CP20-0-10-130308	WG94C	13-5005	Sediment	03/08/13 08:57	03/11/13 16:30
4.	CP17-0-10-130308	WG94D	13-5006	Sediment	03/08/13 12:20	03/11/13 16:30
5.	CP16-0-10-130308	WG94E	13-5007	Sediment	03/08/13 13:08	03/11/13 16:30
6.	CP18dup-0-10-130308	WG94F	13-5008	Sediment	03/08/13 08:16	03/11/13 16:30

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546

Sample ID: CP18-0-10-130308
SAMPLE

Lab Sample ID: WG94A
LIMS ID: 13-5003
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WG94-Landau Associates, Inc.
Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Date Extracted: 03/15/13
Date Analyzed: 03/19/13 18:18
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.14 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 32.6%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	4.9	740 E
91-57-6	2-Methylnaphthalene	4.9	130
90-12-0	1-Methylnaphthalene	4.9	100
208-96-8	Acenaphthylene	4.9	23
83-32-9	Acenaphthene	4.9	150
86-73-7	Fluorene	4.9	120
85-01-8	Phenanthrene	4.9	240
120-12-7	Anthracene	4.9	130
206-44-0	Fluoranthene	4.9	310
129-00-0	Pyrene	4.9	410
56-55-3	Benzo(a)anthracene	4.9	67
218-01-9	Chrysene	4.9	79
50-32-8	Benzo(a)pyrene	4.9	48
193-39-5	Indeno(1,2,3-cd)pyrene	4.9	21
53-70-3	Dibenz(a,h)anthracene	4.9	5.9
191-24-2	Benzo(g,h,i)perylene	4.9	32
132-64-9	Dibenzofuran	4.9	100
TOTBFA	Total Benzofluoranthenes	4.9	140

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	91.3%
d10-2-Methylnaphthalene	69.3%
d14-Dibenzo(a,h)anthracen	83.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP18-0-10-130308
DILUTION

Lab Sample ID: WG94A
LIMS ID: 13-5003
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WG94-Landau Associates, Inc.
Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Date Extracted: 03/15/13
Date Analyzed: 03/19/13 21:59
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.14 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 5.00
Percent Moisture: 32.6%

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**25**	**1,100**
91-57-6	**2-Methylnaphthalene**	**25**	**160**
90-12-0	**1-Methylnaphthalene**	**25**	**120**
208-96-8	**Acenaphthylene**	**25**	**29**
83-32-9	**Acenaphthene**	**25**	**180**
86-73-7	**Fluorene**	**25**	**140**
85-01-8	**Phenanthrene**	**25**	**290**
120-12-7	**Anthracene**	**25**	**130**
206-44-0	**Fluoranthene**	**25**	**380**
129-00-0	**Pyrene**	**25**	**530**
56-55-3	**Benzo(a)anthracene**	**25**	**79**
218-01-9	**Chrysene**	**25**	**95**
50-32-8	**Benzo(a)pyrene**	**25**	**54**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**25**	**31**
53-70-3	Dibenz(a,h)anthracene	25	< 25 U
191-24-2	**Benzo(g,h,i)perylene**	**25**	**39**
132-64-9	**Dibenzofuran**	**25**	**120**
TOTBFA	**Total Benzofluoranthenes**	**25**	**160**

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	110%
d10-2-Methylnaphthalene	81.7%
d14-Dibenzo(a,h)anthracen	96.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP19-0-10-130308
SAMPLE

Lab Sample ID: WG94B
LIMS ID: 13-5004
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WG94-Landau Associates, Inc.
Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Date Extracted: 03/15/13
Date Analyzed: 03/19/13 18:46
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.43 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 52.6%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	4.8	510 E
91-57-6	2-Methylnaphthalene	4.8	87
90-12-0	1-Methylnaphthalene	4.8	73
208-96-8	Acenaphthylene	4.8	24
83-32-9	Acenaphthene	4.8	92
86-73-7	Fluorene	4.8	71
85-01-8	Phenanthrene	4.8	160
120-12-7	Anthracene	4.8	73
206-44-0	Fluoranthene	4.8	220
129-00-0	Pyrene	4.8	370
56-55-3	Benzo(a)anthracene	4.8	130
218-01-9	Chrysene	4.8	150
50-32-8	Benzo(a)pyrene	4.8	120
193-39-5	Indeno(1,2,3-cd)pyrene	4.8	57
53-70-3	Dibenz(a,h)anthracene	4.8	16
191-24-2	Benzo(g,h,i)perylene	4.8	58
132-64-9	Dibenzofuran	4.8	78
TOTBFA	Total Benzofluoranthenes	4.8	300

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	87.3%
d10-2-Methylnaphthalene	72.7%
d14-Dibenzo(a,h)anthracen	77.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP19-0-10-130308
MATRIX SPIKE

Lab Sample ID: WG94B
LIMS ID: 13-5004
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WG94-Landau Associates, Inc.
Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Date Extracted: 03/15/13
Date Analyzed: 03/19/13 19:13
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.45 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 52.6%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	4.8	---
91-57-6	2-Methylnaphthalene	4.8	---
90-12-0	1-Methylnaphthalene	4.8	---
208-96-8	Acenaphthylene	4.8	---
83-32-9	Acenaphthene	4.8	---
86-73-7	Fluorene	4.8	---
85-01-8	Phenanthrene	4.8	---
120-12-7	Anthracene	4.8	---
206-44-0	Fluoranthene	4.8	---
129-00-0	Pyrene	4.8	---
56-55-3	Benzo(a)anthracene	4.8	---
218-01-9	Chrysene	4.8	---
50-32-8	Benzo(a)pyrene	4.8	---
193-39-5	Indeno(1,2,3-cd)pyrene	4.8	---
53-70-3	Dibenz(a,h)anthracene	4.8	---
191-24-2	Benzo(g,h,i)perylene	4.8	---
132-64-9	Dibenzofuran	4.8	---
TOTBFA	Total Benzofluoranthenes	4.8	---

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	81.3%
d10-2-Methylnaphthalene	66.0%
d14-Dibenzo(a,h)anthracen	76.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546

Sample ID: CP19-0-10-130308
MATRIX SPIKE DUPLICATE

Lab Sample ID: WG94B
LIMS ID: 13-5004
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WG94-Landau Associates, Inc.
Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Date Extracted: 03/15/13
Date Analyzed: 03/19/13 19:41
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.44 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 52.6%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	4.8	---
91-57-6	2-Methylnaphthalene	4.8	---
90-12-0	1-Methylnaphthalene	4.8	---
208-96-8	Acenaphthylene	4.8	---
83-32-9	Acenaphthene	4.8	---
86-73-7	Fluorene	4.8	---
85-01-8	Phenanthrene	4.8	---
120-12-7	Anthracene	4.8	---
206-44-0	Fluoranthene	4.8	---
129-00-0	Pyrene	4.8	---
56-55-3	Benzo(a)anthracene	4.8	---
218-01-9	Chrysene	4.8	---
50-32-8	Benzo(a)pyrene	4.8	---
193-39-5	Indeno(1,2,3-cd)pyrene	4.8	---
53-70-3	Dibenz(a,h)anthracene	4.8	---
191-24-2	Benzo(g,h,i)perylene	4.8	---
132-64-9	Dibenzofuran	4.8	---
TOTBFA	Total Benzofluoranthenes	4.8	---

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	94.7%
d10-2-Methylnaphthalene	73.3%
d14-Dibenzo(a,h)anthracen	89.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP19-0-10-130308
DILUTION

Lab Sample ID: WG94B
LIMS ID: 13-5004
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WG94-Landau Associates, Inc.
Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Date Extracted: 03/15/13
Date Analyzed: 03/19/13 22:27
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.43 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 5.00
Percent Moisture: 52.6%

CAS Number	Analyte	RL	Result	
91-20-3	Naphthalene	24	600	
91-57-6	2-Methylnaphthalene	24	83	
90-12-0	1-Methylnaphthalene	24	79	
208-96-8	Acenaphthylene	24	25	
83-32-9	Acenaphthene	24	98	
86-73-7	Fluorene	24	74	
85-01-8	Phenanthrene	24	170	
120-12-7	Anthracene	24	74	
206-44-0	Fluoranthene	24	230	
129-00-0	Pyrene	24	420	
56-55-3	Benzo(a)anthracene	24	130	
218-01-9	Chrysene	24	150	
50-32-8	Benzo(a)pyrene	24	120	
193-39-5	Indeno(1,2,3-cd)pyrene	24	58	
53-70-3	Dibenz(a,h)anthracene	24	16	J
191-24-2	Benzo(g,h,i)perylene	24	59	
132-64-9	Dibenzofuran	24	81	
TOTBFA	Total Benzofluoranthenes	24	310	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	88.3%
d10-2-Methylnaphthalene	75.0%
d14-Dibenzo(a,h)anthracen	80.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546

Sample ID: CP20-0-10-130308
SAMPLE

Lab Sample ID: WG94C
LIMS ID: 13-5005
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WG94-Landau Associates, Inc.
Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Date Extracted: 03/15/13
Date Analyzed: 03/19/13 20:09
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.10 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 56.2%

CAS Number	Analyte	RL	Result	
91-20-3	Naphthalene	5.0	650	E
91-57-6	2-Methylnaphthalene	5.0	83	
90-12-0	1-Methylnaphthalene	5.0	61	
208-96-8	Acenaphthylene	5.0	49	
83-32-9	Acenaphthene	5.0	110	
86-73-7	Fluorene	5.0	84	
85-01-8	Phenanthrene	5.0	250	
120-12-7	Anthracene	5.0	110	
206-44-0	Fluoranthene	5.0	440	
129-00-0	Pyrene	5.0	540	E
56-55-3	Benzo(a)anthracene	5.0	230	
218-01-9	Chrysene	5.0	260	
50-32-8	Benzo(a)pyrene	5.0	210	
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	120	
53-70-3	Dibenz(a,h)anthracene	5.0	28	
191-24-2	Benzo(g,h,i)perylene	5.0	140	
132-64-9	Dibenzofuran	5.0	91	
TOTBFA	Total Benzofluoranthenes	5.0	390	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	96.3%
d10-2-Methylnaphthalene	78.3%
d14-Dibenzo(a,h)anthracen	93.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP20-0-10-130308
DILUTION

Lab Sample ID: WG94C
LIMS ID: 13-5005
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WG94-Landau Associates, Inc.
Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Date Extracted: 03/15/13
Date Analyzed: 03/19/13 22:55
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.10 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 5.00
Percent Moisture: 56.2%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	25	770
91-57-6	2-Methylnaphthalene	25	80
90-12-0	1-Methylnaphthalene	25	66
208-96-8	Acenaphthylene	25	50
83-32-9	Acenaphthene	25	100
86-73-7	Fluorene	25	87
85-01-8	Phenanthrene	25	260
120-12-7	Anthracene	25	110
206-44-0	Fluoranthene	25	440
129-00-0	Pyrene	25	590
56-55-3	Benzo(a)anthracene	25	240
218-01-9	Chrysene	25	270
50-32-8	Benzo(a)pyrene	25	220
193-39-5	Indeno(1,2,3-cd)pyrene	25	110
53-70-3	Dibenz(a,h)anthracene	25	28
191-24-2	Benzo(g,h,i)perylene	25	150
132-64-9	Dibenzofuran	25	96
TOTBFA	Total Benzofluoranthenes	25	430

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	90.0%
d10-2-Methylnaphthalene	81.7%
d14-Dibenzo(a,h)anthracen	83.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP17-0-10-130308
SAMPLE

Lab Sample ID: WG94D
LIMS ID: 13-5006
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WG94-Landau Associates, Inc.
Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Date Extracted: 03/15/13
Date Analyzed: 03/19/13 20:36
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.00 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 41.2%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	5.0	740 E
91-57-6	2-Methylnaphthalene	5.0	75
90-12-0	1-Methylnaphthalene	5.0	100
208-96-8	Acenaphthylene	5.0	14
83-32-9	Acenaphthene	5.0	230
86-73-7	Fluorene	5.0	160
85-01-8	Phenanthrene	5.0	220
120-12-7	Anthracene	5.0	140
206-44-0	Fluoranthene	5.0	340
129-00-0	Pyrene	5.0	340
56-55-3	Benzo(a)anthracene	5.0	80
218-01-9	Chrysene	5.0	110
50-32-8	Benzo(a)pyrene	5.0	54
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	29
53-70-3	Dibenz(a,h)anthracene	5.0	8.9
191-24-2	Benzo(g,h,i)perylene	5.0	34
132-64-9	Dibenzofuran	5.0	120
TOTBFA	Total Benzofluoranthenes	5.0	150

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	95.0%
d10-2-Methylnaphthalene	69.3%
d14-Dibenzo(a,h)anthracen	90.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP17-0-10-130308
DILUTION

Lab Sample ID: WG94D
LIMS ID: 13-5006
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WG94-Landau Associates, Inc.
Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Date Extracted: 03/15/13
Date Analyzed: 03/19/13 23:22
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.00 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 5.00
Percent Moisture: 41.2%

CAS Number	Analyte	RL	Result	
91-20-3	**Naphthalene**	**25**	**880**	
91-57-6	**2-Methylnaphthalene**	**25**	**77**	
90-12-0	**1-Methylnaphthalene**	**25**	**100**	
208-96-8	**Acenaphthylene**	**25**	**14**	**J**
83-32-9	**Acenaphthene**	**25**	**220**	
86-73-7	**Fluorene**	**25**	**150**	
85-01-8	**Phenanthrene**	**25**	**220**	
120-12-7	**Anthracene**	**25**	**120**	
206-44-0	**Fluoranthene**	**25**	**340**	
129-00-0	**Pyrene**	**25**	**360**	
56-55-3	**Benzo(a)anthracene**	**25**	**81**	
218-01-9	**Chrysene**	**25**	**110**	
50-32-8	**Benzo(a)pyrene**	**25**	**50**	
193-39-5	**Indeno(1,2,3-cd)pyrene**	**25**	**28**	
53-70-3	Dibenz(a,h)anthracene	25	< 25	U
191-24-2	**Benzo(g,h,i)perylene**	**25**	**34**	
132-64-9	**Dibenzofuran**	**25**	**120**	
TOTBFA	**Total Benzofluoranthenes**	**25**	**150**	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	93.3%
d10-2-Methylnaphthalene	68.3%
d14-Dibenzo(a,h)anthracen	81.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP16-0-10-130308
SAMPLE

Lab Sample ID: WG94E
LIMS ID: 13-5007
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WG94-Landau Associates, Inc.
Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Date Extracted: 03/15/13
Date Analyzed: 03/19/13 21:04
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.42 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 30.7%

CAS Number	Analyte	RL	Result	
91-20-3	Naphthalene	4.8	140	
91-57-6	2-Methylnaphthalene	4.8	22	
90-12-0	1-Methylnaphthalene	4.8	17	
208-96-8	Acenaphthylene	4.8	8.7	
83-32-9	Acenaphthene	4.8	28	
86-73-7	Fluorene	4.8	24	
85-01-8	Phenanthrene	4.8	69	
120-12-7	Anthracene	4.8	36	
206-44-0	Fluoranthene	4.8	100	
129-00-0	Pyrene	4.8	110	
56-55-3	Benzo(a)anthracene	4.8	21	
218-01-9	Chrysene	4.8	24	
50-32-8	Benzo(a)pyrene	4.8	15	
193-39-5	Indeno(1,2,3-cd)pyrene	4.8	8.8	
53-70-3	Dibenz(a,h)anthracene	4.8	2.5	J
191-24-2	Benzo(g,h,i)perylene	4.8	12	
132-64-9	Dibenzofuran	4.8	19	
TOTBFA	Total Benzofluoranthenes	4.8	43	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	92.3%
d10-2-Methylnaphthalene	71.3%
d14-Dibenzo(a,h)anthracen	82.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP18dup-0-10-130308
SAMPLE

Lab Sample ID: WG94F
LIMS ID: 13-5008
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WG94-Landau Associates, Inc.
Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Date Extracted: 03/15/13
Date Analyzed: 03/19/13 21:32
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.08 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 33.0%

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	5.0	760 E
91-57-6	2-Methylnaphthalene	5.0	110
90-12-0	1-Methylnaphthalene	5.0	80
208-96-8	Acenaphthylene	5.0	27
83-32-9	Acenaphthene	5.0	120
86-73-7	Fluorene	5.0	88
85-01-8	Phenanthrene	5.0	190
120-12-7	Anthracene	5.0	100
206-44-0	Fluoranthene	5.0	300
129-00-0	Pyrene	5.0	420
56-55-3	Benzo(a)anthracene	5.0	66
218-01-9	Chrysene	5.0	90
50-32-8	Benzo(a)pyrene	5.0	55
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	28
53-70-3	Dibenz(a,h)anthracene	5.0	7.8
191-24-2	Benzo(g,h,i)perylene	5.0	36
132-64-9	Dibenzofuran	5.0	82
TOTBFA	Total Benzofluoranthenes	5.0	160

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	91.0%
d10-2-Methylnaphthalene	70.3%
d14-Dibenzo(a,h)anthracen	82.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: CP18dup-0-10-130308
DILUTION

Lab Sample ID: WG94F
LIMS ID: 13-5008
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WG94-Landau Associates, Inc.
Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Date Extracted: 03/15/13
Date Analyzed: 03/20/13 00:17
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.08 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 5.00
Percent Moisture: 33.0%

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**25**	**970**
91-57-6	**2-Methylnaphthalene**	**25**	**120**
90-12-0	**1-Methylnaphthalene**	**25**	**88**
208-96-8	**Acenaphthylene**	**25**	**28**
83-32-9	**Acenaphthene**	**25**	**130**
86-73-7	**Fluorene**	**25**	**92**
85-01-8	**Phenanthrene**	**25**	**210**
120-12-7	**Anthracene**	**25**	**100**
206-44-0	**Fluoranthene**	**25**	**320**
129-00-0	**Pyrene**	**25**	**470**
56-55-3	**Benzo(a)anthracene**	**25**	**66**
218-01-9	**Chrysene**	**25**	**89**
50-32-8	**Benzo(a)pyrene**	**25**	**53**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**25**	**28**
53-70-3	Dibenz(a,h)anthracene	25	< 25 U
191-24-2	**Benzo(g,h,i)perylene**	**25**	**38**
132-64-9	**Dibenzofuran**	**25**	**88**
TOTBFA	**Total Benzofluoranthenes**	**25**	**150**

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	93.3%
d10-2-Methylnaphthalene	75.0%
d14-Dibenzo(a,h)anthracen	70.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SIM SW8270D-SIM GC/MS
Extraction Method: SW3546
Page 1 of 1

Sample ID: MB-031513
METHOD BLANK

Lab Sample ID: MB-031513
LIMS ID: 13-5004
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WG94-Landau Associates, Inc.
Project: Cascade Pole
Event: NA
Date Sampled: NA
Date Received: NA

Date Extracted: 03/15/13
Date Analyzed: 03/19/13 16:27
Instrument/Analyst: NT4/JZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.00 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	5.0	< 5.0 U
90-12-0	1-Methylnaphthalene	5.0	< 5.0 U
208-96-8	Acenaphthylene	5.0	< 5.0 U
83-32-9	Acenaphthene	5.0	< 5.0 U
86-73-7	Fluorene	5.0	< 5.0 U
85-01-8	Phenanthrene	5.0	< 5.0 U
120-12-7	Anthracene	5.0	< 5.0 U
206-44-0	Fluoranthene	5.0	< 5.0 U
129-00-0	Pyrene	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	5.0	< 5.0 U
218-01-9	Chrysene	5.0	< 5.0 U
50-32-8	Benzo(a)pyrene	5.0	< 5.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	< 5.0 U
53-70-3	Dibenz(a,h)anthracene	5.0	< 5.0 U
191-24-2	Benzo(g,h,i)perylene	5.0	< 5.0 U
132-64-9	Dibenzofuran	5.0	< 5.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	95.7%
d10-2-Methylnaphthalene	69.7%
d14-Dibenzo(a,h)anthracen	94.3%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: WG94-Landau Associates, Inc.
Project: Cascade Pole

Client ID	FLN	MNP	DBA	TOT OUT
CP18-0-10-130308	91.3%	69.3%	83.0%	0
CP18-0-10-130308 DL	110%	81.7%	96.7%	0
MB-031513	95.7%	69.7%	94.3%	0
LCS-031513	91.3%	68.3%	91.7%	0
LCSD-031513	93.0%	64.3%	95.7%	0
CP19-0-10-130308	87.3%	72.7%	77.0%	0
CP19-0-10-130308 DL	88.3%	75.0%	80.0%	0
CP19-0-10-130308 MS	81.3%	66.0%	76.0%	0
CP19-0-10-130308 MSD	94.7%	73.3%	89.7%	0
CP20-0-10-130308	96.3%	78.3%	93.3%	0
CP20-0-10-130308 DL	90.0%	81.7%	83.3%	0
CP17-0-10-130308	95.0%	69.3%	90.7%	0
CP17-0-10-130308 DL	93.3%	68.3%	81.7%	0
CP16-0-10-130308	92.3%	71.3%	82.3%	0
CP18dup-0-10-130308	91.0%	70.3%	82.7%	0
CP18dup-0-10-130308 DL	93.3%	75.0%	70.0%	0

	LCS/MB LIMITS	QC LIMITS
(FLN) = d10-Fluoranthene	(30-160)	(30-160)
(MNP) = d10-2-Methylnaphthalene	(35-100)	(34-100)
(DBA) = d14-Dibenzo(a,h)anthracene	(37-120)	(10-117)

Prep Method: SW3546
Log Number Range: 13-5003 to 13-5008

FORM-II SIM SW8270

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: LCS-031513
LAB CONTROL SAMPLE

Lab Sample ID: LCS-031513
LIMS ID: 13-5004
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WG94-Landau Associates, Inc.
Project: Cascade Pole
Event: NA
Date Sampled: NA
Date Received: NA

Date Extracted: 03/15/13

Date Analyzed LCS: 03/19/13 16:55
LCSD: 03/19/13 17:22
Instrument/Analyst LCS: NT4/JZ
LCSD: NT4/JZ

Sample Amount LCS: 10.00 g-dry-wt
LCSD: 10.00 g-dry-wt
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	73.4	150	48.9%	73.2	150	48.8%	0.3%
2-Methylnaphthalene	76.4	150	50.9%	76.6	150	51.1%	0.3%
1-Methylnaphthalene	77.0	150	51.3%	75.8	150	50.5%	1.6%
Acenaphthylene	73.7	150	49.1%	74.8	150	49.9%	1.5%
Acenaphthene	72.2	150	48.1%	74.8	150	49.9%	3.5%
Fluorene	79.7	150	53.1%	85.0	150	56.7%	6.4%
Phenanthrene	85.8	150	57.2%	87.4	150	58.3%	1.8%
Anthracene	92.8	150	61.9%	84.4	150	56.3%	9.5%
Fluoranthene	98.0	150	65.3%	103	150	68.7%	5.0%
Pyrene	95.4	150	63.6%	101	150	67.3%	5.7%
Benzo(a)anthracene	100	150	66.7%	104	150	69.3%	3.9%
Chrysene	97.8	150	65.2%	104	150	69.3%	6.1%
Benzo(a)pyrene	90.7	150	60.5%	96.4	150	64.3%	6.1%
Indeno(1,2,3-cd)pyrene	94.8	150	63.2%	103	150	68.7%	8.3%
Dibenz(a,h)anthracene	95.4	150	63.6%	98.2	150	65.5%	2.9%
Benzo(g,h,i)perylene	91.2	150	60.8%	99.4	150	66.3%	8.6%
Dibenzofuran	75.4	150	50.3%	78.4	150	52.3%	3.9%
Total Benzofluoranthenes	289	450	64.2%	311	450	69.1%	7.3%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-Fluoranthene	91.3%	93.0%
d10-2-Methylnaphthalene	68.3%	64.3%
d14-Dibenzo(a,h)anthracen	91.7%	95.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: CP19-0-10-130308
MATRIX SPIKE

Lab Sample ID: WG94B
LIMS ID: 13-5004
Matrix: Sediment
Data Release Authorized:
Reported: 03/20/13

QC Report No: WG94-Landau Associates, Inc.
Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Date Extracted MS/MSD: 03/15/13

Sample Amount MS: 10.45 g-dry-wt
MSD: 10.44 g-dry-wt

Date Analyzed MS: 03/19/13 19:13
MSD: 03/19/13 19:41

Final Extract Volume MS: 0.50 mL
MSD: 0.50 mL

Instrument/Analyst MS: NT4/JZ
MSD: NT4/JZ

Dilution Factor MS: 1.00
MSD: 1.00

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Naphthalene	510 E	533 E	144	16.0%	742 E	144	161%	32.8%
2-Methylnaphthalene	87	159	144	50.0%	185	144	68.1%	15.1%
1-Methylnaphthalene	73	153	144	55.6%	224	144	105%	37.7%
Acenaphthylene	24	103	144	54.9%	128	144	72.2%	21.6%
Acenaphthene	92	182	144	62.5%	302	144	146%	49.6%
Fluorene	71	153	144	56.9%	232	144	112%	41.0%
Phenanthrene	160	243	144	57.6%	393	144	162%	47.2%
Anthracene	73	180	144	74.3%	355	144	196%	65.4%
Fluoranthene	220	304	144	58.3%	404	144	128%	28.2%
Pyrene	370	472	144	70.8%	656 E	144	199%	32.6%
Benzo(a)anthracene	130	189	144	41.0%	599 E	144	326%	104%
Chrysene	150	217	144	46.5%	708 E	144	388%	106%
Benzo(a)pyrene	120	163	144	29.9%	321	144	140%	65.3%
Indeno(1,2,3-cd)pyrene	57	114	144	39.6%	186	144	89.6%	48.0%
Dibenz(a,h)anthracene	16	85.1	144	48.0%	115	144	68.8%	29.9%
Benzo(g,h,i)perylene	58	118	144	41.7%	182	144	86.1%	42.7%
Dibenzofuran	78	156	144	54.2%	198	144	83.3%	23.7%
Total Benzofluoranthenes	300	435	431	31.3%	837	431	125%	63.2%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

SAMPLE RESULTS-CONVENTIONALS
WG94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/26/13

Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Client ID: CP18-0-10-130308
ARI ID: 13-5003 WG94A

Analyte	Date	Method	Units	RL	Sample
Total Solids	03/12/13 031213#1	SM2540B	Percent	0.01	64.40
Total Organic Carbon	03/25/13 032513#1	Plumb,1981	Percent	0.020	1.03

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
WG94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/26/13

Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Client ID: CP19-0-10-130308
ARI ID: 13-5004 WG94B

Analyte	Date	Method	Units	RL	Sample
Total Solids	03/12/13 031213#1	SM2540B	Percent	0.01	46.40
Total Organic Carbon	03/25/13 032513#1	Plumb,1981	Percent	0.020	2.89

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
WG94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/26/13

Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Client ID: CP20-0-10-130308
ARI ID: 13-5005 WG94C

Analyte	Date	Method	Units	RL	Sample
Total Solids	03/12/13 031213#1	SM2540B	Percent	0.01	42.30
Total Organic Carbon	03/25/13 032513#1	Plumb,1981	Percent	0.020	3.62

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
WG94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/26/13

Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Client ID: CP17-0-10-130308
ARI ID: 13-5006 WG94D

Analyte	Date	Method	Units	RL	Sample
Total Solids	03/12/13 031213#1	SM2540B	Percent	0.01	60.30
Total Organic Carbon	03/25/13 032513#1	Plumb,1981	Percent	0.020	1.23

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
WG94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/26/13

Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Client ID: CP16-0-10-130308
ARI ID: 13-5007 WG94E

Analyte	Date	Method	Units	RL	Sample
Total Solids	03/12/13 031213#1	SM2540B	Percent	0.01	69.50
Total Organic Carbon	03/25/13 032513#1	Plumb,1981	Percent	0.020	1.16

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
WG94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/26/13

Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Client ID: CP18dup-0-10-130308
ARI ID: 13-5008 WG94F

Analyte	Date	Method	Units	RL	Sample
Total Solids	03/12/13 031213#1	SM2540B	Percent	0.01	63.60
Total Organic Carbon	03/25/13 032513#1	Plumb,1981	Percent	0.020	1.04

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
WG94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/26/13

Project: Cascade Pole
Event: NA
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	03/12/13	Percent	< 0.01 U
Total Organic Carbon	03/25/13	Percent	< 0.020 U

LAB CONTROL RESULTS-CONVENTIONALS
WG94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/26/13

Project: Cascade Pole
Event: NA
Date Sampled: NA
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
Total Organic Carbon Plumb,1981	ICVL	03/25/13	Percent	0.101	0.100	101.0%

STANDARD REFERENCE RESULTS-CONVENTIONALS
WG94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/26/13

Project: Cascade Pole
Event: NA
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
Total Organic Carbon NIST 1941B	03/25/13	Percent	3.05	2.99	102.0%

REPLICATE RESULTS-CONVENTIONALS
WG94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/26/13

Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: WG94B Client ID: CP19-0-10-130308					
Total Solids	03/12/13	Percent	46.40	46.10 45.80	0.7%
Total Organic Carbon	03/25/13	Percent	2.89	2.94 2.66	5.3%

MS/MSD RESULTS-CONVENTIONALS
WG94-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 03/26/13

Project: Cascade Pole
Event: NA
Date Sampled: 03/08/13
Date Received: 03/11/13

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: WG94B Client ID: CP19-0-10-130308						
Total Organic Carbon	03/25/13	Percent	2.89	6.32	3.26	105.3%

APPENDIX C

Historical Sediment Analytical Results

TABLE C-1
POST-CONSTRUCTION SEDIMENT MONITORING
ANALYTICAL RESULTS
CASCADE POLE SITE

Site ID:	Cleanup	CP-01-D	CP-02-D	CP-03-S	dup of CP-03-S CP-90-S	CP-03-D	CP-04-D	CP-05-S	CP-05-D	CP-06-F	CP-06-D	CP-07-S	CP-07-D	CP-08-S	CP-08-D
Sample Date:	Levels (a)	4/11/2002	4/12/2002	4/11/2002	4/11/2002	4/11/2002	4/11/2002	4/11/2002	4/11/2002	4/10/2002	4/10/2002	4/11/2002	4/11/2002	4/11/2002	4/12/2002
Lab ID:		K2202334-002	K2202374-002	K2202330-015	K2202330-016	K2202334-004	K2202374-004	K2202330-018	K2202374-006	K2204074-001	K2202334-006	K2202330-009	K2202374-009	K2202330-010	K2202374-011
Sample type:		Dredge	Dredge	Surface	Surface	Dredge	Dredge	Surface	Dredge	Fill (b)	Dredge	Surface	Dredge	Surface	Dredge
Dioxins (ng/kg TEQ dry weight) (c)	80	0.00822	0.386	7.51	5.89	0.0241	0.0183	0.107	0.693		54.4	11.7	1.82	0.571	0.609
PAHs (mg/kg OC) (d)															
Naphthalene	170	55	13	13	11	1.0 U	0.53	11 U	18	8.8 U	13	5.0 U	5.5	7.3 U	9.3
Acenaphthylene	66	3.2	1.8 U	3.7 U	4.4 U	1.0 U	0.50 U	11 U	0.40	8.8 U	1.2	5.0 U	1.3 U	7.3 U	1.5 U
Acenaphthene	57	265 (e)	1.8 U	3.7 U	4.4 U	1.0 U	0.50 U	11 U	12	8.8 U	92	5.0 U	1.3 U	7.3 U	2.0
Fluorene	79	9.0	1.8 U	3.7 U	4.4 U	1.0 U	0.50 U	11 U	8.0	8.8 U	54	5.0 U	1.3 U	7.3 U	1.6
Phenanthrene	480	12	2.1	6.3	9.2	1.0 U	0.51	11 U	24	8.8 U	230	5.0 U	4.5	7.3 U	5.3
Anthracene	1200	4.5	1.8 U	6.9	8.5	1.0 U	0.50 U	11 U	5.2	8.8 U	54	6.9	3.7	7.3 U	3.7
2-Methylnaphthalene	64	2.1 U	1.8 U	3.7 U	4.4 U	1.0 U	0.50 U	11 U	3.2	8.8 U	2.8	5.0 U	1.3 U	7.3 U	1.5 U
LPAH (f,g)	780	348	15	26	28	1.0 U	1.0	11 U	67	8.8 U	446	6.9	14	7.3 U	22
Fluoranthene	1200	5.8	4.6	26	32	2.0	1.0	11 U	26	8.8 U	255	15	8.8	11	15
Pyrene	1400	6.8	1.8 U	13	18	2.2	0.50 U	11 U	20	8.8 U	205	12	11	10	16
Benzo(a)anthracene	270	2.1 U	1.8 U	11	15	1.0 U	0.50 U	11 U	7.2	8.8 U	59	5.0 U	2.4	7.3 U	8.6
Chrysene	460	2.1 U	1.8 U	15	25	1.0 U	0.50 U	11 U	6.0	8.8 U	59	10	3.3	7.3 U	10
Benzo(b)fluoranthene		2.1 U	1.8 U	10	15	1.0 U	0.50 U	11 U	3.6	8.8 U	30	6.4	2.9	7.3 U	7.4
Benzo(k)fluoranthene		2.1 U	1.8 U	9	16	1.0 U	0.50 U	11 U	4.0	8.8 U	28	6.3	2.7	7.3 U	6.0
Total benzofluoranthenes (g,h)	450	2.1 U	1.8 U	19	32	1.0 U	0.50 U	11 U	7.6	8.8 U	58	13	5.7	7.3 U	13
Benzo(a)pyrene	210	2.1 U	1.8 U	8.8	12	1.0 U	0.50 U	11 U	4.4	8.8 U	31	5.0 U	2.5	7.3 U	5.8
Indeno(1,2,3-c,d)pyrene	88	2.1 U	1.8 U	4.9	7.0	1.0 U	0.50 U	11 U	2.5	8.8 U	14	5.0 U	2.2	7.3 U	3.5
Dibenzo(a,h)anthracene	33	2.1 U	1.8 U	3.7 U	4.4 U	1.0 U	0.50 U	11 U	0.40	8.8 U	2.7	5.0 U	1.3 U	7.3 U	1.5 U
Benzo(g,h,i)perylene	78	2.1 U	1.8 U	4.1	5.8	1.0 U	0.50 U	11 U	1.8	8.8 U	9.2	5.0 U	2.0	7.3 U	2.8
HPAH (g,i)	5300	13	4.6	102	147	4.2	1.0	11 U	76	8.8 U	693	49	38	21	75
Dibenzofuran (mg/kg OC)	58	19	1.8 U	3.7 U	4.4 U	1.0 U	0.50 U	11 U	5.6	8.8 U	35	5.0 U	1.3 U	7.3 U	1.5 U
cPAH (ug/kg dry wt)	4300	0.0	0.0	92.8	119.1	0.0	0.0	0.0	702.0	0	5335.0	27.2	82.0	0.0	176.0
Conventionals (percent)															
Total Solids	NA	78.3	77.8	86	88.6	60.6	53	90.4	56.8	95	57.5	84.1	78.9	86.6	77.5
Total Organic Carbon	NA	0.31	0.37	0.16	0.13	0.83	1.89	0.05	2.5	0.06	2.39	0.12	0.51	0.08	0.43

TABLE C-1
POST-CONSTRUCTION SEDIMENT MONITORING
ANALYTICAL RESULTS
CASCADE POLE SITE

Site ID:	Cleanup	CP-09-S	CP-09-D	CP-10-D	CP-11-S	CP-11-D	CP-12-S	CP-12-D	CP-13-S	CP-13-D	CP-13-D-dup	CP-14-S	CP-14-F	CP-14-D	CP-15-S
Sample Date:	Levels (a)	4/11/2002	4/11/2002	4/10/2002	4/11/2002	4/10/2002	4/10/2002	4/11/2002	4/10/2002	4/11/2002	4/11/2002	4/10/2002	4/10/2002	4/10/2002	4/10/2002
Lab ID:		K2202330-012	K2202334-008	K2202334-010	K2202330-017	K2202334-012	K2202330-004	K2202334-014	K2202330-005	K2202374-013	K2202374-014	K2202330-006	K2204074-002	K2202334-016	K2202330-003 I
Sample type:		Surface	Dredge	Dredge	Surface	Dredge	Surface	Dredge	Surface	Dredge	Dredge	Surface	Fill (i)	Dredge	Surface
Dioxins (ng/kg TEQ dry weight) (c)	80	77.9	0.398	0.0544	5.35	0	0.214	0.105	0.236	34.6	19.5	0.497		18.8	0.647
PAHs (mg/kg OC) (d)															
Naphthalene	170	14	45	1.9	5.2	6.4 U	7.4 U	3.1	6.0 U	22	23	6.3 U	8.7 U	26	5.0 U
Acenaphthylene	66	1.3	1.3 U	0.79 U	3.0 U	6.4 U	7.4 U	0.73	6.0 U	0.90	0.89	6.3 U	8.7 U	0.51	5.0 U
Acenaphthene	57	3.7	29	0.79 U	3.0 U	6.4 U	7.4 U	0.40 U	6.0 U	11	16	6.3 U	8.7 U	41	5.0 U
Fluorene	79	4.2	1.4	0.79 U	3.0 U	6.4 U	7.4 U	0.43	6.0 U	10	12	6.3 U	8.7 U	35	5.0 U
Phenanthrene	480	13	3.7	0.79 U	5.2	6.4 U	7.4 U	2.3	6.0 U	31	35	7.8	8.7 U	117	9.2
Anthracene	1200	20	1.3 U	0.79 U	4.5	6.4 U	7.4 U	0.81	6.0 U	17	19	6.3 U	8.7 U	60	5.0 U
2-Methylnaphthalene	64	2.4	1.3 U	0.79 U	3.0 U	6.4 U	7.4 U	0.40 U	6.0 U	3.9	4.4	6.3 U	8.7 U	4.8	5.0 U
LPAH (f,g)	780	57	80	1.9	15	6.4 U	7.4 U	7.4	6.0 U	92	105	7.8	8.7 U	280	9.2
Fluoranthene	1200	29	5.3	1.2	17	6.4 U	7.4 U	5.1	6.0 U	71	72	16	8.7 U	146	19
Pyrene	1400	25	7.1	1.4	13	6.4 U	7.4 U	4.7	6.0 U	85	78	13	8.7 U	124	14
Benzo(a)anthracene	270	12	1.8	0.79 U	6.7	6.4 U	7.4 U	1.8	6.0 U	25	23	6.3 U	8.7 U	44	5.0 U
Chrysene	460	21	2.0	0.79 U	11	6.4 U	7.4 U	1.7	6.0 U	29 J	23 J	6.3 U	8.7 U	41	7.6
Benzo(b)fluoranthene		12	1.6	0.79 U	7.1	6.4 U	7.4 U	1.1	6.0 U	18	17	6.3 U	8.7 U	23	5.0 U
Benzo(k)fluoranthene		11	1.6	0.79 U	6.7	6.4 U	7.4 U	1.3	6.0 U	17	17	6.3 U	8.7 U	22	5.0 U
Total benzofluoranthenes (g,h)	450	23	3.3	0.79 U	14	6.4 U	7.4 U	2.4	6.0 U	35	34	6.3 U	8.7 U	44	5.0 U
Benzo(a)pyrene	210	10	1.7	0.79 U	5.7	6.4 U	7.4 U	1.5	6.0 U	17	16	6.3 U	8.7 U	22	5.0 U
Indeno(1,2,3-c,d)pyrene	88	7.9	1.3	0.79 U	3.8	6.4 U	7.4 U	1.2	6.0 U	8.5	7.8	6.3 U	8.7 U	8.9	5.0 U
Dibenzo(a,h)anthracene	33	1.7	1.3 U	0.79 U	3.0 U	6.4 U	7.4 U	0.4 U	6.0 U	1.5	1.3	6.3 U	8.7 U	1.6	5.0 U
Benzo(g,h,i)perylene	78	7.0	1.3 U	0.8	3.4	6.4 U	7.4 U	1.2	6.0 U	5.7	5.5	6.3 U	8.7 U	5.4	5.0 U
HPAH (g,i)	5300	136	22	3.4	74	6.4 U	7.4 U	20	6.0 U	277	260	29	8.7 U	438	41
Dibenzofuran (mg/kg OC)	58	2.4	1.3 U	0.79 U	3.0 U	6.4 U	7.4 U	0.40 U	6.0 U	8.0	8.3	6.3 U	8.7 U	21	5.0 U
cPAH (ug/kg dry wt)	4300	636.0	51.1	0.0	85.9	0.0	0.0	200.0	0.0	2451.0	1873.0	0.0	0	5129.0	9.1
Conventionals (percent)															
Total Solids	NA	65.5	73.9	78.4	81.3	79.2	85.6	53.8	83.6	64.1	65.8	87.8	96.3	62.3	84
Total Organic Carbon	NA	0.84	0.51	0.81	0.21	0.1	0.08	2.34	0.1	2.12	1.8	0.09	0.06	3.15	0.12

TABLE C-1
POST-CONSTRUCTION SEDIMENT MONITORING
ANALYTICAL RESULTS
CASCADE POLE SITE

Site ID:	Cleanup	CP-15-F	CP-15-D	CP-16-S	CP-17-S	CP-18-S	CP-19-S	dup of CP-19-S CP-91-S	CP-20-S
Sample Date:	Levels (a)	4/11/2002	4/11/2002	4/12/2002	4/12/2002	4/11/2002	4/11/2002	4/11/2002	4/10/2002
Lab ID:		<2204074-003	K2202334-018	K2202374-015	K2202374-016	K2202330-022	K2202330-020	K2202330-019	K2202330-007
Sample type:		Fill (i)	Dredge	Surface	Surface	Surface	Surface	Surface	Surface
Dioxins (ng/kg TEQ dry weight) (c)	80	0.00566	128	24.4	25.2	8.25	7.75	12.4	6.55
PAHs (mg/kg OC) (d)									
Naphthalene	170	9.3 U	81	3.9	9.5 J	20	13	15	6.9
Acenaphthylene	66	9.3 U	12 U	0.93	0.71	0.82	0.85	0.79	0.56
Acenaphthene	57	9.3 U	42	1.2	17 J	3.6	5.4	3.1	1.0
Fluorene	79	9.3 U	27	1.6	15	3.3	3.2	2.6	1.0
Phenanthrene	480	9.3 U	72	5.1	35	14	11 J	7.0 J	4.3
Anthracene	1200	9.3 U	165	4.7	22	7.5	6.3 J	4.0 J	2.3
2-Methylnaphthalene	64	9.3 U	12 U	0.80	3.0	2.6	1.5 J	3.0 J	0.8
LPAH (f,g)	780	9.3 U	386	17	100	49	39	33	16
Fluoranthene	1200	9.3 U	1392	167	83	25	12	14	10
Pyrene	1400	9.3 U	1772	180	124	31	20	22	16
Benzo(a)anthracene	270	9.3 U	278	44	21	10	11 J	5.2 J	3.6
Chrysene	460	9.3 U	278	60	32	18	30 J	6.6 J	4.3
Benzo(b)fluoranthene		9.3 U	165	19	21	7.5	17 J	6.6 J	4.0
Benzo(k)fluoranthene		9.3 U	165	25	20	7.5	16 J	6.6 J	3.6
Total benzofluoranthenes (g,h)	450	9.3 U	329	45	41	15	33 J	13 J	7.6
Benzo(a)pyrene	210	9.3 U	152	18	20	6.9	17 J	6.1 J	3.6
Indeno(1,2,3-c,d)pyrene	88	9.3 U	54	8.0	9.5	3.2	7.2 J	3.5 J	2.0
Dibenzo(a,h)anthracene	33	9.3 U	12 U	1.4	1.7	0.88	2.0 J	0.87 J	0.43
Benzo(g,h,i)perylene	78	9.3 U	38	4.6	6.5	2.5	5.4 J	2.9 J	1.8
HPAH (g,i)	5300	9.3 U	4295	527	338	113	137 J	74 J	49
Dibenzofuran (mg/kg OC)	58	9.3 U	24	1.0	11	2.1	1.9	2.0	0.76
cPAH (ug/kg dry wt)	4300	0	8630.0	2641.0	2109.0	855.0	2235.0	810.0	654.0
Conventionals (percent)									
Total Solids	NA	90.5	54.3	64.3	62.1	64.5	46.5	48.2	41.9
Total Organic Carbon	NA	0.06	0.79	1.5	1.69	1.59	2.23	2.29	3.03

NA = Not available.
Boxed results exceed the cleanup level or cleanup action level.
cPAH = Carcinogenic PAH.
Dredge = interface of dredge material and non excavated material (1 ft interval)
Fill = interior backfill material utilized to restore excavation grade (6" interval)
Surface = surface interval of the backfill material (0-10 cm)

(a) Cleanup action levels for dioxins and cPAH.
(b) Confirmational sediment monitoring sample.
(c) Toxicity equivalent.
(d) All organic data (except dioxins) are normalized to total organic carbon; this involves dividing the dry weight concentration of the constituent by the fraction of total organic carbon present.
(e) See text.
(f) The LPAH criterion represents the sum of the following "low molecular weight polynuclear aromatic hydrocarbon" compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene. The LPAH criterion is not the sum of the criteria values for the individual LPAH compounds listed.
(g) Where chemical criteria in this table represent the sum of individual compounds or isomers, the following methods shall be applied:
(i) Where chemical analyses identify an undetected value for every individual compound/isomer, then the single highest detection limit shall represent the respective compounds/isomers.
(ii) Where chemical analyses detect one or more individual compounds/isomers, only the detected concentrations will be added to represent the group sum.
(h) The total benzofluoranthenes criterion represents the sum of the concentrations of the "B," "J," and "K" isomers.
(i) The HPAH criterion represents the sum of the following "high molecular weight polynuclear aromatic hydrocarbon" compounds: fluoranthene, pyrene, benzo(a)anthracene, chrysene, total benzofluoranthenes, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene. The HPAH critrion is not the sum of the criteria values for the individual HPAH compounds as listed.

TABLE C-2
INTERIOR BACKFILL AND
SURFACE SEDIMENT ANALYTICAL RESULTS 2007

Site ID: / Sample Date: / Lab ID: / Sample type:	Cleanup Levels (a)	CP-01-M1 LU24A 10/16/2007	CP-02-M1 LU24B 10/16/2007	CP-03-M1 LU24C 10/17/2007	CP-04-M1-B LU24D 10/16/2007	CP-04-M1-C LU24Y/LY51 10/16/2007	CP-05-M1 LU24E 10/16/2007	CP-06-M1-B LU24F 10/16/2007	CP-07-M1 LU24G 10/18/2007	CP-08-M1 LU24H 10/16/2007	CP-09-M1 LU24I 10/18/2007	CP-10-M1 LU24J 10/18/2007	CP-11-M1 LU24K 10/16/2007	CP-12-M1 LU24L 10/16/2007	CP-13-M1 LU24M 10/16/2007	CP-14-M1 LU24N 10/16/2007	CP-15-M1 LU24O 10/16/2007	CP-16-M1 LT62A 10/11/2007	CP-17-M1 LT62B 10/11/2007	CP-18-M1 LT62C 10/10/2007	CP-19-M1 LT62D 10/10/2007	CP-20-M1 LT62E 10/10/2007
Dioxins (ng/kg TEQ dry weight) (b)	80	0.433	0.0965	0.424	2.89	2.28	0.000546	0.0356	0.135	0.290	0.0308	4.44	0.0721	0.0512	0.000543	0.00110	0.0140	13.9	34.7	16.5	23.3	15.5
PAHs (mg/kg OC) (c)																						
Naphthalene	170	5.3 U	8.9 U	3.4 U	14.0	34.1	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	5.2 U	8.9 U	9.8 U	5.0 U	12.8 U	12.3 U	0.7	2.6	0.9	2.6	3.0
Acenaphthylene	66	5.3 U	8.9 U	3.4 U	5.7 U	2.4 U	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	5.2 U	8.9 U	9.8 U	5.0 U	12.8 U	12.3 U	0.4 U	0.5	0.3 U	0.9	1.6
Acenaphthene	57	5.3 U	8.9 U	3.4 U	91.9	29.3	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	5.2 U	8.9 U	9.8 U	5.0 U	12.8 U	12.3 U	0.4	1.3	0.3 U	0.7	1.0
Fluorene	79	5.3 U	8.9 U	3.4 U	5.7 U	2.4 U	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	5.2 U	8.9 U	9.8 U	5.0 U	12.8 U	12.3 U	0.5	1.1	0.3 U	1.1	1.3
Phenanthrene	480	5.3 U	8.9 U	3.4 U	10.2	28.3	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	5.2 U	8.9 U	9.8 U	5.0 U	12.8 U	12.3 U	3.5	4.4	0.6	4.3	8.8
Anthracene	1200	5.3 U	8.9 U	3.4 U	5.7 U	2.6	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	5.2 U	8.9 U	9.8 U	5.0 U	12.8 U	12.3 U	2.4	3.5	0.7	3.5	4.6
2-Methylnaphthalene	64	5.3 U	8.9 U	3.4 U	5.7 U	2.4 U	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	5.2 U	8.9 U	9.8 U	5.0 U	12.8 U	12.3 U	0.4 U	0.4	0.3 U	0.6	0.7
LPAH (d,e)	780	5.3 U	8.9 U	3.4 U	116.0	94.3	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	5.2 U	8.9 U	9.8 U	5.0 U	12.8 U	12.3 U	7.6	13.4	2.2	13.0	20.3
Fluoranthene	1200	5.3 U	8.9 U	3.4 U	20.9	9.3	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	10.3	8.9 U	9.8 U	5.0 U	12.8 U	32.5	10.2	16.6	2.2	10.4	28.0
Pyrene	1400	5.3 U	8.9 U	3.4 U	23.3	8.8	7.2 U	12.5 U	6.3 U	6.1	9.4 U	20.4	8.9 U	9.8 U	5.0 U	12.8 U	24.5	8.7	17.2	3.3	16.7	24.2
Benzo(a)anthracene	270	5.3 U	8.9 U	3.4 U	5.7	2.4 U	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	5.2 U	8.9 U	9.8 U	5.0 U	12.8 U	12.3 U	4.2	6.6	1.2	10.9	12.6
Chrysene	460	5.3 U	8.9 U	3.4 U	7.4	2.9	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	5.2 U	8.9 U	9.8 U	5.0 U	12.8 U	27.5	5.5	11.7	2.8	12.0	19.2
Benzo(b)fluoranthene		5.3 U	8.9 U	3.4 U	9.1	3.1	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	7.7	8.9 U	9.8 U	5.0 U	12.8 U	12.3 U	5.4	11.0	6.8	21.4	23.6
Benzo(k)fluoranthene		5.3 U	8.9 U	3.4 U	5.7 U	2.4 U	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	5.2 U	8.9 U	9.8 U	5.0 U	12.8 U	12.3 U	2.2	4.4	3.1	8.9	11.0
Total benzofluoranthenes (e,g)	450	5.3 U	8.9 U	3.4 U	9.1	3.1	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	7.7	8.9 U	9.8 U	5.0 U	12.8 U	12.3	7.6	15.4	9.9	30.2	34.6
Benzo(a)pyrene	210	5.3 U	8.9 U	3.4 U	5.7	2.4 U	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	5.2 U	8.9 U	9.8 U	5.0 U	12.8 U	12.3 U	3.7	6.6	3.7	11.5	12.6
Indeno(1,2,3-c,d)pyrene	88	5.3 U	8.9 U	3.4 U	5.7 U	2.4 U	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	5.2 U	8.9 U	9.8 U	5.0 U	12.8 U	12.3 U	1.7	2.5	1.6	2.2	2.3
Dibenzo(a,h)anthracene	33	5.3 U	8.9 U	3.4 U	5.7 U	2.4 U	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	5.2 U	8.9 U	9.8 U	5.0 U	12.8 U	12.3 U	0.5	0.8	0.6	0.7	0.9
Benzo(g,h,i)perylene	78	5.3 U	8.9 U	3.4 U	5.7 U	2.4 U	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	5.2 U	8.9 U	9.8 U	5.0 U	12.8 U	12.3 U	1.7	2.5	1.5	1.8	2.0
HPAH (e,i)	5300	5.3 U	8.9 U	3.4 U	72.1	24.0	7.2 U	12.5 U	6.3 U	6.1	9.4 U	38.5	8.9 U	9.8 U	5.0 U	12.8 U	96.8	43.8	79.9	26.8	96.4	136.5
1-Methylnaphthalene		5.3 U	8.9 U	3.4 U	5.7 U	18.5	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	5.2 U	8.9 U	9.8 U	5.0 U	12.8 U	12.3 U	0.4 U	0.5	0.3 U	0.4	0.5
Dibenzofuran (mg/kg OC)	58	5.3 U	8.9 U	3.4 U	5.7 U	11.7	7.2 U	12.5 U	6.3 U	4.6 U	9.4 U	5.2 U	8.9 U	9.8 U	5.0 U	12.8 U	12.3 U	0.4 U	0.8	0.3 U	0.6	0.9
cPAH (ug/kg dry wt)	4300	ND	ND	ND	1.8	1.1	ND	ND	ND	ND	ND	0.48	ND	ND	ND	ND	0.49	13	29	17	66	72
Conventionals (percent)																						
Total Solids	NA	89.30	83.90	85.70	92.60	86.20	86.70	95.00	89.90	88.80	88.10	88.90	87.90	83.70	84.00	85.40	86.50	60.50	56.40	62.80	43.00	40.60
Total Organic Carbon	NA	0.094	0.056	0.143	0.086	0.205	0.067	0.040	0.080	0.104	0.051	0.093	0.054	0.049	0.101	0.039	0.040	1.27	1.45	1.38	1.92	1.82

U = Indicates the compound was undetected at the reported concentration.

P = The analyte was detected on both chromatographic columns but the quantified data values differ by >= 40% RPD with no obvious chromatographic interference. The higher of the two results is reported by laboratory.

J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Boxed results exceed the cleanup level or cleanup action level.

cPAH = Carcinogenic PAH.

(a) Cleanup action levels for dioxins and cPAH.

(b) Confirmational sediment monitoring sample.

(c) Toxicity equivalent.

(d) All organic data (except dioxins) are normalized to total organic carbon; this involves dividing the dry weight concentration of the constituent by the fraction of total organic carbon present.

(e) See text.

(f) The LPAH criterion represents the sum of the following "low molecular weight polynuclear aromatic hydrocarbon" compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene. The LPAH criterion is not the sum of the criteria values for the individual LPAH compounds listed.

(g) Where chemical criteria in this table represent the sum of individual compounds or isomers, the following methods shall be applied:
(i) Where chemical analyses identify an undetected value for every individual compound/isomer, then the single highest detection limit shall represent the sum of the respective compounds/isomers.
(ii) Where chemical analyses detect one or more individual compounds/isomers, only the detected concentrations will be added to represent the group sum.

(h) The total benzofluoranthenes criterion represents the sum of the concentrations of the "B," "J," and "K" isomers.

(i) The HPAH criterion represents the sum of the following "high molecular weight polynuclear aromatic hydrocarbon" compounds: fluoranthene, pyrene, benzo(a)anthracene, chrysene, total benzofluoranthenes, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene. The HPAH criterion is not the sum of the criteria values for the individual HPAH compounds as listed.