2009 DSOA ADDITIONAL CHARACTERIZATION DATA REPORT

Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

Submitted to:
The Boeing Company

Submitted by:
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2009 DSOA ADDITIONAL CHARACTERIZATION DATA REPORT

Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

1.0 INTRODUCTION

The Boeing Company (Boeing) is conducting the Duwamish Sediment Other Area (DSOA) and Southwest Bank Interim Measure pursuant to the Administrative Order on Consent [Resource Conservation and Recovery Act (RCRA) Docket No. 1092-01-22-3008(h)] issued to Boeing in 1994 by the U.S. Environmental Protection Agency (EPA) under authority of RCRA Section 3008(h), as amended [42 USC 6928(h)]. The DSOA is adjacent to the Lower Duwamish Superfund site. The DSOA portion of the Interim Measure is the cleanup of sediment in the DSOA adjacent to Boeing's Plant 2 Facility (Figure 1).

Boeing is conducting the DSOA and Southwest Bank project as an Interim Measure. The proposed interim measures for the DSOA and the Southwest Bank are described in the *Duwamish Sediment Other Area and Southwest Bank Interim Measure Alternatives Evaluation* (AMEC and Floyd|Snider 2008) submitted to EPA in November 2008. In brief, the interim measures consist of dredge and cap/backfill alternatives for the sediments, including work at the Southwest Bank.

In December 2008, additional data became available that indicated contamination along the western edge of the DSOA near the channel was deeper than expected, and Boeing notified EPA of its desire to reconsider the implementability of the alternatives in light of the new data and plans to collect additional data. Based upon these new data, EPA determined that additional work was necessary to characterize the concentrations, rates and directions of movement, chemical nature and extent of contamination which originated at or from the Plant 2 Facility, and to support evaluation and design of an effective interim measure. EPA also determined it is necessary to consider chemical transport mechanisms in the conceptual site model, and required that the work plan include a program of sampling to determine whether chemical transport mechanisms have caused polychlorinated biphenyls (PCBs) to be deposited in the deep sediments of the DSOA and whether there is a potential for post-cleanup recontamination from the underlying contaminated sediments and/or continuing sources.

This report summarizes the results of physical and chemical characterization of sediment and pore water samples collected along the western edge of the DSOA and Southwest Bank.

2.0 METHODS

The sediment and pore water sampling and analysis complied with the *Work Plan* (AMEC and Floyd|Snider 2009) for the 2009 DSOA Additional Characterization submitted and approved by EPA in October 2009. In addition, the work was conducted following the requirements of the *Quality Assurance Project Plan* (QAPP; AMEC 2009) developed for the project.

2.1 SAMPLE COLLECTION

Sediment (Figures 2a, 2b, and 2c) and pore water samples (Figure 3) were collected using the procedures specified in the Work Plan and the QAPP. Sediment core locations were determined using a Differential Global Positioning System (DGPS), with coordinates in the Washington State Plane Coordinate System (SPCS), North Zone, referenced to the North American Datum 1983 (NAD 83), survey feet. The operation of the DGPS unit was checked each day before work and at the conclusion of each day's operation by comparing the coordinates with a known reference point (Appendix A).

Recorded water depths during sampling were determined using either a lead line or a depth meter deployed by the diver. Diver-obtained water depths were used at deeper sampling stations during periods of higher current flow.

Horizontal coordinates were converted from SPCS to latitude and longitude (NAD 83) using Corpscon Version 6.0.1. Estimated mudline elevations were calculated from the recorded water depths and the predicted tidal elevations. Pore water sampling elevations were determined using a predicted mudline elevation of -7 feet mean lower low water (MLLW) (based on a Lower Duwamish Waterway Group [LDWG] bathymetric survey completed in 2003).

All field forms from the collection of sediment and pore water are provided in Appendix A.

2.1.1 Impact Cores

The proposed full penetration depth was achieved at three locations. The remaining cores collected for processing were driven to refusal. An additional sampling attempt was made at locations where a minimum of four sample intervals below the interpreted native contact was not obtained. Core penetration at sample location SD-DUW428 was less than the minimum proposed sample collection depth below mudline (12 to 13 feet below mudline) after multiple attempts; therefore, no samples were collected.

2.1.2 Freeze Cores

Freeze coring was attempted at two locations where there was insufficient penetration by the impact corer to meet the proposed study goals. Two attempts at station SD-DUW428 were made; however, recovery of an intact freeze core was not possible. Two attempts at freeze coring at station SD-DUW447 resulted in the collection of one additional sample interval.

2.1.3 Pore Water Collection

Pore water samples were collected at the proposed sample elevations below the native contact (identified in the co-located sediment core). A shielded piezometer well point was driven to set the sampling screen at the specified sampling depth. Clean well points were used to sample each depth interval.

The shallow surface samples (2 to 3 feet below mudline) were sampled using unshielded drive points. The initial attempt to sample pore water at 2 feet below the mudline was unsuccessful. A second attempt was made to collect pore water at 3 feet below mudline. This revision was communicated to and acknowledged by EPA via email on December 14, 2009. Based on this change pore water samples were collected at three of the five shallow surface intervals.

2.2 SAMPLE PROCESSING

2.2.1 Impact Cores

Cores collected using the MudMole™ impact coring system were processed following the procedures outlined in the approved Work Plan (AMEC and Floyd|Snider 2009).

Core tube processing was performed as follows:

- The uppermost side of the core tube was removed using a circular saw.
- An approximate 1-centimeter (cm; 0.38-inch) layer was removed from the exposed sediment surface with a decontaminated stainless-steel scraper.
- The exposed sediment surface of the core was photo-documented using a video camera and logged by a geologist experienced in the logging of sediment cores.
- Stainless-steel plates were inserted between each 1-foot *in situ* depth interval. Sediment from each segment was collected from the center of the core, starting from below each inserted plate marking the top of the segment and extending down the core tube to the next 1-foot *in situ* depth interval or until sufficient sample volume was obtained. Sediment touching the sides of the core tube was not collected.
- Sediment samples from 1-foot *in situ* intervals were placed into clean glass sample containers directly from the core tube. Samples for volatile organic compounds

(VOC) analysis (if required) were placed into two 2-oz glass containers. Samples for PCB and total organic carbon (TOC) analysis were placed in 1-liter containers. Samples were transferred to the analytical laboratory using chain-of-custody procedures. Samples were identified as unhomogenized on the sample label and the chain-of-custody forms. Samples that were not analyzed for PCBs and TOC were archived frozen and held by the analytical laboratory.

2.2.2 Freeze Cores

Freeze cores were extracted and wrapped with polyethylene bagging material and transported to the processing area as soon as possible after collection. The cores were processed following the procedures outlined in the approved Work Plan (AMEC and Floyd|Snider 2009).

Freeze core processing was performed as follows:

- The cores were placed horizontally in an aluminum foil lined tray and the outer layer of thawed sediment was removed by scrapping with a decontaminated stainless-steel spoon.
- The exposed sediment surface of the core was photo-documented using a video camera and logged by a geologist experienced in the logging of sediment cores.
- Sediment samples from the targeted 1-foot *in situ* intervals were removed from the freezing tube and placed into clean 1-liter glass sample containers.
- Samples for PCB and TOC analysis were transferred to the analytical laboratory using chain-of-custody procedures. Samples were identified as unhomogenized on the sample label and the chain-of-custody forms. Archived sample material was frozen at -18°C and held by the analytical laboratory. Excess sample material was re-frozen and held by the analytical laboratory.

2.2.3 Pore Water

A peristaltic pump was used to purge and sample the well points following the procedures outlined in the approved *Work Plan* (AMEC and Floyd|Snider 2009).

Pore water sampling was performed as follows:

- A minimum of 1,500 milliliters (mL) (approximately three casing volumes) were purged from each well point prior to sampling.
- Purge and sampling flow rates were adjusted to 100 mL per minute or less. Temperature, specific conductivity, and turbidity were measured three to five times (each casing volume) before sampling for volatile organic compounds (see Appendix B for pore water parameters for each purge volume).
- Samples for pore water volatile organic compound were collected in three or more clean 40-mL sample vials with septa lids.

- Preserved samples were treated with 1:1 hydrochloric acid. Sample jars were filled to the top to prevent bubble formation.
- Samples for VOC analysis were transferred to the analytical laboratory using chain-of-custody procedures.

At least three casing volumes were purged before the collection of any pore water sample in accordance with the Work Plan. Up to two additional casing volumes were purged at sample locations that had elevated turbidity measurements after the first three purge volumes with the following exceptions: PW-DUW04 at -16 feet, PWDUW05 at -21 feet, and PW-DUW06 at -31 feet. At these locations the water flow rates decreased significantly after three casing volumes were purged; therefore, the samples were collected to ensure there was sufficient volume to conduct the chemical analysis.

2.3 LABORATORY PROCEDURES

All sediment samples analyzed for TOC and PCBs were first homogenized before sample aliquots were removed for analysis. TOC was analyzed using the methods described in Analytical Resources, Inc., Standard Operating Procedure 602S. Samples for PCB analysis were extracted using EPA Method 3550B and analyzed according to EPA Method 8082. Sediment samples analyzed for volatile organic compounds were extracted using a 5-mL purge volume and analyzed according to EPA Method 8260C. Pore water samples were extracted using a 10-mL purge volume and analyzed according to EPA Method 8260C.

2.4 WASTE MANAGEMENT

All waste derived during this investigation is being managed by Boeing in accordance with the approved Work Plan and all applicable regulations.

3.0 RESULTS

Results of sample collection and analysis are presented below.

3.1 SAMPLE COLLECTION

Core sample collection using the impact corer was conducted between November 2 and November 20, 2009. Pore water sample collection was conducted between November 24 and December 11, 2009. Freeze coring was attempted on December 14 and December 15, 2009.

The location of the sediment cores collected during this investigation are shown on Figures 2a, 2b, and 2c and presented in Table 1 (impact core) and Table 2 (freeze core). Pore water sample sites are shown on Figure 3 and presented in Table 3.

Core summary logs describing the sediment types, stratigraphic contacts, and sample IDs for each of the cores are provided in Appendix C.

3.2 SEDIMENT AND PORE WATER CHEMISTRY

The laboratory chain-of-custody forms are provided in Appendix D.

3.2.1 Analytical Results

The results of the conventional (TOC) and PCB chemical analyses are presented in Table 4. The results of the sediment VOC chemical analysis are presented in Table 5. The results of the pore water VOC chemical analysis are presented in Table 6. Laboratory and data validation qualifiers are shown at the bottom of Tables 4, 5, and 6.

3.2.1.1 PCBs

PCBs by Aroclor were analyzed for in 249 samples. In 81 of the 249 samples, PCBs were not detected. Detected PCB concentrations in the samples ranged from 18 to 14,400 micrograms per kilogram (µg/kg) dry weight (1 to 911 milligrams/kilogram-Organic Carbon). At 29 of the 32 locations, at least 1 or more of the deepest samples analyzed were below the Sediment Quality Standards (SQS) or the lowest-apparent-effects threshold (LAET) for PCBs. At three locations sampled during this investigation the deepest sample collected and analyzed exceeded the SQS or LAET for PCBs (i.e., SD-DUW433, SD-DUW447, and SD-DUW488). In addition, samples at SD-DUW428 (reoccupation of SD-DUW180C/401) were not collected as described previously. This location, based on previously collected data, exceeds the SQS at the deepest interval analyzed. The data collected during this and prior investigations are shown on cross sections on Figure 4.

Also shown on Figure 4 is the deepest interpolated depth from available Corps of Engineers (Corps) dredge records. A review of available pre- and post-dredge bathymetric survey records from the Corps was conducted. The area covered by the bathymetric surveys and transects surveyed varied year to year in the vicinity of Plant 2. Drawings of bathymetric surveys conducted between 1931 and 1978 were used to interpolate the deepest estimated depth along each available transect in the vicinity of the DSOA. Typically the horizontal control for the Corps' records was not of sufficient resolution to define the deepest historical depth or its lateral extent at any specific point along the Waterway; however, the records do collectively provide qualitative information on past dredging and deepest historical depth in and adjacent to portions of the DSOA. Representative cross sections showing the deepest interpolated historical depth and the current surface (from the 2003 Lower Duwamish Waterway Group bathymetric survey) at the sampling locations presented in this report are shown on Figure 4. Also, PCBs (dry weight or carbon normalized) and TOC results for samples collected during the current sampling effort and for historic samples are presented on Figure 4.

Several samples had elevated detection limits for individual Aroclors; however, in each of these samples there were elevated concentrations of detected Aroclors (i.e., there were no samples that had elevated undetected total PCB concentrations). For example, sample SD-DUW451-0040 had a nondetected concentration of 6,000 µg/kg dry weight for Aroclor 1248 and a nondetected concentration of 5,400 µg/kg dry weight for Aroclor 1260; however, Aroclor 1254 was detected at 13,000 µg/kg dry weight. Because the detected concentrations were elevated in these samples, the nondetects will not influence the design of the Interim Measure that will be conducted at the site. The elevated detection limits are likely due to matrix interference.

3.2.1.2 VOCs

The sediment and pore water VOC data are depicted on Figure 5.

Ten of the 39 VOCs that were analyzed for in sediments were detected. These were 2-Butanone, Acetone, Carbon Disulfide, Chlorobenzene, cis-1,2-Dichloroethene, Ethylbenzene, m,p-Xylene, o-Xylene, Trichloroethene, and Vinyl Chloride. The frequency of detection and minimum and maximum detected concentrations of VOCs in sediments are shown below.

Detected Analyte	Frequency of Detection (of 23 analyses)	Minimum Detected Concentration (µg/kg dry weight)	Maximum Detected Concentration (µg/kg dry weight)
2-Butanone	10	7	110
Acetone	7	82	530
Carbon Disulfide	13	1.6	15
Chlorobenzene	1	1,400	1,400
cis-1,2-Dichloroethene	3	1.6	4.3
Ethylbenzene	1	470	470
m,p-Xylene	2	1.8	1,200
o-Xylene	2	3	480
Trichloroethene	2	3.6	3.9
Vinyl Chloride	1	2	2

VOCs were detected in sediments in 14 of the 23 samples that were analyzed. Nine samples had no detected VOCs, three samples had one detected VOC, five samples had two detections, four samples had three detections, and two samples had four detected VOCs.

There were six detected VOCs of the 39 analyzed in pore water (Chlorobenzene, Chloroform, cis-1,2-Dichloroethene, Toluene, trans-1,2-Dichloroethene, and Vinyl Chloride). The frequency of detection and minimum and maximum detected concentrations of VOCs in pore water are shown below.

Detected Analyte	Frequency of Detection (of 32 analyses)	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)
Chlorobenzene	1	0.3	0.3
Chloroform	1	0.4	0.4
cis-1,2-Dichloroethene	19	0.2	5.4
Toluene	9	0.2	0.5
trans-1,2-Dichloroethene	5	0.3	0.5
Vinyl Chloride	3	0.2	1.4

3.2.2 Data-Quality Review

A Level 1 data-quality review was conducted by Sayler Data Solutions on each batch of samples analyzed for this investigation. This Level 1 review included the following steps:

- Verification that the lab utilized the specified extract, analysis, and cleanup methods.
- Review of the sample holding time.
- Verification that sample numbers and analyses matched those requested on the chain-of-custody form.
- Verification that the required reporting limits were achieved.

- Verification that field duplicates, matrix spikes, and laboratory-control samples were run at the proper frequency and met quality control (QC) criteria.
- Verification that the surrogate compound analyses were performed and met QC criteria.
- Verification that initial and continuing calibrations were run at the proper frequency and met acceptance criteria.
- Verification that the lab blanks were free of contaminants.

The data validation report is presented in Appendix E.

3.2.2.1 PCBs

Documentation was found to be clear and complete. Calibration data demonstrated acceptable instrument performance. One Aroclor 1260 result was qualified due to high matrix-spike (MS) recovery and five were estimated due to high dual-column relative percent differences (RPDs). Laboratory-control sample results demonstrated acceptable accuracy and precision. Multiple analysis results were reduced to the most appropriate to use. No data were qualified or rejected and data completeness goals were met. PCB data, as reported, are acceptable for use.

3.2.2.2 TOC

Documentation was found to be clear and complete. Laboratory QC results demonstrated acceptable accuracy and precision. General chemistry results, as qualified, are acceptable for use.

3.2.2.3 VOCs

Documentation was found to be clear and complete. 2-Chloroethylvinylether is unsuitable for analysis in preserved water samples, resulting in unusable detection limits. Vinyl acetate was not recovered in the majority of the sediment matrix spikes, resulting in unusable detection limits.

Additional data in certain samples were qualified as estimated based on specific exceedances of holding times, continuing calibration percent differences, surrogate recoveries, internal standard areas, laboratory-control samples and MS recoveries, and LCS/D and MS/D RPDs.

With the exception of the rejected 2-chloroethylvinylether and vinyl acetate results, volatile organic data, as qualified, are acceptable for use.

4.0 ELECTRONIC DATA DELIVERABLE

Electronic data tables with sampling locations, sample collection information, and analytical laboratory data results are provided as an electronic data deliverable (EDD). The EDD is included in the enclosed Data Report CD. Multiple coring attempts were made at some locations to collect the proposed sampling intervals. The coordinates provided in the EDD are an arithmetic average of the individual core locations collected at a location. The pore water sampling locations provided in the EDD were also averaged.

5.0 REFERENCES

AMEC (AMEC Geomatrix, Inc.) 2009. 2009 DSOA Additional Characterization Quality Assurance Project Plan, Boeing Plant 2 Duwamish Sediment Other Area, Seattle/Tukwila, Washington. Prepared for The Boeing Company, Seattle, Washington.

AMEC and Floyd|Snider (AMEC Geomatrix, Inc., and Floyd|Snider, Inc.). 2009. 2009 DSOA Additional Characterization Sample Collection Work Plan, Boeing Plant 2 Duwamish Sediment Other Area, Seattle/Tukwila, Washington. Prepared for The Boeing Company, Seattle, Washington.

AMEC and Floyd|Snider (AMEC Geomatrix, Inc., and Floyd|Snider, Inc.). 2008. Duwamish Sediment Other Area and Southwest Bank Interim Measure Alternatives Evaluation, Boeing Plant 2, Seattle/Tukwila, Washington. Prepared for The Boeing Company, Seattle, Washington.

TABLES

TABLE 1

SEDIMENT SAMPLING LOCATIONS
2009 DSOA Additional Characterization Data Report
Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

Sample Location	Date	Time	State Plane Coordinates (WA SPC North NAD 83; survey feet)		Geographic Coordinates (NAD 83)		Estimated Mudline Elevation (feet; MLLW)	Sample Intervals Collected
			Northing	Easting	Latitude	Longitude		
SD-DUW423	11/3/2009	9:50	198066	1273108	47º 31' 59.735"	122º 19' 13.125"	-7.4	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft, 12-13 ft, 13-14 ft.
SD-DUW424	11/3/2009	10:51	198055	1273102	47º 31' 59.625"	122º 19' 13.21"	-10.1	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft, 12-13 ft, 13-14 ft, 14-15 ft, 15-16 ft.
SD-DUW425	11/5/2009	8:31	197759	1273451	47º 31' 56.771"	122º 19' 8.041"	-6.8	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft.
SD-DUW425	11/17/2009	12:47	197765	1273445	47º 31' 56.829"	122º 19' 8.131"	-4.3	11-12 ft, 12-13 ft, 13-14 ft, 14-15 ft.
SD-DUW485	11/5/2009	9:32	197760	1273451	47º 31' 56.781"	122º 19' 8.042"	-6.5	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft.
SD-DUW485	11/17/2009	13:45	197766	1273445	47º 31' 56.839"	122º 19' 8.131"	-7.3	11-12 ft, 12-13 ft, 13-14 ft, 14-15 ft, 15-16 ft, 16-17 ft, 17-18 ft.
SD-DUW426	11/5/2009	12:45	197516	1273722	47º 31' 54.425"	122º 19' 4.025"	-6.4	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft, 12-13 ft.
SD-DUW426	11/18/2009	7:55	197521	1273721	47º 31' 54.474"	122º 19' 4.041"	-5.5	13-14 ft.
SD-DUW427	11/5/2009	13:35	197503	1273710	47º 31' 54.294"	122º 19' 4.196"	-11.1	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft.
SD-DUW427	11/18/2009	9:17	197505	1273703	47º 31' 54.313"	122º 19' 4.298"	-11.9	12-13 ft, 13-14 ft, 14-15 ft, 15-16 ft.
SD-DUW428	11/9/2009	7:55	197227	1274018	47° 31' 51.629"	122° 18' 59.631"	-10.0	Reoccupation of SD-DUW180C/401; no deeper samples collected (see text for discussion)
SD-DUW428	11/18/2009	12:55	197227	1274026	47° 31' 51.631"	122° 18' 59.514"	-7.4	Reoccupation of SD-DUW180C/401; no deeper samples collected (see text for discussion)
SD-DUW429	11/10/2009	8:02	196955	1274329	47º 31' 49.005"	122º 18' 55.023"	-8.7	12-13 ft, 13-14 ft, 14-15 ft.
SD-DUW430	11/10/2009	10:53	196858	1274468	47º 31' 48.074"	122º 18' 52.971"	-4.5	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft.
SD-DUW430	11/18/2009	14:05	196859	1274461	47º 31' 48.082"	122º 18' 53.073"	-4.5	7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft, 12-13 ft.
SD-DUW431	11/9/2009	10:23	196544	1274827	47º 31' 45.044"	122º 18' 47.653"	-12.3	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft.
SD-DUW431	11/18/2009	15:18	196551	1274835	47º 31' 45.114"	122º 18' 47.538"	-9.8	7-8 ft, 8-9 ft, 9-10 ft.
SD-DUW486	11/9/2009	11:02	196545	1274829	47º 31' 45.054"	122º 18' 47.624"	-11.8	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft.

TABLE 1

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Seattle/Tukwila, Washington

Sample Location	Date	Time	State Plane Coordinates (WA SPC North NAD 83; survey feet)		Geographic Coordinates (NAD 83)		Estimated Mudline Elevation (feet; MLLW)	Sample Intervals Collected
			Northing	Easting	Latitude	Longitude		
SD-DUW432	11/9/2009	12:28	196459	1274925	47º 31' 44.224"	122º 18' 46.201"	-12.9	8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft, 12-13 ft, 13-14 ft, 14-15 ft, 15-16 ft.
SD-DUW432	11/19/2009	8:23	196456	1274934	47º 31' 44.196"	122º 18' 46.069"	-12.4	16-17 ft, 17-18 ft, 18-19 ft.
SD-DUW433	11/9/2009	13:39	196438	1274909	47º 31' 44.013"	122º 18' 46.428"	-16.3	8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft, 12-13 ft, 13-14 ft, 14-15 ft, 15-16 ft, 16-17 ft, 17-18 ft.
SD-DUW433	11/19/2009	10:09	196444	1274914	47º 31' 44.073"	122º 18' 46.357"	-14.9	18-19 ft, 19-20 ft.
SD-DUW434	11/10/2009	13:42	196256	1275136	47º 31' 42.26"	122º 18' 43.07"	-12.5	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft, 12-13 ft, 13-14 ft, 14-15 ft, 15-16 ft, 16-17 ft, 17-18 ft, 18-19 ft.
SD-DUW435	11/10/2009	14:26	196249	1275123	47º 31' 42.189"	122º 18' 43.257"	-15.1	14-15 ft, 15-16 ft, 16-17 ft, 17-18 ft, 18-19 ft, 19-20 ft.
SD-DUW436	11/11/2009	8:08	196161	1275288	47º 31' 41.352"	122º 18' 40.829"	-9.4	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft, 12-13 ft, 13-14 ft, 14-15 ft, 15-16 ft.
SD-DUW436	11/19/2009	11:36	196161	1275278	47º 31' 41.35"	122º 18' 40.975"	-9.9	16-17 ft, 17-18 ft, 18-19 ft.
SD-DUW437	11/11/2009	9:47	196148	1275274	47º 31' 41.221"	122º 18' 41.029"	-11.9	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft, 12-13 ft, 13-14 ft, 14-15 ft, 15-16 ft, 16-17 ft, 17-18 ft.
SD-DUW437	11/19/2009	13:32	196148	1275263	47º 31' 41.219"	122º 18' 41.19"	-12.8	18-19 ft, 19-20 ft.
SD-DUW438	11/11/2009	12:20	196083	1275345	47º 31' 40.593"	122º 18' 39.977"	-11.6	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft.
SD-DUW438	11/13/2009	10:24	196074	1275342	47º 31' 40.504"	122º 18' 40.018"	-13.4	6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft.
SD-DUW439	11/11/2009	13:32	195901	1275544	47º 31' 38.835"	122º 18' 37.027"	-11.1	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft, 12-13 ft, 13-14 ft.
SD-DUW487	11/11/2009	14:20	195899	1275542	47º 31' 38.815"	122º 18' 37.055"	-12.0	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft, 12-13 ft, 13-14 ft.
SD-DUW440	11/12/2009	9:44	195837	1275596	47º 31' 38.213"	122º 18' 36.251"	-13.1	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft, 12-13 ft, 13-14 ft.
SD-DUW441	11/12/2009	12:39	195699	1275755	47º 31' 36.881"	122º 18' 33.896"	-7.9	8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft, 12-13 ft, 13-14 ft, 14-15 ft, 15-16 ft, 16-17 ft.
SD-DUW442	11/5/2009	11:06	197735	1273422	47º 31' 56.529"	122º 19' 8.457"	-14.0	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft.
SD-DUW443	11/9/2009	8:54	197212	1274002	47º 31' 51.478"	122º 18' 59.86"	-14.9	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft.

TABLE 1

SEDIMENT SAMPLING LOCATIONS
2009 DSOA Additional Characterization Data Report
Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

Sample Location	Date	Time	State Plane Coordinates (WA SPC North NAD 83; survey feet)		Geographic Coordinates (NAD 83)		Estimated Mudline Elevation (feet; MLLW)	Sample Intervals Collected
			Northing	Easting	Latitude	Longitude		
SD-DUW443	11/20/2009	8:57	197212	1274012	47º 31' 51.48"	122º 18' 59.714"	-13.7	12-13 ft, 13-14 ft, 14-15 ft, 15-16 ft
SD-DUW444	11/10/2009	9:43	196937	1274304	47º 31' 48.822"	122º 18' 55.382"	-14.1	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft, 12-13 ft, 13-14 ft, 14-15 ft.
SD-DUW445	11/10/2009	12:24	196408	1274884	47º 31' 43.713"	122º 18' 46.784"	-20.6	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft, 12-13 ft, 13-14 ft, 14-15 ft.
SD-DUW446	11/12/2009	11:09	195763	1275590	47º 31' 37.482"	122º 18' 36.318"	-20.1	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft, 12-13 ft, 13-14 ft, 14-15 ft, 15-16 ft, 16-17 ft.
SD-DUW447	11/13/2009	8:20	195890	1275587	47º 31' 38.734"	122º 18' 36.397"	-7.3	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft.
SD-DUW488	11/13/2009	9:04	195890	1275585	47º 31' 38.734"	122º 18' 36.426"	-7.6	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft.
SD-DUW448	11/2/2009	12:04	195849	1275612	47º 31' 38.335"	122º 18' 36.021"	-7.0	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft.
SD-DUW449	11/2/2009	13:19	195816	1275644	47º 31' 38.015"	122º 18' 35.546"	-7.1	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft.
SD-DUW450	11/2/2009	14:32	195790	1275670	47º 31' 37.763"	122º 18' 35.16"	-7.9	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft.
SD-DUW450	11/12/2009	14:08	195797	1275664	47º 31' 37.831"	122º 18' 35.249"	-7.2	7-8 ft, 8-9 ft.
SD-DUW451	11/3/2009	8:07	195765	1275696	47º 31' 37.522"	122º 18' 34.774"	-6.9	2-3 ft, 3-4 ft, 4-5 ft, 5-6 ft, 6-7 ft, 7-8 ft, 8-9 ft, 9-10 ft, 10-11 ft, 11-12 ft, 12-13 ft, 13-14 ft, 14-15 ft, 15-16 ft.

Abbreviation(s)
DSOA = Duwamish Sediment Other Area
MLLW = mean lower low water
NAD 83 = North American Datum 1983
WA SPC North NAD 83 = Washington State Plane Coordinate System, North Zone, referenced to the North American Datum 1983

TABLE 2

FREEZE CORE SAMPLING LOCATIONS
2009 DSOA Additional Characterization Data Report
Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

Sample Location	Date	Time	State Plane Coordinates (WA SPC North NAD 83; survey feet)		Geographic Coordinates (NAD 83)		Estimated Mudline Elevation (feet; MLLW)	Sample Intervals Collected
			Northing	Easting	Latitude	Longitude		
SD-DUW447	12/15/2009	11:36	195889	1275589	47º 31' 38.725"	122º 18' 36.368"	-7.2	6-7 ft.

Abbreviation(s)
DSOA = Duwamish Sediment Other Area
MLLW = mean lower low water
NAD 83 = North American Datum 1983
WA SPC North NAD 83 = Washington State Plane Coordinate System, North Zone, referenced to the North American Datum 1983

TABLE 3

PORE WATER SAMPLING LOCATIONS
2009 DSOA Additional Characterization Data Report
Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

Sample Location	Date	State Plane Coordinates (WA SPC North NAD 83; survey feet)		Geographic Coordinates (NAD 83)		Sample Elevations
		Northing	Easting	Latitude	Longitude	
PW-DUW01	11/30/2009	195886	1275587	47º 31' 38.693"	122º 18' 36.396"	-16 ft, -21 ft, -26 ft, -31 ft.
PW-DUW01	12/1/2009	195886	1275585	47º 31' 38.699"	122º 18' 36.421"	-36 ft.
PW-DUW01	12/11/2009	195887	1275584	47º 31' 38.706"	122º 18' 36.433"	-10 ft
PW-DUW02	11/24/2009	195847	1275615	47º 31' 38.319"	122º 18' 35.973"	-16 ft, -21 ft
PW-DUW02	11/25/2009	195846	1275615	47º 31' 38.306"	122º 18' 35.971"	-26 ft, -31 ft, -36 ft.
PW-DUW02	12/11/2009	195850	1275614	47º 31' 38.341"	122º 18' 35.995"	-10 ft
PW-DUW03	12/3/2009	195813	1275643	47º 31' 37.986"	122º 18' 35.558"	-16 ft, -21 ft, -26 ft.
PW-DUW03	12/4/2009	195814	1275643	47º 31' 37.99"	122º 18' 35.56"	-31 ft, -36 ft.
PW-DUW04	12/4/2009	195799	1275663	47º 31' 37.853"	122º 18' 35.264"	-16 ft.
PW-DUW04	12/8/2009	195796	1275664	47º 31' 37.817"	122º 18' 35.249"	-21 ft, -26 ft, -31 ft, -36 ft.
PW-DUW05	12/9/2009	195765	1275695	47º 31' 37.525"	122º 18' 34.783"	-21 ft, -26 ft, -31 ft.
PW-DUW05	12/10/2009	195767	1275694	47º 31' 37.541"	122º 18' 34.802"	-10 ft, -36 ft.
PW-DUW06	12/1/2009	195886	1275585	47º 31' 38.695"	122º 18' 36.411"	-16 ft, -21 ft.
PW-DUW06	12/2/2009	195886	1275586	47º 31' 38.699"	122º 18' 36.421"	-26 ft, -31 ft, -36 ft.

Abbreviation(s)
DSOA = Duwamish Sediment Other Area
MLLW = mean lower low water
NAD 83 = North American Datum 1983
WA SPC North NAD 83 = Washington State Plane Coordinate System, North Zone, referenced to the North American Datum 1983

TABLE 4

RESULTS OF TOC AND PCB ANALYSES
2009 DSOA Additional Characterization Data Report
Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

Location	Sample ID			Aroclor (µg/kg dry weight)																		mg/Kg-OC	
		TOC (Percent)		1016			1221			1232			1242			1248			1254			1260			Total PCB		Total	
		Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Value	Q[1]
SD-DUW423	SD-DUW423-0020	1.68			19	U		19	U		19	U		19	U		19	U		290			570			860		51	
SD-DUW423	SD-DUW423-0040	2.69			20	U		20	U		20	U		20	U		20	U		160			380			540		20	
SD-DUW423	SD-DUW423-0050	1.36			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	1	U
SD-DUW423	SD-DUW423-0060	1.32			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	2	U
SD-DUW423	SD-DUW423-0070	0.846			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	2	U
SD-DUW423	SD-DUW423-0080	0.808			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	2	U
SD-DUW423	SD-DUW423-0090	1.43			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	1	U
SD-DUW423	SD-DUW423-0100	1.13			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	2	U
SD-DUW424	SD-DUW424-0020	3.02			20	U		20	U		20	U		20	U		4,600			6,500			3,100	Y	UY	11,100		368	
SD-DUW424	SD-DUW424-0040	3.59			20	U		20	U		20	U		20	U		2,300			4,000			2,100	Y	UY	6,300		175	
SD-DUW424	SD-DUW424-0060	3			20	U		20	U		20	U		20	U		380			530			240			1,150		38	
SD-DUW424	SD-DUW424-0080	2.72			20	U		20	U		20	U		20	U		1,600	Y	UY	2,400			1,200	Y	UY	2,400		88	
SD-DUW424	SD-DUW424-0090	1.69			20	U		20	U		20	U		20	U		170	Y	UY	330			300			630		37	
SD-DUW424	SD-DUW424-0100	1.03			19	U		19	U		19	U		19	U		19	U		51			39			90		9	
SD-DUW424	SD-DUW424-0110	1.22			11	U		11	U		11	U		11	U		11	U		11	U		11	U		11	U	1	U
SD-DUW424	SD-DUW424-0120	2.05			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	1	U
SD-DUW424	SD-DUW424-0130	1.92			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	1	U
SD-DUW425	SD-DUW425-0020	1.82			20	U		20	U		20	U		20	U		480	Y	UY	1,300			820			2,120		116	
SD-DUW425	SD-DUW425-0040	1.65			20	U		20	U		20	U		20	U		150	Y	UY	390			390			780		47	
SD-DUW425	SD-DUW425-0060	1.42			20	U		20	U		20	U		20	U		130	Y	UY	360			260			620		44	
SD-DUW425	SD-DUW425-0070	1.9			30	U		30	U		30	U		30	U		98	Y	UY	300			320			620		33	
SD-DUW425	SD-DUW425-0080	0.388			20	U		20	U		20	U		20	U		20	U		20	U		26			26		NA	
SD-DUW425	SD-DUW425-0090	0.524			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	4	U
SD-DUW425	SD-DUW425-0100	0.387			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	NA	U
SD-DUW425	SD-DUW425-0110	0.616			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	3	U
SD-DUW485	SD-DUW485-0020	1.78			20	U		20	U		20	U		20	U		220	Y	UY	530			350			880		49	
SD-DUW485	SD-DUW485-0040	1.69			20	U		20	U		20	U		20	U		79	Y	UY	280			290			570		34	
SD-DUW485	SD-DUW485-0060	1.83			20	U		20	U		20	U		20	U		140	Y	UY	480			500			980		54	
SD-DUW485	SD-DUW485-0070	1.39			20	U		20	U		20	U		20	U		49	Y	UY	100			110			210		15	
SD-DUW485	SD-DUW485-0080	0.805			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	2	U
SD-DUW485	SD-DUW485-0090	1.2			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	2	U
SD-DUW485	SD-DUW485-0100	0.345			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	NA	U
SD-DUW426	SD-DUW426-0020	1.95			34	U		34	U		34	U		34	U		1,200	Y	UY	2,500			1,500			4,000		205	
SD-DUW426	SD-DUW426-0040	0.953			20	U		20	U		20	U		20	U		20	U		70			84			154		16	
SD-DUW426	SD-DUW426-0050	0.73			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	3	U
SD-DUW426	SD-DUW426-0060	1			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	2	U
SD-DUW426	SD-DUW426-0070	1.33			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	2	U
SD-DUW426	SD-DUW426-0080	1.16			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	2	U
SD-DUW426	SD-DUW426-0090	2.06			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	1	U
SD-DUW426	SD-DUW426-0100	1.37		J	20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	1	U

TABLE 4

RESULTS OF TOC AND PCB ANALYSES
2009 DSOA Additional Characterization Data Report
Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

Location	Sample ID			Aroclor (µg/kg dry weight)																				mg/Kg-OC	
		TOC (Percent)		1016			1221			1232			1242			1248			1254			1260			Total PCB		Total	
		Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Value	Q[1]
SD-DUW427	SD-DUW427-0020	1.69			32	U		32	U		32	U		32	U		280	Y	UY	660			560			1,220		72	
SD-DUW427	SD-DUW427-0040	2.08			67	U		67	U		67	U		67	U		2,200	Y	UY	5,100			960	Y	UY	5,100		245	
SD-DUW427	SD-DUW427-0060	0.767			20	U		20	U		20	U		20	U		24	Y	UY	56			98			154		20	
SD-DUW427	SD-DUW427-0080	1.56			27	U		27	U		27	U		27	U		360	Y	UY	640			380			1,020		65	
SD-DUW427	SD-DUW427-0100	1.38			20	U		20	U		20	U		20	U		130	Y	UY	200			160			360		26	
SD-DUW427	SD-DUW427-0110	1.56			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	1	U
SD-DUW427	SD-DUW427-0120	0.283			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	NA	U
SD-DUW427	SD-DUW427-0130	0.517			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	4	U
SD-DUW427	SD-DUW427-0140	0.556			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	3	U
SD-DUW427	SD-DUW427-0150	0.156			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	NA	U
SD-DUW428	No samples collected; see text for dicussion																												
SD-DUW429	SD-DUW429-0120	1.48			28	U		28	U		28	U		28	U		420	Y	UY	540			630			1,170		79	
SD-DUW429	SD-DUW429-0130	1.25			20	U		20	U		20	U		20	U		20	U		46			58			104		8	
SD-DUW429	SD-DUW429-0140	0.593			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	3	U
SD-DUW430	SD-DUW430-0040	0.435			35	U		35	U		35	U		35	U		35	U		240			620			860		NA	
SD-DUW430	SD-DUW430-0050	0.322			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	NA	U
SD-DUW430	SD-DUW430-0060	0.466			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	NA	U
SD-DUW430	SD-DUW430-0070	0.278			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	NA	U
SD-DUW430	SD-DUW430-0080	0.172			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	NA	U
SD-DUW430	SD-DUW430-0090	0.437			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	NA	U
SD-DUW430	SD-DUW430-0100	0.368			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	NA	U
SD-DUW431	SD-DUW431-0040	2.56			69	U		69	U		69	U		69	U		69	U		69	U		2,300			2,300		90	
SD-DUW431	SD-DUW431-0050	2.05			330	U		330	U		330	U		330	U		330	U		3,800	Y	UY	6,000			6,000		293	
SD-DUW431	SD-DUW431-0060	1.79			19	U		19	U		19	U		19	U		19	U		19	U		28			28		2	
SD-DUW431	SD-DUW431-0070	0.171			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	NA	U
SD-DUW431	SD-DUW431-0080	0.141			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	NA	U
SD-DUW431	SD-DUW431-0090	0.95			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	2	U
SD-DUW486	SD-DUW486-0040	2.41			390	U		390	U		390	U		390	U		390	U		2,900	Y	UY	5,900			5,900		245	
SD-DUW486	SD-DUW486-0050	1.69			71	U		71	U		71	U		71	U		360	Y	UY	1,800			2,600			4,400		260	
SD-DUW486	SD-DUW486-0060	1.46			31	U		31	U		31	U		31	U		31	U		31	U		87			87		6	
SD-DUW486	SD-DUW486-0070	0.496			20	U		20	U		20	U		20	U		20	U		42			81			123		NA	
SD-DUW432	SD-DUW432-0090	2.32			20	U		20	U		20	U		20	U		20	U		360			230			590		25	
SD-DUW432	SD-DUW432-0100	2.03			20	U		20	U		20	U		20	U		20	U		50	Y	UY	65			65		3	
SD-DUW432	SD-DUW432-0110	2.59			20	U		20	U		20	U		20	U		20	U		190			170			360		14	
SD-DUW432	SD-DUW432-0120	1.89			20	U		20	U		20	U		20	U		58	Y	UY	150			130			280		15	
SD-DUW432	SD-DUW432-0130	2.08			19	U		19	U		19	U		19	U		29	Y	UY	76			130			206		10	
SD-DUW432	SD-DUW432-0140	2			31	U		31	U		31	U		31	U		46	Y	UY	230	Y	UY	520			520		26	
SD-DUW432	SD-DUW432-0150	2.07			31	U		31	U		31	U		31	U		47	Y	UY	310	Y	UY	950			950		46	
SD-DUW432	SD-DUW432-0160	2.4			20	U		20	U		20	U		20	U		20	U		98	Y	UY	380			380		16	
SD-DUW432	SD-DUW432-0170	2.65			32	U		32	U		32	U		32	U		32	U		490	Y	UY	1,200			1,200		45	
SD-DUW432	SD-DUW432-0180	2.44			20	U		20	U		20	U		20	U		20	U		20	U		30	Y	UY	30	Y	1	Y

TABLE 4

RESULTS OF TOC AND PCB ANALYSES
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Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

Location	Sample ID	TOC (Percent)			Aroclor (µg/kg dry weight) 1016			1221			1232			1242			1248			1254			1260			Total PCB		mg/Kg-OC Total	
		Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Value	Q[1]
SD-DUW433	SD-DUW433-0090	1.8			20	U		20	U		20	U		20	U		20	U		110			130			240		13	
SD-DUW433	SD-DUW433-0100	2.97			20	U		20	U		20	U		20	U		20	U		170			190			360		12	
SD-DUW433	SD-DUW433-0110	2.21			20	U		20	U		20	U		20	U		49	Y	UY	92			160			252		11	
SD-DUW433	SD-DUW433-0120	2.31			19	U		19	U		19	U		19	U		19	U		97	Y	UY	280			280		12	
SD-DUW433	SD-DUW433-0130	2.38			31	U		31	U		31	U		31	U		31	U		160	Y	UY	690			690		29	
SD-DUW433	SD-DUW433-0140	2.24			130	U		130	U		130	U		130	U		650	Y	UY	970	Y	UY	2,400			2,400		107	
SD-DUW433	SD-DUW433-0150	3.15			20	U		20	U		20	U		20	U		20	U		69	Y	UY	300			300		10	
SD-DUW433	SD-DUW433-0160	2.31			20	U		20	U		20	U		20	U		20	U		74	Y	UY	360			360		16	
SD-DUW433	SD-DUW433-0170	2.7			20	U		20	U		20	U		20	U		20	U		200	Y	UY	930			930		34	
SD-DUW433	SD-DUW433-0180	2.77			98	U		98	U		98	U		98	U		98	U		240	Y	UY	1,700			1,700		61	
SD-DUW433	SD-DUW433-0190	3.48			20	U		20	U		20	U		20	U		20	U		73	Y	UY	510			510		15	
SD-DUW434	SD-DUW434-0060	2.99			34	U		34	U		34	U		34	U		870	Y	UY	920			480			1,400		47	
SD-DUW434	SD-DUW434-0080	2.16			37	U		37	U		37	U		37	U		370	Y	UY	620			670			1,290		60	
SD-DUW434	SD-DUW434-0100	2.48			34	U		34	U		34	U		34	U		300	Y	UY	430			440			870		35	
SD-DUW434	SD-DUW434-0110	2.05			32	U		32	U		32	U		32	U		160	Y	UY	320	Y	UY	560			560		27	
SD-DUW434	SD-DUW434-0120	2.56			19	U		19	U		19	U		19	U		140	Y	UY	290	Y	UY	330			330		13	
SD-DUW434	SD-DUW434-0130	2.29			96	U		96	U		96	U		96	U		96	U		960	Y	UY	2,200			2,200		96	
SD-DUW434	SD-DUW434-0140	1.87			31	U		31	U		31	U		31	U		31	U		310	Y	UY	880			880		47	
SD-DUW434	SD-DUW434-0150	1.9			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	1	U
SD-DUW434	SD-DUW434-0160	0.597			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	3	U
SD-DUW434	SD-DUW434-0170	0.599			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	3	U
SD-DUW434	SD-DUW434-0180	0.644			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	3	U
SD-DUW435	SD-DUW435-0150	2.81			41	U		41	U		41	U		41	U		41	U		300			1,000			1,300		46	
SD-DUW435	SD-DUW435-0160	3.09			20	U		20	U		20	U		20	U		20	U		41			68			109		4	
SD-DUW435	SD-DUW435-0170	1.24			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	2	U
SD-DUW435	SD-DUW435-0180	0.216			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	NA	U
SD-DUW435	SD-DUW435-0190	0.331			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	NA	U
SD-DUW436	SD-DUW436-0040	2.11			42	U		42	U		42	U		42	U		42	U		2,000			3,300			5,300		251	
SD-DUW436	SD-DUW436-0060	1.74			30	U		30	U		30	U		30	U		30	U		250			350			600		34	
SD-DUW436	SD-DUW436-0080	2.37			32	U		32	U		32	U		32	U		32	U		700			1,200			1,900		80	
SD-DUW436	SD-DUW436-0100	2.57			34	U		34	U		34	U		34	U		34	U		1,600			3,000			4,600		179	
SD-DUW436	SD-DUW436-0110	1.9			260	U		260	U		260	U		260	U		2,000	Y	UY	3,300	Y	UY	5,700			5,700		300	
SD-DUW436	SD-DUW436-0120	2.54			270	U		270	U		270	U		270	U		270	U		2,700	Y	UY	6,200			6,200		244	
SD-DUW436	SD-DUW436-0130	2.15			41	U		41	U		41	U		41	U		210	Y	UY	410	Y	UY	910			910		42	
SD-DUW436	SD-DUW436-0140	2.62			160	U		160	U		160	U		160	U		160	U		800	Y	UY	2,200			2,200		84	
SD-DUW436	SD-DUW436-0150	2.17			180	U		180	U		180	U		180	U		180	U		1,400	Y	UY	2,800			2,800		129	
SD-DUW436	SD-DUW436-0160	1.22			19	U		19	U		19	U		19	U		19	U		19	U		38		J	38	J	3	J
SD-DUW436	SD-DUW436-0170	2.84			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	1	U
SD-DUW436	SD-DUW436-0180	2.23			19	U		19	U		19	U		19	U		19	U		24			19	U		24		1	

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Seattle/Tukwila, Washington

Location	Sample ID				Aroclor (µg/kg dry weight)																						mg/Kg-OC	
		TOC (Percent)			1016			1221			1232			1242			1248			1254			1260			Total PCB		Total	
		Value	Q^1	Q^2	Value	Q^1	Q^2	Value	Q^1	Q^2	Value	Q^1	Q^2	Value	Q^1	Q^2	Value	Q^1	Q^2	Value	Q^1	Q^2	Value	Q^1	Q^2	Value	Q^1	Value	Q^1
SD-DUW437	SD-DUW437-0060	2.29			20	U		20	U		20	U		20	U		20	U		160			230			390		17	
SD-DUW437	SD-DUW437-0080	2.46			19	U		19	U		19	U		19	U		19	U		320			470			790		32	
SD-DUW437	SD-DUW437-0100	2.2			20	U		20	U		20	U		20	U		20	U		270			450			720		33	
SD-DUW437	SD-DUW437-0110	2.01			110	U		110	U		110	U		110	U		110	U		720	Y	UY	1,500			1,500		75	
SD-DUW437	SD-DUW437-0120	2.48			55	U		55	U		55	U		55	U		55	U		460	Y	UY	1,300			1,300		52	
SD-DUW437	SD-DUW437-0130	2.98			41	U		41	U		41	U		41	U		41	U		150	Y	UY	550			550		18	
SD-DUW437	SD-DUW437-0140	2.36			47	U		47	U		47	U		47	U		47	U		380	Y	UY	730			730		31	
SD-DUW437	SD-DUW437-0150	1.89			40	U		40	U		40	U		40	U		40	U		170	Y	UY	390			390		21	
SD-DUW437	SD-DUW437-0160	2.62			19	U		19	U		19	U		19	U		190	Y	UY	480	Y	UY	890			890		34	
SD-DUW437	SD-DUW437-0170	2.32			20	U		20	U		20	U		20	U		20	U		39			20	U		39		2	
SD-DUW437	SD-DUW437-0180	3.02			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	1	U
SD-DUW437	SD-DUW437-0190	0.909			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	2	U
SD-DUW438	SD-DUW438-0040	3.78			35	U		35	U		35	U		35	U		35	U		1,600			4,300			5,900		156	
SD-DUW438	SD-DUW438-0060	1.35			32	U		32	U		32	U		32	U		240	Y	UY	280			590			870		64	
SD-DUW438	SD-DUW438-0070	1.02			28	U		28	U		28	U		28	U		28	U		270	Y	UY	520			520		51	
SD-DUW438	SD-DUW438-0080	3.63			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	1	U
SD-DUW438	SD-DUW438-0090	5.82			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	NA	U
SD-DUW438	SD-DUW438-0100	1.38			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	1	U
SD-DUW439	SD-DUW439-0040	2.84			35	U		35	U		35	U		35	U		450	Y	UY	720			430			1,150		40	
SD-DUW439	SD-DUW439-0060	1.99			19	U		19	U		19	U		19	U		19	U		220			560			780		39	
SD-DUW439	SD-DUW439-0070	2.86			20	U		20	U		20	U		20	U		20	U		99	Y	UY	360			360		13	
SD-DUW439	SD-DUW439-0080	2.84			19	U		19	U		19	U		19	U		19	U		150			490			640		23	
SD-DUW439	SD-DUW439-0090	1.83			37	U		37	U		37	U		37	U		37	U		590	Y	UY	1,200			1,200		66	
SD-DUW439	SD-DUW439-0100	2.21			31	U		31	U		31	U		31	U		31	U		81	Y	UY	100			100		5	
SD-DUW439	SD-DUW439-0110	1.51			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	1	U
SD-DUW439	SD-DUW439-0120	0.791			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	2	U
SD-DUW439	SD-DUW439-0130	0.216			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	NA	U
SD-DUW487	SD-DUW487-0040	1.61			34	U		34	U		34	U		34	U		34	U		960			530			1,490		93	
SD-DUW487	SD-DUW487-0060	2.12			20	U		20	U		20	U		20	U		20	U		150			310			460		22	
SD-DUW487	SD-DUW487-0070	2.74			20	U		20	U		20	U		20	U		50	Y	UY	150	Y	UY	440			440		16	
SD-DUW487	SD-DUW487-0080	4.11			20	U		20	U		20	U		20	U		20	U		130			420			550		NA	
SD-DUW487	SD-DUW487-0090	1.24			20	U		20	U		20	U		20	U		20	U		20	U		36			36		3	
SD-DUW487	SD-DUW487-0100	2.12			31	U		31	U		31	U		31	U		77	Y	UY	240			520			760		36	
SD-DUW487	SD-DUW487-0110	1.89			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	1	U
SD-DUW487	SD-DUW487-0120	1.74			20	U		20	U		20	U		20	U		98	Y	UY	68	Y	UY	260			260		15	
SD-DUW487	SD-DUW487-0130	0.758			20	U		20	U		20	U		20	U		49	Y	UY	20	U		51			51		7	
SD-DUW440	SD-DUW440-0060	2.3			38	U		38	U		38	U		190	Y	UY	38	U		1,500			1,200			2,700		117	
SD-DUW440	SD-DUW440-0070	1.74			110	U		110	U		110	U		110	U		1600	Y	UY	1,900			320	Y	UY	1,900		109	
SD-DUW440	SD-DUW440-0080	0.657			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	3	U
SD-DUW440	SD-DUW440-0090	0.509			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	4	U
SD-DUW440	SD-DUW440-0100	0.102			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	NA	U
SD-DUW440	SD-DUW440-0110	0.282			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	NA	U

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Location	Sample ID				Aroclor (µg/kg dry weight)																				mg/Kg-OC	
		TOC (Percent)			1016			1221			1232			1242			1248			1254			1260			Total PCB		Total	
		Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Value	Q[1]
SD-DUW441	SD-DUW441-0090	0.486			25	U		25	U		25	U		25	U		190	Y	UY	130			60			190		NA	
SD-DUW441	SD-DUW441-0100	0.213			20	U		20	U		20	U		20	U		58	Y	UY	49			42			91		NA	
SD-DUW441	SD-DUW441-0110	0.199			20	U		20	U		20	U		20	U		49	Y	UY	28			20	U		28		NA	
SD-DUW441	SD-DUW441-0120	0.481			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	NA	U
SD-DUW441	SD-DUW441-0130	0.566		J	20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	4	U
SD-DUW442	SD-DUW442-0020	2.17			20	U		20	U		20	U		20	U		120	Y	UY	270			240			510		24	
SD-DUW442	SD-DUW442-0040	1.83			31	U		31	U		31	U		31	U		330	Y	UY	570			440			1,010		55	
SD-DUW442	SD-DUW442-0050	1.7			19	U		19	U		19	U		19	U		97	Y	UY	200			170			370		22	
SD-DUW442	SD-DUW442-0060	1.53		J	20	U		20	U		20	U		20	U		20	U		51			64			115		8	
SD-DUW442	SD-DUW442-0070	1.59			20	U		20	U		20	U		20	U		20	U		25	Y	UY	45			45		3	
SD-DUW442	SD-DUW442-0080	1.32			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	2	U
SD-DUW442	SD-DUW442-0090	1.96			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	1	U
SD-DUW443	SD-DUW443-0020	2.49			20	U		20	U		20	U		20	U		110			20	U		900			1,010		41	
SD-DUW443	SD-DUW443-0040	2.2			45	U		45	U		45	U		45	U		250			440			490			1,180		54	
SD-DUW443	SD-DUW443-0060	2.16			520			41	U		41	U		41	U		41	U		1,600			800			2,920		135	
SD-DUW443	SD-DUW443-0080	1.21			38	U		38	U		38	U		310			38	U		820			730			1,860		154	
SD-DUW443	SD-DUW443-0090	1.47			30	U		30	U		30	U		30	U		300	Y	UY	340			190	P	J	530		36	
SD-DUW443	SD-DUW443-0100	1.44			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	1	U
SD-DUW443	SD-DUW443-0110	1.94			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	1	U
SD-DUW443	SD-DUW443-0120	1.78			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	1	U
SD-DUW443	SD-DUW443-0130	1.51			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	1	U
SD-DUW443	SD-DUW443-0140	1.49			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	1	U
SD-DUW444	SD-DUW444-0020	2.49			60	U		60	U		60	U		60	U		240	Y	UY	550			1,600			2,150		86	
SD-DUW444	SD-DUW444-0040	1.59			38	U		38	U		38	U		38	U		390	Y	UY	320			460			780		49	
SD-DUW444	SD-DUW444-0060	2.23			37	U		37	U		37	U		37	U		1,200	Y	UY	1,600			960			2,560		115	
SD-DUW444	SD-DUW444-0080	2.57			20	U		20	U		20	U		20	U		160	Y	UY	210			300			510		20	
SD-DUW444	SD-DUW444-0090	1.33			19	U		19	U		19	U		19	U		19	U		30			28			58		4	
SD-DUW444	SD-DUW444-0100	2.2			31	U		31	U		31	U		31	U		94	Y	UY	240	Y	UY	350			350		16	
SD-DUW444	SD-DUW444-0110	2.39			41	U		41	U		41	U		41	U		620	Y	UY	620	Y	UY	880			880		37	
SD-DUW444	SD-DUW444-0120	2.65			31	U		31	U		31	U		31	U		460	Y	UY	770	Y	UY	1,200			1,200		45	
SD-DUW444	SD-DUW444-0130	1.09			150	U		150	U		150	U		150	U		600	Y	UY	750	Y	UY	3,700			3,700		339	
SD-DUW444	SD-DUW444-0140	2.54			20	U		20	U		20	U		20	U		20	U		79			100			179		7	
SD-DUW445	SD-DUW445-0020	2.06			42	U		42	U		42	U		42	U		1,200			1,300			720			3,220		156	
SD-DUW445	SD-DUW445-0040	2.86			20	U		20	U		20	U		20	U		20	U		120			350			470		16	
SD-DUW445	SD-DUW445-0050	2.18		J	19	U		19	U		19	U		19	U		29	Y	UY	45			28			73		3	
SD-DUW445	SD-DUW445-0060	2.9			20	U		20	U		20	U		20	U		66	Y	UY	170			150			320		11	
SD-DUW445	SD-DUW445-0070	1.9			19	U		19	U		19	U		19	U		19	U		52			68			120		6	
SD-DUW445	SD-DUW445-0080	2.11			20	U		20	U		20	U		20	U		20	U		47			90			137		6	
SD-DUW445	SD-DUW445-0090	1.91			19	U		19	U		19	U		19	U		19	U		48	Y	UY	61			61		3	

TABLE 4

RESULTS OF TOC AND PCB ANALYSES
2009 DSOA Additional Characterization Data Report
Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

Location	Sample ID				Aroclor (µg/kg dry weight)																					mg/Kg-OC	
		TOC (Percent)			1016			1221			1232			1242			1248			1254			1260			Total PCB		Total	
		Value	Q^1	Q^2	Value	Q^1	Q^2	Value	Q^1	Q^2	Value	Q^1	Q^2	Value	Q^1	Q^2	Value	Q^1	Q^2	Value	Q^1	Q^2	Value	Q^1	Q^2	Value	Q^1	Value	Q^1
SD-DUW446	SD-DUW446-0040	2.11			20	U		20	U		20	U		20	U		40	Y	UY	99	Y	UY	310			310		15	
SD-DUW446	SD-DUW446-0050	3.35			19	U		19	U		19	U		19	U		19	U		39	Y	UY	190			190		6	
SD-DUW446	SD-DUW446-0060	3.85			20	U		20	U		20	U		20	U		20	U		20	U		110			110		3	
SD-DUW446	SD-DUW446-0070	2.57			20	U		20	U		20	U		20	U		20	U		98	Y	UY	570			570		22	
SD-DUW446	SD-DUW446-0080	1.54			20	U		20	U		20	U		20	U		20	U		20	U		29			29		2	
SD-DUW446	SD-DUW446-0090	1.62			31	U		31	U		31	U		31	U		31	U		62	Y	UY	210			210		13	
SD-DUW446	SD-DUW446-0100	2.86			20	U		20	U		20	U		20	U		20	U		59	Y	UY	240			240		8	
SD-DUW446	SD-DUW446-0110	1.83			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	1	U
SD-DUW446	SD-DUW446-0120	0.974			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	2	U
SD-DUW446	SD-DUW446-0130	0.875			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	2	U
SD-DUW446	SD-DUW446-0140	0.675			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	3	U
SD-DUW446	SD-DUW446-0150	0.094			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	NA	U
SD-DUW446	SD-DUW446-0160	0.076			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	NA	U
SD-DUW447	SD-DUW447-0020	1.3			260	U		260	U		260	U		260	U		6,500	Y	UY	5,700			1,800			7,500		577	
SD-DUW447	SD-DUW447-0040	10.2			300	U		300	U		300	U		300	U		1,500	Y	UY	2,800			7,000			9,800		NA	
SD-DUW447	SD-DUW447-0050	14.4			550	U		550	U		550	U		550	U		2,200	Y	UY	4,400			10,000			14,400		NA	
SD-DUW447	SD-DUW447-0060	0.877		J	25	U		25	U		25	U		25	U		50	Y	UY	82			96			178		20	
SD-DUW488	SD-DUW488-0020	1.31			100	U		100	U		100	U		100	U		2,000	Y	UY	3,000			1,300			4,300		328	
SD-DUW488	SD-DUW488-0040	12.3			150	U		150	U		150	U		150	U		1,900	Y	UY	3,200			7,500			10,700		NA	
SD-DUW488	SD-DUW488-0050	4.48			32	U		32	U		32	U		32	U		240	Y	UY	340			1,100			1,440		NA	
SD-DUW448	SD-DUW448-0020	1.46		J	62	U		62	U		62	U		62	U		62	U		470			750			1,220		84	
SD-DUW448	SD-DUW448-0040	1.24			480	U		480	U		480	U		480	U		12,000	Y	UY	8,400			2,900	P	J	11,300		911	
SD-DUW448	SD-DUW448-0050	0.605			32	U		32	U		32	U		32	U		240	Y	UY	240			150	P	J	390		64	
SD-DUW448	SD-DUW448-0060	0.161			19	U		19	U		19	U		19	U		19	U		27			19	U		27		NA	
SD-DUW448	SD-DUW448-0070	0.322			19	U		19	U		19	U		19	U		57	Y	UY	81			56	P	J	137		NA	
SD-DUW448	SD-DUW448-0080	0.131			20	U		20	U		20	U		20	U		20	U		18	J		20	U		18	J	NA	
SD-DUW448	SD-DUW448-0090	0.097			20	U		20	U		20	U		20	U		20	U		22			20	U		22		NA	
SD-DUW449	SD-DUW449-0020	1.81			32	U		32	U		32	U		32	U		32	U		590			600			1,190		66	
SD-DUW449	SD-DUW449-0040	1.74			19	U		19	U		19	U		19	U		19	U		130			190			320		18	
SD-DUW449	SD-DUW449-0050	0.957			24	U		24	U		24	U		24	U		24	U		120	Y	UY	270			270		28	
SD-DUW449	SD-DUW449-0060	0.149			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	NA	U
SD-DUW449	SD-DUW449-0070	0.712			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	3	U
SD-DUW449	SD-DUW449-0080	0.435			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	NA	U
SD-DUW449	SD-DUW449-0090	0.21			20	U		20	U		20	U		20	U		20	U		20	U		30	P	J	30	J	NA	
SD-DUW450	SD-DUW450-0020	1.65			19	U		19	U		19	U		19	U		19	U		210			210			420		25	
SD-DUW450	SD-DUW450-0040	2.07			150	U		150	U		150	U		150	U		150	U		1,400			3,500			4,900		237	
SD-DUW450	SD-DUW450-0060	1.6			67	U		67	U		67	U		67	U		67	U		240			240			480		30	
SD-DUW450	SD-DUW450-0070	1.86			30	U		30	U		30	U		30	U		30	U		74	Y	UY	260			260		14	
SD-DUW450	SD-DUW450-0080	0.768			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	3	U

TABLE 4

RESULTS OF TOC AND PCB ANALYSES
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Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

Location	Sample ID	TOC (Percent)			Aroclor (µg/kg dry weight) 1016			1221			1232			1242			1248			1254			1260			Total PCB		mg/Kg-OC Total	
		Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Q[2]	Value	Q[1]	Value	Q[1]
SD-DUW451	SD-DUW451-0020	1.25			20	U		20	U		20	U		20	U		20	U		650			620			1,270		102	
SD-DUW451	SD-DUW451-0040	2.39			38	U		38	U		38	U		38	U		6,000	Y	UY	13,000			5,400	Y	UY	13,000		544	
SD-DUW451	SD-DUW451-0060	2.59			19	U		19	U		19	U		19	U		19	U		260			820			1,080		42	
SD-DUW451	SD-DUW451-0080	17.2			20	U		20	U		20	U		20	U		20	U		81			260			341		NA	
SD-DUW451	SD-DUW451-0100	1.87			19	U		19	U		19	U		19	U		19	U		170			960			1,130		60	
SD-DUW451	SD-DUW451-0110	1.72			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	1	U
SD-DUW451	SD-DUW451-0120	1.6			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	1	U
SD-DUW451	SD-DUW451-0130	1.64			20	U		20	U		20	U		20	U		20	U		20	U		20	U		20	U	1	U
SD-DUW451	SD-DUW451-0140	1.76			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	1	U
SD-DUW451	SD-DUW451-0150	0.506			19	U		19	U		19	U		19	U		19	U		19	U		19	U		19	U	4	U

Note(s)

1. Laboratory data qualifiers as follows:
   J—Estimated concentration when the value is less than ARI's established reporting limits.
   P—The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference.
   U—Indicates that the target analyte was not detected at the reported concentration.
   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.
2. Data validation qualifiers as follows:
   J—The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.
   UY—The reporting limit was elevated due to interferences. The material was analyzed for, but was not detected above the level of the associated value.

Indicates duplicate of above sample.

Abbreviation(s)

ARI = Analytical Resources, Inc.
DSOA = Duwamish Sediment Other Area
mg/kg-OC = milligrams per kilogram organic carbon
PCB = polychlorinated biphenyls
RPD = relative percent difference
TOC = total organic carbon
µg/kg = micrograms per kilogram

TABLE 5

RESULTS OF SEDIMENT VOC ANALYSES

2009 DSOA Additional Characterization Data Report
Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

Sample ID:	SD-DUW447-0020			SD-DUW447-0040			SD-DUW448-0020			SD-DUW448-0040			SD-DUW448-0060			SD-DUW448-0080			SD-DUW449-0020			SD-DUW449-0040			SD-DUW449-0060			SD-DUW449-0080			SD-DUW450-0020		
Analyte	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**
1,1,1-Trichloroethane	1.2	U	UJ	230	U	UJ	1.2	U		1.1	U	UJ	1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U	UJ	1.2	U		1.5	U	
1,1,2,2-Tetrachloroethane	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
1,1,2-Trichloro-1,2,2-trifluoroethane	2.5	U		470	U		2.3	U		2.2	U		2.3	U		2.3	U		3	U		2.5	U	UJ	2.6	U		2.3	U		3	U	
1,1,2-Trichloroethane	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
1,1-Dichloroethane	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
1,1-Dichloroethene	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
1,2-Dichloroethane	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
1,2-Dichloropropane	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
2-Butanone	6.2	U		1,200	U		**17**			**7.2**		J	5.6	U		5.8	U		7.4	U		**7**		J	6.4	U		5.8	U		7.4	U	
2-Chloroethylvinylether	6.2	U	R	1,200	U	R	5.9	U	UJ	5.6	U	UJ	5.6	U	UJ	5.8	U	UJ	7.4	U	UJ	6.2	U	UJ	6.4	U	UJ	5.8	U	UJ	7.4	U	UJ
2-Hexanone	6.2	U		1,200	U		5.9	U		5.6	U		5.6	U		5.8	U		7.4	U		6.2	U	UJ	6.4	U		5.8	U		7.4	U	
4-Methyl-2-Pentanone (MIBK)	6.2	U		1,200	U		5.9	U		5.6	U		5.6	U		5.8	U		7.4	U		6.2	U	UJ	6.4	U		5.8	U		7.4	U	
Acetone	33.7		U	1,200	U		96	Q	J	46	Q	U	11	Q	U	13	Q	U	45	Q	U	34	Q	UJ	60		U	15	Q	U	46	Q	U
Benzene	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
Bromodichloromethane	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
Bromoform	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
Bromomethane	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
Carbon Disulfide	**2**		J	230	U		**12**			**15**		J	1.1	U		1.2	U		**2.6**		J	**4.9**		J	1.3	U		1.2	U		1.5	U	
Carbon Tetrachloride	1.2	U	UJ	230	U	UJ	1.2	U		1.1	U	UJ	1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U	UJ	1.2	U		1.5	U	
Chlorobenzene	1.2	U	UJ	230	U	UJ	1.2	U		1.1	U	UJ	1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U	UJ	1.2	U		1.5	U	
Chloroethane	1.2	U		230	U		1.2	U		1.1	U	UJ	1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U	UJ	1.2	U		1.5	U	
Chloroform	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
Chloromethane	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
cis-1,2-Dichloroethene	**1.8**			230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
cis-1,3-Dichloropropene	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
Dibromochloromethane	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
Ethylbenzene	1.2	U	UJ	230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
m,p-Xylene	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
Methylene Chloride	2.5	U		470	U		5		U	4.5		U	4.8		U	4.8		U	6.3		U	2.8	Q	UJ	9.6		U	3.9		U	5.1		U
o-Xylene	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
Styrene	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
Tetrachloroethene	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
Toluene	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
trans-1,2-Dichloroethene	1.2	U	UJ	230	U	UJ	1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
trans-1,3-Dichloropropene	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
Trichloroethene	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
Trichlorofluoromethane	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	
Vinyl Acetate	6.2	U	R	1,200	U	R	5.9	U	R	5.9	U	R	5.6	U	R	5.8	U	R	7.4	U	R	6.5	U	R	6.4	U	R	5.8	U	R	7.4	U	R
Vinyl Chloride	1.2	U		230	U		1.2	U		1.1	U		1.1	U		1.2	U		1.5	U		1.2	U	UJ	1.3	U		1.2	U		1.5	U	

TABLE 5

RESULTS OF SEDIMENT VOC ANALYSES
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Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

Sample ID:	SD-DUW450-0040			SD-DUW450-0060			SD-DUW450-0080			SD-DUW451-0020			SD-DUW451-0040			SD-DUW451-0060			SD-DUW451-0080			SD-DUW451-0100			SD-DUW451-0120			SD-DUW451-0140			SD-DUW488-0020			SD-DUW488-0040		
Analyte	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**
1,1,1-Trichloroethane	1.4	U	UJ	1.2	U		1.4	U	UJ	1.6	U		390	U		1.6	U		1.4	U	UJ	700	U		1.2	U		1.4	U	UJ	1.5	U	UJ	1,600	U	UJ
1,1,2,2-Tetrachloroethane	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		1.6	U	UJ	1.4	U		700	U		1.2	U		1.4	U	UJ	1.5	U		1,600	U	
1,1,2-Trichloro-1,2,2-trifluoroethane	2.8	U	UJ	2.5	U		2.7	U		3.2	U		790	U		3.1	U		2.7	U		1,400	U		2.3	U		2.9	U		3	U		3,200	U	
1,1,2-Trichloroethane	1.4	U	UJ	1.2	U		1.4	U		1.6	U	UJ	390	U		1.6	U		1.4	U		700	U		1.2	U	UJ	1.4	U		1.5	U		1,600	U	
1,1-Dichloroethane	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		1.6	U		1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
1,1-Dichloroethene	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		1.6	U		1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
1,2-Dichloroethane	1.4	U	UJ	1.2	U		1.4	U		1.6	U	UJ	390	U		1.6	U		1.4	U		700	U		1.2	U	UJ	1.4	U		1.5	U		1,600	U	
1,2-Dichloropropane	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		1.6	U		1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
2-Butanone	**14**			6.2	U		**34**			8.1	U	UJ	2,000	U		**110**		J	12	M	N	3,500	U		**9.8**		J	**12**			**12**			8,100	U	
2-Chloroethylvinylether	7.7	U	UJ	6.2	U	UJ	6.8	U	R	8.1	U	UJ	2,000	U		7.7	U	UJ	6.8	U	UJ	3,500	U		5.8	U	UJ	7.2	U	UJ	7.6	U	R	8,100	U	R
2-Hexanone	6.9	U	UJ	6.2	U		6.8	U		8.1	U		2,000	U		7.7	U		6.8	U		3,500	U		5.8	U		7.2	U		7.6	U		8,100	U	
4-Methyl-2-Pentanone (MIBK)	6.9	U	UJ	6.2	U		6.8	U		8.1	U	UJ	2,000	U		7.7	U		6.8	U		3,500	U		5.8	U	UJ	7.2	U		7.6	U		8,100	U	
Acetone	91	Q	J	41	Q	U	**210**			64	Q	UJ	2,000	U	UJ	530	Q	J	62		U	3,500	U	UJ	86	Q	J	100	Q	J	**82**		J	8,100	U	
Benzene	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		1.6	U		1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
Bromodichloromethane	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		1.6	U		1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
Bromoform	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		1.6	U	UJ	1.4	U		700	U		1.2	U		1.4	U	UJ	1.5	U		1,600	U	
Bromomethane	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		1.6	U		1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
Carbon Disulfide	**3.4**			**1.8**		J	**2.6**		J	1.6	U		390	U		**10**		J	**3.8**			700	U		**1.6**		J	**4.4**			**3.1**			1,600	U	
Carbon Tetrachloride	1.4	U	UJ	1.2	U		1.4	U	UJ	1.6	U		390	U		1.6	U	UJ	1.4	U	UJ	700	U		1.2	U		1.4	U	UJ	1.5	U	UJ	1,600	U	UJ
Chlorobenzene	1.4	U	UJ	1.2	U		1.4	U	UJ	1.6	U		**1,400**			1.6	U	UJ	1.4	U	UJ	700	U		1.2	U		1.4	U	UJ	1.5	U	UJ	1,600	U	UJ
Chloroethane	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		1.6	U		1.4	U	UJ	700	U		1.2	U		1.4	U	UJ	1.5	U		1,600	U	
Chloroform	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		1.6	U		1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
Chloromethane	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		1.6	U		1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
cis-1,2-Dichloroethene	**1.6**			**4.3**			1.4	U		1.6	U		390	U		1.6	U		1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
cis-1,3-Dichloropropene	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		1.6	U	UJ	1.4	U	UJ	700	U		1.2	U		1.4	U		1.5	U		1,600	U	
Dibromochloromethane	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		1.6	U		1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
Ethylbenzene	1.4	U	UJ	1.2	U		1.4	U		1.6	U		**470**			1.6	U		1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
m,p-Xylene	1.4	U	UJ	1.2	U		1.4	U		1.6	U		**1,200**			**1.8**		J	1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
Methylene Chloride	3.4		UJ	4.5		U	4.1		U	4.8	Q	U	790	U		7.8	Q	U	5.2		U	1,400	U		4.7		U	6.9		UJ	3	U		3,200	U	
o-Xylene	1.4	U	UJ	1.2	U		1.4	U		1.6	U		**480**			**3**		J	1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
Styrene	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		1.6	U		1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
Tetrachloroethene	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		1.6	U		1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
Toluene	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		1.6	U		1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
trans-1,2-Dichloroethene	1.4	U	UJ	1.2	U		1.4	U	UJ	1.6	U		390	U		1.6	U		1.4	U		700	U		1.2	U		1.4	U		1.5	U	UJ	1,600	U	UJ
trans-1,3-Dichloropropene	1.4	U	UJ	1.2	U		1.4	U		1.6	U	UJ	390	U		1.6	U	UJ	1.4	U	UJ	700	U		1.2	U	UJ	1.4	U		1.5	U		1,600	U	
Trichloroethene	1.4	U	UJ	**3.6**			1.4	U		1.6	U		390	U		**3.9**		J	1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
Trichlorofluoromethane	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		1.6	U		1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	
Vinyl Acetate	6.9	U	R	6.2	U	R	6.8	U	R	8.1	U	R	2,000	U	R	7.7	U	R	6.8	U	R	3,500	U	R	5.8	U	R	7.3	U	R	7.6	U	R	8,100	U	R
Vinyl Chloride	1.4	U	UJ	1.2	U		1.4	U		1.6	U		390	U		**2**		J	1.4	U		700	U		1.2	U		1.4	U		1.5	U		1,600	U	

TABLE 5

RESULTS OF SEDIMENT VOC ANALYSES
2009 DSOA Additional Characterization Data Report
Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

Note(s)

1. Laboratory data qualifiers as follows:
   U—Indicates that the target analyte was not detected at the reported concentration.
   Q—Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria.
   M—Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters.
   J—Estimated concentration when the value is less than ARI's established reporting limits.
2. Data validation qualifiers as follows:
   U—Indicates that the target analyte was not detected at the reported concentration.
   R—The sample result is rejected. The presence or absence of the analyte cannot be verified and data are not usable.
   UJ—The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
   N—Analysis indicates the presence of an analyte for which there is presumptive evidence to make a tenative identification.

Indicates duplicate of samples collected at station SD-DUW447.

Values in **Bold** are detected analytes.

Abbreviation(s)

ARI = Analytical Resources, Inc.
DSOA = Duwamish Sediment Other Area
RL = reporting limit
µg/kg = micrograms per kilogram
VOC = volatile organic compounds

TABLE 6

RESULTS OF PORE WATER VOC ANALYSES

2009 DSOA Additional Characterization Data Report
Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

Sample ID:	PW-DUW01-0100			PW-DUW01-0160			PW-DUW01-0210			PW-DUW01-0260			PW-DUW01-0310			PW-DUW01-0360			PW-DUW02-0100			PW-DUW02-0160			PW-DUW02-0210			PW-DUW02-0260			PW-DUW02-0310		
Analyte (µg/L)	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**
1,1,1-Trichloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,1,2,2-Tetrachloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,1,2-Trichloro-1,2,2-trifluoroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,1,2-Trichloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,1-Dichloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,1-Dichloroethene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,2-Dichloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,2-Dichloropropane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
2-Butanone	2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U	UJ	2.5	U	UJ
2-Chloroethylvinylether	1	U	R	1	U	R	1	U	R	1	U	R	1	U	R	1	U	R	1	U	R	1	U		1	U	R	1	U	R	1	U	R
2-Hexanone	2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U	
4-Methyl-2-Pentanone	2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U	
Acetone	2.5	U	UJ	5.9		U	5.3		U	**4.7**		U	6.9		U	3	Q	UJ	2.8	QM	UJ	9.5	Q	U	5.5	Q	U	2.8	Q	UJ	2.5	U	UJ
Benzene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Bromodichloromethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Bromoform	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Bromomethane	0.5	U	UJ	0.5	U		0.5	U		0.5	U		0.5	U		0.5	U	UJ	0.5	U	UJ	0.5	U	UJ	0.5	U	UJ	0.5	U	UJ	0.5	U	UJ
Carbon Disulfide	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Carbon Tetrachloride	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Chlorobenzene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Chloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Chloroform	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Chloromethane	0.2	U		0.2		U	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
cis-1,2-Dichloroethene	0.2	U		**4.2**			**0.4**			**1.1**			0.2	U		**0.4**			**0.2**			0.2	U		**0.4**			**0.5**			0.2	U	
cis-1,3-Dichloropropene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Dibromochloromethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Ethylbenzene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
m,p-Xylene	0.4	U		0.4	U		0.4	U		0.4	U		0.4	U		0.4	U		0.4	U		0.4	U		0.4	U		0.4	U		0.4	U	
Methylene Chloride	0.5	U		0.5	U		0.5	U		0.5	U		0.5	U		0.6	B	U	0.5	U		0.5	U		0.5	U		0.5	U		0.5	U	
o-Xylene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Styrene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	UJ	0.2	U		0.2	U	
Tetrachloroethene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Toluene	0.2	U		**0.4**			**0.2**			0.2	U		**0.3**			0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
trans-1,2-Dichloroethene	0.2	U		**0.5**			**0.4**			**0.3**			0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
trans-1,3-Dichloropropene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Trichloroethene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Trichlorofluoromethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Vinyl Acetate	1	U		1	U		1	U		1	U		1	U		1	U		1	U		1	U		1	U		1	U	UJ	1	U	UJ
Vinyl Chloride	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	

TABLE 6

RESULTS OF PORE WATER VOC ANALYSES

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Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

Sample ID:	PW-DUW02-0360			PW-DUW03-0160			PW-DUW03-0210			PW-DUW03-0260			PW-DUW03-0310			PW-DUW03-0360			PW-DUW04-0160			PW-DUW04-0210			PW-DUW04-0260			PW-DUW04-0310			PW-DUW04-0360		
Analyte (µg/L)	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**
1,1,1-Trichloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,1,2,2-Tetrachloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,1,2-Trichloro-1,2,2-trifluoroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,1,2-Trichloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,1-Dichloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,1-Dichloroethene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,2-Dichloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,2-Dichloropropane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
2-Butanone	2.5	U	UJ	2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U	
2-Chloroethylvinylether	1	U	R	1	U	R	1	U	R	1	U	R	1	U	R	1	U	R	1	U	R	1	U	R	1	U	R	1	U	R	1	U	R
2-Hexanone	2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U	
4-Methyl-2-Pentanone	2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U	
Acetone	4	Q	UJ	2.5	U	UJ	3	Q	UJ	2.8	Q	UJ	2.5	U	UJ	2.5	U	UJ	4.7	Q	UJ	5.7		U	7.3		U	11		U	4.6		U
Benzene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Bromodichloromethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Bromoform	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Bromomethane	0.5	U	UJ	0.5	U	UJ	0.5	U	UJ	0.5	U	UJ	0.5	U	UJ	0.5	U	UJ	0.5	U	UJ	0.5	U		0.5	U		0.5	U		0.5	U	
Carbon Disulfide	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Carbon Tetrachloride	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Chlorobenzene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Chloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Chloroform	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Chloromethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.4		U	0.2	U		0.2	U	
cis-1,2-Dichloroethene	0.2	U		0.2	U		0.2	U		0.2	U		0.9			**2.8**			0.2	U		**0.6**			0.2	U		**0.6**			**5.4**		
cis-1,3-Dichloropropene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Dibromochloromethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Ethylbenzene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
m,p-Xylene	0.4	U		0.4	U		0.4	U		0.4	U		0.4	U		0.4	U		0.4	U		0.4	U		0.4	U		0.4	U		0.4	U	
Methylene Chloride	0.5	U		0.5	U		0.5	U		0.5	U		0.5	U		0.5	U		0.5	U		0.5	U		0.5	U		0.5	U		0.5	U	
o-Xylene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Styrene	0.2	U		0.2	U		0.2	U	UJ	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Tetrachloroethene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Toluene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		**0.3**			**0.4**			**0.3**			0.2	U		0.2	U	
trans-1,2-Dichloroethene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
trans-1,3-Dichloropropene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Trichloroethene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Trichlorofluoromethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Vinyl Acetate	1	U	UJ	1	U		1	U		1	U		1	U		1	U		1	U		1	U		1	U		1	U		1	U	
Vinyl Chloride	0.2	U		0.2	U		0.2	U		**0.9**			**1.4**			0.2	U		**0.2**			0.2	U		0.2	U		0.2	U		0.2	U	

TABLE 6

RESULTS OF PORE WATER VOC ANALYSES
2009 DSOA Additional Characterization Data Report
Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

Sample ID:	PW-DUW05-0100			PW-DUW05-0210			PW-DUW05-0260			PW-DUW05-0310			PW-DUW05-0360			PW-DUW06-0160			PW-DUW06-0210			PW-DUW06-0260			PW-DUW06-0310			PW-DUW06-0360		
Analyte (µg/L)	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**	**Value**	**Q[1]**	**Q[2]**
1,1,1-Trichloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,1,2,2-Tetrachloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,1,2-Trichloro-1,2,2-trifluoroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,1,2-Trichloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,1-Dichloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,1-Dichloroethene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,2-Dichloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
1,2-Dichloropropane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
2-Butanone	2.5	U		2.5	U	UJ	2.5	U	UJ	2.5	U	UJ	2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U	
2-Chloroethylvinylether	1	U	R	1	U	R	1	U	R	1	U	R	1	U	R	1	U	R	1	U	R	1	U	R	1	U	R	1	U	R
2-Hexanone	2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U	
4-Methyl-2-Pentanone	2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U		2.5	U	
Acetone	4.4	Q	UJ	2.5	U	UJ	3.1	Q	UJ	4.8	Q	UJ	3		U	4.2	Q	UJ	3.1	Q	UJ	4.6	Q	UJ	3.7	Q	UJ	2.5	U	UJ
Benzene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Bromodichloromethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Bromoform	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Bromomethane	0.5	U	UJ	0.5	U	UJ	0.5	U	UJ	0.5	U	UJ	0.5	U	UJ	0.5	U	UJ	0.5	U	UJ	0.5	U	UJ	0.5	U	UJ	0.5	U	UJ
Carbon Disulfide	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Carbon Tetrachloride	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Chlorobenzene	**0.3**			0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Chloroethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Chloroform	**0.4**			0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Chloromethane	0.2	U		0.2	U		0.2	U		0.5		U	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
cis-1,2-Dichloroethene	0.2	U		0.2	U		**0.8**			**0.6**			**0.3**			**1.4**			**1.3**			**0.5**			0.2	U		**0.3**		
cis-1,3-Dichloropropene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Dibromochloromethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Ethylbenzene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
m,p-Xylene	0.4	U		0.4	U		0.4	U		0.4	U		0.4	U		0.4	U		0.4	U		0.4	U		0.4	U		0.4	U	
Methylene Chloride	0.5	U		0.5	U		0.5	U		0.5	U		0.5	U		0.5	U		0.5	U		0.5	U		0.5	U		0.5	U	
o-Xylene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Styrene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Tetrachloroethene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Toluene	**0.2**			**0.5**			0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		**0.2**			0.2	U	
trans-1,2-Dichloroethene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		**0.3**			**0.3**			0.2	U		0.2	U		0.2	U	
trans-1,3-Dichloropropene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Trichloroethene	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Trichlorofluoromethane	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	
Vinyl Acetate	1	U		1	U		1	U		1	U		1	U		1	U		1	U		1	U		1	U		1	U	
Vinyl Chloride	0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U		0.2	U	

TABLE 6

RESULTS OF PORE WATER VOC ANALYSES
2009 DSOA Additional Characterization Data Report
Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

Note(s)

1. Laboratory data qualifiers as follows:
   U—Indicates that the target analyte was not detected at the reported concentration.
   Q—Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria.
   B—Analyte detected in an associated method blank at a concentration greater than 1/2 of ARI's RL or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
2. Data validation qualifiers as follows:
   U—Indicates that the target analyte was not detected at the reported concentration.
   R—The sample result is rejected. The presence or absence of the analyte cannot be verified and data are not usable.
   UJ—The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

Indicates duplicate of samples collected at station PW-DUW01.

Values in **Bold** are detected analytes.

Abbreviation(s)

ARI = Analytical Resources, Inc.
DSOA = Duwamish Sediment Other Area
RL = reporting limit
µg/L = micrograms per liter

FIGURES

APPROXIMATE SCALE IN FEET

0 175 350 700

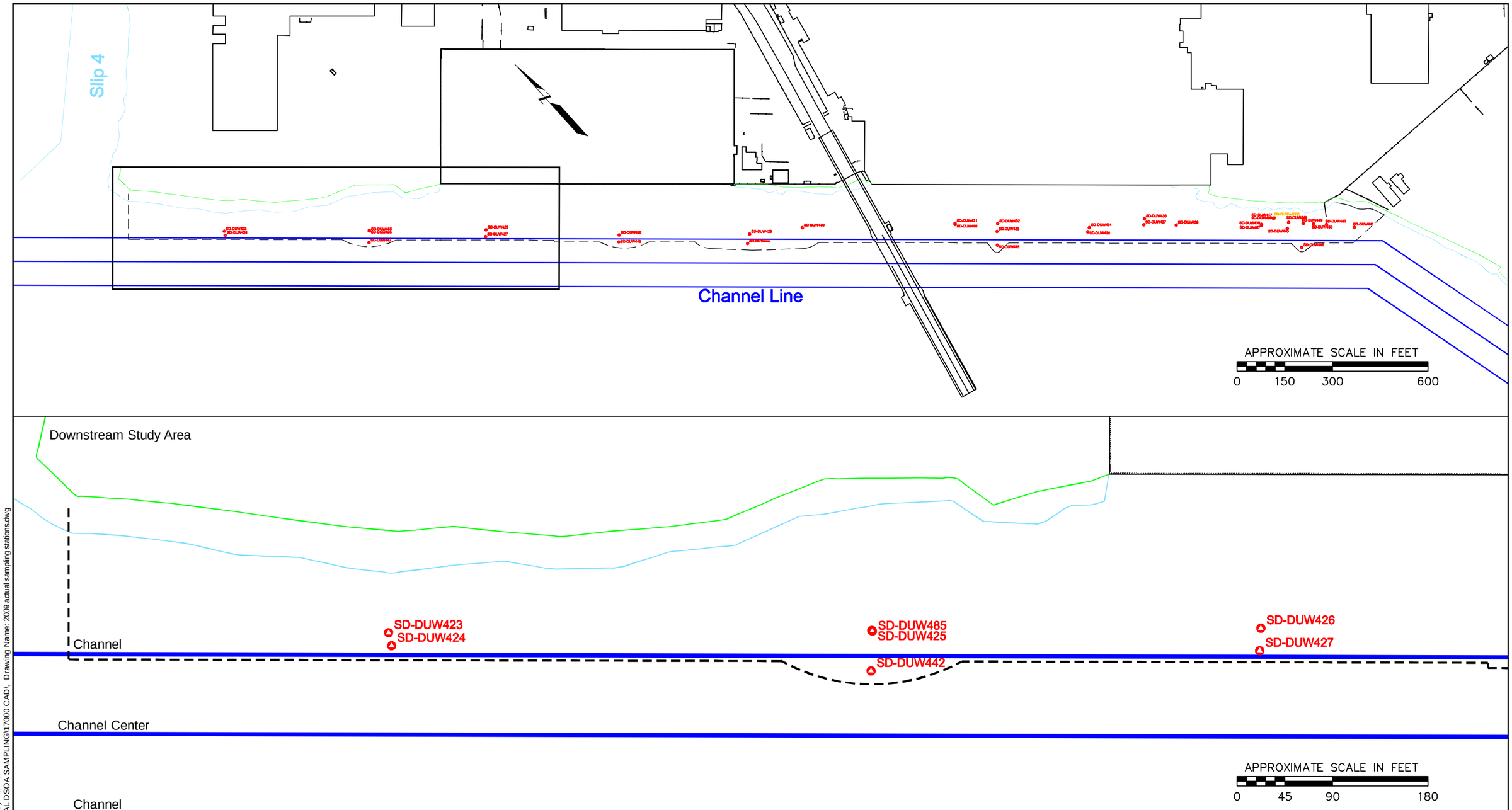
Duwamish Sediment Other Area

BOEING

PLANT 2 DUWAMISH SEDIMENT OTHER AREA (DSOA) VICINITY
2009 DSOA Additional Characterization Data Report
Boeing Plant 2, Seattle/Tukwila, Washington

By: GSM	Date: 2-9-2010	Project No. 13133.004
AMEC Geomatrix		Figure 1

Plot Date: 02/09/10 - 5:04pm Plotted by: gary.maxwell
Drawing Path: P:\BOEING\2009 ADDITIONAL DSOA SAMPLING\17000 CAD\Vicinity. Drawing Name: Additional Sampling 2009.dwg



Estimated Top of Bank

Estimated Toe of Slope

DSOA Boundary

SD-DUW4xx Actual Sediment Core Sample Location 2010

SD-DUW4xx Actual Freeze Core Sample Location 2010

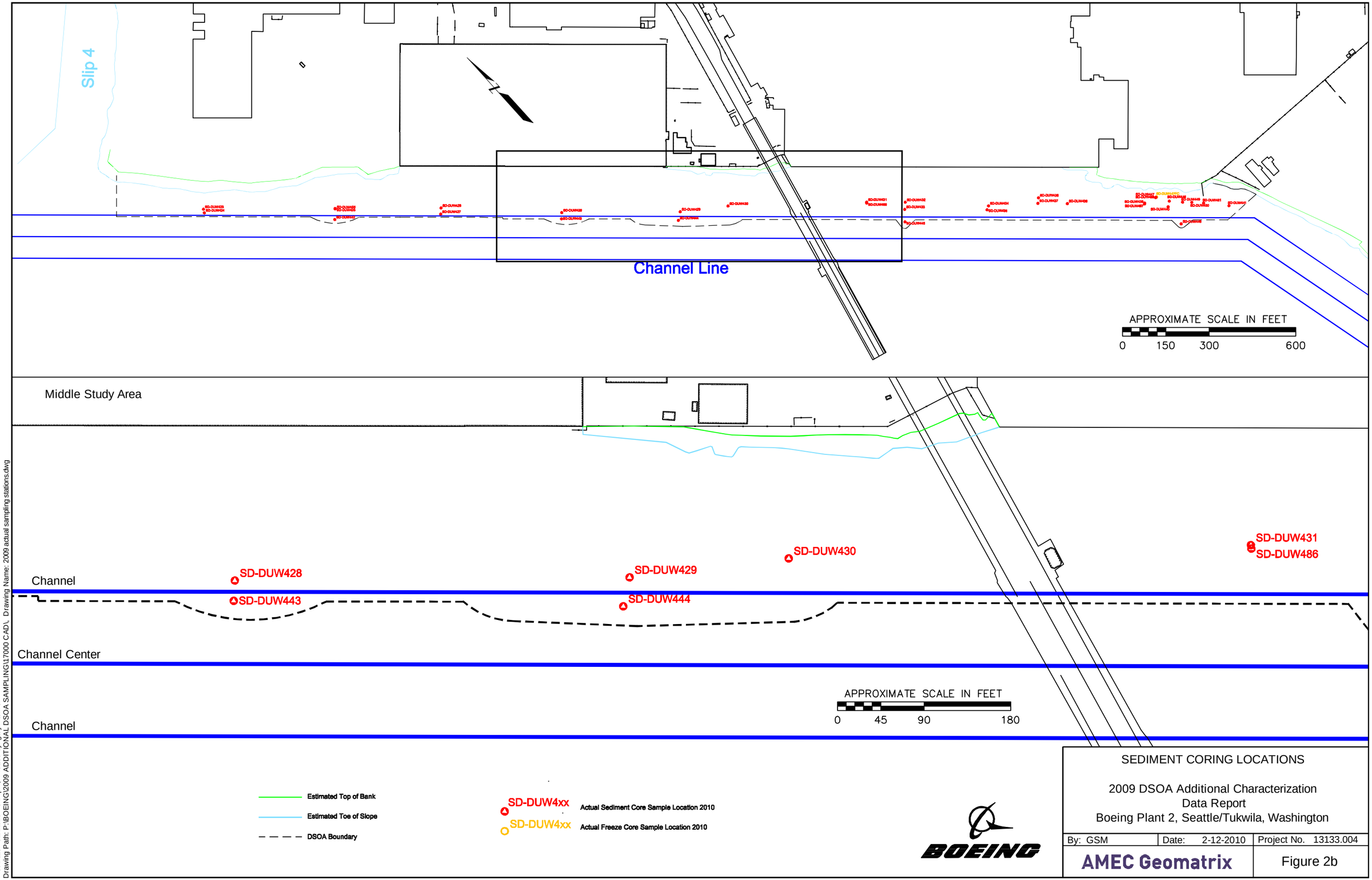
BOEING

SEDIMENT CORING LOCATIONS

2009 DSOA Additional Characterization
Data Report
Boeing Plant 2, Seattle/Tukwila, Washington

By: GSM	Date: 2-12-2010	Project No. 13133.004
AMEC Geomatrix		Figure 2a

Plot Date: 02/12/10 - 3:23pm, Plotted by: gary.maxwell
Drawing Path: P:\BOEING\2009 ADDITIONAL DSOA SAMPLING\17000 CAD\, Drawing Name: 2009 actual sampling stations.dwg

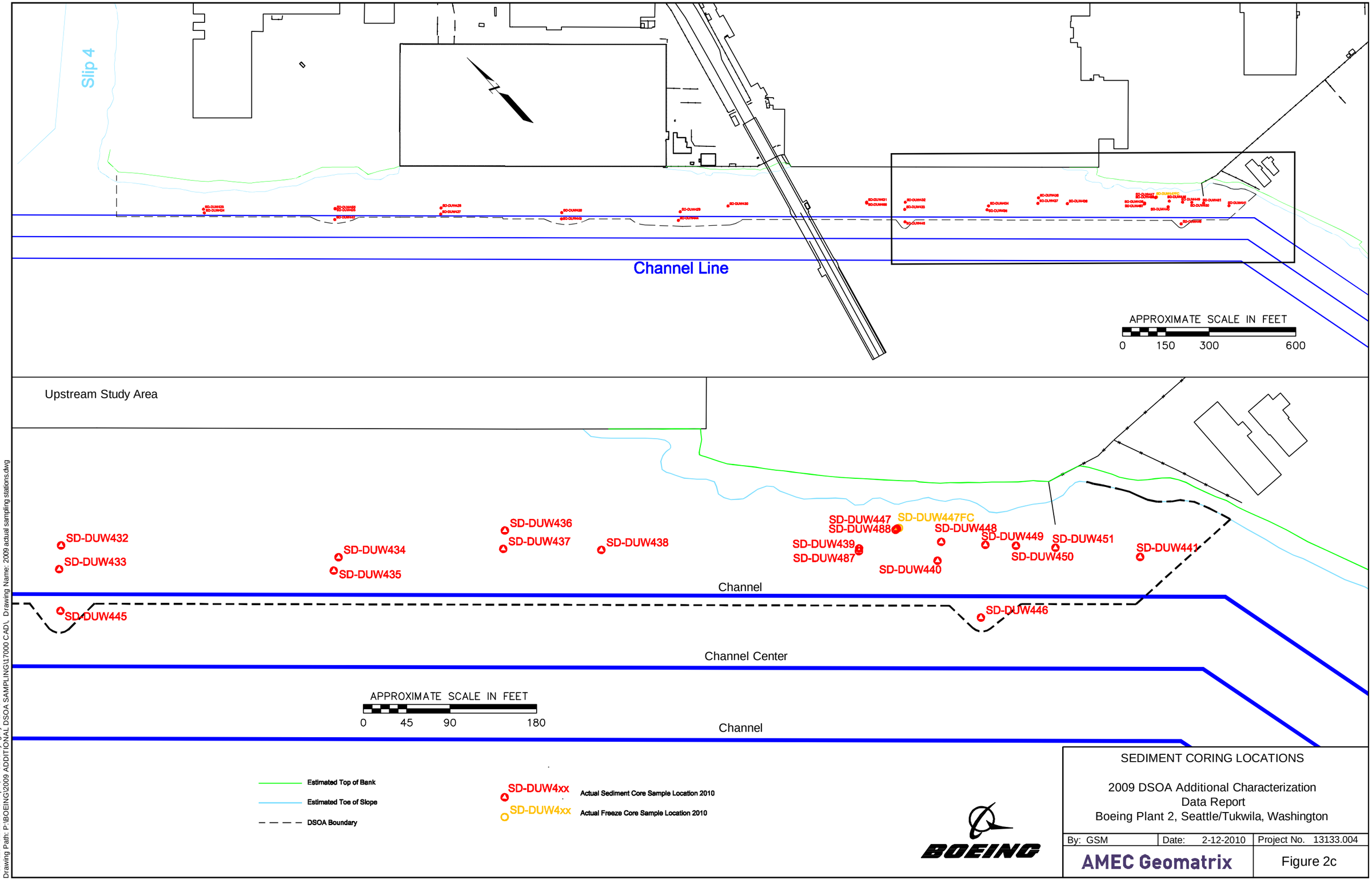


SEDIMENT CORING LOCATIONS

2009 DSOA Additional Characterization
Data Report
Boeing Plant 2, Seattle/Tukwila, Washington

By: GSM	Date: 2-12-2010	Project No. 13133.004
AMEC Geomatrix		Figure 2b

Plot Date: 02/12/10 - 3:24pm, Plotted by: gary.maxwell
Drawing Path: P:\BOEING\2009 ADDITIONAL DSOA SAMPLING\17000 CAD\, Drawing Name: 2009 actual sampling stations.dwg

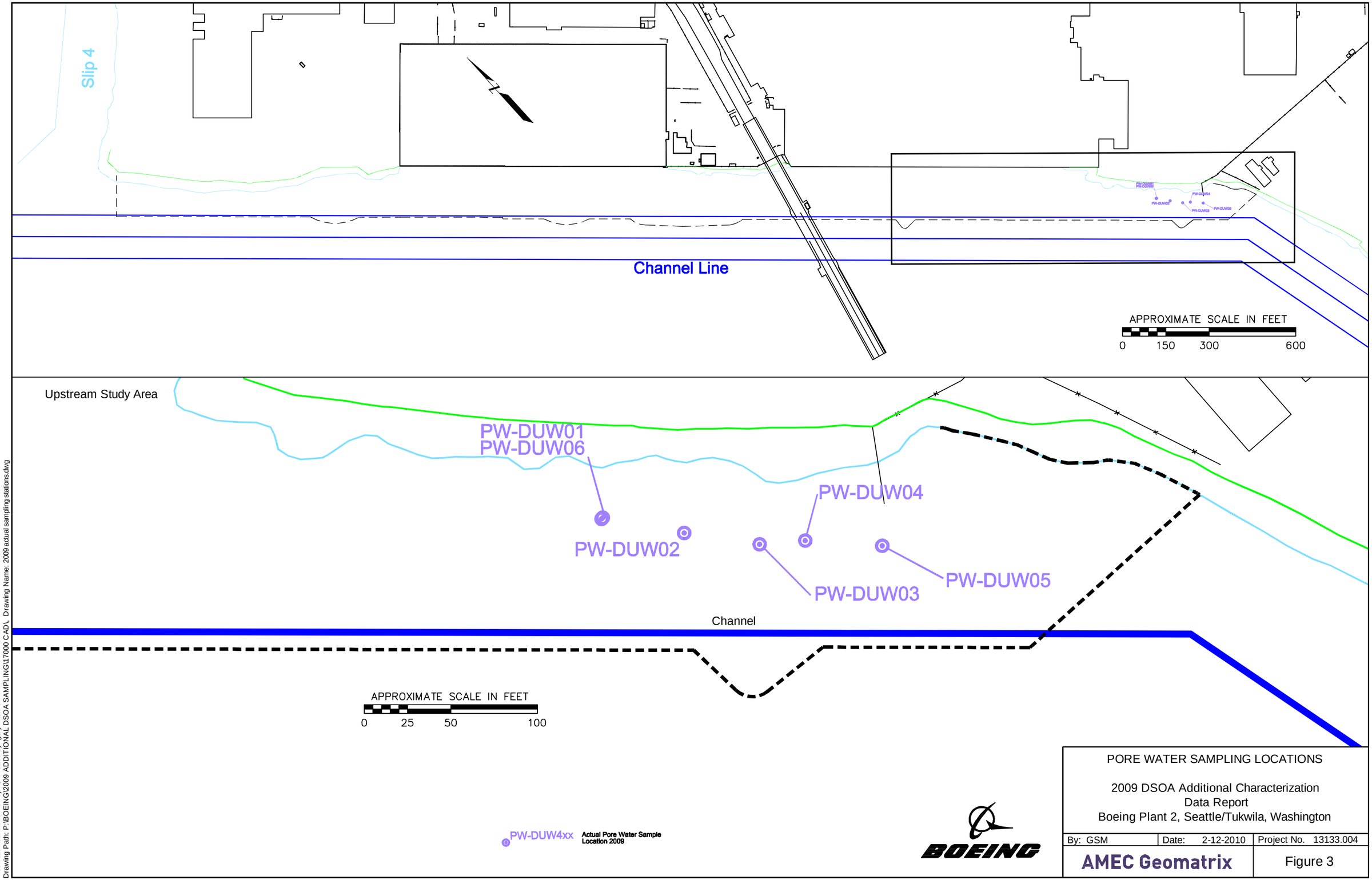


SEDIMENT CORING LOCATIONS

2009 DSOA Additional Characterization
Data Report
Boeing Plant 2, Seattle/Tukwila, Washington

By: GSM	Date: 2-12-2010	Project No. 13133.004
AMEC Geomatrix		Figure 2c

Plot Date: 02/12/10 - 3:24pm, Plotted by: gary.maxwell
Drawing Path: P:\BOEING\2009 ADDITIONAL DSOA SAMPLING\17000 CAD\, Drawing Name: 2009 actual sampling stations.dwg

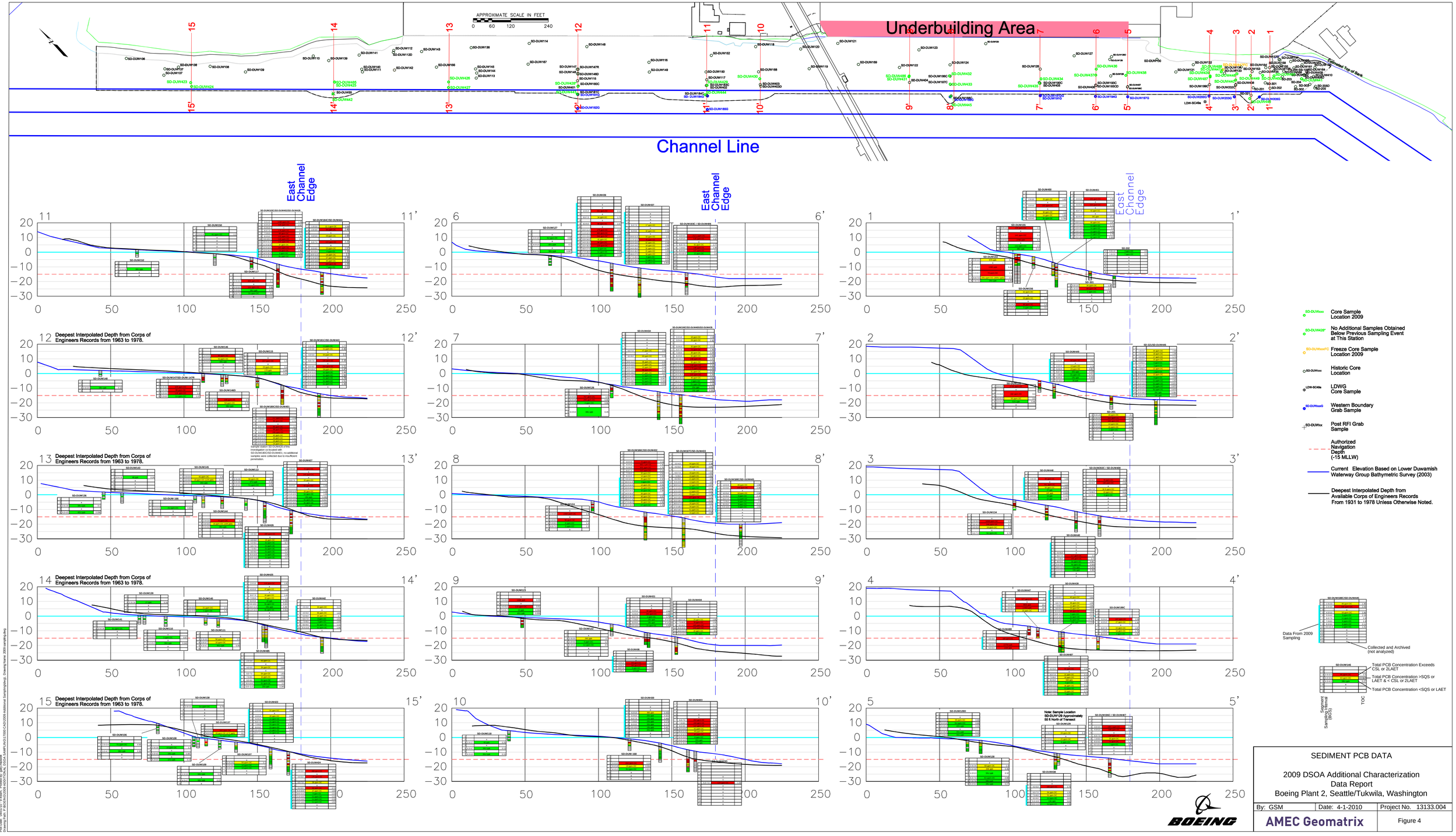


PORE WATER SAMPLING LOCATIONS

2009 DSOA Additional Characterization Data Report
Boeing Plant 2, Seattle/Tukwila, Washington

By: GSM	Date: 2-12-2010	Project No. 13133.004
AMEC Geomatrix		Figure 3

Plot Date: 02/12/10 - 3:25pm, Plotted by: gary.maxwell
Drawing Path: P:\BOEING\2009 ADDITIONAL DSOA SAMPLING\17000 CAD\, Drawing Name: 2009 actual sampling stations.dwg

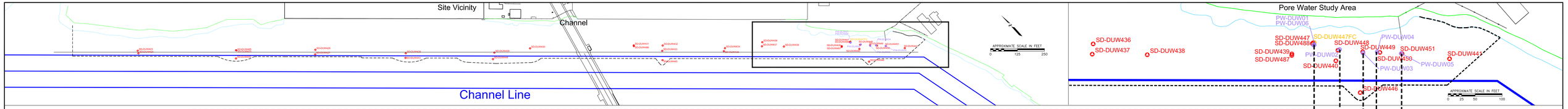


SEDIMENT PCB DATA

2009 DSOA Additional Characterization Data Report

Boeing Plant 2, Seattle/Tukwila, Washington

By: GSM	Date: 4-1-2010	Project No. 13133.004
AMEC Geomatrix		Figure 4



Pore Water Chemistry

MLLW = 0ft

-5 -10 -15 -20 -25 -30 -35 -40

SD-DUW447 / PW-DUW01

SD-DUW447-0020	Value	Q
2-Butanone	6.2	U
Acetone	11.7	
Carbon Disulfide	2	
Chlorobenzene	1.2	U
cis-1,2-Dichloroethene	1.2	U
Ethylbenzene	1.2	U
m,p-Xylene	1.2	U
Methylene Chloride	2.5	U
o-Xylene	1.2	U
Trichloroethene	1.2	U
Vinyl Chloride	1.2	U

SD-DUW447-0060	Value	Q
2-Butanone	1200	U
Acetone	1200	U
Carbon Disulfide	230	U
Chlorobenzene	230	U
cis-1,2-Dichloroethene	230	U
Ethylbenzene	230	U
m,p-Xylene	230	U
Methylene Chloride	230	U
o-Xylene	230	U
Trichloroethene	230	U
Vinyl Chloride	230	U

Mudline (ft bgs)	Elevation (ft MLLW)
0 to 1	-7
1 to 2	-8
2 to 3	-9
3 to 4	-10
4 to 5	-11
5 to 6	-12
6 to 7	-13
7 to 8	-14
8 to 9	-15
9 to 10	-16
10 to 11	-17
11 to 12	-18
12 to 13	-19
13 to 14	-20
14 to 15	-21
15 to 16	-22
16 to 17	-23
17 to 18	-24
18 to 19	-25
19 to 20	-26
20 to 21	-27
21 to 22	-28
22 to 23	-29
23 to 25	-30
24 to 25	-31
25 to 26	-32
26 to 27	-33
27 to 28	-34
28 to 29	-35
29 to 30	-36

Native

SD-DUW488 / PW-DUW08

This Location Duplicate of SD-DUW447

SD-DUW488-0020	Value	Q
2-Butanone	12	
Acetone	82	
Carbon Disulfide	3.1	
Chlorobenzene	1.3	U
cis-1,2-Dichloroethene	1.3	U
Ethylbenzene	1.3	U
m,p-Xylene	1.3	U
Methylene Chloride	1.3	U
o-Xylene	1.3	U
Trichloroethene	1.3	U
Vinyl Chloride	1.3	U

SD-DUW488-0060	Value	Q
2-Butanone	8100	U
Acetone	8100	U
Carbon Disulfide	1600	U
Chlorobenzene	1600	U
cis-1,2-Dichloroethene	1600	U
Ethylbenzene	1600	U
m,p-Xylene	1600	U
Methylene Chloride	3200	U
o-Xylene	1600	U
Trichloroethene	1600	U
Vinyl Chloride	1600	U

Mudline (ft bgs)	Elevation (ft MLLW)
0 to 1	-7
1 to 2	-8
2 to 3	-9
3 to 4	-10
4 to 5	-11
5 to 6	-12
6 to 7	-13
7 to 8	-14
8 to 9	-15
9 to 10	-16
10 to 11	-17
11 to 12	-18
12 to 13	-19
13 to 14	-20
14 to 15	-21
15 to 16	-22
16 to 17	-23
17 to 18	-24
18 to 19	-25
19 to 20	-26
20 to 21	-27
21 to 22	-28
22 to 23	-29
23 to 25	-30
24 to 25	-31
25 to 26	-32
26 to 27	-33
27 to 28	-34
28 to 29	-35
29 to 30	-36

Native

SD-DUW448 / PW-DUW02

SD-DUW448-0020	Value	Q
2-Butanone	17	
Acetone	96	Q
Carbon Disulfide	12	
Chlorobenzene	1.2	U
cis-1,2-Dichloroethene	1.2	U
Ethylbenzene	1.2	U
m,p-Xylene	1.2	U
Methylene Chloride	5	
o-Xylene	1.2	U
Trichloroethene	1.2	U
Vinyl Chloride	1.2	U

SD-DUW448-0060	Value	Q
2-Butanone	7.2	
Acetone	36	
Carbon Disulfide	15	
Chlorobenzene	1.1	U
cis-1,2-Dichloroethene	1.1	U
Ethylbenzene	1.1	U
m,p-Xylene	1.1	U
Methylene Chloride	1.1	U
o-Xylene	1.1	U
Trichloroethene	1.1	U
Vinyl Chloride	1.1	U

SD-DUW448-0080	Value	Q
2-Butanone	7.2	
Acetone	38	
Carbon Disulfide	1.2	U
Chlorobenzene	1.2	U
cis-1,2-Dichloroethene	1.2	U
Ethylbenzene	1.2	U
m,p-Xylene	1.2	U
Methylene Chloride	4.8	
o-Xylene	1.2	U
Trichloroethene	1.2	U
Vinyl Chloride	1.2	U

Mudline (ft bgs)	Elevation (ft MLLW)
0 to 1	-7
1 to 2	-8
2 to 3	-9
3 to 4	-10
4 to 5	-11
5 to 6	-12
6 to 7	-13
7 to 8	-14
8 to 9	-15
9 to 10	-16
10 to 11	-17
11 to 12	-18
12 to 13	-19
13 to 14	-20
14 to 15	-21
15 to 16	-22
16 to 17	-23
17 to 18	-24
18 to 19	-25
19 to 20	-26
20 to 21	-27
21 to 22	-28
22 to 23	-29
23 to 25	-30
24 to 25	-31
25 to 26	-32
26 to 27	-33
27 to 28	-34
28 to 29	-35
29 to 30	-36

Native

SD-DUW449 / PW-DUW03

SD-DUW449-0020	Value	Q
2-Butanone	7.4	U
Acetone	46	Q
Carbon Disulfide	2.6	
Chlorobenzene	1.5	U
cis-1,2-Dichloroethene	1.5	U
Ethylbenzene	1.5	U
m,p-Xylene	1.5	U
Methylene Chloride	6.3	
o-Xylene	1.5	U
Trichloroethene	1.5	U
Vinyl Chloride	1.5	U

SD-DUW449-0060	Value	Q
2-Butanone	7	
Acetone	38	Q
Carbon Disulfide	1.2	U
Chlorobenzene	1.2	U
cis-1,2-Dichloroethene	1.2	U
Ethylbenzene	1.2	U
m,p-Xylene	1.2	U
Methylene Chloride	6.3	
o-Xylene	1.2	U
Trichloroethene	1.2	U
Vinyl Chloride	1.2	U

SD-DUW449-0080	Value	Q
2-Butanone	6.4	U
Acetone	60	
Carbon Disulfide	1.3	U
Chlorobenzene	1.3	U
cis-1,2-Dichloroethene	1.3	U
Ethylbenzene	1.3	U
m,p-Xylene	1.3	U
Methylene Chloride	9.6	
o-Xylene	1.3	U
Trichloroethene	1.3	U
Vinyl Chloride	1.3	U

SD-DUW449-0080	Value	Q
2-Butanone	5.8	U
Acetone	35	Q
Carbon Disulfide	1.2	U
Chlorobenzene	1.2	U
cis-1,2-Dichloroethene	1.2	U
Ethylbenzene	1.2	U
m,p-Xylene	1.2	U
Methylene Chloride	3.3	
o-Xylene	1.2	U
Trichloroethene	1.2	U
Vinyl Chloride	1.2	U

Mudline (ft bgs)	Elevation (ft MLLW)
0 to 1	-7
1 to 2	-8
2 to 3	-9
3 to 4	-10
4 to 5	-11
5 to 6	-12
6 to 7	-13
7 to 8	-14
8 to 9	-15
9 to 10	-16
10 to 11	-17
11 to 12	-18
12 to 13	-19
13 to 14	-20
14 to 15	-21
15 to 16	-22
16 to 17	-23
17 to 18	-24
18 to 19	-25
19 to 20	-26
20 to 21	-27
21 to 22	-28
22 to 23	-29
23 to 25	-30
24 to 25	-31
25 to 26	-32
26 to 27	-33
27 to 28	-34
28 to 29	-35
29 to 30	-36

Native

SD-DUW450 / PW-DUW04

SD-DUW450-0020	Value	Q
2-Butanone	7.4	U
Acetone	46	Q
Carbon Disulfide	1.5	U
Chlorobenzene	1.5	U
cis-1,2-Dichloroethene	1.5	U
Ethylbenzene	1.5	U
m,p-Xylene	1.5	U
Methylene Chloride	5.4	
o-Xylene	1.5	U
Trichloroethene	1.5	U
Vinyl Chloride	1.5	U

SD-DUW450-0040	Value	Q
2-Butanone	8.1	U
Acetone	51	Q
Carbon Disulfide	3.4	
Chlorobenzene	1.4	U
cis-1,2-Dichloroethene	3.8	
Ethylbenzene	1.4	U
m,p-Xylene	1.4	U
Methylene Chloride	5.4	
o-Xylene	1.4	U
Trichloroethene	1.4	U
Vinyl Chloride	1.4	U

SD-DUW450-0060	Value	Q
2-Butanone	9.2	U
Acetone	41	Q
Carbon Disulfide	3.8	
Chlorobenzene	1.4	U
cis-1,2-Dichloroethene	4.2	
Ethylbenzene	1.2	U
m,p-Xylene	1.2	U
Methylene Chloride	4.5	
o-Xylene	1.2	U
Trichloroethene	3.8	
Vinyl Chloride	1.2	U

SD-DUW450-0080	Value	Q
2-Butanone	34	
Acetone	210	
Carbon Disulfide	2.8	
Chlorobenzene	1.4	U
cis-1,2-Dichloroethene	1.4	U
Ethylbenzene	1.4	U
m,p-Xylene	1.4	U
Methylene Chloride	4.1	
o-Xylene	1.4	U
Trichloroethene	1.4	U
Vinyl Chloride	1.4	U

Mudline (ft bgs)	Elevation (ft MLLW)
0 to 1	-7
1 to 2	-8
2 to 3	-9
3 to 4	-10
4 to 5	-11
5 to 6	-12
6 to 7	-13
7 to 8	-14
8 to 9	-15
9 to 10	-16
10 to 11	-17
11 to 12	-18
12 to 13	-19
13 to 14	-20
14 to 15	-21
15 to 16	-22
16 to 17	-23
17 to 18	-24
18 to 19	-25
19 to 20	-26
20 to 21	-27
21 to 22	-28
22 to 23	-29
23 to 25	-30
24 to 25	-31
25 to 26	-32
26 to 27	-33
27 to 28	-34
28 to 29	-35
29 to 30	-36

Native

SD-DUW451 / PW-DUW05

SD-DUW451-0020	Value	Q
2-Butanone	8.1	U
Acetone	64	Q
Carbon Disulfide	1.6	U
Chlorobenzene	1.6	U
cis-1,2-Dichloroethene	1.6	U
Ethylbenzene	1.6	U
m,p-Xylene	1.6	U
Methylene Chloride	4.8	Q
o-Xylene	1.6	U
Trichloroethene	1.6	U
Vinyl Chloride	1.6	U

SD-DUW451-0040	Value	Q
2-Butanone	2000	U
Acetone	2000	U
Carbon Disulfide	390	U
Chlorobenzene	1400	
cis-1,2-Dichloroethene	390	U
Ethylbenzene	470	
m,p-Xylene	1200	
Methylene Chloride	790	U
o-Xylene	480	
Trichloroethene	390	U
Vinyl Chloride	390	U

SD-DUW451-0060	Value	Q
2-Butanone	130	U
Acetone	130	U
Carbon Disulfide	10	
Chlorobenzene	1.5	U
cis-1,2-Dichloroethene	1.5	U
Ethylbenzene	1.5	U
m,p-Xylene	12	
o-Xylene	3	
Trichloroethene	1.5	U
Vinyl Chloride	1.5	U

SD-DUW451-0080	Value	Q
2-Butanone	12	U
Acetone	42	
Carbon Disulfide	3.8	
Chlorobenzene	1.4	U
cis-1,2-Dichloroethene	1.4	U
Ethylbenzene	1.4	U
m,p-Xylene	5.2	
o-Xylene	1.4	U
Trichloroethene	1.4	U
Vinyl Chloride	1.4	U

SD-DUW451-0100	Value	Q
2-Butanone	3500	U
Acetone	3500	U
Carbon Disulfide	700	U
Chlorobenzene	700	U
cis-1,2-Dichloroethene	700	U
Ethylbenzene	700	U
m,p-Xylene	700	U
Methylene Chloride	1400	U
o-Xylene	700	U
Trichloroethene	700	U
Vinyl Chloride	700	U

SD-DUW451-0120	Value	Q
2-Butanone	9.8	
Acetone	86	Q
Carbon Disulfide	1.6	
Chlorobenzene	1.2	U
cis-1,2-Dichloroethene	1.2	U
Ethylbenzene	1.2	U
m,p-Xylene	4.7	
o-Xylene	1.2	U
Trichloroethene	1.2	U
Vinyl Chloride	1.2	U

SD-DUW451-0140	Value	Q
2-Butanone	12	
Acetone	100	Q
Carbon Disulfide	4.4	
Chlorobenzene	1.4	U
cis-1,2-Dichloroethene	1.4	U
Ethylbenzene	1.4	U
m,p-Xylene	12	
o-Xylene	1.4	U
Trichloroethene	1.4	U
Vinyl Chloride	1.4	U

Mudline (ft bgs)	Elevation (ft MLLW)
0 to 1	-7
1 to 2	-8
2 to 3	-9
3 to 4	-10
4 to 5	-11
5 to 6	-12
6 to 7	-13
7 to 8	-14
8 to 9	-15
9 to 10	-16
10 to 11	-17
11 to 12	-18
12 to 13	-19
13 to 14	-20
14 to 15	-21
15 to 16	-22
16 to 17	-23
17 to 18	-24
18 to 19	-25
19 to 20	-26
20 to 21	-27
21 to 22	-28
22 to 23	-29
23 to 25	-30
24 to 25	-31
25 to 26	-32
26 to 27	-33
27 to 28	-34
28 to 29	-35
29 to 30	-36

Native

SD-DUW451-0180	Value	Q
Chlorobenzene	0.22	U
Ethylbenzene	0.22	U
Methylene Chloride	0.22	U
cis-1,2-Dichloroethene	0.22	U
Trichloroethene	0.22	U
Vinyl Chloride	0.22	U
Specific Conductance (mS/cm)	0.4	

SD-DUW451-0200	Value	Q
Chlorobenzene	0.22	U
Ethylbenzene	0.22	U
Methylene Chloride	0.22	U
cis-1,2-Dichloroethene	0.22	U
Trichloroethene	0.22	U
Vinyl Chloride	0.22	U
Specific Conductance (mS/cm)	0.4	

SD-DUW451-0220	Value	Q
Chlorobenzene	0.22	U
Ethylbenzene	0.22	U
Methylene Chloride	0.22	U
cis-1,2-Dichloroethene	0.22	U
Trichloroethene	0.22	U
Vinyl Chloride	0.22	U
Specific Conductance (mS/cm)	0.4	

SD-DUW451-0240	Value	Q
Chlorobenzene	0.22	U
Ethylbenzene	0.22	U
Methylene Chloride	0.22	U
cis-1,2-Dichloroethene	0.22	U
Trichloroethene	0.22	U
Vinyl Chloride	0.22	U
Specific Conductance (mS/cm)	0.4	

SD-DUW451-0260	Value	Q
Chlorobenzene	0.22	U
Ethylbenzene	0.22	U
Methylene Chloride	0.22	U
cis-1,2-Dichloroethene	0.22	U
Trichloroethene	0.22	U
Vinyl Chloride	0.22	U
Specific Conductance (mS/cm)	0.4	

SD-DUW451-0280	Value	Q
Chlorobenzene	0.22	U
Ethylbenzene	0.22	U
Methylene Chloride	0.22	U
cis-1,2-Dichloroethene	0.22	U
Trichloroethene	0.22	U
Vinyl Chloride	0.22	U
Specific Conductance (mS/cm)	0.4	

SD-DUW451-0300	Value	Q
Chlorobenzene	0.22	U
Ethylbenzene	0.22	U
Methylene Chloride	0.22	U
cis-1,2-Dichloroethene	0.22	U
Trichloroethene	0.22	U
Vinyl Chloride	0.22	U
Specific Conductance (mS/cm)	0.4	

SD-DUW451-0320	Value	Q
Chlorobenzene	0.22	U
Ethylbenzene	0.22	U
Methylene Chloride	0.22	U
cis-1,2-Dichloroethene	0.22	U
Trichloroethene	0.22	U
Vinyl Chloride	0.22	U
Specific Conductance (mS/cm)	0.4	

SD-DUW451-0340	Value	Q
Chlorobenzene	0.22	U
Ethylbenzene	0.22	U
Methylene Chloride	0.22	U
cis-1,2-Dichloroethene	0.22	U
Trichloroethene	0.22	U
Vinyl Chloride	0.22	U
Specific Conductance (mS/cm)	0.4	

SD-DUW451-0360	Value	Q
Chlorobenzene	0.22	U
Ethylbenzene	0.22	U
Methylene Chloride	0.22	U
cis-1,2-Dichloroethene	0.22	U
Trichloroethene	0.22	U
Vinyl Chloride	0.22	U
Specific Conductance (mS/cm)	0.4	

SD-DUW451-0380	Value	Q
Chlorobenzene	0.22	U
Ethylbenzene	0.22	U
Methylene Chloride	0.22	U
cis-1,2-Dichloroethene	0.22	U
Trichloroethene	0.22	U
Vinyl Chloride	0.22	U
Specific Conductance (mS/cm)	0.4	

SD-DUW451-0400	Value	Q
Chlorobenzene	0.22	U
Ethylbenzene	0.22	U
Methylene Chloride	0.22	U
cis-1,2-Dichloroethene	0.22	U
Trichloroethene	0.22	U
Vinyl Chloride	0.22	U
Specific Conductance (mS/cm)	0.4	

SD-DUW451-0420	Value	Q
Chlorobenzene	0.22	U
Ethylbenzene	0.22	U
Methylene Chloride	0.22	U
cis-1,2-Dichloroethene	0.22	U
Trichloroethene	0.22	U
Vinyl Chloride	0.22	U
Specific Conductance (mS/cm)	0.4	

SD-DUW451-0440	Value	Q
Chlorobenzene	0.22	U
Ethylbenzene	0.22	U
Methylene Chloride	0.22	U
cis-1,2-Dichloroethene	0.22	U
Trichloroethene	0.22	U
Vinyl Chloride	0.22	U
Specific Conductance (mS/cm)	0.4	

SD-DUW451-0460	Value	Q
Chlorobenzene	0.22	U
Ethylbenzene	0.22	U
Methylene Chloride	0.22	U
cis-1,2-Dichloroethene	0.22	U
Trichloroethene	0.22	U
Vinyl Chloride	0.22	U
Specific Conductance (mS/cm)	0.4	

SD-DUW451-0480	Value	Q
Chlorobenzene	0.22	U
Ethylbenzene	0.22	U
Methylene Chloride	0.22	U
cis-1,2-Dichloroethene	0.22	U
Trichloroethene	0.22	U
Vinyl Chloride	0.22	U
Specific Conductance (mS/cm)	0.4	

SD-DUW451-0500	Value	Q
Chlorobenzene	0.22	U
Ethylbenzene	0.22	U
Methylene Chloride	0.22	U
cis-1,2-Dichloroethene	0.22	U
Trichloroethene	0.22	U
Vinyl Chloride	0.22	U
Specific Conductance (mS/cm)	0.4	

SEDIMENT AND PORE WATER VOC DATA
2009 DSOA Additional Characterization
Data Report
Boeing Plant 2, Seattle/Tukwila, Washington

BOEING

By: GSM	Date: 2/12/2010	Project No. 13133.004
AMEC Geomatrix		Figure 5

File Name: 13133-1-2Dsec_Report_qc.mxd
Date/Time: 02/12/10 - 1:25pm, Report by: gsmith
Project Path: P:\13133\1-2D Sediment Characterization\2009 DSO\13133-1D2D - Boeing Name - 2009 actual sampling locations.mxd

APPENDIX A

Field Forms

Appendix A to the Data Report is provided as a separate pdf file.

APPENDIX B

Pore Water Sample Collection Parameters

Appendix B to the Data Report is provided as a separate pdf file.

APPENDIX C

Core Summary Logs

Appendix C to the Data Report is provided as a separate pdf file.

APPENDIX D

Chain-of-Custody Forms

Appendix D to the Data Report is provided as a separate pdf file.

APPENDIX E

Data Validation Report

Appendix E to the Data Report is provided as a separate pdf file.

APPENDIX A

Field Forms

GPS CHECK FORMS

AMEC Geomatrix, Inc., GPS Check Form

Date: 11-2-09

Project: 2009 Additional DSOA Sampling

Recorder: CM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376 196376

Easting 1274699 1274701

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock. 2.55 of station

---

Start of Day

Time: _____

Northing _____

Coordinate Datum Setup Confirmed: _____

Easting _____

Comments: _____

End of Day

Time: _____

Northing _____

Coordinate Datum Setup Confirmed: _____

Easting _____

Comments: _____

AMEC Geomatrix, Inc., GPS Check Form

Date: 11-3-09

Project: 2009 Additional DSOA Sampling

Recorder: SSM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 0751

Northing 196376

Coordinate Datum Setup Confirmed: X

Easting 1274703 RHG

Comments: 3.8 ft from checkpoint

End of Day

Time: 1315

Northing 196376

Coordinate Datum Setup Confirmed: X

Easting 1274699

Comments: 0.3 ft from station

AMEC Geomatrix, Inc., GPS Check Form

Date: 11-5-09

Project: 2009 Additional DSOA Sampling

Recorder: GSM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 0748

Northing 196378

Coordinate Datum Setup Confirmed: Y

Easting 1274701

Comments: 2.6 off station

End of Day

Time: 1441

Northing 196378

Coordinate Datum Setup Confirmed: Y

Easting 1274702

Comments: 3.4 off mark

AMEC Geomatrix, Inc., GPS Check Form

Date: 11-9-09

Project: 2009 Additional DSOA Sampling **Recorder:** GSM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1 **Northing** 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 736 **Northing** 196376

Coordinate Datum Setup Confirmed: Y **Easting** 1274703

Comments: 3.4 A at station

End of Day

Time: 1755 **Northing** 196377

Coordinate Datum Setup Confirmed: Y **Easting** 1274702

Comments: 3.6 A at mark

AMEC Geomatrix, Inc., GPS Check Form

Date: 11-10-09

Project: 2009 Additional DSOA Sampling

Recorder: GSM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 746

Northing 196376

Coordinate Datum Setup Confirmed: Y

Easting 1274702

Comments: 3.2 A off marks

End of Day

Time: 1543

Northing 196377

Coordinate Datum Setup Confirmed: Y

Easting 1274702

Comments:

AMEC Geomatrix, Inc., GPS Check Form

Date: 11-11-09

Project: 2009 Additional DSOA Sampling

Recorder: GJM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 748

Northing 196376

Coordinate Datum Setup Confirmed: Y

Easting 1274701

Comments:

End of Day

Time: 1523

Northing 196375

Coordinate Datum Setup Confirmed: Y

Easting 1274702

Comments:

AMEC Geomatrix, Inc., GPS Check Form

Date: 11-12-09

Project: 2009 Additional DSOA Sampling

Recorder: GSM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 925

Northing 196376

Coordinate Datum Setup Confirmed: Y

Easting 1274702

Comments: 3.14 off mark

End of Day

Time: 1527

Northing 196376

Coordinate Datum Setup Confirmed: Y

Easting 1274702

Comments: 2.9 ft off mark

AMEC Geomatrix, Inc., GPS Check Form

Date: 11-13-09

Project: 2009 Additional DSOA Sampling

Recorder: _____

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 0759

Northing 196376

Coordinate Datum Setup Confirmed: Y

Easting 1274702

Comments: 3.3 ft off mark

End of Day

Time: 1143

Northing 196377

Coordinate Datum Setup Confirmed: Y

Easting 1274701

Comments: _____

AMEC Geomatrix, Inc., GPS Check Form

Date: 11-17-09

Project: 2009 Additional DSOA Sampling

Recorder: GSM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 745

Northing 196376

Coordinate Datum Setup Confirmed: Y

Easting 1274703

Comments: 4.3 ft off mark

End of Day

Time: 1519

Northing 196378

Coordinate Datum Setup Confirmed: Y

Easting 1274701

Comments: 2.7 ft

AMEC Geomatrix, Inc., GPS Check Form

Date: 11-18-09

Project: 2009 Additional DSOA Sampling

Recorder: GSM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 718

Northing 196377

Coordinate Datum Setup Confirmed: Y

Easting ~~196637~~ 1274702

Comments: 2.9 ft off mark

End of Day

Time: 1122

Northing 196377

Coordinate Datum Setup Confirmed: Y

Easting 1274701

Comments: 3.2 ft off mark

AMEC Geomatrix, Inc., GPS Check Form

Date: 11 19 09

Project: 2009 Additional DSOA Sampling

Recorder: GJR

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 733

Northing 196377

Coordinate Datum Setup Confirmed: Y

Easting 1274701

Comments: 2.74

End of Day

Time: 1557

Northing 196378

Coordinate Datum Setup Confirmed: X

Easting 1274701

Comments: 2.74 off mark

AMEC Geomatrix, Inc., GPS Check Form

Date: 11-20-09

Project: 2009 Additional DSOA Sampling

Recorder: SSM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 0734

Northing 196377

Coordinate Datum Setup Confirmed: Y

Easting 1274700

Comments: 1.8 ft

End of Day

Time: 1352

Northing 196377

Coordinate Datum Setup Confirmed: Y

Easting 1274701

Comments: 2.8 ft

AMEC Geomatrix, Inc., GPS Check Form

Date: 11-24-09

Project: 2009 Additional DSOA Sampling

Recorder: GSM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 0906

Northing 196377

Coordinate Datum Setup Confirmed: _____

Easting 1274701

Comments: 3.0 ft off mark

End of Day

Time: 1549

Northing 196378

Coordinate Datum Setup Confirmed: Y

Easting 1274700

Comments: 1.8

AMEC Geomatrix, Inc., GPS Check Form

Date: 11-25-09

Project: 2009 Additional DSOA Sampling

Recorder: _____

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 825

Northing 196379

Coordinate Datum Setup Confirmed: Yes

Easting 1274700

Comments: 3 ft off mark

End of Day

Time: 1649

Northing 196378

Coordinate Datum Setup Confirmed: N

Easting 1274708

Comments: 2.5 ft off mark

AMEC Geomatrix, Inc., GPS Check Form

Date: 11-30-09

Project: 2009 Additional DSOA Sampling

Recorder: GJM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 815

Northing 196377

Coordinate Datum Setup Confirmed: Y

Easting 1274701

Comments: 3.0 ft from mark

End of Day

Time: 1710

Northing 196378

Coordinate Datum Setup Confirmed: Y

Easting 1274699

Comments: 2.3 ft off mark

AMEC Geomatrix, Inc., GPS Check Form

Date: 12-1-09

Project: 2009 Additional DSOA Sampling

Recorder: GSM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 755

Northing 196379

Coordinate Datum Setup Confirmed: Y

Easting 1274698

Comments: 3.0 ft off mark

End of Day

Time: _____

Northing _____

Coordinate Datum Setup Confirmed: _____

Easting _____

Comments: GPS failure - no end of day check

AMEC Geomatrix, Inc., GPS Check Form

Date: 12-2-09 CSM

Project: 2009 Additional DSOA Sampling

Recorder: GSM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 848

Northing 196379

Coordinate Datum Setup Confirmed: Y

Easting 1274700

Comments: 3-2 ft off mark

End of Day

Time: 1612

Northing 196379

Coordinate Datum Setup Confirmed: Y

Easting 1274699

Comments:

AMEC Geomatrix, Inc., GPS Check Form

Date: 12-3-09

Project: 2009 Additional DSOA Sampling

Recorder: GSM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 809

Northing 196378

Coordinate Datum Setup Confirmed: Y

Easting 1274699

Comments: 2.5 ft

End of Day

Time: 1532

Northing 196380

Coordinate Datum Setup Confirmed: Y

Easting 1274698

Comments: 3.9 ft off mark

AMEC Geomatrix, Inc., GPS Check Form

Date: 12-4-09

Project: 2009 Additional DSOA Sampling

Recorder: 659

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 805

Northing 196379

Coordinate Datum Setup Confirmed: Y

Easting 1274700

Comments: 2.5

End of Day

Time: 1659

Northing 196379

Coordinate Datum Setup Confirmed: Y

Easting 127699

Comments: 3A off mark

AMEC Geomatrix, Inc., GPS Check Form

Date: 12-7-09

Project: 2009 Additional DSOA Sampling

Recorder: GSM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 820

Northing 196379

Coordinate Datum Setup Confirmed: Y

Easting 1274699

Comments: 3.1 ft from mark

End of Day

Time: _____

Northing _____

Coordinate Datum Setup Confirmed: _____

Easting _____

Comments: _____

AMEC Geomatrix, Inc., GPS Check Form

Date: 12-8-09

Project: 2009 Additional DSOA Sampling

Recorder: GSM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 813

Northing 196377

Coordinate Datum Setup Confirmed: Y

Easting 1274699

Comments: 1.6 off mark

End of Day

Time: 1539

Northing 196378

Coordinate Datum Setup Confirmed: Y

Easting 1274699

Comments: 1.9 ft off mark

AMEC Geomatrix, Inc., GPS Check Form

Date: 12-9-09

Project: 2009 Additional DSOA Sampling

Recorder: GSM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 821

Northing 196377

Coordinate Datum Setup Confirmed: Y

Easting 1274700

Comments: 1.5 ft off mark

End of Day

Time: 1625

Northing 196378

Coordinate Datum Setup Confirmed: Y

Easting 1274699

Comments: ~~[illegible]~~ 1.7 ft off mark

AMEC Geomatrix, Inc., GPS Check Form

Date: 12-10-09

Project: 2009 Additional DSOA Sampling

Recorder: GIM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 0831

Northing 196379

Coordinate Datum Setup Confirmed: Y

Easting 1274699

Comments: 3.4 ft off mark

End of Day

Time: 1452

Northing 196377

Coordinate Datum Setup Confirmed: Yes

Easting 1274700

Comments: 1.3 ft off mark

AMEC Geomatrix, Inc., GPS Check Form

Date: 12-11-09

Project: 2009 Additional DSOA Sampling

Recorder: GSM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 0806

Northing 196378

Coordinate Datum Setup Confirmed: Y

Easting 1274701

Comments: 3.3 off mark

End of Day

Time: 1401

Northing 196376

Coordinate Datum Setup Confirmed: Y

Easting 1274700

Comments: 1.8 ft off mark

AMEC Geomatrix, Inc., GPS Check Form

Date: 12/14/09

Project: 2009 Additional DSOA Sampling

Recorder: GSM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 857

Northing 196379

Coordinate Datum Setup Confirmed: Y

Easting 1274701

Comments: 3.9 ft off mark

End of Day

Time: _____

Northing _____

Coordinate Datum Setup Confirmed: _____

Easting _____

Comments: _____

AMEC Geomatrix, Inc., GPS Check Form

Date: 12-15-09

Project: 2009 Additional DSOA Sampling

Recorder: GJM

Calculated Location of Reference Station

Coordinate Datum: WA State Plane, NAD 83

Zone: North Zone

Reference Station Name: Check Point 1

Northing 196376

Easting 1274699

Units of Measure: Survey Feet

Reference Station Description: Piling at downstream end of the South Park Marina at the end of the channel side dock.

Start of Day

Time: 755

Northing 196378

Coordinate Datum Setup Confirmed: Y

Easting 1274701

Comments: 3.3 ft off mark

End of Day

Time: 1037

Northing 196379

Coordinate Datum Setup Confirmed: Y

Easting 1274701

Comments: 3.3 ft

PORE WATER FIELD FORMS

PORE WATER COLLECTION

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
120109	GSM	PW-DUW 01	6	ft

Coordinates North	Coordinates East
195886	1275585

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft, - 8, - 13, - 18, - 23, - 28

Place Field Sample ID Label Here

no sample

PW DUW 01 0090

Field Measurements pumping started 1057

Purge Vol.

	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (500 ml)	98	C	282 mS	218
2		C		
3		C		
4		C		
5		C		

Sample Depth Relative to Mudline: Depth 2 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 800 ml

Sampling Time (military): ____

Field Comments: stop pumping at 12:30 - not enough water to sample

PORE WATER COLLECTION

Page ___ of ___

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
121109	GSN	PW-DUW01	6	ft

Coordinates North	Coordinates East
195887	1275584

Target Sampling Interval Below Mudline: - 3 ft

AMEC Proj.No. 13133.003
PW-DUW01-~~0090~~ 0100
Pore Water Collection Form
Initials: RHG Preserved HCl X
Date: 12/11/09 Time: 1200

Target Sampling Interval Below Native Contact (Circle One): - 3 ft
- 8
- 13
- 18
- 23
- 28

Field Measurements Start pumping 1129

Purge Vol.

	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (500 ml)	50	C	265 mS	143
2 (1000 ml)	55	C	266	64
3 (1700 ml)	54	C	269	45
4 (2100 ml)	57	C	268	24
5		C		

Sample Depth Relative to Mudline: Depth 3 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 2 440 ml

Sampling Time (military): 1200

Field Comments:

PORE WATER COLLECTION

Date (mm/dd/yy)	Initials	Station
11 30 09	GSM	PW-DUW 01

Confirmed Native Contact

Depth Below Mudline	Unit
6	ft

Coordinates	
North	East
195886	1275587

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft, - 8, - 13, - 18, - 23, - 28

AMEC Proj.No. 13133.003
PW-DUW01-0160
Pore Water Collection Form
Initials: RHG Preserved HCl ✓
Date: 11/30/09 Time: 1015

PW-DUW-01-0160

Field Measurements start pumping 0950

Purge Vol.

	Temp	Unit	Specific Conductance	Unit	Turbidity-NTU
1 (500 ml)	93	C	283	ms	353
2 (1000 ml)	96	C	234	ms	49
3 (1500 ml)	93	C	302	ms	19
4 (2000 ml)	94	C	299	ms	09
5		C			

Sample Depth Relative to Mudline

Depth	Unit
9	ft

Drill Rod Sections Used

5	✓
10	✓
15	✓
20	✓
25	✓
30	
35	
40	
45	

Purge Volume	Unit
2 300	ml

Sampling Time (military)
1015

Field Comments: calibration checked on electronic instruments before start of day by RG

PORE WATER COLLECTION

Date (mm/dd/yy)	Initials	Station
11 30 09	GSM	PW-DUW01

Confirmed Native Contact

Depth Below Mudline	Unit
6	ft

Coordinates	
North	East
195886	1275587

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 8 ft

- 1 3
- 1 8
- 2 3
- 2 8

AMEC Proj.No. 13133.003
PW-DUW01-0210
Pore Water Collection Form
Initials: RHG Preserved HCl X
Date: 11/30/09 Time: 1305

PW DUW 01-0210

Field Measurements start pumping 1157

Purge Vol.

	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (500 ml)	11.1	C	318 ms	43
2 (1000 ml)	11.4	C	325 ms	27
3 (1500 ml)	11.4	C	324 ms	15
4 (2000 ml)	11.2	C	322	19
5		C		

Sample Depth Relative to Mudline

Depth	Unit
14	ft

Drill Rod Sections Used

5	✓
10	✓
15	✓
20	✓
25	✓
30	✓
35	
40	
45	

Purge Volume	Unit
2340	ml

Sampling Time (military)
1305

Field Comments:

PORE WATER COLLECTION

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
113009	6SM	PW-DUW01	6	ft

Coordinates North	Coordinates East
195886	1275587

AMEC Proj.No. 13133.003
PW-DUW01-0260
Pore Water Collection Form
Initials: RHG Preserved HCl X
Date: 11/30/09 Time: 1425

PW-DUW01-0260

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft
- 8
- 13
- 18
- 23
- 28

Field Measurements start pumping 1408

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (500 ml)	110	C	365	637
2 (1000 ml)	107	C	365	192
3 (1500 ml)	107	C	365	113
4 (2500 ml)	105	C	362	104
5		C		

Sample Depth Relative to Mudline: Depth 19 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 2740 ml

Sampling Time (military): 1425

Field Comments:

PORE WATER COLLECTION

Date (mm/dd/yy)	Initials	Station
11 ~~13~~ 09	SM	PW-DUW01

30 SM 12-22-09

Confirmed Native Contact

Depth Below Mudline	Unit
6	ft

Coordinates

North	East
1958866	1275587

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft, - 8, - 1 3, - 1 8, - 2 3, - 2 8

AMEC Proj.No. 13133.003
PW-DUW01-0310
Pore Water Collection Form
Initials: RHG Preserved HCl X
Date: 11/30/09 Time: 1640

PW-DUW01-0310

Field Measurements start pumping 1524

Sample Depth Relative to Mudline

Depth	Unit
24	ft

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (500 ml)	106	C	368 ms	938
2 (1000 ml)	101	C	362	334
3 (1500 ml)	101	C	366	194
4 (2000 ml)	103	C	364	124
5		C		

Drill Rod Sections Used

5	
10	
15	
20	
25	
30	
35	
40	
45	

Purge Volume	Unit
2400	ml

Sampling Time (military)
1640

Field Comments:

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
120109	BSM	PW-DUW01	6	ft

Coordinates North	Coordinates East
195886	1275585

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft

- 8
- 13
- 18
- (23)
- 28

AMEC Proj.No. 13133.003
PW-DUW01-0360
Pore Water Collection Form
Initials: RHG Preserved HCl X
Date: 12/1/09 Time: 1020

PW DUW 01 0360

Field Measurements start pumping 0950

Purge Vol.	Temp	Unit	Specific Conductance	Unit	Turbidity-NTU
1 (500 ml)	103	C	343	mS	493
2 (1200 ml)	101	C	342	mS	68
3 (1800)	97	C	341	mS	38
4 (2500)	91	C	340		70
5		C			

Sample Depth Relative to Mudline: Depth 29 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 2800 ml

Sampling Time (military): 1020

Field Comments: meter calibrations check by RG at start of day

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
11 25 09	GSM	PW-DUW 02	6	ft

Coordinates North	Coordinates East
195846	1275615

o/c ~~195847~~ ~~[illegible]~~

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft, - 8, - 13, - 18, - 23, - 28

Place

Field Sample ID Label Here

PW DUW 02 0090

Field Measurements 1540 start pumping

Sample Depth Relative to Mudline: Depth 2 ft

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (400)	12.1	C	177 mS	73
2 (800)	11.3	C	97	21
3		C		
4		C		
5		C		

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 1200 ml

Sampling Time (military):

Field Comments: stopped purging @ 1630 because of darkness abandoned collection effort

PORE WATER COLLECTION

Page ___ of ___

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
12 11 09	GSM	PW-DUW 02	6	ft

Coordinates North	Coordinates East
195850	1275614

AMEC Proj.No. 13133.003
PW-DUW02-~~0090~~ 0100
Pore Water Collection Form
Initials: EHK Preserved HCl X
Date: 12/11/09 Time: 1045

Target Sampling Interval Below Mudline: - 3 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft, - 8, - 13, - 18, - 23, - 28

Field Measurements start sampling 1026

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (500ml)	38	C	262 ms	189
2 (1200ml)	38	C	276 ms	42
3 (1600ml)	39	C	276 ms	23
4		C		
5		C		

Sample Depth Relative to Mudline: Depth 3 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 2100 ml

Sampling Time (military): 1045

Field Comments: _____

PORE WATER COLLECTION

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
112409	GSM	PW-DUW 02	6	ft

Coordinates North	Coordinates East	
195852	1275611	attempt 1
195947	1275615	attempt 2

AMEC Proj.No. 13133.003
PW-DUW02-0160
Pore Water Collection Form
Initials: RHG Preserved HCl ___
Date: 11/24/09 Time: 1210

sample PW DUW 02-0160

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft
- 8
- 13
- 18
- 23
- 28

Field Measurements 1125 start pumping

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (400 ml)	108	C	132 ms	966
2 (1200 ml)	105	C	238 ms	380
3 (1560)	104	C	254 ms	59
4 (2000)	105	C	264 ms	34
5 (2400 ml)	103	C	252 ms	28

Sample Depth Relative to Mudline

Depth	Unit
19	ft

Drill Rod Sections Used

5	✓
10	✓
15	✓
20	✓
25	✓
30	✓
35	
40	
45	

Purge Volume	Unit	Sampling Time (military)
2700	ml	1210

Field Comments: 1042 - attempt one - hit buried object (dented tip) moved boat

PORE WATER COLLECTION

Date (mm/dd/yy)	Initials	Station
112409	GSM	PW-DUW02

Confirmed Native Contact

Depth Below Mudline	Unit
6	ft

Coordinates	
North	East
195852	1275615

195897 GSM 12-22-09

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft, - 8, - 13, - 18, - 23, - 28

AMEC Proj.No. 13133.003
PW-DUW02-0210
Pore Water Collection Form
Initials:_____ Preserved HCl__
Date: 11/24/09 Time: 1345

Sample PW DUW02-0210

Field Measurements 1305 start pumping

Sample Depth Relative to Mudline: Depth 14 ft

Purge Vol.	Temp	Unit	Specific Conductance	Unit	Turbidity-NTU
1 (450 ml)	110	C	295	mS	932
2 (600 ml)	105	C	293		87
3 (1500 ml)	108	C	296		35
4 (2000 ml)	107	C	296		21
5		C			

Drill Rod Sections Used

5	\
10	\
15	\
20	\
25	\
30	\
35	\
40	
45	

Purge Volume: 2250 ml

Sampling Time (military): 1345

Field Comments: _____

PORE WATER COLLECTION

Date (mm/dd/yy)	Initials	Station
11 24 09	GM	PW-DUW 02

Confirmed Native Contact

Depth Below Mudline	Unit
6	ft

Coordinates	
North	East

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft
- 8
- 13
- 18
- 23
- 28

Place Field Sample ID Label Here

PW PUW 02-0260

Field Measurements start pumping 1514

Purge Vol.

	Temp Unit	Specific Conductance - Unit	Turbidity-NTU
1	C		
2	C		
3	C		
4	C		
5	C		

Sample Depth Relative to Mudline

Depth	Unit
19	ft

Drill Rod Sections Used

5	✓
10	✓
15	✓
20	✓
25	✓
30	✓
35	✓
40	
45	

Purge Volume	Unit
	ml

Sampling Time (military)

Field Comments: no water - screen shield jam - reject

PORE WATER COLLECTION

Date (mm/dd/yy)	Initials	Station
112509	BSM	PW-DUW 02

Confirmed Native Contact

Depth Below Mudline	Unit
6	ft

Coordinates	
North	East
195846	1275615

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft

- 8
- 1 3
- 1 8
- 2 3
- 2 8

AMEC Proj.No. 13133.003
PW-DUW02-0260
Pore Water Collection Form
Initials: RAG Preserved HCl X
Date: 11/25/09 Time: 0956

PW DUW 020-0260

Field Measurements 946 start pumping

Sample Depth Relative to Mudline

Depth	Unit
19	ft

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (500 ml)	11.1	C	334 mS	384
2 (1000 ml)	10.6	C	174 mS	107
3 (1500 ml)	10.5	C	181 mS	29
4 (2000 ml)	10.4	C	175 mS	09
5	10.5	C	184	33

Drill Rod Sections Used

5	/
10	/
15	/
20	/
25	/
30	/
35	/
40	/
45	

Purge Volume	Unit
2800	ml

Sampling Time (military)
0956

Field Comments: Day two for this station, ~2 ft from day 1 station

PORE WATER COLLECTION

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
11 25 09	GSM	PW-DUW 02	6	ft

Coordinates North	Coordinates East
195846	1275615

AMEC Proj.No. 13133.003
PW-DUW02-0310
Pore Water Collection Form
Initials: RHG Preserved HCl ___
Date: 11/25/09 Time: 1145

PW DUW-020-0310

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft
- 8
- 13
- 18
- 23
- 28

Field Measurements 1125 start pumping

Purge Vol.	Time	Temp	Unit	Specific Conductance	Unit	Turbidity-NTU
1	500	120	C	120	ms	608
2	1000	118	C	87	ms	164
3	1500	126	C	74		56
4	2000	125	C	149		43
5	2700	117	C	147		38

Sample Depth Relative to Mudline: Depth 24 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 3 040 ml

Sampling Time (military): 1145

Field Comments: day two for this station ~ 2A from day 1

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
112509	GSM	PW-DUW02	60	ft

Coordinates North	Coordinates East
195846	1275615

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft
- 8
- 1 3
- 1 8
- 2 3
- 2 8

AMEC Proj.No. 13133.003
PW-DUW02-0360
Pore Water Collection Form
Initials: EHG Preserved HCl ✓
Date: 11/25/09 Time: 1355

PW-DUW02-0360

Field Measurements 1335 start time

Purge Vol.

	Temp	Unit	Specific Conductance	Unit	Turbidity-NTU
1 (500 ml)	117	C	63	ms	104
2 (1000 ml)	120	C	63	ms	301
3 (1500 ml)	117	C	63	ms	123
4 (2000 ml)	114	C	62	ms	103
5 (2500 ml)	113	C	62	ms	79

Sample Depth Relative to Mudline: Depth 29 ft

Drill Rod Sections Used

5	/
10	/
15	/
20	/
25	/
30	/
35	/
40	/
45	/

Purge Volume: 2 820 ml

Sampling Time (military): 1355

Field Comments:

PORE WATER COLLECTION

Page ___ of ___

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
1 2 ~~0 3~~ 0 9	GSM	PW-DUW 03	6	ft

04 GSM 1/7/10

Coordinates North	Coordinates East
195814	1275644

Target Sampling Interval Below Mudline: 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft, - 8, - 13, - 18, - 23, - 28

Place

Field Sample ID Label Here

no sample

Field Measurements start pumping 1316

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1		C		
2		C		
3		C		
4		C		
5		C		

Sample Depth Relative to Mudline

Depth	Unit
2	ft

Drill Rod Sections Used

5	
10	
15	
20	
25	
30	
35	
40	
45	

Purge Volume	Unit	Sampling Time (military)
350	ml	

Field Comments: 1423 - no water flow - abandon sampling attempt

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact: Depth Below Mudline	Unit
121109	GJM	PW-DUW 03	6	ft

Coordinates	
North	East
195814	1275643

Target Sampling Interval Below Mudline: - 3 ft

Target Sampling Interval Below Native Contact (Circle One):
- 3 ft
- 8
- 13
- 18
- 23
- 28

Place

Field Sample ID Label Here

no sample

Field Measurements start pumping 0856 / stop 0933

Purge Vol.

	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (280 ml)	55	C *	111 mS	179
2		C		
3		C		
4		C		
5		C		

Sample Depth Relative to Mudline: Depth 3 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 640 ml

Sampling Time (military):

Field Comments: Cond. & Turbidity meters calibration checked by RG at start of day

* sample partly frozen - warmed sample in hot water bath

water flow too slow abandoned

PORE WATER COLLECTION

Page ___ of ___

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
12 3 09	GSW	PW-DUW 03	6	ft

Coordinates North	Coordinates East
195813	1275643

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft, - 8, - 13, - 18, - 23, - 28

AMEC Proj.No. 13133.003
PW-DUW03-0160
Pore Water Collection Form
Initials: EHG Preserved HCl X
Date: 12/3/09 Time: 1040

PW DUW 03 -0160

Field Measurements Start pumping 916

Purge Vol.	Temp	Unit	Specific Conductance	Unit	Turbidity-NTU
1 (500 ml)	62	C	221	mS	435
2 (1000 ml)	48	C	228	mS	210
3 (1500 ml)	46	C	228	mS	81
4		C			
5		C			

Sample Depth Relative to Mudline: Depth 9 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: ___ ml

Sampling Time (military): 1040

Field Comments: meter calibration checked by RG before start of sampling

Very slow flow rate - 1½ hr purge duration

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact: Depth Below Mudline	Unit
120309	SM	PW-DUW-03	6	ft

Coordinates: North	East
195813	1275643

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft; - 8; - 13; - 18; - 23; - 28

AMEC Proj.No. 13133.003
PW-DUW03-0210
Pore Water Collection Form
Initials: EHG Preserved HCl X
Date: 12/3/09 Time: 1250

PW-DUW-03-0210

Field Measurements start pumping 1155

Purge Vol.	Temp	Unit	Specific Conductance	Unit	Turbidity-NTU
1 (500)	70	C	299	mS	248
2 (1000 ml)	75	C	302	mS	158
3 (1500 ml)	91	C	308	mS	20
4		C			
5		C			

Sample Depth Relative to Mudline: Depth 14 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 1800 ml

Sampling Time (military): 1250

Field Comments:

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
12 03 09	GSM	PW-DUW 03	5	ft

Coordinates North	Coordinates East
195813	1275643

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft, - 8, - 13, - 18, - 23, - 28

AMEC Proj.No. 13133.003
PW-DUW03-0260
Pore Water Collection Form
Initials: EHG Preserved HCl X
Date: 12/3/09 Time: 1440

PW DUW-03-0260

Field Measurements 1406 start pumping

Purge Vol.	Temp	Unit	Specific Conductance	Unit	Turbidity-NTU
1 (500 ml)	94	C	56	mS	583
2 (1200 ml)	87	C	53	mS	206
3 (1700 ml)	90	C	54	mS	10
4 (2200 ml)	77	C	54		226
5 (2800 ml)	85	C	55		91

Sample Depth Relative to Mudline: Depth 21 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 3500 ml

Sampling Time (military): 1440

Field Comments: conductivity calibration rechecked by RG

low spec cond – profiled water column surface in µS @ mudline (-7ft MLW) reading was 34 mS reading at +5ft MLW was 50 mS

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
12 03 09	65 m	PW-DUW 03	6	ft

4 CSM 12-22-09

Coordinates North	Coordinates East
195814	1275644

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft, - 8, - 13, - 18, - 23, - 28

AMEC Proj.No. 13133.003
PW-DUW03-0310
Pore Water Collection Form
Initials: RHG Preserved HCl X
Date: 12/4/09 Time: 1020

Field Measurements start time 925

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU	Sample Depth Relative to Mudline Depth	Unit
1 (500 m)	23	C	148 ms	491	24	ft
2 (1000 ml)	24	C	158	108		
3 (1500 ml)	23	C	157	43		
4 (2000 ml)	21	C	168	156		
5 (2500 ml)	30	C	174	57		

Field Measurements

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume	Unit	Sampling Time (military)
2900	ml	1020

Field Comments: GPS point for 12-2 logged as PW01 day 1 - should be PW03 day 1

Meter calibration checked by RG at beginning of day

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
120309	GSM	PW-DUW 03	6	ft

4 GSM 12-22-09

Coordinates North	Coordinates East
195814	1275644

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft
- 8
- 13
- 18
- ~~23~~
- 28

AMEC Proj.No. 13133.003
PW-DUW03-0360
Pore Water Collection Form
Initials: RHG Preserved HCl ✓
Date: 12/4/09 Time: 1230

Field Measurements start pumping 1210

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (500 ml)	51	C	214	261
2 (1200 ml)	51	C	218	1162
3 (1700 ml)	52	C	217	70
4		C		
5		C		

Sample Depth Relative to Mudline

Depth	Unit
29	ft

Drill Rod Sections Used

5	
10	
15	
20	
25	
30	
35	
40	
45	

Purge Volume	Unit
2700	ml

Sampling Time (military): 1230

Field Comments:

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact: Depth Below Mudline	Unit
120909	GSM	PW-DUW 04	2	ft

Coordinates: North	East
195798	1275659

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft, - 8, - 13, - 18, - 23, - 28

Place

Field Sample ID Label Here

no sample

Field Measurements started to attempt pumping 0900

Purge Vol. 1

Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
	C		

Sample Depth Relative to Mudline: Depth 2 ft

Field Measurements

2

Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
	C		

Field Measurements

3

Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
	C		

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Field Measurements

4

Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
	C		

Field Measurements

5

Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
	C		

Purge Volume	Unit	Sampling Time (military)
175	ml	

Field Comments: stop pumping 1030 - not enough water to sample No Samples

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact: Depth Below Mudline	Unit
12/11/09	SSM	PW-DUW 04	6	ft

Coordinates	
North	East
1957999	1275661

Target Sampling Interval Below Mudline: - 3 ft

Target Sampling Interval Below Native Contact (Circle One):
- 3 ft
- 8
- 13
- 18
- 23
- 28

Place

Field Sample ID Label Here

no sample

Field Measurements start pumping 1251 - stop 1335

Sample Depth Relative to Mudline: Depth 3 ft

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1		C		
2		C		
3		C		
4		C		
5		C		

Drill Rod Sections Used

5	
10	
15	
20	
25	
30	
35	
40	
45	

Purge Volume	Unit	Sampling Time (military)
520	ml	

Field Comments: low water flow - abandoned - 1335 hrs

PORE WATER COLLECTION

Page ___ of ___

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
12 ~~3~~ 09	65 M	PW-DUW 04	6	ft

4 GSM 12-22-09

Coordinates North	Coordinates East
195799	1275563

AMEC Proj.No. 13133.003
PW-DUW0 04- 0160
Porewater Desc Form
Initials: RHG Preserved HCl ✓
Date: 12/1/09 Time: 1615

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft, - 8, - 13, - 18, - 23, - 28

Field Measurements Start pumping 1511

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (500 ml)	74	C	68 mc	1080
2 (1000 ml)	51	C	63	110
3 (1500 ml)	47	C	63	605
4		C		
5		C		

Sample Depth Relative to Mudline: Depth 9 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume	Unit	Sampling Time (military)
1600	ml	1615

Field Comments: In this very good pumping rate. @ 1500ml pumping rate very slow <10ml/min

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact: Depth Below Mudline	Unit
12 8 09	GSM	PW-DUW04	6	ft

Coordinates	
North	East
195796	1275664

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft

- 8
- 13
- 18
- 23
- 28

AMEC Proj.No. 13133.003
PW-DUW04-0210
Pore Water Collection Form
Initials: RHG Preserved HCl X
Date: 12/8/09 Time: 1000

Field Measurements Start pumping 0926

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (500 ml)	37	C	214	241
2 (1000 ml)	41	C	222	33
3 (1500 ml)	45	C	216	18
4		C		
5		C		

Sample Depth Relative to Mudline: Depth 14 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 2000 ml

Sampling Time (military): 1010

Field Comments: meters cal checked by RG at beginning of the day

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
12 8 09	GSM	PW-DUW 04	6	ft

Coordinates North	Coordinates East
195796	1275664

AMEC Proj.No. 13133.003
PW-DUW04-0260
Pore Water Collection Form
Initials: RAG Preserved HCl X
Date: 12/8/09 Time: 1155

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft
- 8
- 13
- 18
- 23
- 28

Field Measurements 1st sampling 1123

Sample Depth Relative to Mudline: Depth 19 ft

Purge Vol.	Temp	Unit	Specific Conductance	Unit	Turbidity-NTU
1 (500 ml)	62	C	277	mS	124
2 (1000 ml)	57	C	282	mS	24
3 (1500 ml)	56	C	283	mS	15
4		C			
5		C			

Drill Rod Sections Used

5	
10	
15	
20	
25	
30	
35	
40	
45	

Purge Volume: 2100 ml

Sampling Time (military): 1155

Field Comments:

PORE WATER COLLECTION

Date (mm/dd/yy)	Initials	Station
120809	GSM	PW-DUW04

Confirmed Native Contact

Depth Below Mudline	Unit
6	ft

Coordinates	
North	East
195796	1275664

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft

- 8
- 1 3
- 1 8
- 2 3
- 2 8

AMEC Proj.No. 13133.003
PW-DUW04-0310
Pore Water Collection Form
Initials: RAK Preserved HCl X
Date: 12/8/09 Time: 1330

Field Measurements start pumping 1304

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (500 ml)	86	C	253 mS	331
2 (1400 ml)	73	C	255 mS	111
3 (2300 ml)	80	C	253 mS	42
4 (2700 ml)	69	C	255 mS	52
5		C		

Sample Depth Relative to Mudline

Depth	Unit
24	ft

Drill Rod Sections Used

5	
10	
15	
20	
25	
30	
35	
40	
45	

Purge Volume	Unit
3 420	ml

Sampling Time (military)
1330

Field Comments:

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact: Depth Below Mudline	Unit
12/8/09	SM	PW-DUW 09	6	ft

Coordinates	
North	East
195796	1275664

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft

- 8
- 13
- 18
- 23
- 28

AMEC Proj.No. 13133.003
PW-DUW04-0360
Pore Water Collection Form
Initials: RHG Preserved HCl X
Date: 12/8/09 Time: 1505

Field Measurements — start pumping 1433

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (500 ml)	13	C	227 µS	3670
2 (1200 ml)	14	C	223	473
3 (1700 ml)	12	C	224	1066
4 (2100 ml)	16	C	226	58
5		C		

Sample Depth Relative to Mudline: Depth 31 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 2500 ml

Sampling Time (military): 1505

Field Comments:

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
121009	GSM	PW-DUW 05	17	ft

Coordinates North	Coordinates East
195767	1275694

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft, - 8, - 13, - 18, - 23, - 28

Place

Field Sample ID Label Here

Field Measurements start pumping 1123

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (500 ml)	57	C	314	165
2		C		
3		C		
4		C		
5		C		

Sample Depth Relative to Mudline: Depth -2 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 900 ml

Sampling Time (military): ____

Field Comments: End pumping @ 1253 no sample

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
12/10/09	GSM	PW-DUW 05	11	ft

Coordinates North	Coordinates East
195767	1275699

Target Sampling Interval Below Mudline: - 3 ft

AMEC Proj.No. 13133.003
PW-DUW0 5 - 0100
Pore Water Collection Form
Initials: RHG Preserved HCl ✓
Date: 12/10/09 Time: 1355

Target Sampling Interval Below Native Contact (Circle One): - 3 ft
- 8
- 13
- 18
- 23
- 28

Field Measurements start pumping 1316

Purge Vol.	Temp Unit	Specific Conductance - Unit	Turbidity-NTU
1 (500 ml)	68 C	325 mS	173
2 (1000 ml)	67 C	328 mS	109
3 (1500 ml)	67 C	325	160
4	C		
5	C		

Sample Depth Relative to Mudline: Depth 3 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 840 ml

Sampling Time (military): 1355

Field Comments: pumping rate slowed after 1500ml

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
120909	GSM	PW-DUW05	11	ft

Coordinates North	Coordinates East
195765	1275695

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft, - 8, - 13, - 18, - 23, - 28

AMEC Proj.No. 13133.003
PW-DUW05-0210
Pore Water Collection Form
Initials: RHG Preserved HCl X
Date: 12/9/09 Time: 1240

Field Measurements Started pumping 1145

Purge Vol.	Temp	Unit	Specific Conductance	Unit	Turbidity-NTU
1 (500 ml)	8.0	C	60	mS	1750
2 (1000 ml)	7.8	C	63	mS	713
3 (1500 ml)	7.3	C	62	mS	927
4 (1900 ml)	6.9	C	63	mS	964
5		C			

Sample Depth Relative to Mudline: Depth 14 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 2600 ml

Sampling Time (military): 1240

Field Comments: Turbidimeter & SCT meter calibration checked

pumping rate slowed after 1500 ml

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
12 09 09	GS	PW-DUW 05	11	ft

Coordinates North	Coordinates East
195765	1275695

AMEC Proj.No. 13133.003
PW-DUW05-0260
Pore Water Collection Form
Initials: RHG Preserved HCl ✓
Date: 12/9/09 Time: 1415

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft
- 8
- 1 3
- 1 8
- 2 3
- 2 8

Field Measurements Start pumping 1340

Purge Vol.	Temp	Unit	Specific Conductance	Unit	Turbidity-NTU
1 (600 ml)	62	C	201		445
2 (1200 ml)	63	C	207		119
3 (1700)	65	C	206		45
4		C			
5		C			

Sample Depth Relative to Mudline: Depth 19 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 2400 ml

Sampling Time (military): 1450

Field Comments:

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station
120909	KK	PW-DUW05

Confirmed Native Contact

Depth Below Mudline	Unit
11	ft

Coordinates	
North	East
195765	1275695

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft

- 8
- 13
- 18
- 23
- 28

AMEC Proj.No. 13133.003
PW-DUW05-0310
Pore Water Collection Form
Initials: RAG Preserved HCl X
Date: 12/9/09 Time: 1545

Field Measurements Start pumping 1509

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 500ml	57	C	224	143
2 1000ml	52	C	225	46
3 1500ml	47	C	224	31
4 2000ml	43	C	218	35
5		C		

Sample Depth Relative to Mudline

Depth	Unit
24	ft

Drill Rod Sections Used

5	
10	
15	
20	
25	
30	
35	
40	
45	

Purge Volume	Unit
2260	ml

Sampling Time (military)
1545

Field Comments:

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
12/10/09	GSM	PW-DUW05	11	ft

Coordinates North	Coordinates East
195767	1275694

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft

- 8
- 13
- 18
- 23
- 28

AMEC Proj.No. 13133.003
PW-DUW05-0360
Pore Water Collection Form
Initials: RHG Preserved HCl X
Date: 12/10/09 Time: 1020

Field Measurements Start Pumping 0942

Sample Depth Relative to Mudline: Depth 29 ft

Purge Vol.	Temp	Unit	Specific Conductance	Unit	Turbidity-NTU
1 (500 ml)	71	C	233	ms	1300
2 (1300 ml)	67	C	246	ms	162
3 (1760)	66	C	244	ms	99
4 (2300 ml)	60	C	246	ms	62
5 (2800 ml)	51	C	244	ms	25

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 3 100 ml

Sampling Time (military): 1020

Field Comments: Turbidimeter and YSI SCT calibrations checked

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
12 01 09	GSM	PW-DUW06	6	ft

Coordinates North	Coordinates East
195886	1275585

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft, - 8, - 13, - 18, - 23, - 28

AMEC Proj.No. 13133.003
PW-DUW06-0160
Pore Water Collection Form
Initials: RHG Preserved HCl X
Date: 12/1/09 Time: 1345

PW-06-0160

Field Measurements 1304 start pumping

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 500 ml	10.6	C	314 ms	841
2 1000 ml	10.3	C	316	218
3 1500 ml	10.0	C	314	87
4 2000 ml	10.4	C	313	49
5 2500 ml	9.7	C	316	48

Sample Depth Relative to Mudline: Depth 9 ft

Drill Rod Sections Used: 5, 10, 15, 20, 25, 30, 35, 40, 45

Purge Volume: 2900 ml

Sampling Time (military): 1345

Field Comments: _____

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
12/1/09	GIN	PW-DUW06	6	ft

Coordinates North	Coordinates East
1958866	1275585

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 8 ft; - 1 3; - 1 8; - 2 3; - 2 8

AMEC Proj.No. 13133.003
PW-DUW06-0210
Pore Water Collection Form
Initials: RHG Preserved HCl X
Date: 12/1/09 Time: 1615

PW-06-0210

Field Measurements start pumping attempt 1 1428 / attempt 2 1513

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (500)	97	C	318	181
2 (1000)	93	C	317	68
3 (1500 ml)	84	C	308	33
4		C		
5		C		

Sample Depth Relative to Mudline: Depth 14 ft

Drill Rod Sections Used: 5 ✓, 10 ✓, 15 ✓, 20 ✓, 25 ✓, 30 ✓, 35, 40, 45

Purge Volume: 250 ml (attempt 1) 2) 2000 ml

Sampling Time (military): 1615

Field Comments: 1444 - poor water flow - abandon attempt 1 & redrill - no data taken for attempt 1

Flow rate dropped dramatically after 1800 ml of purge on attempt 2

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station
120209	GSM	PW-DUW06

Confirmed Native Contact

Depth Below Mudline	Unit
6	ft

Coordinates	
North	East
195886	1275586

AMEC Proj.No. 13133.003
PW-DUW06-0260
Pore Water Collection Form
Initials: RHG Preserved HCl X
Date: 12/2/09 Time: 1150

PW DUW 06 0260

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft
- 8
- 13
- 18
- 23
- 28

Field Measurements 1044 start Pumping

Sample Depth Relative to Mudline

Depth	Unit
19	ft

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 (500 ml)	80	C	341 mS	532
2 (1000 ml)	86	C	339 mS	133
3 (1500 ml)	94	C	340 mS	41
4		C		
5		C		

Drill Rod Sections Used

5	✓
10	✓
15	✓
20	✓
25	✓
30	✓
35	
40	
45	

Purge Volume	Unit
900	ml

Sampling Time (military)
1150

Field Comments: Meter calibration checked by RG at beginning of day

PORE WATER COLLECTION

Page ___ of ___

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact: Depth Below Mudline	Unit
12/2/09	GSM	PW-DUW06	6	ft

Coordinates	
North	East
1958866	1275586

Target Sampling Interval Below Mudline: - 2 ft

Target Sampling Interval Below Native Contact (Circle One): - 3 ft
- 8
- 13
- 18
- 23
- 28

AMEC Proj.No. 13133.003
PW-DUW06-0310
Pore Water Collection Form
Initials: GSM Preserved HCl X
Date: 12/2/09 Time: 1335

PW DUW 06 0310

Field Measurements start pumping 1252

Sample Depth Relative to Mudline: Depth 24 ft

Purge Vol.	Temp Unit	Specific Conductance - Unit	Turbidity-NTU
1 (600 ml)	10.2 C	368 ms	274
2 (1200 ml)	9.4 C	365 ms	502
3 (1500 ml)	8.8 C	359 ms	181
4	C		
5	C		

Drill Rod Sections Used

5	✓
10	✓
15	✓
20	✓
25	✓
30	✓
35	✓
40	
45	

Purge Volume	Unit	Sampling Time (military)
1700	ml	1335

Field Comments: rate of flow dropped the longer purge was done start ~100 ml/min end ~10 ml/min

PORE WATER COLLECTION

Page ____ of ____

Date (mm/dd/yy)	Initials	Station	Confirmed Native Contact Depth Below Mudline	Unit
120209	GSM	PW-DUW 06	6	ft

Coordinates North	Coordinates East
195886	1275586

Target Sampling Interval - 2 ft
Below Mudline:

Target Sampling Interval - 3 ft
Below Native Contact - 8
(Circle One): - 1 3
- 1 8
- 2 3
- 2 8

AMEC Proj.No. 13133.003
PW-DUW06-0360
Pore Water Collection Form
Initials: RHG Preserved HCl X
Date: 12/2/09 Time: 1530

PW DUW 06 0360

Field Measurements 1453 start pumping

Purge Vol.	Temp	Unit	Specific Conductance - Unit	Turbidity-NTU
1 500 ml	93	C	346	414
2 1000 ml	85	C	342	135
3 1500 ml	87	C	338	52
4 2000 ml	81	C	337	28
5		C		

Sample Depth Relative to Mudline

Depth	Unit
29	ft

Drill Rod Sections Used

5	X
10	X
15	X
20	X
25	X
30	X
35	X
40	X
45	

Purge Volume	Unit	Sampling Time (military)
2450	ml	1530

Field Comments: _____

amec

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(425) 921-4000

Job Number: 13133.003 Date: 11/23/09 Page 1 of 1

Location: AMEC Gilmx lab By: KAM

12:00 changed probe on YSI 85 & calibrated Conductivity successfully with 10ms calibration standard!

amec

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(425) 921-4000

Job Number: _____ Date: 11-24-09 Page _____ of _____

Location: plant 2 By: GSM

1145 calibrated cond + turb meters

amec

3500 188th Street SW, Suite 600, Lynnwood, WA 98037
(425) 921-4000

Job Number: 13133.003 Date: 11/25/09 Page ____ of ____

Location: Boeing Plant 2 By: ____

1210 Checked calibration on YSI and Oakton turbidimeter

Fieldlog AMEC.XLS

SEDIMENT SAMPLING FIELD FORMS

423

Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	NO
RHG	Separation (gaps) along length of sediment in core tube.	NO
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	
RHG N/A	VOC samples in cooler with trip blanks (2 vials per cooler)	NO N/A

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GEM Date: 11 / 3 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW 423 Time: 950

[X] Water Depth: 14.6 Tide: 7.2

[X] Duplicate core required at station? Required Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 198067 Actual N: 198066

Planned E: 1273112 Actual E: 1273108

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RMK

	Penetration:	Recovery:	Comments:
1	17.9	18.9	
2	16.3	17.6	
3	13.5	16.0	
4	13.3	15.7	very slow - bouncing
5	10.7	14.2	stopped moving again
6	7.4	11.4	
7	6.4	10.8	
8	5.8	10.5	very slow
9	5.8	10.5	refusal
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 10.4 ft

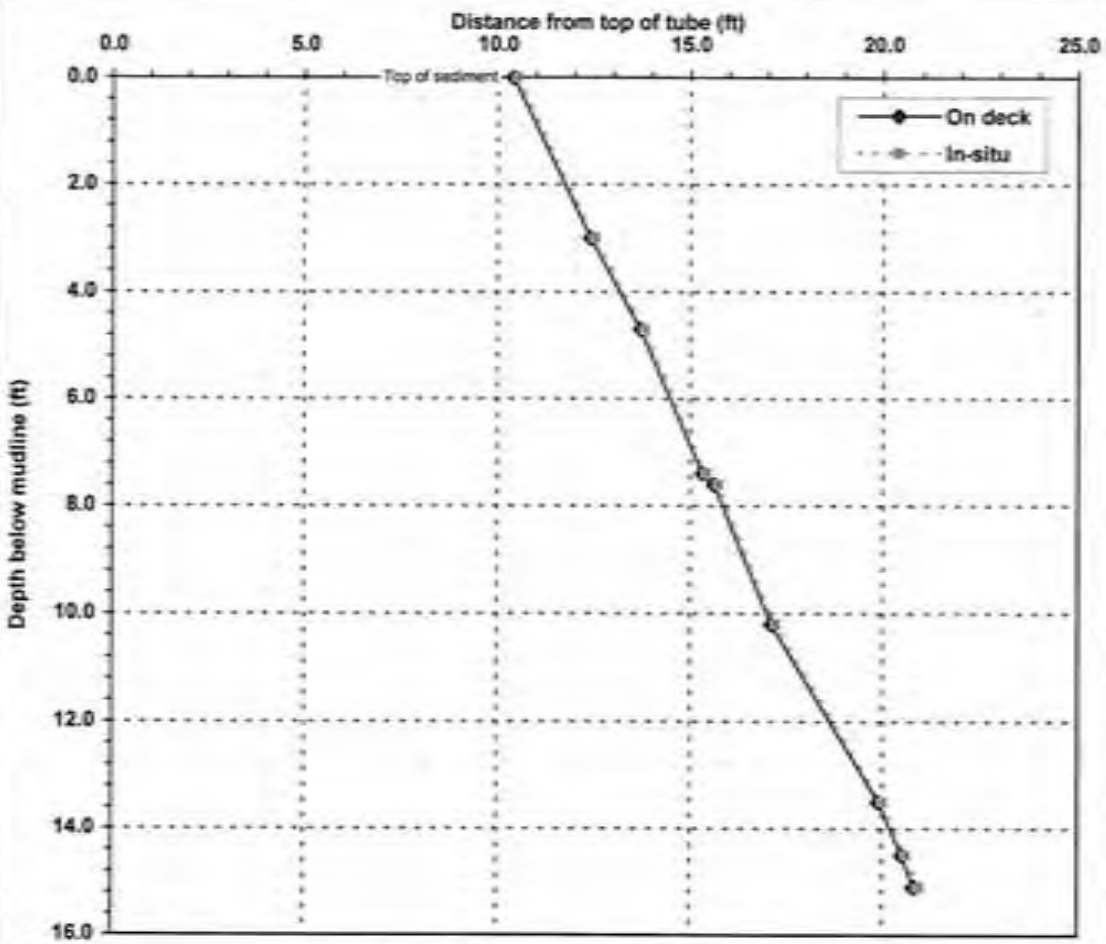
Notes: 20.9 core tube length

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW423
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		198066 — Northing
Date:	11/3/2009 — **Time:** 9:50		1273108 — Easting
Water depth:	14.6 ft — **Mudline:** -7.4 ft MLLW	(estimated using electronic tide gauge)	

Place Field ID Label Here

Weather/Comments: Partly cloudy



Penetration 15.101 ft/ On deck recovery 10.5 ft = 70% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-3	2	67%
3-4.7	1.3	76%
4.7-7.4	1.6	59%
7.4-7.6	0.3	150%
7.6-10.2	1.5	58%
10.2-13.5	2.8	85%
13.5-14.5	0.6	60%
14.5-15.1	0.3	50%
15.1-15.101	0.001	100%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	10.4
1	11.07
2	11.73
3	12.40
4	13.16
5	13.88
6	14.47
7	15.06
8	15.83
9	16.41
10	16.98
11	17.78
12	18.63
13	19.48
14	20.20
15	20.75
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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Lynnwood, WA 98037

(425) 921-4000
fax (425) 921-4040

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW423

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/3/2009	11/3/09
Start Time:	9:50	1320

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
10.4	Top of sediment
	10.4-11.1 SM blackish gray, mod dense, 75/25 sand 0 fn to med scattered pea gravel
	11.1-16.0 ML black to blackish gray 90/10 sand v fn mod soft, blocky, v homog. trace organics slight H_2S odor large wood pieces (4") @ 14.9-15.4 and 15.8 mod plast so some clay
	11.0-16.2 SP/SM loose, blackish gray v fn sand, dense.
	16.2-20.0 ML olive gray, firm 80/20, blocky, homog. blocky texture sand is v fn to fn mod plast + some clay

Distance top/bottom	Sample ID labels
11.73 / 12.4	AMEC Proj.No. 13133.003 SD-DUW423-0020 Core Description Initials: RHG Date: 11/3/09 Time: 1315
12.4 / 13.16	AMEC Proj.No. 13133.003 SD-DUW423-0030 Core Description Initials: RHG Date: 11/3/09 Time: 1315
13.16 / 13.9	AMEC Proj.No. 13133.003 SD-DUW423-0040 Core Description Initials: RHG Date: 11/3/09 Time: 1315
13.9 / 14.5	AMEC Proj.No. 13133.003 SD-DUW423-0050 Core Description Initials: RHG Date: 11/3/09 Time: 1315
14.5 / 15.1	AMEC Proj.No. 13133.003 SD-DUW423-0060 Core Description Initials: RHG Date: 11/3/09 Time: 1315
15.1 / 15.8	AMEC Proj.No. 13133.003 SD-DUW423-0070 Core Description Initials: RHG Date: 11/3/09 Time: 1315
15.8 / 16.4	AMEC Proj.No. 13133.003 SD-DUW423-0080 Core Description Initials: RHG Date: 11/3/09 Time: 1315

Continued

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW423

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/3/2009	11/3/09
Start Time:	9:50	1320

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
10.4	Top of sediment

Distance top/bottom	Sample ID labels
16.4 / 17	AMEC Proj.No. 13133.003 SD-DUW423-0090 Core Description Initials: RHG Date: 11/3/09 Time: 1315
17 / 17.8	AMEC Proj.No. 13133.003 SD-DUW423-0100 Core Description Initials: RHG Date: 11/3/09 Time: 1315
17.8 / 18.63	AMEC Proj.No. 13133.003 SD-DUW423-0110 Core Description Initials: RHG Date: 11/3/09 Time: 1315
18.63 / 19.5	AMEC Proj.No. 13133.003 SD-DUW423-0120 Core Description Initials: RHG Date: 11/3/09 Time: 1315
19.5 / 20.2	AMEC Proj.No. 13133.003 SD-DUW423-0130 Core Description Initials: RHG Date: 11/3/09 Time: 1315

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 17 2009

[x] Daily dGPS verification check completed R2

[x] Station Name: SD DUW 423 Time: 0858

[ ] Water Depth: 16.4 Tide: 9.1

[x] Duplicate core required at station? Required (Not Required)

[x] GPS range within 6 ft radius of station prior to sampler deployment

[x] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 198067 Actual N: 198070

Planned E: 1273112 Actual E: 1273117

[x] Logged GPS Verified by Shore Crew

[n/a] Maximum core penetration goal reached refusal

[n/a] No known significant loss of sediment out of bottom of core tube water leakage past plug

[x] Core tube labeled

[x] Core log and check list provided to shore crew Received By: RHG

	Penetration:	Recovery:	Comments:
1	19.5	19.6	
2	~~[illegible]~~		hard layer near surface
3	17.5	18.3	
4	14.5	17.7	
5	12.7	16.9	
6	9.1	14.9	slow
7	8.3	14.5	
8	7.7	14.1	
9	6.9	13.5	
10	6.1	12.9	
11	5.7	12.7	very slow
12	5.3	12.5	
13	5.1	12.3	
14	5.0	12.3	
15			
16			
17			

On-deck Recovery: 12.3 ft

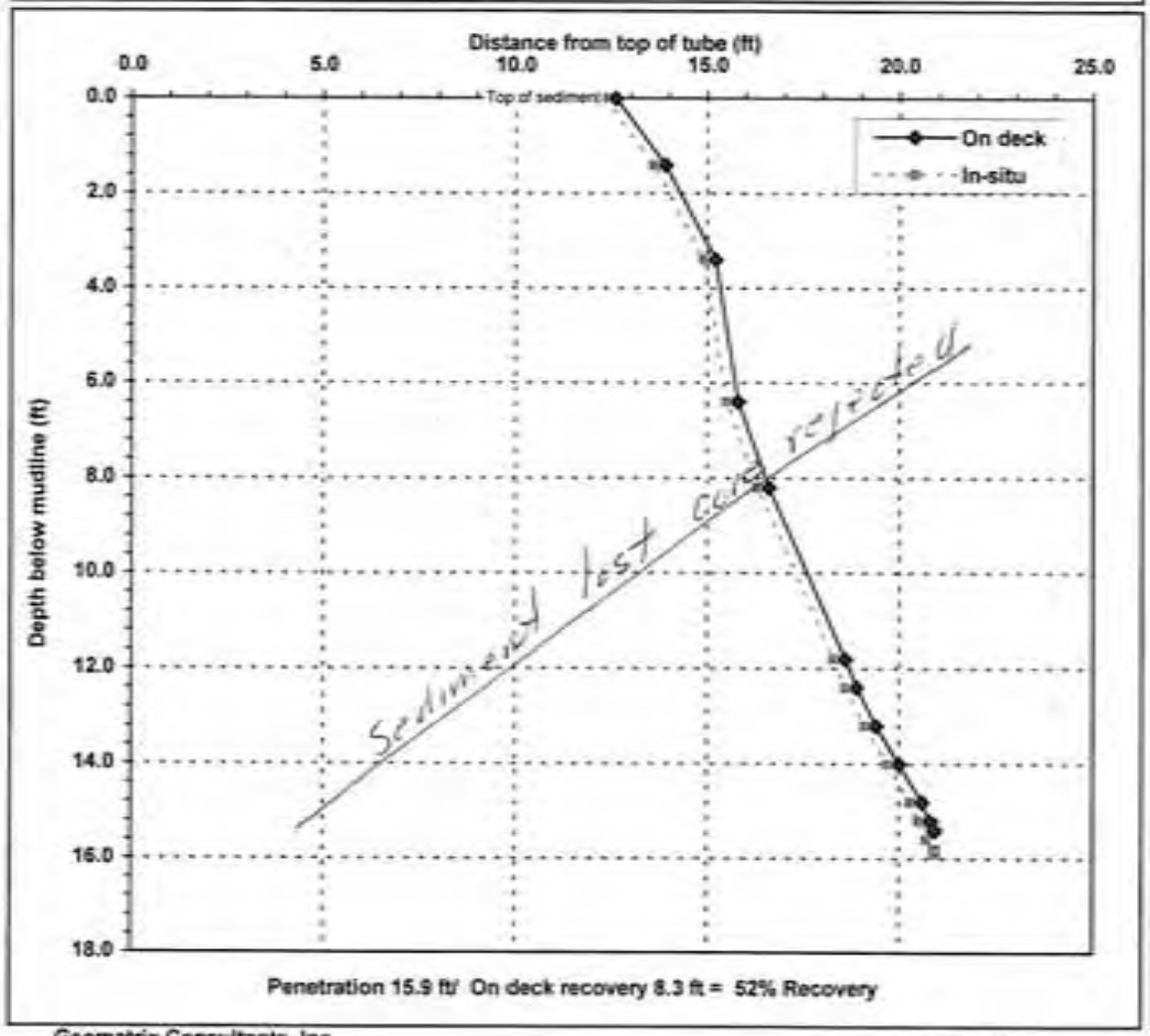
Notes: 20.9 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW423R2
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		198070 — Northing
Date:	11/17/2009	**Time:**	8:58 — 1273117 — Easting
Water depth:	16.4 ft	**Mudline:**	-7.3 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Rain



Penetration 15.9 ft/ On deck recovery 8.3 ft = 52% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-1.4	1.3	93%
1.4-3.4	1.3	65%
3.4-6.4	0.6	20%
6.4-8.2	0.8	44%
8.2-11.8	2	56%
11.8-12.4	0.3	50%
12.4-13.2	0.5	62%
13.2-14	0.6	75%
14-14.8	0.6	75%
14.8-15.2	0.2	50%
15.2-15.6	0.2	50%
15.6-15.8	0.1999	100%
15.8-15.9	1E-04	0%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	12.6
1	13.53
2	14.29
3	14.94
4	15.32
5	15.52
6	15.72
7	16.07
8	16.51
9	17.04
10	17.60
11	18.16
12	18.70
13	19.28
14	20.00
15	20.70
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

lost

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File name SD-DUW423R2
Bore Log (mudline)

4124

Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	No
RHG	Separation (gaps) along length of sediment in core tube.	No
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
N/A	Duplicate samples analyzed at 10% frequency	
[illegible]	VOC samples in cooler with trip blanks (2 vials per cooler)	N/A

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 3 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW 424 Time: 1051

[X] Water Depth: 16.6 Tide: 6.5

[X] Duplicate core required at station? Required (Not Required)

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 198056 Actual N: 198055

Planned E: 1273102 Actual E: 1273102

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RHG

	Penetration:	Recovery:	Comments:
1	17.4	18.2	
2	13.1	14.3	
3	9.9	12.0	
4	7.9	10.8	
5	6.1	9.8	
6	5.3	8.9	
7	5.1	8.8	
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 8.7 ft

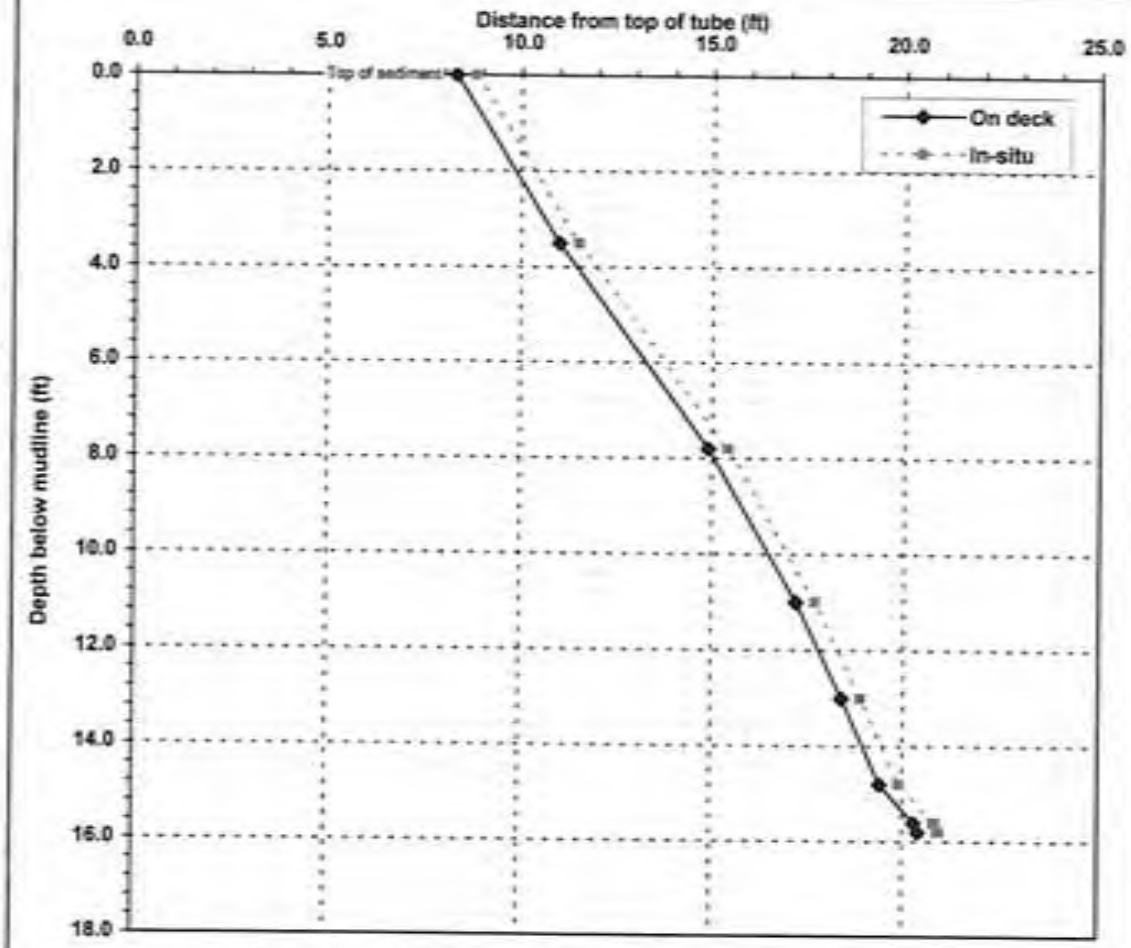
Notes: core tube length 20.9 ft

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW424
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		198055 — Northing
Date:	11/3/2009	**Time:**	10:51 — 1273102 — Easting
Water depth:	16.6 ft	**Mudline:**	-10.1 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Partly cloudy



Penetration 15.8 ft/ On deck recovery 12.6 ft = 80% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-3.5	2.7	77%
3.5-7.8	3.9	91%
7.8-11	2.3	72%
11-13	1.2	60%
13-14.8	1	56%
14.8-15.6	0.9	113%
15.6-15.8	0.1	50%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	8.3
1	9.07
2	9.84
3	10.61
4	11.45
5	12.36
6	13.27
7	14.17
8	15.04
9	15.76
10	16.48
11	17.20
12	17.80
13	18.40
14	18.96
15	19.63
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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File name SD-DUW424
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW424

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/3/2009	11/3/09
Start Time:	10:51	1220

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
8.3	Top of sediment
	8.3-9.3 SM grayish black, 70/30 sand is fn slight H_2S odor med dense
	9.3-17.1 ML black, 80/20 slight H_2S odor, mod. firm, scattered wood @ 12.2, 12.4, 16.3
	mod strong H_2S 9.8 → 11.6 then slight
	V homog. blocky texture low plast to med.
	faint sand laminations SP (gray sand is fn-med) @ 11.5 @ 12.4 @ 13.3 @ 16
	17.1-19.3 SM: blackish gray, dense 80/20, sand is fn
	wood chunk @ 17.5'
	olive gray SP sand lams @ 17.7-17.8 & 18.8-18.9
	19.3-19.7 SP: blackish gray red-white grains, sand is med-fn med. dense scattered gray ML clasts (rip up clasts?)
	19.7-20.6 ML/SM black, firm 60/40 fines/sand. sand is fn-med.

@ 14' 1" thick organic layer

Scattered organic material roots, wood & fibers, twigs throughout

Distance top/bottom	Sample ID labels
9.84 / 10.6	AMEC Proj.No. 13133.003 SD-DUW424-0020 Core Description Initials: RHG Date: 11/3/09 Time: 1215
10.6 / 11.45	AMEC Proj.No. 13133.003 SD-DUW424-0030 Core Description Initials: RHG Date: 11/3/09 Time: 1215
11.45 / 12.36	AMEC Proj.No. 13133.003 SD-DUW424-0040 Core Description Initials: RHG Date: 11/3/09 Time: 1215
12.36 / 13.3	AMEC Proj.No. 13133.003 SD-DUW424-0050 Core Description Initials: RHG Date: 11/3/09 Time: 1215
13.3 / 14.2	AMEC Proj.No. 13133.003 SD-DUW424-0060 Core Description Initials: RHG Date: 11/3/09 Time: 1215
14.2 / 15	AMEC Proj.No. 13133.003 SD-DUW424-0070 Core Description Initials: RHG Date: 11/3/09 Time: 1215
15 / 15.76	AMEC Proj.No. 13133.003 SD-DUW424-0080 Core Description Initials: RHG Date: 11/3/09 Time: 1215

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW424

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/3/2009	11/3/09
Start Time:	10:51	1220

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
8.7	Top of sediment

Distance top/bottom	Sample ID labels
15.76 / 16.5	AMEC Proj.No. 13133.003 SD-DUW424-0090 Core Description Initials: RHG Date: 11/3/09 Time: 1215
16.5 / 17.2	AMEC Proj.No. 13133.003 SD-DUW424-0100 Core Description Initials: RHG Date: 11/3/09 Time: 1215
17.2 / 17.8	AMEC Proj.No. 13133.003 SD-DUW424-0110 Core Description Initials: RHG Date: 11/3/09 Time: 1215
17.8 / 18.4	AMEC Proj.No. 13133.003 SD-DUW424-0120 Core Description Initials: RHG Date: 11/3/09 Time: 1215
18.4 / 18.96	AMEC Proj.No. 13133.003 SD-DUW424-0130 Core Description Initials: RHG Date: 11/3/09 Time: 1215
18.96 / 19.63	AMEC Proj.No. 13133.003 SD-DUW424-0140 Core Description Initials: RHG Date: 11/3/09 Time: 1215
19.63 / 20.6	AMEC Proj.No. 13133.003 SD-DUW424-0150 Core Description Initials: RHG Date: 11/3/09 Time: 1215

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: BSM Date: 11 / 17 2009

- [x] Daily dGPS verification check completed
- [x] Station Name: SD DNW 424 Time: 1102
- [x] Water Depth: 18.4 Tide: 7.)
- [x] Duplicate core required at station? Required Not Required
- [x] GPS range within 6 ft radius of station prior to sampler deployment
- [x] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 198056 Actual N: 198062

Planned E: 1273102 Actual E: 1273097

- [x] Logged GPS Verified by Shore Crew
- [x] Maximum core penetration goal reached vertical
- [x] No known significant loss of sediment out of bottom of core tube
- [x] Core tube labeled
- [x] Core log and check list provided to shore crew Received By: RHG

	Penetration:	Recovery:	Comments:
1	18.0	18.7	
2	14.1	15.5	
3	12.2	~~13.~~ 13.9	
4	9.6	11.9	
5	8.9	10.9	
6	6.0	9.6	
7	5.0	9.1	
8	4.4	8.7	slow
9	4.1	8.6	
10	4.0	8.5	very slow
11	3.7	8.4	
12	3.5	8.3	
13			
14			
15			
16			
17			

On-deck Recovery: 8.3 ft

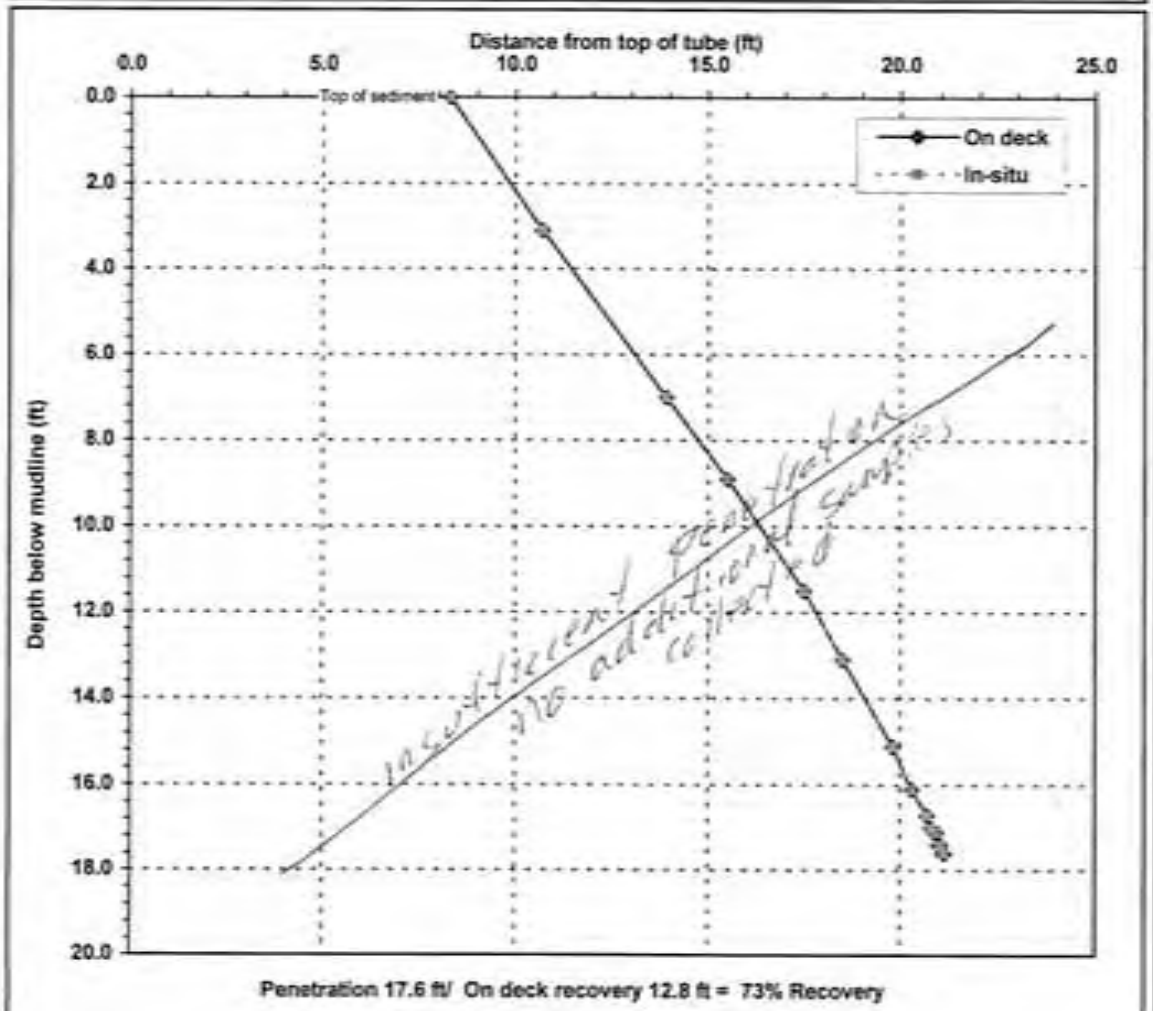
Notes: 20.1 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW424R2
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		198062 — Northing
Date:	11/17/2009	**Time:**	11:02 — 1273097 — Easting
Water depth:	18.4 ft	**Mudline:**	-11.3 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: sunny



Penetration 17.6 ft/ On deck recovery 12.8 ft = 73% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-3.1	2.4	77%
3.1-7	3.2	82%
7-8.9	1.6	84%
8.9-11.5	2	77%
11.5-13.1	1	63%
13.1-15.1	1.3	65%
15.1-16.1	0.5	50%
16.1-16.7	0.4	67%
16.7-17	0.1	33%
17-17.1	0.1	100%
17.1-17.4	0.1	33%
17.4-17.6	0.1	50%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	8.3
1	9.07
2	9.85
3	10.62
4	11.44
5	12.26
6	13.08
7	13.90
8	14.74
9	15.58
10	16.35
11	17.12
12	17.81
13	18.44
14	19.09
15	19.74
16	20.25
17	20.80
18	No sample
19	No sample
20	No sample

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	NO
RHG	Separation (gaps) along length of sediment in core tube.	NO
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	

H25

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 5 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DNW 425 Time: 0831

[X] Water Depth: 17.9 Tide: 11.1

[X] Duplicate core required at station? Required Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 197761 Actual N: 197759

Planned E: 1273449 Actual E: 1273451

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RHK

	Penetration:	Recovery:	Comments:
1	18.2	18.6	
2	14.7	15.9	
3	12.0	13.9	
4	10.8	13.2	
5	10.1	12.8	very slow
6	9.8	12.4	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 12.4 ft

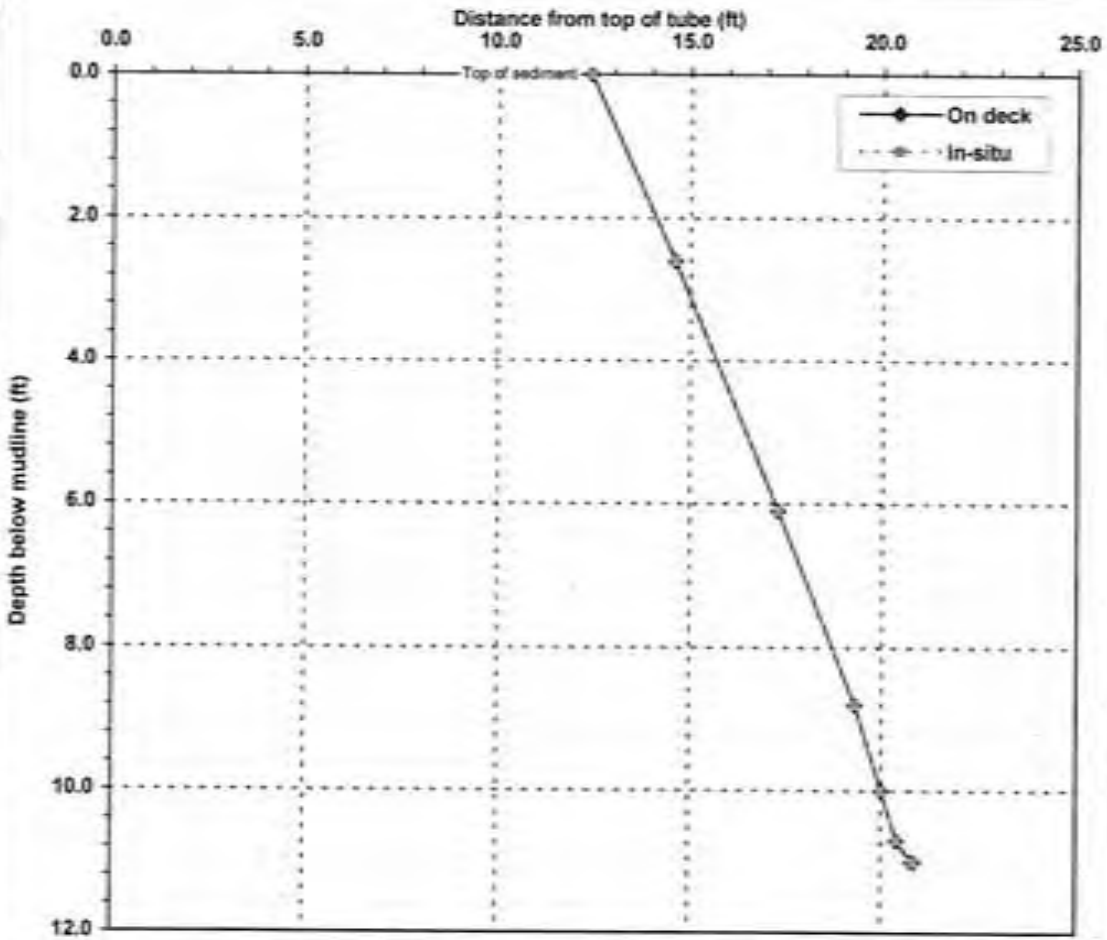
Notes: 29-8 A core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW425
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		197759 — Northing
Date:	11/5/2009 — **Time:** 8:31		1273451 — Easting
Water depth:	17.9 ft — **Mudline:** -6.8 ft MLLW	(estimated using electronic tide gauge)	

Place Field ID Label Here

Weather/Comments: Overcast



Penetration 11 ft/ On deck recovery 8.4 ft = 76% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.6	2.2	85%
2.6-6.1	2.7	77%
6.1-8.8	2	74%
8.8-10	0.7	58%
10-10.7	0.4	57%
10.7-11	0.4	133%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	12.4
1	13.25
2	14.09
3	14.91
4	15.68
5	16.45
6	17.22
7	17.97
8	18.71
9	19.42
10	20.00
11	11.00
12	No sample
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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File name SD-DUW425
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW425

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/5/2009	11/5/09
Start Time:	8:31	1045

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID labels
12.4	Top of sediment RG 12/22/09 12.4 - 13.5 SM black, med dense, 75/25 sand is fn-med	14.1 / 14.9	AMEC Proj.No. 13133.003 **SD-DUW425-0020** Core Description Initials: RHG Date: 11/5/09 Time: 1045
	13.5 - 18.6 ML black, med. plast 90/10 sand is fn. SP gray lense @ 14.1-14.2 sand is med scattered SP pockets throughout (faint, not well defined) 17.2-17.3 SP blackish gray, red white grains, lense.	14.9 / 15.7	AMEC Proj.No. 13133.003 **SD-DUW425-0030** Core Description Initials: RHG Date: 11/5/09 Time: 1045
		15.7 / 16.45	AMEC Proj.No. 13133.003 **SD-DUW425-0040** Core Description Initials: RHG Date: 11/5/09 Time: 1045
	18.6 - 20.4 SP blackish gray with red-white grains 90/10, some fines - lenses (blackish gray) @18.8, 19.2 sand is fn → coarsening ↓ to med ML dust gray @ 19.9-20.0 ~2" Ø. Gray ML lense @ 20.3-20.5	16.45 / 17.2	AMEC Proj.No. 13133.003 **SD-DUW425-0050** Core Description Initials: RHG Date: 11/5/09 Time: 1045
		17.2 / 17.97	AMEC Proj.No. 13133.003 **SD-DUW425-0060** Core Description Initials: RHG Date: 11/5/09 Time: 1045
		17.97 / 18.7	AMEC Proj.No. 13133.003 **SD-DUW425-0070** Core Description Initials: RHG Date: 11/5/09 Time: 1045
		18.7 / 19.42	AMEC Proj.No. 13133.003 **SD-DUW425-0080** Core Description Initials: RHG Date: 11/5/09 Time: 1045

Continued

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW425

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/5/2009	11/5/09
Start Time:	8:31	1045

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
12.4	Top of sediment

Distance top/bottom	Sample ID label
19.42 / 20	AMEC Proj.No. 13133.003 **SD-DUW425-0090** Core Description Initials: RHG Date: 11/5/09 Time: 1045
20 / 20.5	AMEC Proj.No. 13133.003 **SD-DUW425-0100** Core Description Initials: RHG Date: 11/5/09 Time: 1045

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Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GCM Date: 11 / 17 2009

- [x] Daily dGPS verification check completed
- [x] Station Name: SD DMU 425 Time: 1247
- [x] Water Depth: 15.2 Tide: 10.9
- [x] Duplicate core required at station? Required Not Required
- [x] GPS range within 6 ft radius of station prior to sampler deployment
- [x] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 197761 Actual N: 197765

Planned E: 1273449 Actual E: 1273445

- [x] Logged GPS Verified by Shore Crew
- [x] Maximum core penetration goal reached refusal
- [x] No known significant loss of sediment out of bottom of core tube
- [x] Core tube labeled
- [x] Core log and check list provided to shore crew Received By: [illegible]

	Penetration:	Recovery:	Comments:
1	18.3	18.9	
2	15.7	16.5	
3	13.6	15.1	
4	12.1	14.4	slow
5	11.1	13.9	
6	9.8	13.2	
7	8.8	12.6	
8	7.8	11.9	
9	7.4	11.7	very slow
10	6.6	11.0	
11	6.2	10.8	
12	5.7	10.5	
13	5.5	10.3	
14	5.5	10.2	
15			
16			
17			

On-deck Recovery: 10.2 ft

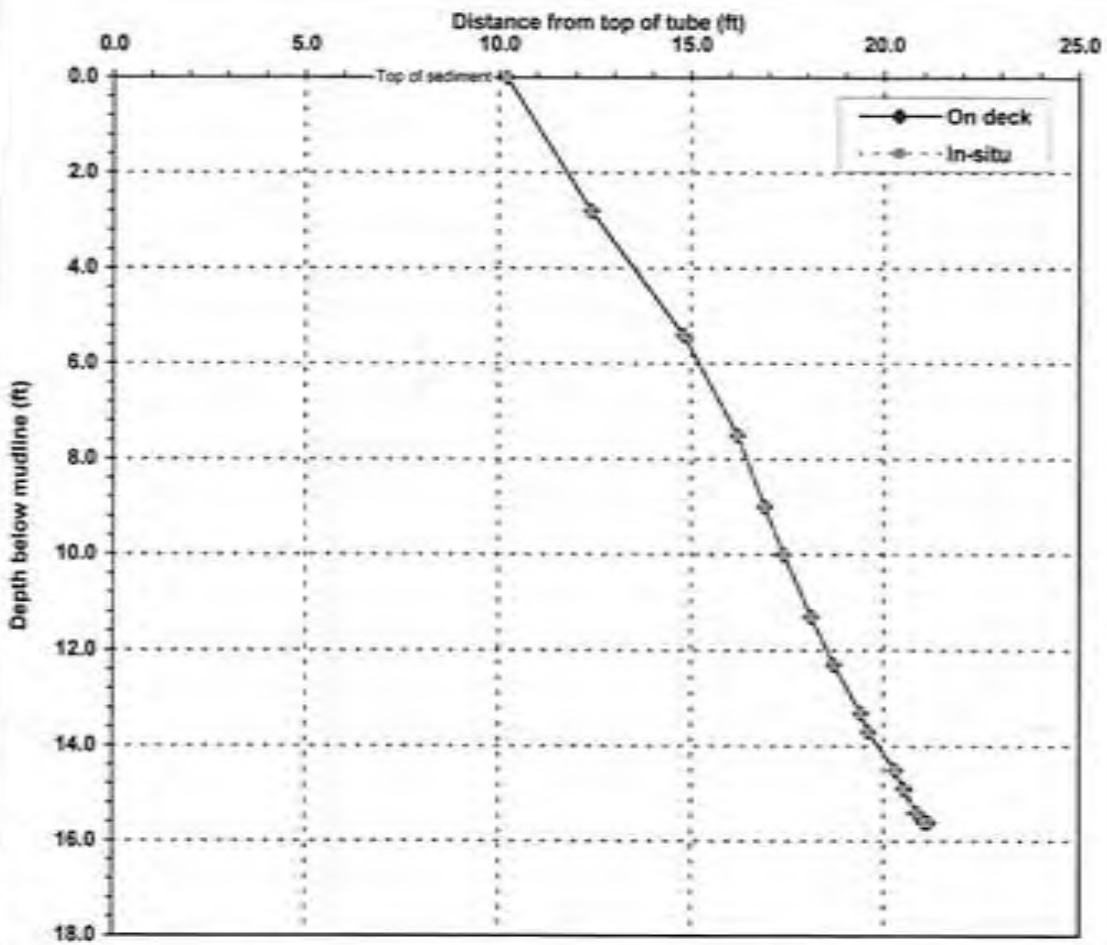
Notes: 21.1 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW425R2
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		197765 Northing
Date:	11/17/2009 **Time:** 12:47		1273445 Easting
Water depth:	15.2 ft **Mudline:** -4.3 ft MLLW	(estimated using electronic tide gauge)	

Place Field ID Label Here

Weather/Comments: Overcast



Penetration 15.6 ft/ On deck recovery 10.9 ft = 70% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.8	2.2	79%
2.8-5.4	2.4	92%
5.4-7.5	1.4	67%
7.5-9	0.7	47%
9-10	0.5	50%
10-11.3	0.7	54%
11.3-12.3	0.6	60%
12.3-13.3	0.7	70%
13.3-13.7	0.2	50%
13.7-14.5	0.7	87%
14.5-14.9	0.2	50%
14.9-15.4	0.3	60%
15.4-15.599	0.2	101%
15.599-15.6	0.1	10000%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	10.2
1	10.99
2	11.77
3	12.58
4	13.51
5	14.43
6	15.20
7	15.87
8	16.43
9	16.90
10	17.40
11	17.94
12	18.52
13	19.19
14	19.86
15	20.56
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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File name SD-DUW425R2
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW425R2

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/17/2009	11/17/09
Start Time:	12:47	1530

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
10.2	Top of sediment
	10.2-12 ML: soft, grayish blackish, non-plastic 75/25 sand is med.
	12-16.2 ML: black, mod. firm, mod plast, 90/10 sand is fn.
	SP lens @ 14.2-14.3 ↳ blackish gray, red/white grains
	SM, blackish gray, 85/15 sand fn @ 15.7-15.8 16.0-16.1
	16.2-18.1 SM blackish gray, mod dense, red/white grains, sand is med-fn. 80/20 trace wood frags
	18.1-20.3 SP blackish gray, dense, red white grains sand is med-fn 95/5 winnowed below
	20.3, no sample collected. SM loose olive gray 80/20 sand fn @ 18.5-18.7 19.8-19.9 20.2-20.3

Distance top/bottom	Sample ID labels
17.94 / 18.52	AMEC Proj.No. 13133.003 **SD-DUW425-0110** Core Description Initials: RHG Date: 11/17/09 Time: 1530
18.52 / 19.19	AMEC Proj.No. 13133.003 **SD-DUW425-0120** Core Description Initials: RHG Date: 11/17/09 Time: 1530
19.19 / 19.86	AMEC Proj.No. 13133.003 **SD-DUW425-0130** Core Description Initials: RHG Date: 11/17/09 Time: 1530
19.86 / 20.3	AMEC Proj.No. 13133.003 **SD-DUW425-0140** Core Description Initials: RHG Date: 11/17/09 Time: 1530

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4/26

Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	No
RHG	Separation (gaps) along length of sediment in core tube.	No
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	[illegible]
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	[illegible]

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 3 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DNW 426 Time: 1235

[X] Water Depth: 13.0 Tide: 7.3

[X] Duplicate core required at station? Required Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 197514 Actual N: 197513

Planned E: 1273722 Actual E: 1273723

[X] Logged GPS Verified by Shore Crew

[ ] Maximum core penetration goal reached

[ ] No known significant loss of sediment out of bottom of core tube

[ ] Core tube labeled

[ ] Core log and check list provided to shore crew Received By: _____

	Penetration:	Recovery:	Comments:
1	10.0	17.0	
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: _____ ft

Notes: 20.9 ft core tube

air compressor broke down

Coring attempt abandoned RHG

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 5 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW426 Time: 1245

[X] Water Depth: 13.6 Tide: 7.2

[X] Duplicate core required at station? Required (Not Required)

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 197514 Actual N: 197516

Planned E: 1273722 Actual E: 1273722

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RWH

	Penetration:	Recovery:	Comments:
1	~~16.5~~	~~12.7~~	
2	12.6	15.5	
3	11.4	14.6	
4	8.4	12.3	very slow
5	7.2	11.6	
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 11.7 ft

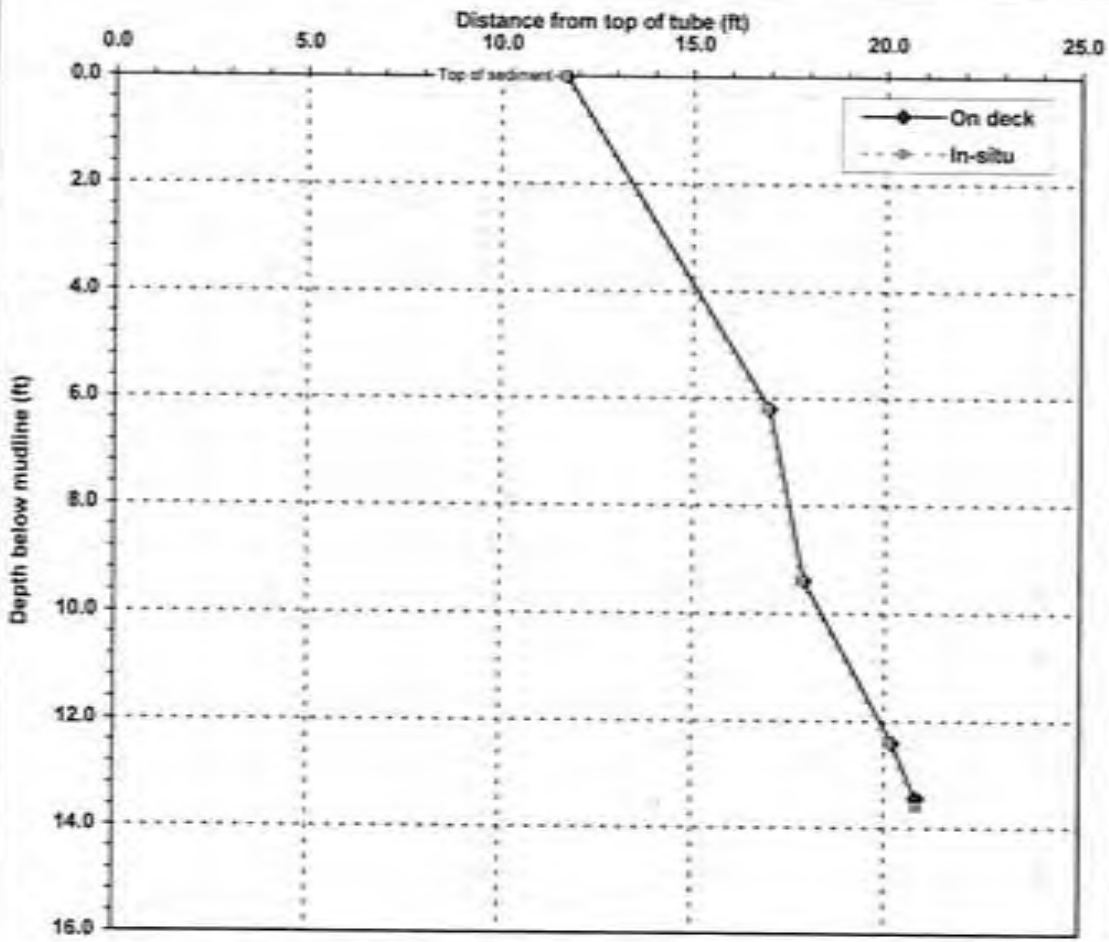
Notes:

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW426
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		197516 — Northing
Date:	11/5/2009	**Time:**	12:45 — 1273722 — Easting
Water depth:	13.6 ft	**Mudline:**	-6.4 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Rain



Penetration 13.6 ft/ On deck recovery 9.1 ft = 67% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-6.2	5.3	85%
6.2-9.4	0.9	28%
9.4-12.4	2.3	77%
12.4-13.6	0.7	58%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	11.7
1	12.55
2	13.41
3	14.26
4	15.12
5	15.97
6	16.83
7	17.23
8	17.51
9	17.79
10	18.36
11	19.13
12	19.89
13	20.55
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW426

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/5/2009	11/5/09
Start Time:	12:45	1445

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID labels
11.7	Top of sediment 11.7-12.6 SM/ML black, mod loose, 60/40 either way, sand is fine.	13.4 / 14.26	AMEC Proj.No. 13133.003 SD-DUW426-0020 Core Description Initials: RHG Date: 11/5/09 Time: 1445
@14.1 piece of wood.	12.6-19.5 ML, blackish gray, med soft → mod firm, SP loose (blackish gray, med white grains) @ sand is fine 14.6 → 15.0 another @ 15.8-16.1	14.26 / 15.12	AMEC Proj.No. 13133.003 SD-DUW426-0030 Core Description Initials: RHG Date: 11/5/09 Time: 1445
appears slightly interbedded with gray to blackish gray ML layers	17.4-17.7 & 18.1-18.3 SM olive gray 80/20, sand fn, mod dense grades to gray below 18.3	15.12 / 15.97	AMEC Proj.No. 13133.003 SD-DUW426-0040 Core Description Initials: RHG Date: 11/5/09 Time: 1445
		15.97 / 16.83	AMEC Proj.No. 13133.003 SD-DUW426-0050 Core Description Initials: RHG Date: 11/5/09 Time: 1445
slight H_2S odor to 14'	19.5-20.4 SM: gray to blackish gray, appears slightly interbedded, mod dense 80/20 with some black layering.	16.83 / 17.23	AMEC Proj.No. 13133.003 SD-DUW426-0060 Core Description Initials: RHG Date: 11/5/09 Time: 1445
		17.23 / 17.5	AMEC Proj.No. 13133.003 SD-DUW426-0070 Core Description Initials: RHG Date: 11/5/09 Time: 1445
		17.5 / 17.8	AMEC Proj.No. 13133.003 SD-DUW426-0080 Core Description Initials: RHG Date: 11/5/09 Time: 1445

Continued

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW426

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/5/2009	11/5/09
Start Time:	12:45	1445

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
11.7	Top of sediment

Distance top/bottom	Sample ID labels
17.8 / 18.36	AMEC Proj.No. 13133.003 SD-DUW426-0090 Core Description Initials: RHG Date: 11/5/09 Time: 1445
18.36 / 19.13	AMEC Proj.No. 13133.003 SD-DUW426-0100 Core Description Initials: RHG Date: 11/5/09 Time: 1445
19.13 / 19.9	AMEC Proj.No. 13133.003 SD-DUW426-0110 Core Description Initials: RHG Date: 11/5/09 Time: 1445
19.9 / 20.4	AMEC Proj.No. 13133.003 SD-DUW426-0120 Core Description Initials: RHG Date: 11/5/09 Time: 1445

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Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: 11-18-09 Date: 11 / 18 2009

[X] Daily dGPS verification check completed R3

[X] Station Name: SD DMW 426 Time: 0755

[X] Water Depth: 16.8 Tide: 11.3

[X] Duplicate core required at station? Required ~~Not Required~~

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 197514 Actual N: ~~197520~~ 197521 GSM 12-22-09

Planned E: 1273722 Actual E: 1273721

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached Refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RAG

	Penetration:	Recovery:	Comments:
1	18.8	19.3	
2	16.8	18.0	
3	14.4	16.4	
4	12.0	14.7	
5	9.6	13.0	
6	7.2	11.6	
7	5.1	10.7	
8	~~3.5~~	~~9.1~~	double checked values
9	3.0	9.9 ←	
10	2.7	9.5	very slow
11	2.5	9.6	no recovery
12			
13			
14			
15			
16			
17			

On-deck Recovery: 9.9 ft

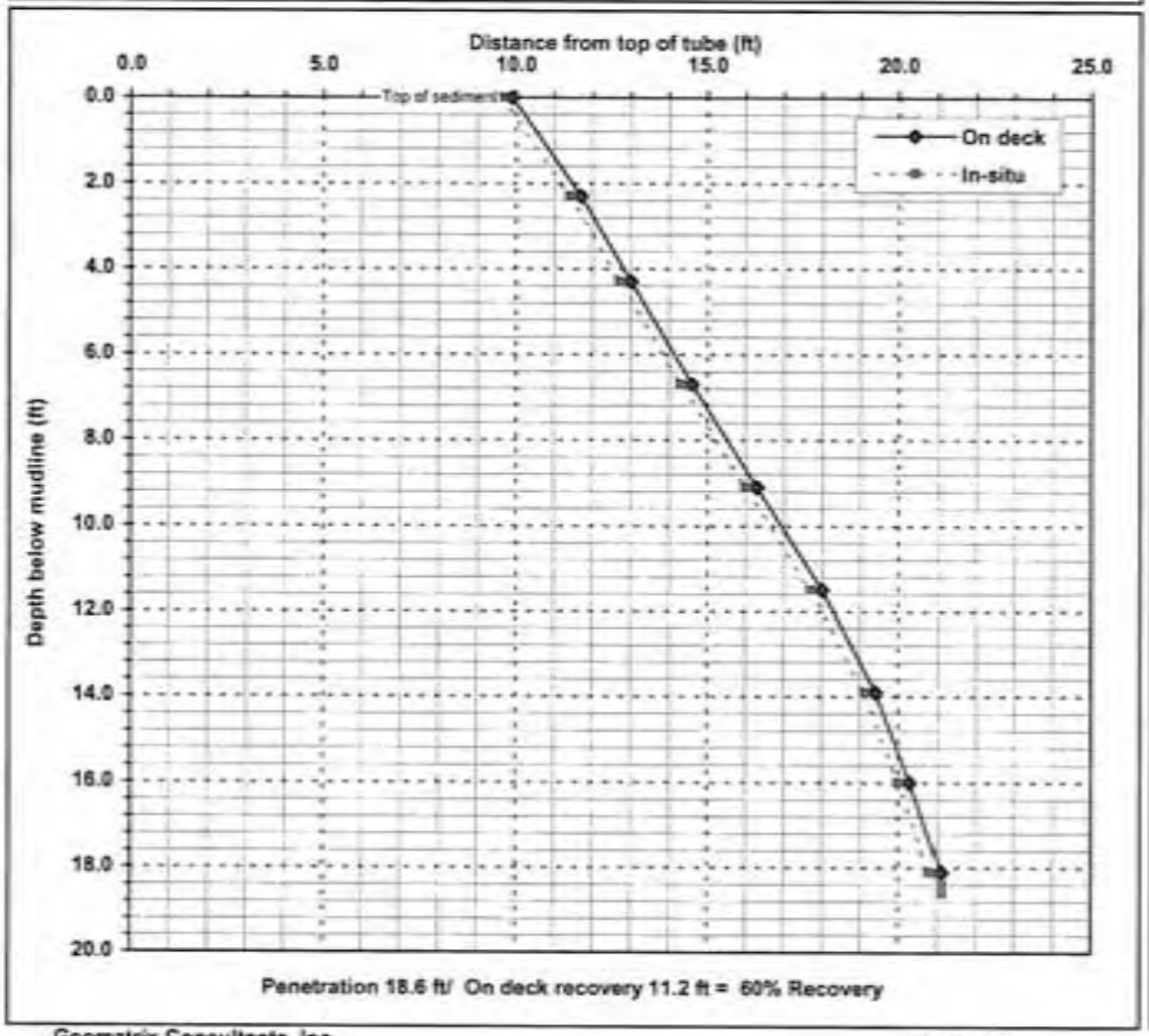
Notes: 21.1 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW426R3
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		197521 — Northing
Date:	11/18/2009 — **Time:** 7:55		1273721 — Easting
Water depth:	16.8 ft — **Mudline:** -5.5 ft MLLW		(estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Partly cloudy, cold



Penetration 18.6 ft/ On deck recovery 11.2 ft = 60% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.3	1.8	78%
2.3-4.3	1.3	65%
4.3-6.7	1.6	67%
6.7-9.1	1.7	71%
9.1-11.5	1.7	71%
11.5-13.9	1.4	58%
13.9-16	0.9	43%
16-18.1	0.8	38%
18.1-18.4	0.299	100%
18.4-18.6	0.001	1%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	9.9
1	10.68
2	11.47
3	12.16
4	12.81
5	13.47
6	14.13
7	14.81
8	15.52
9	16.23
10	16.94
11	17.65
12	18.29
13	18.88
14	19.44
15	19.87
16	20.30
17	20.68
18	21.06
19	No sample
20	No sample

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File name SD-DUW426R3.xls
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW426R3

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/18/2009	11/18/09
Start Time:	7:55	1100

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
9.9	Top of sediment
	9.9-11.4 SM: black, loose to 10.3 then med. dense. 80/20 sand is med
	large piece of wood @ 11.2
	Sl H_2S odor
	11.4-12.7 ML: black, med firm med. plast, 90/10 scattered organics twigs etc
	12.7-14.3 SP/SM blackish gray, red/white grains, med. dense, sand fn/med, 80/20 to 85/15
	14.3-16.5 ML olive gray, med firm, non to low plast 90/10 sand is fn.
	16.5-18.8 SM blackish gray, dense, red/white grains, sand is fn-med. 85/15
	thing gray ML lens @ 18.4
	18.8-19.3 SP blackish gray, dense, red/white grains, sand med. 95/5
	gray ML lens @ 19.2-19.4
	winnowed below 19.3 but same SP to 20.6

Distance top/bottom
18.9 / 19.3

Sample ID labels

AMEC Proj.No. 13133.003
SD-DUW426-0130
Core Description
Initials: RHG
Date: 11/18/09 Time: 1100

Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG		Core processed within 24 hrs of collection. YES
RHG		Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores) NO
RHG		Separation (gaps) along length of sediment in core tube. NO
RHG		Video taken. (destroy photo label after use to prevent accidental reuse.) YES
RHG		Correct number and type of sample jars filled. YES
RHG		Sample label number matches on all sample jars and core description forms and COC forms. YES
RHG		Sample jars verified against COC forms. YES
RHG		Samples kept cold until delivery to lab. YES
RHG	N/A	Duplicate samples analyzed at 10% frequency
RHG	N/A	VOC samples in cooler with trip blanks (2 vials per cooler)

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 5 2009

[x] Daily dGPS verification check completed

[x] Station Name: SD DUW 427 Time: 1335

[x] Water Depth: 18.6 Tide: ~~1335~~ 7.5

[x] Duplicate core required at station? Required Not Required

[x] GPS range within 6 ft radius of station prior to sampler deployment

[x] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 197503 Actual N: 197503

Planned E: 1273712 Actual E: 1273710

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[x] No known significant loss of sediment out of bottom of core tube

[x] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RHG

	Penetration:	Recovery:	Comments:
1	17.0	17.8	
2	14.6	15.9	
3	10.8	13.7	
4	9.3	12.6	very stiff
5	8.9	12.2	
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 12.2 ft

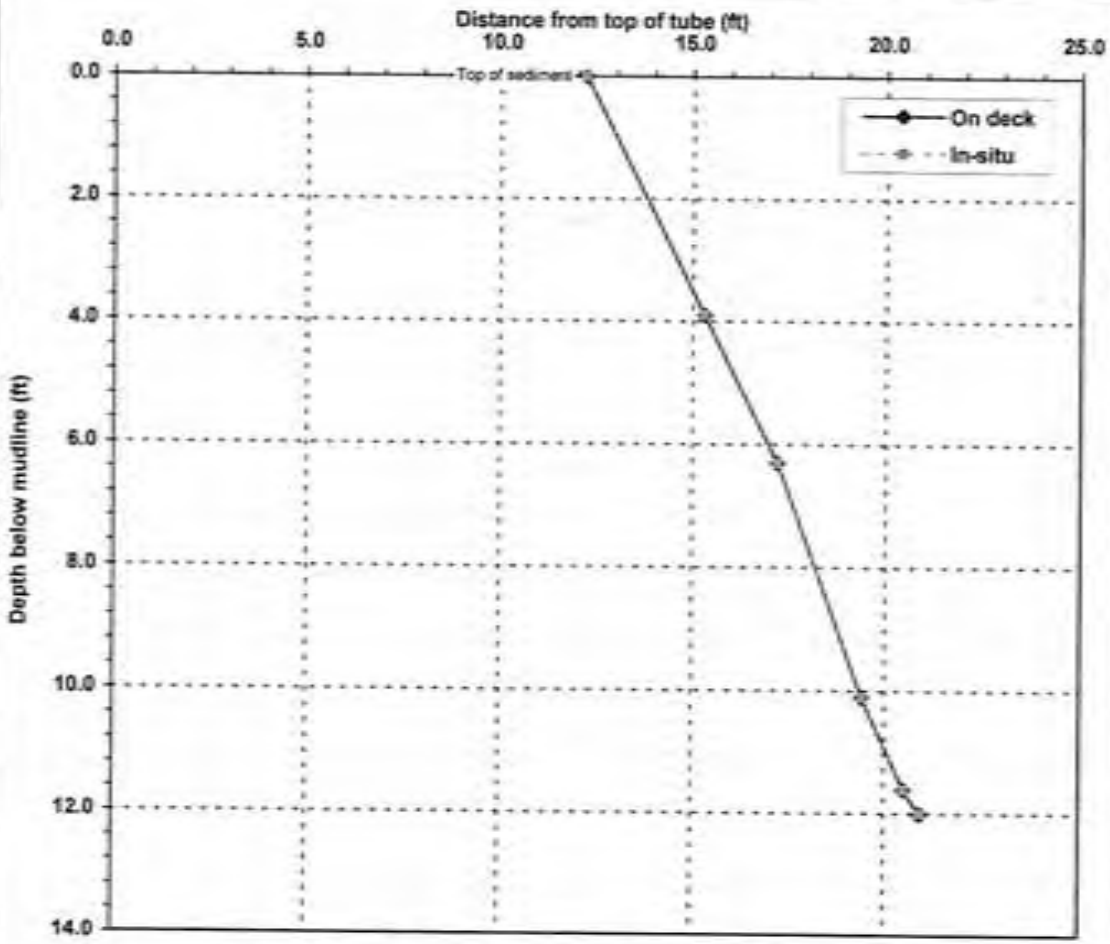
Notes: 2009

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW427
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		197503 — Northing
Date:	11/5/2009	**Time:**	13:35 — 1273710 — Easting
Water depth:	18.6 ft	**Mudline:**	-11.1 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Rain



Penetration 12 ft/ On deck recovery 8.7 ft = 73% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-3.9	3.1	79%
3.9-6.3	1.9	79%
6.3-10.1	2.2	58%
10.1-11.6	1.1	73%
11.6-12	0.4	100%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	12.2
1	12.99
2	13.79
3	14.58
4	15.38
5	16.17
6	16.96
7	17.61
8	18.18
9	18.76
10	19.34
11	20.06
12	12.00
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW427

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/5/2009	11/5/09
Start Time:	13:35	1530

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID labels
12.2	Top of sediment		
	12.2-13.9 ML - black, mod soft 70/30 sand is fn non-plastic	13.8 / 14.58	AMEC Proj.No. 13133.003 **SD-DUW427-0020** Core Description Initials: RHG Date: 11/5/09 Time: 1530
	13.9-18.2. ML: black, mod firm 85/15, sand is fn low to mod plastic	14.58 / 15.38	AMEC Proj.No. 13133.003 **SD-DUW427-0030** Core Description Initials: RHG Date: 11/5/09 Time: 1530
Faint interbeddedness to this unit	16.7-17 SP lense, blackish gray, red-white grains, sand is med, mod dense	15.38 / 16.17	AMEC Proj.No. 13133.003 **SD-DUW427-0040** Core Description Initials: RHG Date: 11/5/09 Time: 1530
trace organics	18-18.2 Same type of lense		
SP bell @ 15.9'	18.2-19.6 SM: blackish gray to gray, mod dense, 80/20 sand is fn med.	16.17 / 16.96	AMEC Proj.No. 13133.003 **SD-DUW427-0050** Core Description Initials: RHG Date: 11/5/09 Time: 1530
	SP: olive gray 100 fn sand @ 19.2 1" @ 19.5 1"	16.96 / 17.61	AMEC Proj.No. 13133.003 **SD-DUW427-0060** Core Description Initials: RHG Date: 11/5/09 Time: 1530
	19.6-20.4 SP: blackish gray red-white grains sand is fn-med	17.61 / 18.18	AMEC Proj.No. 13133.003 **SD-DUW427-0070** Core Description Initials: RHG Date: 11/5/09 Time: 1530
3" piece of wood @ 18.5'	wood piece (black) @ 19.8 thin olive gray ML lense @ 19.7. 1" thick	18.18 / 18.76	AMEC Proj.No. 13133.003 **SD-DUW427-0080** Core Description Initials: RHG Date: 11/5/09 Time: 1530

Continued

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW427

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/5/2009	11/5/09
Start Time:	13:35	1530

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
12.2	Top of sediment

Distance top/bottom	Sample ID labels
18.76 / 19.34	AMEC Proj.No. 13133.003 **SD-DUW427-0090** Core Description Initials: RHG Date: 11/5/09 Time: 1530
19.34 / 20.06	AMEC Proj.No. 13133.003 **SD-DUW427-0100** Core Description Initials: RHG Date: 11/5/09 Time: 1530
20.06 / 20.4	AMEC Proj.No. 13133.003 **SD-DUW427-0110** Core Description Initials: RHG Date: 11/5/09 Time: 1530

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Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 18 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW 427 R2 Time: 0917

[X] Water Depth: 21.7 Tide: 9.8

[X] Duplicate core required at station? Required (Not Required)

[ ] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 197507 Actual N: 197505

Planned E: 1273712 Actual E: 1273703

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal - no recovery

[Y] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RHG

	Penetration:	Recovery:	Comments:
1	17.0	18.2	
2	14.8	16.0	
3	11.5	13.9	
4	8.9	12.2	seal bite divers fin
5	8.0	11.9	failed giving for ~15 min
6	6.5	10.8	
7	5.1	10.1	
8	3.9	9.8	
9	2.6	9.3	
10	2.0	9.0	very slow
11	1.5	8.8	
12	1.1	8.8	
13			
14			
15			
16			
17			

On-deck Recovery: 8.4 ft

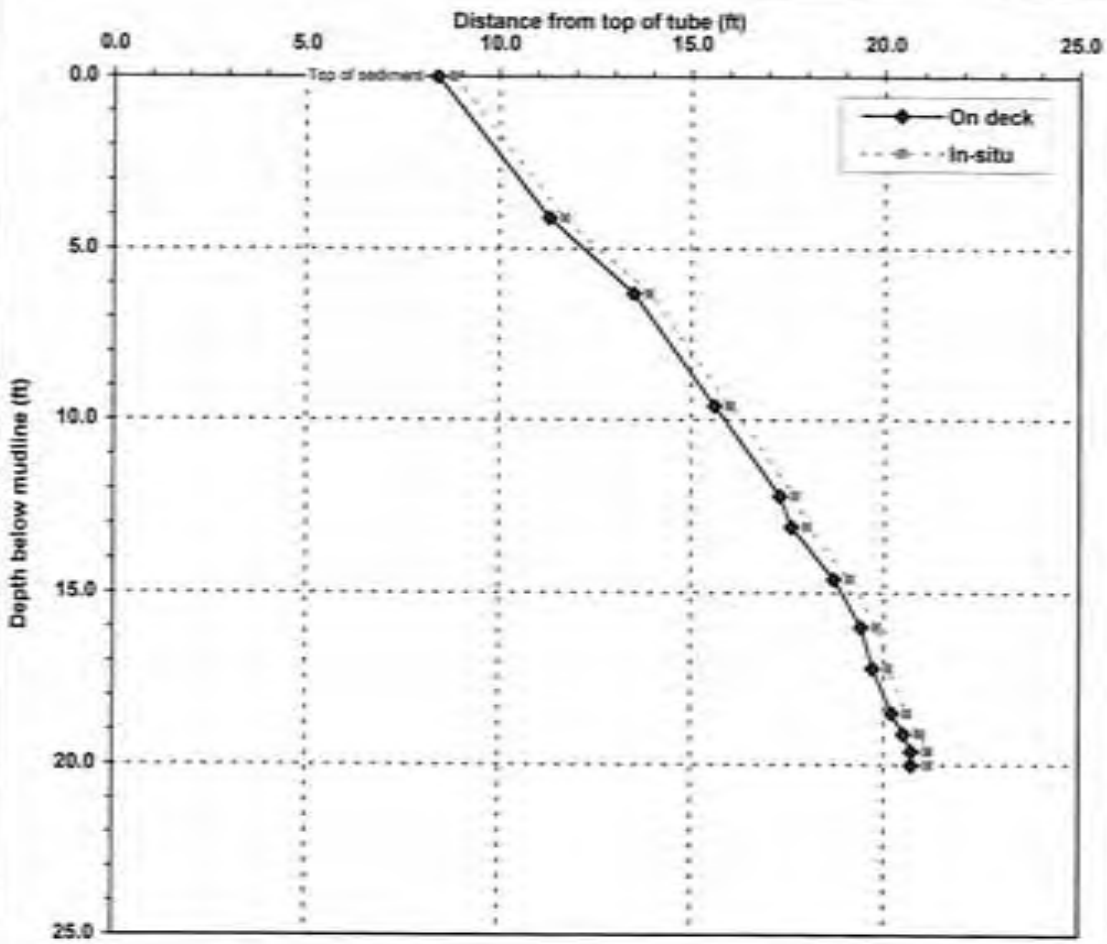
Notes: 21.1 @ core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW427R2
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		197505 — Northing
Date:	11/18/2009	**Time:**	9:17 — 1273703 — Easting
Water depth:	21.7 ft	**Mudline:**	-11.9 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Partly cloudy



Penetration 20 ft/ On deck recovery 12.7 ft = 64% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-4.1	2.9	71%
4.1-6.3	2.2	100%
6.3-9.6	2.1	64%
9.6-12.2	1.7	65%
12.2-13.1	0.3	33%
13.1-14.6	1.1	73%
14.6-16	0.7	50%
16-17.2	0.3	25%
17.2-18.5	0.5	38%
18.5-19.1	0.3	50%
19.1-19.6	0.199	40%
19.6-20	0.001	0%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	8.4
1	9.11
2	9.81
3	10.52
4	11.23
5	12.20
6	13.20
7	13.95
8	14.58
9	15.22
10	15.86
11	16.52
12	17.17
13	17.57
14	18.26
15	18.90
16	19.40
17	19.65
18	20.01
19	20.45
20	20.00

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW427R2

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/18/2009	11/18/09
Start Time:	9:17	1135

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
8.4	Top of sediment 8.4-10.6 ML grayish black, soft non to low plast, 90/10 10.6-16.2 ML. black, mod firm mod. plast, trace twigs (organics) 90/10 sand is fn in 8.1-15 13.7-14.9 SP layer blackish gray red/white grains, sand is fn-med 95/5 wood @ 14.1 15.1-17.4 olive gray SM lens, sand fn 16.2-18.4 SM. blackish gray, red/white grains, dense 80/20, sand fn-med gray ML lens @ 18.1-18.3 18.4-19.4 SP. blackish gray, dense, red/white grains sand is med. 95/5 below 19.4 → 20.6 winnowed, not sampled but same SP

Distance top/bottom	Sample ID labels
17.17 / 17.57	AMEC Proj.No. 13133.003 SD-DUW427-0120 Core Description Initials: RHG Date: 11/18/09 Time: 1135
17.57 / 18.26	AMEC Proj.No. 13133.003 SD-DUW427-0130 Core Description Initials: RHG Date: 11/18/09 Time: 1135
18.26 / 18.9	AMEC Proj.No. 13133.003 SD-DUW427-0140 Core Description Initials: RHG Date: 11/18/09 Time: 1135
18.9 / 19.4	AMEC Proj.No. 13133.003 SD-DUW427-0150 Core Description Initials: RHG Date: 11/18/09 Time: 1135

Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials	
	Core processed within 24 hrs of collection.
	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)
	Separation (gaps) along length of sediment in core tube.
	Video taken. (destroy photo label after use to prevent accidental reuse.)
	Correct number and type of sample jars filled.
	Sample label number matches on all sample jars and core description forms and COC forms.
	Sample jars verified against COC forms.
	Samples kept cold until delivery to lab.
	Duplicate samples analyzed at 10% frequency
	VOC samples in cooler with trip blanks (2 vials per cooler)

1128

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: ESM Date: 11 / 9 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DNW 428 Time: 755

[X] Water Depth: 17.7 Tide: 11.5

[X] Duplicate core required at station? Required (Not Required)

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 197229 Actual N: 197227

Planned E: 1274020 Actual E: 1274018

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RJE

	Penetration:	Recovery:	Comments:
1	19.5	19.5	
2	15.9	16.1	
3	12.2	13.3	
4	10.6	12.3	slow
5	10.2	11.8	very slow
6	9.7	11.5	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 11.5 ft

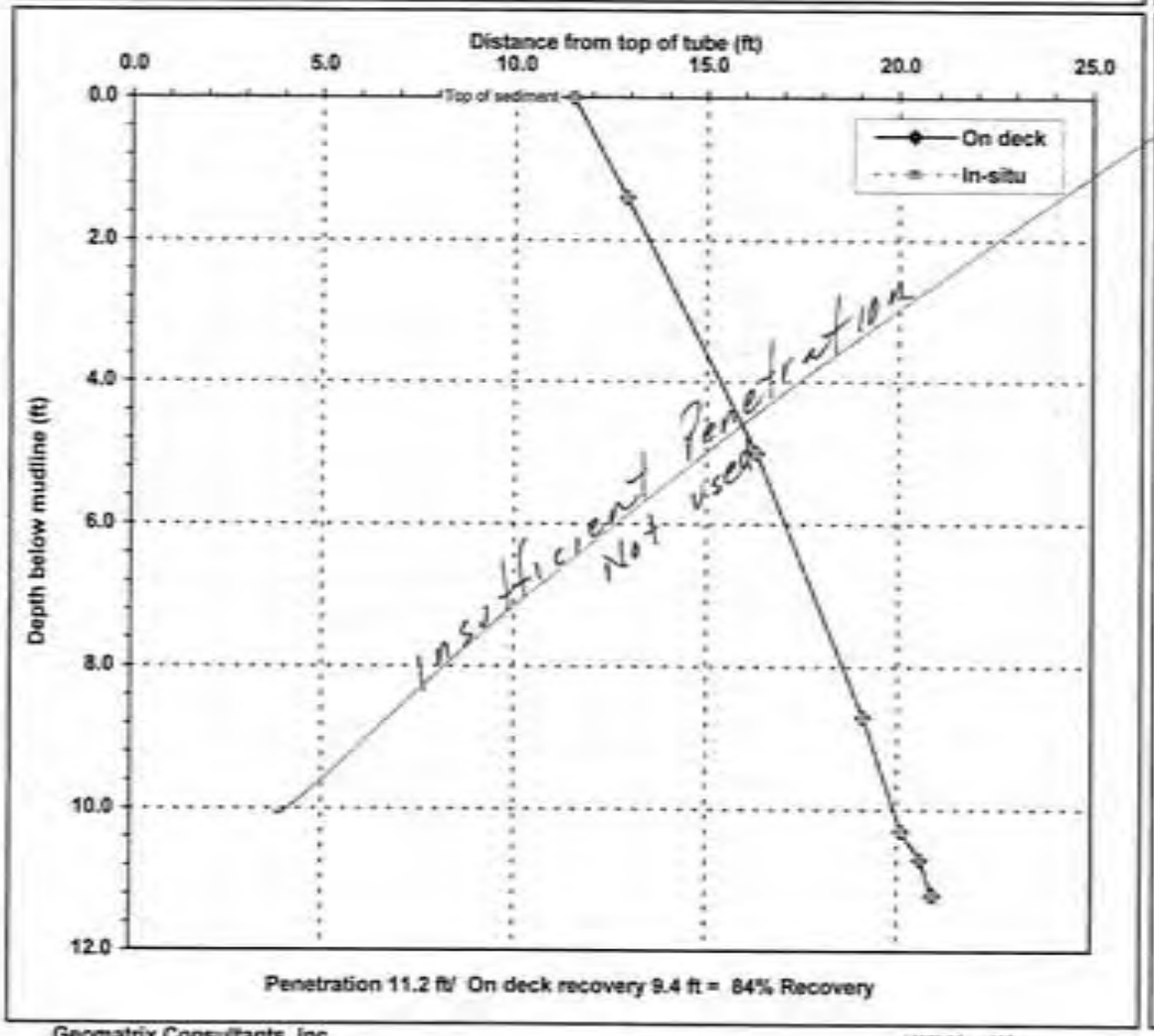
Notes: 20.9 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW428
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		197227 — Northing
Date:	11/9/2009	**Time:**	7:55 — 1274018 — Easting
Water depth:	17.7 ft	**Mudline:**	-10.0 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Rain



Penetration 11.2 ft/ On deck recovery 9.4 ft = 84% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-1.4	1.4	100%
1.4-5	3.4	94%
5-8.7	2.8	76%
8.7-10.3	1	63%
10.3-10.7	0.5	125%
10.7-11.2	0.3	60%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	11.5
1	12.50
2	13.47
3	14.41
4	15.36
5	16.30
6	17.06
7	17.81
8	18.57
9	19.29
10	19.91
11	20.78
12	No sample
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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File name SD-DUW428
Bore Log (mudline)

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11/18 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DNW 428 R2 Time: 1255

[X] Water Depth: 14.8 Tide: 7.4

[X] Duplicate core required at station? Required (Not Required)

[ ] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 197229 Actual N: 197227

Planned E: 1274020 Actual E: 1274026

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached no recovery - refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RHL

	Penetration:	Recovery:	Comments:
1	19.2	19.7	
2	16.7	17.3	
3	14.1	14.6	
4	11.9	13.1	no visable penetration - hit something?
5	11.6	12.8	13:17 hrs
6	11.0	12.8	1331
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 13.1 ft

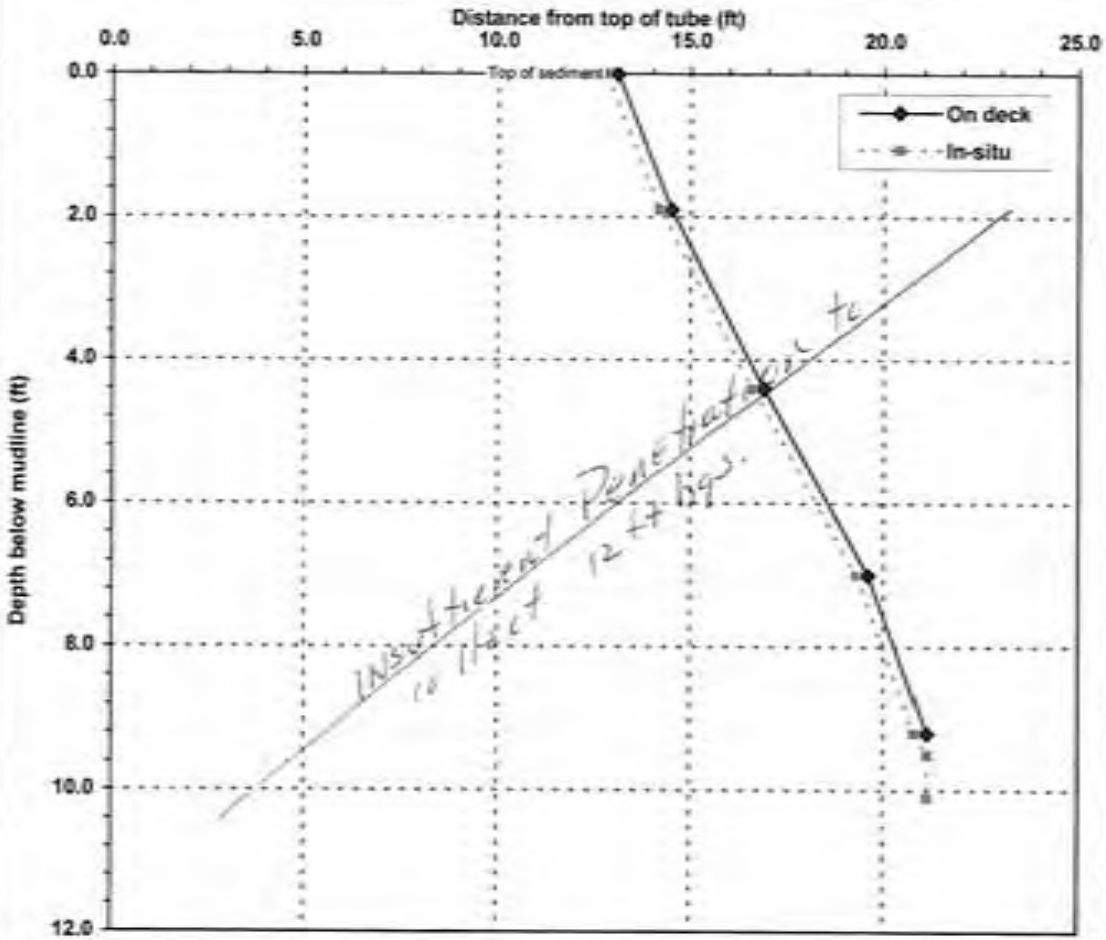
Notes: 21.1 A core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW428R2
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		197227 — Northing
Date:	11/18/2009	**Time:**	12:55 — 1274026 — Easting
Water depth:	14.8 ft	**Mudline:**	-7.4 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Overcast and breezy



Penetration 10.1 ft/ On deck recovery 8 ft = 79% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-1.9	1.4	74%
1.9-4.4	2.4	96%
4.4-7	2.7	104%
7-9.2	1.5	68%
9.2-9.5	0.299	100%
9.5-10.1	0.001	0%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	13.1
1	13.84
2	14.60
3	15.56
4	16.52
5	17.52
6	18.56
7	19.60
8	20.28
9	20.96
10	No sample
11	No sample
12	No sample
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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Sediment Freeze Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: ~~11/~~ 12/14/ 2009

Y	Daily dGPS verification check completed
X	Station Name: 5D DUW 428 Time: 918
X	Water Depth: 15.0 Tide: 7.7
X	Duplicate core required at station? Required Not Required
Y	GPS range within 6 ft radius of station prior to sampler deployment
Y	Logged GPS position within 9 ft. radius of station (boat GPS)
Planned N:	197229 Actual N: 197229
Planned E:	1274020 Actual E: 1274018
X	Logged GPS Verified by Shore Crew.
Y	Penetration: 20 ft.
X	Maximum core penetration goal reached
	Freezing Duration: _____ min.
	lbs. of CO2 used: _____ lbs.
	Target section recovered
	Core labeled
	Core log and check list provided to shore crew Received By: _____

Notes: Tu-net 12-20

Start 1120 - 1130 20# Attempt 1

1334 1339 12# Attempt 2

could not pull core out of bottom

Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials	
RHG	Core processed within 24 hrs of collection. YES
RHG	Significant loss of sediment out of bottom of core tube. No (does not apply to freeze cores)
RHG	Separation (gaps) along length of sediment in core tube. No
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.) YES
RHG	Correct number and type of sample jars filled. YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms. YES
RHG	Sample jars verified against COC forms. YES
RHG	Samples kept cold until delivery to lab. YES
NA	Duplicate samples analyzed at 10% frequency RHG
NA	VOC samples in cooler with trip blanks (2 vials per cooler) RHG

1/20

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: SSM Date: 11 / 9 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD SUW 429 Time: 0801

[X] Water Depth: 14.7 Tide: 6.0

[X] Duplicate core required at station? Required (Not Required)

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196956 Actual N: 196955

Planned E: 1274327 Actual E: 1274329

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RHA

	Penetration:	Recovery:	Comments:
1	19.9	19.7	
2	17.3	17.7	
3	14.5	15.2	
4	11.2	13.4	
5	8.4	11.9	
6	6.7	10.8	
7	6.4	10.6	very slow
8	5.8	10.3	
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 10.2 ft

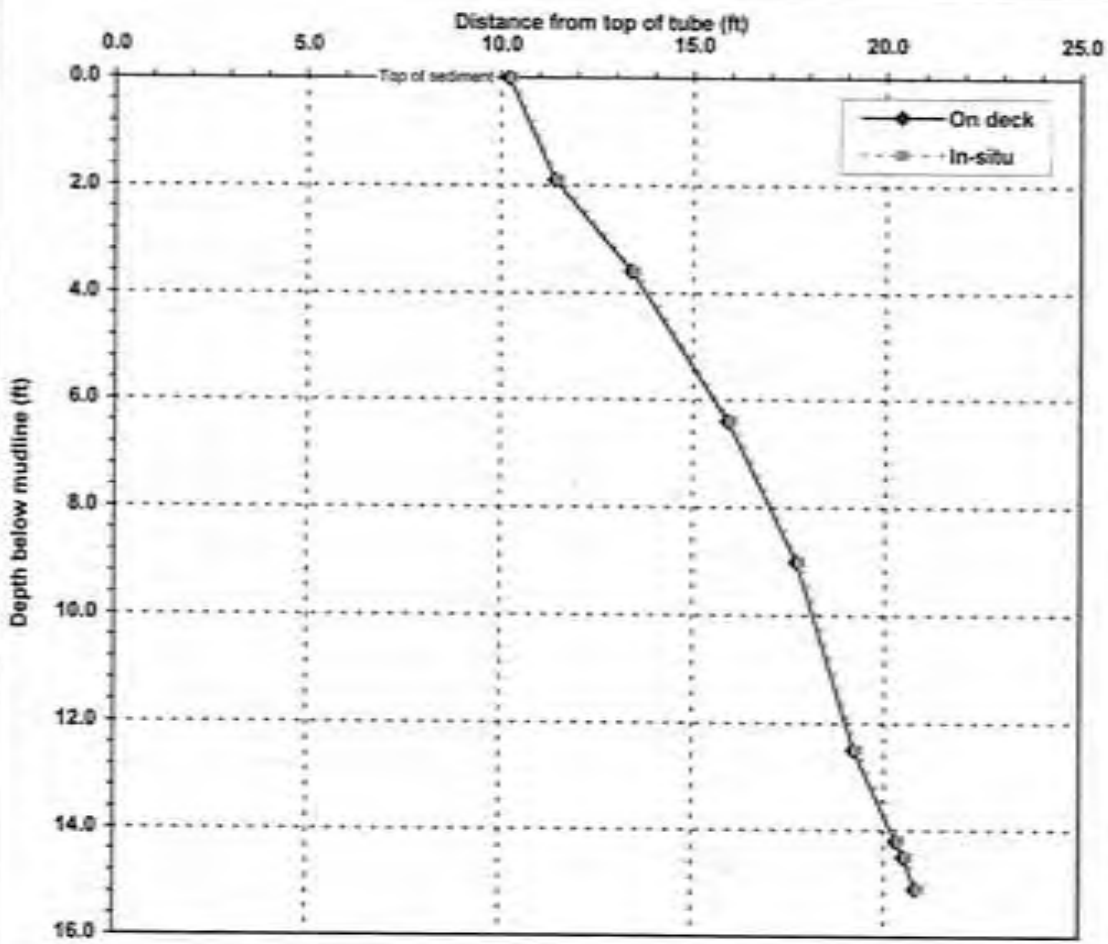
Notes: 20.9 ft core tube

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW429
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		196955 — Northing
Date:	11/10/2009	**Time:**	8:02 — 1274329 — Easting
Water depth:	14.7 ft	**Mudline:**	-8.7 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Rain



Penetration 15.1 ft/ On deck recovery 10.7 ft = 71% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-1.9	1.2	63%
1.9-3.6	2	118%
3.6-6.4	2.5	89%
6.4-9	1.8	69%
9-12.5	1.5	43%
12.5-14.2	1.1	65%
14.2-14.5	0.2	67%
14.5-15.1	0.3	50%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	10.2
1	10.83
2	11.52
3	12.69
4	13.76
5	14.65
6	15.54
7	16.32
8	17.01
9	17.70
10	18.13
11	18.56
12	18.99
13	19.52
14	20.17
15	20.75
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW429

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/10/2009	11/10/09
Start Time:	8:02	1055

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID labels
10.2	Top of sediment		
	10.2-10.7 SM black, mod loose, 80/20 sand is med couple of clams	19 / 19.52	AMEC Proj.No. 13133.003 SD-DUW429-0120 Core Description Initials: RHG Date: 11/10/09 Time: 1100
	10.7-12.2 SP blackish gray, mod dense, red/white grains, sand is med 95/5	19.52 / 20.17	AMEC Proj.No. 13133.003 SD-DUW429-0130 Core Description Initials: RHG Date: 11/10/09 Time: 1100
	12.2-16.4 ML black, mod stiff low plast 90/10 Zone of 75/25 grayish ML @ 14.3-14.6	20.17 / 20.4	AMEC Proj.No. 13133.003 SD-DUW429-0140 Core Description Initials: RHG Date: 11/10/09 Time: 1100
	SM gray lens @ 15.7-15.9 Mod. plast 15.9-16.4		
	16.4-17.5 SAA 10.7-12.2		
	17.5-19.7 SM blackish gray, mod. dense, 75/25 sand is fn-med		
	H2S SP gray fine, lens @ 19.5-19.7		
	19.7-20.4 SP blackish gray, mod dense, red white grains, 95/5 sand is med-fn		

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430

Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	Some sediment Loss
RHG	Separation (gaps) along length of sediment in core tube.	Separation @ Native contact
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	RHG
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	RHG

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GRM Date: 11 / 10 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DMW 430 Time: 1053

[X] Water Depth: 15.4 Tide: ~~HW~~ 10.9

[X] Duplicate core required at station? Required (Not Required)

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196856 Actual N: 196858

Planned E: 1274468 Actual E: 1274467

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[ ] No known significant loss of sediment out of bottom of core tube sand/water flowed out when plug removed

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RHG

	Penetration:	Recovery:	Comments:
1	18.4	18.9	
2	16.6	17.5	slow
3	13.6	15.2	
4	11.9	14.4	
5	10.9	14.1	
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 14.1 ft

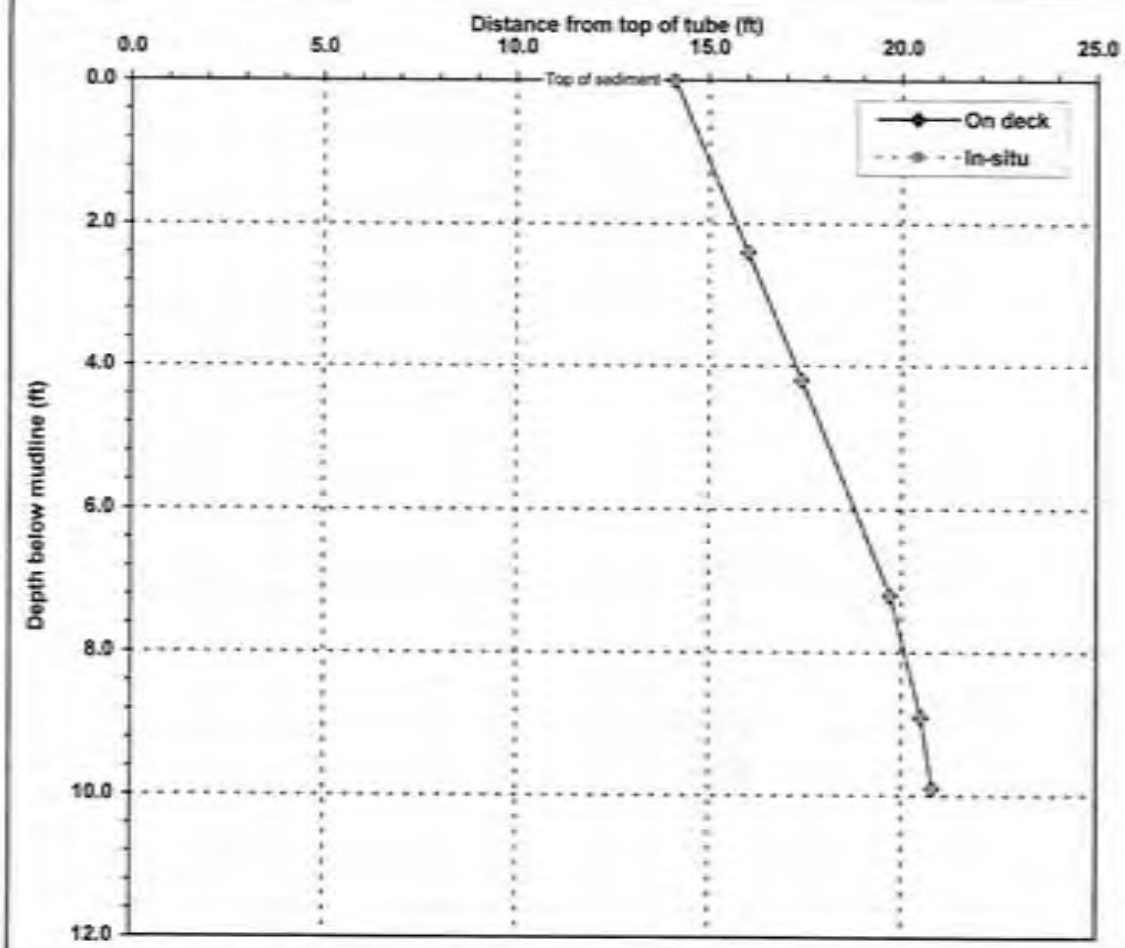
Notes: 20.8 ft core tube

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW430
Project No:	13133.003	**Position:**	NAD 83 WA N
Collected by:	GSM		196858 Northing
Date:	11/10/2009 **Time:** 10:53		1274467 Easting
Water depth:	15.4 ft **Mudline:** -4.5 ft MLLW	(estimated using electronic tide gauge)	

Place Field ID Label Here

Weather/Comments: Partly cloudy



Penetration 9.9 ft/ On deck recovery 6.7 ft = 68% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.4	1.9	79%
2.4-4.2	1.4	78%
4.2-7.2	2.3	77%
7.2-8.9	0.8	47%
8.9-9.9	0.3	30%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	14.1
1	14.89
2	15.68
3	16.47
4	17.24
5	18.01
6	18.78
7	19.55
8	20.08
9	20.53
10	No sample
11	No sample
12	No sample
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW430

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/10/2009	11/10/09
Start Time:	10:53	1300

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
14.1	Top of sediment
	14.1-14.7 SP. black, med. dense, sand is med. 90/10 to 14.3 is brown.
	14.7-16.6 ML blackish gray, mod. stiff, mod. plast, 85/15 sand is fn. wood pieces from 16.3-16.5
	16.6-19.2 SP blackish gray, red white grains, 95/5 mod. dense - dense, sand is mod. Interbeds of olive gray ML 90/10 throughout including @ 17.1, 17.6, 17.8, 18.1, 18.3, 18.4, 18.5, 18.7 19.1 (~1" or thinner)
	19.2-20.4 WINNOWED >50% but material left is SP: blackish gray, red/white grains, sand is med. 95/5

Distance top/bottom	Sample ID labels
15.68 / 16.47	AMEC Proj.No. 13133.003 SD-DUW430-0020 Core Description Initials: RHG Date: 11/10/09 Time: 1250
16.47 / 17.24	AMEC Proj.No. 13133.003 SD-DUW430-0030 Core Description Initials: RHG Date: 11/10/09 Time: 1250
17.24 / 18	AMEC Proj.No. 13133.003 SD-DUW430-0040 Core Description Initials: RHG Date: 11/10/09 Time: 1250
18 / 18.8	AMEC Proj.No. 13133.003 SD-DUW430-0050 Core Description Initials: RHG Date: 11/10/09 Time: 1250
18.8 / 19.2	AMEC Proj.No. 13133.003 SD-DUW430-0060 Core Description Initials: RHG Date: 11/10/09 Time: 1250

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSR Date: 11 / 18 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW 430 R2 Time: 1405

[X] Water Depth: 12.7 Tide: 8-2

[X] Duplicate core required at station? Required ~~Not Required~~

[ ] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196856 Actual N: 196859

Planned E: 1274468 Actual E: 1274461

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached no recovery

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RW

	Penetration:	Recovery:	Comments:
1	17.9	19.0	
2	16.0	17.4	
3	14.4	16.2	
4	11.6	14.2	
5	10.6	13.9	slow
6	9.2	13.2	
7	6.3	12.5	
8	4.4	11.8	
9	3.5	11.6	poor recovery
10	3.3	11.6	no recovery
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 11.3 ft

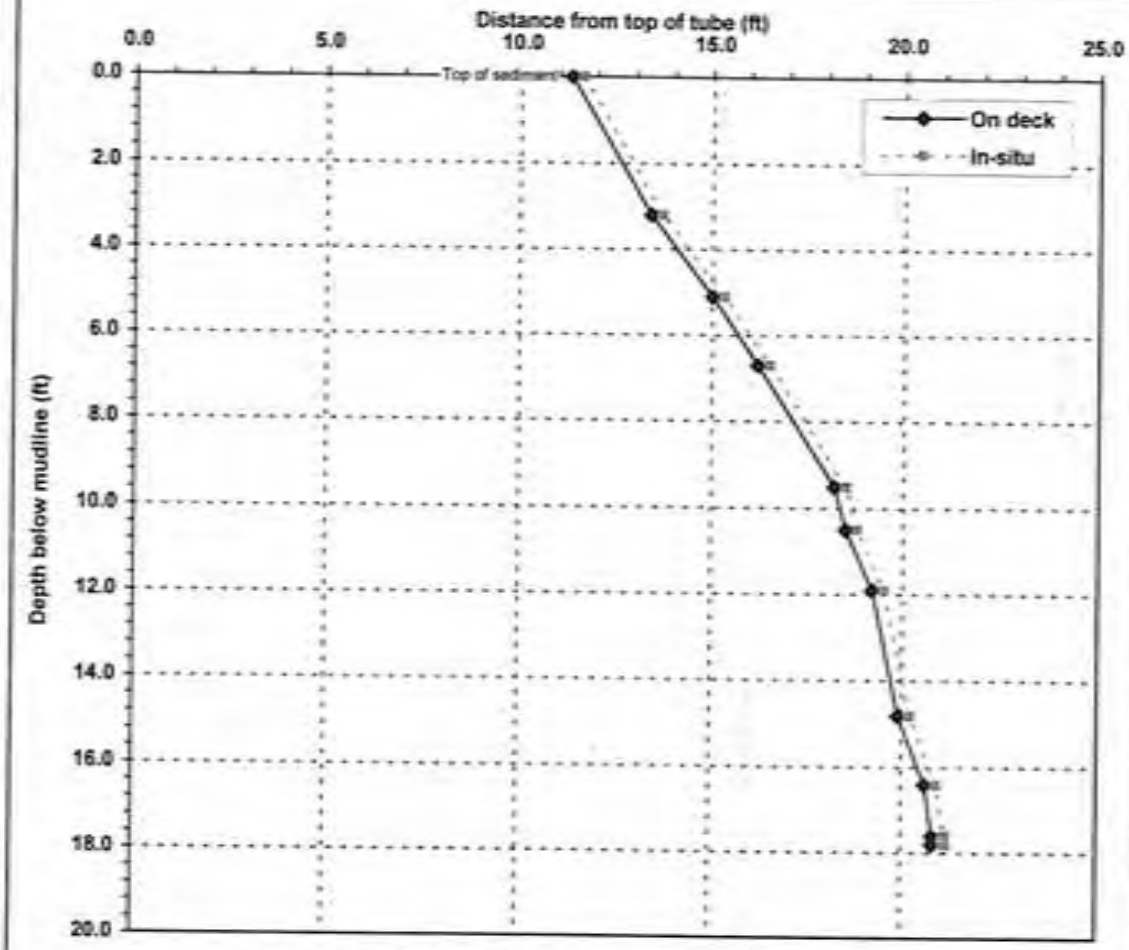
Notes: 21.1 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW430R2
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		196859 — Northing
Date:	11/18/2009	**Time:**	14:05 — 1274461 — Easting
Water depth:	12.7 ft	**Mudline:**	-4.5 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Overcast, breezy



Penetration 17.8 ft/ On deck recovery 9.8 ft = 55% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-3.2	2.1	66%
3.2-5.1	1.6	84%
5.1-6.7	1.2	75%
6.7-9.5	2	71%
9.5-10.5	0.3	30%
10.5-11.9	0.7	50%
11.9-14.8	0.7	24%
14.8-16.4	0.7	44%
16.4-17.6	0.199	17%
17.6-17.8	0.001	1%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	11.3
1	11.96
2	12.61
3	13.27
4	14.07
5	14.92
6	15.68
7	16.41
8	17.13
9	17.84
10	18.35
11	18.75
12	19.22
13	19.47
14	19.71
15	19.99
16	20.43
17	20.70
18	No sample
19	No sample
20	No sample

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File name SD-DUW430R2
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW430R2

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/18/2009	11/18/09
Start Time:	14:05	1520

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
11.3	Top of sediment
	11.3 - 13.4 SM - black, med. dense, sand is med, 80/20, trace
	13.4 - 14.1 ML - grayish black, med. firm, low plast 85/15.
	14.1 - 16.7 SP/SM. blackish gray, red/white grains, sand is fn. 85/15 ←
	ML lenses, black, @ 14.5-14.6, 16-16.1, 16.2-16.3, 15.0-15.1
	16.7 - 17.3 SP: blackish gray, red/white grains, dense, sand med-cr, 95/5
	17.3 - 19.4 SP: blackish gray, dense, red/white grains, sand is fn 95/5 ←
	gray ML lenses @ 17.8-17.9, 18.3-18.4, 18.6-18.8, 19.3-19.4
	winnowed below 19.4 → 20.6
	SP as above, not sampled.

Distance top/bottom	Sample ID labels
16.41 / 17.13	AMEC Proj.No. 13133.003 SD-DUW430-0070 Core Description Initials: RHG Date: 11/18/09 Time: 1520 ~~1250~~
17.13 / 17.84	AMEC Proj.No. 13133.003 SD-DUW430-0080 Core Description Initials: RHG Date: 11/18/09 Time: 1520 ~~1250~~
17.84 / 18.35	AMEC Proj.No. 13133.003 SD-DUW430-0090 Core Description Initials: RHG Date: 11/18/09 Time: 1520
18.35 / 18.75	AMEC Proj.No. 13133.003 SD-DUW430-0100 Core Description Initials: RHG Date: 11/18/09 Time: 1520
18.75 / 19.22	AMEC Proj.No. 13133.003 SD-DUW430-0110 Core Description Initials: RHG Date: 11/18/09 Time: 1520
19.22 / 19.4	AMEC Proj.No. 13133.003 SD-DUW430-0120 Core Description Initials: RHG Date: 11/18/09 Time: 1520

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	No Slippage
RHG	Separation (gaps) along length of sediment in core tube.	NO
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	RHG
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	RHG

H3

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 9 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DAW 431 Time: 1023

[X] Water Depth: 23.4 Tide: 11.1

[X] Duplicate core required at station? Required Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196543 Actual N: 196544

Planned E: 1274829 Actual E: 1274827

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[No] No known significant loss of sediment out of bottom of core tube leakage past piston

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RWG

	Penetration:	Recovery:	Comments:
1	~~18.6~~ 18.1	18.6	
2	14.1	15.6	
3	10.9	13.8	
4	10.5	13.5	very slow
5	10.2	13.5	
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 13.8 ft

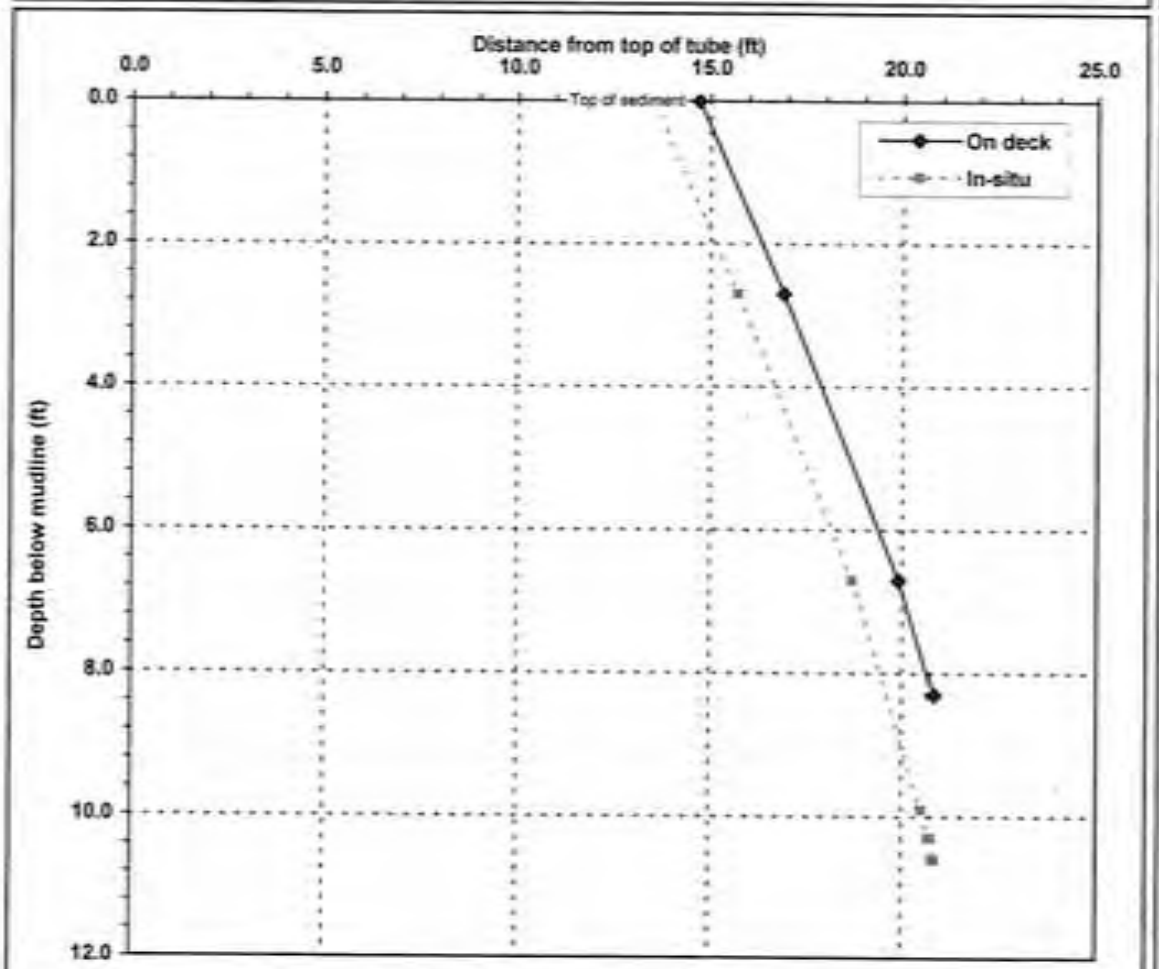
Notes: 20.8 ft total

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW431
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		196544 — Northing
Date:	11/9/2009	**Time:**	10:23 — 1274827 — Easting
Water depth:	23.4 ft	**Mudline:**	-12.3 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Rain



Penetration 10.6 ft/ On deck recovery 6.1 ft = 58% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.7	2.2	81%
2.7-6.7	3	75%
6.7-9.9	1.8	56%
9.9-10.3	0.2	50%
10.3-10.6	0.1	33%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	14.7
1	15.51
2	16.33
3	17.13
4	17.88
5	18.63
6	19.38
7	20.07
8	20.63
9	No sample
10	No sample
11	No sample
12	No sample
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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File name SD-DUW431
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW431

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/9/2009	11/9/09
Start Time:	10:23	1205

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
14.7	Top of sediment
	14.7-15.6 SM, blackish, mod. loose, 70/30 sand is med → fn,
	15.6-19.6 ML: blackish gray, mod soft to 17.9 then mod firm. 90/10 low to mod plast
	SP blackish gray, red-white grains sand is med @ 16.8-17.1
	thin gray fine SP laminations @ 18.1, 18.3, 18.4
	19.6-20.3 SP: blackish gray, mod dense, red-white grains sand is fine to 20 then med. 90/10 to 20 then 100/0 piece of wood @ 19.8-20.0

Distance top/bottom	Sample ID labels
16.33 / 17.13	AMEC Proj.No. 13133.003 SD-DUW431-0020 Core Description Initials: RHG Date: 11/9/09 Time: 1210
17.13 / 17.88	AMEC Proj.No. 13133.003 SD-DUW431-0030 Core Description Initials: RHG Date: 11/9/09 Time: 1210
17.88 / 18.63	AMEC Proj.No. 13133.003 SD-DUW431-0040 Core Description Initials: RHG Date: 11/9/09 Time: 1210
18.63 / 19.38	AMEC Proj.No. 13133.003 SD-DUW431-0050 Core Description Initials: RHG Date: 11/9/09 Time: 1210
19.38 / 20.07	AMEC Proj.No. 13133.003 SD-DUW431-0060 Core Description Initials: RHG Date: 11/9/09 Time: 1210

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DNW 431 R2 Time: 1518

[X] Water Depth: 19.2 Tide: 9.4

[X] Duplicate core required at station? Required (Not Required)

[ ] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196544 Actual N: 196551

Planned E: 1274828 Actual E: 1274835

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RHG

	Penetration:	Recovery:	Comments:
1	19.0	18.6	
2	15.0	16.4	
3	12.0	14.3	
4	11.0	13.8	slow
5	10.5	13.4	
6	10.3	13.4	no recovery
7	9.9	13.4	
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 13.0 ft

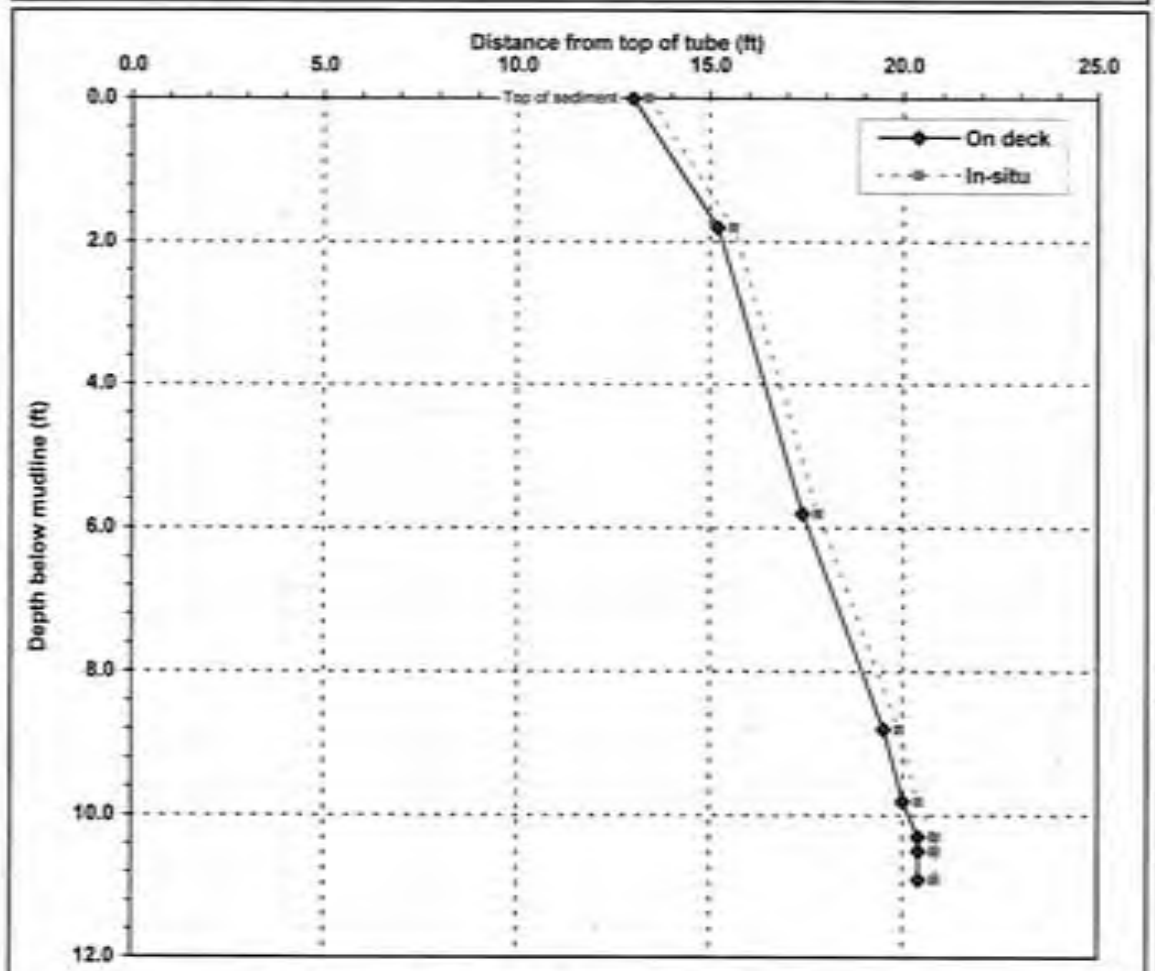
Notes: 20.8 ft

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW431R2
Project No:	13133.003	**Position:**	NAD 83 WA N
Collected by:	GSM		196551 Northing
Date:	11/18/2009 **Time:** 15:18		1274835 Easting
Water depth:	19.2 ft **Mudline:** -9.8 ft MLLW	(estimated using electronic tide gauge)	

Place Field ID Label Here

Weather/Comments: Overcast



Penetration 10.9 ft/ On deck recovery 7.8 ft = 72% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-1.8	2.2	122%
1.8-5.8	2.2	55%
5.8-8.8	2.1	70%
8.8-9.8	0.5	50%
9.8-10.3	0.399	80%
10.3-10.5	0.001	0%
10.5-10.9	0.001	0%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	13
1	14.22
2	15.31
3	15.86
4	16.41
5	16.96
6	17.54
7	18.24
8	18.94
9	19.60
10	20.16
11	No sample
12	No sample
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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File name SD-DUW431R2
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW431R2

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/18/2009	11/18/09
Start Time:	15:18	1630

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
13	Top of sediment
	13-16 SM: blackish gray, loose to 13.6 then mod dense, 80/20 sand fn-med. ML lense black @ 14.1-14.2, 14.5-14.6, 14.7-14.8, 15.4-15.5, 15.8-16.0
	16.6-18.1 SM: blackish gray, red/white grains, dense, 85/15 sand is fn. ML black lenses @ 16.2, 16.4, 17.4, 18.0
	18.1-20.4 SP: blackish gray, 95/5 dense, red/white grains, sand is med, olive gray ML lense 90/10 fn sand @ 19.7-19.9
	winnowed below 19.9 but same SP
	SI winnowed 19.2-19.4 not sampled as part of 7-8

Distance top/bottom	Sample ID labels
18.4 / 18.94	AMEC Proj.No. 13133.003 SD-DUW431-0070 Core Description Initials: RHG Date: 11/18/09 Time: 1630
18.94 / 19.60	AMEC Proj.No. 13133.003 SD-DUW431-0080 Core Description Initials: RHG Date: 11/18/09 Time: 1630
19.6 / 19.9	AMEC Proj.No. 13133.003 SD-DUW431-0090 Core Description Initials: RHG Date: 11/18/09 Time: 1630

Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	No
RHG	Separation (gaps) along length of sediment in core tube.	No
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	RHG
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	RHG

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 9 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD Dum 432 Time: 1228

[Y] Water Depth: 23.5 Tide: 10.6

[Y] Duplicate core required at station? Required Not Required

[Y] GPS range within 6 ft radius of station prior to sampler deployment

[Y] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 195457 Actual N: 195459

Planned E: 1274926 Actual E: 1274925

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal - no additional recovery

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RG

	Penetration:	Recovery:	Comments:
1	18.0	19.0	
2	14.0	15.3	
3	9.4	11.9	
4	7.5	10.8	
5	5.4	9.6	
6	4.2	8.8	slow
7	3.5	8.9	
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 8.8 ft

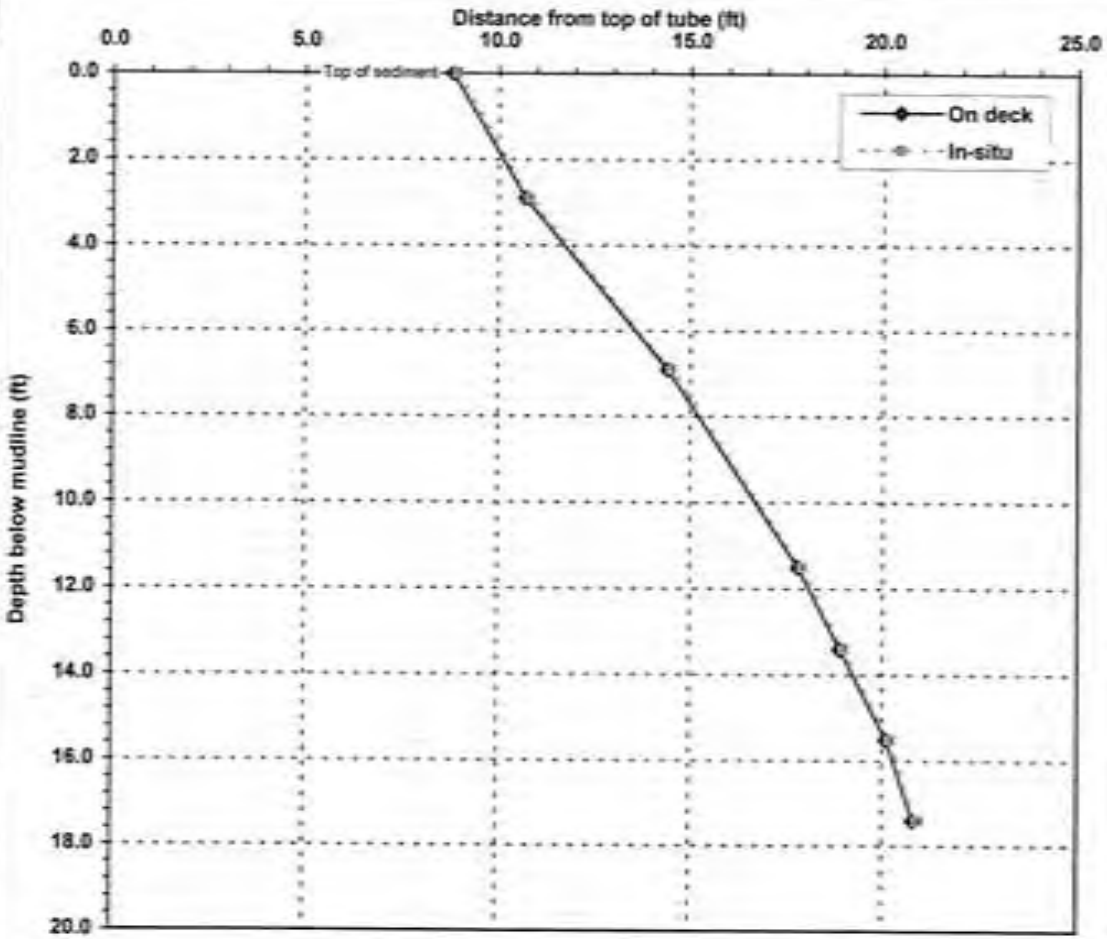
Notes: 20.9 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW432
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		196459 — Northing
Date:	11/9/2009	**Time:**	12:28 — 1274925 — Easting
Water depth:	23.5 ft	**Mudline:**	-12.9 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Rain



Penetration 17.4 ft/ On deck recovery 12.1 ft = 70% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.9	1.9	66%
2.9-6.9	3.7	93%
6.9-11.5	3.4	74%
11.5-13.4	1.1	58%
13.4-15.5	1.2	57%
15.5-17.4	0.7	37%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	8.8
1	9.46
2	10.11
3	10.79
4	11.72
5	12.64
6	13.57
7	14.47
8	15.21
9	15.95
10	16.69
11	17.43
12	18.09
13	18.67
14	19.24
15	19.81
16	20.28
17	20.65
18	No sample
19	No sample
20	No sample

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW432

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/9/2009	11/9/09
Start Time:	12:28	1450

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID labels
8.8	Top of sediment 8.8-13.1 ML soft, black, trace organics, 90/10 sand is fn-med. lense SP, blackish gray, red white grains, sand is med @ 12' 13.1-15.0 ML. gray, to blackish gray, mod stiff, 80/20 sand is fn-med. non-plastic to low trace organic layer @ 13.4'. piece of wood (brown) @ 14.4 15.0-20.4 ML. olive gray, mod stiff to stiff, mod. plast SP/SM fine sand lenses @ 15.7, 16.2-16.4, 16.6, 16.9, 17.2, 17.8-18.2, 18.4, 19.2, 19.9 → 95/5, very little sand in the silt → almost interbedded in nature, silt is dominant though.	15.21 / 15.95	AMEC Proj.No. 13133.003 **SD-DUW432-0080** Core Description Initials: RHG Date: 11/9/09 Time: 1450
		15.95 / 16.7	AMEC Proj.No. 13133.003 **SD-DUW432-0090** Core Description Initials: RHG Date: 11/9/09 Time: 1450
		16.7 / 17.43	AMEC Proj.No. 13133.003 **SD-DUW432-0100** Core Description Initials: RHG Date: 11/9/09 Time: 1450
		17.43 / 18.1	AMEC Proj.No. 13133.003 **SD-DUW432-0110** Core Description Initials: RHG Date: 11/9/09 Time: 1450
		18.1 / 18.67	AMEC Proj.No. 13133.003 **SD-DUW432-0120** Core Description Initials: RHG Date: 11/9/09 Time: 1450
		18.67 / 19.24	AMEC Proj.No. 13133.003 **SD-DUW432-0130** Core Description Initials: RHG Date: 11/9/09 Time: 1450
		19.24 / 19.81	AMEC Proj.No. 13133.003 **SD-DUW432-0140** Core Description Initials: RHG Date: 11/9/09 Time: 1450

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW432

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/9/2009	11/9/09
Start Time:	12:28	1450

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
8.8	Top of sediment

Distance top/bottom	Sample ID labels
19.81 / 20.28	AMEC Proj.No. 13133.003 SD-DUW432-0150 Core Description Initials: RHG Date: 11/9/09 Time: 1450

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Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: CKA Date: 11 / 19 2009

- [x] Daily dGPS verification check completed
- [x] Station Name: SD DUW 432 R2 Time: 823
- [x] Water Depth: 23.8 Tide: 11.4
- [ ] Duplicate core required at station? Required Not Required
- [ ] GPS range within 6 ft radius of station prior to sampler deployment
- [x] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196457 Actual N: 196455

Planned E: 1274925 Actual E: 1274935 ~~5~~ 1274934 GM 12.22.09

- [x] Logged GPS Verified by Shore Crew
- [x] Maximum core penetration goal reached
- [x] No known significant loss of sediment out of bottom of core tube
- [x] Core tube labeled
- [x] Core log and check list provided to shore crew Received By: [illegible]

	Penetration:	Recovery:	Comments:
1	17.6	17.6	
2	15.9	17.0	
3	13.6	15.4	
4	12.1	14.2	
5	[illegible]	13.5	
6	[illegible]	11.6	
7	5.5	10.5	
8	3.5	9.7	
9	2.5	8.6	
10	2.0	8.3	
11	1.0	8.0	
12	0.5	7.9	
13	0.2	7.8	
14			
15			
16			
17			

On-deck Recovery: 7.9 ft

Notes: 2-6 ft core

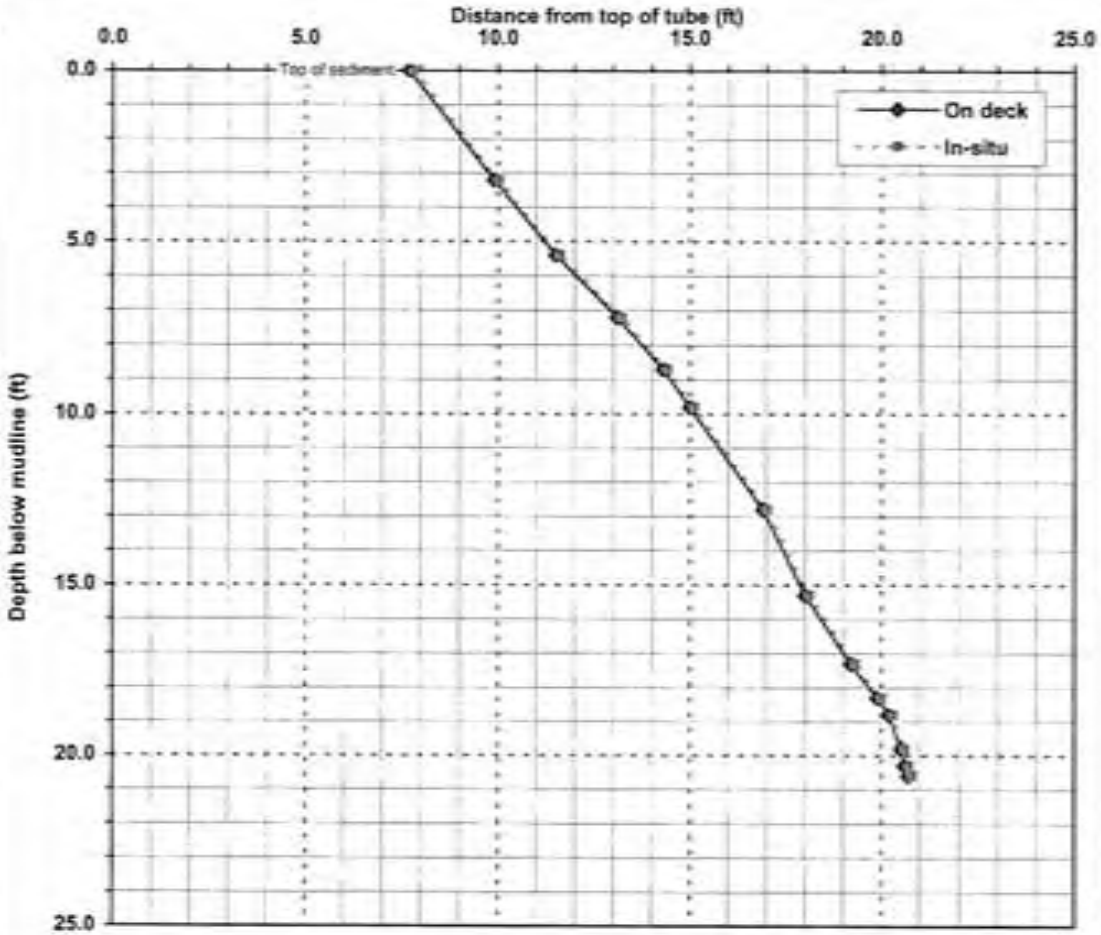
432 rep 1 logged as 423 on GPS

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW432R2
Project No:	13133.003	**Position:**	NAD 83 WA N
Collected by:	GSM		196456 Northing
Date:	11/19/2009 **Time:** 8:23		1274934 Easting
Water depth:	23.8 ft **Mudline:** -12.4 ft MLLW		(estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Rain



Penetration 20.6 ft/ On deck recovery 13.1 ft = 64% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-3.2	2.2	69%
3.2-5.4	1.6	73%
5.4-7.2	1.6	89%
7.2-8.7	1.2	80%
8.7-9.8	0.7	64%
9.8-12.8	1.9	63%
12.8-15.3	1.1	44%
15.3-17.3	1.2	60%
17.3-18.3	0.7	70%
18.3-18.8	0.3	60%
18.8-19.8	0.3	30%
19.8-20.3	0.1	20%
20.3-20.6	0.1	33%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	7.7
1	8.39
2	9.08
3	9.76
4	10.48
5	11.21
6	12.03
7	12.92
8	13.74
9	14.49
10	15.13
11	15.76
12	16.39
13	16.99
14	17.43
15	17.87
16	18.42
17	19.02
18	19.69
19	20.26
20	20.54

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW432R2

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/19/2009	11/19/09
Start Time:	8:23	1130

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID labels
7.7	Top of sediment 7.7-9.1 ML. black, soft, non-plast, 85/15 sand fn-med, trace organics	18.42 / 19.02	AMEC Proj.No. 13133.003 SD-DUW432-0160 Core Description Initials: RHG Date: 11/19/09 Time: 1130
	9.1-20.0 ML: black, mod. firm to firm (@ 18'), mod. plast, 90/10 sand fn. trace organics, mod (thin fibers) olive gray SM 80/20 lenses (sand fn) @ 11.3-11.4, 11.7-11.8, 12.1-12.2 SP, leaves blackish gray, red/white grains sand fn, med 13.8-13.9 14.4-14.6 14.9-15.8 15.2-15.3 15.6-15.9 16.1-16.2 16.7-16.8 17-17.1 17.3-17.4 17.6-17.7 18.7-18.8	19.02 / 19.69	AMEC Proj.No. 13133.003 SD-DUW432-0170 Core Description Initials: RHG Date: 11/19/09 Time: 1130
	no recovery below 20.0, not sampled winnowed material is SP in nature, med sand, red/white grains, 95/5 only 5% in core tube	19.69 / 20	AMEC Proj.No. 13133.003 SD-DUW432-0180 Core Description Initials: RHG Date: 11/19/09 Time: 1130

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	NO
RHG	Separation (gaps) along length of sediment in core tube.	NO
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	RHG
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	RHG

133

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSN Date: 11 / 9 2009

[x] Daily dGPS verification check completed

[X] Station Name: SD DUW 433 Time: 1379

[X] Water Depth: 25.5 Tide: ~~8.0~~ 9.2

[X] Duplicate core required at station? Required (Not Required)

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196437 Actual N: 196438

Planned E: 1274909 Actual E: 1274909

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RG

	Penetration:	Recovery:	Comments:
1	~~18.7~~		
2	13.3	14.4	
3	9.5	11.5	
4	6.6	9.7	
5	4.7	8.6	slow
6	3.7	7.8	
7	3.3	7.3	
8	2.7	6.7	very slow
9			dragging anchor - stop coring
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 7-1 ft

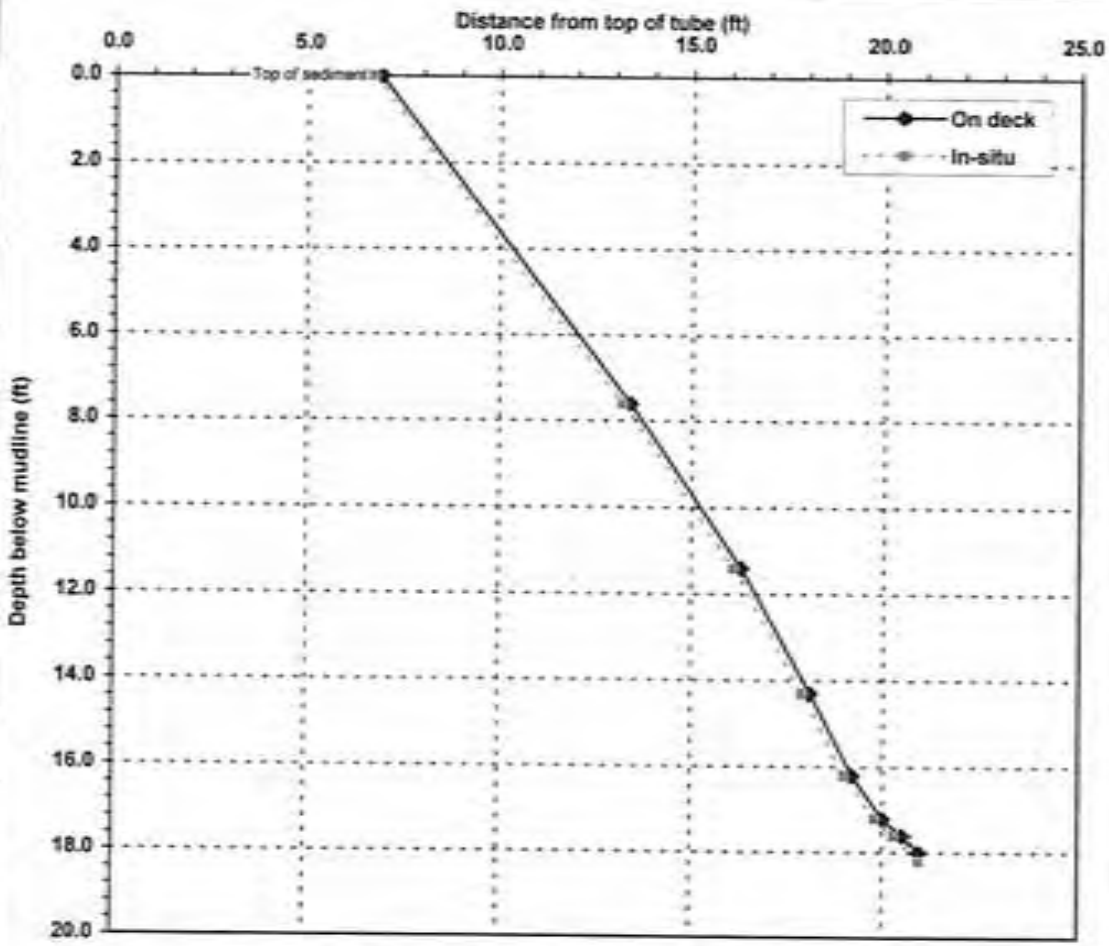
Notes: 23.9 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW433
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		196438 — Northing
Date:	11/9/2009	**Time:**	13:39 — 1274909 — Easting
Water depth:	25.5 ft	**Mudline:**	-16.3 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Partly cloudy



Penetration 18.201 ft/ On deck recovery 14 ft = 77% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-7.6	6.5	86%
7.6-11.4	2.9	76%
11.4-14.3	1.8	62%
14.3-16.2	1.1	58%
16.2-17.2	0.8	80%
17.2-17.6	0.5	125%
17.6-18.201	0.6	100%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	6.9
1	7.76
2	8.61
3	9.47
4	10.32
5	11.18
6	12.03
7	12.89
8	13.71
9	14.47
10	15.23
11	15.99
12	16.67
13	17.29
14	17.91
15	18.51
16	19.08
17	19.84
18	20.90
19	No sample
20	No sample

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File name SD-DUW433
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW433

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/9/2009	11/9/09
Start Time:	13:39	1535

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
6.9	Top of sediment
	6.9 - 8.3 ML - black, soft, non-plastic 90/10 sand is fine
	8.3 - 13.1 ML black, med. stiff, low - mod plast 90/10 to 80/20, sand is med - fn
	trace organics wood pieces @ 12.9
	13.1 - 20.4 ML olive gray to dk gray, mod soft to stiff, mod plast
	95/5 in the silt.
	Lenses of gray fn SP, maybe SP/SM @ 13.9, 14.1, 14.8, 15.1, 15.4, 16.1, 16.6, 17.1, 17.7, 17.9, 18.3, 18.9, 19.5, 19.7
	piece of wood @ 17.6
	interbedded organics 13.8-19.2
	dominant unit is silt, SP is interbedded in this unit
	trace wood shards @ 14.8
	piece of wood @ 18.6
	scattered organic fibers
20.6	good? → 433 & 432 both could be almost OH.

Distance top/bottom	Sample ID labels
13.71 / 14.47	AMEC Proj.No. 13133.003 SD-DUW433-0080 Core Description Initials: RHG Date: 11/9/09 Time: 1535
14.47 / 15.23	AMEC Proj.No. 13133.003 SD-DUW433-0090 Core Description Initials: RHG Date: 11/9/09 Time: 1535
15.23 / 16	AMEC Proj.No. 13133.003 SD-DUW433-0100 Core Description Initials: RHG Date: 11/9/09 Time: 1535
16 / 16.67	AMEC Proj.No. 13133.003 SD-DUW433-0110 Core Description Initials: RHG Date: 11/9/09 Time: 1535
16.67 / 17.3	AMEC Proj.No. 13133.003 SD-DUW433-0120 Core Description Initials: RHG Date: 11/9/09 Time: 1535
17.3 / 17.9	AMEC Proj.No. 13133.003 SD-DUW433-0130 Core Description Initials: RHG Date: 11/9/09 Time: 1535
17.9 / 18.5	AMEC Proj.No. 13133.003 SD-DUW433-0140 Core Description Initials: RHG Date: 11/9/09 Time: 1535

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW433

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/9/2009	11/9/09
Start Time:	13:39	1535

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
ZT 6.9	Top of sediment

Distance top/bottom	Sample ID labels
18.5 / 19.08	AMEC Proj.No. 13133.003 SD-DUW433-0150 Core Description Initials: RHG Date: 11/9/09 Time: 1535
19.08 / 19.84	AMEC Proj.No. 13133.003 SD-DUW433-0160 Core Description Initials: RHG Date: 11/9/09 Time: 1535
19.84 / 20.6	AMEC Proj.No. 13133.003 SD-DUW433-0170 Core Description Initials: RHG Date: 11/9/09 Time: 1535

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Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: SSM Date: 11 / 19 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW 433 R2 Time: 1039

[X] Water Depth: 24.5 Tide: 9.6

[X] Duplicate core required at station? Required (Not Required)

[ ] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196437 Actual N: 196444

Planned E: 1274909 Actual E: 1274914

[X] Logged GPS Verified by Shore Crew

[X] Maximum core penetration goal reached

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RG

	Penetration:	Recovery:	Comments:
1	18.0	18.3	
2	16.1	17.3	
3	14.2	15.9	
4	12.0	14.0	
5	9.0	11.5	
6	6.0	9.6	
7	4.0	8.9	
8	2.5	8.1	
9	1.0	7.1	
10	0.2	3.5	
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 5.4 ft

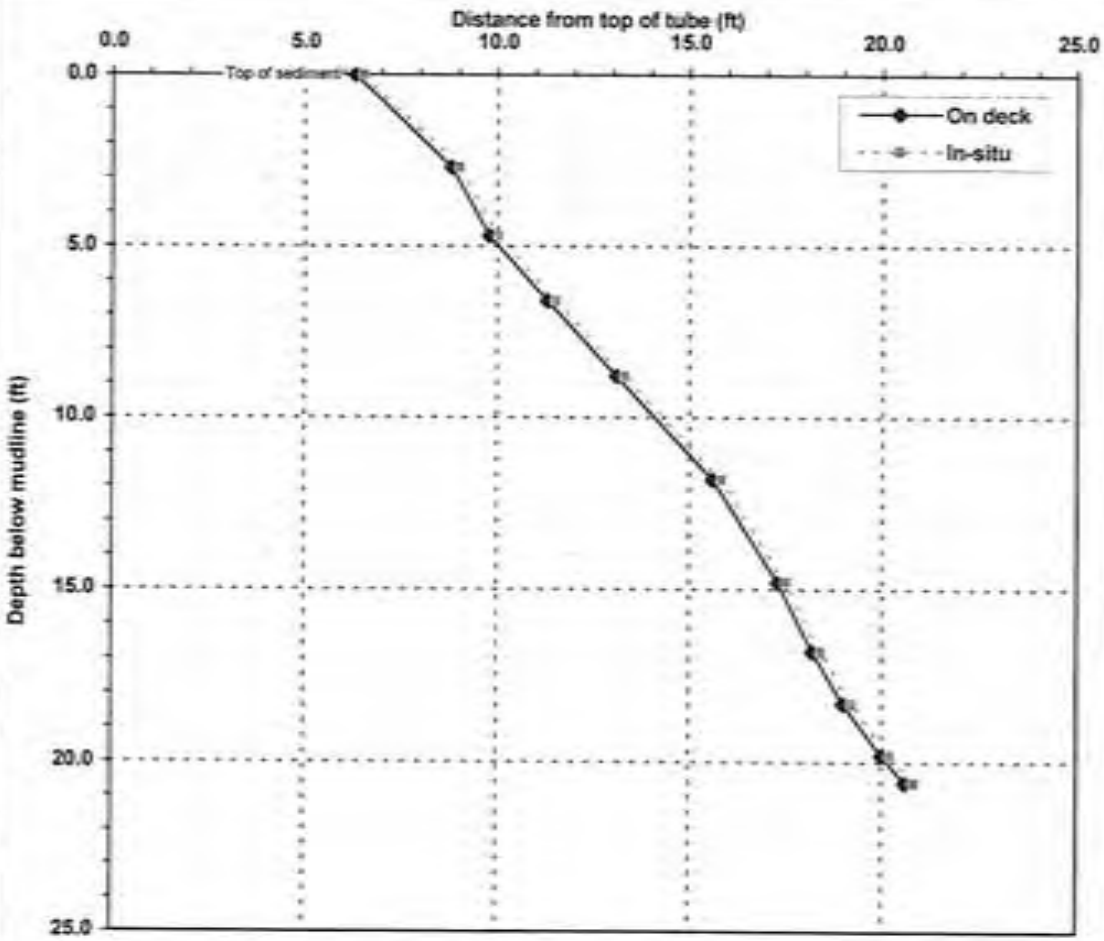
Notes: 20-8 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW433R2
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		196444 Northing
Date:	11/19/2009 **Time:** 10:09		1274914 Easting
Water depth:	24.5 ft **Mudline:** -14.9 ft MLLW	(estimated using electronic tide gauge)	

Place Field ID Label Here

Weather/Comments: Rain



Penetration 20.6 ft/ On deck recovery 14.5 ft = 70% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.7	2.5	93%
2.7-4.7	1	50%
4.7-6.6	1.5	79%
6.6-8.8	1.8	82%
8.8-11.8	2.5	83%
11.8-14.8	1.7	57%
14.8-16.8	0.9	45%
16.8-18.3	0.8	53%
18.3-19.8	1	67%
19.8-20.6	0.6	75%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	6.3
1	7.23
2	8.15
3	8.95
4	9.45
5	10.04
6	10.83
7	11.63
8	12.45
9	13.27
10	14.10
11	14.93
12	15.71
13	16.28
14	16.85
15	17.39
16	17.84
17	18.31
18	18.84
19	19.47
20	20.15

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File name SD-DUW433R2
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW433R2

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/19/2009	11/19/09
Start Time:	10:09	1215

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
6.3	Top of sediment
	6.3 - 11.2 ML - grayish black, soft, non-plastic, 85/15 Sand fn-med, trace organics, becomes mod. firm, low plast @ 7.7
	11.2 - 20.3 ML - black, mod. firm to firm (below 17.6), mod plast, 90/10 fn sand, trace fine organic fibers
	SP lense, blackish gray, med/white grains, med. fn sand @ 12.5-12.6
piece of wood @ 13.8	
	Wood zones (twigs, bark, black) @ 12.8-12.95, 14.7-14.8
	SM - olive gray, 80/20 fn sand lenses @ 12.6-12.7, 13.1-13.2, 13.4-13.8, 14.5-14.7, 15.1-15.2, 16.1-16.2, 17-17.1, 17.7-17.3, 18.3-18.5
	no recovery below 20.3 core tube empty.

Distance top/bottom	Sample ID labels
18.81 / 19.47	AMEC Proj.No. 13133.003 SD-DUW433-0180 Core Description Initials: RHG Date: 11/19/09 Time: 1215
19.47 / 20.15	AMEC Proj.No. 13133.003 SD-DUW433-0190 Core Description Initials: RHG Date: 11/19/09 Time: 1215

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHK	Core processed within 24 hrs of collection.	YES
RHK	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	No
RHK	Separation (gaps) along length of sediment in core tube.	No
RHK	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHK	Correct number and type of sample jars filled.	YES
RHK	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHK	Sample jars verified against COC forms.	YES
	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	RHK
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	RHK

434

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 10 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW 434 Time: 1342

[X] Water Depth: 22.6 Tide: 10.1

[ ] Duplicate core required at station? Required Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196261 Actual N: 196256

Planned E: 1275136 Actual E: 1275136

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: [illegible]

	Penetration:	Recovery:	Comments:
1	16.7	18.2	
2	13.9	15.5	
3	8.7	11.2	
4	4.9	8.7	
5	3.1	7.7	slow
6	2.3	7.1	
7	1.8	6.8	
8	1.6	6.6	
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 6.6 ft

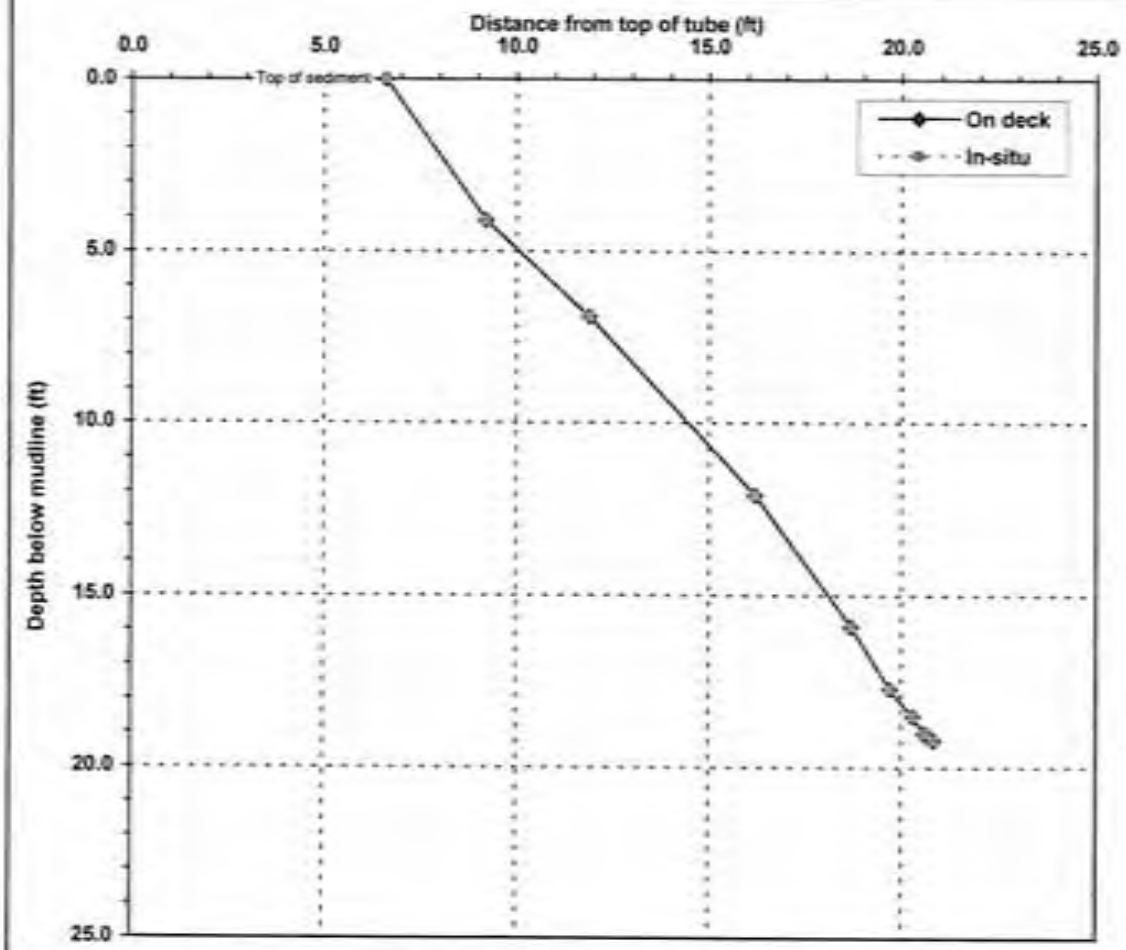
Notes: 20.5 ft core tube

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW434
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		196256 — Northing
Date:	11/10/2009	**Time:**	13:42 — 1275136 — Easting
Water depth:	22.6 ft	**Mudline:**	-12.5 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Rain



Penetration 19.2 ft/ On deck recovery 14.2 ft = 74% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-4.1	2.6	63%
4.1-6.9	2.7	96%
6.9-12.1	4.3	83%
12.1-15.9	2.5	66%
15.9-17.7	1	56%
17.7-18.5	0.6	75%
18.5-19	0.3	60%
19-19.2	0.2	100%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	6.6
1	7.23
2	7.87
3	8.50
4	9.14
5	10.07
6	11.03
7	11.98
8	12.81
9	13.64
10	14.46
11	15.29
12	16.12
13	16.79
14	17.45
15	18.11
16	18.76
17	19.31
18	19.93
19	20.60
20	No sample

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW434

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/10/2009	11/10/09
Start Time:	13:42	1625

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
6.6	Top of sediment
	6.6-11.2 ML mod soft, black, trace organics 85/15 sand is fine, med H_2S to 9.2
	11.2-11.5 SP: blackish gray, red white grains, sand is fine, med dense
	11.5-18.4 ML black, mod. firm, low plast grading to mod @ 15.2. 90/10 sand fn trace organics throughout
	14.9 wood brick) SM lense @ 14.4-14.6 blackish gray 70/30 sand is fn.
	16.0 wood also @ 16.5-16.6, 16.9-17.0, 17.3-17.4
	18.4-19.0 SM blackish gray, red white grains 80/20 sand is med dense, trace fm gravel, subr.
	19.0-19.6 SM olive gray, sand is fn, dense, 80/20. trace fine gravel subr med-cr red/white SP lens @ 19.3 & 19.5
	19.6-20.4 SP blackish gray, red white grains, sand is med, med dense, winnowed below 19.8

Distance top/bottom	Sample ID labels
7.87 / 8.5	AMEC Proj.No. 13133.003 SD-DUW434-0020 Core Description Initials: RHG Date: 11/10/09 Time: 1625
8.5 / 9.14	AMEC Proj.No. 13133.003 SD-DUW434-0030 Core Description Initials: RHG Date: 11/10/09 Time: 1625
9.14 / 10.07	AMEC Proj.No. 13133.003 SD-DUW434-0040 Core Description Initials: RHG Date: 11/10/09 Time: 1625
10.07 / 11.03	AMEC Proj.No. 13133.003 SD-DUW434-0050 Core Description Initials: RHG Date: 11/10/09 Time: 1625
11.03 / 11.98	AMEC Proj.No. 13133.003 SD-DUW434-0060 Core Description Initials: RHG Date: 11/10/09 Time: 1625
11.98 / 12.81	AMEC Proj.No. 13133.003 SD-DUW434-0070 Core Description Initials: RHG Date: 11/10/09 Time: 1625
12.81 / 13.64	AMEC Proj.No. 13133.003 SD-DUW434-0080 Core Description Initials: RHG Date: 11/10/09 Time: 1625

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW434

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/10/2009	11/10/09
Start Time:	13:42	1625

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID labels
6.6	Top of sediment	13.64 / 14.46	AMEC Proj.No. 13133.003 **SD-DUW434-0090** Core Description Initials: RHG Date: 11/10/09 Time: 1625
		14.46 / 15.29	AMEC Proj.No. 13133.003 **SD-DUW434-0100** Core Description Initials: RHG Date: 11/10/09 Time: 1625
		15.29 / 16.12	AMEC Proj.No. 13133.003 **SD-DUW434-0110** Core Description Initials: RHG Date: 11/10/09 Time: 1625
		16.12 / 16.79	AMEC Proj.No. 13133.003 **SD-DUW434-0120** Core Description Initials: RHG Date: 11/10/09 Time: 1625
		16.79 / 17.45	AMEC Proj.No. 13133.003 **SD-DUW434-0130** Core Description Initials: RHG Date: 11/10/09 Time: 1625
		17.45 / 18.11	AMEC Proj.No. 13133.003 **SD-DUW434-0140** Core Description Initials: RHG Date: 11/10/09 Time: 1625
		18.11 / 18.76	AMEC Proj.No. 13133.003 **SD-DUW434-0150** Core Description Initials: RHG Date: 11/10/09 Time: 1625

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW434

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/10/2009	11/10/09
Start Time:	13:42	1625

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
6.6	Top of sediment

Distance top/bottom	Sample ID labels
18.76 / 19.31	AMEC Proj.No. 13133.003 SD-DUW434-0160 Core Description Initials: RHG Date: 11/10/09 Time: 1625
19.31 / 19.93	AMEC Proj.No. 13133.003 SD-DUW434-0170 Core Description Initials: RHG Date: 11/10/09 Time: 1625
19.93 / 20.6	AMEC Proj.No. 13133.003 SD-DUW434-0180 Core Description Initials: RHG Date: 11/10/09 Time: 1625

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials	
RHG	Core processed within 24 hrs of collection. YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores) No
RHG	Separation (gaps) along length of sediment in core tube. No
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.) YES
RHG	Correct number and type of sample jars filled. YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms. YES
RHG	Sample jars verified against COC forms. YES
RHG	Samples kept cold until delivery to lab. YES
NA	Duplicate samples analyzed at 10% frequency RHG
NA	VOC samples in cooler with trip blanks (2 vials per cooler) RHG

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Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 10 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW 435 Time: 1426

[X] Water Depth: 24.1 Tide: 9.0

[X] Duplicate core required at station? Required Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196248 Actual N: 196249

Planned E: 1275124 Actual E: 1275124

1275123

[X] Logged GPS Verified by Shore Crew

GSM 12-22-09

[Yes] Maximum core penetration goal reached

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RG

	Penetration:	Recovery:	Comments:
1	18.2	18.6	
2	14.3	15.1	
3	9.6	12.3	
4	5.1	9.7	
5	2.0	~~5.1~~ 7.9	
6	1.2	7.3	
7	0.2	7.1	
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 7.2 ft

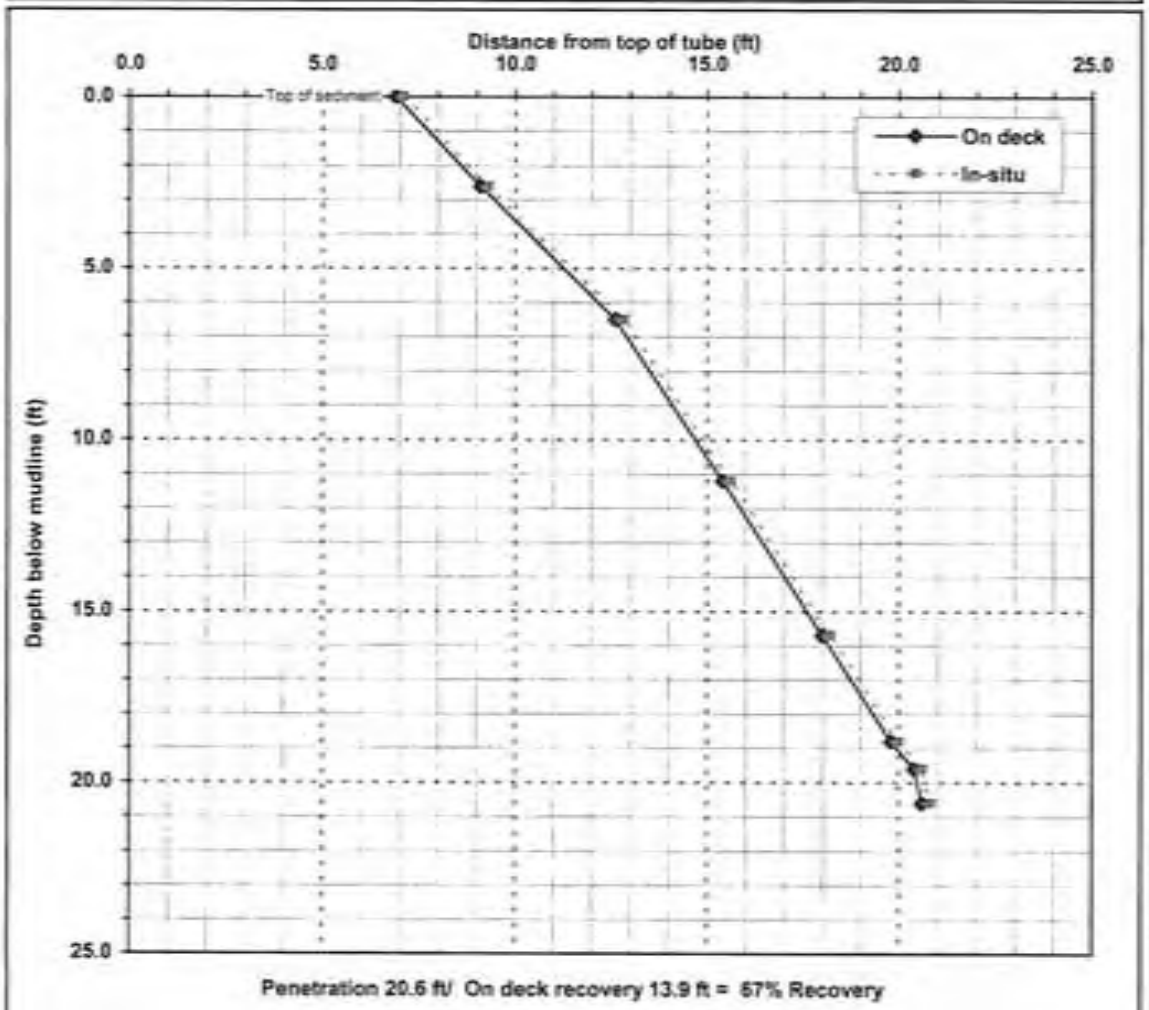
Notes: 20.8 ft rave

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW435
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		196249 — Northing
Date:	11/10/2009 — **Time:** 14:26		1275123 — Easting
Water depth:	24.1 ft — **Mudline:** -15.1 ft MLLW	(estimated using electronic tide gauge)	

Place Field ID Label Here

Weather/Comments: Rain



Penetration 20.6 ft/ On deck recovery 13.9 ft = 67% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.6	2.2	85%
2.6-6.5	3.5	90%
6.5-11.2	2.8	60%
11.2-15.7	2.6	58%
15.7-18.8	1.8	58%
18.8-19.6	0.6	75%
19.6-20.6	0.2	20%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	6.9
1	7.75
2	8.59
3	9.46
4	10.36
5	11.25
6	12.15
7	12.90
8	13.49
9	14.09
10	14.69
11	15.28
12	15.86
13	16.44
14	17.02
15	17.60
16	18.17
17	18.75
18	19.34
19	19.95
20	20.48

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW435

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/10/2009	11/10/09
Start Time:	14:26	1535

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
12 6.9	Top of sediment
	6.9-8.3. ML: black, soft, 80/20 sand is fine, trace organics, slight H_2S odor
	8.3-16.5 ML grayish black, mod soft to 15 then mod firm mod plast, 90/10 sand is fine, slight H_2S odor to 9.3
	pink piece of plastic (garbage bag?) @ 12.7
	16.5-19.1 ML olive gray, mod firm. 90/10 sand is fine, trace interbeds of SM gray fine sand
	19.1-20.05 SP blackish gray, red white grains 90/10 sand is fine-med, dense trace SM/ML lense @ 19.2 & 19.9
	20.05-20.4 SP. blackish gray, red/white grains, sand is med-cr, 95/5 dense one ML pocket @ 20.1

Distance top/bottom	Sample ID labels
17.02 / 17.6	AMEC Proj.No. 13133.003 SD-DUW435-0140 Core Description Initials: CJW Date: 11/10/09 Time: 1535
17.6 / 18.17	AMEC Proj.No. 13133.003 SD-DUW435-0150 Core Description Initials: CJW Date: 11/10/09 Time: 1535
18.17 / 18.75	AMEC Proj.No. 13133.003 SD-DUW435-0160 Core Description Initials: CJW Date: 11/10/09 Time: 1535
18.75 / 19.34	AMEC Proj.No. 13133.003 SD-DUW435-0170 Core Description Initials: CJW Date: 11/10/09 Time: 1535
19.34 / 19.95	AMEC Proj.No. 13133.003 SD-DUW435-0180 Core Description Initials: CJW Date: 11/10/09 Time: 1535
19.95 / 20.4	AMEC Proj.No. 13133.003 SD-DUW435-0190 Core Description Initials: CJW Date: 11/10/09 Time: 1535

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	No
RHG	Separation (gaps) along length of sediment in core tube.	No
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	Yes
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	RHG
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	RHG

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Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 11 2009

[x] Daily dGPS verification check completed

[x] Station Name: SD DUW 436 Time: 0808

[x] Water Depth: 14.0 Tide: 4.6

[x] Duplicate core required at station? Required (Not Required)

[x] GPS range within 6 ft radius of station prior to sampler deployment

[x] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196160 Actual N: ~~196158~~ 196161

Planned E: 1275286 Actual E: ~~1275286~~ 1275288

[x] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[x] No known significant loss of sediment out of bottom of core tube

[x] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RHG

	Penetration:	Recovery:	Comments:
1	18.5	19.3	
2	16.7	17.4	
3	13.4	15.2	
4	10.6	13.6	
5	8.5	12.1	
6	5.8	10.1	slow
7	4.6	9.2	
8	4.4	9.0	
9	4.1	9.0	
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 9.0 ft

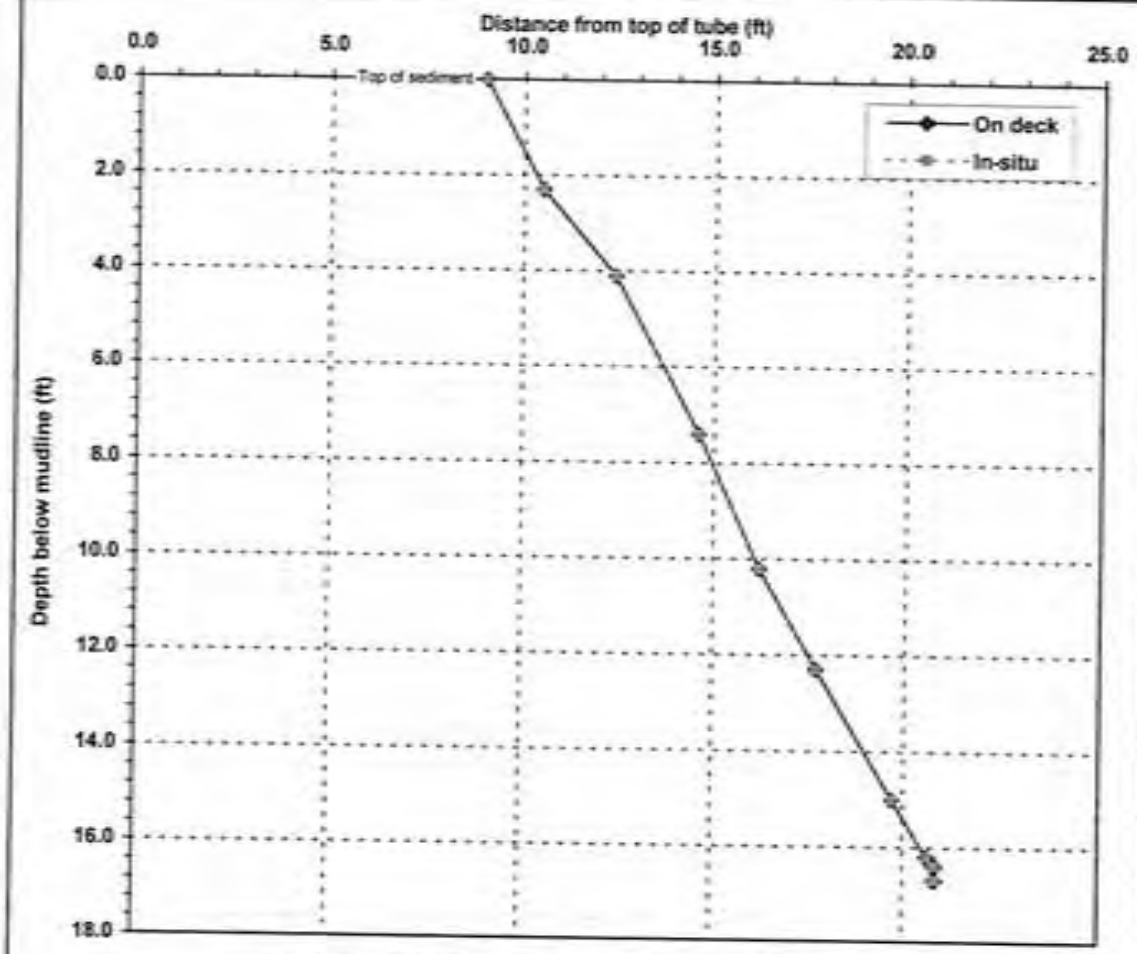
Notes: 20.8 ft core tube

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW436
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		196161 — Northing
Date:	11/11/2009	**Time:**	8:08 — 1275288 — Easting
Water depth:	14.0 ft	**Mudline:**	-9.4 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Partly cloudy



Penetration 16.7 ft/ On deck recovery 11.8 ft = 71% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.3	1.5	65%
2.3-4.1	1.9	106%
4.1-7.4	2.2	67%
7.4-10.2	1.6	57%
10.2-12.3	1.5	71%
12.3-15	2	74%
15-16.2	0.9	75%
16.2-16.4	0.199	100%
16.4-16.7	0.001	0%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	9
1	9.65
2	10.30
3	11.24
4	12.29
5	13.00
6	13.67
7	14.33
8	14.94
9	15.51
10	16.09
11	16.77
12	17.49
13	18.22
14	18.96
15	19.70
16	20.45
17	No sample
18	No sample
19	No sample
20	No sample

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW436

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/11/2009	11/11/09
Start Time:	8:08	1215

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID labels
9	Top of sediment 9-13.7 ML, black, mod firm, low to mod plast, 90/10 sand is fine olive gray SM lenses @ 12.3-12.4, 13-13.1, 13.5-13.6, SP: blackish gray, red-white sand med 10.2-10.3 13.7-15.9 SM: olive gray, mod dense, sand is fn, 80/20. interbeds of blackish gray ML/SM units (c 1/8" thick) and blackish gray SP lenses (red/white stains) sand fn 15.9-20.2 ML, black, mod firm to firm, mod plast 95/5, homogeneous trace organic material Large chunk of wood (2") @ 16' than SP olive gray @ 15.5-19.6 20.2-20.4 SP: blackish gray, mod. dense sand is fn, red/white grains	10.3 / 11.24	**AMEC Proj.No. 13133.003** **SD-DUW436-0020** Core Description Initials: RHG Date: 11/11/09 Time: 1215
		11.24 / 12.29	**AMEC Proj.No. 13133.003** **SD-DUW436-0030** Core Description Initials: RHG Date: 11/11/09 Time: 1215
		12.29 / 13	**AMEC Proj.No. 13133.003** **SD-DUW436-0040** Core Description Initials: RHG Date: 11/11/09 Time: 1215
		13 / 13.67	**AMEC Proj.No. 13133.003** **SD-DUW436-0050** Core Description Initials: RHG Date: 11/11/09 Time: 1215
		13.67 / 14.33	**AMEC Proj.No. 13133.003** **SD-DUW436-0060** Core Description Initials: RHG Date: 11/11/09 Time: 1215
		14.33 / 14.94	**AMEC Proj.No. 13133.003** **SD-DUW436-0070** Core Description Initials: RHG Date: 11/11/09 Time: 1215
		14.94 / 15.51	**AMEC Proj.No. 13133.003** **SD-DUW436-0080** Core Description Initials: RHG Date: 11/11/09 Time: 1215

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW436

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/11/2009	11/11/09
Start Time:	8:08	1215

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID labels
9	Top of sediment	15.51 / 16.09	AMEC Proj.No. 13133.003 SD-DUW436-0090 Core Description Initials: RHG Date: 11/11/09 Time: 1215
		16.09 / 16.77	AMEC Proj.No. 13133.003 SD-DUW436-0100 Core Description Initials: RHG Date: 11/11/09 Time: 1215
		16.77 / 17.49	AMEC Proj.No. 13133.003 SD-DUW436-0110 Core Description Initials: RHG Date: 11/11/09 Time: 1215
		17.49 / 18.22	AMEC Proj.No. 13133.003 SD-DUW436-0120 Core Description Initials: RHG Date: 11/11/09 Time: 1215
		18.22 / 18.96	AMEC Proj.No. 13133.003 SD-DUW436-0130 Core Description Initials: RHG Date: 11/11/09 Time: 1215
		18.96 / 19.7	AMEC Proj.No. 13133.003 SD-DUW436-0140 Core Description Initials: RHG Date: 11/11/09 Time: 1215
		19.70 / 20.45	AMEC Proj.No. 13133.003 SD-DUW436-0150 Core Description Initials: RHG Date: 11/11/09 Time: 1215

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Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: [illegible] Date: 11 / [illegible] 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW 43612 Time: 1136

[X] Water Depth: 18.3 Tide: 8.1

[X] Duplicate core required at station? Required Not Required

[/] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196160 Actual N: 196161

Planned E: 1275285 Actual E: 1275278

[X] Logged GPS Verified by Shore Crew

[X] Maximum core penetration goal reached natural

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: [illegible]

	Penetration:	Recovery:	Comments:
1	17.0	17.6	
2	15.1	16.2	
3	14.4	15.8	
4	13.0	14.9	
5	9.5	13.5	
6	7.0	11.3	
7	5.0	9.9	
8	4.0	~~9.7~~ 9.4	
9	3.0	8.8	
10	2.0	8.0	[illegible]
11	1.5	7.7	
12	1.0	7.5	
13			
14			
15			
16			
17		7.4	

On-deck Recovery: _____ ft

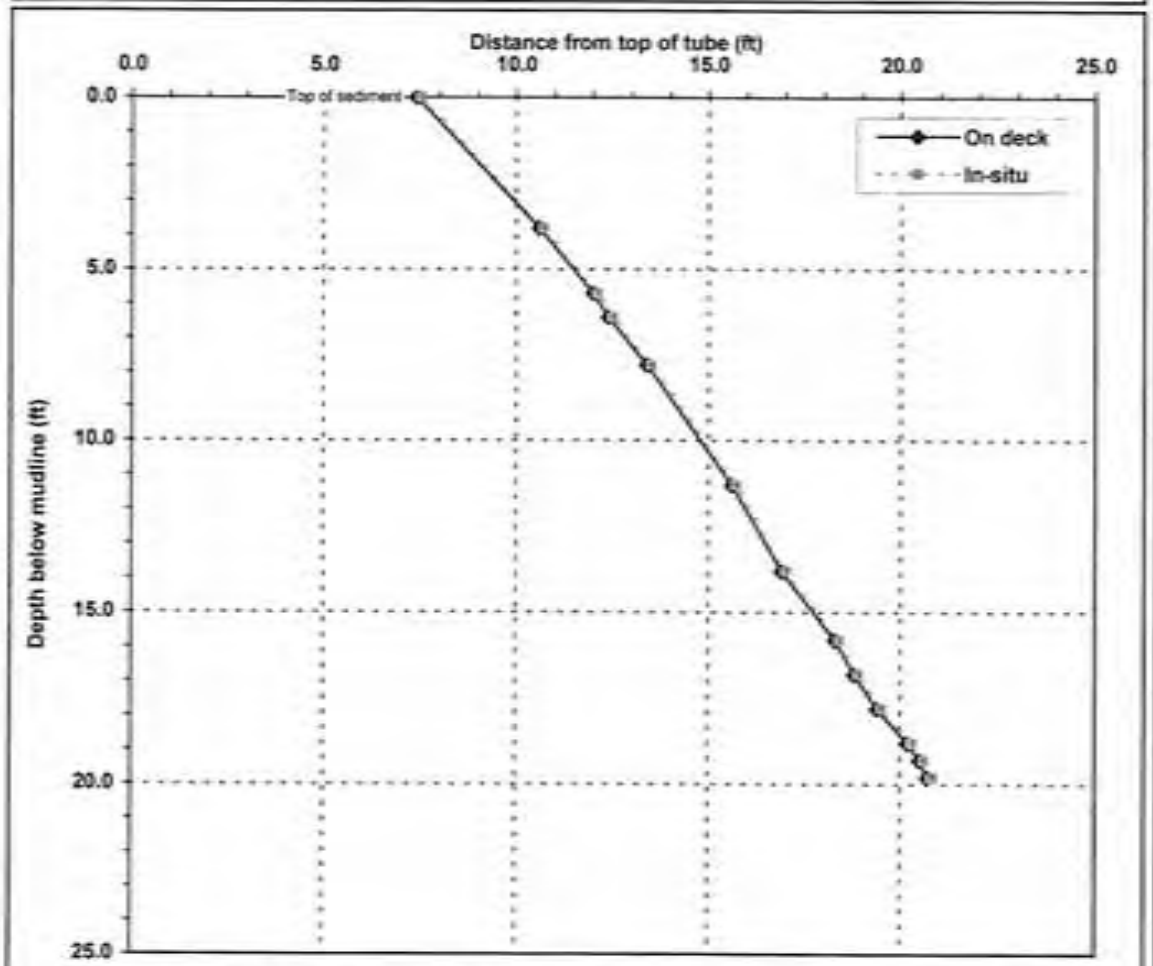
Notes: 23.5 A [illegible]

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW436R2
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		196161 — Northing
Date:	11/19/2009	**Time:**	11:36 — 1275278 — Easting
Water depth:	18.0 ft	**Mudline:**	-9.9 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Rain



Penetration 19.8 ft/ On deck recovery 13.4 ft = 68% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-3.8	3.2	84%
3.8-5.7	1.4	74%
5.7-6.4	0.4	57%
6.4-7.8	1	71%
7.8-11.3	2.2	63%
11.3-13.8	1.3	52%
13.8-15.8	1.4	70%
15.8-16.8	0.5	50%
16.8-17.8	0.6	60%
17.8-18.8	0.8	80%
18.8-19.3	0.3	60%
19.3-19.8	0.2	40%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	7.4
1	8.24
2	9.08
3	9.93
4	10.75
5	11.48
6	12.17
7	12.83
8	13.53
9	14.15
10	14.78
11	15.41
12	15.96
13	16.48
14	17.04
15	17.74
16	18.40
17	18.92
18	19.56
19	20.32
20	No sample

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File name SD-DUW436R2
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW436R2

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/19/2009	11/19/2009
Start Time:	11:36	1320

Comments:

Laboratory processing by:

All distances are measured from top of core tube.

Distance ft	Visual sample description
7.4	Top of sediment
	7.4-10.1 ML. black, soft, to 8.4 then mod. firm to 10.1, non plast, 85/15 sand fn
	10.1-20.4 ML: black, mod firm to firm (below 17.4), mod plast, 90/10 sand fn.
	trace organics thin fibers
	SP. blackish gray, red/white grains, sand fn-med @ 10.5-10.6, 11.3-12.4
	wood layer @ 11.9-12.0 ↳ twigs black.
	SM: olive gray, 80/20, fn sand @ 11.5-11.6, 12.2-12.3, 13.3-13.6, 13.8-13.9, 14.5-14.6, 15.3-15.4, 16.1-16.2, 17.2-17.3
	white, flaky material @ 16.8' (microwave) small pieces 1/8" or sm.
	18.6-18.9 SP loose, blackish gray, red/white, sand fn-med, 95/5
	4"x4" piece of bark @ 19.6
	no recovery below 20.4, core tube empty.

Distance top/bottom	Sample ID labels
18.4 / 18.92	AMEC Proj.No. 13133.003 SD-DUW436-0160 Core Description Initials: RHG Date: 11/19/09 Time: 1320
18.92 / 19.56	AMEC Proj.No. 13133.003 SD-DUW436-0170 Core Description Initials: RHG Date: 11/19/09 Time: 1320
19.56 / 20.32	AMEC Proj.No. 13133.003 SD-DUW436-0180 Core Description Initials: RHG Date: 11/19/09 Time: 1320

Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	No
RHG	Separation (gaps) along length of sediment in core tube.	No
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	RHG
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	RHG

13

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 11 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW 437 Time: 947

[X] Water Depth: 20.1 Tide: 8.2

[X] Duplicate core required at station? Required Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196145 Actual N: 196148

Planned E: 127572 Actual E: 1275274

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: R W

	Penetration:	Recovery:	Comments:
1	16.9	17.5	
2	14.1	15.2	
3	10.6	13.0	
4	8.7	11.6	
5	7.3	10.7	
6	5.5	9.5	
7	4.7	8.6	slow
8	4.0	8.0	
9	3.7	7.6	
10	3.3	7.4	
11	2.9	7.1	
12	2.6	6.9	
13			
14			
15			
16			
17			

On-deck Recovery: 7.2 ft

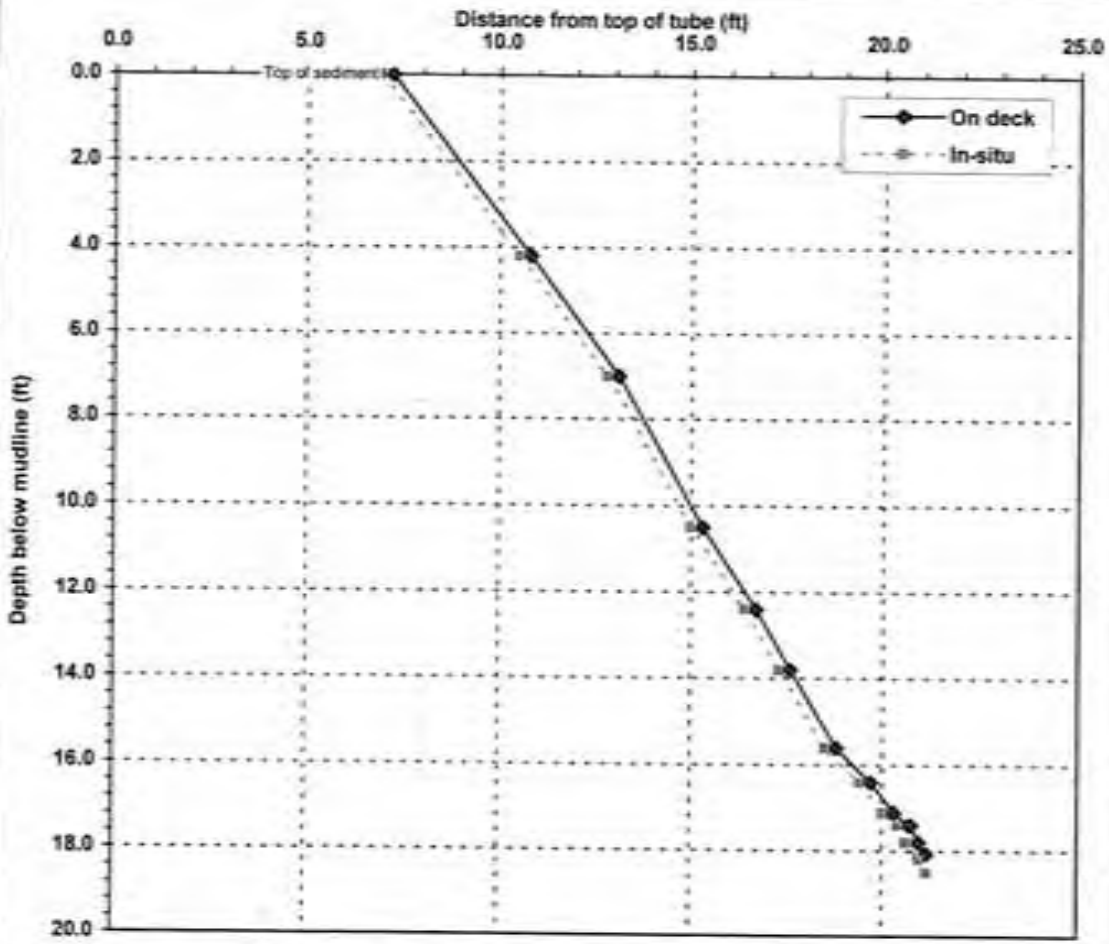
Notes: 21.1 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW437
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		196148 — Northing
Date:	11/11/2009	**Time:**	9:47 — 1275274 — Easting
Water depth:	20.1 ft	**Mudline:**	-11.9 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Partly Cloudy



Penetration 18.5 ft/ On deck recovery 13.9 ft = 75% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-4.2	3.6	86%
4.2-7	2.3	82%
7-10.5	2.2	63%
10.5-12.4	1.4	74%
12.4-13.8	0.9	64%
13.8-15.6	1.2	67%
15.6-16.4	0.9	113%
16.4-17.1	0.6	86%
17.1-17.4	0.4	133%
17.4-17.8	0.2	50%
17.8-18.2	0.3	75%
18.2-18.5	0.2	67%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	7.2
1	8.06
2	8.91
3	9.77
4	10.63
5	11.46
6	12.28
7	13.10
8	13.73
9	14.36
10	14.99
11	15.67
12	16.41
13	17.09
14	17.73
15	18.40
16	19.25
17	20.21
18	21.05
19	No sample
20	No sample

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File name SD-DUW437
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW437

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/11/2009	11/11/09
Start Time:	9:47	1115

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
7.2	Top of sediment
	7.2-7.5 ML soft ~~SP~~, black, 80/20 sand is fn non-plast.
	7.5-7.8 SP blackish gray, red/white grains, sand is fn-med. med dense
mod. to strong H_2S odor to 10.6	7.8-8.9 ML med soft, black, 80/20, sand is fn, non-plast. the top interval
	8.9-12.3 ML black, med firm low to mod plast, 90/10 sand is fine,
	mod @ 10.2-10.5
	12.3-20.6 ML blackish gray, med firm to 17.9, then firm, mod plast, 95/5 sand is v fn.
	organic debris 17.3-17.5
	olive gray SP/SM interbeds fn. sand 80/20 → 95/5 @ 17.3, 13.1 → 13.5, 13.9 → 14, 14.4 → 14.8, 16.2-16.5
	trace organic debris 15.6
	ML pocket, olive gray @ 20
	SP: pocket, blackish gray, red/white grains, sand fn-med @ 20.2-20.3

Distance top/bottom	
8.91 / 9.77	AMEC Proj.No. 13133.003 SD-DUW437-0020 Core Description Initials: RHG Date: 11/11/09 Time: 1115
9.77 / 10.63	AMEC Proj.No. 13133.003 SD-DUW437-0030 Core Description Initials: RHG Date: 11/11/09 Time: 1115
10.63 / 11.46	AMEC Proj.No. 13133.003 SD-DUW437-0040 Core Description Initials: RHG Date: 11/11/09 Time: 1115
11.46 / 12.28	AMEC Proj.No. 13133.003 SD-DUW437-0050 Core Description Initials: RHG Date: 11/11/09 Time: 1115
12.28 / 13.1	AMEC Proj.No. 13133.003 SD-DUW437-0060 Core Description Initials: RHG Date: 11/11/09 Time: 1115
13.1 / 13.73	AMEC Proj.No. 13133.003 SD-DUW437-0070 Core Description Initials: RHG Date: 11/11/09 Time: 1115
13.73 / 14.36	AMEC Proj.No. 13133.003 SD-DUW437-0080 Core Description Initials: RHG Date: 11/11/09 Time: 1115

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW437

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/11/2009	11/11/09
Start Time:	9:47	1115

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
7.2	Top of sediment

Distance top/bottom	Sample ID labels
14.36 – 15	AMEC Proj.No. 13133.003 SD-DUW437-0090 Core Description Initials: RHG Date: 11/11/09 Time: 1115
15 – 15.67	AMEC Proj.No. 13133.003 SD-DUW437-0100 Core Description Initials: RHG Date: 11/11/09 Time: 1115
15.67 – 16.41	AMEC Proj.No. 13133.003 SD-DUW437-0110 Core Description Initials: RHG Date: 11/11/09 Time: 1115
16.41 – 17.09	AMEC Proj.No. 13133.003 SD-DUW437-0120 Core Description Initials: RHG Date: 11/11/09 Time: 1115
17.09 – 17.73	AMEC Proj.No. 13133.003 SD-DUW437-0130 Core Description Initials: RHG Date: 11/11/09 Time: 1115
17.73 – 18.4	AMEC Proj.No. 13133.003 SD-DUW437-0140 Core Description Initials: RHG Date: 11/11/09 Time: 1115
18.4 – 19.25	AMEC Proj.No. 13133.003 SD-DUW437-0150 Core Description Initials: RHG Date: 11/11/09 Time: 1115

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW437

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/11/2009	11/11/09
Start Time:	9:47	1115

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
7.2	Top of sediment

Distance top/bottom	Sample ID labels
19.25 / 20.2	AMEC Proj.No. 13133.003 SD-DUW437-0169 Core Description Initials: RHG Date: 11/11/09 Time: 1115
20.2 / 20.6	AMEC Proj.No. 13133.003 SD-DUW437-0170 Core Description Initials: RHG Date: 11/11/09 Time: 1115

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Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSA Date: 11 / 19 2009

- [x] Daily dGPS verification check completed
- [x] Station Name: SD DUW 437 Time: 1332
- [x] Water Depth: 20.2 Tide: 7.4
- [x] Duplicate core required at station? Required (Not Required)
- [ ] GPS range within 6 ft radius of station prior to sampler deployment
- [x] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196145 Actual N: 196148

Planned E: 1275272 Actual E: 1275263

- [x] Logged GPS Verified by Shore Crew
- [Yes] Maximum core penetration goal reached
- [x] No known significant loss of sediment out of bottom of core tube
- [x] Core tube labeled
- [X] Core log and check list provided to shore crew Received By: RHG

	Penetration:	Recovery:	Comments:
1	16.5	18.0	
2	14.4	16.1	
3	12.0	13.9	
4	6.5	9.9	
5	5.0	9.0	
6	3.0	7.8	
7	1.5	7.1	
8	0.2	6.3	
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 6.3 ft

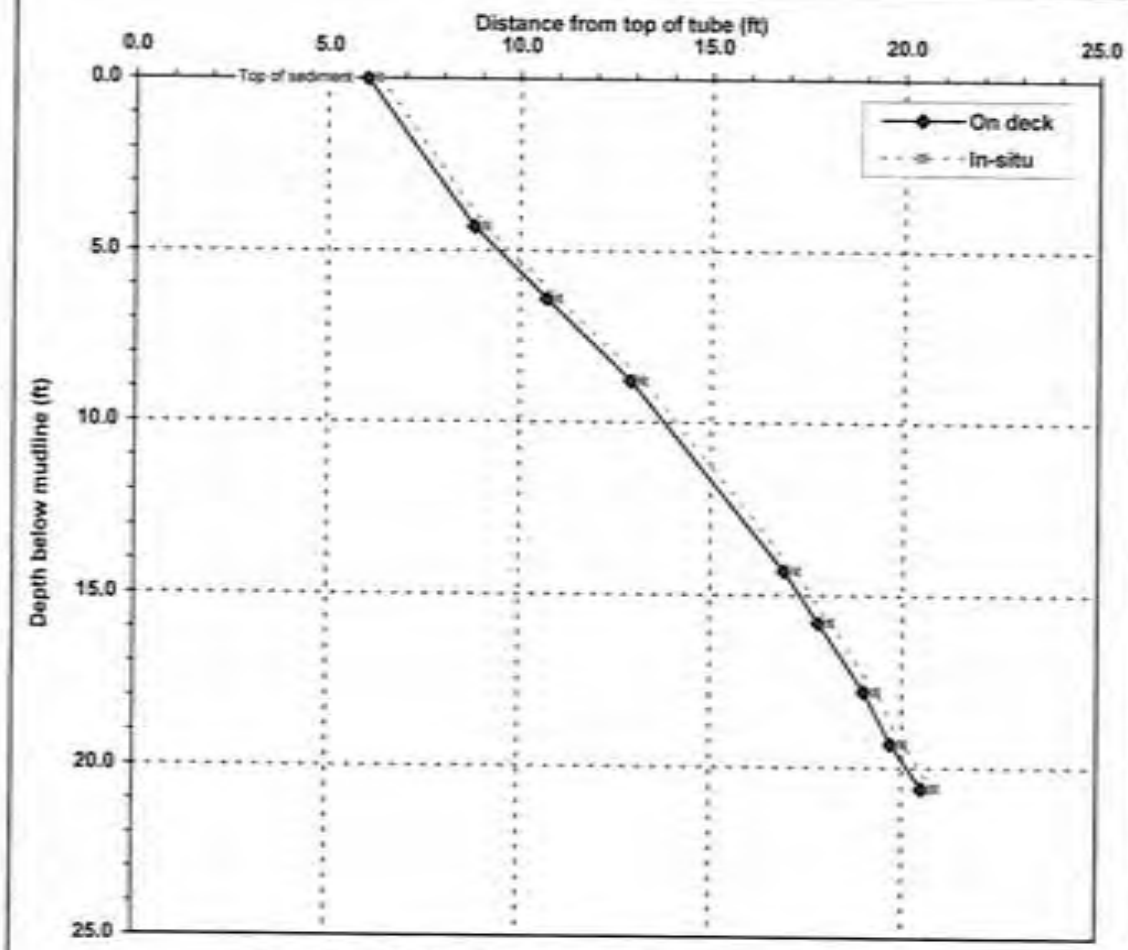
Notes: 20.5 @ core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW437R2
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		196148 — Northing
Date:	11/19/2009	**Time:**	13:32 — 1275263 — Easting
Water depth:	20.2 ft	**Mudline:**	-12.8 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Rain



Penetration 20.6 ft/ On deck recovery 14.8 ft = 72% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-4.3	2.8	65%
4.3-6.4	1.9	90%
6.4-8.8	2.2	92%
8.8-14.3	4	73%
14.3-15.8	0.9	60%
15.8-17.8	1.2	60%
17.8-19.3	0.7	47%
19.3-20.6	0.8	62%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	6
1	6.65
2	7.30
3	7.95
4	8.60
5	9.43
6	10.34
7	11.25
8	12.17
9	13.05
10	13.77
11	14.50
12	15.23
13	15.95
14	16.68
15	17.32
16	17.92
17	18.52
18	19.09
19	19.56
20	20.13

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File name SD-DUW437R2
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW437R2

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/19/2009	11/19/09
Start Time:	13:32	1445

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
6	Top of sediment
	6-7.5 ML: black, soft, non-plast 80/20 sand fn-med.
sl H_2S odor 10.6'	to 7.5-20.45 ML. grayish black, med. firm to firm (below 16.9') med plast, 90/10 fn sand
	trace fine organic fibers
	SP lense, blackish gray, med/white grains, sand is fn-med @ 10.7-10.8, 11.1-11.2, 18.8-18.9
	SM olive gray, 80/20, sand fn lenses @ 17.3-17.6, 13.1-13.2, 13.7-13.8, 14-14.1, 14.3-14.4, 15.1-15.2, 15.6-15.7, 16.9-17.0
	piece of wood @ 15.4, 17.1
	trace wood horizon (twigs, black) @ 13.6, 17.1

Distance top/bottom	Sample ID labels
19.09 / 19.56	AMEC Proj.No. 13133.003 SD-DUW437-0180 Core Description Initials: RHG Date: 11/19/09 Time: 1445
19.56 / 20.13	AMEC Proj.No. 13133.003 SD-DUW437-0190 Core Description Initials: RHG Date: 11/19/09 Time: 1445

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	YES
RHG	Separation (gaps) along length of sediment in core tube.	No
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	Yes
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	RHG
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	RHG

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 11 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DMW 438 Time: 1122

[X] Water Depth: 22.8 Tide: 10.9

[X] Duplicate core required at station? Required Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196077 Actual N: 196076

Planned E: 1275347 Actual E: 1275350

[X] Logged GPS Verified by Shore Crew

[NO] Maximum core penetration goal reached

[ ] No known significant loss of sediment out of bottom of core tube

[ ] Core tube labeled

[ ] Core log and check list provided to shore crew Received By: _____

	Penetration:	Recovery:	Comments:
1	17.9	19.0	
2	15.9	17.4	
3	14.3	16.8	core tipping sideways
4	13.0	16.3	
5			core tipped 45° - reject attempt
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: _____ ft

Notes: reject - cleaned out core tube + reused

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 11 2009

[Y] Daily dGPS verification check completed

[Y] Station Name: SD DUW 438 Rep 2 Time: 1220

[Y] Water Depth: 23.0 Tide: 11.4

[Y] Duplicate core required at station? Required (Not Required)

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196077 Actual N: 196083

Planned E: 1275347 Actual E: 1275345

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RH

	Penetration:	Recovery:	Comments:
1	17.7	18.3	
2	15.0	15.9	
3	12.7	14.6	
4	11.9	14.0	
5	11.3	13.8	
6	11.0	13.6	very slow
7	10.8	13.5	
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 13.7 ft

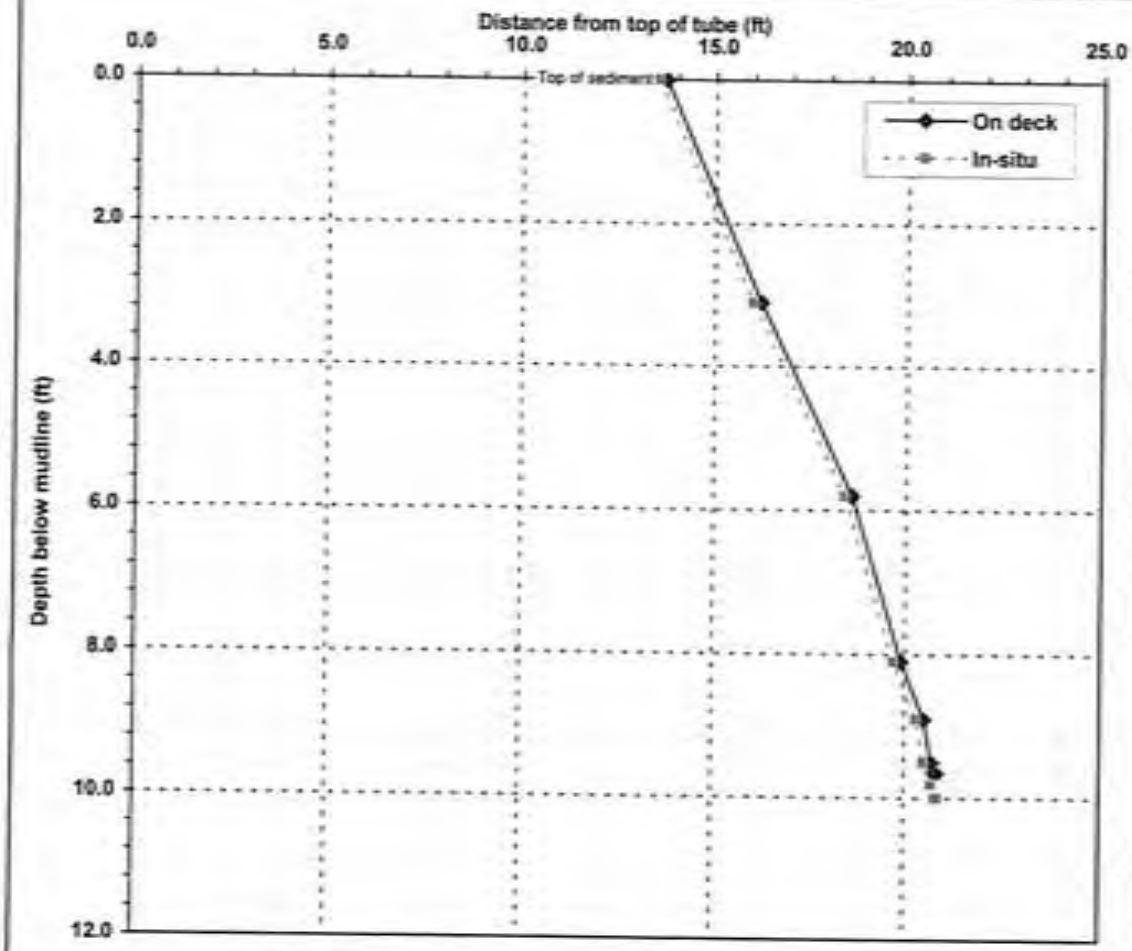
Notes: second attempt - moved ~ 2m from first location

Mudmole™ Bore Log

Project: 2009 Additional Characterization
Station: SD-DUW438
Project No: 13133.003
Position: NAD 83 — WA N
196083 — Northing
1275345 — Easting
Collected by: GSM
Date: 11/11/2009 **Time:** 12:20
Water depth: 23.0 ft **Mudline:** -11.6 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Sunny



Penetration 10 ft/ On deck recovery 7.1 ft = 71% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-3.1	2.5	81%
3.1-5.8	2.4	89%
5.8-8.1	1.3	57%
8.1-8.9	0.6	75%
8.9-9.5	0.2	33%
9.5-9.8	0.2	67%
9.8-10	0.1	50%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	13.7
1	14.51
2	15.31
3	16.12
4	17.00
5	17.89
6	18.71
7	19.28
8	19.84
9	20.53
10	No sample
11	No sample
12	No sample
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW438

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/11/2009	11/11/09
Start Time:	12:20	1340

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
13.7	Top of sediment
	13.7-14.4 ML. soft, black, non-plastic, 80/20 sand is fn-med, trace crushed shells to 14
	14.4-17.8 ML. black, mod stiff, mod plast, 95/5 with trace SP sand pockets @ 15.7 & 16.8 → red white grains sand is med.
	twig @ 16.3
	trace organics throughout
	17.8-18.1 SM blackish gray, dense, 80/20 sand is fine,
	18.1-20.4 SP. blackish gray, med dense, 95/5 red white grains sand is fn-med. 50-70% winnowed below 18.5
	piece of wood (bark?) @ 18.5, winnowed below.

Distance top/bottom	Sample ID labels
15.31 / 16.12	AMEC Proj.No. 13133.003 SD-DUW438-0020 Core Description Initials: RHG Date: 11/11/09 Time: 1340
16.12 / 17	AMEC Proj.No. 13133.003 SD-DUW438-0030 Core Description Initials: RHG Date: 11/11/09 Time: 1340
17 / 17.89	AMEC Proj.No. 13133.003 SD-DUW438-0040 Core Description Initials: RHG Date: 11/11/09 Time: 1340
17.89 / 18.5	AMEC Proj.No. 13133.003 SD-DUW438-0050 Core Description Initials: RHG Date: 11/11/09 Time: 1340

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Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 13 2009

[x] Daily dGPS verification check completed

[x] Station Name: SD DUW 438 R3 Time: 1024

[x] Water Depth: 20.5 Tide: 7.1

[x] Duplicate core required at station? Required ~~Not Required~~

[x] GPS range within 6 ft radius of station prior to sampler deployment

[x] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196077 Actual N: 196074

Planned E: 1275347 Actual E: 1275342

[x] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[x] No known significant loss of sediment out of bottom of core tube

[x] Core tube labeled

[x] Core log and check list provided to shore crew Received By: RHS

	Penetration:	Recovery:	Comments:
1	17.6	19.1	
2	15.0	17.1	
3	12.4	14.7	
4	10.5	13.7	
5	9.6	13.2	
6	8.6	12.9	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 12.9 ft

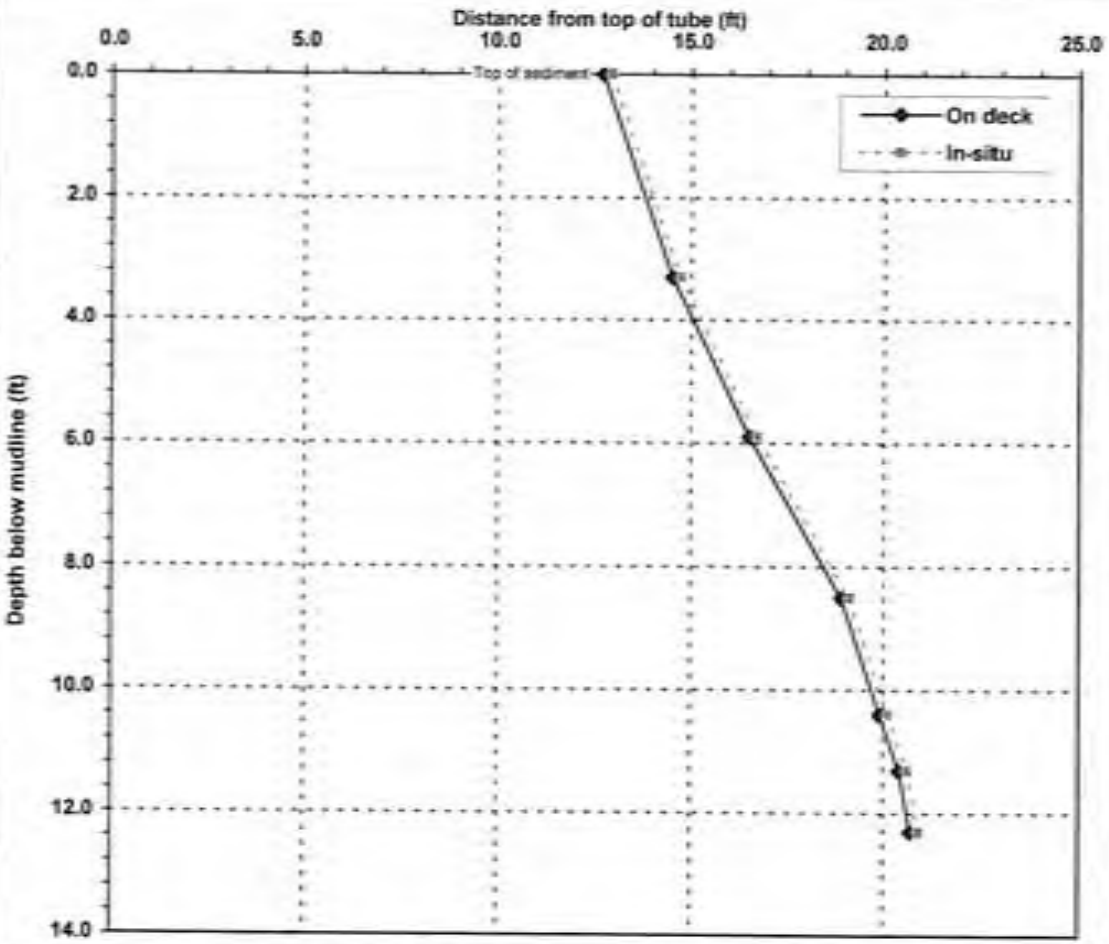
Notes: 20.9 @

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW438R3
Project No:	13133.003	**Position:**	NAD 83 WA N
Collected by:	GSM		196074 Northing
Date:	11/13/2009 **Time:** 10:24		1275342 Easting
Water depth:	20.5 ft **Mudline:** -13.4 ft MLLW		(estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Overcast



Penetration 12.3 ft/ On deck recovery 8.2 ft = 67% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-3.3	1.8	55%
3.3-5.9	2	77%
5.9-8.5	2.4	92%
8.5-10.4	1	53%
10.4-11.3	0.5	56%
11.3-12.3	0.3	30%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	12.7
1	13.25
2	13.79
3	14.34
4	15.04
5	15.81
6	16.59
7	17.52
8	18.44
9	19.16
10	19.69
11	20.23
12	20.61
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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File name SD-DUW438R3
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW438R3

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/13/2009	11/13/09
Start Time:	10:24	1145

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
12.7	Top of sediment
	12.7-15.4 ML black, soft, low plast, 95/5 sand fine, sl H_2S odor throughout
	15.4-17.8 ML black, mod. firm mod plast, trace organics lense of gray SM @ 16.4-16.5, 17.4-17.5 mussel shell @ 16, 17.2
	17.8-20.1 SP. blackish gray, mod. dense to dense, red/white grains sand is mod with wood frags lenses of ML gray @ 18.7, 19.6, 19.3, 20 coarse salt + pepper sand lense with wood frags @ 19.1
	20.1-20.4 SP. olive gray, 90/10 fine sand, dense

Distance top/bottom	Sample ID labels
16.59 / 17.52	AMEC Proj.No. 13133.003 SD-DUW438-0060 Core Description Initials: RHG Date: 11/13/09 Time: 1145
17.52 / 18.44	AMEC Proj.No. 13133.003 SD-DUW438-0070 Core Description Initials: RHG Date: 11/13/09 Time: 1145
18.44 / 19.16	AMEC Proj.No. 13133.003 SD-DUW438-0080 Core Description Initials: RHG Date: 11/13/09 Time: 1145
19.16 / 19.69	AMEC Proj.No. 13133.003 SD-DUW438-0090 Core Description Initials: RHG Date: 11/13/09 Time: 1145
19.69 / 20.23	AMEC Proj.No. 13133.003 SD-DUW438-0100 Core Description Initials: RHG Date: 11/13/09 Time: 1145

439

Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	Slight
RHG	Separation (gaps) along length of sediment in core tube.	No
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
RHG	Duplicate samples analyzed at 10% frequency	YES
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	RHG

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 11 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DMW 439 Time: 1332

[X] Water Depth: 22.2 Tide: 11.1

[X] Duplicate core required at station? (Required) Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 195901 Actual N: 195901

Planned E: 1275541 Actual E: 1275544

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RHG

	Penetration:	Recovery:	Comments:
1	17.7	18.1	
2	15.4	16.2	
3	11.6	13.0	
4	8.1	10.9	
5	6.7	9.9	
6	5.5	9.1	
7	4.8	8.8	
8	4.3	8.6	very slow
9	4.0	8.6	
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 8.7 ft

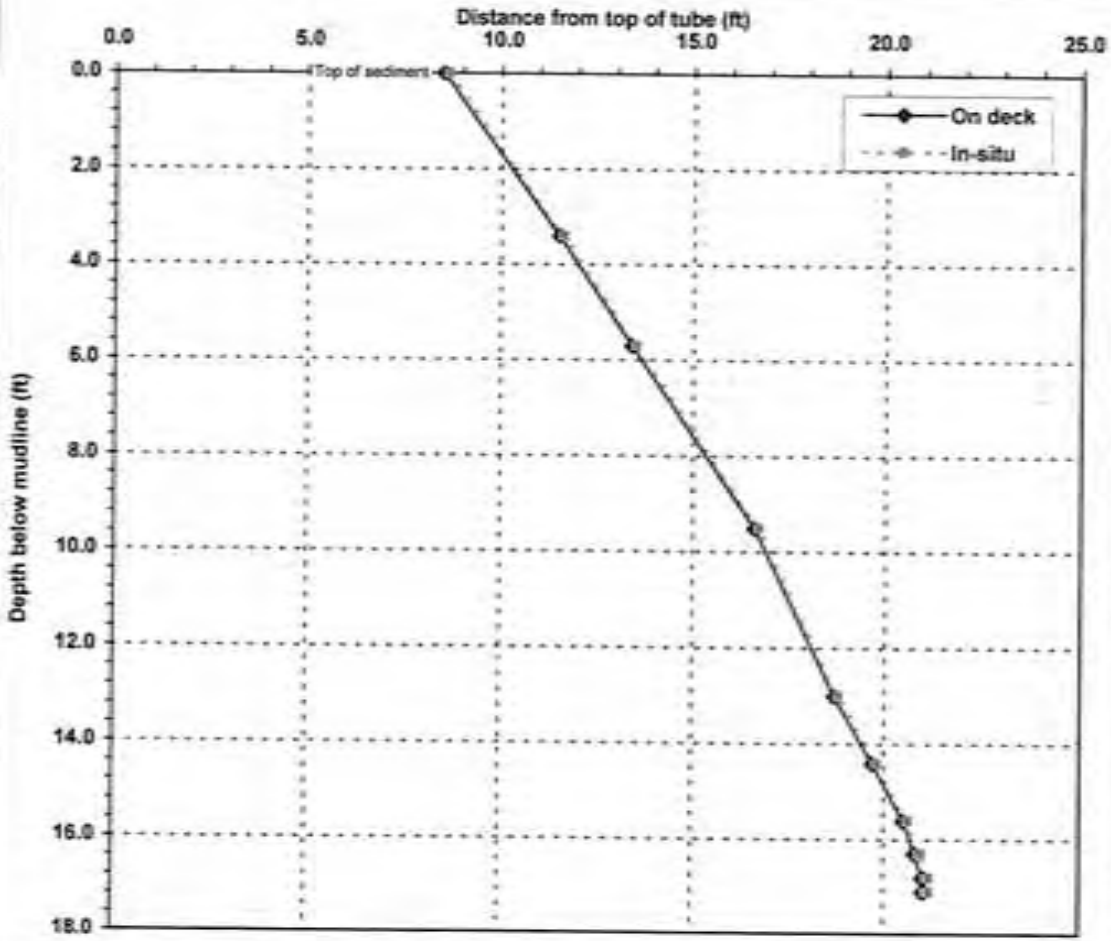
Notes: 21.1 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW439
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		195901 — Northing
Date:	11/11/2009	**Time:**	13:32 — 1275544 — Easting
Water depth:	22.2 ft	**Mudline:**	-11.1 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Sunny



Penetration 17.1 ft/ On deck recovery 12.6 ft = 74% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-3.4	3	88%
3.4-5.7	1.9	83%
5.7-9.5	3.2	84%
9.5-13	2.1	60%
13-14.4	1	71%
14.4-15.6	0.8	67%
15.6-16.3	0.3	43%
16.3-16.8	0.1999	40%
16.8-17.1	1E-04	0%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	8.5
1	9.38
2	10.26
3	11.15
4	12.00
5	12.82
6	13.65
7	14.49
8	15.34
9	16.18
10	16.90
11	17.50
12	18.10
13	18.70
14	19.41
15	20.10
16	20.67
17	21.00
18	No sample
19	No sample
20	No sample

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW439

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/11/2009	11/11/09
Start Time:	13:32	1615

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID labels
8.5	Top of sediment 8.5-9.4 ML: soft, black, non-plast, 85/15, sand fin.	10.26 / 11.15	AMEC Proj.No. 13133.003 SD-DUW439-0020 Core Description Initials: RHG Date: 11/11/09 Time: 1615
spotty slight sheen 10.5-11	9.4-17.4 ML: mod soft to mod firm (at 14.9). mod. plast, 90/10 sand fine slight H_2S to 11.8' SM olive gray, 80/20, sand fin @ 11.1-11.5 12.5-12.6 12.9-14.3 15.5-15.6 15.9-16.1 16.9-17.0 slight spotty sheen moderate HC-like odor	11.15 / 12	AMEC Proj.No. 13133.003 SD-DUW439-0030 Core Description Initials: RHG Date: 11/11/09 Time: 1615
wood @ 16.8	17.4-18.4 SM: blackish gray 80/20 sand is fin-med, dense red/white grains	12 / 12.82	AMEC Proj.No. 13133.003 SD-DUW439-0040 Core Description Initials: RHG Date: 11/11/09 Time: 1615
slight HC-like odor 18.1-19.0	18.4-19.0 SP: blackish gray, dense, red/white grains, 95/5 sand is med grading coarse @ 18.9 19.0 → EOC is void or winnowed, material as above	12.82 / 13.65	AMEC Proj.No. 13133.003 SD-DUW439-0050 Core Description Initials: RHG Date: 11/11/09 Time: 1615
		13.65 / 14.49	AMEC Proj.No. 13133.003 SD-DUW439-0060 Core Description Initials: RHG Date: 11/11/09 Time: 1615
		14.49 / 15.34	AMEC Proj.No. 13133.003 SD-DUW439-0070 Core Description Initials: RHG Date: 11/11/09 Time: 1615
		15.34 / 16.18	AMEC Proj.No. 13133.003 SD-DUW439-0080 Core Description Initials: RHG Date: 11/11/09 Time: 1615

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW439

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/11/2009	11/11/09
Start Time:	13:32	1615

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
8.5	Top of sediment

Distance top/bottom	Sample Description
16.18 / 16.9	AMEC Proj.No. 13133.003 SD-DUW439-0090 Core Description Initials: RHG Date: 11/11/09 Time: 1615
16.9 / 17.5	AMEC Proj.No. 13133.003 SD-DUW439-0100 Core Description Initials: RHG Date: 11/11/09 Time: 1615
17.5 / 18.1	AMEC Proj.No. 13133.003 SD-DUW439-0110 Core Description Initials: RHG Date: 11/11/09 Time: 1615
18.1 / 18.7	AMEC Proj.No. 13133.003 SD-DUW439-0120 Core Description Initials: RHG Date: 11/11/09 Time: 1615
18.7 / 19.41	AMEC Proj.No. 13133.003 SD-DUW439-0130 Core Description Initials: RHG Date: 11/11/09 Time: 1615

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	slight winnowing
RHG	Separation (gaps) along length of sediment in core tube.	No
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	RHG
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	RHG

OHO

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 12 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW 440 Time: 0944

[X] Water Depth: 19.9 Tide: 6.8

[X] Duplicate core required at station? Required (Not Required)

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 195838 Actual N: 195837

Planned E: 1275598 Actual E: 1275596

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RHG

	Penetration:	Recovery:	Comments:
1	18.5	18.6	
2	16.3	16.5	
3	12.9	13.7	
4	10.4	12.6	
5	8.7	11.8	slow
6	8.0	11.4	
7	7.0	11.1	
8	6.4	10.8	
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 10.7 ft

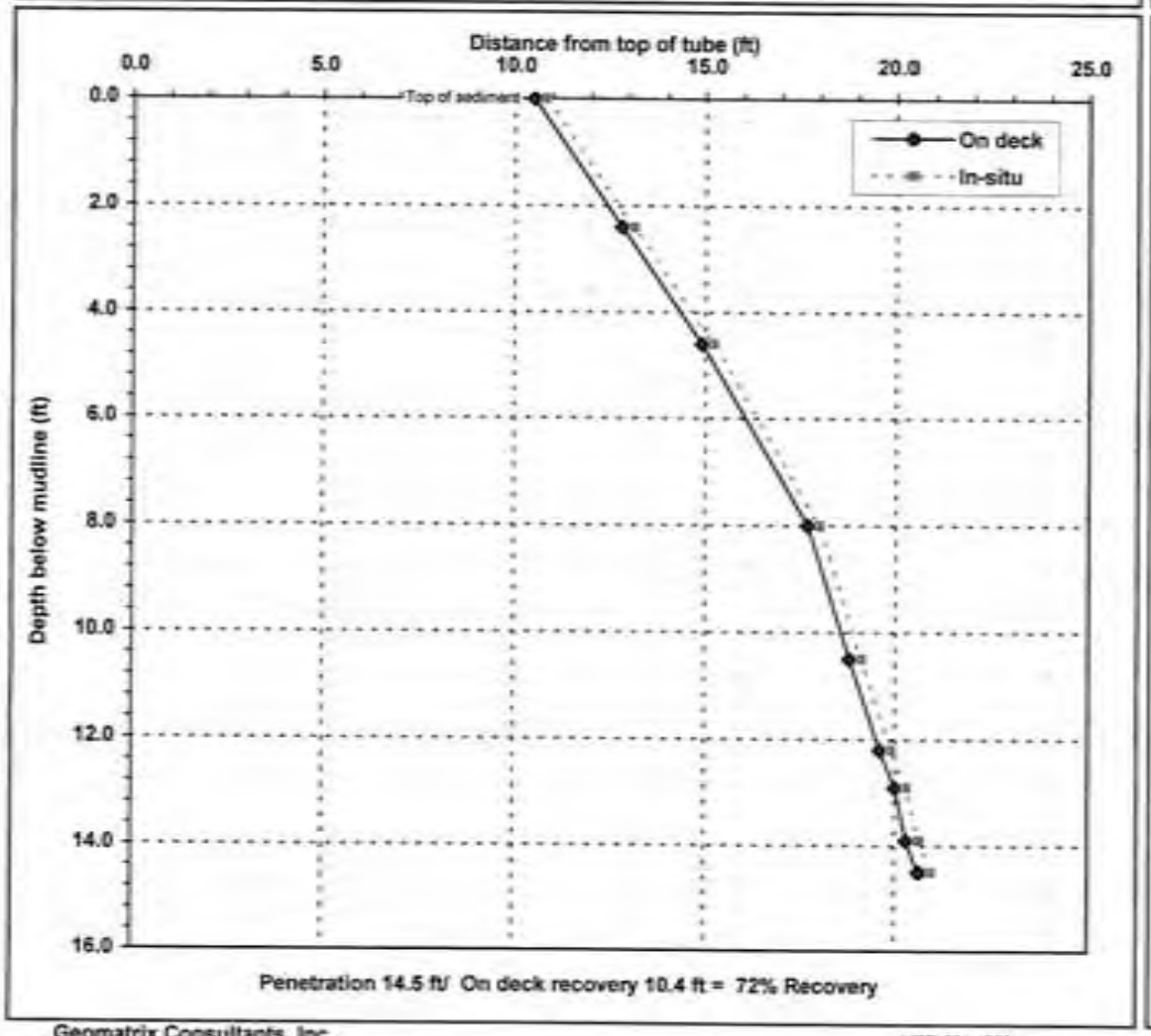
Notes: 20.9 @ core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW440
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		195837 — Northing
Date:	11/12/2009	**Time:**	9:44 — 1275596 — Easting
Water depth:	19.9 ft	**Mudline:**	-13.1 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Sunny



Penetration 14.5 ft/ On deck recovery 10.4 ft = 72% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.4	2.3	96%
2.4-4.6	2.1	95%
4.6-8	2.8	82%
8-10.5	1.1	44%
10.5-12.2	0.8	47%
12.2-12.9	0.4	57%
12.9-13.9	0.3	30%
13.9-14.5	0.3	50%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	10.5
1	11.46
2	12.42
3	13.37
4	14.33
5	15.23
6	16.05
7	16.88
8	17.70
9	18.14
10	18.58
11	19.04
12	19.51
13	20.03
14	20.35
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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File name SD-DUW440
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW440

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/12/2009	11/12/09
Start Time:	9:44	1100

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
10.5	Top of sediment
	10.5 - 11.9 ML black, mod. soft, non-plast, 80/20 sand is fn-med.
mod H_2S odor to 17.5	11.9 - 17.1 ML: black, mod firm to 15.7, then firm, mod plast, 90/10
	lenses of SP, black, sand is fn-med @ 13.1 - 13.2, 14.0 - 14.1, 14.5 - 14.6, 15.5 - 15.6
	Sl. HC-like odor from 16.3 - 16.7
	17.1 - 18.45 SM blackish gray, red white grains
	slight to mod HC-like odor 17.1 - 18.2
	sand is fn-med, 80/20, dense, thin black ML laminations @ 17.7, 17.8, 17.9, 18.1, 18.2
	18.45 - 20.4 SP: blackish gray, red/white grains, sand is med 95/5, dense.
	gray ML clast @19.3
	sl. winnowed 20.4 - 20.6 (~70%)

Distance top/bottom	Sample ID labels
12.42 / 13.37	AMEC Proj.No. 13133.003 SD-DUW440-0020 Core Description Initials: RHG Date: 11/12/09 Time: 1100
13.37 / 14.33	AMEC Proj.No. 13133.003 SD-DUW440-0030 Core Description Initials: RHG Date: 11/12/09 Time: 1100
14.33 / 15.23	AMEC Proj.No. 13133.003 SD-DUW440-0040 Core Description Initials: RHG Date: 11/12/09 Time: 1100
15.23 / 16.05	AMEC Proj.No. 13133.003 SD-DUW440-0050 Core Description Initials: RHG Date: 11/12/09 Time: 1100
16.05 / 16.88	AMEC Proj.No. 13133.003 SD-DUW440-0060 Core Description Initials: RHG Date: 11/12/09 Time: 1100
16.88 / 17.7	AMEC Proj.No. 13133.003 SD-DUW440-0070 Core Description Initials: RHG Date: 11/12/09 Time: 1100
17.7 / 18.14	AMEC Proj.No. 13133.003 SD-DUW440-0080 Core Description Initials: RHG Date: 11/12/09 Time: 1100

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW440

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/12/2009	11/12/09
Start Time:	9:44	1100

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
10.5	Top of sediment

Distance top/bottom	Sample ID labels
18.14 / 18.58	AMEC Proj.No. 13133.003 **SD-DUW440-0090** Core Description Initials: RHG Date: 11/12/09 Time: 1100
18.58 / 19.04	AMEC Proj.No. 13133.003 **SD-DUW440-0100** Core Description Initials: RHG Date: 11/12/09 Time: 1100
19.04 / 19.51	AMEC Proj.No. 13133.003 **SD-DUW440-0110** Core Description Initials: RHG Date: 11/12/09 Time: 1100
19.51 / 20.03	AMEC Proj.No. 13133.003 **SD-DUW440-0120** Core Description Initials: RHG Date: 11/12/09 Time: 1100
20.03 / 20.4	AMEC Proj.No. 13133.003 **SD-DUW440-0130** Core Description Initials: RHG Date: 11/12/09 Time: 1100

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	No
RHG	Separation (gaps) along length of sediment in core tube.	NO
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	RHG
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	RHG

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Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11/12 2009

[X] Daily dGPS verification check completed

[✓] Station Name: SO DNW 441 Time: 1239

[✓] Water Depth: 19.2 Tide: 11.3

[✓] Duplicate core required at station? Required Not Required

[✓] GPS range within 6 ft radius of station prior to sampler deployment

[✓] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 195 699 Actual N: 195 699

Planned E: 1275755 Actual E: 1275755

[✓] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[✓] No known significant loss of sediment out of bottom of core tube

[✓] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RG

	Penetration:	Recovery:	Comments:
1	17.4	19.1	
2	14.0	15.4	
3	10.5	13.3	
4	7.6	12.0	
5	5.8	10.8	
6	5.2	10.3	slow
7	4.6	9.9	
8	4.1	9.5	
9	3.6	9.3	
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 9.2 ft ft

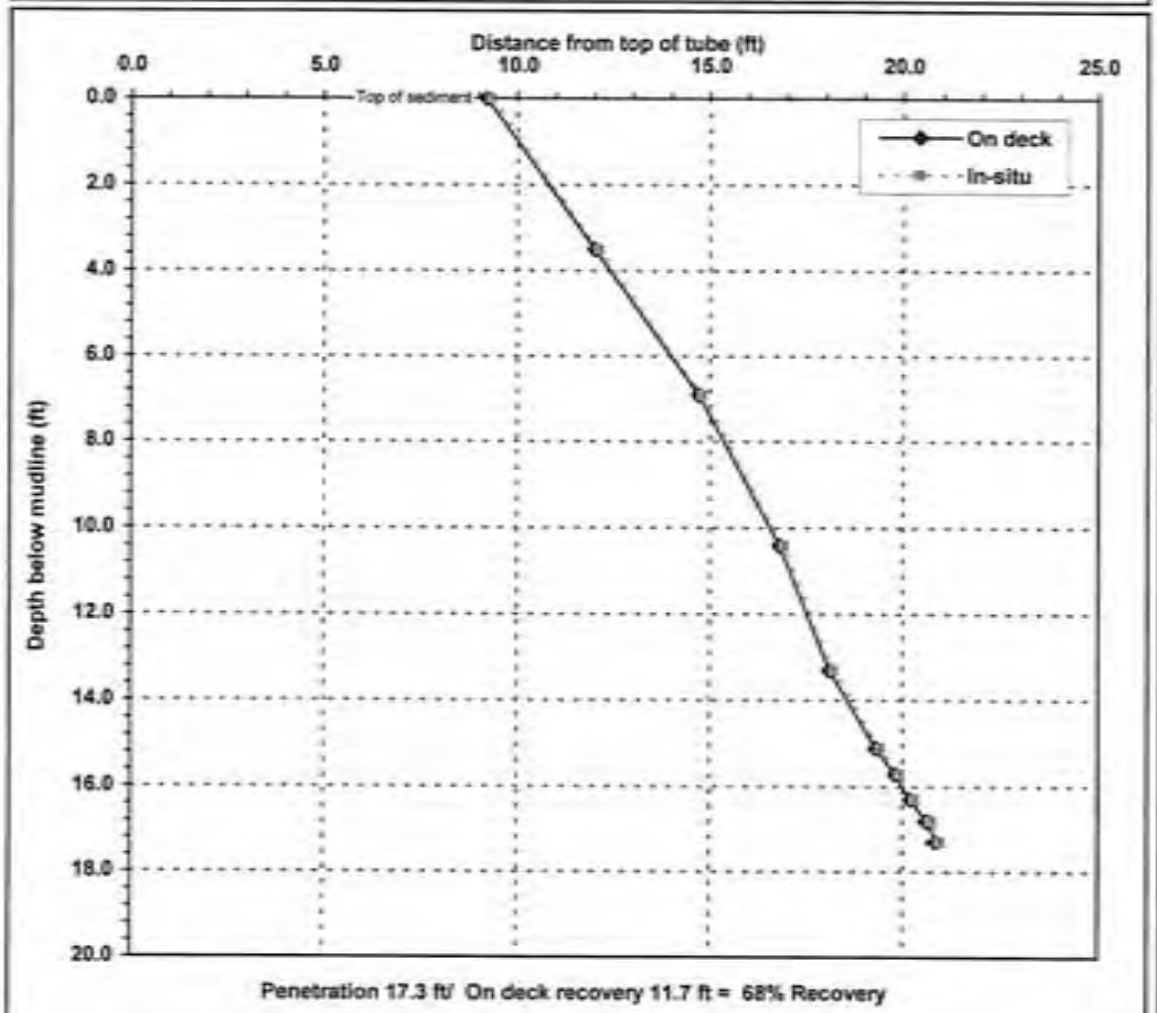
Notes: 20.9 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW441
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		195699 — Northing
Date:	11/12/2009	**Time:**	12:39 — 1275755 — Easting
Water depth:	19.2 ft	**Mudline:**	-7.9 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Sunny



Penetration 17.3 ft/ On deck recovery 11.7 ft = 68% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-3.5	2.8	80%
3.5-6.9	2.7	79%
6.9-10.4	2.1	60%
10.4-13.3	1.3	45%
13.3-15.1	1.2	67%
15.1-15.7	0.5	83%
15.7-16.3	0.4	67%
16.3-16.8	0.4	80%
16.8-17.3	0.2	40%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	9.2
1	10.00
2	10.80
3	11.60
4	12.40
5	13.19
6	13.99
7	14.76
8	15.36
9	15.96
10	16.56
11	17.07
12	17.52
13	17.97
14	18.57
15	19.23
16	20.00
17	20.68
18	No sample
19	No sample
20	No sample

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File name SD-DUW441
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW441

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/12/2009	11/12/09
Start Time:	12:39	1450

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
9.2	Top of sediment
	9.2-11 ML. soft, black, non-to low plast, 95/5 sand is fn-med trace organics.
	11-11.9 ML. med firm, black, med plast, 90/10 sand is fn. wood pieces @ 12.7, 14 & 14.6
	lenses of olive gray SM @ 14.1-14.2 14.7-14.8
	14.9-17.6 SP: blackish gray, red/white grains sand is fn, grading medium @ 16.8
15.36 2 pieces of gravel	90/10
	sl H_2S 16.5-17.1 Scattered olive gray ML rip up clast to 16.2. 16.3-16.5 ML gray 90/10, med. plast lense. below 16.8 no rip up clasts just 95/5
sl. H_2S odor 18.1-20.3	17.6-19.5 SP/SP: grayish brown 80/20-90/10 sand is fine, dense. hints of interbeddness
	19.5-20.3 SP: blackish gray, red/white grains, mod dense, 95/5 scattered wood pieces

Distance top/bottom	
15.36 / 15.96	AMEC Proj.No. 13133.003 SD-DUW441-0080 Core Description Initials: RHG Date: 11/12/09 Time: 1450
15.96 / 16.56	AMEC Proj.No. 13133.003 SD-DUW441-0090 Core Description Initials: RHG Date: 11/12/09 Time: 1450
16.56 / 17.07	AMEC Proj.No. 13133.003 SD-DUW441-0100 Core Description Initials: RHG Date: 11/12/09 Time: 1450
17.07 / 17.52	AMEC Proj.No. 13133.003 SD-DUW441-0110 Core Description Initials: RHG Date: 11/12/09 Time: 1450
17.52 / 17.97	AMEC Proj.No. 13133.003 SD-DUW441-0120 Core Description Initials: RHG Date: 11/12/09 Time: 1450
17.97 / 18.57	AMEC Proj.No. 13133.003 SD-DUW441-0130 Core Description Initials: RHG Date: 11/12/09 Time: 1450
18.57 / 19.23	AMEC Proj.No. 13133.003 SD-DUW441-0140 Core Description Initials: RHG Date: 11/12/09 Time: 1450

No recovery below 20.3

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW441

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/12/2009	11/12/09
Start Time:	12:39	1450

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
9.2	Top of sediment

Distance top/bottom	Sample ID labels
19.23 / 20	AMEC Proj.No. 13133.003 **SD-DUW441-0150** Core Description Initials: RHG Date: 11/12/09 Time: 1450
20 / 20.3	AMEC Proj.No. 13133.003 **SD-DUW441-0160** Core Description Initials: RHG Date: 11/12/09 Time: 1450

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG		Core processed within 24 hrs of collection. YES
RHG		Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores) No
RHG		Separation (gaps) along length of sediment in core tube. No
RHG		Video taken. (destroy photo label after use to prevent accidental reuse.) YES
RHG		Correct number and type of sample jars filled. YES
RHG		Sample label number matches on all sample jars and core description forms and COC forms. YES
RHG		Sample jars verified against COC forms. YES
RHG		Samples kept cold until delivery to lab. YES
NA	RHG	Duplicate samples analyzed at 10% frequency
NA	RHG	VOC samples in cooler with trip blanks (2 vials per cooler)

hh2

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: CSM Date: 11 / 5 2009

X	Daily dGPS verification check completed
X	Station Name: SD DUW 442 Time: ~~1050~~ 1106
X	Water Depth: ~~22.~~ ~~21.8~~ 22.3 Tide: 8.3
X	Duplicate core required at station? Required Not Required
X	GPS range within 6 ft radius of station prior to sampler deployment
X	Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 197735 Actual N: 197735

Planned E: 1273424 Actual E: 1273422

X	Logged GPS Verified by Shore Crew
No	Maximum core penetration goal reached refusal
Y	No known significant loss of sediment out of bottom of core tube
X	Core tube labeled
X	Core log and check list provided to shore crew Received By: RAG

	Penetration:	Recovery:	Comments:
1	18.5	19.1	
2	14.2	15.8	
3	11.1	13.7	
4	10.3	13.3	
5	9.6	12.8	[illegible]
6	8.9	12.3	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 12.3 ft

Notes: 20.4 core tube

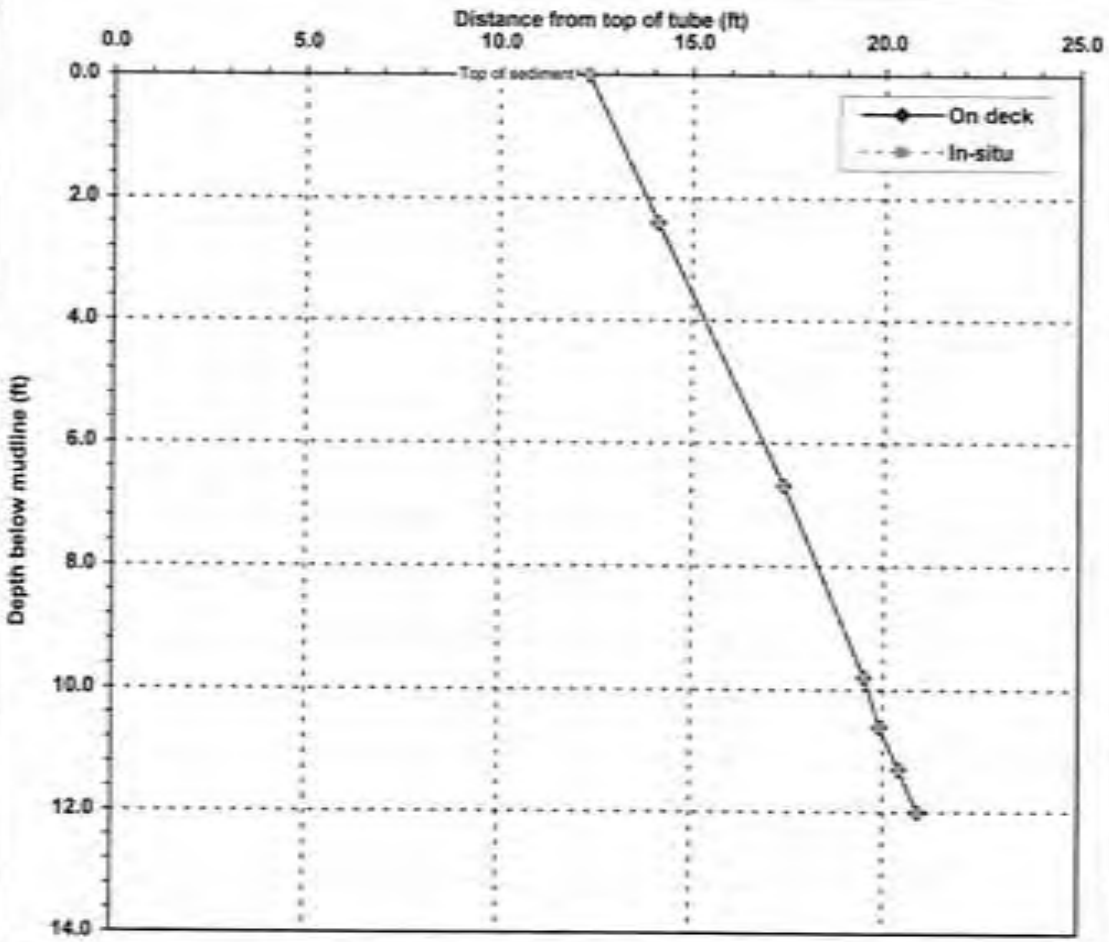
boat dragged anchor - reject first location logged on GPS

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW442
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		197735 — Northing
Date:	11/5/2009	**Time:**	11:06 — 1273422 — Easting
Water depth:	22.3 ft	**Mudline:**	-14.0 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Rainy



Penetration 12 ft/ On deck recovery 8.6 ft = 72% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.4	1.8	75%
2.4-6.7	3.3	77%
6.7-9.8	2.1	68%
9.8-10.6	0.4	50%
10.6-11.3	0.5	71%
11.3-12	0.5	71%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	12.3
1	13.05
2	13.80
3	14.56
4	15.33
5	16.10
6	16.86
7	17.60
8	18.28
9	18.96
10	19.60
11	20.19
12	12.00
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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File name SD-DUW442
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW442

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/5/2009	11/5/09
Start Time:	11:06	1250

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID labels
12.3	Top of sediment 12.3-13 SM loose, black 70/30 sand is fine 13.0-18.2 ML black, mod soft to 15.4 then mod firm, 90/10, low to mod plast piece of wood @ 15.3 @ 16.6 lenses of SP/SM olive gray, dense, sand is fn @ 15.9-16.1 @ 17.6-17.8 18.2-19.4 SP black/gray, red white grains, mod dense piece of wood @ 19.1 scattered black ML pockets (100 fines) @ 19.2 & 19.4 sand is fn - med grades to below 19.4-20.6 SP as above but no ML pockets and sand is med.	13.8 / 14.56	AMEC Proj.No. 13133.003 SD-DUW442-0020 Core Description Initials: RHG Date: 11/5/09 Time: 1250
		14.56 / 15.33	AMEC Proj.No. 13133.003 SD-DUW442-0030 Core Description Initials: RHG Date: 11/5/09 Time: 1250
		15.33 / 16.1	AMEC Proj.No. 13133.003 SD-DUW442-0040 Core Description Initials: RHG Date: 11/5/09 Time: 1250
		16.1 / 16.86	AMEC Proj.No. 13133.003 SD-DUW442-0050 Core Description Initials: RHG Date: 11/5/09 Time: 1250
		16.86 / 17.6	AMEC Proj.No. 13133.003 SD-DUW442-0060 Core Description Initials: RHG Date: 11/5/09 Time: 1250
		17.6 / 18.28	AMEC Proj.No. 13133.003 SD-DUW442-0070 Core Description Initials: RHG Date: 11/5/09 Time: 1250
		18.28 / 18.96	AMEC Proj.No. 13133.003 SD-DUW442-0080 Core Description Initials: RHG Date: 11/5/09 Time: 1250

Continued

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW442

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/5/2009	11/5/09
Start Time:	11:06	1250

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
12.3	Top of sediment

Distance top/bottom	Sample ID labels
18.96 / 19.6	AMEC Proj.No. 13133.003 SD-DUW442-0090 Core Description Initials: ~~11/5/09~~ RHG Date: 11/5/09 Time: 1250
19.6 / 20.2	AMEC Proj.No. 13133.003 SD-DUW442-0100 Core Description Initials: RHG Date: 11/5/09 Time: 1250

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	No
RHG	Separation (gaps) along length of sediment in core tube.	No
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	NHG
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	NHG

343

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 9 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DMW 443 Time: 0854

[X] Water Depth: 24.5 Tide: 11.3

[X] Duplicate core required at station? (Required) Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 197210 Actual N: 197212

Planned E: 1274003 Actual E: 1274002

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RHG

	Penetration:	Recovery:	Comments:
1	12.6	19.8	
2	12.9	13.9	
3	9.9	12.0	
4	8.3	11.0	very low
5	7.9	10.7	
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 10.7 ft

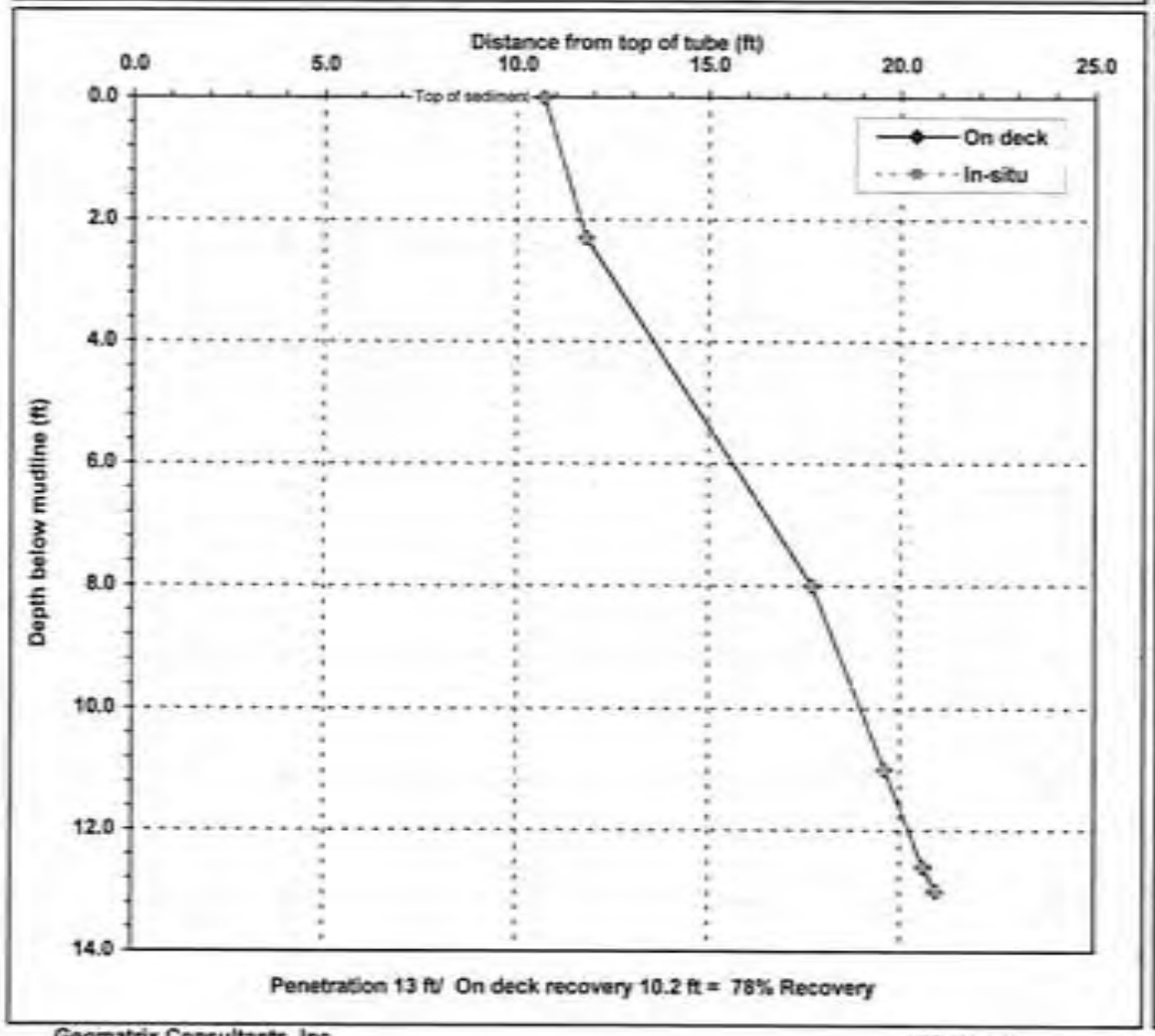
Notes: 25-9

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW443
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		197212 — Northing
Date:	11/9/2009	**Time:**	8:54 — 1274002 — Easting
Water depth:	24.5 ft	**Mudline:**	-14.9 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Rain



Penetration 13 ft/ On deck recovery 10.2 ft = 78% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.3	1.1	48%
2.3-8	5.9	104%
8-11	1.9	63%
11-12.6	1	63%
12.6-13	0.3	75%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	10.7
1	11.18
2	11.66
3	12.52
4	13.56
5	14.59
6	15.63
7	16.66
8	17.70
9	18.33
10	18.97
11	19.60
12	20.23
13	13.00
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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File name SD-DUW443
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW443

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/9/2009	11/9/09
Start Time:	8:54	1000

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
10.7	Top of sediment
	10.5-12.2 ML: soft, grayish black, 90/10, trace organics with plast
	12.2-15.2 ML: bluish gray, mod stiff, 90/10 sand is fn. mod to hi plast ← mod plastic, wood frags @ 13.6, 15.9 grades to below
	15.2-18.5 ML: bluish gray mod. stiff, 80/20 sand is fn, mod plast wood piece @ 18.3 wood frags @ 15.9
	18.5-20.5 SM olive gray, 75/25 sand is fn-mod, mod. dense. wood frag layers (~1" thick) @ 19.1, 19.9, 20.3
	↓ trace layering in this unit

Distance top/bottom	Sample ID Label
11.66 / 12.52	AMEC Proj.No. 13133.003 SD-DUW443-0020 Core Description Initials: RHG Date: 11/9/09 Time: 1000
12.52 / 13.56	AMEC Proj.No. 13133.003 SD-DUW443-0030 Core Description Initials: RHG Date: 11/9/09 Time: 1000
13.56 / 14.59	AMEC Proj.No. 13133.003 SD-DUW443-0040 Core Description Initials: RHG Date: 11/9/09 Time: 1000
14.59 / 15.63	AMEC Proj.No. 13133.003 SD-DUW443-0050 Core Description Initials: RHG Date: 11/9/09 Time: 1000
15.63 / 16.66	AMEC Proj.No. 13133.003 SD-DUW443-0060 Core Description Initials: RHG Date: 11/9/09 Time: 1000
16.66 / 17.7	AMEC Proj.No. 13133.003 SD-DUW443-0070 Core Description Initials: RHG Date: 11/9/09 Time: 1000
17.7 / 18.33	AMEC Proj.No. 13133.003 SD-DUW443-0080 Core Description Initials: RHG Date: 11/9/09 Time: 1000

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW443

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/9/2009	11/9/09
Start Time:	8:54	1000

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
10.7	Top of sediment

Distance top/bottom	Sample ID labels
18.33 / 18.97	AMEC Proj.No. 13133.003 **SD-DUW443-0090** Core Description Initials: RHG Date: 11/9/09 Time: 1000
18.97 / 19.6	AMEC Proj.No. 13133.003 **SD-DUW443-0100** Core Description Initials: RHG Date: 11/9/09 Time: 1000
19.6 / 20.23	AMEC Proj.No. 13133.003 **SD-DUW443-0110** Core Description Initials: RHG Date: 11/9/09 Time: 1000

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 20 2009

X	Daily dGPS verification check completed
X	Station Name: SD NAW 443 R2 Time: 857
X	Water Depth: 25.0 Tide: 11.3
X	Duplicate core required at station? Required Not Required
	GPS range within 6 ft radius of station prior to sampler deployment
X	Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 197210 Actual N: 197212

Planned E: 1274003 Actual E: 1274012

X	Logged GPS Verified by Shore Crew
No	Maximum core penetration goal reached refusal
	No known significant loss of sediment out of bottom of core tube
X	Core tube labeled
X	Core log and check list provided to shore crew Received By: RB

	Penetration:	Recovery:	Comments:
1	18.8	19.3	
2	15.2	17.3	
3	13.0	15.1	
4	11.0	13.4	
5	8.0	11.3	
6	6.7	10.3	
7	6.0	9.8	slow
8	5.3	9.2	
9	4.7	8.9	very slow
10	4.5	8.8	
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 8.8 ft

Notes: core [illegible] - very hard to extract

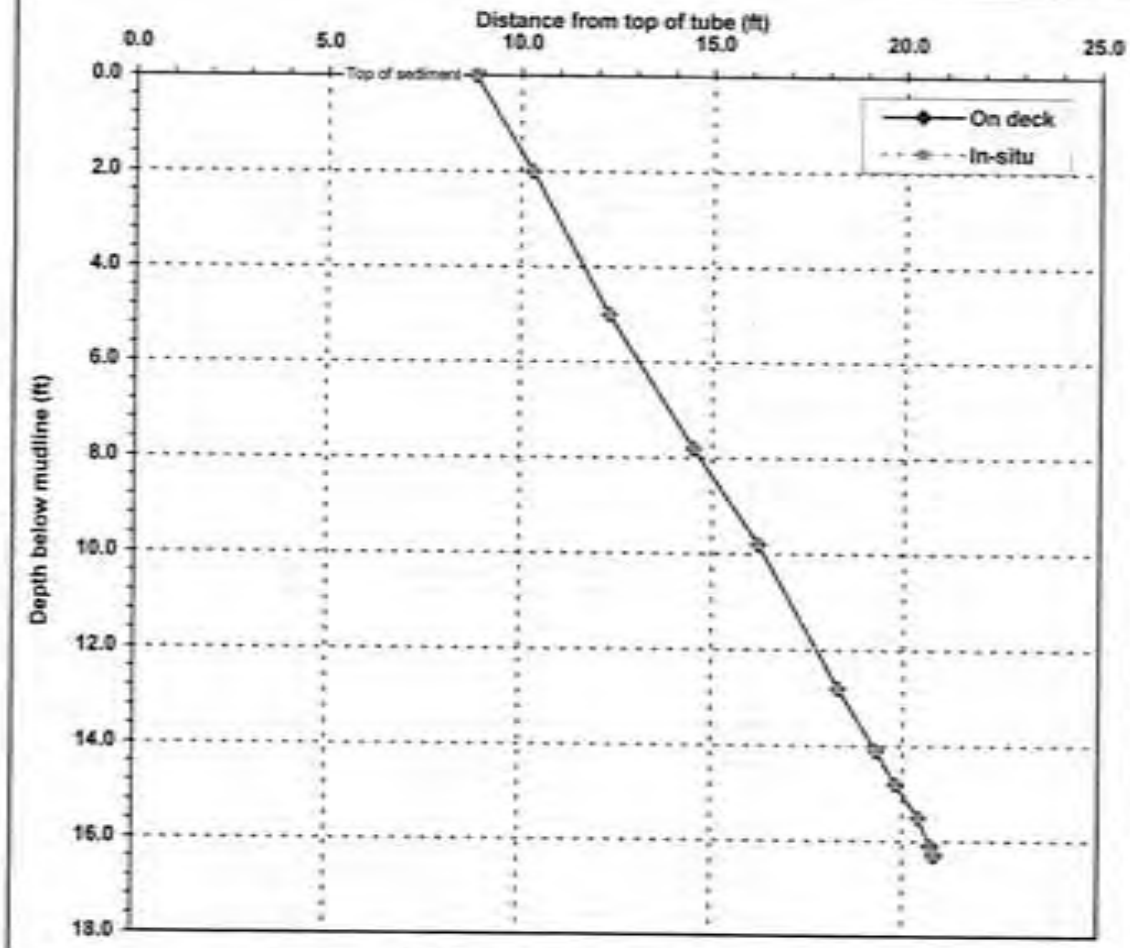
20.8 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW443R2
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		197212 — Northing
Date:	11/20/2009	**Time:**	8:57 — 1274012 — Easting
Water depth:	25.0 ft	**Mudline:**	-13.7 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Overcast



Penetration 16.3 ft/ On deck recovery 12 ft = 74% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2	1.5	75%
2-5	2	67%
5-7.8	2.2	79%
7.8-9.8	1.7	85%
9.8-12.8	2.1	70%
12.8-14.1	1	77%
14.1-14.8	0.5	71%
14.8-15.5	0.6	86%
15.5-16.1	0.3	50%
16.1-16.3	0.1	50%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	8.8
1	9.55
2	10.30
3	10.97
4	11.63
5	12.30
6	13.09
7	13.87
8	14.67
9	15.52
10	16.34
11	17.04
12	17.74
13	18.45
14	19.22
15	19.97
16	20.65
17	No sample
18	No sample
19	No sample
20	No sample

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File name SD-DUW443R2
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW443R2

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/20/2009	11/20/09
Start Time:	8:57	1100

Comments: * didn't include solid wood chunks

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	
8.8	Top of sediment 8.8 - 9.3 ML: soft, black, non plast 85/15, sand fn. med sl. H_2S odor	17.74 / 18.3	AMEC Proj.No. 13133.003 SD-DUW443-0120 Core Description Initials: RHG Date: 11/20/09 Time: 1100
	9.3-15.7 ML: mod firm, black, mod plast, 90/10 sand fn, sl. H_2S to 12.5' wood frags @ 11.8, 12.8, 14.0, SM: olive gray 80/20, sand fn, lenses @ 13.2-13.3, 13.6-13.7, 14.8-14.9	18.45 / 19.22	AMEC Proj.No. 13133.003 SD-DUW443-0130 Core Description Initials: RHG Date: 11/20/09 Time: 1100
	15.7-16.7 SP: blackish gray, dense, red/white grains, sand med-fn, black ML pockets @ 16.5	19.22 / 19.97	AMEC Proj.No. 13133.003 SD-DUW443-0140 Core Description Initials: RHG Date: 11/20/09 Time: 1100
	16.7-20.4 SM olive gray, dense, 80/20, sand fn organic zone (black, twigs) @ 17.7 ML black lense @ 19.6-19.7 black wood pieces @ 17.8-18.0 brown solid piece of wood cored through 18.3-18.5	19.97 / 20.4	AMEC Proj.No. 13133.003 SD-DUW443-0150 Core Description Initials: RHG Date: 11/20/09 Time: 1100

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	No
RHG	Separation (gaps) along length of sediment in core tube.	No
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	RHG
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	RHG

HHH

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSR Date: 11 / 10 2009

- [x] Daily dGPS verification check completed
- [x] Station Name: SD OUW 444 Time: 0901
- [x] Water Depth: 22.3 Tide: 8.2
- [x] Duplicate core required at station? Required Not Required
- [x] GPS range within 6 ft radius of station prior to sampler deployment
- [x] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196932 Actual N: 196931

Planned E: 1274307 Actual E: ~~1274305~~ 1274307

- [x] Logged GPS Verified by Shore Crew
- [No] Maximum core penetration goal reached refusal
- [x] No known significant loss of sediment out of bottom of core tube
- [x] Core tube labeled
- [x] Core log and check list provided to shore crew Received By: [illegible]

	Penetration:	Recovery:	Comments:
1	18.6	19.2	
2	14.4	15.4	
3	14.3	15.4	
4	14.4	15.3	
5			
6		core catcher	failed (broken off)
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 16.2 ft

Notes: 20.9 ft core tube

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 10 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW 444 Time: 943

[X] Water Depth: 23.7 Tide: 9.6

[X] Duplicate core required at station? Required (Not Required)

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196932 Actual N: 196937

Planned E: 1274307 Actual E: 1274304

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RG

	Penetration:	Recovery:	Comments:
1	18.1	18.6	
2	13.6	14.9	
3	10.1	12.4	
4	7.1	10.6	
5	5.5	9.6	
6	5.1	9.4	slow
7	4.9	9.2	
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 9.2 ft

Notes: Rep 2

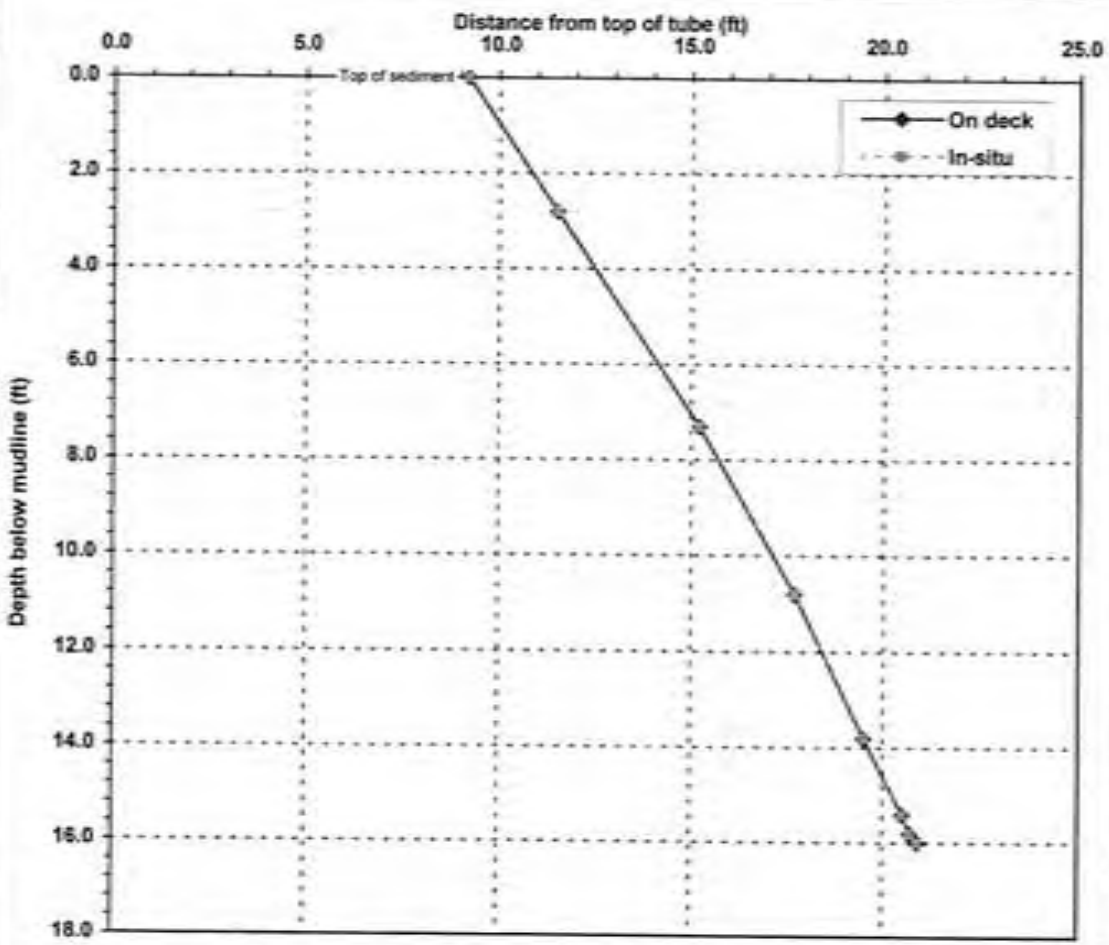
20.9 A tube

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW444
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		196937 — Northing
Date:	11/10/2009	**Time:**	9:43 — 1274304 — Easting
Water depth:	23.7 ft	**Mudline:**	-14.1 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Partly cloudy



Penetration 16 ft/ On deck recovery 11.7 ft = 73% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.8	2.3	82%
2.8-7.3	3.7	82%
7.3-10.8	2.5	71%
10.8-13.8	1.8	60%
13.8-15.4	1	63%
15.4-15.8	0.2	50%
15.8-16	0.2	100%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	9.2
1	10.02
2	10.84
3	11.66
4	12.49
5	13.31
6	14.13
7	14.95
8	15.70
9	16.41
10	17.13
11	17.82
12	18.42
13	19.02
14	19.63
15	20.25
16	16.00
17	No sample
18	No sample
19	No sample
20	No sample

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW444

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/10/2009	11/10/09
Start Time:	9:43	1150

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID labels
~~9.2~~ ~~9.0~~ ok CG 12/22/09	Top of sediment 9.2-10.3 SM black, mod loose, 75/25, sand is fn-med	10.84 / 11.66	AMEC Proj.No. 13133.003 SD-DUW444-0020 Core Description Initials: RHG Date: 11/10/09 Time: 1150
	10.3-15.2 ML blackish gray, mod soft getting mod firm @ 14. 85/15 low to mod plast	11.66 / 12.49	AMEC Proj.No. 13133.003 SD-DUW444-0030 Core Description Initials: RHG Date: 11/10/09 Time: 1150
wood sticks @11.8'	trace organics 1" SP lense @ 12.6, 13.2, 12.8 red/white grains, sand is med. 2" ML 100/0 olive gray low plast @ 13.3	12.49 / 13.31	AMEC Proj.No. 13133.003 SD-DUW444-0040 Core Description Initials: RHG Date: 11/10/09 Time: 1150
H_2S odor from 12-13.5	wood frag zone 13.5-13.8 50% wood at least, rest is ML	13.31 / 14.13	AMEC Proj.No. 13133.003 SD-DUW444-0050 Core Description Initials: RHG Date: 11/10/09 Time: 1150
ship worked out chunks of wood	15.2-18.2 ML olive gray 80/20 sand is fine, mod stiff scattered SM lenses throughout (olive gray) thin black organic rich lenses @ 16.6, 16.7, 16.8, 18.1 @ 16.1, 16.4, 16.9-17.2	14.13 / 14.95	AMEC Proj.No. 13133.003 SD-DUW444-0060 Core Description Initials: RHG Date: 11/10/09 Time: 1150
	18.2-20.4 SM olive gray to gray, mod dense, 80/20 sand is fn-med	14.95 / 15.7	AMEC Proj.No. 13133.003 SD-DUW444-0070 Core Description Initials: RHG Date: 11/10/09 Time: 1150
piece of wood @ 19.5	piece of wood @ 20' 2" pocket of SP red/white grains, sand is med @ 19.8	15.7 / 16.41	AMEC Proj.No. 13133.003 SD-DUW444-0080 Core Description Initials: RHG Date: 11/10/09 Time: 1150

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW444

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/10/2009	11/10/09
Start Time:	9:43	1150

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID labels
9.2	Top of sediment	16.41 / 17.13	AMEC Proj.No. 13133.003 SD-DUW444-0090 Core Description Initials: RHG Date: 11/10/09 Time: 1150
		17.13 / 17.82	AMEC Proj.No. 13133.003 SD-DUW444-0100 Core Description Initials: RHG Date: 11/10/09 Time: 1150
		17.82 / 18.42	AMEC Proj.No. 13133.003 SD-DUW444-0110 Core Description Initials: RHG Date: 11/10/09 Time: 1150
		18.42 / 19.02	AMEC Proj.No. 13133.003 SD-DUW444-0120 Core Description Initials: RHG Date: 11/10/09 Time: 1150
		19.02 / 19.63	AMEC Proj.No. 13133.003 SD-DUW444-0130 Core Description Initials: RHG Date: 11/10/09 Time: 1150
		19.63 / 20.25	AMEC Proj.No. 13133.003 SD-DUW444-0140 Core Description Initials: RHG Date: 11/10/09 Time: 1150

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	NO
RHG	Separation (gaps) along length of sediment in core tube.	NO
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
[illegible]	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	RHG
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	RHG

HAS

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 10 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DMW 445 Time: 1224

[X] Water Depth: 31.8 Tide: 11.2

[X] Duplicate core required at station? Required Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196408 Actual N: 196408

Planned E: 1274886 Actual E: 1274884

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RG

	Penetration:	Recovery:	Comments:
1	16.0	16.8	
2	11.2	12.2	
3	8.3	10.7	
4	6.4	9.5	
5	6.2	9.3	very slow
6	6.0	9.2	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 9.2 ft

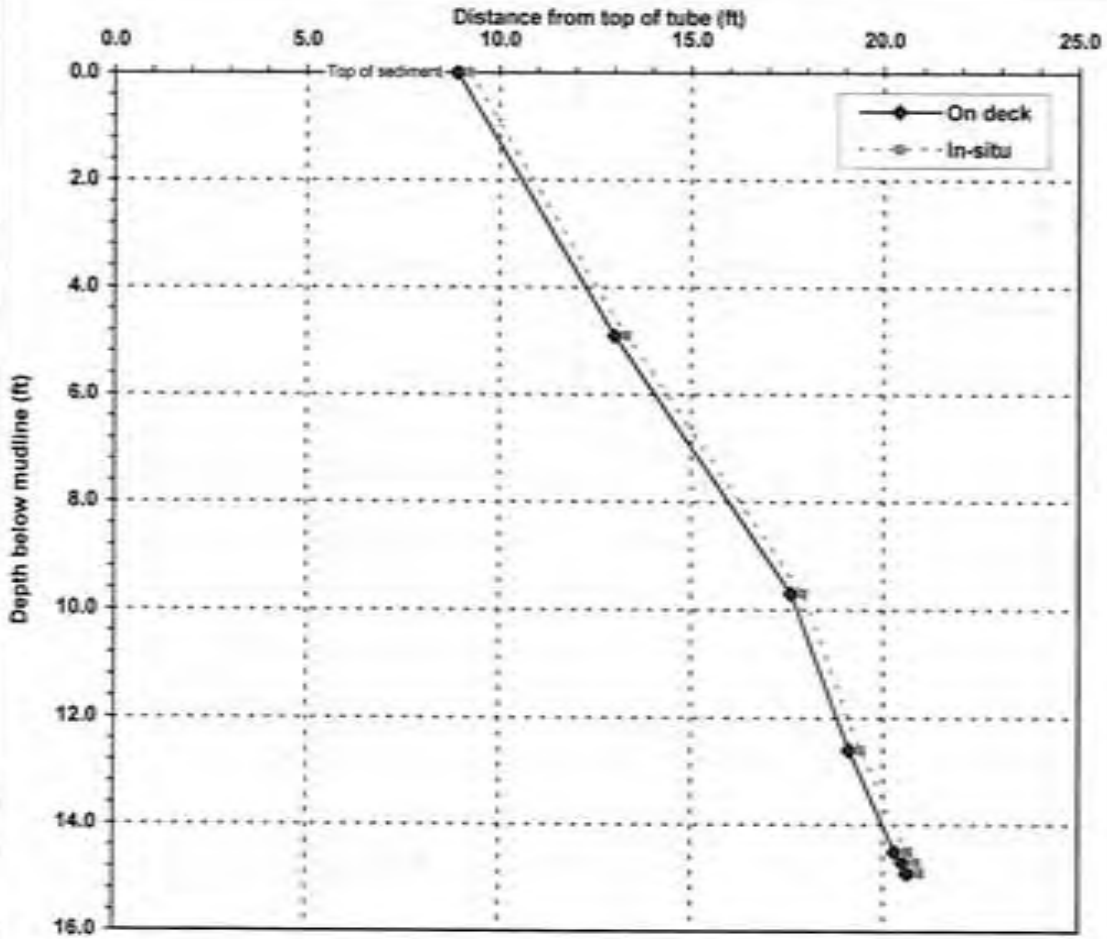
Notes:

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW445
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		196408 — Northing
Date:	11/10/2009	**Time:**	12:24 — 1274884 — Easting
Water depth:	31.8 ft	**Mudline:**	-20.6 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Cloudy



Penetration 14.9 ft/ On deck recovery 12 ft = 81% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-4.9	4.1	84%
4.9-9.7	4.6	96%
9.7-12.6	1.5	52%
12.6-14.5	1.2	63%
14.5-14.7	0.2	100%
14.7-14.9	0.1	50%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	8.9
1	9.74
2	10.57
3	11.41
4	12.25
5	13.10
6	14.05
7	15.01
8	15.97
9	16.93
10	17.76
11	18.27
12	18.79
13	19.35
14	19.96
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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File name SD-DUW445
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW445

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/10/2009	11/10/09
Start Time:	12:24	1350

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID labels
8.9	Top of sediment 8.9-11.1 ML mod soft, black, non-plast, 80/20 sand is fine. strong ~~mod~~ H_2S odor 11.1-17.2 ML black, mod soft, 90/10 sand is fine low plast 11.6-11.1 wood and H_2S odor 10.8 bark & wood chips 17.2-20 ML olive gray, mod soft, mod stiff below 18.8 90/10 mod plast H_2S strong odor 16.6 13.2 twig & organic layers @ 12.3, 12.6, 12.8, 13.2, 13.4, 13.5-17.4 some sand. → 14.2, 14.4 17.7 piece of wood → trace organics away from twig layers as well. Faint SM gray lenses below 14.6 → 20 SP lense 17.8-18.1, 90/10 sand fine 20-20.4 SP gray, red/white grains sand is fine 90/10, scattered gray ML pockets scattered wood (twigs branches throughout)	10.57 / 11.4	AMEC Proj.No. 13133.003 SD-DUW445-0020 Core Description Initials: CJW Date: 11/10/09 Time: 1350
		11.4 / 12.25	AMEC Proj.No. 13133.003 SD-DUW445-0030 Core Description Initials: CJW Date: 11/10/09 Time: 1350
		12.25 / 13.1	AMEC Proj.No. 13133.003 SD-DUW445-0040 Core Description Initials: CJW Date: 11/10/09 Time: 1350
		13.1 / 14.05	AMEC Proj.No. 13133.003 SD-DUW445-0050 Core Description Initials: CJW Date: 11/10/09 Time: 1350
		14.05 / 15	AMEC Proj.No. 13133.003 SD-DUW445-0060 Core Description Initials: CJW Date: 11/10/09 Time: 1350
		15 / 15.97	AMEC Proj.No. 13133.003 SD-DUW445-0070 Core Description Initials: CJW Date: 11/10/09 Time: 1350
		15.97 / 16.93	AMEC Proj.No. 13133.003 SD-DUW445-0080 Core Description Initials: CJW Date: 11/10/09 Time: 1350

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW445

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/10/2009	11/10/09
Start Time:	12:24	1350

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID/Label
8.9	Top of sediment	16.93 / 17.76	AMEC Proj.No. 13133.003 SD-DUW445-0090 Core Description Initials: CJW Date: 11/10/09 Time: 1350
		17.76 / 18.27	AMEC Proj.No. 13133.003 SD-DUW445-0100 Core Description Initials: CJW Date: 11/10/09 Time: 1350
		18.27 / 18.79	AMEC Proj.No. 13133.003 SD-DUW445-0110 Core Description Initials: CJW Date: 11/10/09 Time: 1350
		18.79 / 19.35	AMEC Proj.No. 13133.003 SD-DUW445-0120 Core Description Initials: CJW Date: 11/10/09 Time: 1350
		19.35 / 19.98	AMEC Proj.No. 13133.003 SD-DUW445-0130 Core Description Initials: CJW Date: 11/10/09 Time: 1350
		19.98 / 20.4	AMEC Proj.No. 13133.003 SD-DUW445-0140 Core Description Initials: CJW Date: 11/10/09 Time: 1350

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Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 20 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW 445 Time: 11:5

[X] Water Depth: 31.5 Tide: 9.3

[X] Duplicate core required at station? Required (Not Required)

[ ] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 1964 08 Actual N: 196410

Planned E: 1274886 Actual E: 1274877

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached poor recovery - retrieval

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RG

	Penetration:	Recovery:	Comments:
1	18.7	19.2	
2	16.3	17.1	
3	15.0	15.1 ← 16.1?	
4	12.0	13.8	
5	10.0	12.4	
6	8.0	11.3	
7	6.6	10.3	
8	5.6	9.9	very slow
9	4.6	9.7	very poor recovery
10	4.6	9.7	
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 9.6 ft

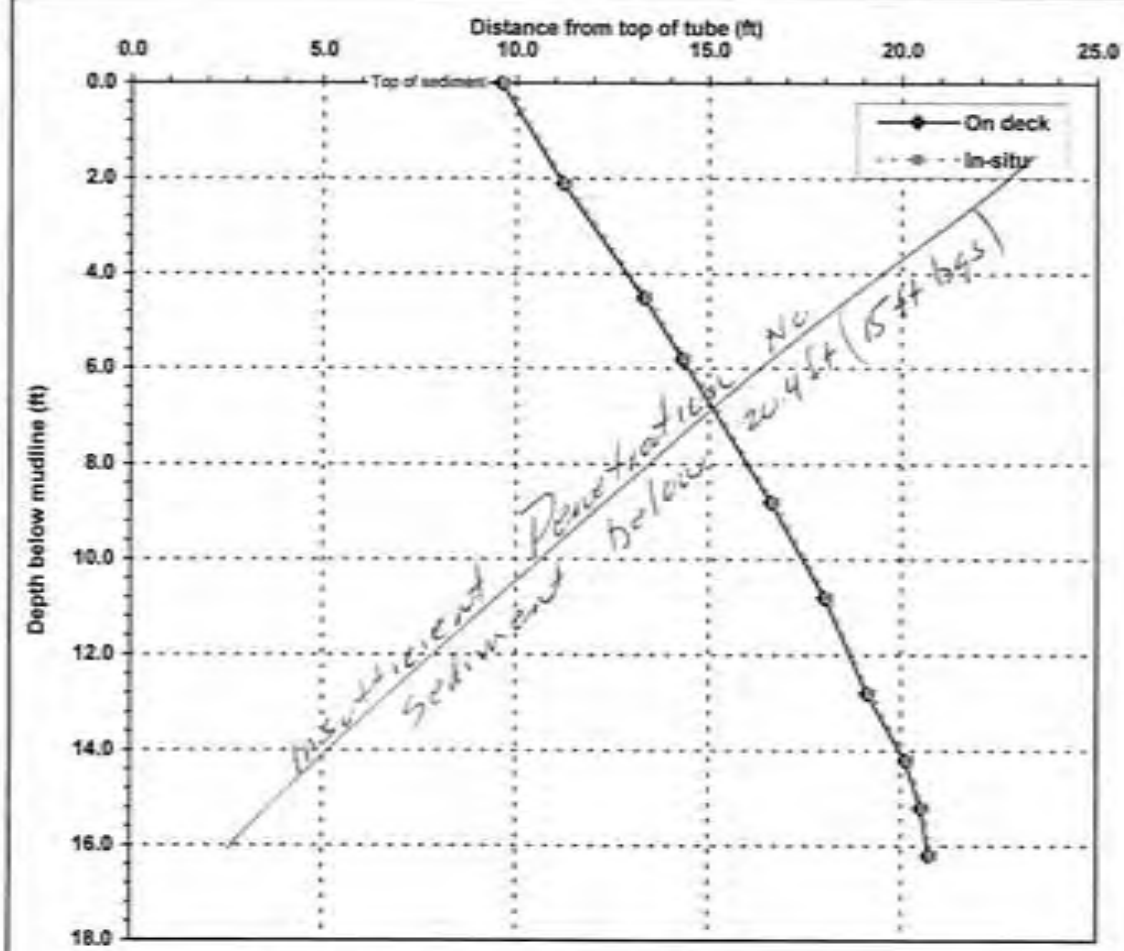
Notes: 20.8 ft core tube

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW445R2
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		196410 — Northing
Date:	11/20/2009	**Time:**	11:05 — 1274877 — Easting
Water depth:	31.5 ft	**Mudline:**	-22.2 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Overcast



Penetration 15.2 ft/ On deck recovery 11.2 ft = 69% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.1	1.6	76%
2.1-4.5	2.1	88%
4.5-5.8	1	77%
5.8-8.8	2.3	77%
8.8-10.8	1.4	70%
10.8-12.8	1.1	55%
12.8-14.2	1	71%
14.2-15.2	0.4	40%
15.2-16.2	0.2	20%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	9.6
1	10.36
2	11.12
3	11.99
4	12.86
5	13.68
6	14.45
7	15.22
8	15.99
9	16.74
10	17.44
11	18.11
12	18.66
13	19.24
14	19.96
15	20.42
16	20.66
17	No sample
18	No sample
19	No sample
20	No sample

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection. RHG	
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	Minor winnowing
RHG	Separation (gaps) along length of sediment in core tube.	NO
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	RHG
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	RHG

HG

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: [illegible] Date: 11 / 12 2009

Y	Daily dGPS verification check completed
Y	Station Name: SD DUN 446 Time: 1109
X	Water Depth: 29.6 Tide: 9.5
Y	Duplicate core required at station? Required Not Required
Y	GPS range within 6 ft radius of station prior to sampler deployment
X	Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 195764 Actual N: 195763

Planned E: 1275593 Actual E: 1275590

X	Logged GPS Verified by Shore Crew
No	Maximum core penetration goal reached (refusal)
X	No known significant loss of sediment out of bottom of core tube
X	Core tube labeled
X	Core log and check list provided to shore crew Received By: [illegible]

	Penetration:	Recovery:	Comments:
1	19.4	19.7	
2	15.5	15.6	
3	12.4	12.7	
4	7.8	9.5	
5	6.4	9.1	
6	5.0	8.1	slow
7	4.3	7.7	
8	3.6	7.6	poor recovery
9	3.2	7.3	
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 7.2 ft

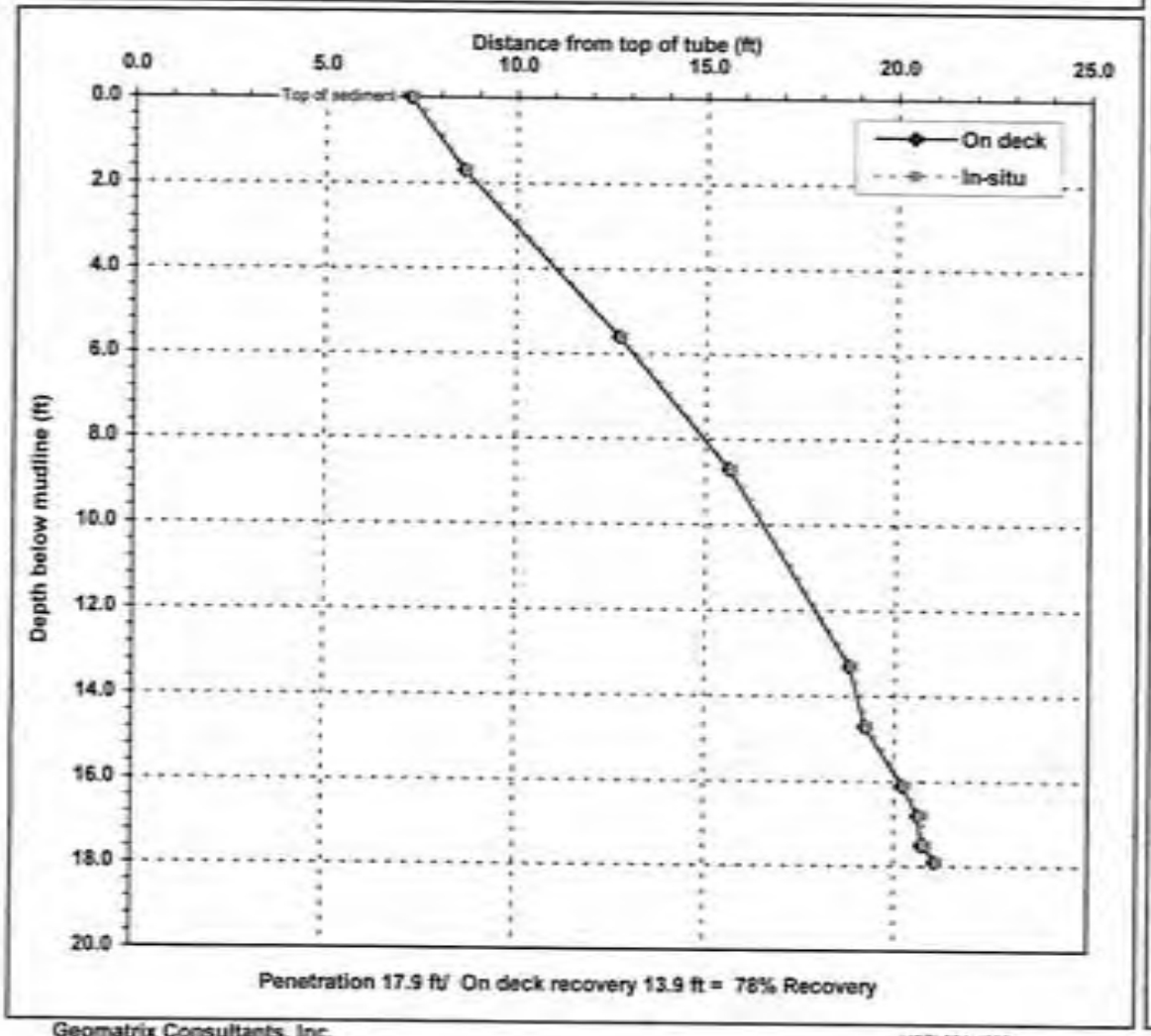
Notes: 21.1 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW446
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		195763 — Northing
Date:	11/12/2009	**Time:**	11:09 — 1275590 — Easting
Water depth:	29.6 ft	**Mudline:**	-20.1 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Sunny



Penetration 17.9 ft/ On deck recovery 13.9 ft = 78% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-1.7	1.4	82%
1.7-5.6	4.1	105%
5.6-8.7	2.9	94%
8.7-13.3	3.2	70%
13.3-14.7	0.4	29%
14.7-16.1	1	71%
16.1-16.8	0.4	57%
16.8-17.5	0.1	14%
17.5-17.9	0.3	75%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	7.2
1	8.02
2	8.92
3	9.97
4	11.02
5	12.07
6	13.07
7	14.01
8	14.95
9	15.81
10	16.50
11	17.20
12	17.90
13	18.59
14	19.00
15	19.41
16	20.13
17	20.63
18	No sample
19	No sample
20	No sample

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File name SD-DUW446
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW446

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/12/2009	11/12/09
Start Time:	11:09	1355

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
7.2	Top of sediment
	7.2 – 8.2 ML: black, soft, low plast 90/10 sand is fn → v fn.
	8.2 – 11.8 SP/SM: blackish gray, mod dense, 80/20 sand is fn-med. mostly SP w/ SM zones
	sl H_2S odor 10 – 10.9'
	wood @ 10.1, 11.2, 11.5
	11.8 – 17.6 ML: black, med firm, mod. plast, 90/10 sand is fine,
	piece of wood @ 16.8
	lenses of gray SM 80/20 sand fine @ 12.1-12.3 14.0-14.5
	lenses of SP blackish gray, red/white, med dense @ 15.15.1, 15.6-15.7
	17.6-19.1 SM gray, dense, 80/20 sand is fn-med,
	wood pieces @ 18.3
	wood pieces @ 18.1-18.3 wood piece @ 17.8
	19.1 – 20.4 SP: blackish gray, red/white grains, med dense, sand is fn-med.
	core winnowed 20.4 - 20.6 not sampled

Distance top/bottom	Sample ID labels
8.92 / 9.97	AMEC Proj.No. 13133.003 SD-DUW446-0020 Core Description Initials: RHG Date: 11/12/09 Time: 1355
9.97 / 11.02	AMEC Proj.No. 13133.003 SD-DUW446-0030 Core Description Initials: RHG Date: 11/12/09 Time: 1355
11.02 / 12.07	AMEC Proj.No. 13133.003 SD-DUW446-0040 Core Description Initials: RHG Date: 11/12/09 Time: 1355
12.07 / 13.07	AMEC Proj.No. 13133.003 SD-DUW446-0050 Core Description Initials: RHG Date: 11/12/09 Time: 1355
13.07 / 14.01	AMEC Proj.No. 13133.003 SD-DUW446-0060 Core Description Initials: RHG Date: 11/12/09 Time: 1355
14.01 / 14.95	AMEC Proj.No. 13133.003 SD-DUW446-0070 Core Description Initials: RHG Date: 11/12/09 Time: 1355
14.95 / 15.81	AMEC Proj.No. 13133.003 SD-DUW446-0080 Core Description Initials: RHG Date: 11/12/09 Time: 1355

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW446

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/12/2009	11/12/09
Start Time:	11:09	1355

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
7.2	Top of sediment

Distance top/bottom	Sample ID labels
15.81 / 16.5	AMEC Proj.No. 13133.003 SD-DUW446-0090 Core Description Initials: RHG Date: 11/12/09 Time: 1355
16.5 / 17.2	AMEC Proj.No. 13133.003 SD-DUW446-0100 Core Description Initials: RHG Date: 11/12/09 Time: 1355
17.2 / 17.9	AMEC Proj.No. 13133.003 SD-DUW446-0110 Core Description Initials: RHG Date: 11/12/09 Time: 1355
17.9 / 18.59	AMEC Proj.No. 13133.003 SD-DUW446-0120 Core Description Initials: RHG Date: 11/12/09 Time: 1355
18.59 / 19	AMEC Proj.No. 13133.003 SD-DUW446-0130 Core Description Initials: RHG Date: 11/12/09 Time: 1355
19 / 19.41	AMEC Proj.No. 13133.003 SD-DUW446-0140 Core Description Initials: RHG Date: 11/12/09 Time: 1355
19.41 / 20.13	AMEC Proj.No. 13133.003 SD-DUW446-0150 Core Description Initials: RHG Date: 11/12/09 Time: 1355

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW446

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/12/2009	11/12/09
Start Time:	11:09	1355

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
7.2	Top of sediment

Distance top/bottom	Sample ID labels
20.13 / 20.4	AMEC Proj.No. 13133.003 SD-DUW446-0160 Core Description Initials: RHG Date: 11/12/09 Time: 1355

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials	
RHG	Core processed within 24 hrs of collection. YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores) slight winnowing below 18.4ft
RHG	Separation (gaps) along length of sediment in core tube. No
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.) YES
RHG	Correct number and type of sample jars filled. YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms. YES
RHG	Sample jars verified against COC forms. YES
RHG	Samples kept cold until delivery to lab. YES
NA	Duplicate samples analyzed at 10% frequency RHG
RHG	VOC samples in cooler with trip blanks (2 vials per cooler) YES

LHH

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 2 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW 447 Time: 0916

[X] Water Depth: 13.5 Tide: 6.4

[X] Duplicate core required at station? Required Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 195887 Actual N: 195884

Planned E: 1275579 Actual E: 1275580

[X] Logged GPS Verified by Shore Crew

[no] Maximum core penetration goal reached – refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RG

	Penetration:	Recovery:	Comments:
1	17.8	18.5	
2	~~17~~	~~16.4~~	
3	16.4	17.2	
4	14.4	15.6	
5	13.0	14.7	very slow
6	9.2	13.1	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 13.1 ft

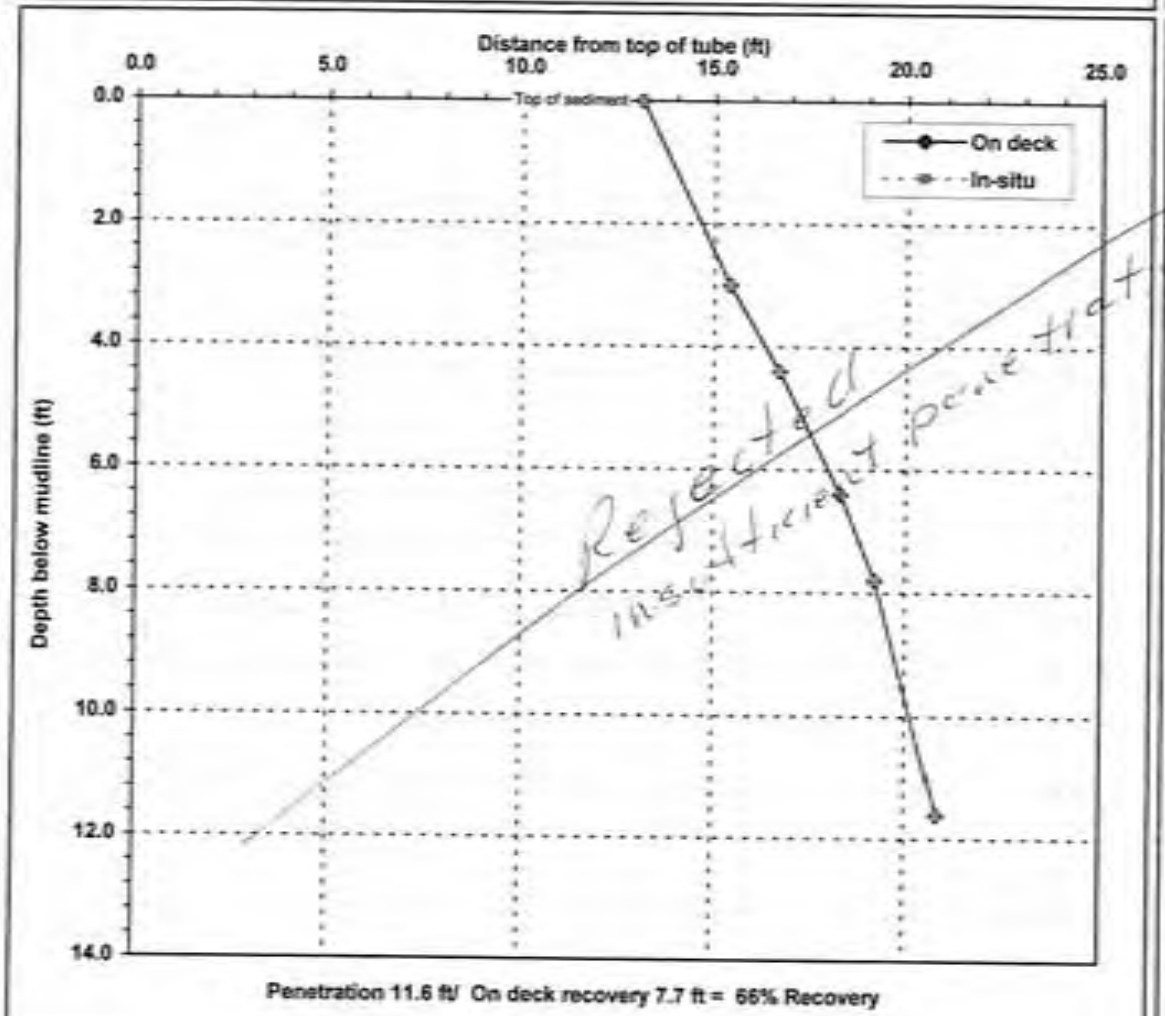
Notes: core tube length 20.8 ft
heavy oil sheen in tip of core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW447
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		195884 — Northing
Date:	11/2/2009	**Time:**	9:16 — 1275580 — Easting
Water depth:	13.5 ft	**Mudline:**	-7.1 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Sunny



Penetration 11.6 ft/ On deck recovery 7.7 ft = 66% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-3	2.3	77%
3-4.4	1.3	93%
4.4-6.4	1.6	80%
6.4-7.8	0.9	64%
7.8-11.6	1.6	42%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	13.1
1	13.87
2	14.63
3	15.40
4	16.33
5	17.18
6	17.98
7	18.69
8	19.28
9	19.71
10	20.13
11	20.55
12	No sample
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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File name SD-DUW447
Bore Log (mudline)

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: BSM Date: 11 / 13 2009

[X] Daily dGPS verification check completed

[X] Station Name: 447 Time: 820

[X] Water Depth: 11.8 Tide: 4.5

[X] Duplicate core required at station? Required Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 195887 Actual N: 195890

Planned E: 1275579 Actual E: 1275587

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RHG

	Penetration:	Recovery:	Comments:
1	18.5	19.0	
2	16.8	17.2	
3	14.2	15.6	
4	12.0	13.7	very slow
5	10.5	13.3	
6	9.9	13.0	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 13.3 ft

Notes: 21.1 ft core

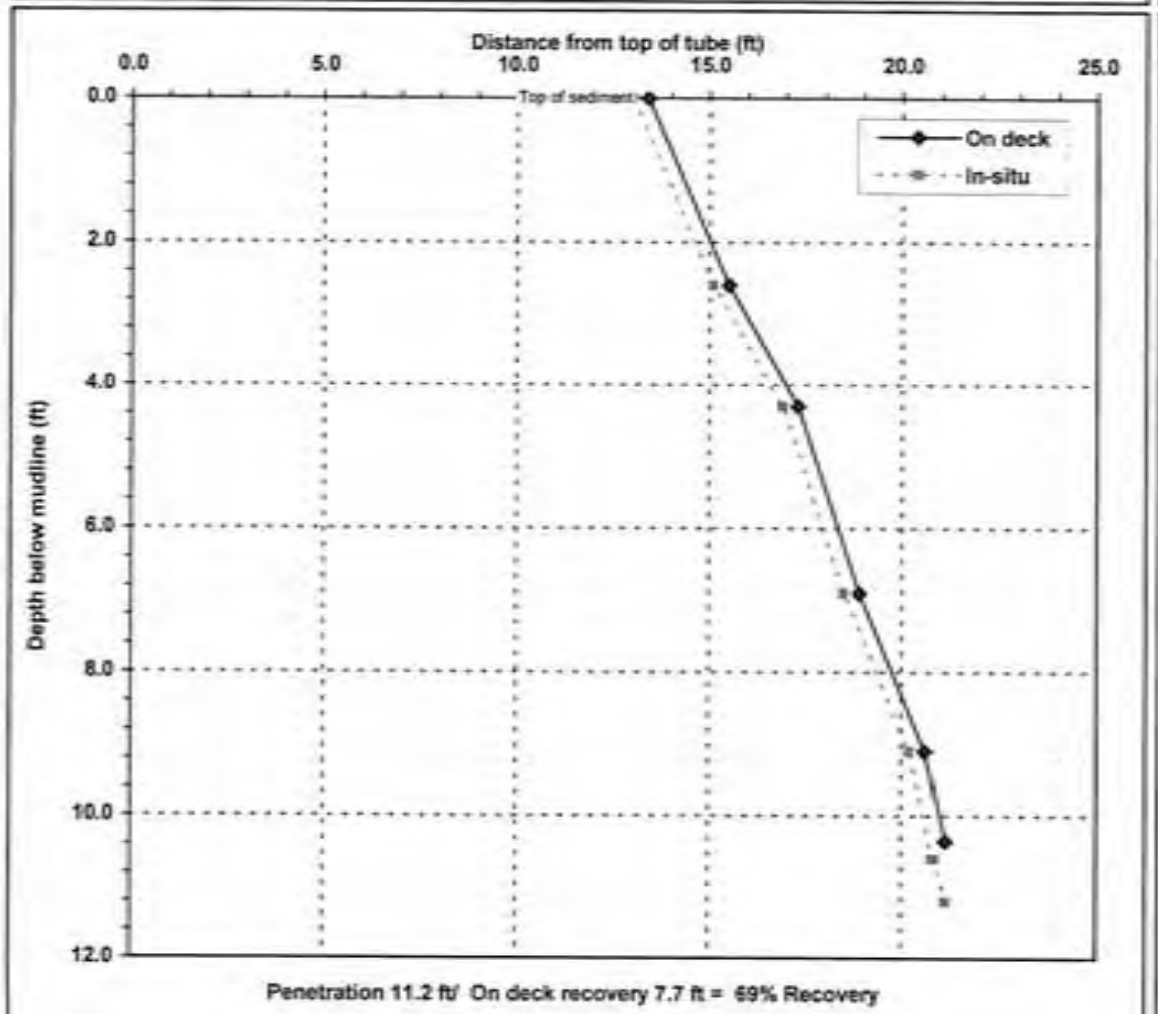
11.8
11.5
7.7

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW447R2
Project No:	13133.003	**Position:**	NAD 83 WA N
Collected by:	GSM		195890 Northing
Date:	11/13/2009 **Time:** 8:20		1275587 Easting
Water depth:	11.8 ft **Mudline:** -7.3 ft MLLW		(estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Overcast and very windy



Penetration 11.2 ft/ On deck recovery 7.7 ft = 69% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.6	2.1	81%
2.6-4.3	1.8	106%
4.3-6.9	1.6	62%
6.9-9.1	1.7	77%
9.1-10.6	0.6	40%
10.6-11.2	0.3	50%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	13.4
1	14.21
2	15.02
3	15.92
4	16.98
5	17.73
6	18.35
7	18.98
8	19.75
9	20.52
10	20.96
11	No sample
12	No sample
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW447R2

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/13/2009	11/13/09
Start Time:	8:20	1020

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
13.4	Top of sediment
	13.4-14.3 SM brown grading to grey, mod loose sand is med. 80/20.
	14.3-15.9 SP: blackish gray, red white grains, sand is fn-med. 90/10, scattered faint ML pockets
	wood strip @ 15.4
	15.9-16.7 ML blackish gray, mod plast, mod. stiff, 90/10 sand fn
	16.7-18.4 SM black, mod dense 15/70/15, gravel is sub r
	trace wood strips
	2" piece of metal @ 16.9.
	large piece of gravel @ 17.7 (2" ø)
	chalky texture, sl HC-like odor to wood
	strong HC-like odor throughout and moderate sheen
	and scattered smaller pieces
	white, massive, angular 1/2" piece of material @ 17.9
	18.4-20.6 winnowed material is >50% SP: blackish gray, med dense, red/white grains sand is fn-med.

Distance top/bottom	Sample ID labels
15.02 / 15.92	AMEC Proj.No. 13133.003 SD-DUW447-0020 Core Description Initials: RHG Date: 11/13/09 Time: 1020
15.92 / 16.98	AMEC Proj.No. 13133.003 SD-DUW447-0030 Core Description Initials: RHG Date: 11/13/09 Time: 1020
16.98 / 17.73	AMEC Proj.No. 13133.003 SD-DUW447-0040 Core Description Initials: RHG Date: 11/13/09 Time: 1020
17.73 / 18.35	AMEC Proj.No. 13133.003 SD-DUW447-0050 Core Description Initials: RHG Date: 11/13/09 Time: 1020

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Sediment Freeze Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 12/15/09 2009

[Y] Daily dGPS verification check completed

[Y] Station Name: SD DUW 447 Time: 817

[X] Water Depth: 15.6 Tide: 95

[X] Duplicate core required at station? Required (Not Required)

[Y] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 195890 (core 447 R2) Actual N: 195891

Planned E: 1275587 Actual E: 1275589

[Y] Logged GPS Verified by Shore Crew.

[X] Penetration: 12 ft.

[ ] Maximum core penetration goal reached

[X] Freezing Duration: 20 min.

[X] lbs. of CO2 used: 40 lbs.

[ ] Target section recovered

[ ] Core labeled

[X] Core log and check list provided to shore crew Received By: RHG

cylinder 1
start 0923
end 934 20#

start cylinder 2
0937
0945 20#

Notes: Sediment below 6ft not retained

Sediment Freeze Core Bore Log
2009 Additional DSOA Sampling

Initials: GJM Date: 11 / 12/15/09 2009

X	Daily dGPS verification check completed
X	Station Name: SD DUW 447 Time: 1136
X	Water Depth: 15.1 Tide: 7.9
X	Duplicate core required at station? Required Not Required
X	GPS range within 6 ft radius of station prior to sampler deployment
X	Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 195 891 (F core 1) Actual N: 195889

Planned E: 1275589 Actual E: 1275589

	Logged GPS Verified by Shore Crew.
X	Penetration: 12 ft.
	Maximum core penetration goal reached
X	Freezing Duration: 20 min.
X	lbs. of CO2 used: 40 lbs.
	Target section recovered
	Core labeled
X	Core log and check list provided to shore crew Received By: RHG

cylinder 1
start 1214
stop 1226

cylinder 2
start 1229
stop 1239

Notes:

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW 447 freeze core

Place Field ID Label Here

	Core collection	Laboratory
Date:	12/15/09	12/15/09
Start Time:	1136	1315

Comments: Freeze Core
2nd attempt

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
0	Top of sediment
	0-3' not recovered
	3-4 SP. blackish gray, sand is fn-med red/white grains
	4-5.3 GW. blackish gray with orange mottling, sand is med gravel subr and 0.5 to 2" ø. plastic bag trash @ 4.3. gray silt ML pockets @ 5.1.
	43 to 48 pieces of brick
	5.3-7.1 SP: blackish gray, sand is fn-med, red/white grains
	7.1 to end, no recovery.

Distance top/bottom
6
7

AMEC Proj.No. 13133.003
SD-DUW447-0060
Core Description
Initials: RHG
Date: 12/15/09 Time: 1315

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	NO
RHG	Separation (gaps) along length of sediment in core tube.	to unknown below 18.54ft
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	
RHG	VOC samples in cooler with trip blanks (2 vials per cooler)	YES

448

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 2 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW 448 Time: 1204

[X] Water Depth: 14.0 Tide: 7.0

[X] Duplicate core required at station? Required (Not Required)

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 195851 Actual N: 195849

Planned E: 1275610 Actual E: 1275612

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: EG

	Penetration:	Recovery:	Comments:
1	17.8	18.2	
2	15.2	16.3	
3	12.7	14.8	
4	11.3	13.9	very slow
5	10.1	13.6	
6	9.8	13.4	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 13.4 ft

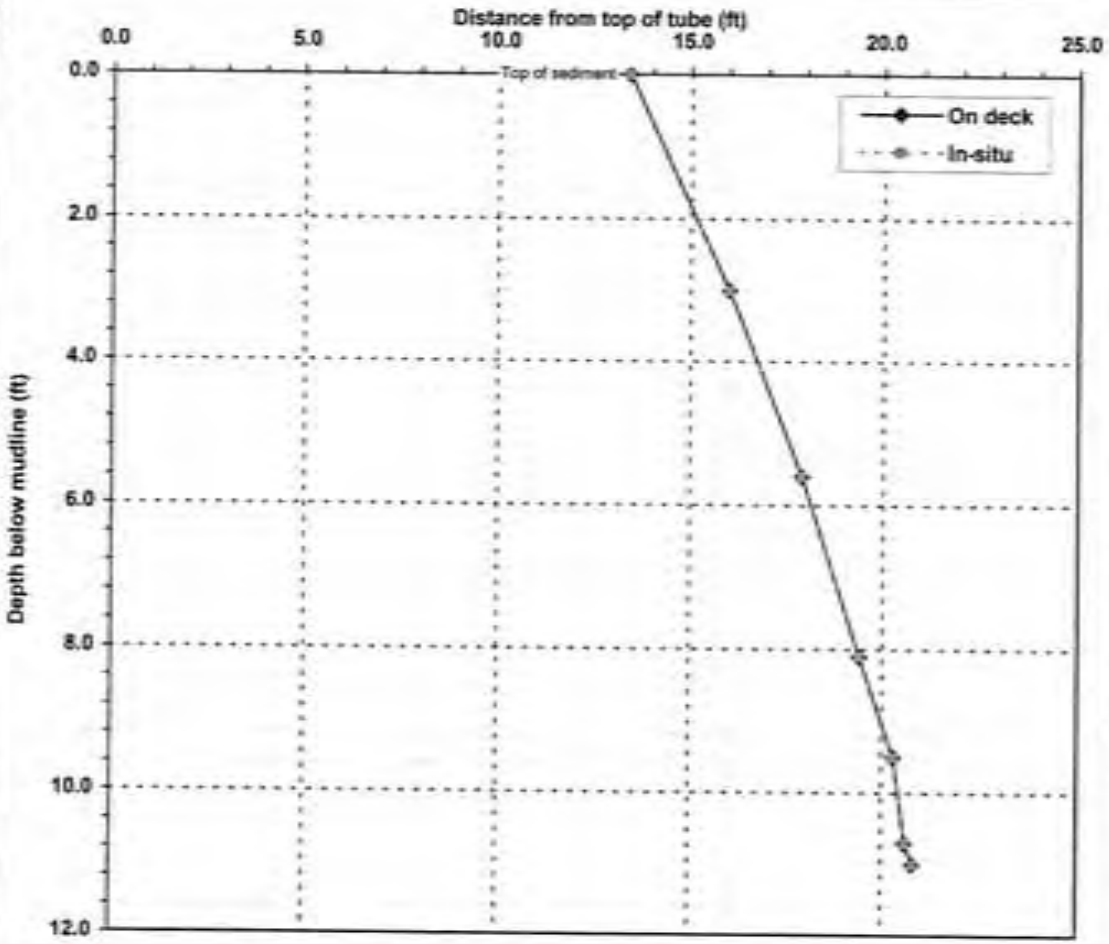
Notes: 20.8 ft core tube

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW448
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		195849 — Northing
Date:	11/2/2009	**Time:**	12:04 — 1275612 — Easting
Water depth:	14.0 ft	**Mudline:**	-7.0 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Overcast



Penetration 11 ft/ On deck recovery 7.4 ft = 67% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-3	2.6	87%
3-5.6	1.9	73%
5.6-8.1	1.5	60%
8.1-9.5	0.9	64%
9.5-10.7	0.3	25%
10.7-11	0.2	67%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	13.4
1	14.27
2	15.13
3	16.00
4	16.73
5	17.46
6	18.14
7	18.74
8	19.34
9	19.98
10	20.43
11	11.00
12	No sample
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW448

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/2/2009	11/2/09
Start Time:	12:04	1415

Comments:

Laboratory processing by: NBB

All distances are measured from top of core tube.

Distance ft	Visual sample description
13.4	Top of sediment
	13.4-14.5 ML silt, olive gray, orange mottling to 13.6, trace sand mod soft, 90% fines, 10% fine sand
	14.5-15.2 GP/SP gravel with sand to sand with gravel, bluish gray, gravel pea gravel size and smaller 85% gravel/sand 15% fines
	15.2-18.5 SM silt with sand blackish gray, trace red-white grains, sand is fin-med trace organic material localized black zone @ 16.8-17.5 med from to 17.5 then v. from to 18.5
	trace copper metal pieces @15.5
	asphalt-like piece from 16.8-17.0
	agglomerate piece 1.5" @ 15.8'
	18.5-20.6 SP poorly graded sand fin-med, gray with red and white grains winnowed core tube med dense.
18.5	
20.6	

Distance top/bottom	Sample ID labels
15.13 / 16.0	AMEC Proj.No. 13133.003 SD-DUW448-0020 Core Description Initials: RHG Date: 11/2/09 Time: 1415
16.0 / 16.73	AMEC Proj.No. 13133.003 SD-DUW448-0030 Core Description Initials: RHG Date: 11/2/09 Time: 1415
16.73 / 17.5	AMEC Proj.No. 13133.003 SD-DUW448-0040 Core Description Initials: RHG Date: 11/2/09 Time: 1415
17.5 / 18.14	AMEC Proj.No. 13133.003 SD-DUW448-0050 Core Description Initials: RHG Date: 11/2/09 Time: 1415
18.14 / 18.74	AMEC Proj.No. 13133.003 SD-DUW448-0060 Core Description Initials: RHG Date: 11/2/09 Time: 1415
18.74 / 19.34	AMEC Proj.No. 13133.003 SD-DUW448-0070 Core Description Initials: RHG Date: 11/2/09 Time: 1415
19.34 / 20	AMEC Proj.No. 13133.003 SD-DUW448-0080 Core Description Initials: RHG Date: 11/2/09 Time: 1415

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Continued

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW448

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/2/2009	11/2/09
Start Time:	12:04	~~NPB~~ 1415

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
13.4	Top of sediment

Distance top/bottom	Sample ID labels
20 / 20.4	AMEC Proj.No. 13133.003 SD-DUW448-0090 Core Description Initials: RHG Date: 11/2/09 Time: 1415

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	No
RHG	Separation (gaps) along length of sediment in core tube.	Winnowed below 18.8ft 1m top
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	
RHG	VOC samples in cooler with trip blanks (2 vials per cooler)	YES

RHG

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 2 2009

- [x] Daily dGPS verification check completed
- [x] Station Name: SD DAW 449 Time: 1319
- [x] Water Depth: 15.8 Tide: 8.7
- [x] Duplicate core required at station? Required (Not Required)
- [x] GPS range within 6 ft radius of station prior to sampler deployment
- [x] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 195816 Actual N: 195816

Planned E: 1275641 Actual E: 1275643 ~~3~~ 1275644 GSM 12-22-09

- [x] Logged GPS Verified by Shore Crew
- [No] Maximum core penetration goal reached refusal
- [x] No known significant loss of sediment out of bottom of core tube
- [x] Core tube labeled
- [x] Core log and check list provided to shore crew Received By: RG

	Penetration:	Recovery:	Comments:
1	17.8	18.5	
2	16.6	17.2	
3	14.3	15.4	
4	11.9	13.9	
5	9.8	13.4	slow - poor recovery
6	9.1	13.1	refusal
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 13.1 ft

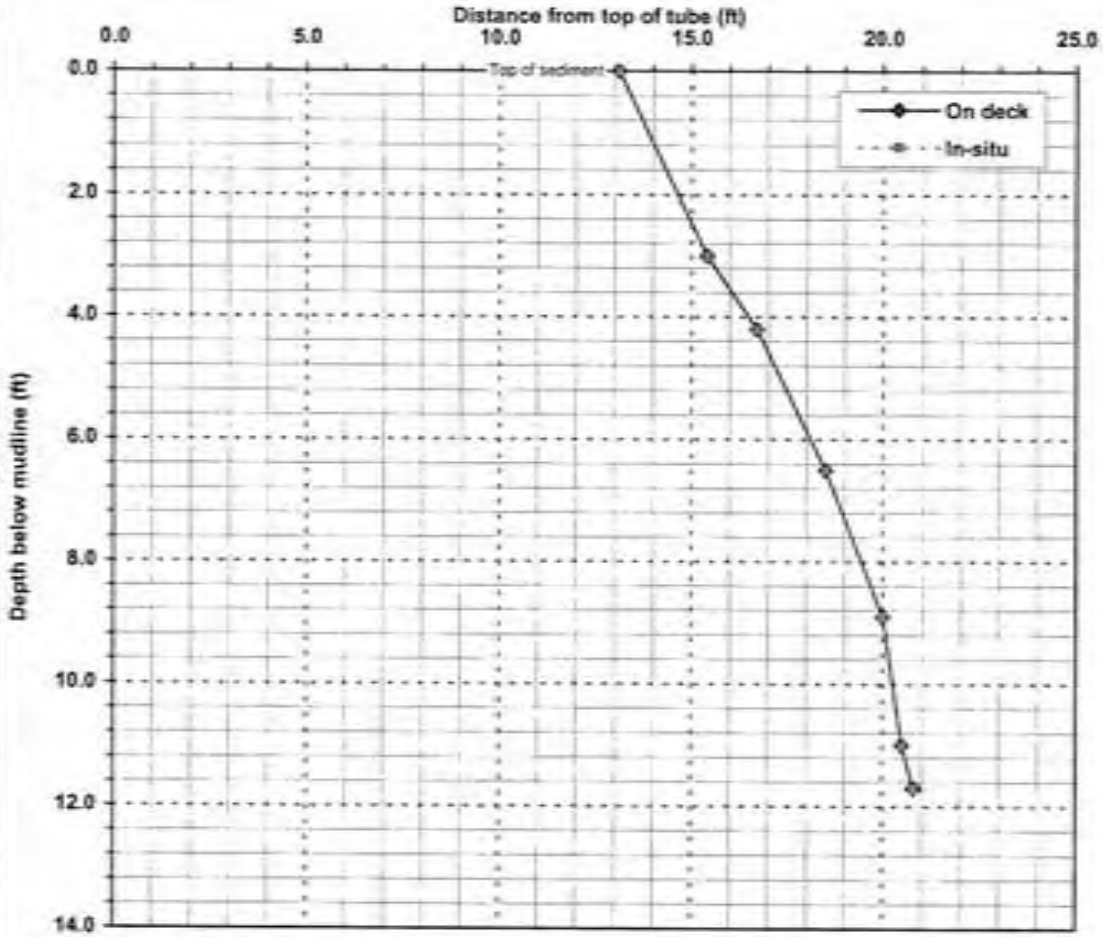
Notes: 20.8 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW449
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		195816 — Northing
Date:	11/2/2009 **Time:** 13:19		1275644 — Easting
Water depth:	15.8 ft **Mudline:** -7.1 ft MLLW	(estimated using electronic tide gauge)	

Place Field ID Label Here

Weather/Comments: Overcast



Penetration 11.7 ft/ On deck recovery 7.7 ft = 66% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-3	2.3	77%
3-4.2	1.3	108%
4.2-6.5	1.8	78%
6.5-8.9	1.5	63%
8.9-11	0.5	24%
11-11.7	0.3	43%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	13.1
1	13.87
2	14.63
3	15.40
4	16.48
5	17.33
6	18.11
7	18.81
8	19.44
9	20.02
10	20.26
11	20.50
12	No sample
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW449

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/2/2009	11/2/09
Start Time:	13:19	1541

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID labels
13.1	Top of sediment 13.1 - 13.65 ML silt with gravel, brown with oxy mottling. mod soft. gravel pea gravel size & subr 75% fines 25% gravel 13.65 - 16.1 ML silt, blackish gray with black zones (mottling), trace organic material mod. firm 90% fines 10% sand, fn gr ? agg piece (glass? @15.6 bottle) 16.1 - 17.8 SM: sand with silt, blackish gray, 70% sand fn-med, 30% fines. some black mod mottled zones dense. copper wire & wire crimp @16.2 16.5 copper wire 17.8 - 18.2 SP: gray, sand is fn → v. fn, dense 18.2 - 20.6 SP blackish gray, trace red-white grains, sand is fn-med, trace gray ML pockets (rip-up clasts?) mod. dense Winnowed below 18.8' ½ tube missing	14.6 / 15.4	AMEC Proj.No. 13133.003 SD-DUW449-0020 Core Description Initials: RHG Date: 11/2/09 Time: 1515
		15.4 / 16.5	AMEC Proj.No. 13133.003 SD-DUW449-0030 Core Description Initials: RHG Date: 11/2/09 Time: 1515
		16.5 / 17.33	AMEC Proj.No. 13133.003 SD-DUW449-0040 Core Description Initials: RHG Date: 11/2/09 Time: 1515
		17.33 / 18.11	AMEC Proj.No. 13133.003 SD-DUW449-0050 Core Description Initials: RHG Date: 11/2/09 Time: 1515
		18.11 / 18.8	AMEC Proj.No. 13133.003 SD-DUW449-0060 Core Description Initials: RHG Date: 11/2/09 Time: 1515
		18.8 / 19.44	AMEC Proj.No. 13133.003 SD-DUW449-0070 Core Description Initials: RHG Date: 11/2/09 Time: 1515
		19.44 / 20	AMEC Proj.No. 13133.003 SD-DUW449-0080 Core Description Initials: RHG Date: 11/2/09 Time: 1515

continued

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW449

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/2/2009	11/2/09
Start Time:	13:19	1541

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
13.1	Top of sediment

Distance top/bottom	Sample ID labels
20 / 20.3	AMEC Proj.No. 13133.003 SD-DUW449-0000 Core Description Initials: RHG Date: 11/2/09 Time: 1515

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHK	Core processed within 24 hrs of collection.	YES
RHK	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	No
RHK	Separation (gaps) along length of sediment in core tube.	No
RHK	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHK	Correct number and type of sample jars filled.	YES
RHK	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHK	Sample jars verified against COC forms.	YES
	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	
RHK	VOC samples in cooler with trip blanks (2 vials per cooler)	YES

150

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 2 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW 450 Time: 1432

[X] Water Depth: 18.2 Tide: 10.3

[X] Duplicate core required at station? Required (Not Required)

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 195790 Actual N: 195789

Planned E: 1275669 Actual E: 1275670

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[—] No known significant loss of sediment out of bottom of core tube — water / sand leaked past plug

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RG

	Penetration:	Recovery:	Comments:
1	18.5	19.3	
2	15.7	16.9	
3	12.9	15.1	
4	11.9	14.2	very slow
5	11.2	13.8	
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 14.0 ft

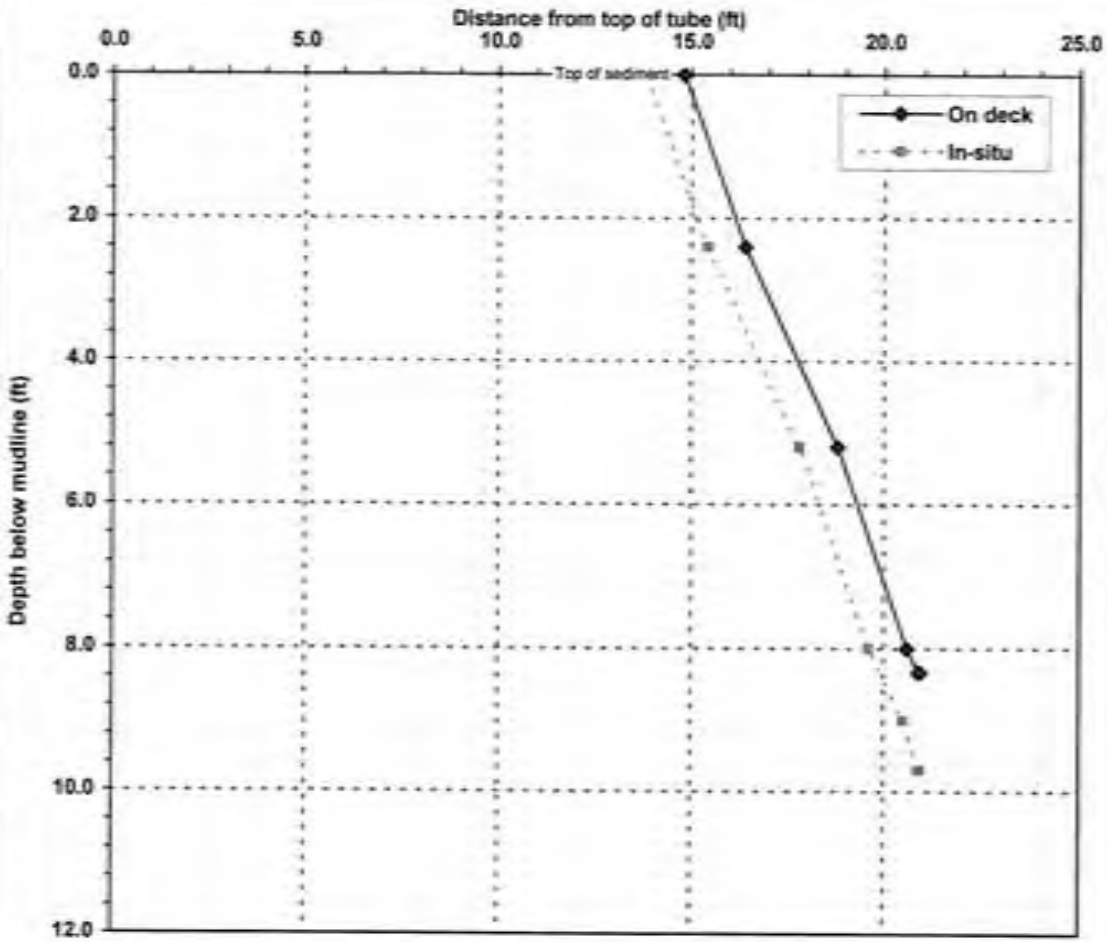
Notes: 20.8 A core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW450
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		195789 — Northing
Date:	11/2/2009	**Time:**	14:32 — 1275670 — Easting
Water depth:	18.2 ft	**Mudline:**	-7.9 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Light Rain



Penetration 9.7 ft/ On deck recovery 6.1 ft = 63% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.4	1.6	67%
2.4-5.2	2.4	86%
5.2-8	1.8	64%
8-9	0.9	90%
9-9.7	0.4	57%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	14.8
1	15.47
2	16.13
3	16.91
4	17.77
5	18.63
6	19.31
7	19.96
8	20.60
9	No sample
10	No sample
11	No sample
12	No sample
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW450

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/2/2009	11/2/09
Start Time:	14:32	1630

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID labels
14.8	Top of sediment 14.8-15.3 ML silt with gravel, brown w/ orange mott 75% fines, 25% gravel mod firm	16.13 / 16.9	AMEC Proj.No. 13133.003 SD-DUW450-0020 Core Description Initials: RHG Date: 11/2/09 Time: 1425
	15.3-18.4 ML silt with sand, ~~upper~~ to 16.5 much more sand (70/30) than 85+/15 blackish gray with scattered gray fn sand laminations mod plast (rolls pretty good) mod firm	16.9 / 17.8	AMEC Proj.No. 13133.003 SD-DUW450-0030 Core Description Initials: RHG Date: 11/2/09 Time: 1425
probably 10%-15% clay in this		17.8 / 18.63	AMEC Proj.No. 13133.003 SD-DUW450-0040 Core Description Initials: RHG Date: 11/2/09 Time: 1425
	18.4-18.6 SP: gray, fn sand, dense. 100% sand	18.63 / 19.3	AMEC Proj.No. 13133.003 SD-DUW450-0050 Core Description Initials: RHG Date: 11/2/09 Time: 1425
	18.6-19.3 transition zone of SP blackish gray with red-white grains and ML gray lenses. mod dense.	19.3 / 20	AMEC Proj.No. 13133.003 SD-DUW450-0060 Core Description Initials: RHG Date: 11/2/09 Time: 1425
	19.3-20.6 SP blackish gray, white-red grains, mod dense. sand is fn-med 95+ sand 5% fines		
	19.6' wood piece		
19.5'	2"x1" angular rock.		

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Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 12 2009

- [x] Daily dGPS verification check completed Rep2
- [x] Station Name: SD DUN 450 Time: 1408
- [x] Water Depth: 18.3 Tide: 11.1
- [x] Duplicate core required at station? Required (Not Required)
- [x] GPS range within 6 ft radius of station prior to sampler deployment
- [x] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 195790 Actual N: 195797

Planned E: 1275669 Actual E: 1275664

- [x] Logged GPS Verified by Shore Crew
- [N] Maximum core penetration goal reached refusal
- [x] No known significant loss of sediment out of bottom of core tube
- [x] Core tube labeled
- [x] Core log and check list provided to shore crew Received By: RG

	Penetration:	Recovery:	Comments:
1	16.7	19.8	
2	14.8	17.8	
3	10.7	14.7	
4	9.1	13.7	
5	8.1	13.2	
6	7.5	12.9	very odor
7	7.0	12.6	
8	6.1	12.3	
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 12.2 ft

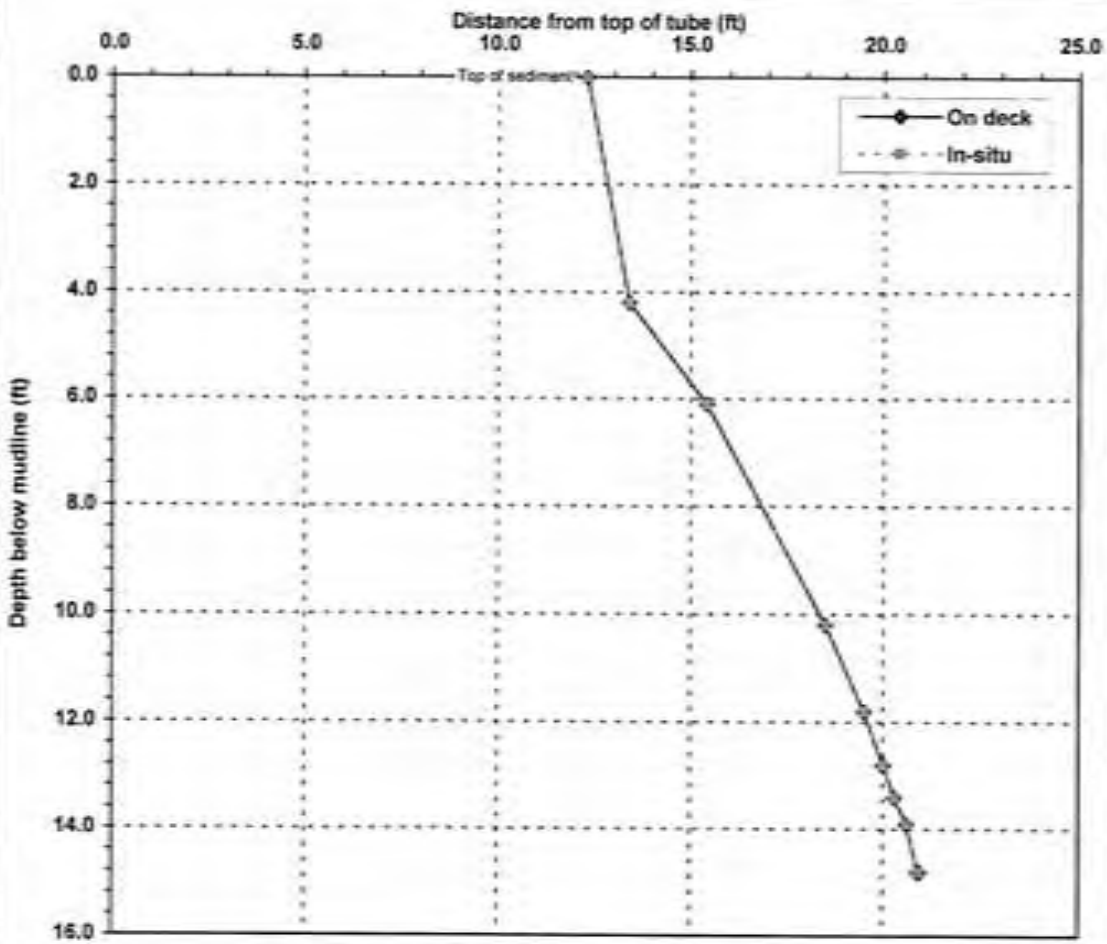
Notes: 20.9 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW450R2
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		195797 — Northing
Date:	11/12/2009	**Time:**	14:08 — 1275664 — Easting
Water depth:	18.3 ft	**Mudline:**	-7.2 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Sunny



Penetration 14.8 ft/ On deck recovery 8.6 ft = 58% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-4.2	1.1	26%
4.2-6.1	2	105%
6.1-10.2	3.1	76%
10.2-11.8	1	63%
11.8-12.8	0.5	50%
12.8-13.4	0.3	50%
13.4-13.9	0.3	60%
13.9-14.8	0.3	33%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	12.3
1	12.56
2	12.82
3	13.09
4	13.35
5	14.24
6	15.29
7	16.08
8	16.84
9	17.59
10	18.35
11	19.00
12	19.60
13	20.10
14	20.63
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW450R2

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/12/2009	11/12/09
Start Time:	14:08	1600

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
12.3	Top of sediment
	12.3-12.9 SP. blackish gray, mod dense, 95/5 sand is med red/white grains
	12.9-13.3 SM. as above but 80/20.
	13.3-17.2 ML black, mod firm, med. plast
	lenses of olive gray SM @ 13.3-13.4, 15.7-15.8
	lenses of SP blackish gray, red/white grains sand is med. fn 16.3-16.4, 16.7-16.8, 17-17.1
	17.2-20.6 SP blackish gray, mod dense, 95/5 red/white grains sand is med-fn
	winnowed below 17.5 ~20% not sampled
	Last sample collected to 17.5

Distance top/bottom	Sample ID Label
16.08 / 16.84	AMEC Proj.No. 13133.003 SD-DUW450-0070 Core Description Initials: RHG Date: 11/12/09 Time: 1600
16.84 / 17.5	AMEC Proj.No. 13133.003 SD-DUW450-0080 Core Description Initials: RHG Date: 11/12/09 Time: 1600

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Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	No
RHG	Separation (gaps) along length of sediment in core tube.	No
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
N/A	Duplicate samples analyzed at 10% frequency	
RHG	VOC samples in cooler with trip blanks (2 vials per cooler)	YES

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Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 3 2009

- [x] Daily dGPS verification check completed
- [x] Station Name: SD DMW 451 Time: 0807
- [x] Water Depth: 16.2 Tide: 9.3
- [x] Duplicate core required at station? Required (Not Required)
- [x] GPS range within 6 ft radius of station prior to sampler deployment
- [x] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 195766 Actual N: 195765

Planned E: 1275698 Actual E: 1275696

- [ ] Logged GPS Verified by Shore Crew
- [ ] Maximum core penetration goal reached vertical
- [x] No known significant loss of sediment out of bottom of core tube
- [x] Core tube labeled
- [x] Core log and check list provided to shore crew Received By: RHG

	Penetration:	Recovery:	Comments:
1	17.0	17.3	
2	14.2	14.9	
3	11.5	12.6	
4	9.1	11.1	very slow
5	7.2	9.9	
6	5.0	8.9	
7	4.8	8.3	
8	3.5	7.8	
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 7.9 ft

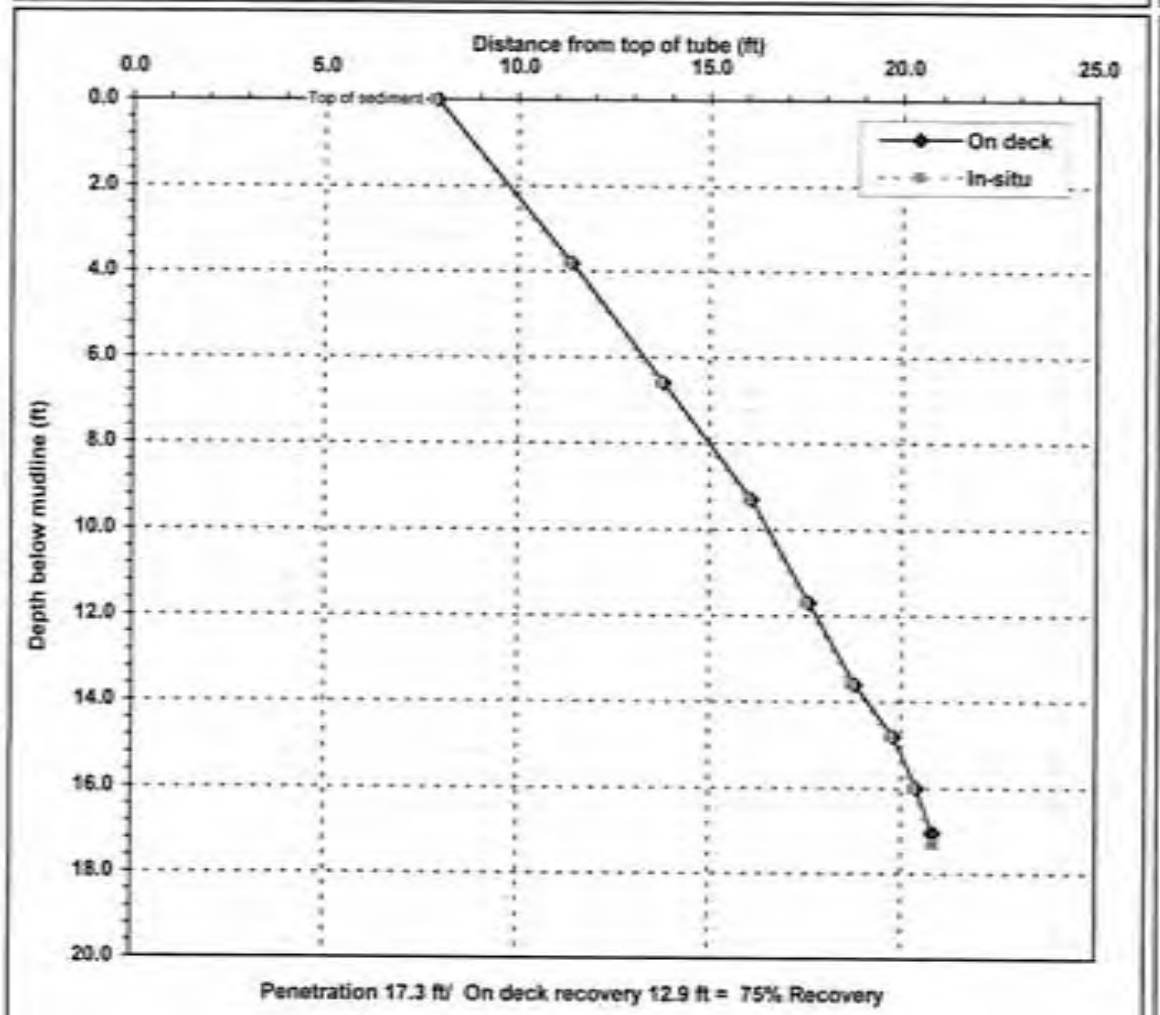
Notes: 23-8 A core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW451
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		195765 — Northing
Date:	11/3/2009	**Time:**	8:07 — 1275696 — Easting
Water depth:	16.2 ft	**Mudline:**	-6.9 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: partial clouds



Penetration 17.3 ft/ On deck recovery 12.9 ft = 75% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-3.8	3.5	92%
3.8-6.6	2.4	86%
6.6-9.3	2.3	85%
9.3-11.7	1.5	63%
11.7-13.6	1.2	63%
13.6-14.8	1	83%
14.8-16	0.6	50%
16-17.3	0.5	38%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	7.9
1	8.82
2	9.74
3	10.66
4	11.57
5	12.43
6	13.29
7	14.14
8	14.99
9	15.84
10	16.54
11	17.16
12	17.79
13	18.42
14	19.13
15	19.90
16	20.40
17	20.78
18	No sample
19	No sample
20	No sample

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File name SD-DUW451
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW451

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/3/2009	11/3/09
Start Time:	8:07	1100

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description	Distance top/bottom	Sample ID labels
7.9	Top of sediment 7.9-9.1 SM black, sand is med, trace wood fragments to 8.3' mod dense 75/25 sand/fines, non-plast	9.74 / 10.7	AMEC Proj.No. 13133.003 SD-DUW451-0020 Core Description Initials: RHG Date: 11/3/09 Time: 0945
	9.1 – 17.5 ML: blackish gray 80/20 fines/sand (fn) non-low plast. mod firm blocky texture, v. homog.	10.7 / 11.6	AMEC Proj.No. 13133.003 SD-DUW451-0030 Core Description Initials: RHG Date: 11/3/09 Time: 0945
	SM: olive gray to gray 80/20 sand (fn)/fines laminations @ firm/dense 10.6-10.9 11.6-11.9 12.5-12.7 13.4-13.6 15.5-15.6 16.7-16.9	11.6 / 12.43	AMEC Proj.No. 13133.003 SD-DUW451-0040 Core Description Initials: RHG Date: 11/3/09 Time: 0945
	17.5 – 20.6 SP: blackish gray, 95/5 red-white grains mod dense sand is fn-to-med	12.43 / 13.3	AMEC Proj.No. 13133.003 SD-DUW451-0050 Core Description Initials: RHG Date: 11/3/09 Time: 0945
	lenses of ML: gray 80/20, trace organics @ 18.4-18.6 slight H_2S odor 19.4-19.6 35-45% lenses of wood (bark frags) @ 19.1-19.2 @ 19.8-19.9 this is a large piece of wood	13.3 / 14.14	AMEC Proj.No. 13133.003 SD-DUW451-0060 Core Description Initials: RHG Date: 11/3/09 Time: 0945
		14.14 / 15	AMEC Proj.No. 13133.003 SD-DUW451-0070 Core Description Initials: RHG Date: 11/3/09 Time: 0945
		15 / 15.84	AMEC Proj.No. 13133.003 SD-DUW451-0080 Core Description Initials: RHG Date: 11/3/09 Time: 0945

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW451

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/3/2009	11/3/09
Start Time:	8:07	1100

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
7.9	Top of sediment

Distance top/bottom	Sample ID labels
15.84 / 16.54	AMEC Proj.No. 13133.003 SD-DUW451-0090 Core Description Initials: RHG Date: 11/3/09 Time: 0945
16.54 / 17.16	AMEC Proj.No. 13133.003 SD-DUW451-0100 Core Description Initials: RHG Date: 11/3/09 Time: 0945
17.16 / 17.8	AMEC Proj.No. 13133.003 SD-DUW451-0110 Core Description Initials: RHG Date: 11/3/09 Time: 1945
17.8 / 18.4	AMEC Proj.No. 13133.003 SD-DUW451-0120 Core Description Initials: RHG Date: 11/3/09 Time: 0945
18.4 / 19.13	AMEC Proj.No. 13133.003 SD-DUW451-0130 Core Description Initials: RHG Date: 11/3/09 Time: 0945
19.13 / 19.9	AMEC Proj.No. 13133.003 SD-DUW451-0140 Core Description Initials: RHG Date: 11/3/09 Time: 0945
19.9 / 20.4	AMEC Proj.No. 13133.003 SD-DUW451-0150 Core Description Initials: RHG Date: 11/3/09 Time: 0945

485

Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	NO
RHG	Separation (gaps) along length of sediment in core tube.	NO
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
RHG	Duplicate samples analyzed at 10% frequency	YES
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GJM Date: 11 / 5 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW 485 Time: 0932

[X] Water Depth: 16.6 Tide: 10.1

[X] Duplicate core required at station? (Required) Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 197761 Actual N: 197760

Planned E: 1273449 Actual E: 1273451

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RHH

	Penetration:	Recovery:	Comments:
1	18.3	18.8	
2	15.9	17.0	
3	11.6	14.4	slow
4	9.9	13.6	
5	9.1	13.1	
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 13.1 ft

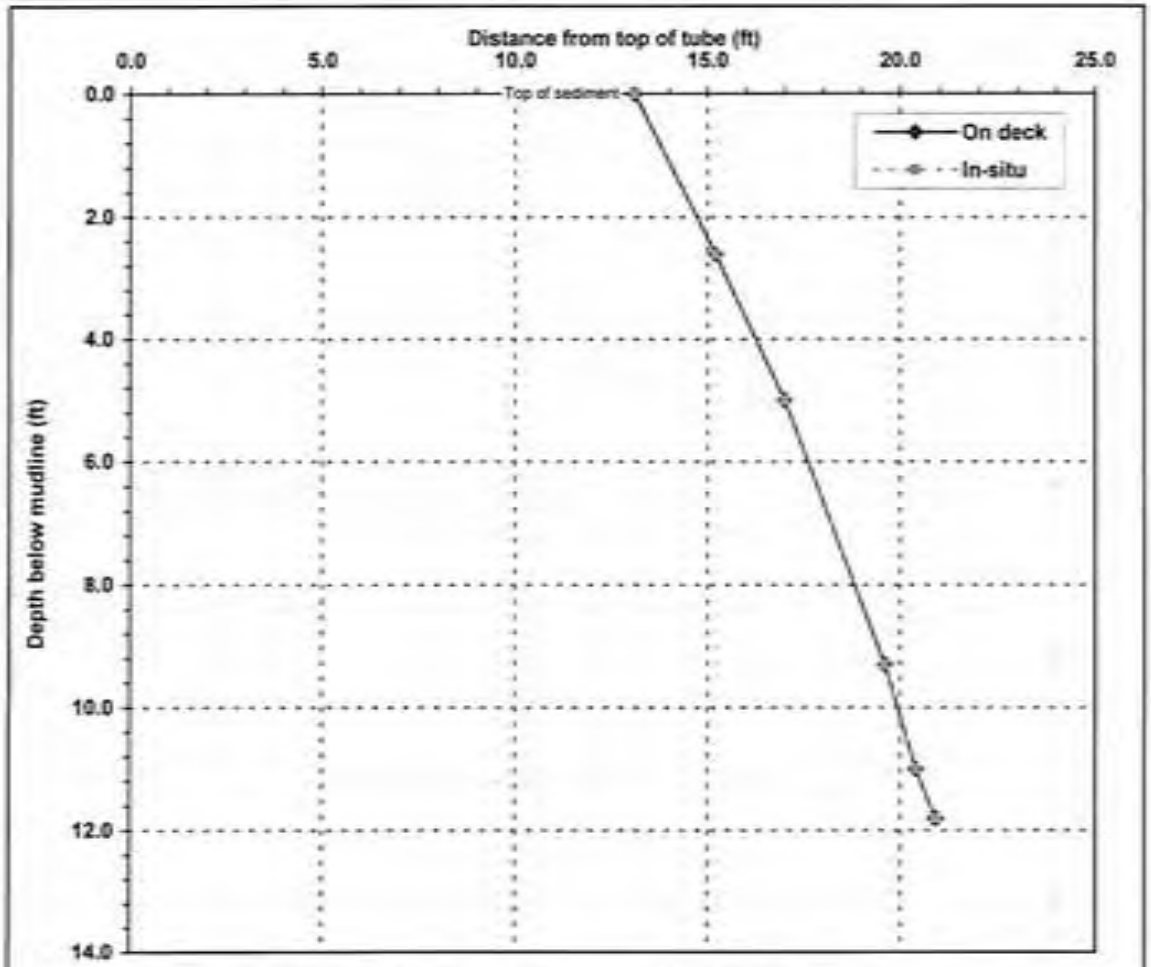
Notes: 20.9 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW485
Project No:	13133.003	**Position:**	NAD 83 WA N
Collected by:	GSM		197760 Northing
Date:	11/5/2009 **Time:** 9:32		1273451 Easting
Water depth:	16.6 ft **Mudline:** -6.5 ft MLLW	(estimated using electronic tide gauge)	

Place Field ID Label Here

Weather/Comments: Overcast



Penetration 11.8 ft/ On deck recovery 7.8 ft = 66% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.6	2.1	81%
2.6-5	1.8	75%
5-9.3	2.6	60%
9.3-11	0.8	47%
11-11.8	0.5	62%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	13.1
1	13.91
2	14.72
3	15.50
4	16.25
5	17.00
6	17.60
7	18.21
8	18.81
9	19.42
10	19.93
11	20.40
12	No sample
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW485

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/5/2009	11/5/09
Start Time:	9:32	1125

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
13.1	Top of sediment
	13.1-14.4 SM, black, mod. dense to mod. loose, 80/20 sand is med
	14.4-18.6 ML black, mod to hi plast, 90/10 sand is fn, Mod firm
	lens of SP blackish gray red-white grains @ 17.13-17.3 @ 16.1-16.2
	piece of wood @ 17.8
	sticky, blocky texture.
	18.6-20.1 SP. blackish gray, red-white grains, med dense, 90/10 sand is med.
	lens of ML olive gray @ 19.1-19.2 19.4-19.5
	20.1-20.6 SM. olive gray, mod. (11 mc) dense, sand is fn 80/20
	same as bottom shift in 425

Distance top/bottom	Sample ID labels
14.72 / 15.5	AMEC Proj.No. 13133.003 SD-DUW485-0020 Core Description Initials: RHG Date: 11/5/09 Time: 1125
15.5 / 16.25	AMEC Proj.No. 13133.003 SD-DUW485-0030 Core Description Initials: RHG Date: 11/5/09 Time: 1125
16.25 / 17	AMEC Proj.No. 13133.003 SD-DUW485-0040 Core Description Initials: RHG Date: 11/5/09 Time: 1125
17 / 17.6	AMEC Proj.No. 13133.003 SD-DUW485-0050 Core Description Initials: RHG Date: 11/5/09 Time: 1125
17.6 / 18.2	AMEC Proj.No. 13133.003 SD-DUW485-0060 Core Description Initials: RHG Date: 11/5/09 Time: 1125
18.2 / 18.8	AMEC Proj.No. 13133.003 SD-DUW485-0070 Core Description Initials: RHG Date: 11/5/09 Time: 1125
18.8 / 19.42	AMEC Proj.No. 13133.003 SD-DUW485-0080 Core Description Initials: RHG Date: 11/5/09 Time: 1125

continued

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW485

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/5/2009	11/5/09
Start Time:	9:32	1125

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
13.1	Top of sediment

Distance top/bottom	Sample ID labels
19.42 / 19.93	AMEC Proj.No. 13133.003 SD-DUW485-0090 Core Description Initials: RHG Date: 11/5/09 Time: 1125
19.93 / 20.6	AMEC Proj.No. 13133.003 SD-DUW485-0100 Core Description Initials: RHG Date: 11/5/09 Time: 1125

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Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GFM Date: 11 / 17 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DMW 485 Time: 1345

[X] Water Depth: 16.0 Tide: 8.7

[X] Duplicate core required at station? (Required) Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 197761 Actual N: 197766

Planned E: 1273449 Actual E: 1273445

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[—] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RHP

	Penetration:	Recovery:	Comments:
1	16.8	18.2	
2	15.4	16.7	
3	13.2	15.5	
4	11.2	14.3	slow
5	9.0	13.0	
6	7.4	12.0	
7	6.4	11.4	
8	5.6	11.1	very slow
9	5.0	10.7	
10	4.4	10.2	
11	3.5	9.7	
12	3.0	9.3	
13	2.5	8.9	
14	2.2	8.7	
15	1.7	8.3	
16			
17			

On-deck Recovery: 8.3 ft

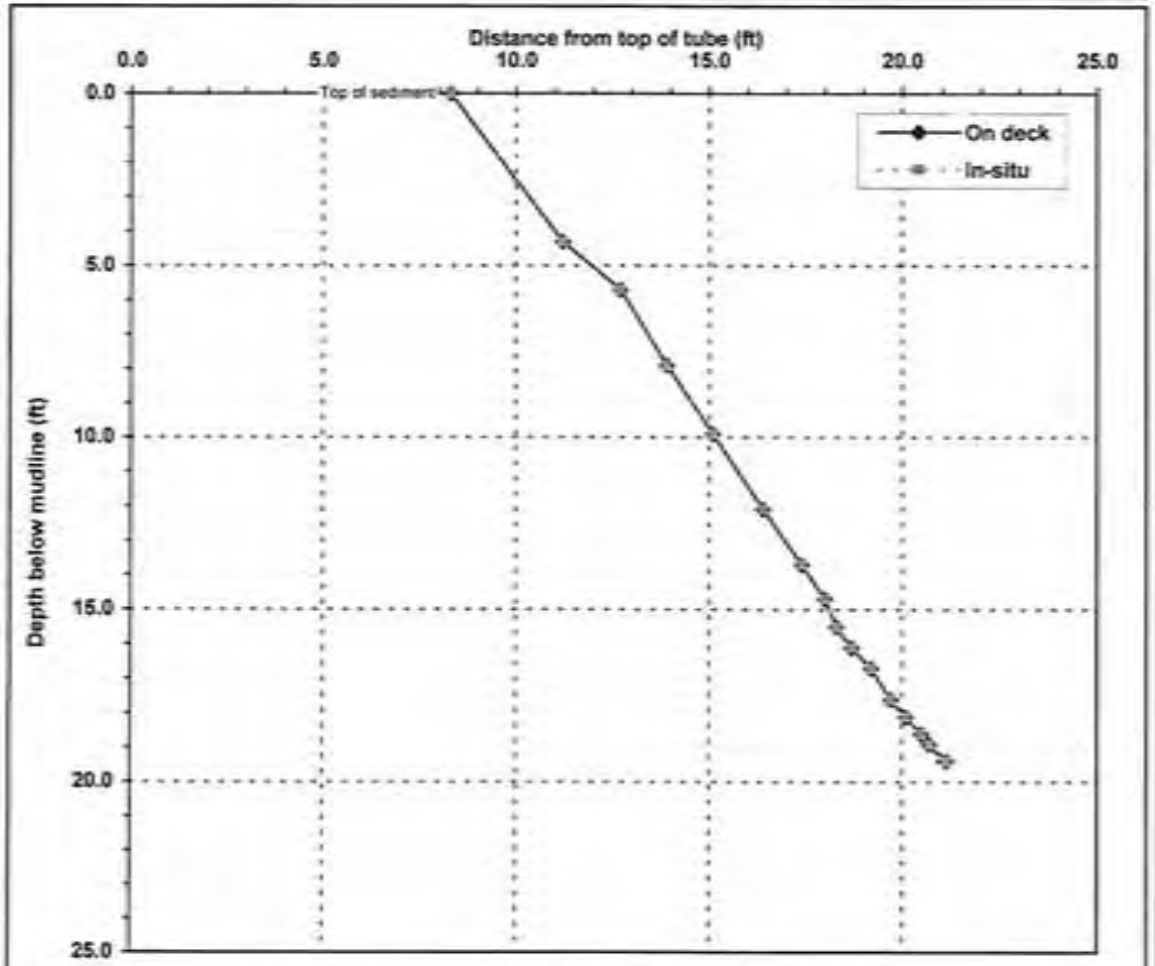
Notes: 21.1 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW485R2
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		197766 — Northing
Date:	11/17/2009	**Time:**	13:45 — 1273445 — Easting
Water depth:	16.0 ft	**Mudline:**	-7.3 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Overcast



Penetration 19.4 ft/ On deck recovery 12.8 ft = 66% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-4.3	2.9	67%
4.3-5.7	1.5	107%
5.7-7.9	1.2	55%
7.9-9.9	1.2	60%
9.9-12.1	1.3	59%
12.1-13.7	1	63%
13.7-14.7	0.6	60%
14.7-15.5	0.3	38%
15.5-16.1	0.4	67%
16.1-16.7	0.5	83%
16.7-17.6	0.5	56%
17.6-18.1	0.4	80%
18.1-18.6	0.4	80%
18.6-18.9	0.2	67%
18.9-19.4	0.4	80%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	8.3
1	8.97
2	9.65
3	10.32
4	11.00
5	11.95
6	12.86
7	13.41
8	13.96
9	14.56
10	15.16
11	15.75
12	16.34
13	16.96
14	17.58
15	18.11
16	18.63
17	19.37
18	20.02
19	20.78
20	No sample

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File name SD-DUW485R2
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW485R2

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/17/2009	11/17/09
Start Time:	13:45	1600

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
8.3	Top of sediment
	8.3-9.9 ML: black, soft, non-plast, 80/20 sand med one clam @ 8.6
	9.9-14.7 ML: black, mod firm mod. plast, 90/10 sand fin
	SP loose, blackish gray red/white grains @ 11.4-11.5
	SM loose, olive gray @ 13.5-13.6 13.9-14.0
	14.7-16.3 SM: blackish gray, red/white grains, dense, sand med. 80/20
	16.3-19.6 SP: blackish gray, dense, red/white grains, sand fin-med
	SM olive gray dense, 80/20 sand fin @ 17-17.4, 18.9-19.0, 19.5-19.6 | 17.7, 17.9, 18.2
	wood frags @ 17.9 and in loose @ 19.4, 19.5
	winnowed below 19.6, not sampled
	material is SP with trace pea gravel

Distance top/bottom	Sample ID labels
15.75 / 16.34	AMEC Proj.No. 13133.003 SD-DUW485-0110 Core Description Initials: RHG Date: 11/17/09 Time: 1600
16.34 / 16.96	AMEC Proj.No. 13133.003 SD-DUW485-0120 Core Description Initials: RHG Date: 11/17/09 Time: 1600
16.96 / 17.58	AMEC Proj.No. 13133.003 SD-DUW485-0130 Core Description Initials: RHG Date: 11/17/09 Time: 1600
17.58 / 18.11	AMEC Proj.No. 13133.003 SD-DUW485-0140 Core Description Initials: RHG Date: 11/17/09 Time: 1600
18.11 / 18.63	AMEC Proj.No. 13133.003 SD-DUW485-0150 Core Description Initials: RHG Date: 11/17/09 Time: 1600
18.63 / 19.37	AMEC Proj.No. 13133.003 SD-DUW485-0160 Core Description Initials: RHG Date: 11/17/09 Time: 1600
19.37 / 19.6	AMEC Proj.No. 13133.003 SD-DUW485-0170 Core Description Initials: RHG Date: 11/17/09 Time: 1600

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486

Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	No
RHG	Separation (gaps) along length of sediment in core tube.	No
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
~~AA~~ RHG	Duplicate samples analyzed at 10% frequency	~~RHG~~ YES
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	RHG

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSM Date: 11 / 9 2009

- [x] Daily dGPS verification check completed
- [x] Station Name: SD DUW 486 Time: 1152
- [x] Water Depth: 23.0 Tide: 11.2
- [x] Duplicate core required at station? (Required) Not Required
- [x] GPS range within 6 ft radius of station prior to sampler deployment
- [x] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 196543 Actual N: 196545

Planned E: 1274829 Actual E: 1274829

- [x] Logged GPS Verified by Shore Crew
- [x] Maximum core penetration goal reached refusal
- [x] No known significant loss of sediment out of bottom of core tube
- [x] Core tube labeled
- [x] Core log and check list provided to shore crew Received By: RG

	Penetration:	Recovery:	Comments:
1	17.9	18.2	
2	13.8	15.4	
3	11.0	14.1	
4	10.3	13.9	very slow
5	10.1	13.8	
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 13.9 ft

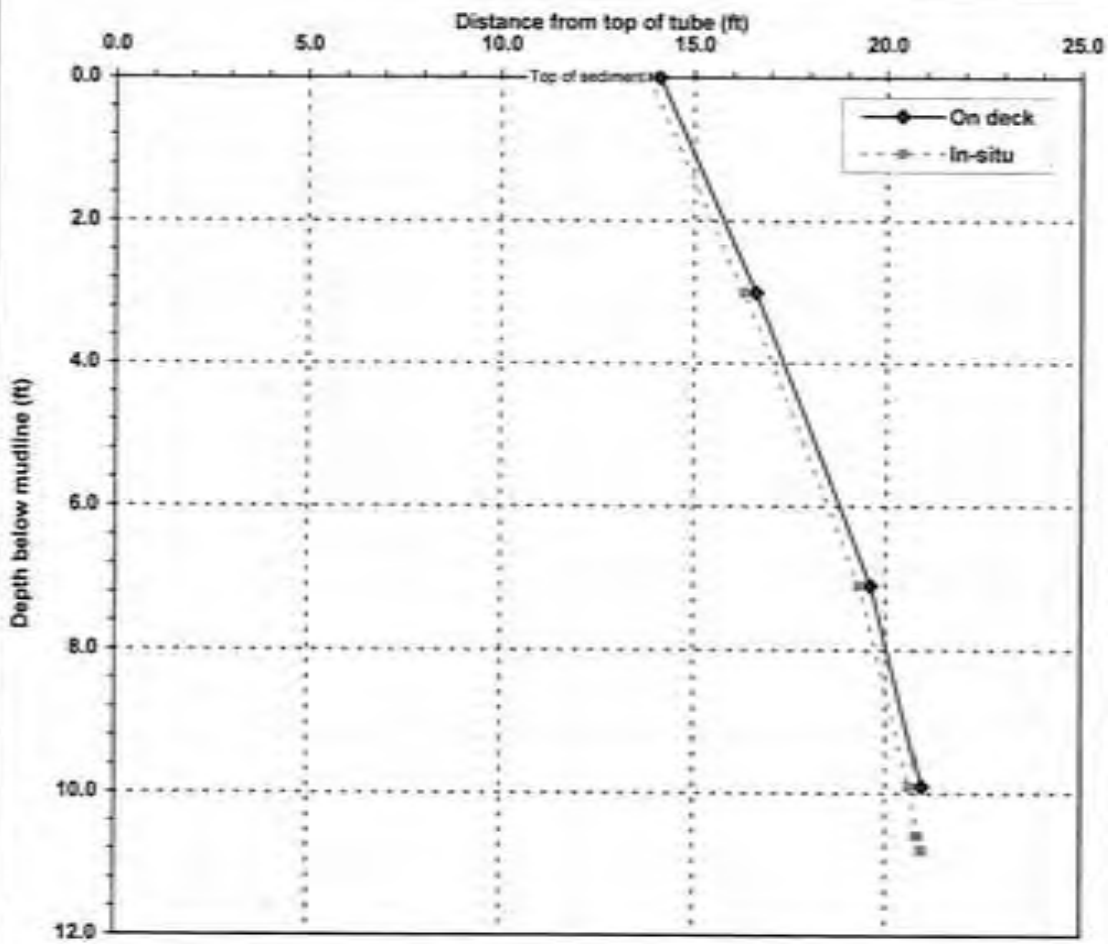
Notes: 209 A core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW486
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		196545 — Northing
Date:	11/9/2009 — **Time:** 11:02		1274829 — Easting
Water depth:	23.0 ft — **Mudline:** -11.8 ft MLLW	(estimated using electronic tide gauge)	

Place Field ID Label Here

Weather/Comments: Rain



Penetration 10.8 ft/ On deck recovery 6.8 ft = 63% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-3	2.5	83%
3-7.1	3	73%
7.1-9.9	1.3	46%
9.9-10.6	0.2	29%
10.6-10.8	0.1	50%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	14.1
1	14.93
2	15.77
3	16.60
4	17.33
5	18.06
6	18.80
7	19.53
8	20.02
9	20.48
10	No sample
11	No sample
12	No sample
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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File name SD-DUW486
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW486

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/9/2009	11/9/09
Start Time:	11:02	1245

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
~~13.9~~ 14.1	Top of sediment
	14.1-15.0 SM/ML black, soft, non-plast, 60/40 either way sand is fn.
	15.0-18.6 ML. grayish black, mod. stiff, mod plast, 90/10
	piece of shredded wood @ 16.9.
	SP loose gray red/white grains sand is med @ 16.2' @ 15.0'
	then SP gray lens, fn sand @ 17.5, 17.6, 17.7
	18.6-20.6 SP: blackish gray, mod dense, red white grains 90/10 to 19.2 then 100/0. sand is fn in top and grades medium @ 19.8

Distance top/bottom	Sample ID labels
15.77 / 16.6	AMEC Proj.No. 13133.003 SD-DUW486-0020 Core Description Initials: RHG Date: 11/9/09 Time: 1235
16.6 / 17.33	AMEC Proj.No. 13133.003 SD-DUW486-0030 Core Description Initials: RHG Date: 11/9/09 Time: 1235
17.33 / 18.06	AMEC Proj.No. 13133.003 SD-DUW486-0040 Core Description Initials: RHG Date: 11/9/09 Time: 1235
18.06 / 18.8	AMEC Proj.No. 13133.003 SD-DUW486-0050 Core Description Initials: RHG Date: 11/9/09 Time: 1235
18.8 / 19.53	AMEC Proj.No. 13133.003 SD-DUW486-0060 Core Description Initials: RHG Date: 11/9/09 Time: 1235
19.53 / 20.02	AMEC Proj.No. 13133.003 SD-DUW486-0070 Core Description Initials: RHG Date: 11/9/09 Time: 1235

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487

Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials		
RHG	Core processed within 24 hrs of collection.	YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores)	Some
RHG	Separation (gaps) along length of sediment in core tube.	NO
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.)	YES
RHG	Correct number and type of sample jars filled.	YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms.	YES
RHG	Sample jars verified against COC forms.	YES
RHG	Samples kept cold until delivery to lab.	YES
NA	Duplicate samples analyzed at 10% frequency	RHG YES
NA	VOC samples in cooler with trip blanks (2 vials per cooler)	RHG

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GSR Date: 11 / 11 2009

[Y] Daily dGPS verification check completed

[Y] Station Name: SD DUW 487 Time: 1420

[X] Water Depth: 22.1 Tide: 10.1

[X] Duplicate core required at station? (Required) Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[Y] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 195901 Actual N: 195899

Planned E: 1275541 Actual E: 1275542

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[Yes] No known significant loss of sediment out of bottom of core tube water leaked past plug

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: [illegible]

	Penetration:	Recovery:	Comments:
1	18.0	18.4	
2	14.9	16.0	
3	10.8	12.9	
4	7.0	11.0	
5	4.7	9.9	
6	3.8	9.4	
7	3.5	9.2	very slow
8	2.9	9.0	
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 9.2 ft

Notes:

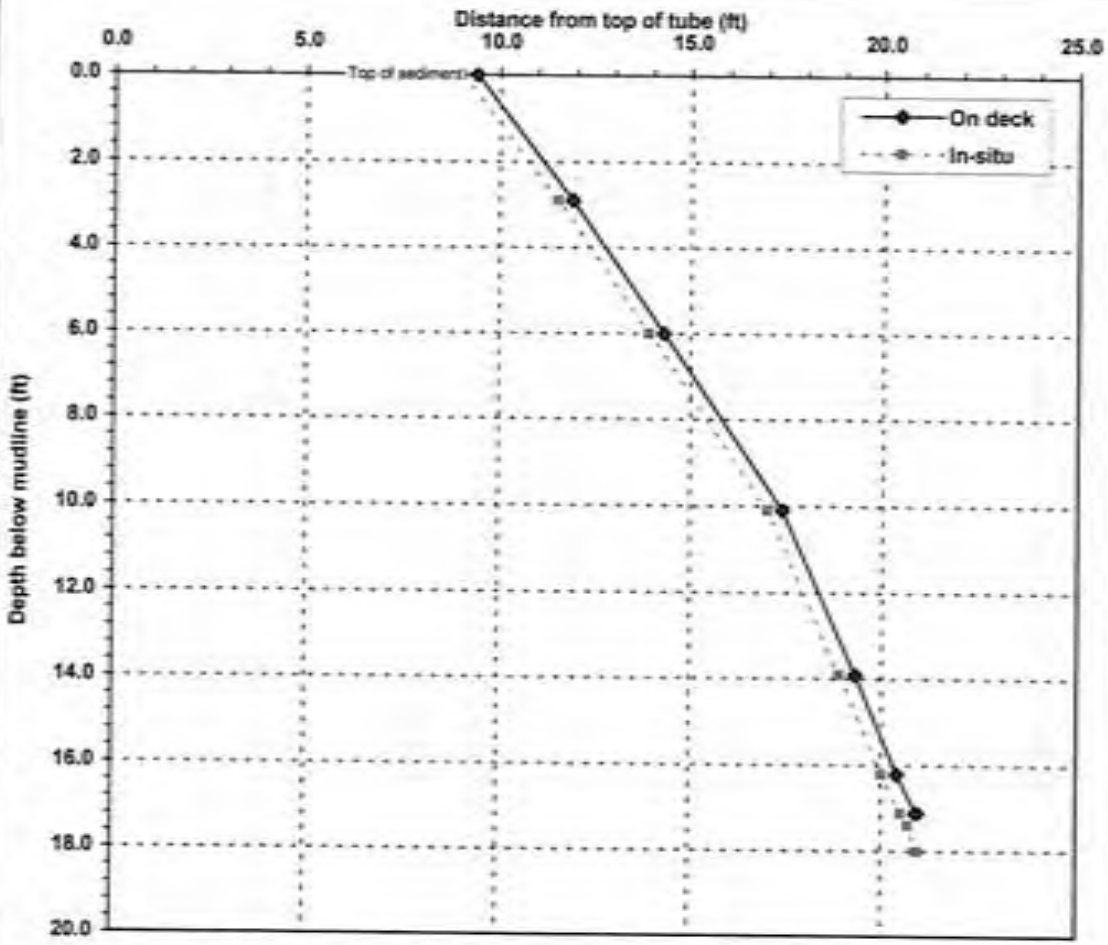
20.9 ft core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW487
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		195899 — Northing
Date:	11/11/2009	**Time:**	14:20 — 1275542 — Easting
Water depth:	22.1 ft	**Mudline:**	-12.0 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Sunny



Penetration 18 ft/ On deck recovery 11.5 ft = 64% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.9	2.5	86%
2.9-6	2.4	77%
6-10.1	3.1	76%
10.1-13.9	1.9	50%
13.9-16.2	1.1	48%
16.2-17.1	0.5	56%
17.1-17.4	0.2	67%
17.4-18	0.2	33%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	9.4
1	10.26
2	11.12
3	11.98
4	12.75
5	13.53
6	14.30
7	15.06
8	15.81
9	16.57
10	17.32
11	17.85
12	18.35
13	18.85
14	19.35
15	19.83
16	20.30
17	20.84
18	No sample
19	No sample
20	No sample

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File name SD-DUW487
Bore Log (mudline)

Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW487

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/11/2009	11/11/09
Start Time:	14:20	1520

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
9.4	Top of sediment
	9.4-10.2 ML - soft, black, non-pl 85/15 sand is fn-med, trace shells to 9.6
	10.2-18.1 ML, mod. soft to 12.2 then mod stiff, black, low plast to 13.2 then mod. plast 90/10, sand fine
	trace organics throughout
	layers of SM olive gray, 80/20 sand is fine, med. dense @ 11.9-12.2, 14.7-14.9, 16.2-16.3, 16.8-17.1
	18.1-19.2 SM blackish gray, med dense 80/20, red/white grains, sand is fn-med.
moderate He-like odor from 18.4-19.4	19.2-19.4 SP blackish gray, med dense, red/white grains, moderate
	19.4-20.6 SAA but >50% winnowed not sampled.

Distance top/bottom	Sample ID labels
11.12 / 11.98	AMEC Proj.No. 13133.003 SD-DUW487-0020 Core Description Initials: RHG Date: 11/11/09 Time: 1520
11.98 / 12.75	AMEC Proj.No. 13133.003 SD-DUW487-0030 Core Description Initials: RHG Date: 11/11/09 Time: 1520
12.75 / 13.53	AMEC Proj.No. 13133.003 SD-DUW487-0040 Core Description Initials: RHG Date: 11/11/09 Time: 1520
13.53 / 14.3	AMEC Proj.No. 13133.003 SD-DUW487-0050 Core Description Initials: RHG Date: 11/11/09 Time: 1520
14.3 / 15.06	AMEC Proj.No. 13133.003 SD-DUW487-0060 Core Description Initials: RHG Date: 11/11/09 Time: 1520
15.06 / 15.81	AMEC Proj.No. 13133.003 SD-DUW487-0070 Core Description Initials: RHG Date: 11/11/09 Time: 1520
15.81 / 16.57	AMEC Proj.No. 13133.003 SD-DUW487-0080 Core Description Initials: RHG Date: 11/11/09 Time: 1520

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW487

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/11/2009	11/11/09
Start Time:	14:20	1520

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
9.4	Top of sediment

Distance top/bottom	Sample ID labels
16.57 / 17.32	AMEC Proj.No. 13133.003 SD-DUW487-0090 Core Description Initials: RHG Date: 11/11/09 Time: 1520
17.32 / 17.85	AMEC Proj.No. 13133.003 SD-DUW487-0100 Core Description Initials: RHG Date: 11/11/09 Time: 1520
17.85 / 18.35	AMEC Proj.No. 13133.003 SD-DUW487-0110 Core Description Initials: RHG Date: 11/11/09 Time: 1520
18.35 / 18.85	AMEC Proj.No. 13133.003 SD-DUW487-0120 Core Description Initials: RHG Date: 11/11/09 Time: 1520
18.85 / 19.35	AMEC Proj.No. 13133.003 SD-DUW487-0130 Core Description Initials: RHG Date: 11/11/09 Time: 1520

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Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: SSM Date: 11 / 19 2009

[x] Daily dGPS verification check completed

[x] Station Name: SD DUW 487 RR Time: 1449

[x] Water Depth: 21.0 Tide: 8.1

[x] Duplicate core required at station? Required (Not Required)

[ ] GPS range within 6 ft radius of station prior to sampler deployment

[x] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 195901 Actual N: 195904

Planned E: 1275541 Actual E: 1275534

[x] Logged GPS Verified by Shore Crew

[N] Maximum core penetration goal reached no recovery

[x] No known significant loss of sediment out of bottom of core tube

[x] Core tube labeled

[x] Core log and check list provided to shore crew Received By: RG

	Penetration:	Recovery:	Comments:
1	17.5	19.8	
2	17.1	18.2	
3	13.0	15.1	
4	10.0	13.1	
5	9.0	12.6	
6	8.0	11.8	
7	7.0	11.3	slow
8	6.0	10.9	
9	4.5	10.6	poor recovery
10	3.5	10.3	" "
11	3.0	10.2	" "
12	2.9	10.2	
13			
14			
15			
16			
17			

On-deck Recovery: 10.2 ft

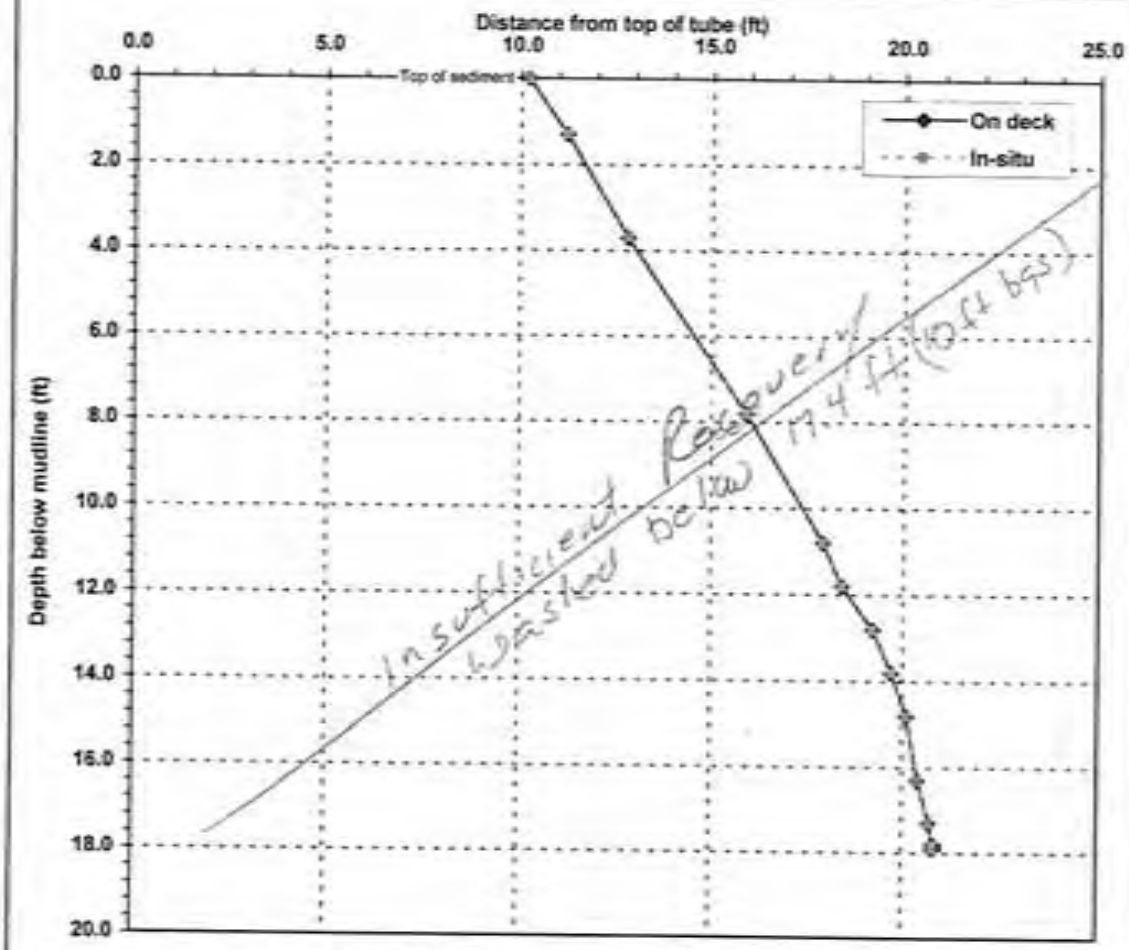
Notes: 20.8 @ core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW487R2
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		195904 — Northing
Date:	11/19/2009	**Time:**	14:49 — 1275534 — Easting
Water depth:	21.0 ft	**Mudline:**	-12.9 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Overcast



Penetration 17.9 ft/ On deck recovery 10.6 ft = 59% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-1.3	1	77%
1.3-3.7	1.6	67%
3.7-7.8	3.1	76%
7.8-10.8	2	67%
10.8-11.8	0.5	50%
11.8-12.8	0.8	80%
12.8-13.8	0.5	50%
13.8-14.8	0.4	40%
14.8-16.3	0.3	20%
16.3-17.3	0.3	30%
17.3-17.8	0.099	20%
17.8-17.9	0.001	1%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	10.2
1	10.97
2	11.67
3	12.33
4	13.03
5	13.78
6	14.54
7	15.30
8	16.03
9	16.70
10	17.37
11	18.00
12	18.56
13	19.30
14	19.78
15	20.14
16	20.34
17	20.61
18	No sample
19	No sample
20	No sample

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File name SD-DUW487R2
Bore Log (mudline)

Processing Checklist - Sediments

Duplicate cores collected at 10 % frequency

Core Processing:

Initials	
RHG	Core processed within 24 hrs of collection. YES
RHG	Significant loss of sediment out of bottom of core tube. (does not apply to freeze cores) NO
RHG	Separation (gaps) along length of sediment in core tube. NO
RHG	Video taken. (destroy photo label after use to prevent accidental reuse.) YES
RHG	Correct number and type of sample jars filled. YES
RHG	Sample label number matches on all sample jars and core description forms and COC forms. YES
RHG	Sample jars verified against COC forms. YES
RHG	Samples kept cold until delivery to lab. YES
RHG	Duplicate samples analyzed at 10% frequency YES
RHG	VOC samples in cooler with trip blanks (2 vials per cooler) YES

Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GJM Date: 11 / 2 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DKW 488 Time: 1046

[X] Water Depth: 12.7 Tide: 6.0

[X] Duplicate core required at station? (Required) Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 1275579 Actual ~~N~~ E: 1275580

Planned E: 195887 Actual ~~E~~ N: 195886

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: RG

	Penetration:	Recovery:	Comments:
1	18.0	18.4	
2	15.6	16.4	
3	13.4	15.3	
4	10.0	13.9	very slow
5	9.8	13.7	
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 14.0 ft

Notes: 20.8 ft core

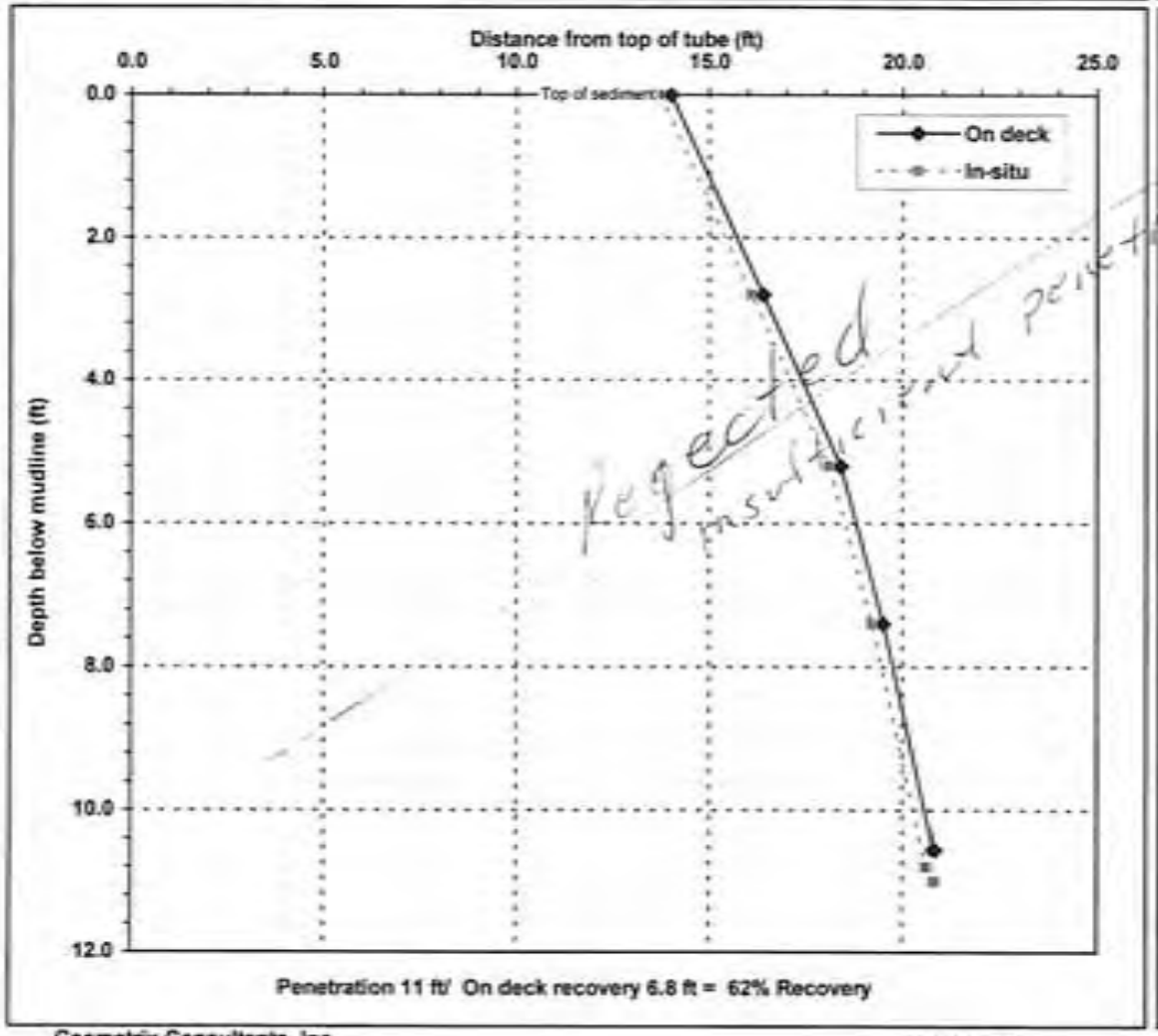
heavy oil sheen at tip of core

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW488
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		195886 — Northing
Date:	11/2/2009	**Time:**	10:46 — 1275580 — Easting
Water depth:	12.7 ft	**Mudline:**	-6.7 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Sunny



Penetration 11 ft/ On deck recovery 6.8 ft = 62% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.8	2.4	86%
2.8-5.2	2	83%
5.2-7.4	1.1	50%
7.4-10.8	1.4	41%
10.8-11	0.2	100%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	14
1	14.86
2	15.71
3	16.57
4	17.40
5	18.23
6	18.80
7	19.30
8	19.75
9	20.16
10	20.57
11	No sample
12	No sample
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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Sediment Core Bore Log
2009 Additional DSOA Sampling

Initials: GCM Date: 11 / 13 2009

[X] Daily dGPS verification check completed

[X] Station Name: SD DUW 488 R2 Time: 0904

[X] Water Depth: 12.6 Tide: 5.0

[X] Duplicate core required at station? Required Not Required

[X] GPS range within 6 ft radius of station prior to sampler deployment

[X] Logged GPS position within 9 ft. radius of station (boat GPS)

Planned N: 195887 Actual N: 195890

Planned E: 1275579 Actual E: 1275584

[X] Logged GPS Verified by Shore Crew

[No] Maximum core penetration goal reached refusal

[X] No known significant loss of sediment out of bottom of core tube

[X] Core tube labeled

[X] Core log and check list provided to shore crew Received By: [illegible]

	Penetration:	Recovery:	Comments:
1	18.8	19.2	
2	15.9	16.9	
3	14.0	16.4	
4	11.0	15.3	
5	10.1	14.9	
6	9.8	14.7	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

On-deck Recovery: 15.9 ft

Notes: 21.1 At core

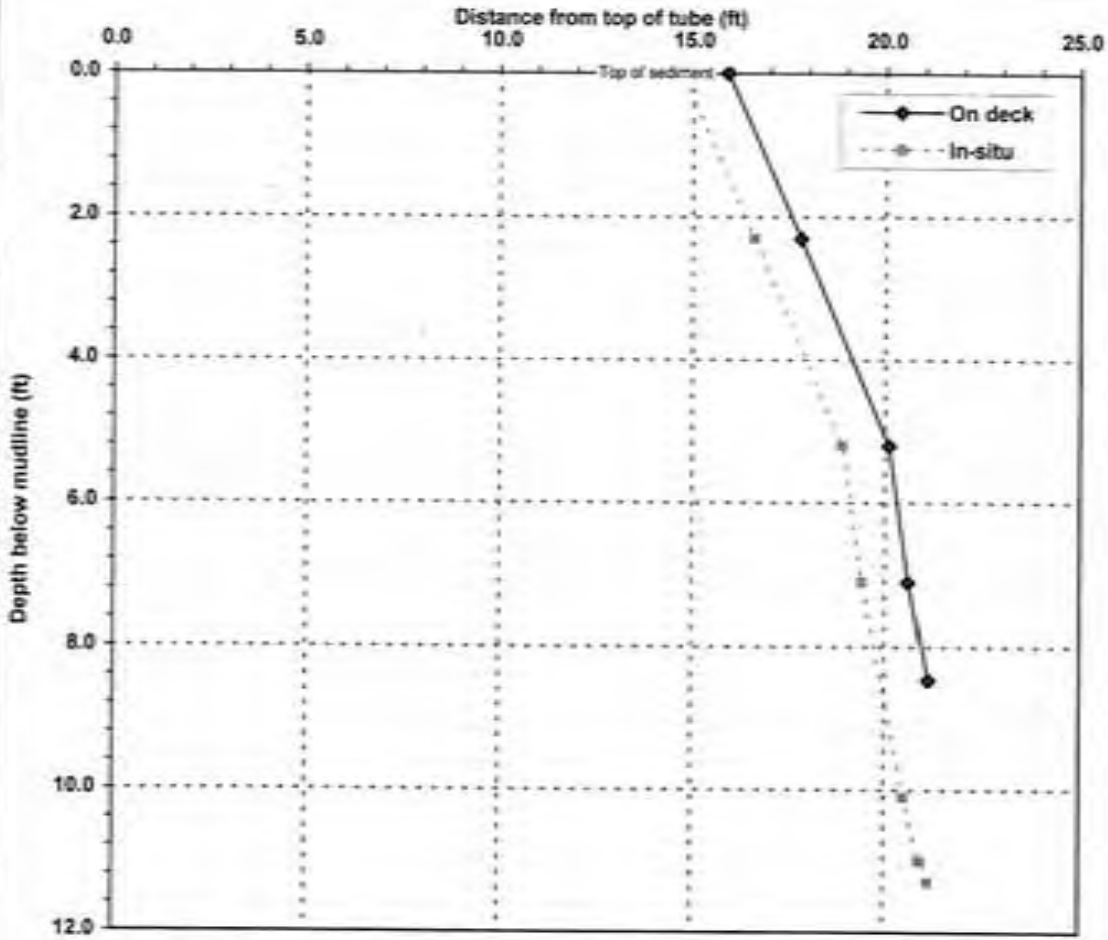
7.6
5.0
7.6

Mudmole™ Bore Log

Project:	2009 Additional Characterization	**Station:**	SD-DUW488R2
Project No:	13133.003	**Position:**	NAD 83 — WA N
Collected by:	GSM		195890 — Northing
Date:	11/13/2009	**Time:**	9:04 — 1275584 — Easting
Water depth:	12.6 ft	**Mudline:**	-7.6 ft MLLW (estimated using electronic tide gauge)

Place Field ID Label Here

Weather/Comments: Cloudy and very windy



Penetration 11.3 ft/ On deck recovery 5.2 ft = 46% Recovery

Penetration interval (ft)	Interval recovery (ft)	Percent recovery
0-2.3	1.9	83%
2.3-5.2	2.3	79%
5.2-7.1	0.5	26%
7.1-10.1	1.1	37%
10.1-11	0.4	44%
11-11.3	0.2	67%

Depth below mudline (ft)	Distance from top of tube (ft)
Mudline	15.9
1	16.73
2	17.55
3	18.36
4	19.15
5	19.94
6	20.31
7	20.57
8	20.93
9	No sample
10	No sample
11	No sample
12	No sample
13	No sample
14	No sample
15	No sample
16	No sample
17	No sample
18	No sample
19	No sample
20	No sample

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Mudmole™ Core Description Form

Project: 2009 Additional Characterization
Project No: 13133.003
Station: SD-DUW488R2

Place Field ID Label Here

	Core collection	Laboratory
Date:	11/13/2009	11/13/09
Start Time:	9:04	1100

Comments:

Laboratory processing by: NPB

All distances are measured from top of core tube.

Distance ft	Visual sample description
15.9	Top of sediment
	15.9-16.9 SM brown grading to gray, med loose, 80/20 sand is fn-med
	16.9-17.9 SP: blackish gray, med dense, 90/10, sand is fn-med. trace scattered black to gray ML pockets
	red/white grains
	@17.8 1" black aggregate piece trace wood @ 17.3
	17.9-18.7 ML. gray, med firm, med plast, 90/10 sand is fine
	18.7-20.1 SM black, med dense, 15/75/15, med. sheen, sand is fn-med. gravel to 1", subr trace wood and organic fibers.
strong HC-like odor	
	@19.6-19.7 3" piece of brick angular
	20.1-20.6 SP blackish gray, med dense, red/white grains, 95/5,
pieces of glass 19.4-20.1 1" rectangular	
	winnowed below 20.4 (not sampled)

Distance top/bottom	Sample ID labels
17.55 / 18.36	AMEC Proj.No. 13133.003 SD-DUW488-0020 Core Description Initials: RHG Date: 11/13/09 Time: 1100
18.36 / 19.15	AMEC Proj.No. 13133.003 SD-DUW488-0030 Core Description Initials: RHG Date: 11/13/09 Time: 1100
19.15 / 19.94	AMEC Proj.No. 13133.003 SD-DUW488-0040 Core Description Initials: RHG Date: 11/13/09 Time: 1100
19.94 / 20.31	AMEC Proj.No. 13133.003 SD-DUW488-0050 Core Description Initials: RHG Date: 11/13/09 Time: 1100

APPENDIX B

Pore Water Sample Collection Parameters

APPENDIX B

PORE WATER SAMPLE COLLECTION PARAMETERS

2009 DSOA Additional Characterization Data Report
Boeing Plant 2 Duwamish Sediment Other Area
Seattle/Tukwila, Washington

			Purge 1				Purge 2				Purge 3				Purge 4				Purge 5			
Location	Sample Date	Elevation (feet MLLW)	Volume (mL)	Temperature (ºC)	Specific Conductance (mS/cm)	Turbidity (NTU)	Volume (mL)	Temperature (ºC)	Specific Conductance (mS/cm)	Turbidity (NTU)	Volume (mL)	Temperature (ºC)	Specific Conductance (mS/cm)	Turbidity (NTU)	Volume (mL)	Temperature (ºC)	Specific Conductance (mS/cm)	Turbidity (NTU)	Volume (mL)	Temperature (ºC)	Specific Conductance (mS/cm)	Turbidity (NTU)
PW-DUW01	12/1/2009	-9	500	9.8	28.2	21.8	Abandoned															
PW-DUW01	12/11/2009	-10	500	5	26.5	14.3	1,000	5.5	26.6	6.4	1,700	5.4	26.9	4.5	2,100	5.7	26.8	2.4				
PW-DUW01	11/30/2009	-16	500	9.3	28.3	35.3	1,000	9.6	23.4	4.9	1,500	9.3	30.2	1.9	2,000	9.4	29.9	0.9				
PW-DUW01	11/30/2009	-21	500	11.1	31.8	4.3	1,000	11.4	32.5	2.7	1,500	11.4	32.4	1.5	2,000	11.2	32.2	1.9				
PW-DUW01	11/30/2009	-26	500	11	36.5	63.7	1,000	10.7	36.5	19.2	1,600	10.7	36.5	11.3	2,500	10.5	36.2	10.4				
PW-DUW01	11/30/2009	-31	500	10.6	36.8	93.8	1,000	10.1	36.2	33.4	1,500	10.1	36.6	19.4	2,000	10.3	36.4	12.4				
PW-DUW01	12/1/2009	-36	500	10.3	34.3	49.3	1,200	10.1	34.2	6.8	1,800	9.7	34.1	3.8	2,500	9.1	34	7				
PW-DUW02	11/25/2009	-9	400	12.1	17.7	7.3	800	11.3	9.7	2.1	Abandoned											
PW-DUW02	12/11/2009	-10	500	3.8	26.2	18.9	1,200	3.8	27.6	4.2	1,600	3.9	27.6	2.3	1,600	3.9	27.6	2.3				
PW-DUW02	11/24/2009	-16	400	10.8	18.2	96.6	1,200	10.5	23.8	38	1,560	10.4	25.4	5.9	2,000	10.5	26.4	3.4	2,400	10.3	25.2	2.8
PW-DUW02	11/24/2009	-21	400	11	29.5	93.2	800	10.5	28.3	8.7	1,500	10.8	29.6	3.5	2,000	10.7	29.6	2.1				
PW-DUW02	11/25/2009	-26	500	11.1	33.4	38.4	1,000	10.6	17.4	10.7	1,500	10.5	18.1	2.9	2,000	10.4	17.5	0.9	2,800	10.5	18.4	3.3
PW-DUW02	11/25/2009	-31	500	12	12	60.8	1,000	11.8	8.7	16.4	1,500	12.6	7.4	5.6	2,000	12.5	14.4	4.3	2,700	11.7	14.7	3.8
PW-DUW02	11/25/2009	-36	500	11.7	6.3	104	1,000	12	6.3	30.1	1,500	11.7	6.3	12.3	2,000	11.4	6.2	10.3	2,500	11.3	6.2	7.9
PW-DUW03	12/4/2009	-9	Abandoned																			
PW-DUW03	12/11/2009	-10	280	3.5	11.1	17.9	Abandoned															
PW-DUW03	12/3/2009	-16	500	6.2	22.1	43.5	1,000	4.8	22.8	21	1,500	4.6	22.8	8.1								
PW-DUW03	12/3/2009	-21	500	7	29.9	24.8	1,000	7.5	30.2	15.8	1,500	9.1	30.8	2								
PW-DUW03	12/3/2009	-26	500	9.4	5.6	58.3	1,200	8.7	5.3	20.6	1,700	9	5.4	10	2,200	7.7	5.4	22.6	2,800	8.5	5.5	9.1
PW-DUW03	12/4/2009	-31	500	2.3	14.8	99.1	1,000	2.4	15.8	10.8	1,500	2.3	15.7	4.3	2,000	2.1	16.8	15.6	2,500	3	17.4	5.7
PW-DUW03	12/4/2009	-36	500	5.1	21.4	26.1	1,200	5.1	21.8	11.6	1,700	5.2	21.7	7								
PW-DUW04	12/8/2009	-9	Abandoned																			
PW-DUW04	12/11/2009	-10	Abandoned																			
PW-DUW04	12/4/2009	-16	500	7.4	6.8	108	1,000	5.1	6.3	110	1,500	4.7	6.3	60.5								
PW-DUW04	12/8/2009	-21	500	3.7	21.4	24.1	1,000	4.1	22.2	3.3	1,500	4.5	21.6	1.8								
PW-DUW04	12/8/2009	-26	500	6.2	27.7	12.4	1,000	5.7	28.2	2.4	1,500	5.6	28.3	1.5								
PW-DUW04	12/8/2009	-31	500	8.6	25.3	33.1	1,400	7.3	25.5	11.1	2,000	8	25.3	4.2	2,700	6.9	25.5	5.2				
PW-DUW04	12/8/2009	-36	500	7.3	22.7	367	1,200	6.4	22.3	47.3	1,700	6.2	22.4	10.66	2,100	6.6	22.6	5.6				
PW-DUW05	12/10/2009	-9	500	5.7	31.4	16.5	Abandoned															
PW-DUW05	12/10/2009	-10	500	6.8	32.5	17.3	1,000	6.7	32.8	10.9	1,500	6.7	32.5	10								
PW-DUW05	12/9/2009	-21	500	8	6	175	1,000	7.8	6.3	71.3	1,500	7.3	6.2	92.7	1,900	6.9	6.3	96.4				
PW-DUW05	12/9/2009	-26	500	6.2	20.1	44.5	1,200	6.3	20.7	11.9	1,700	6.5	20.6	4.5								
PW-DUW05	12/9/2009	-31	500	5.7	22.4	14.3	1,000	5.2	22.5	4.6	1,500	4.7	22.4	3.1	2,000	4.3	21.8	3.5				
PW-DUW05	12/10/2009	-36	500	7.1	23.3	130.6	1,300	6.7	24.6	16.2	1,700	6.6	24.4	9.9	2,300	6	24.6	6.2				
PW-DUW06	12/1/2009	-16	500	10.6	31.4	84.1	1,000	10.3	31.6	21.8	1,500	10	31.4	8.7	2,000	10.4	31.3	4.9	2,500	9.7	31.6	4.8
PW-DUW06	12/1/2009	-21	500	9.7	31.8	18.1	1,000	9.3	31.7	6.8	1,500	8.4	30.8	3.3								
PW-DUW06	12/2/2009	-26	500	8	34.1	53.2	1,000	8.6	33.9	13.3	1,500	9.4	34	4.1								
PW-DUW06	12/2/2009	-31	600	10.2	36.8	274	1,000	9.4	36.5	50.2	1,500	8.8	35.9	18.1								
PW-DUW06	12/2/2009	-36	500	9.3	34.6	41.4	1,000	8.5	34.2	13.5	1,500	8.7	33.8	5.2	2,000	8.1	33.7	2.8				

Abbreviation(s)
°C = degrees Celsius
DSOA = Duwamish Sediment Other Area
mL = milliliter
MLLW = mean lower low water
mS/cm = milliSiemens per centimeter
NTU = nephelometric turbidity unit

APPENDIX C

Core Summary Logs

Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

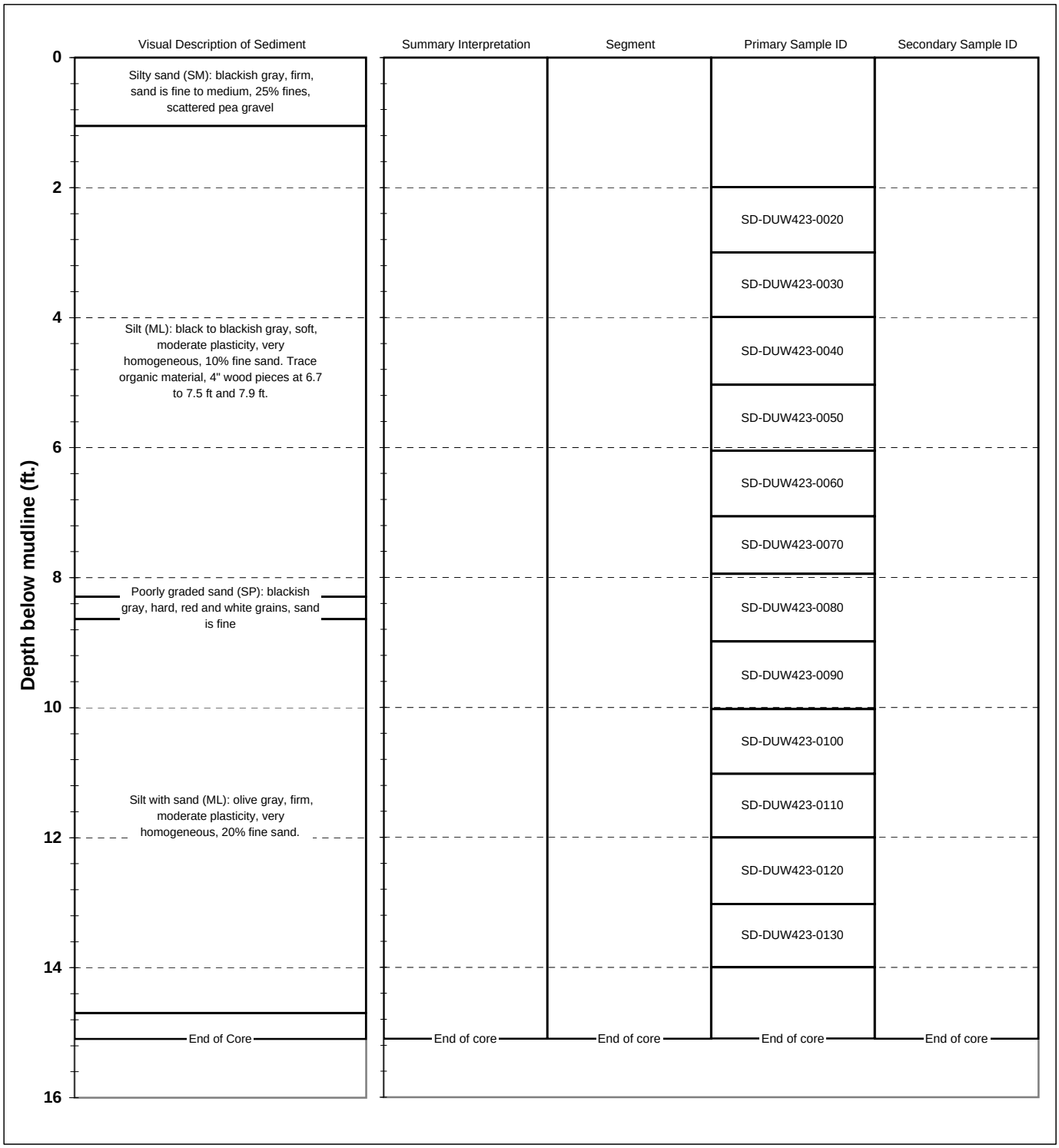
Station: **SD-DUW423**

Maximum depth of retained sediment: 14.7 ft
Percent recovery (on-deck): 70%

Mudline elevation: -7.4 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/3/2009	11/3/2009
Time:	9:50	13:20

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

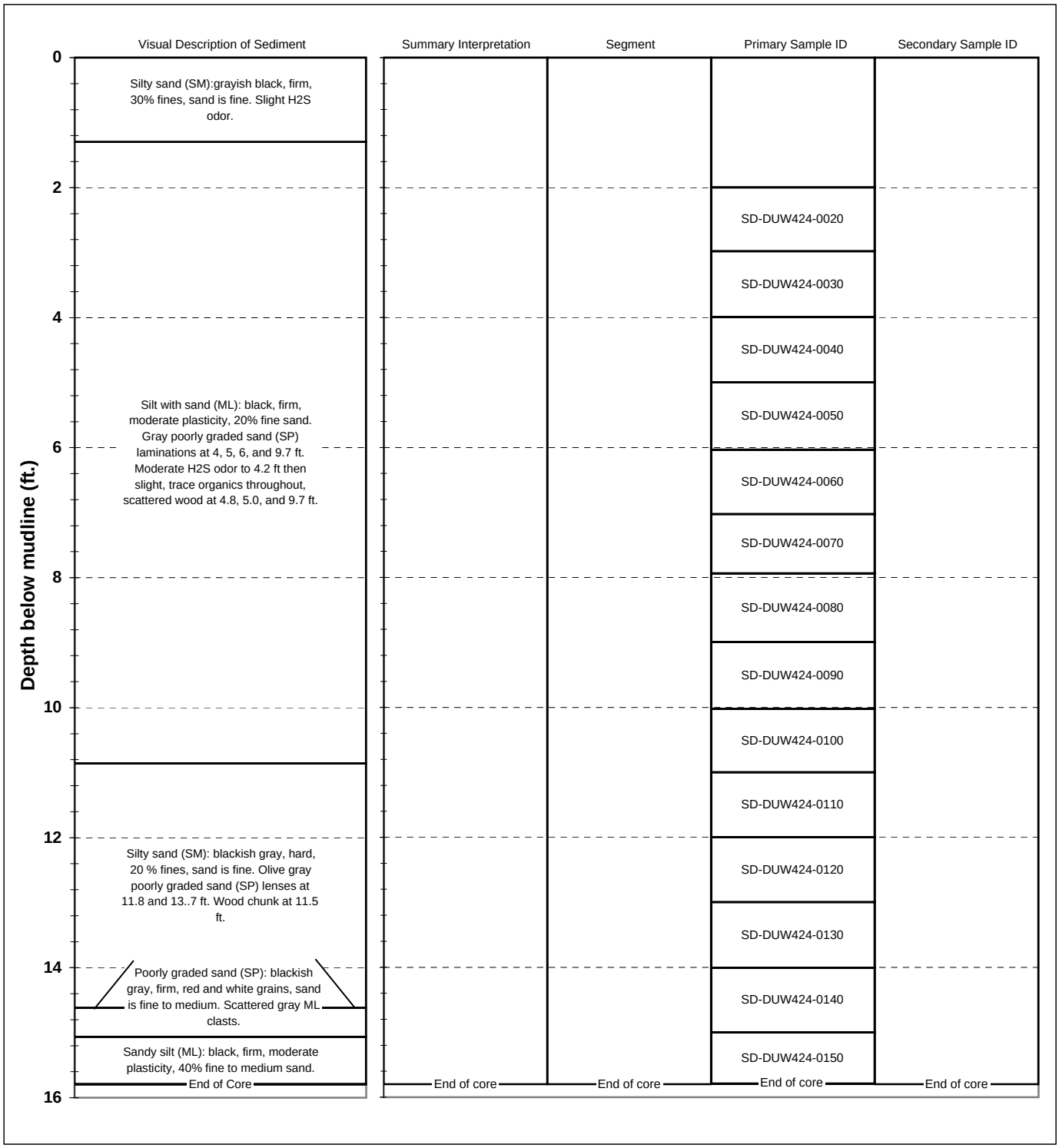
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW424**

Maximum depth of retained sediment: 15.8 ft
Mudline elevation: -10.1 **ft MLLW**
Percent recovery (on-deck): 80%

	Core collection	Laboratory processing
Date:	11/3/2009	11/3/2009
Time:	10:51	12:20

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

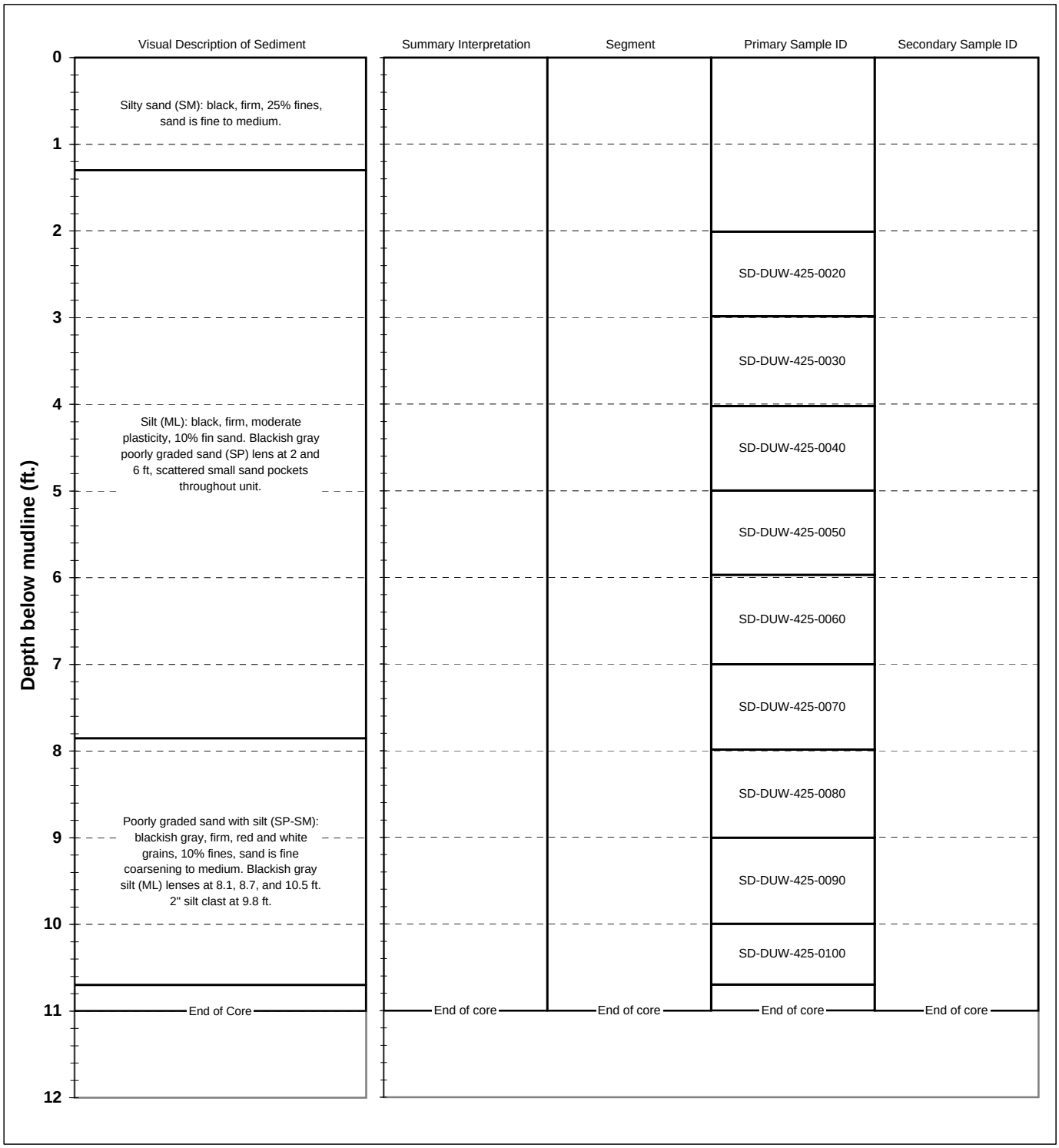
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW425**

Maximum depth of retained sediment: 10.7 ft
Mudline elevation: -6.8 **ft MLLW**
Percent recovery (on-deck): 76%

	Core collection	Laboratory processing
Date:	11/5/2009	11/5/2009
Time:	8:31	10:45

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

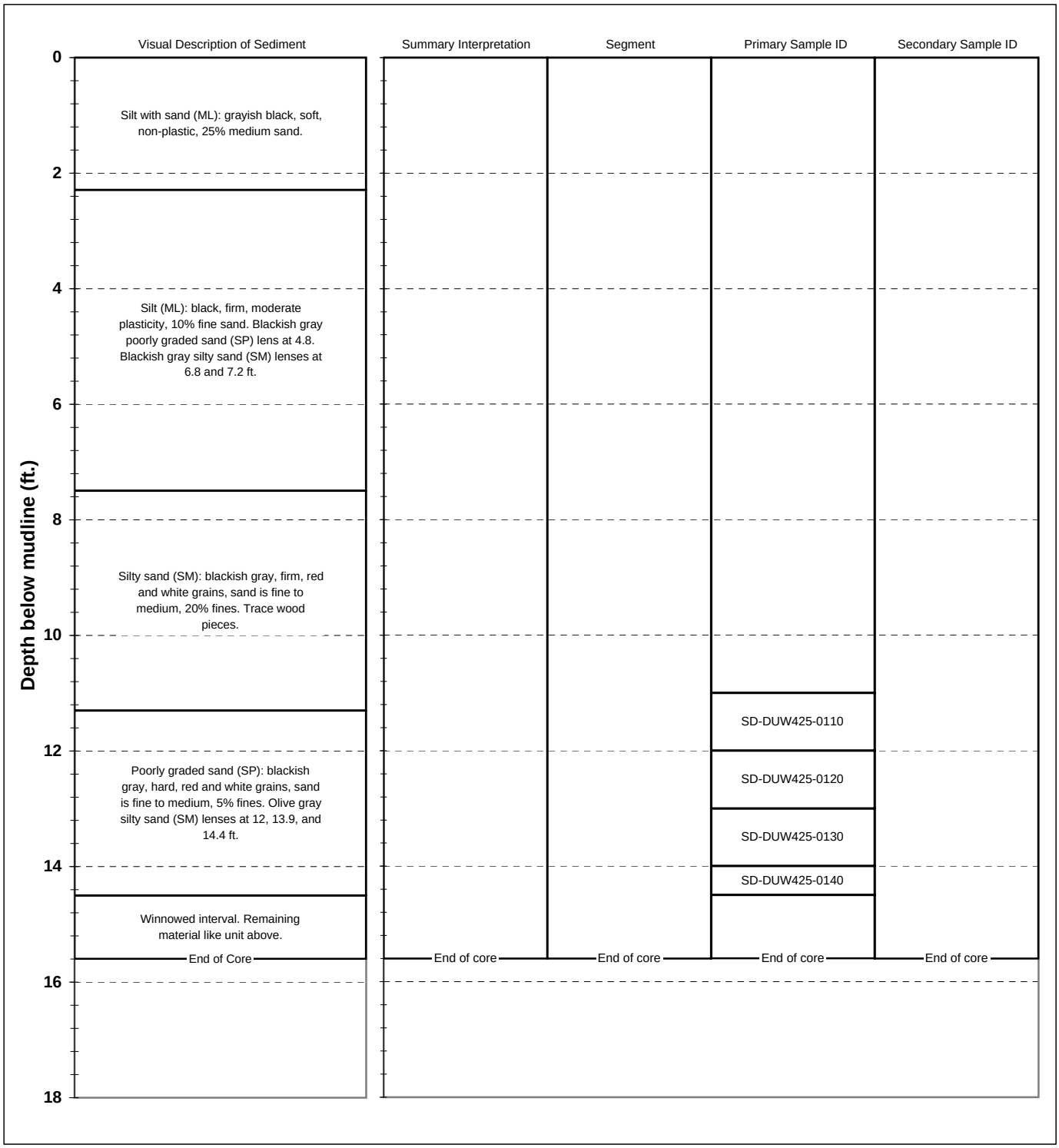
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW425R2**

Maximum depth of retained sediment: 15.6 ft
Mudline elevation: -4.3 **ft MLLW**
Percent recovery (on-deck): 70%

	Core collection	Laboratory processing
Date:	11/17/2009	11/17/2009
Time:	12:47	15:30

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

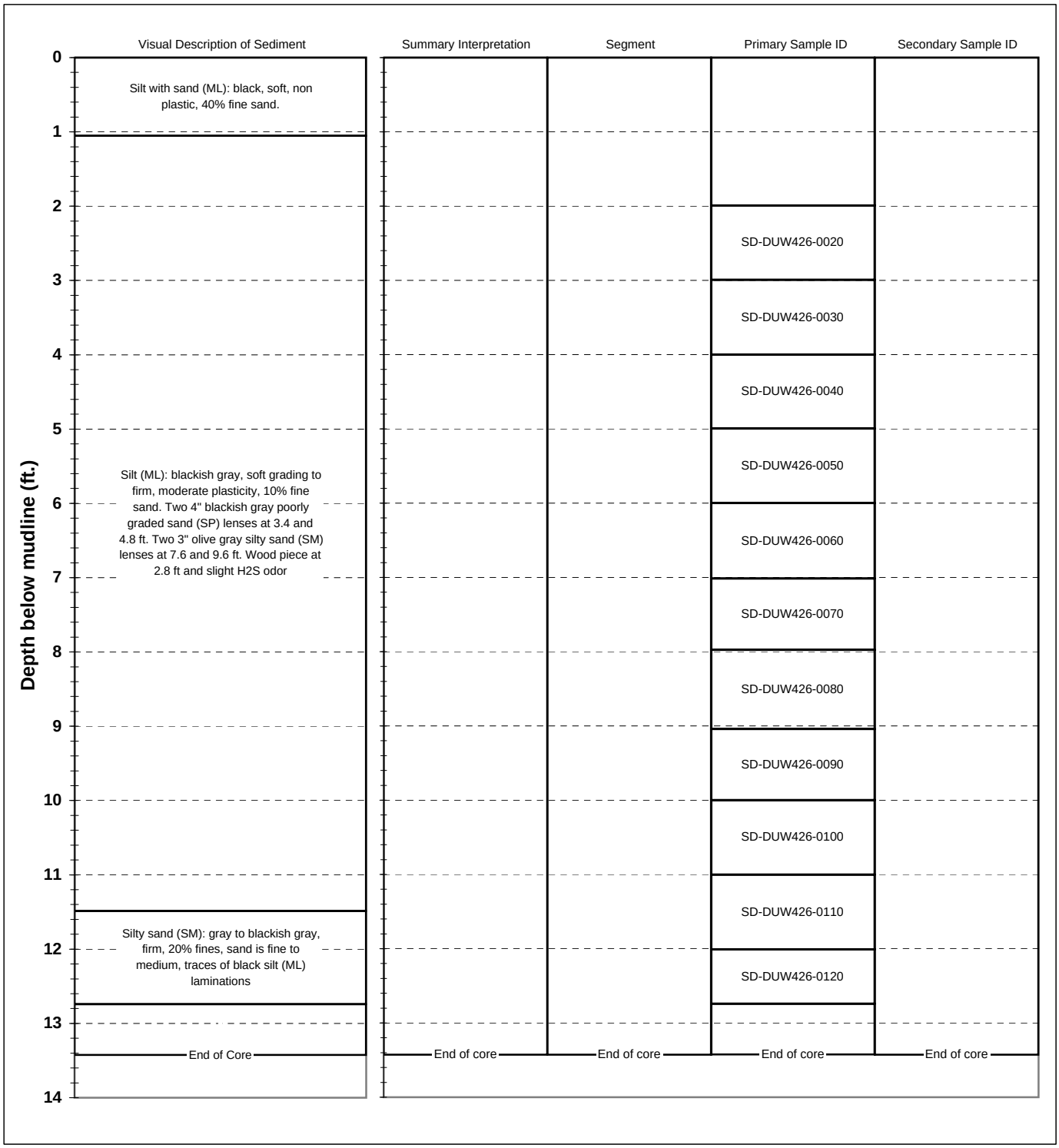
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW426**

Maximum depth of retained sediment: 12.7 ft
Mudline elevation: -6.4 **ft MLLW**
Percent recovery (on-deck): 67%

	Core collection	Laboratory processing
Date:	11/5/2009	11/5/2009
Time:	12:45	14:45

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

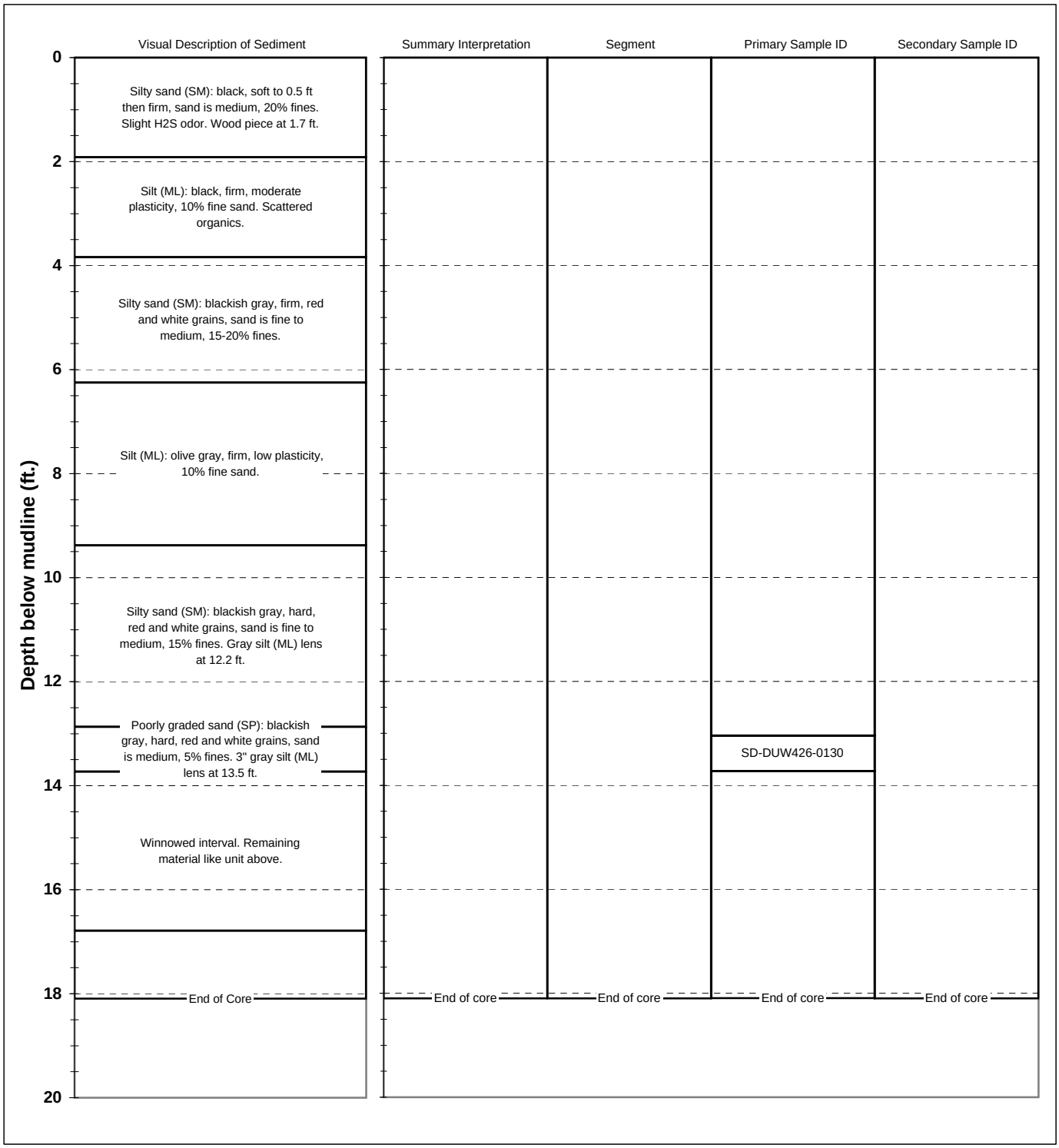
Station: **SD-DUW426R3**

Maximum depth of retained sediment: 16.8 ft
Percent recovery (on-deck): 60%

Mudline elevation: -5.5 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/18/2009	11/18/2009
Time:	7:55	11:00

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

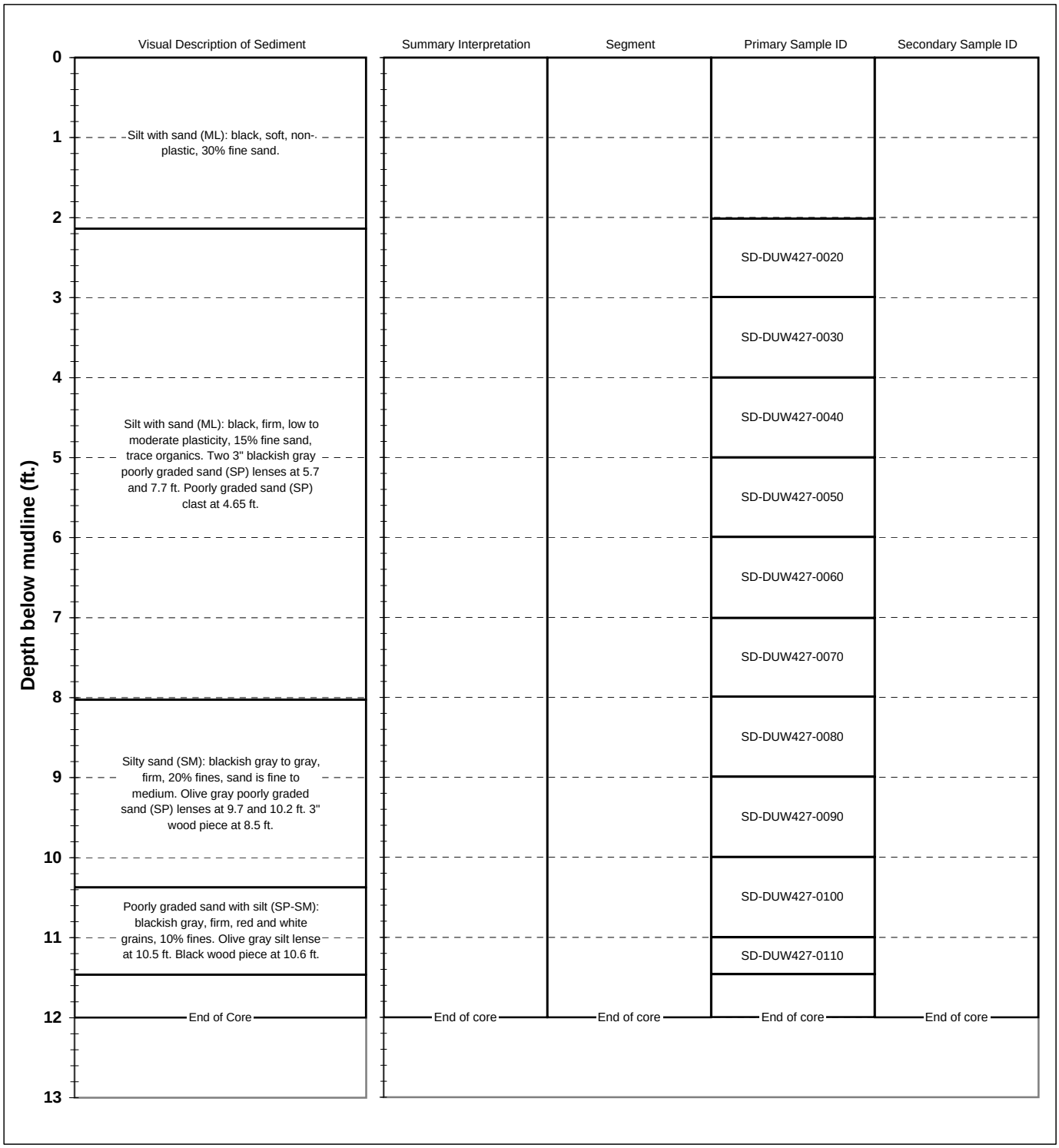
Station: **SD-DUW427**

Maximum depth of retained sediment: 11.5 ft
Percent recovery (on-deck): 73%

Mudline elevation: -11.1 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/5/2009	11/5/2009
Time:	13:35	15:30

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW427R2**

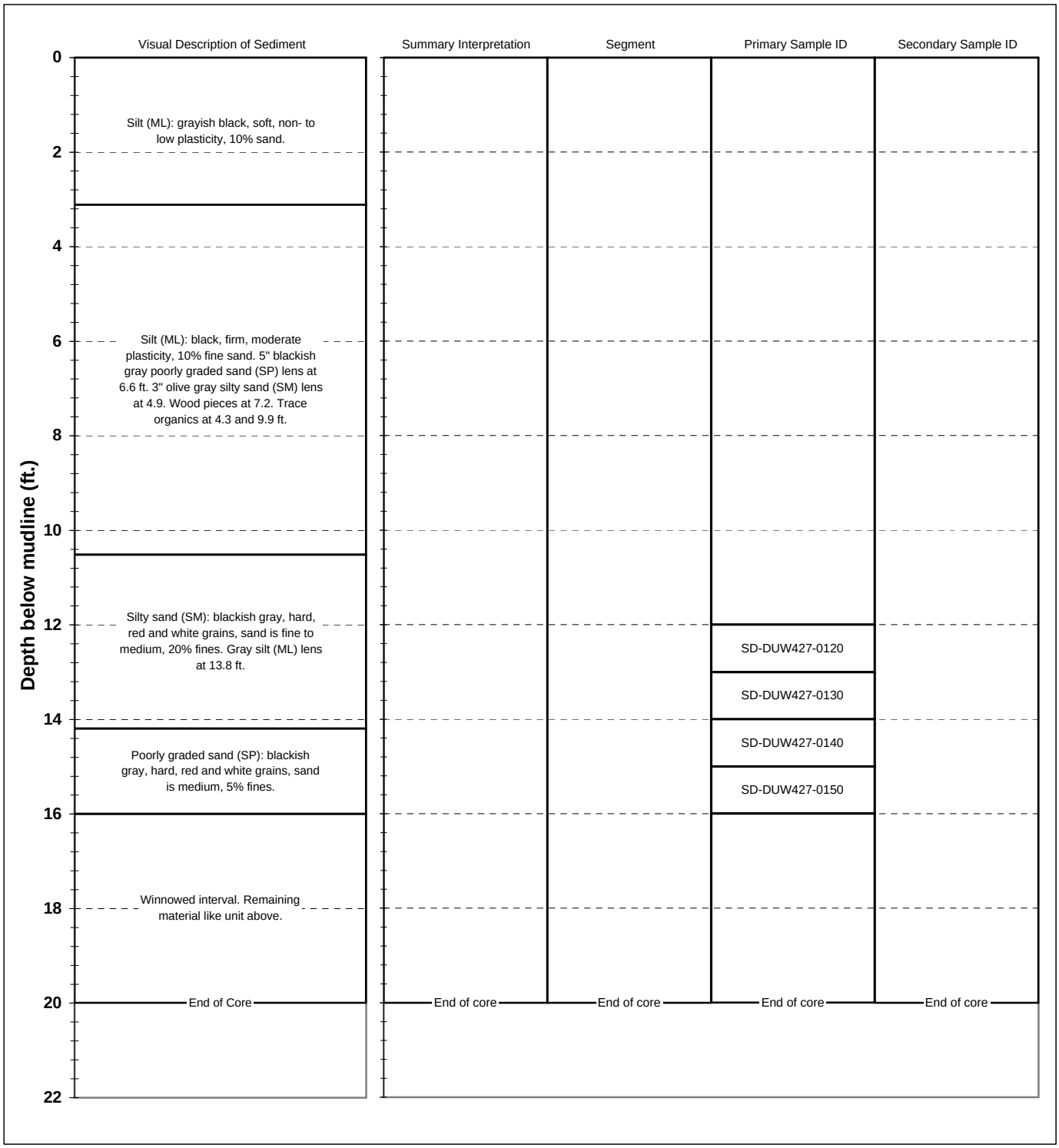
Maximum depth of retained sediment: 20.0 ft

Mudline elevation: -11.9 **ft MLLW**

Percent recovery (on-deck): 64%

	Core collection	Laboratory processing
Date:	11/18/2009	11/18/2009
Time:	9:17	11:35

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

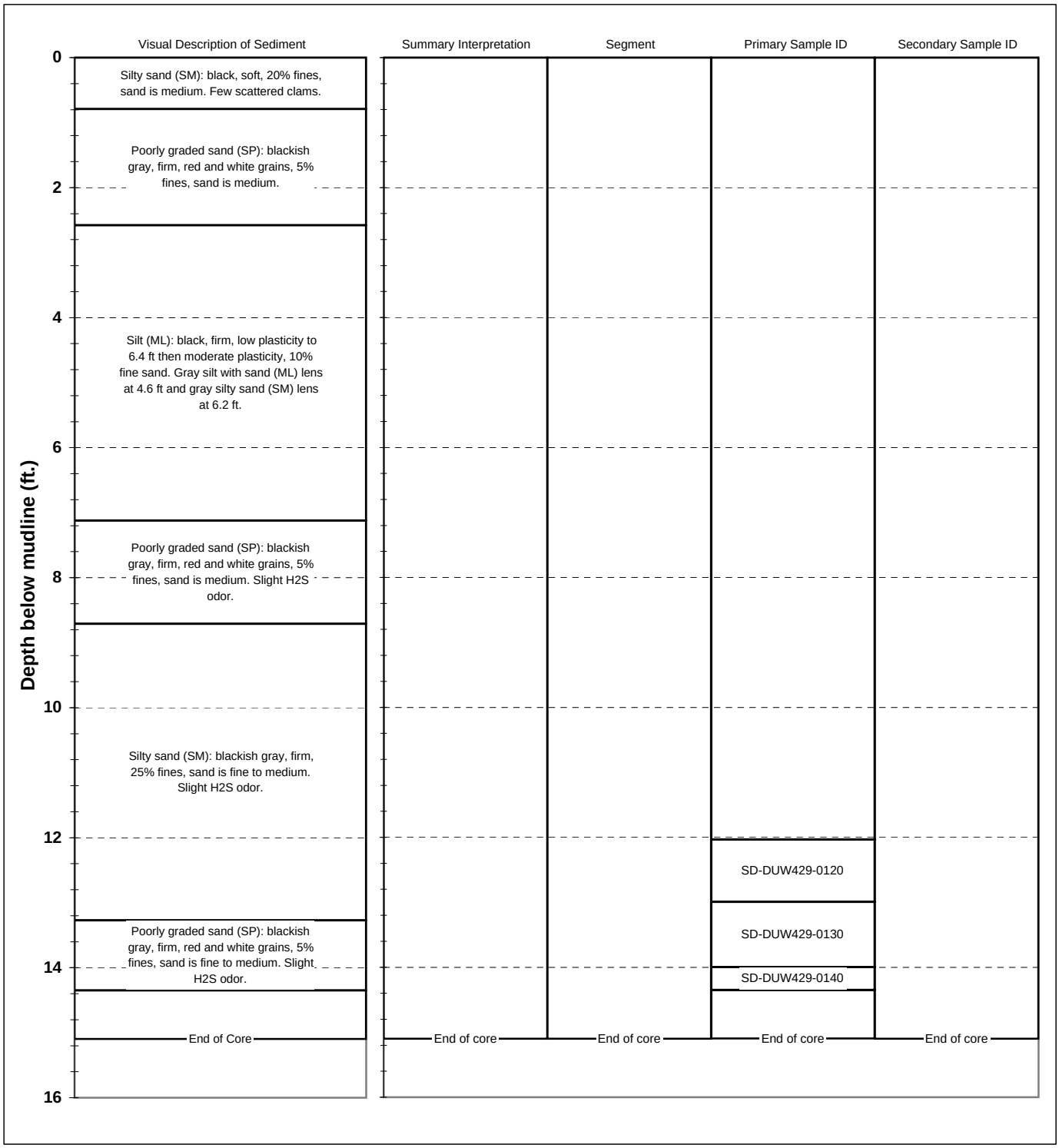
Station: **SD-DUW429**

Maximum depth of retained sediment: 14.4 ft
Percent recovery (on-deck): 71%

Mudline elevation: -8.7 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/10/2009	11/10/2009
Time:	8:02	10:55

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

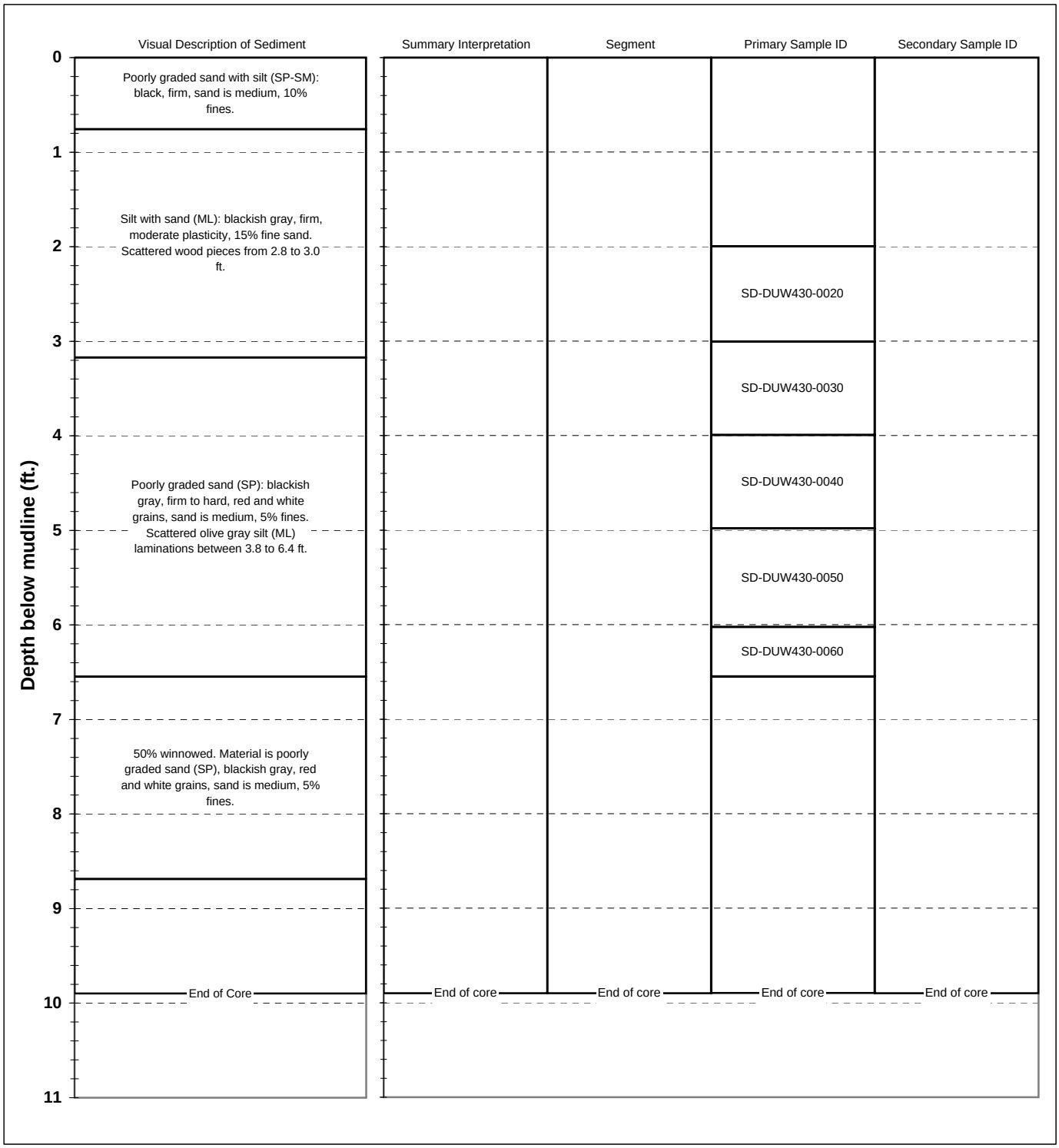
Station: **SD-DUW430**

Maximum depth of retained sediment: 8.7 ft
Percent recovery (on-deck): 68%

Mudline elevation: -4.5 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/10/2009	11/10/2009
Time:	10:53	13:00

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

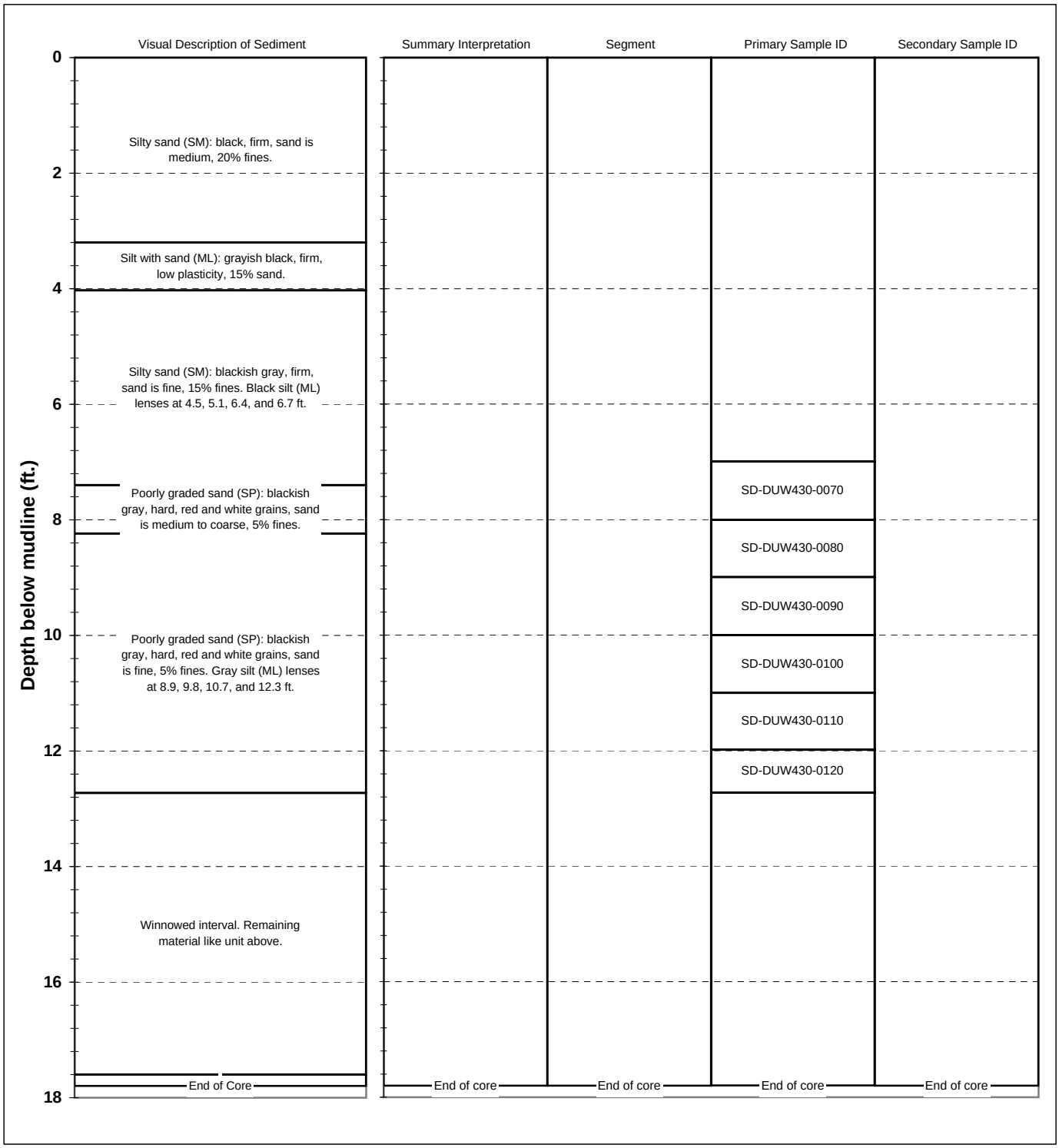
Station: **SD-DUW430R2**

Maximum depth of retained sediment: 17.6 ft
Percent recovery (on-deck): 55%

Mudline elevation: -4.5 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/18/2009	11/18/2009
Time:	14:05	15:20

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW431**

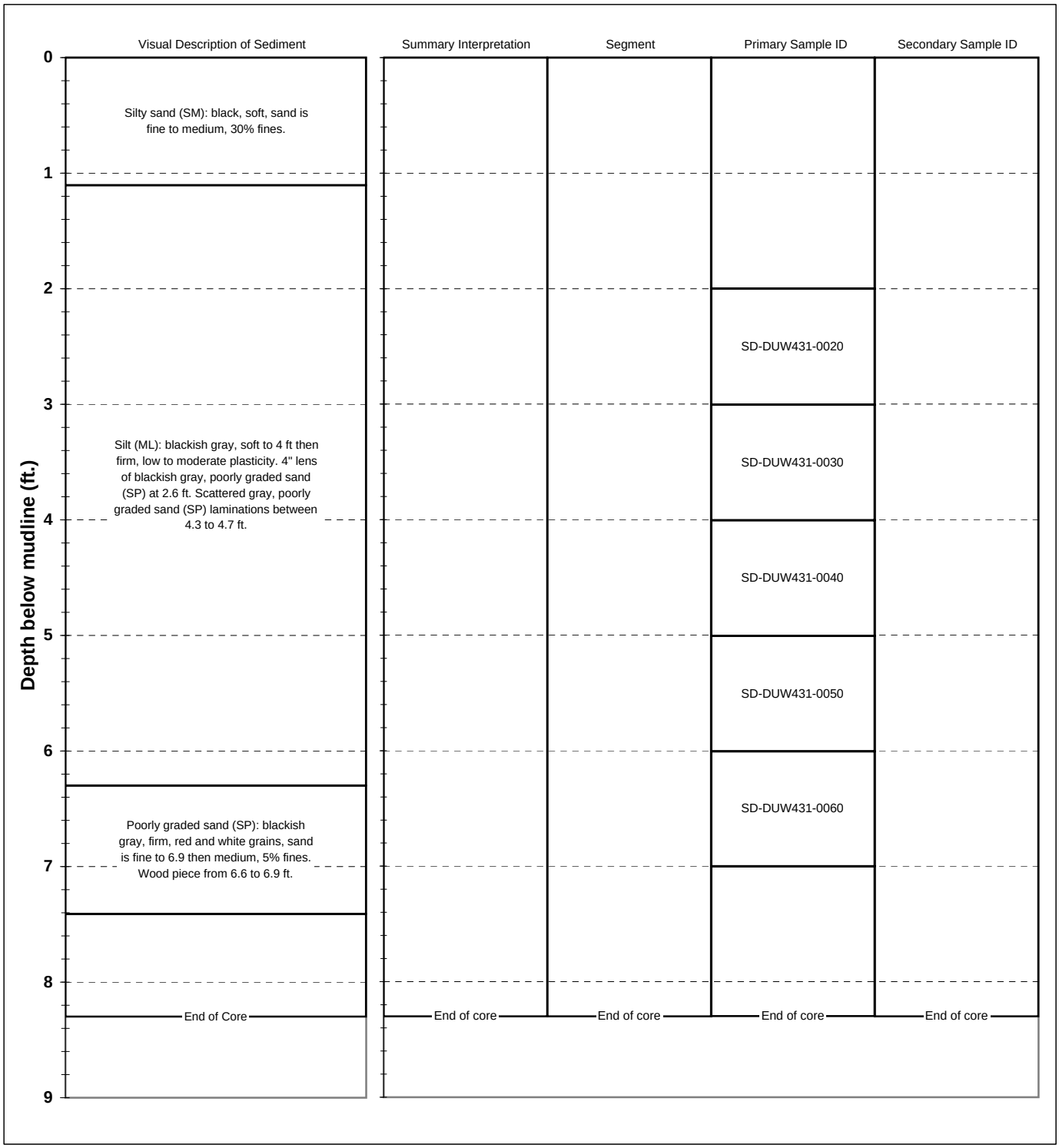
Maximum depth of retained sediment: 8.3 ft

Mudline elevation: -12.3 **ft MLLW**

Percent recovery (on-deck): 58%

	Core collection	Laboratory processing
Date:	11/9/2009	11/9/2009
Time:	10:23	12:05

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

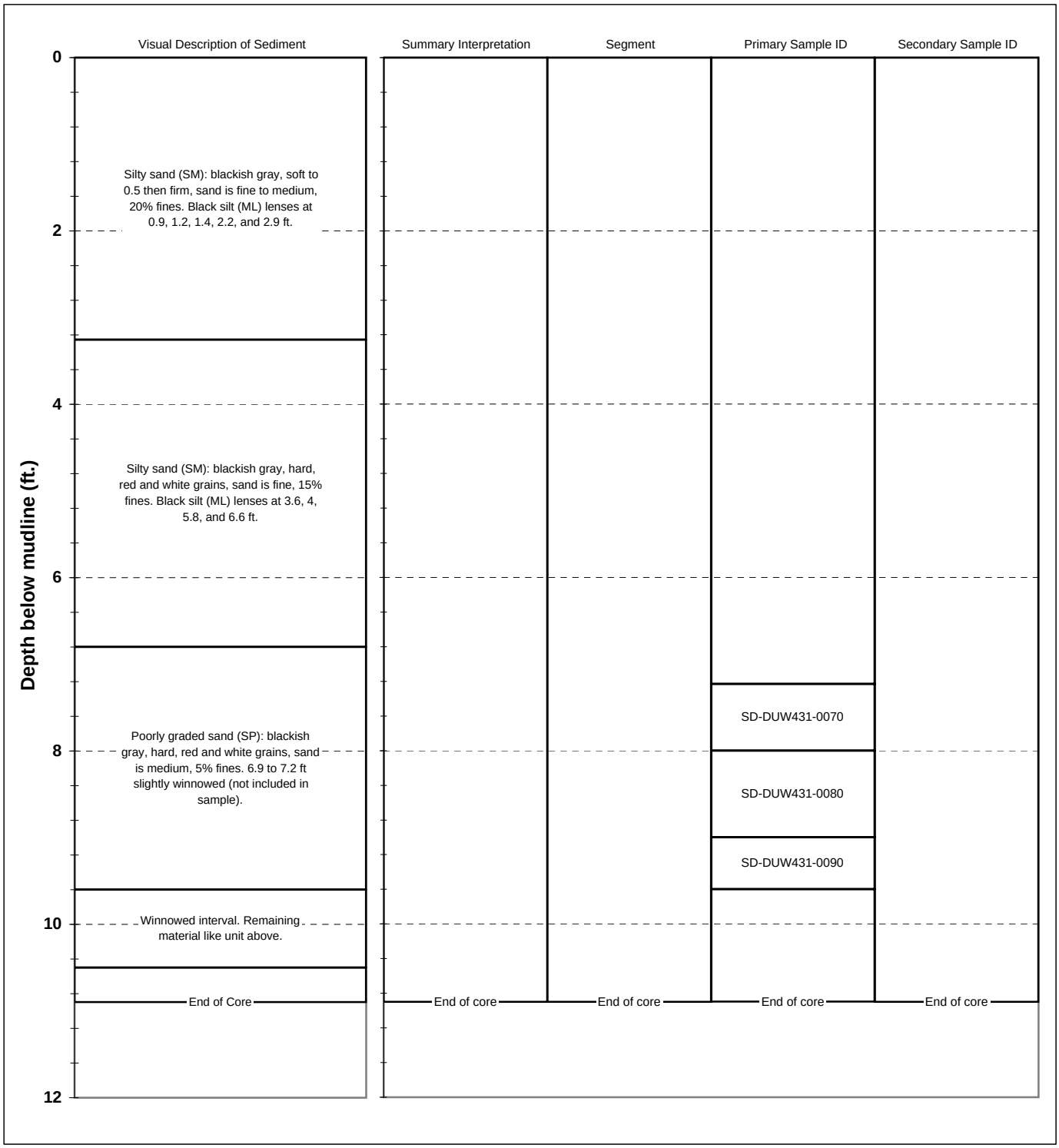
Station: **SD-DUW431R2**

Maximum depth of retained sediment: 10.5 ft
Percent recovery (on-deck): 72%

Mudline elevation: -9.8 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/18/2009	11/18/2009
Time:	15:18	16:30

Field Log: NPB
Summary Log: NPB



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File name: SD-DUW431R2.xls
Summary Core Log

Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

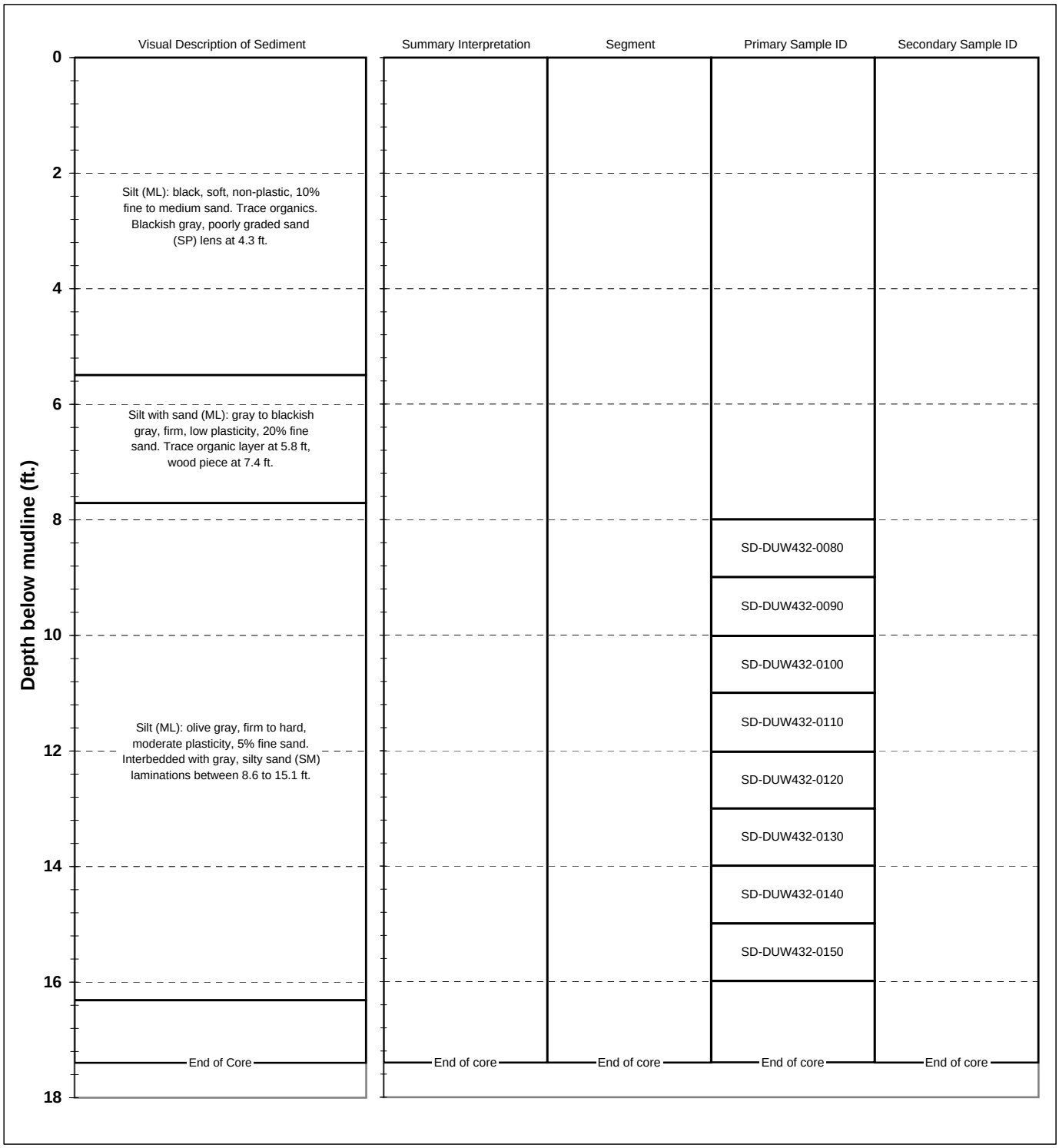
Station: **SD-DUW432**

Maximum depth of retained sediment: 16.3 ft
Percent recovery (on-deck): 70%

Mudline elevation: -12.9 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/9/2009	11/9/2009
Time:	12:28	14:50

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

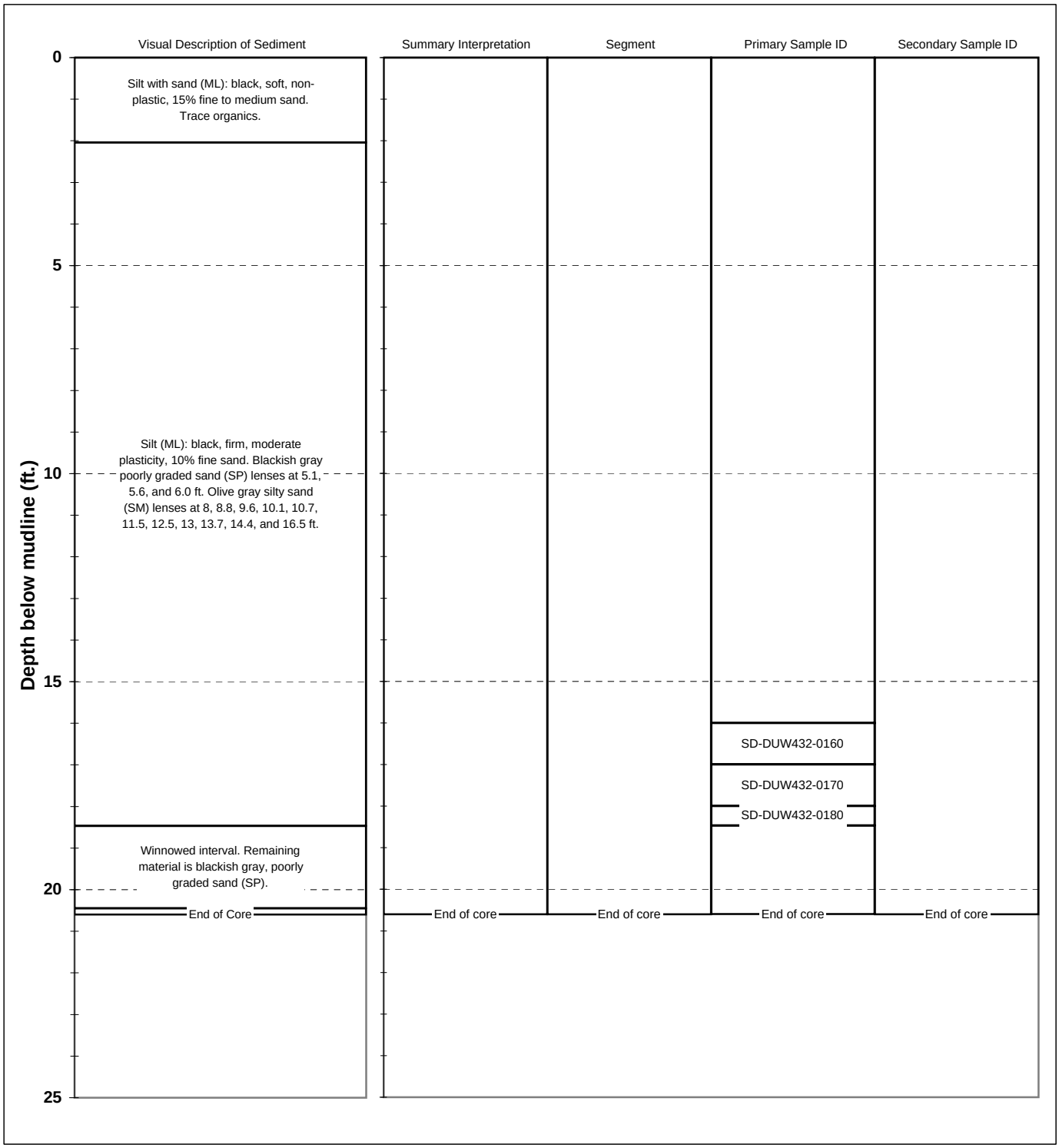
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW432R2**

Maximum depth of retained sediment: 20.6 ft
Mudline elevation: -12.4 **ft MLLW**
Percent recovery (on-deck): 64%

	Core collection	Laboratory processing
Date:	11/19/2009	11/19/2009
Time:	8:23	11:30

Field Log: NPB
Summary Log: NPB



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File name: SD-DUW432R2.xls
Summary Core Log

Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

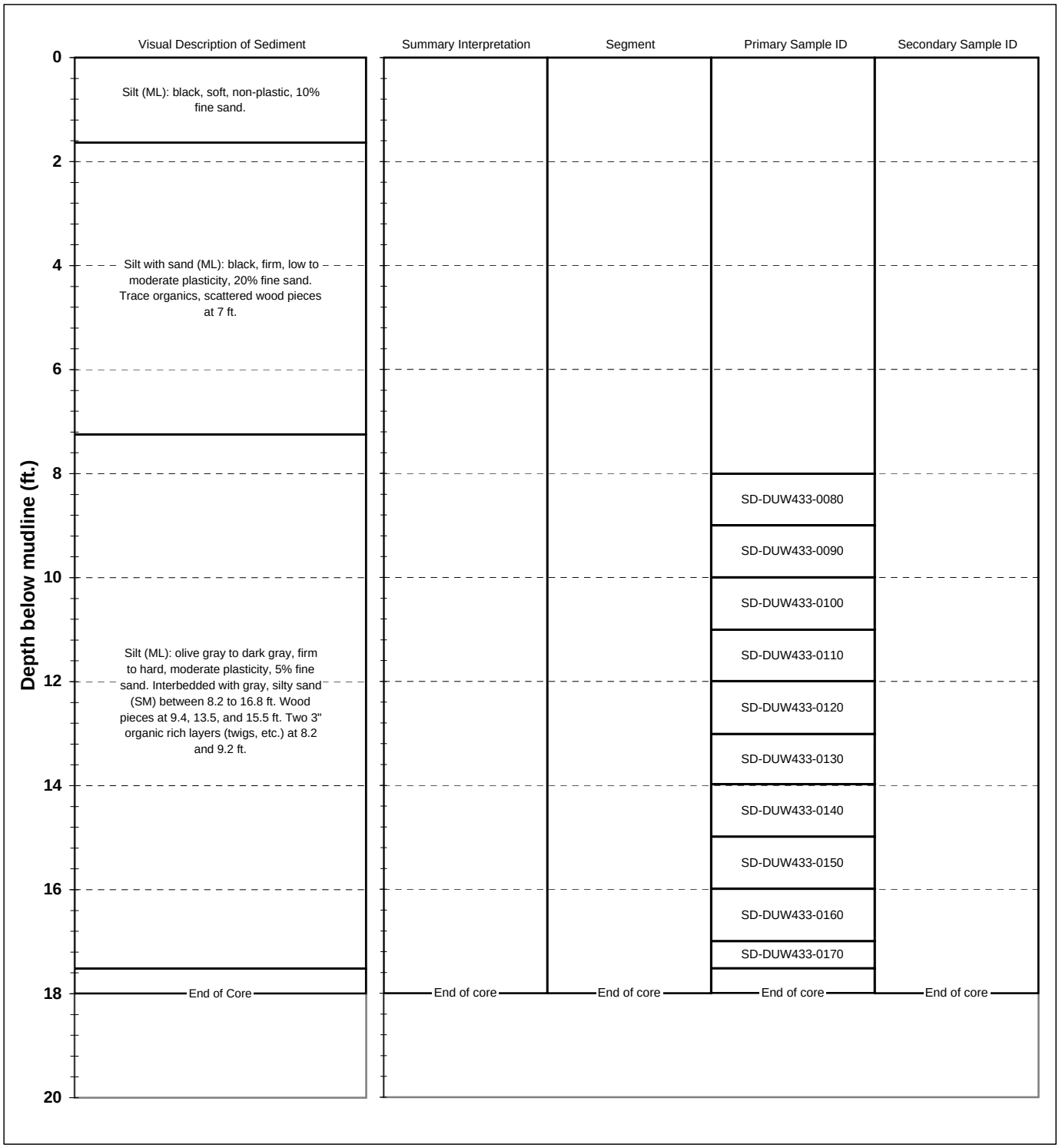
Station: **SD-DUW433**

Maximum depth of retained sediment: 17.5 ft
Percent recovery (on-deck): 77%

Mudline elevation: -16.3 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/9/2009	11/9/2009
Time:	13:39	15:35

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

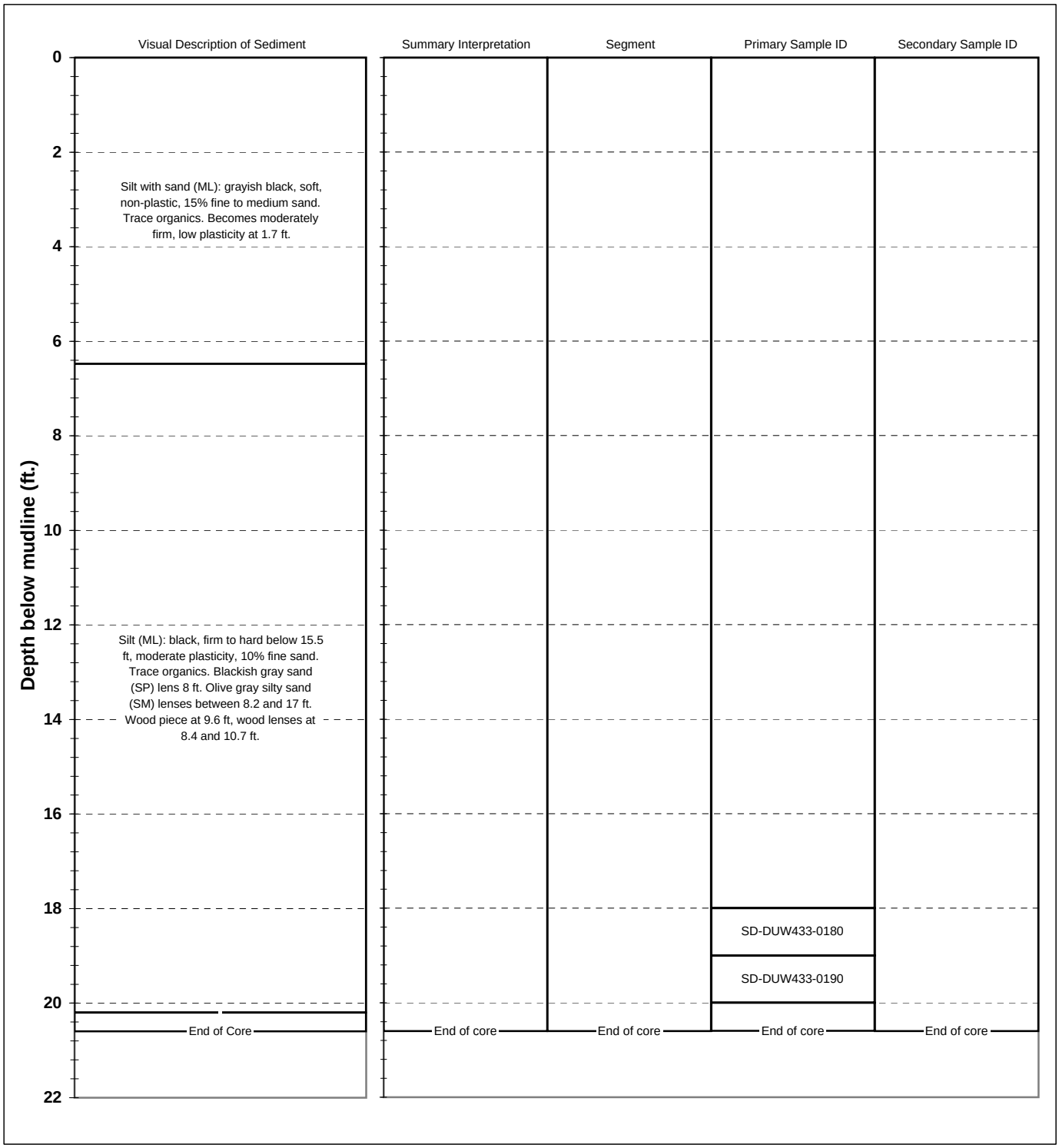
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW433R2**

Maximum depth of retained sediment: 20.2 ft
Mudline elevation: -14.9 **ft MLLW**
Percent recovery (on-deck): 70%

	Core collection	Laboratory processing
Date:	11/19/2009	11/19/2009
Time:	10:09	12:15

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW434**

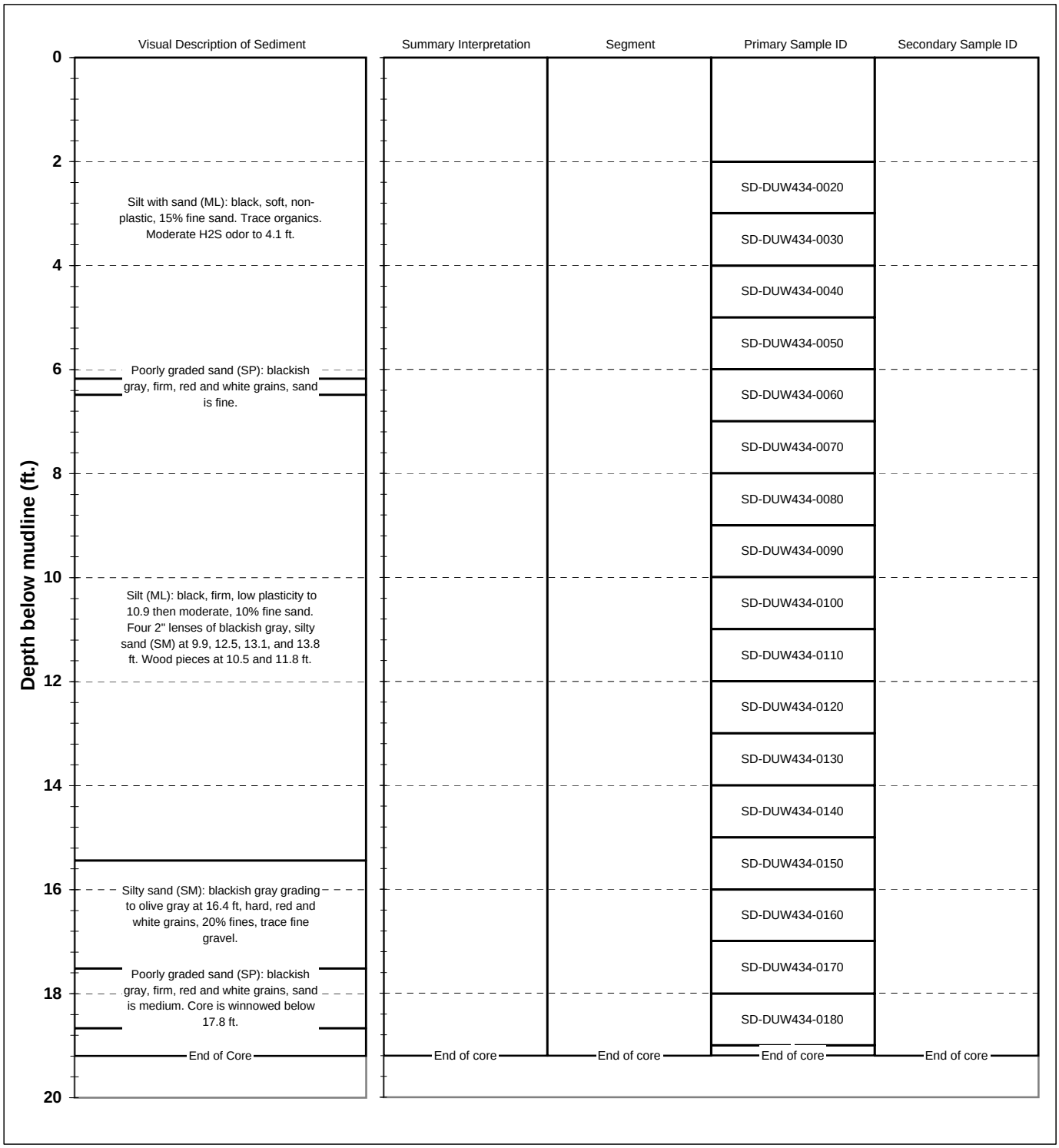
Maximum depth of retained sediment: 18.7 ft

Mudline elevation: -12.5 **ft MLLW**

Percent recovery (on-deck): 74%

	Core collection	Laboratory processing
Date:	11/10/2009	11/10/2009
Time:	13:42	16:25

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

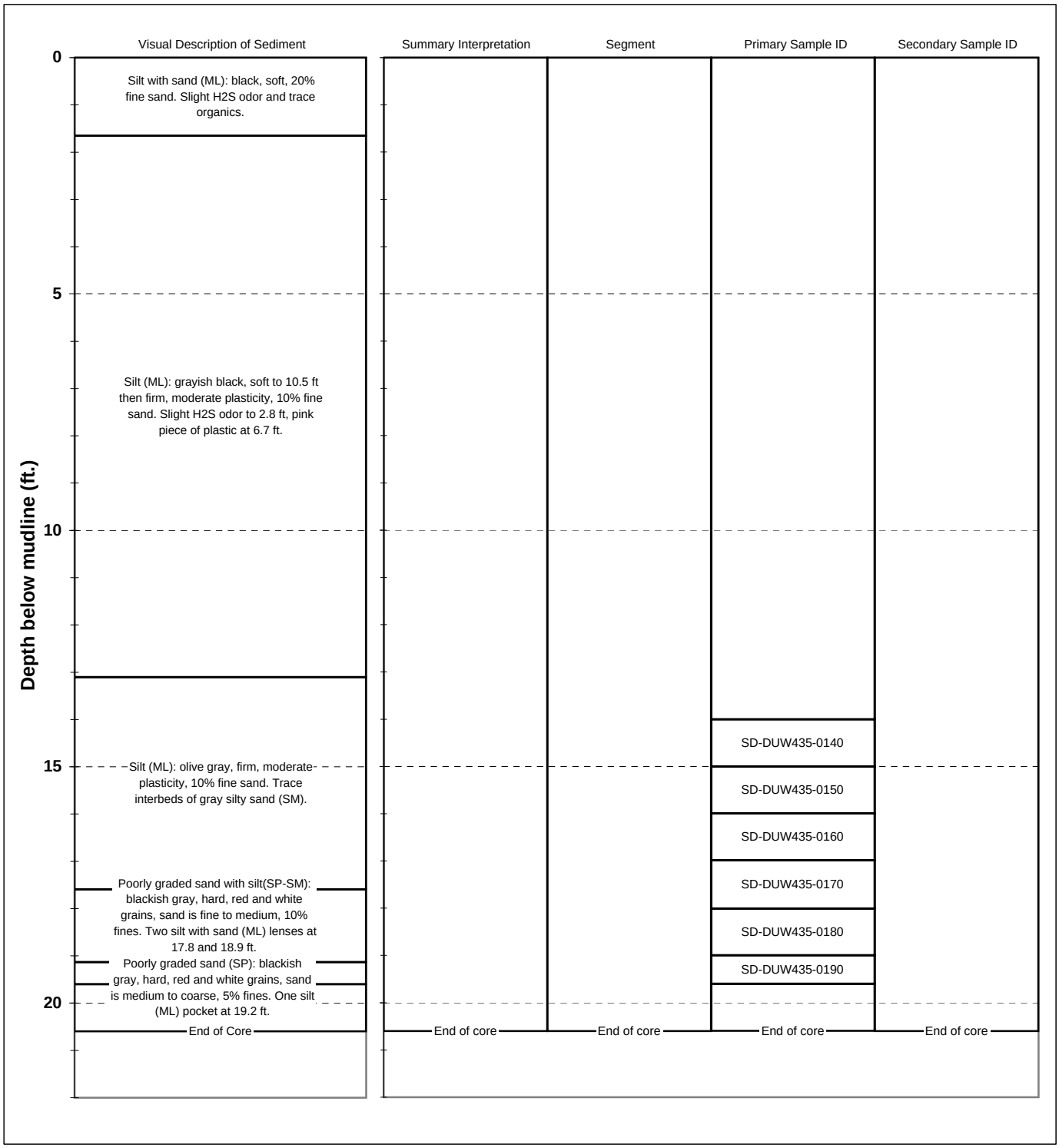
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW435**

Maximum depth of retained sediment: 20.6 ft
Mudline elevation: -15.1 **ft MLLW**
Percent recovery (on-deck): 67%

	Core collection	Laboratory processing
Date:	11/10/2009	11/10/2009
Time:	14:26	15:35

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

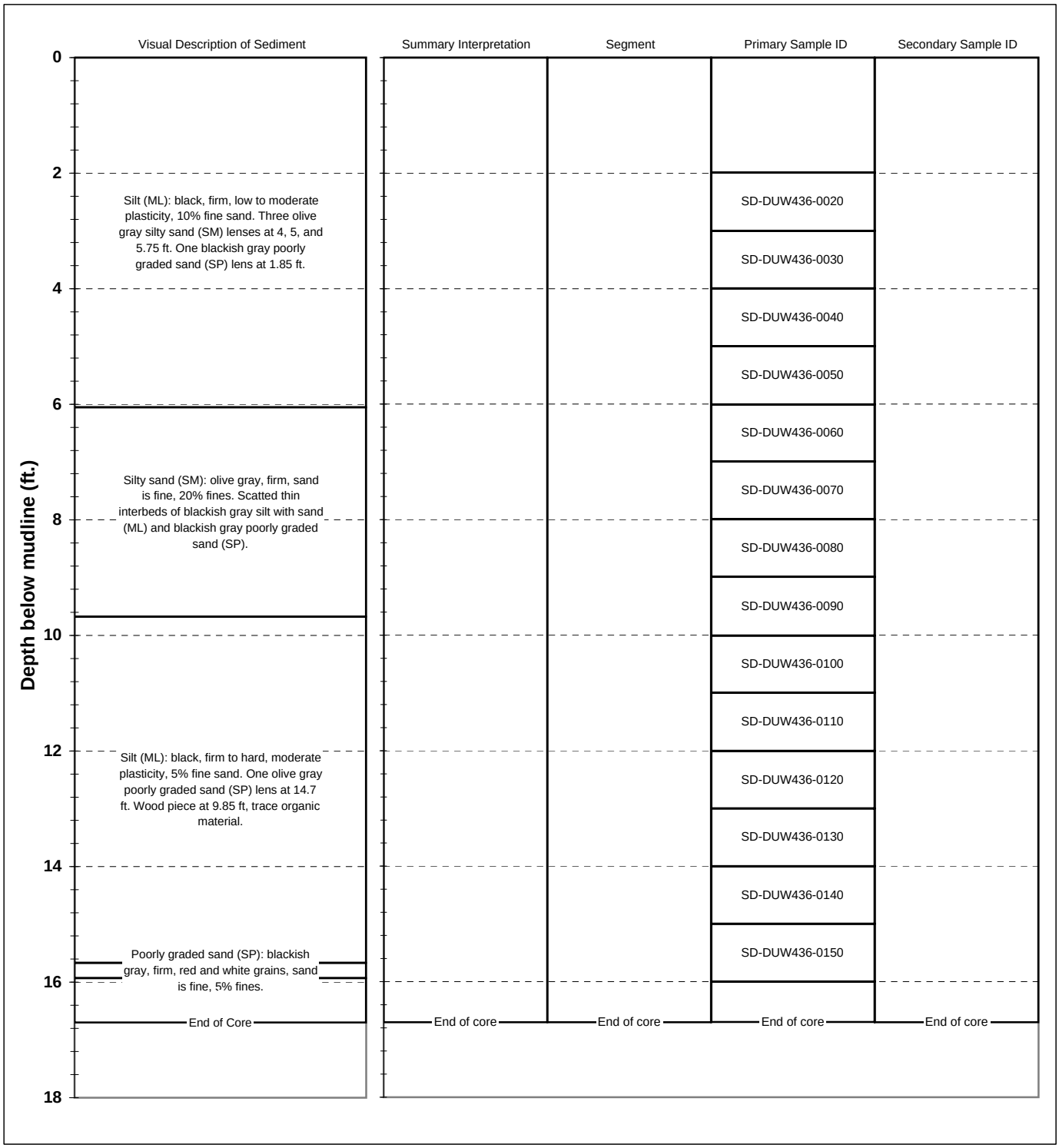
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW436**

Maximum depth of retained sediment: 15.9 ft
Mudline elevation: -9.4 **ft MLLW**
Percent recovery (on-deck): 71%

	Core collection	Laboratory processing
Date:	11/11/2009	11/11/2009
Time:	8:08	12:15

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

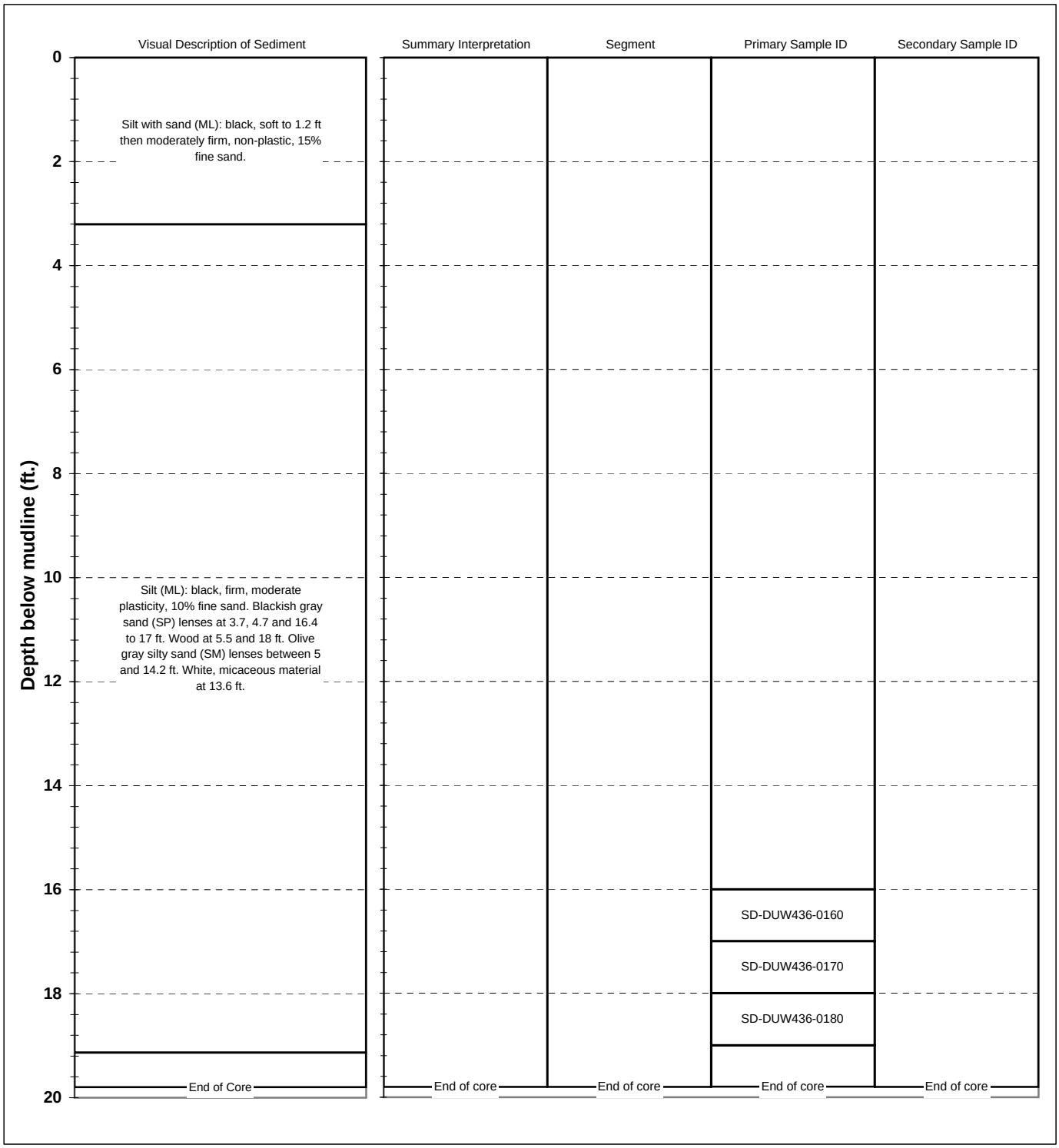
Station: **SD-DUW436R2**

Maximum depth of retained sediment: 19.8 ft
Percent recovery (on-deck): 68%

Mudline elevation: -9.9 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/19/2009	11/19/2009
Time:	11:36	13:20

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

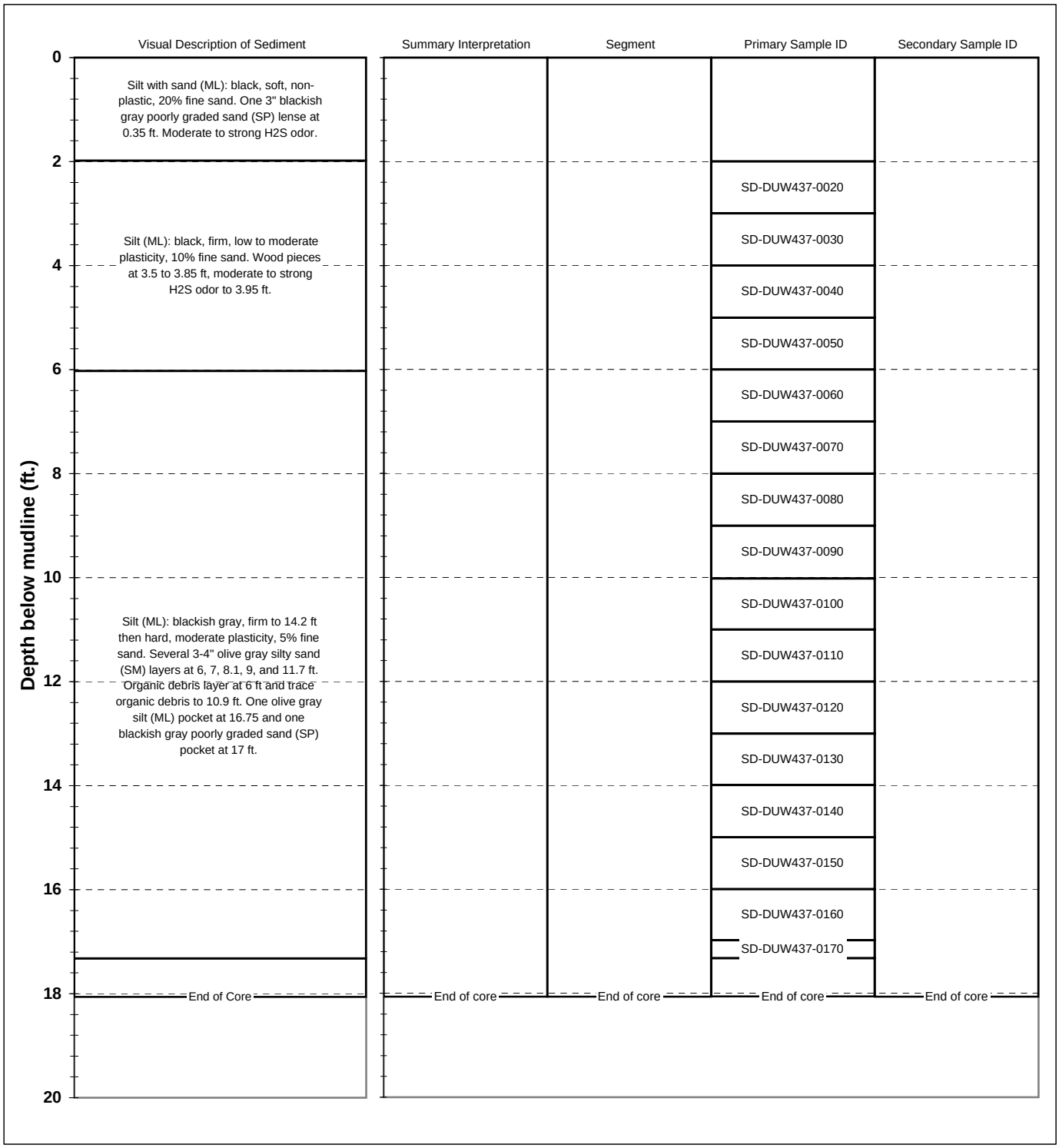
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW437**

Maximum depth of retained sediment: 18.1 ft
Mudline elevation: -11.9 **ft MLLW**
Percent recovery (on-deck): 75%

	Core collection	Laboratory processing
Date:	11/11/2009	11/11/2009
Time:	9:47	11:15

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

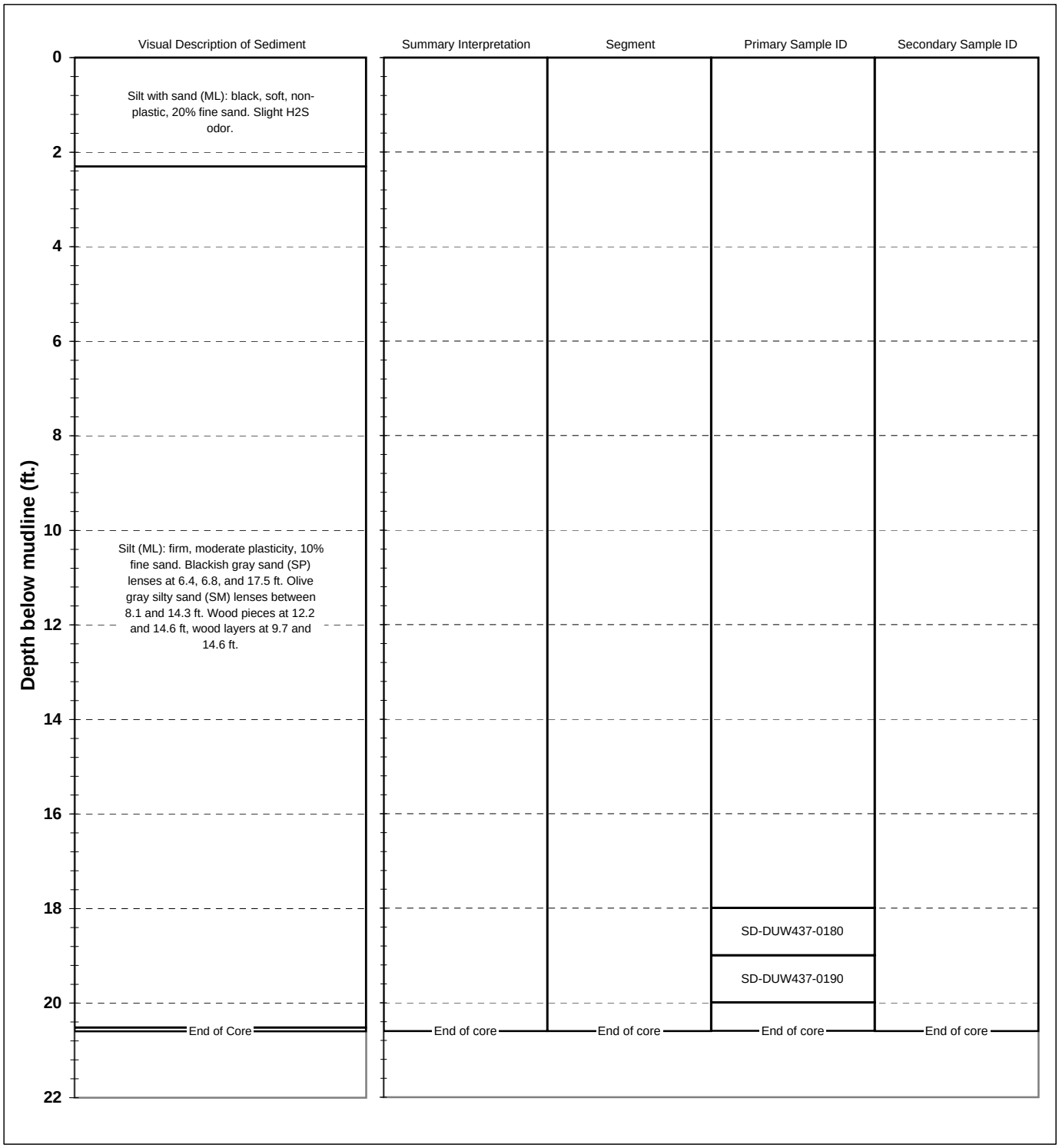
Station: **SD-DUW437R2**

Maximum depth of retained sediment: 20.6 ft
Percent recovery (on-deck): 72%

Mudline elevation: -12.8 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/19/2009	11/19/2009
Time:	13:32	14:45

Field Log: NPB
Summary Log: NPB



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File name: SD-DUW437R2.xls
Summary Core Log

Mudmole™ Core Summary Log

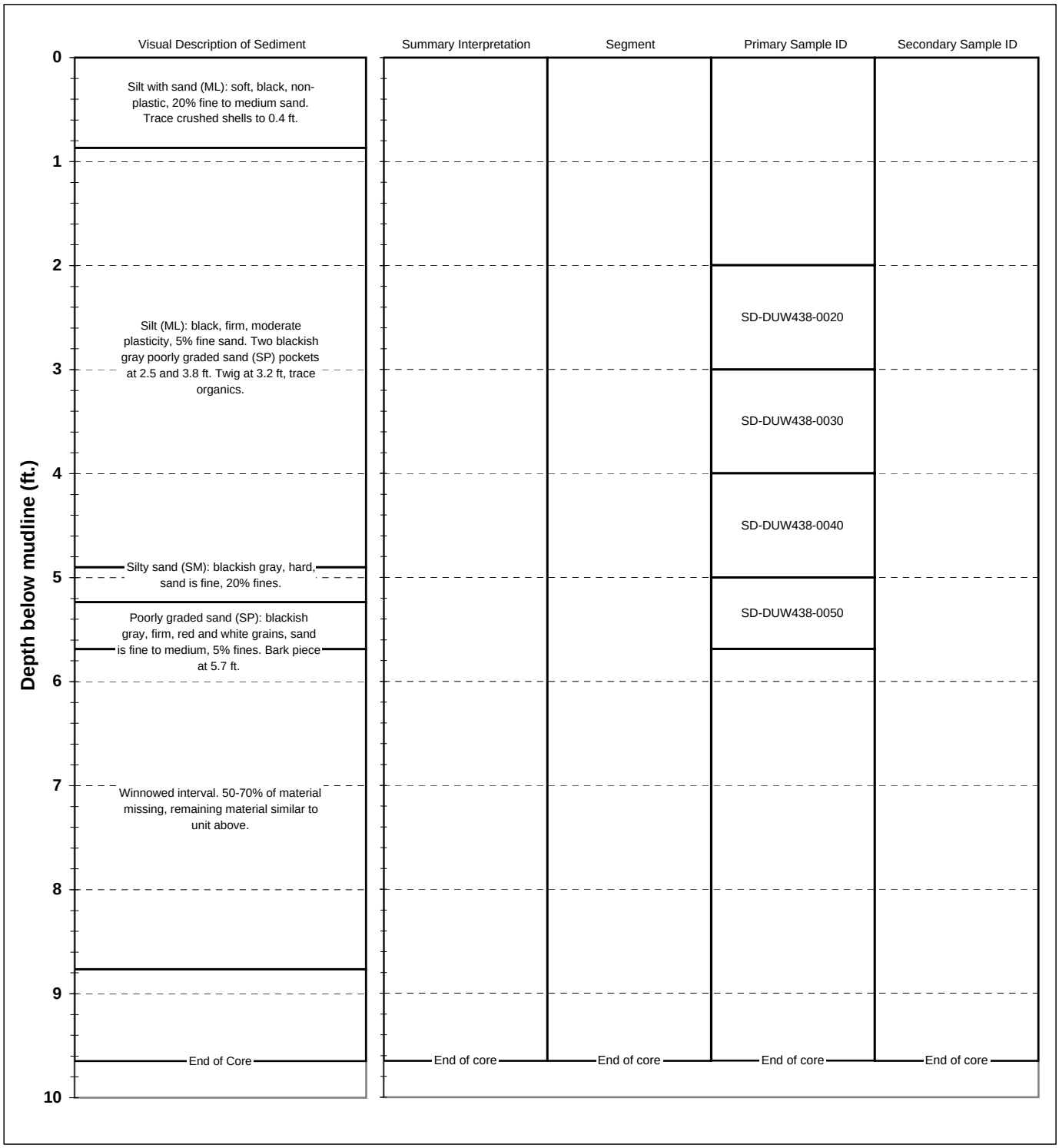
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW438**

Maximum depth of retained sediment: 9.7 ft
Mudline elevation: -11.6 **ft MLLW**
Percent recovery (on-deck): 71%

	Core collection	Laboratory processing
Date:	11/11/2009	11/11/2009
Time:	12:20	13:40

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

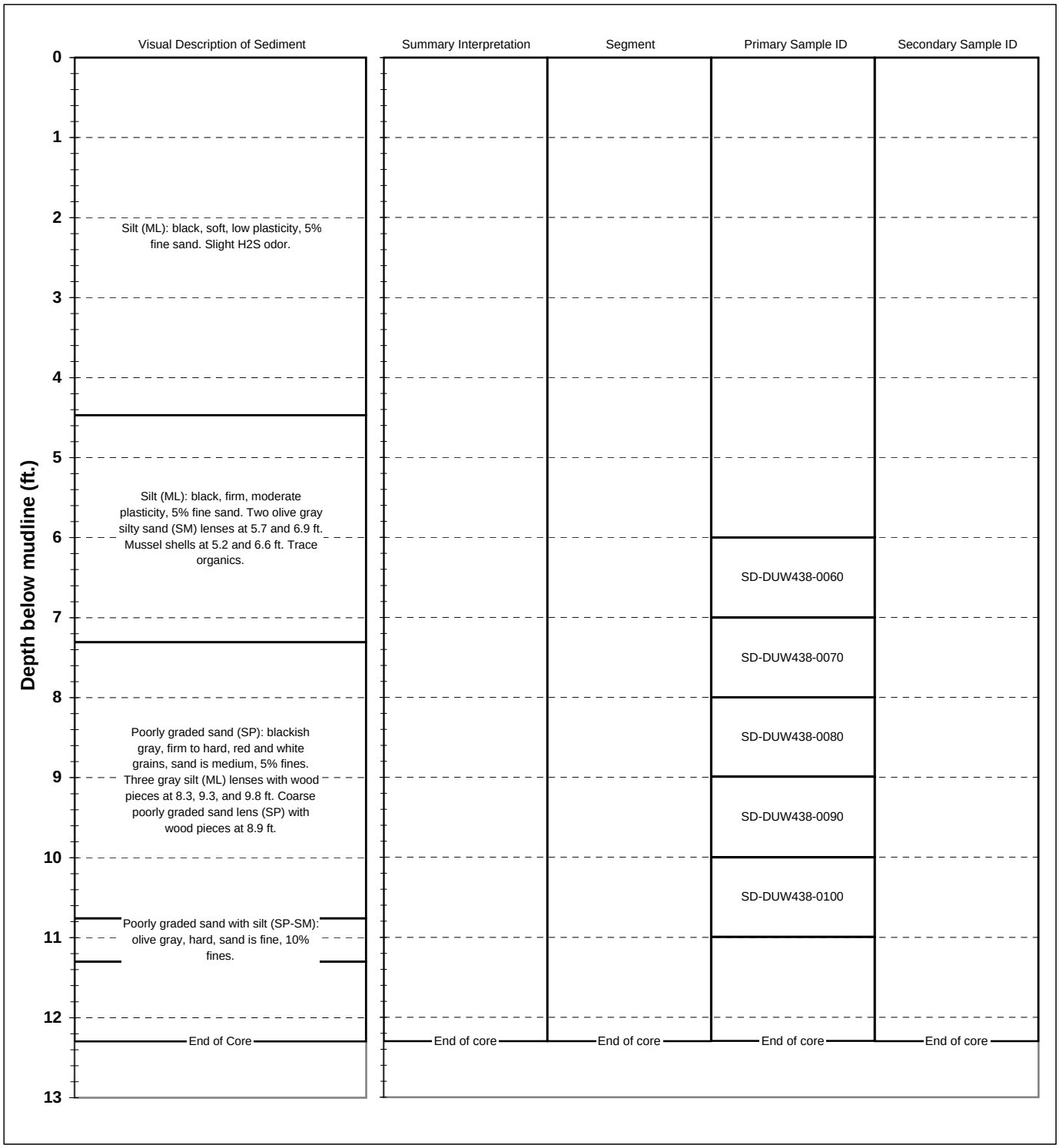
Station: **SD-DUW438R3**

Maximum depth of retained sediment: 11.3 ft
Percent recovery (on-deck): 67%

Mudline elevation: -13.4 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/13/2009	11/13/2009
Time:	10:24	11:45

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

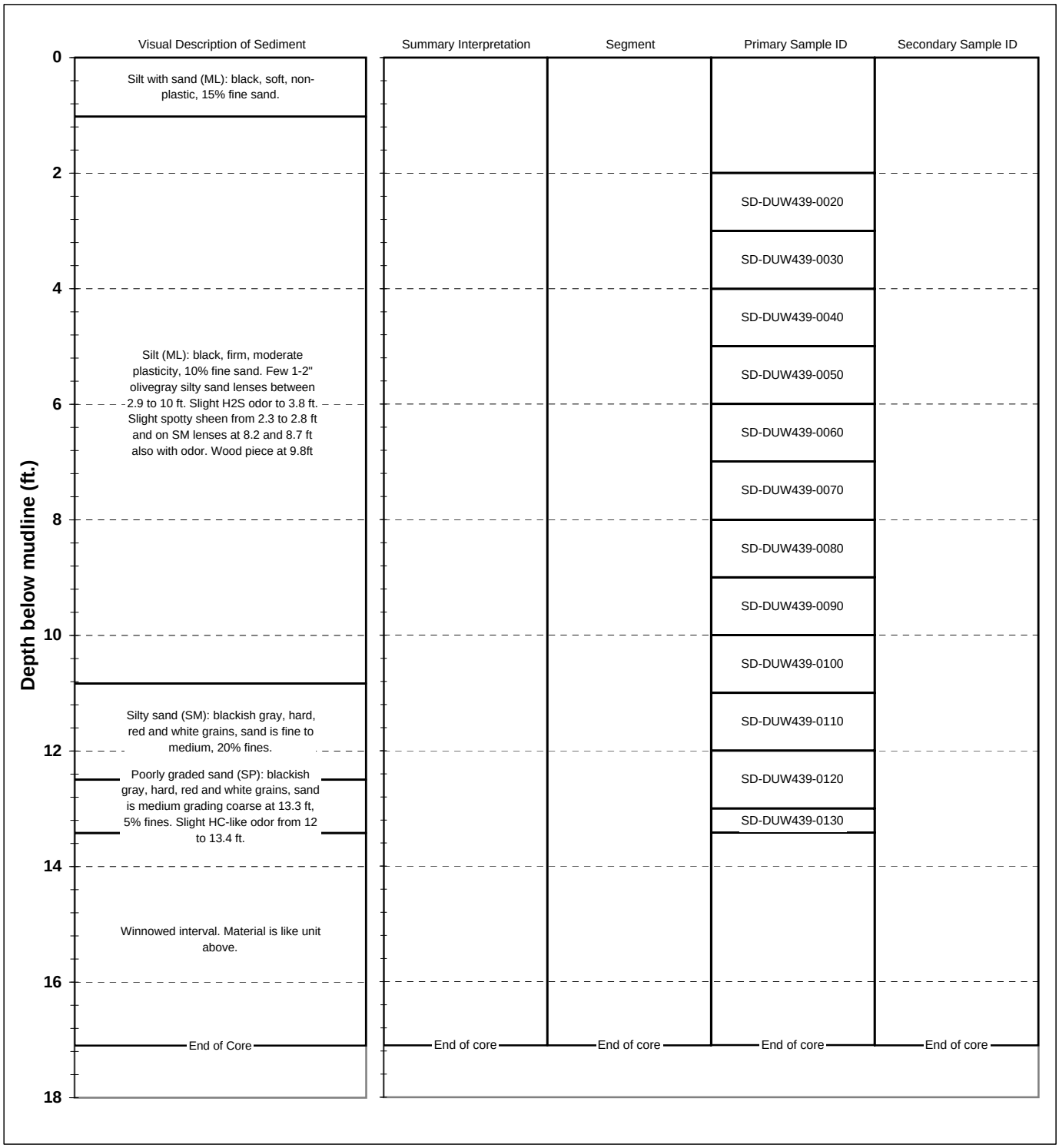
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW439**

Maximum depth of retained sediment: 17.1 ft
Mudline elevation: -11.1 **ft MLLW**
Percent recovery (on-deck): 74%

	Core collection	Laboratory processing
Date:	11/11/2009	11/11/2009
Time:	13:32	16:15

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

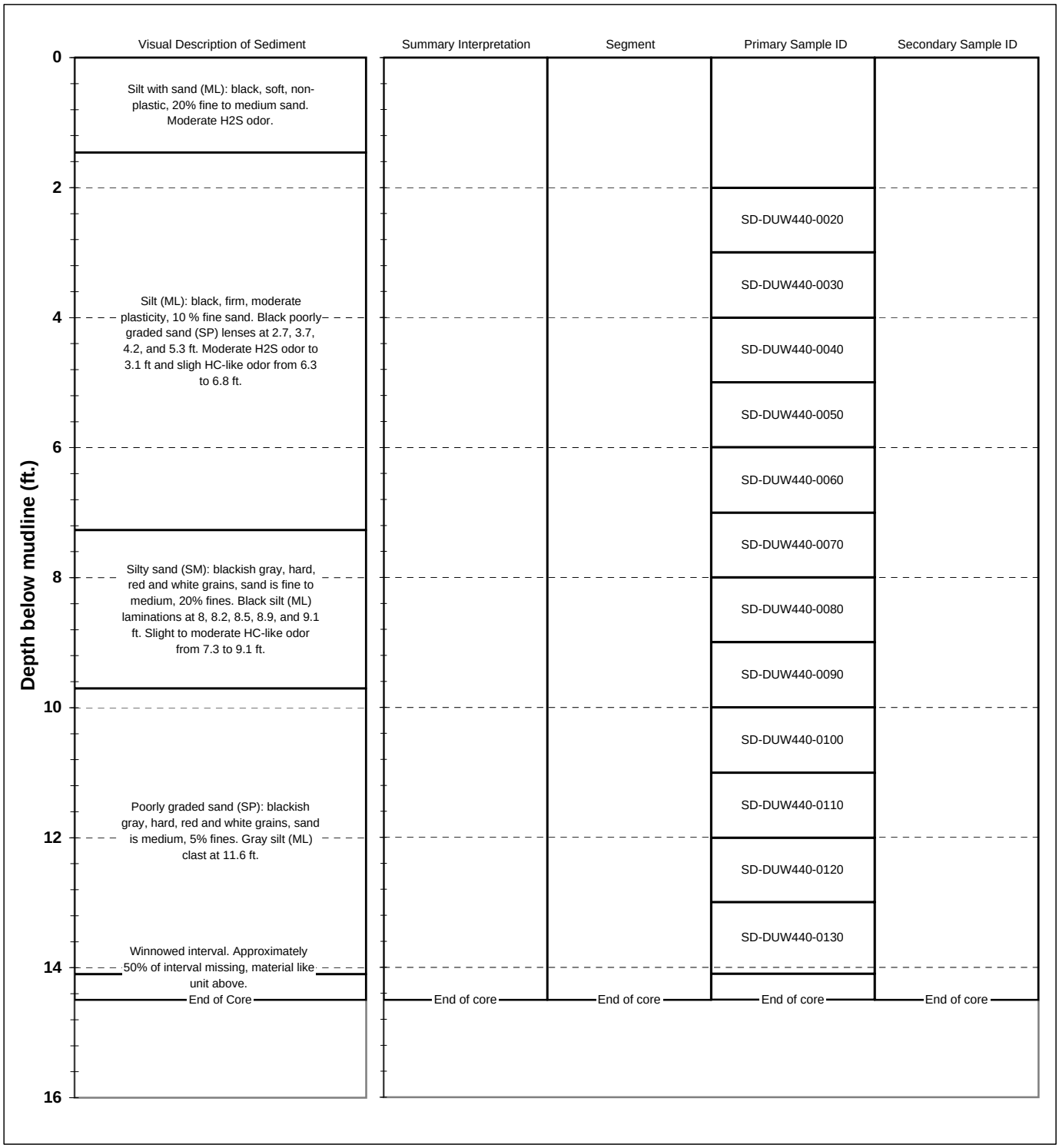
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW440**

Maximum depth of retained sediment: 14.5 ft
Mudline elevation: -13.1 **ft MLLW**
Percent recovery (on-deck): 72%

	Core collection	Laboratory processing
Date:	11/12/2009	11/12/2009
Time:	9:44	11:00

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

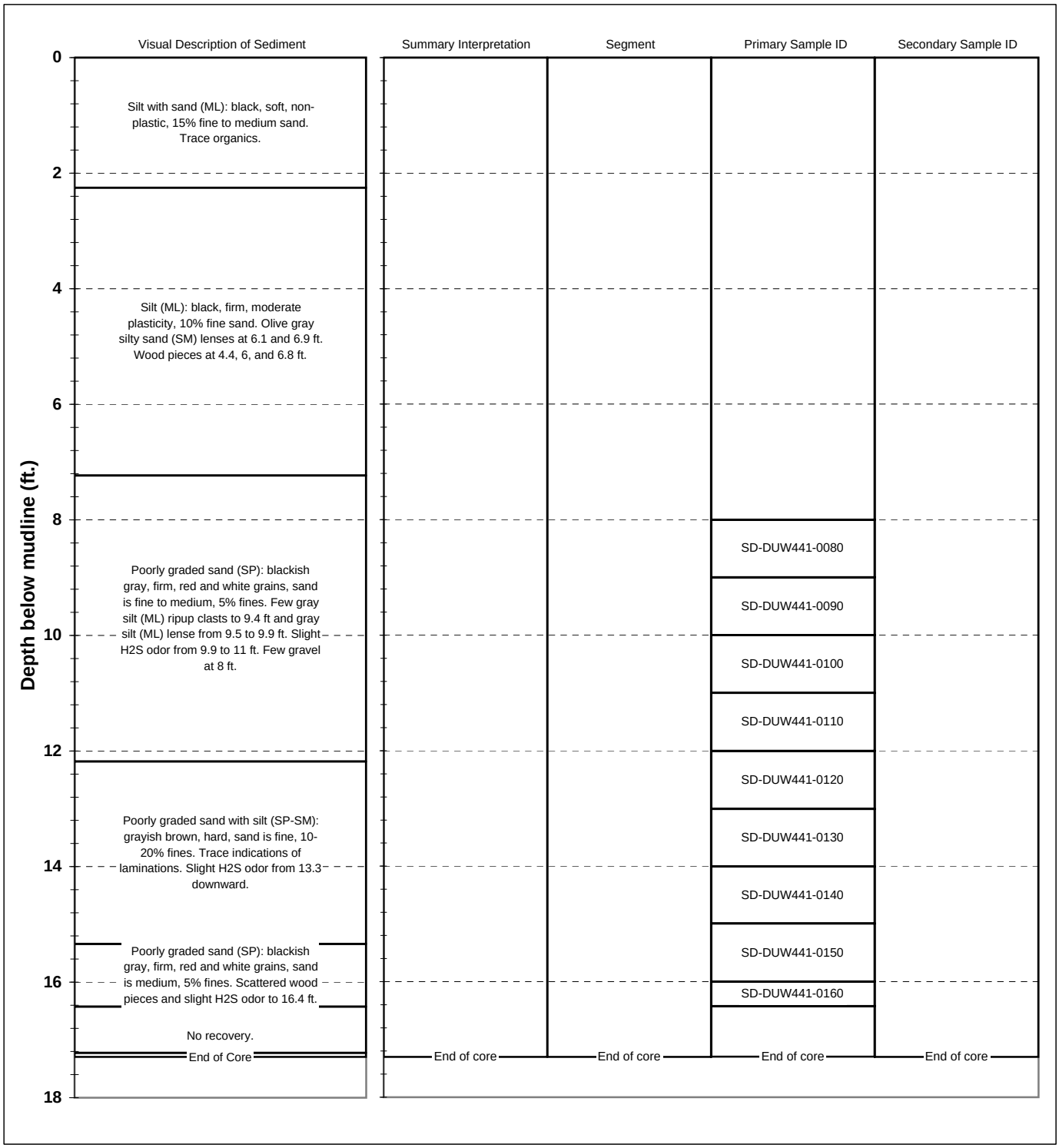
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW441**

Maximum depth of retained sediment: 16.4 ft
Mudline elevation: -7.9 **ft MLLW**
Percent recovery (on-deck): 68%

	Core collection	Laboratory processing
Date:	11/12/2009	11/12/2009
Time:	12:39	14:50

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

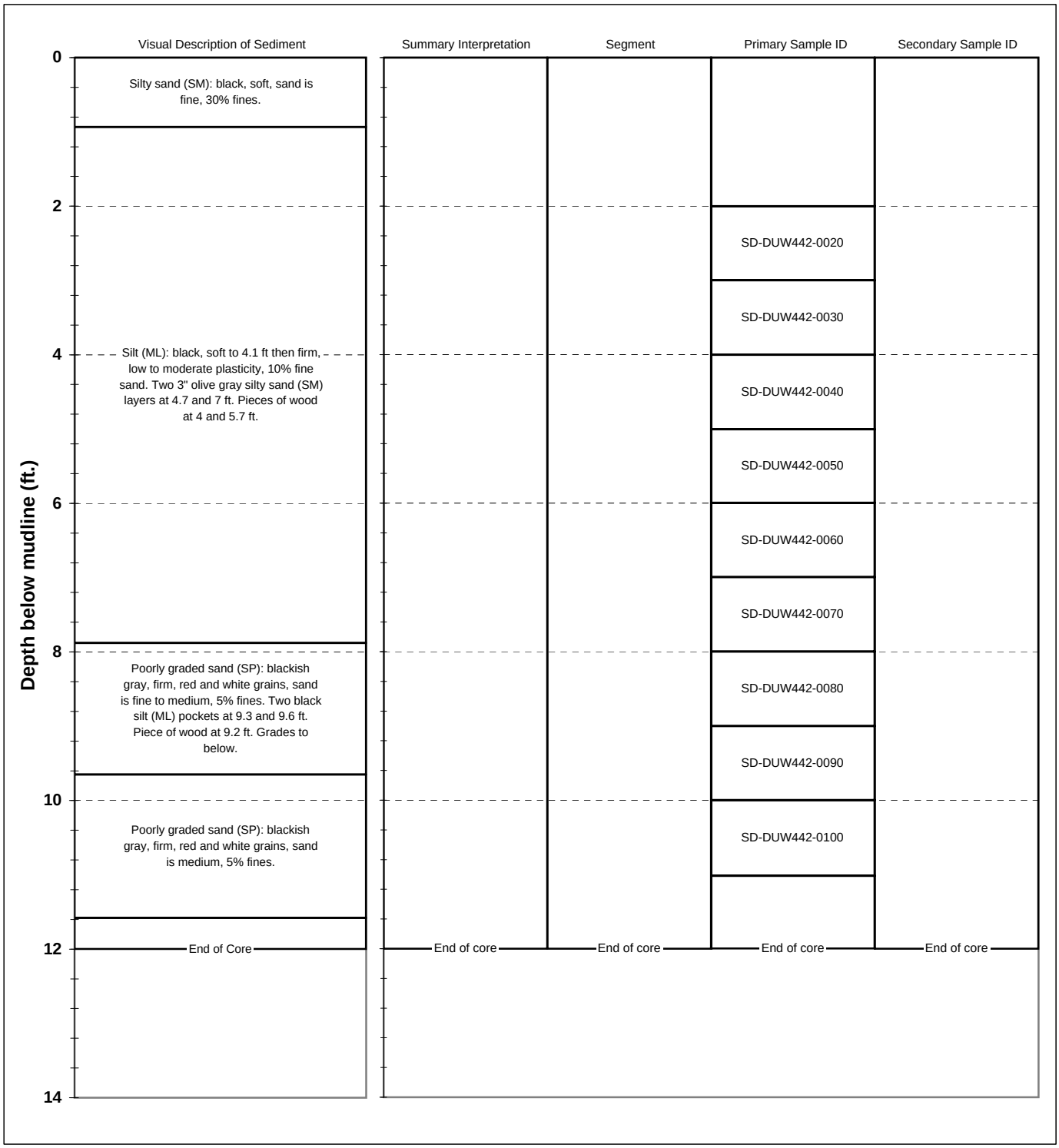
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW442**

Maximum depth of retained sediment: 12.0 ft
Mudline elevation: -14.0 **ft MLLW**
Percent recovery (on-deck): 72%

	Core collection	Laboratory processing
Date:	11/5/2009	11/5/2009
Time:	11:06	12:50

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

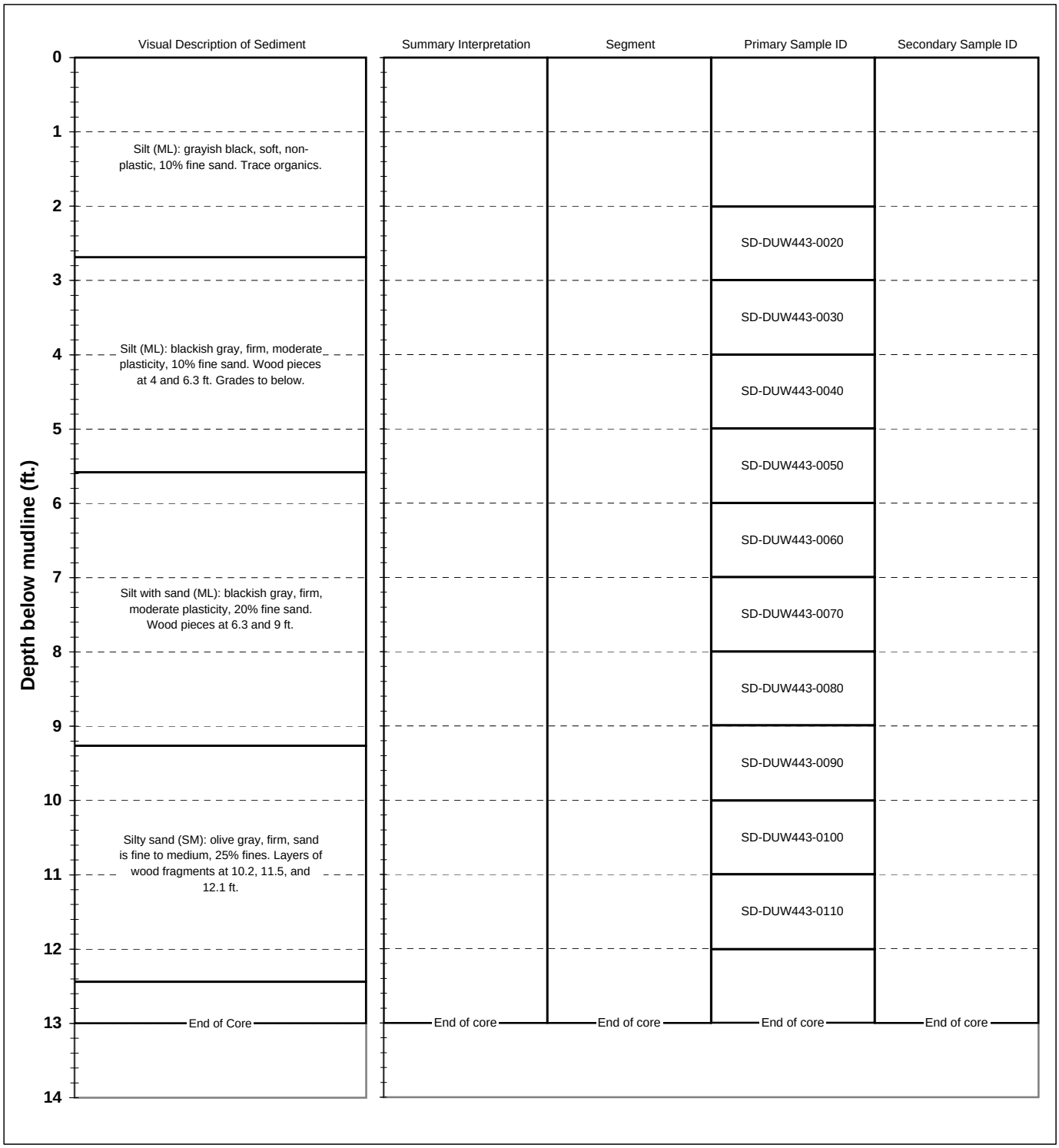
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW443**

Maximum depth of retained sediment: 12.4 ft
Mudline elevation: -14.9 **ft MLLW**
Percent recovery (on-deck): 78%

	Core collection	Laboratory processing
Date:	11/9/2009	11/9/2009
Time:	8:54	10:00

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW443R2**

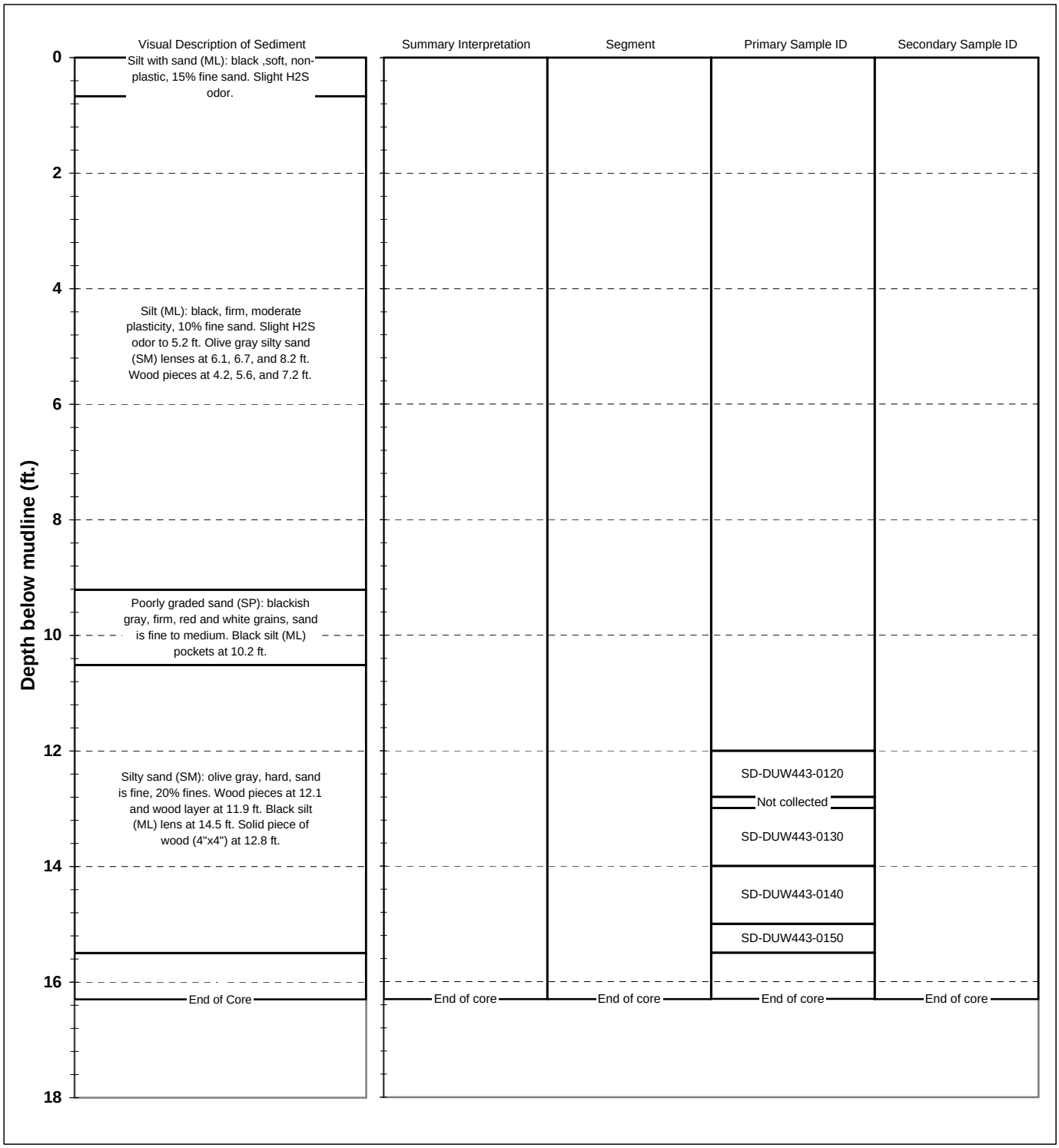
Maximum depth of retained sediment: 15.5 ft

Mudline elevation: -13.7 **ft MLLW**

Percent recovery (on-deck): 74%

	Core collection	Laboratory processing
Date:	11/20/2009	11/20/2009
Time:	8:57	11:00

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

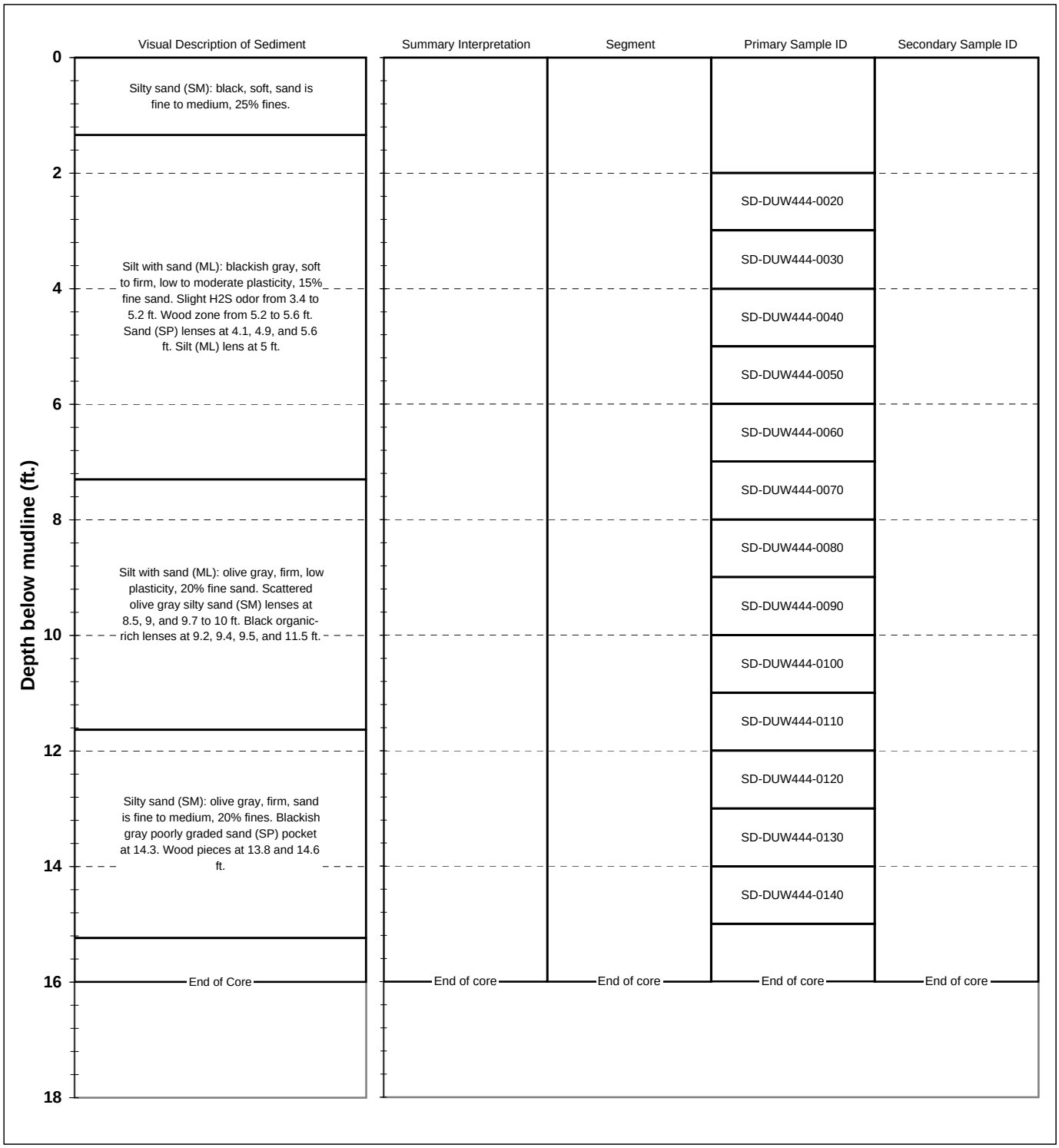
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW444**

Maximum depth of retained sediment: 15.2 ft
Mudline elevation: -14.1 **ft MLLW**
Percent recovery (on-deck): 73%

	Core collection	Laboratory processing
Date:	11/10/2009	11/10/2009
Time:	9:43	11:50

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

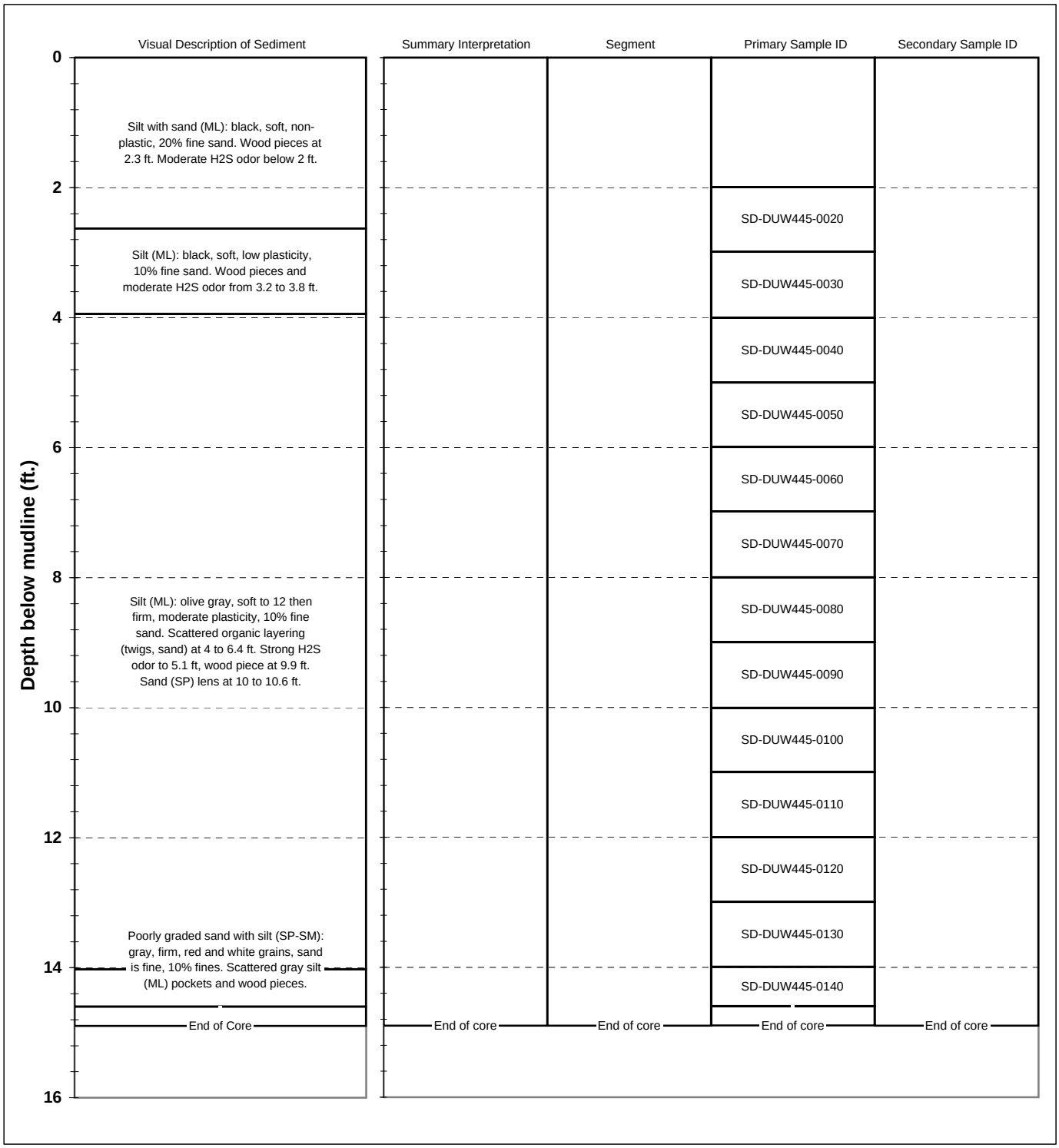
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW445**

Maximum depth of retained sediment: 14.6 ft
Mudline elevation: -20.6 **ft MLLW**
Percent recovery (on-deck): 81%

	Core collection	Laboratory processing
Date:	11/10/2009	11/10/2009
Time:	12:24	13:50

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW446**

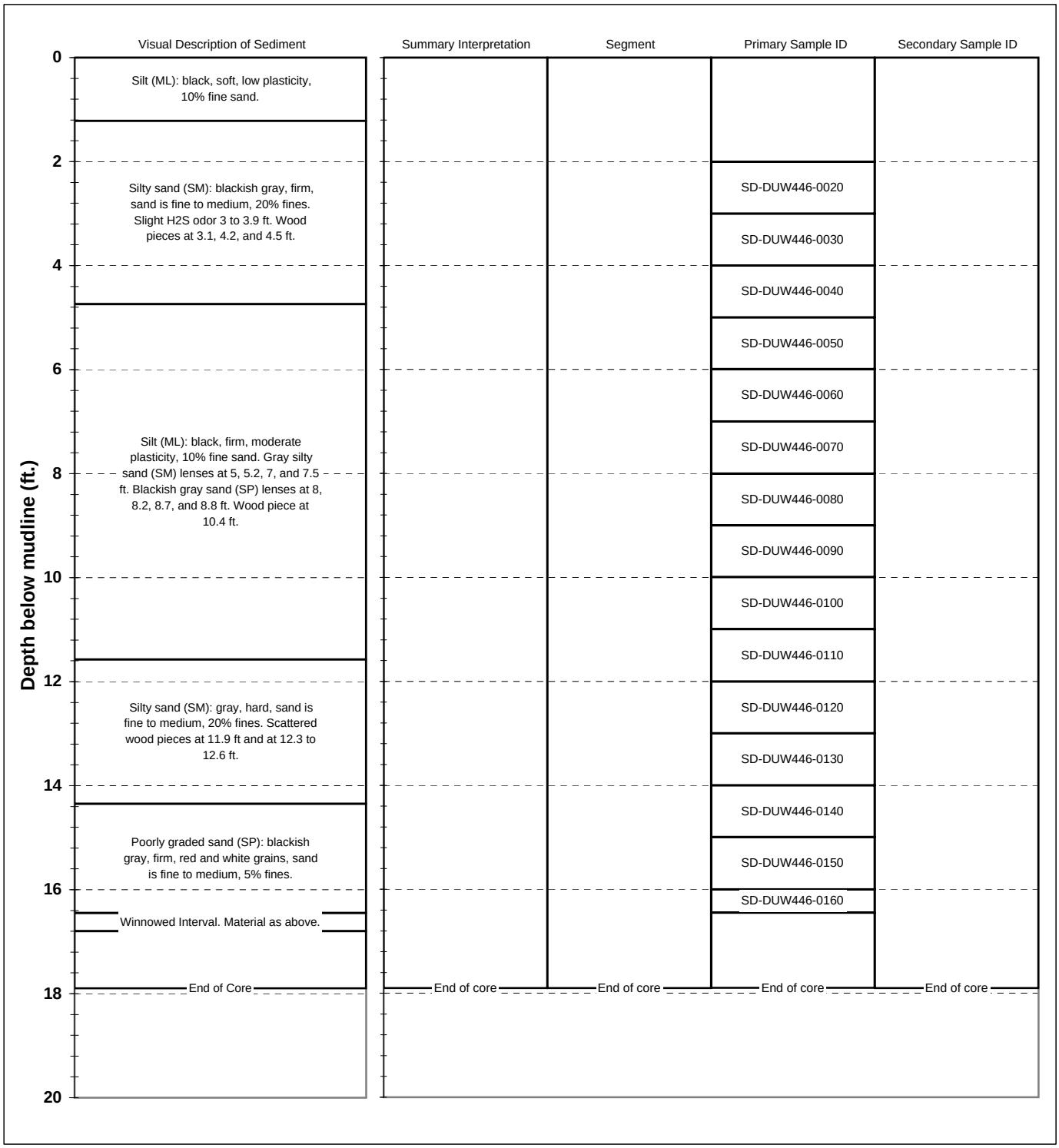
Maximum depth of retained sediment: 16.8 ft

Mudline elevation: -20.1 **ft MLLW**

Percent recovery (on-deck): 78%

	Core collection	Laboratory processing
Date:	11/12/2009	11/12/2009
Time:	11:09	13:55

Field Log: NPB
Summary Log: NPB



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(425) 921-4000
fax (425) 921-4040

Mudmole™ Core Summary Log

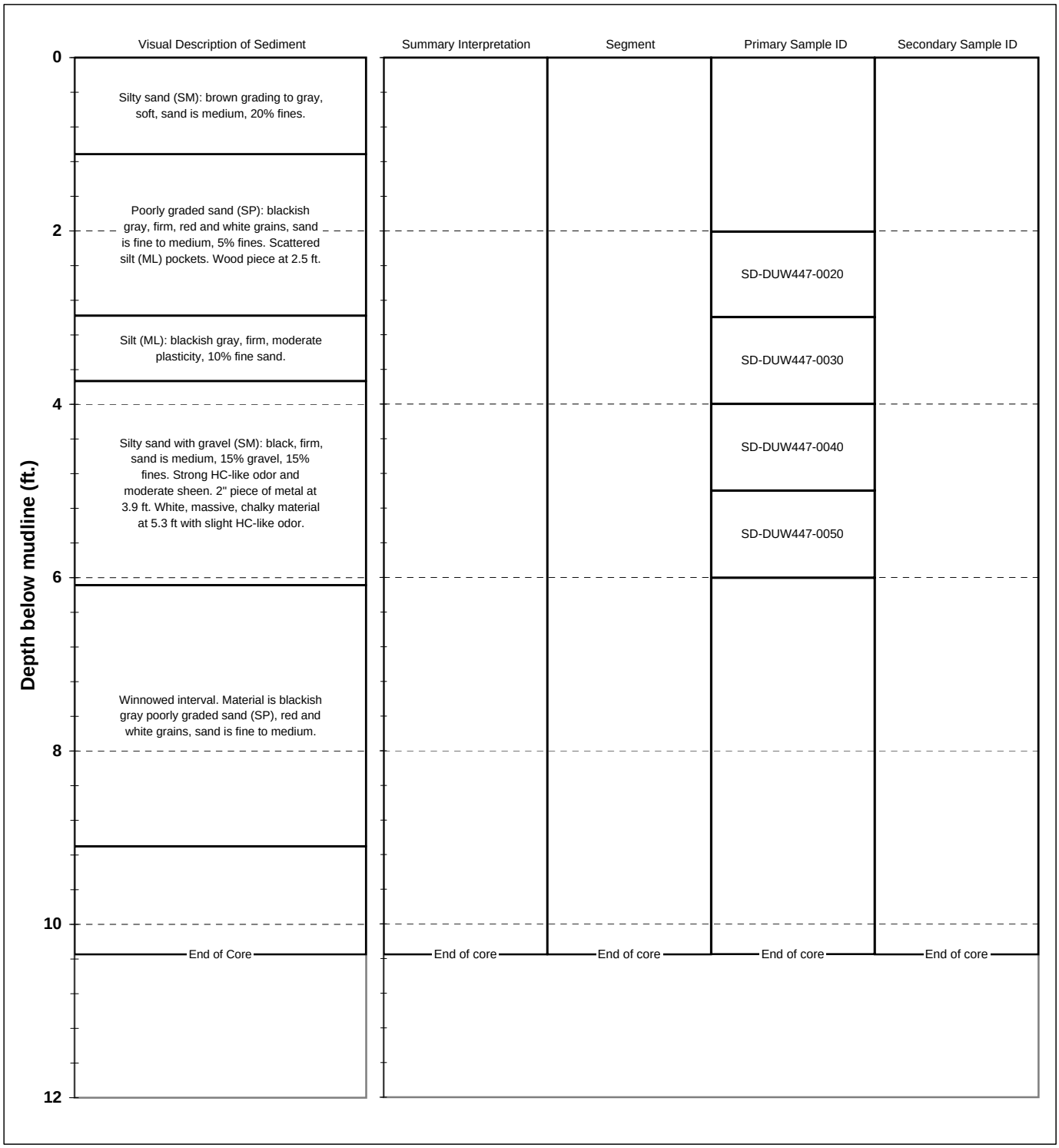
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW447R2**

Maximum depth of retained sediment: 10.4 ft
Mudline elevation: -7.3 **ft MLLW**
Percent recovery (on-deck): 69%

	Core collection	Laboratory processing
Date:	11/13/2009	11/13/2009
Time:	8:20	10:20

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW447FC**

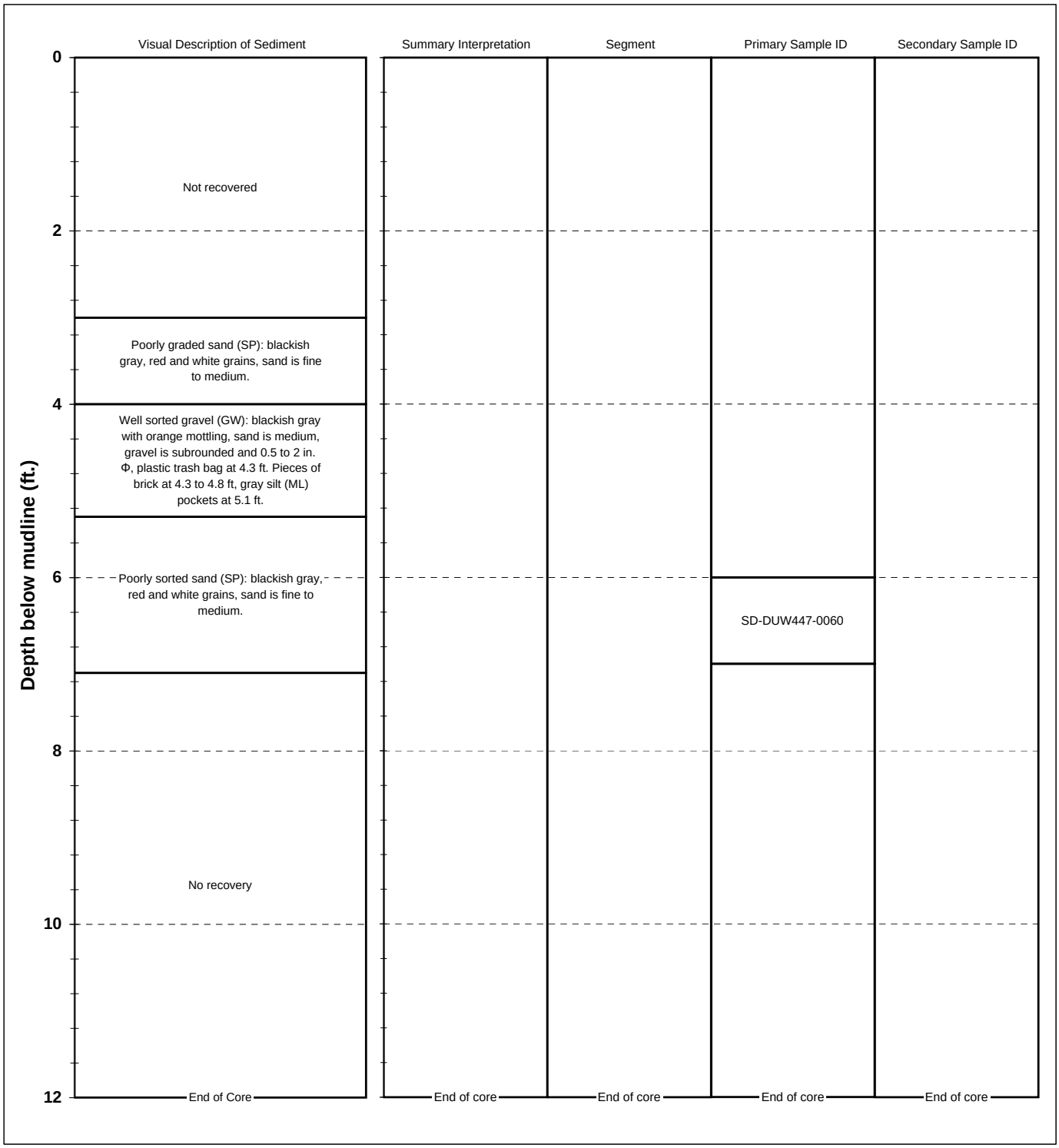
Maximum depth of retained sediment: 7.0 ft

Mudline elevation: -7.2 **ft MLLW**

Percent recovery (on-deck): 100%

	Core collection	Laboratory processing
Date:	12/5/2009	12/15/2009
Time:	11:36	13:15

Field Log: NPB
Summary Log: NPB



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File name: SD-DUW447FC.xls
Summary Core Log

Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

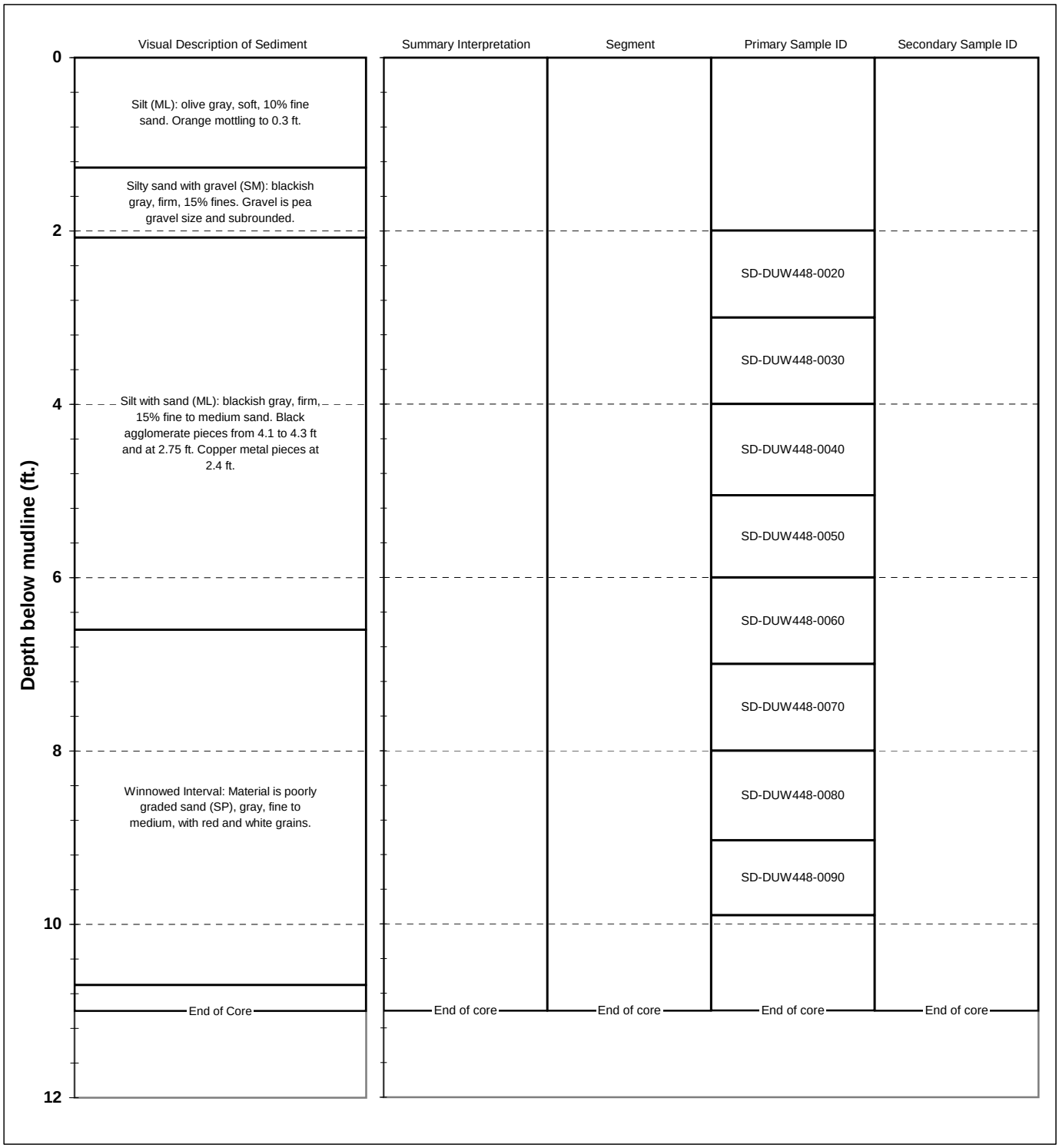
Station: **SD-DUW448**

Maximum depth of retained sediment: 11.0 ft
Percent recovery (on-deck): 67%

Mudline elevation: -7.0 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/2/2009	11/2/2009
Time:	12:04	14:15

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

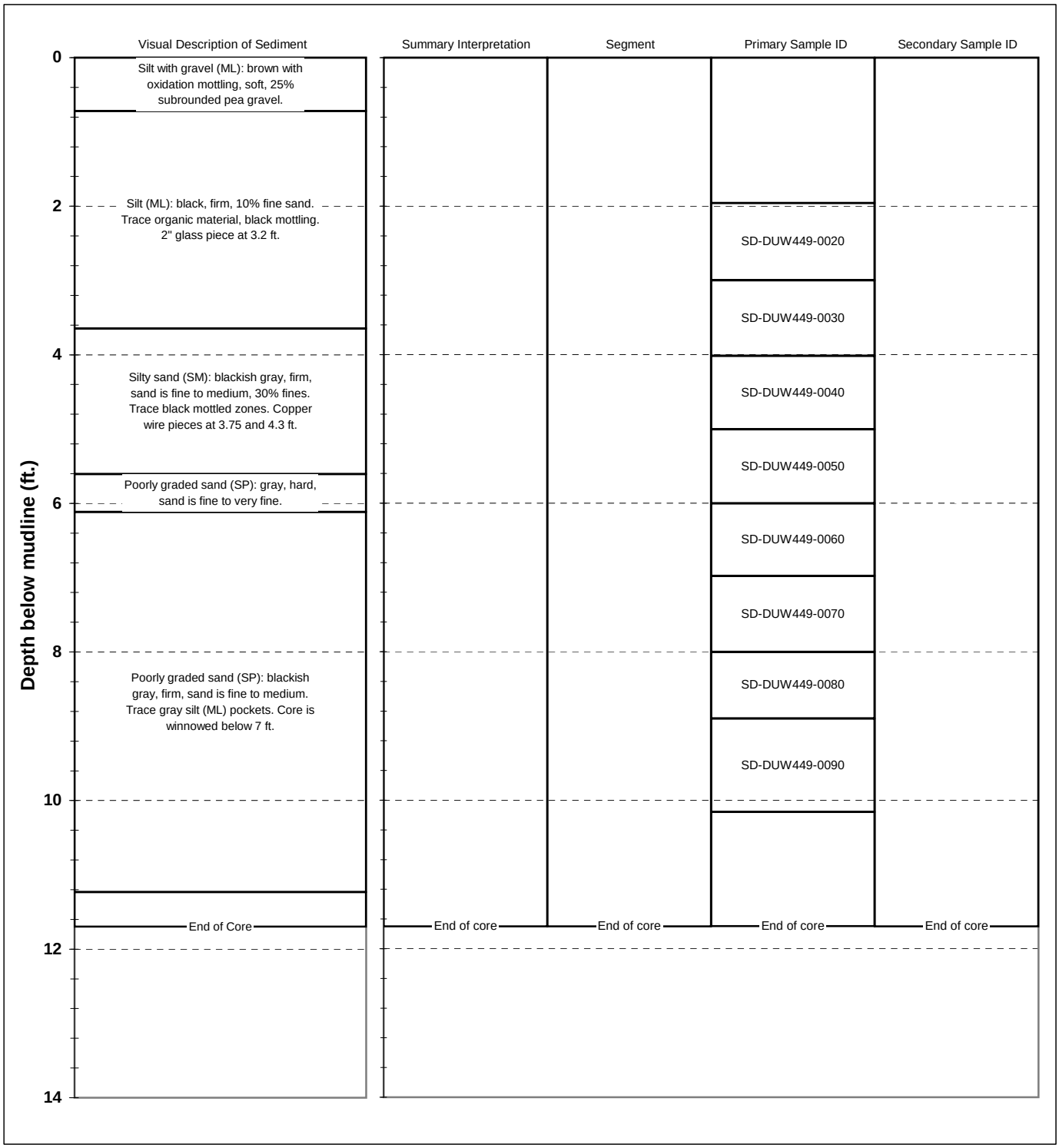
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW449**

Maximum depth of retained sediment: 11.7 ft
Mudline elevation: -7.1 **ft MLLW**
Percent recovery (on-deck): 66%

	Core collection	Laboratory processing
Date:	11/2/2009	11/2/2009
Time:	13:19	15:41

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

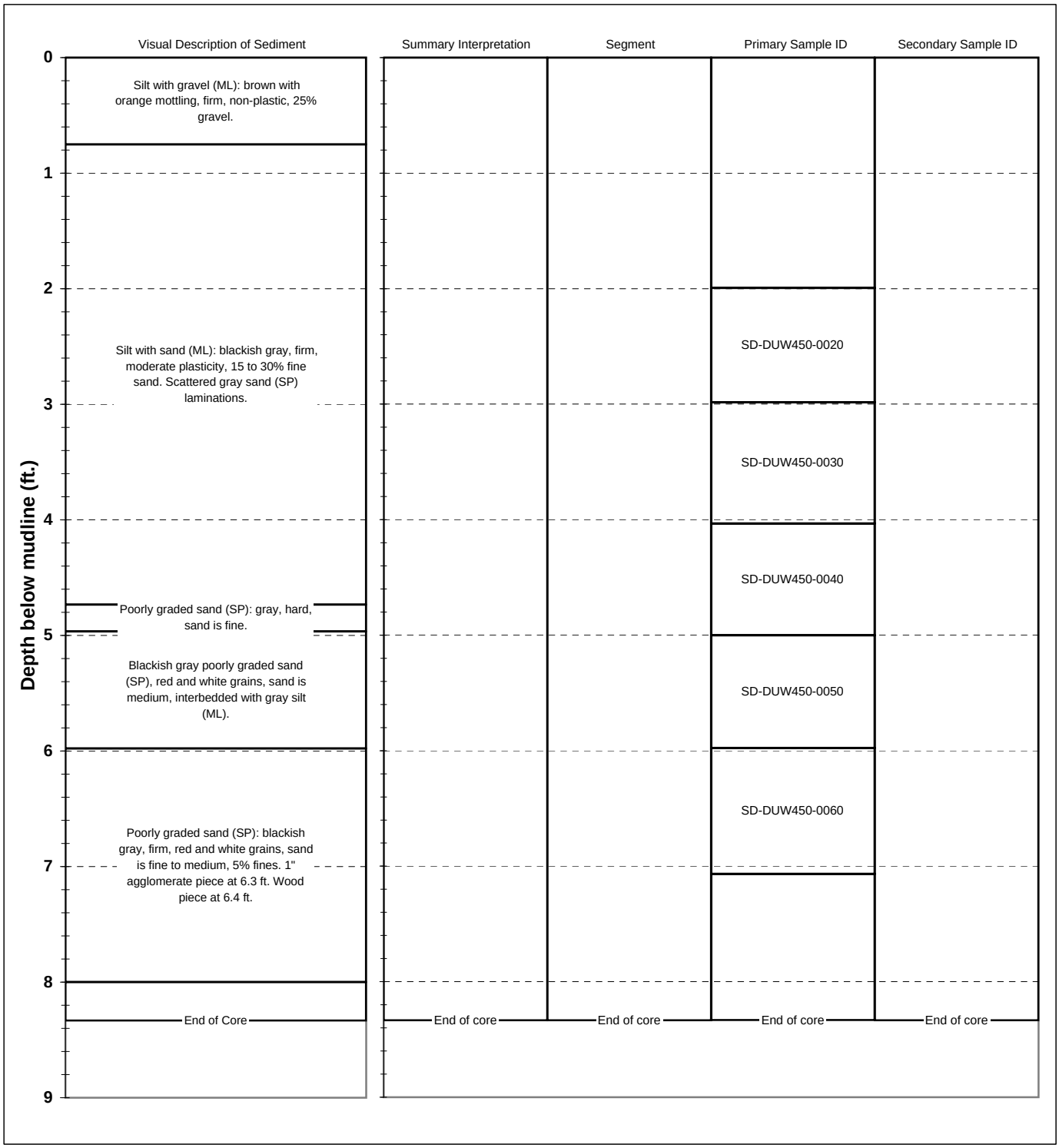
Station: **SD-DUW450**

Maximum depth of retained sediment: 8.0 ft
Percent recovery (on-deck): 63%

Mudline elevation: -7.9 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/2/2009	11/2/2009
Time:	14:32	16:30

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

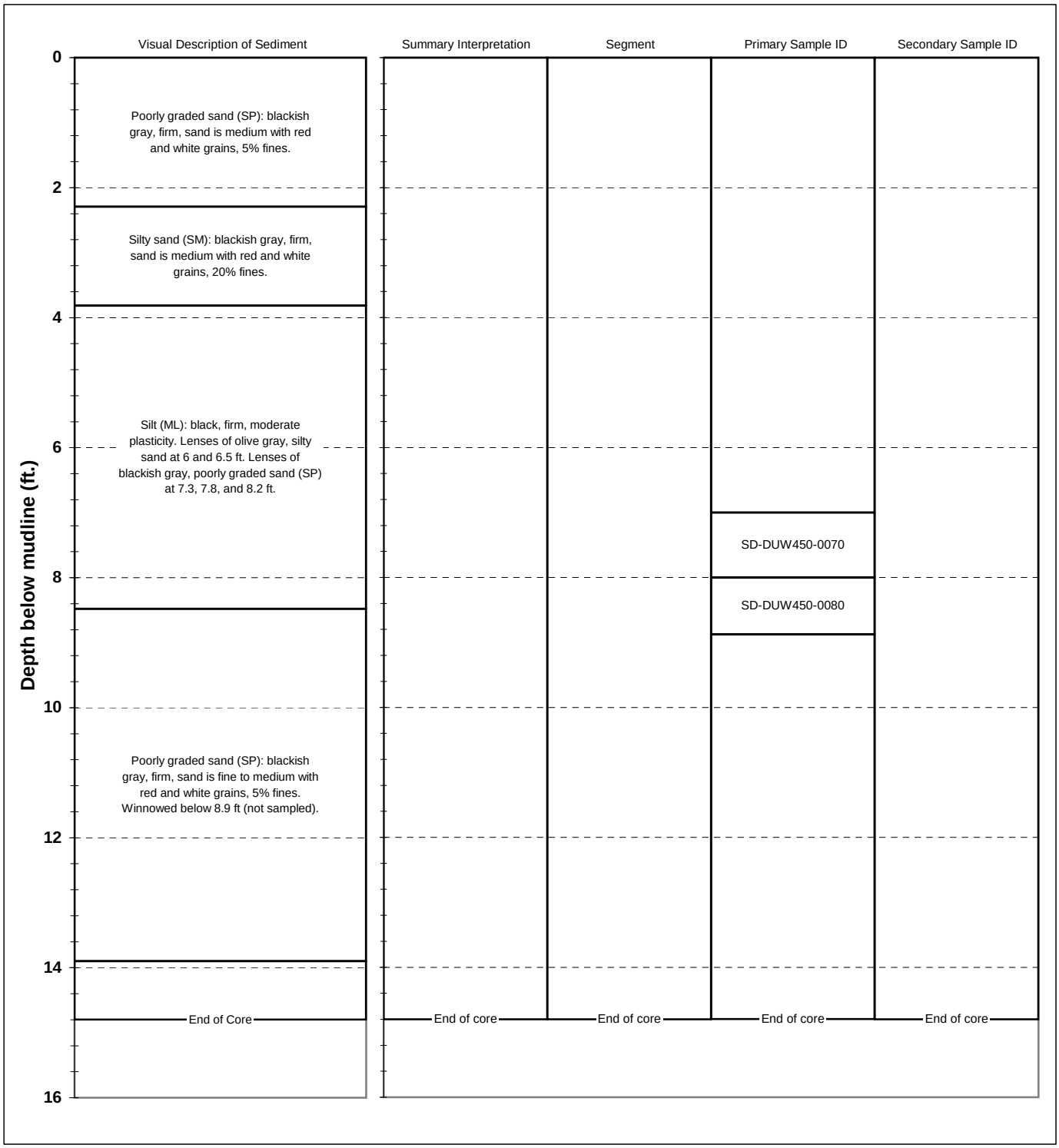
Station: **SD-DUW450R2**

Maximum depth of retained sediment: 14.8 ft
Percent recovery (on-deck): 58%

Mudline elevation: -7.2 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/12/2009	11/12/2009
Time:	14:08	16:00

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

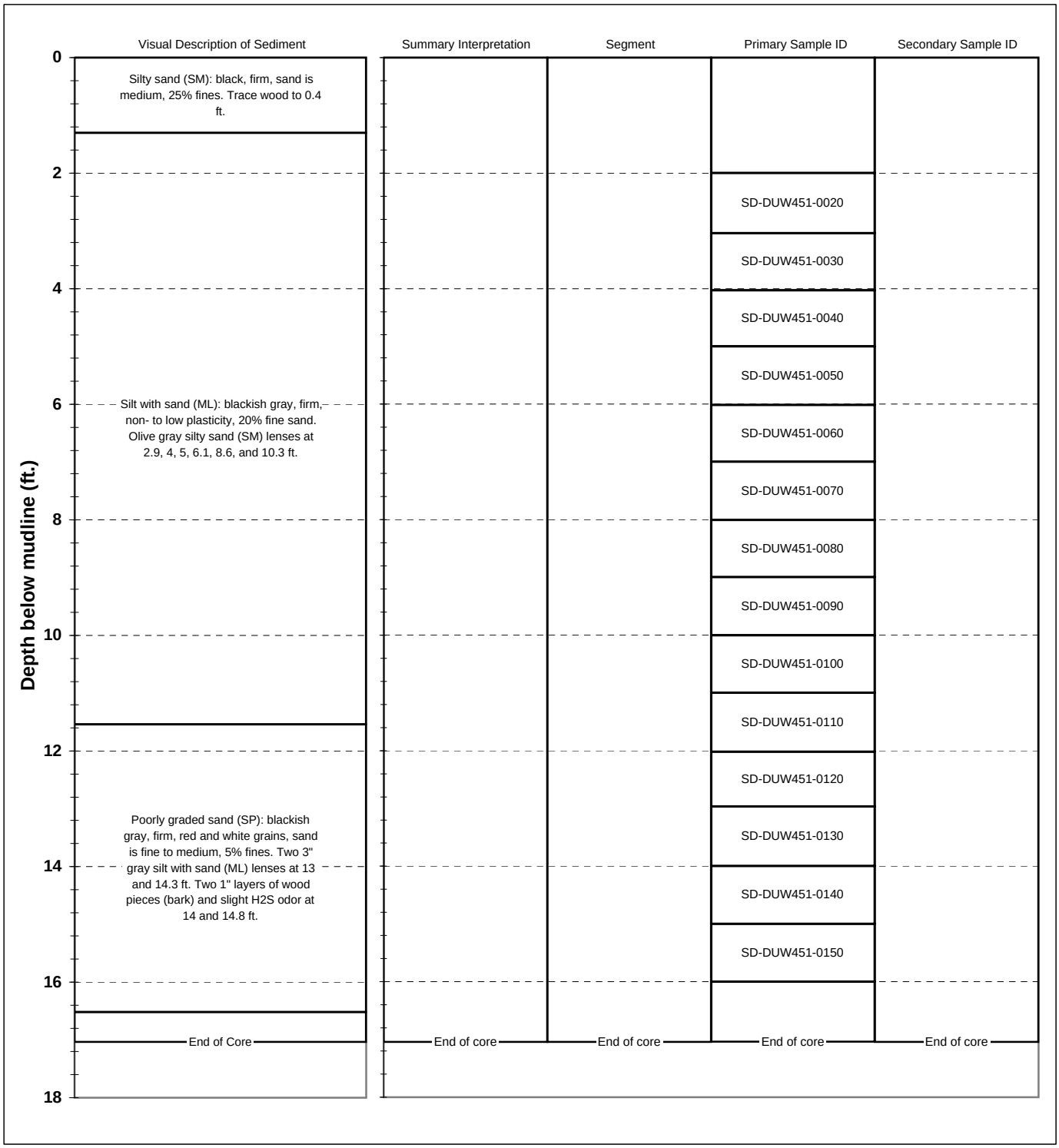
Station: **SD-DUW451**

Maximum depth of retained sediment: 16.5 ft
Percent recovery (on-deck): 75%

Mudline elevation: -6.9 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/3/2009	11/3/2009
Time:	8:07	11:00

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

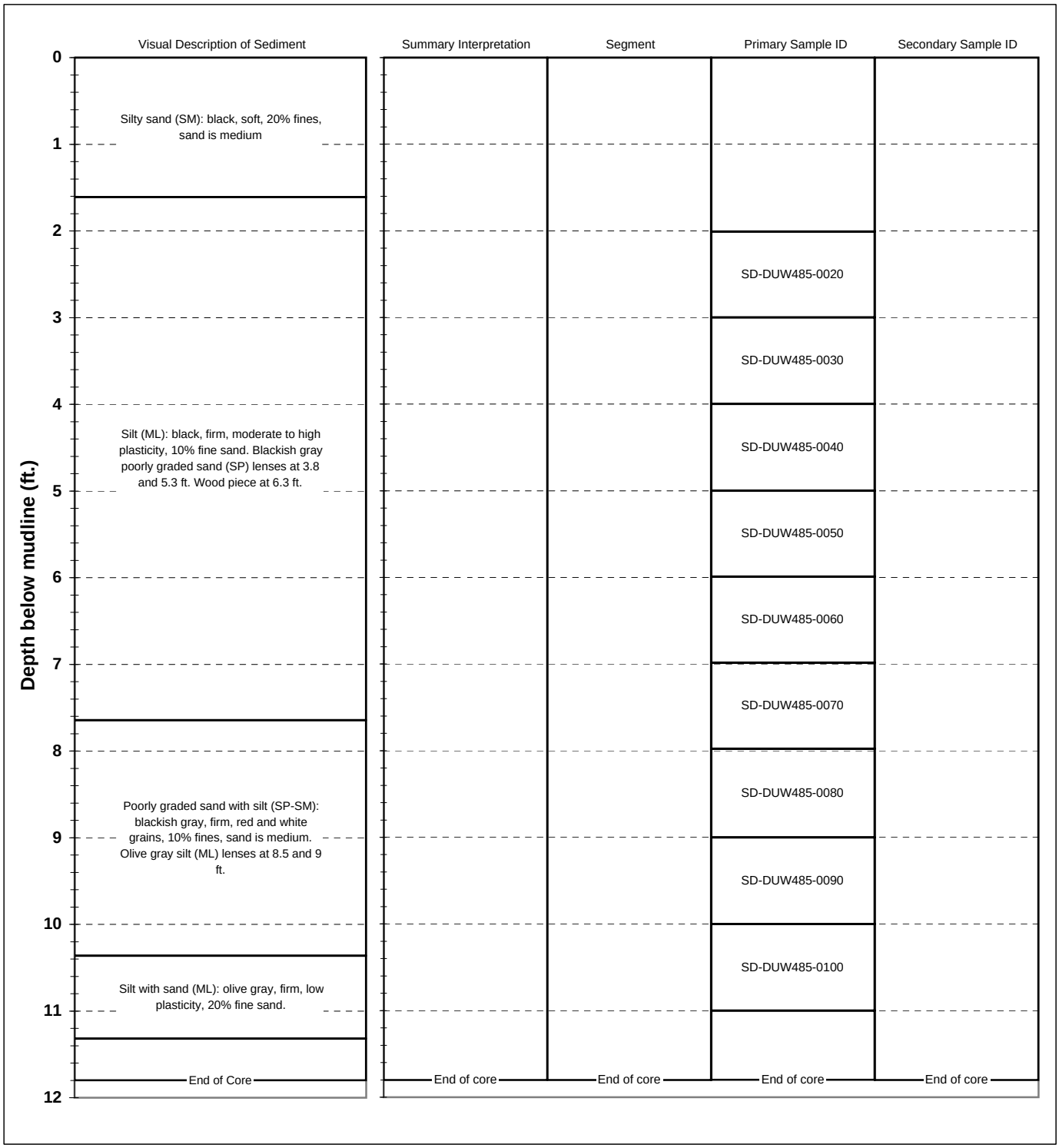
Station: **SD-DUW485**

Maximum depth of retained sediment: 11.8 ft
Percent recovery (on-deck): 66%

Mudline elevation: -6.5 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/5/2009	11/5/2009
Time:	9:32	11:25

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

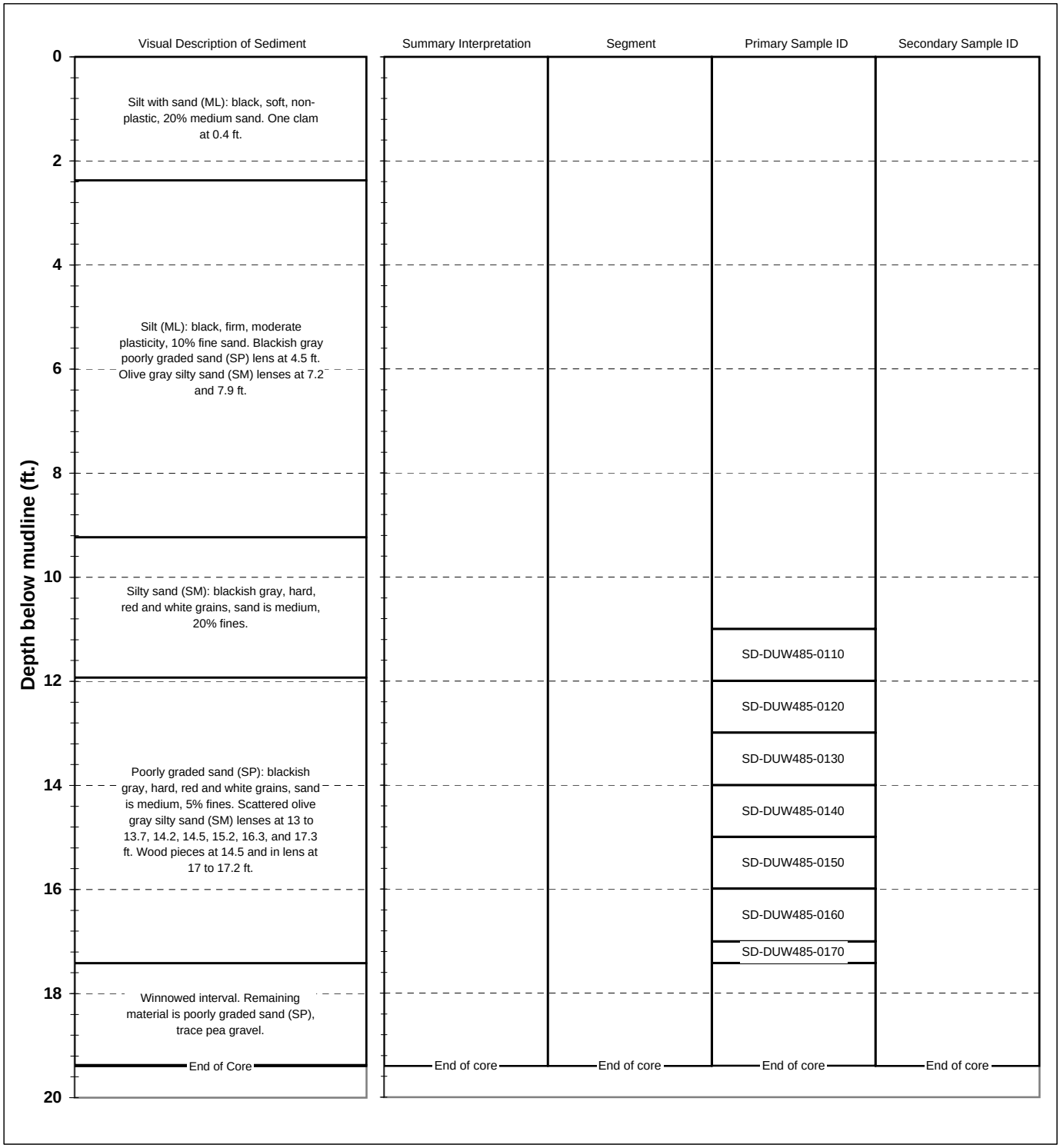
Station: **SD-DUW485R2**

Maximum depth of retained sediment: 19.4 ft
Percent recovery (on-deck): 66%

Mudline elevation: -7.3 **ft MLLW**

	Core collection	Laboratory processing
Date:	11/17/2009	11/17/2009
Time:	13:45	16:00

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

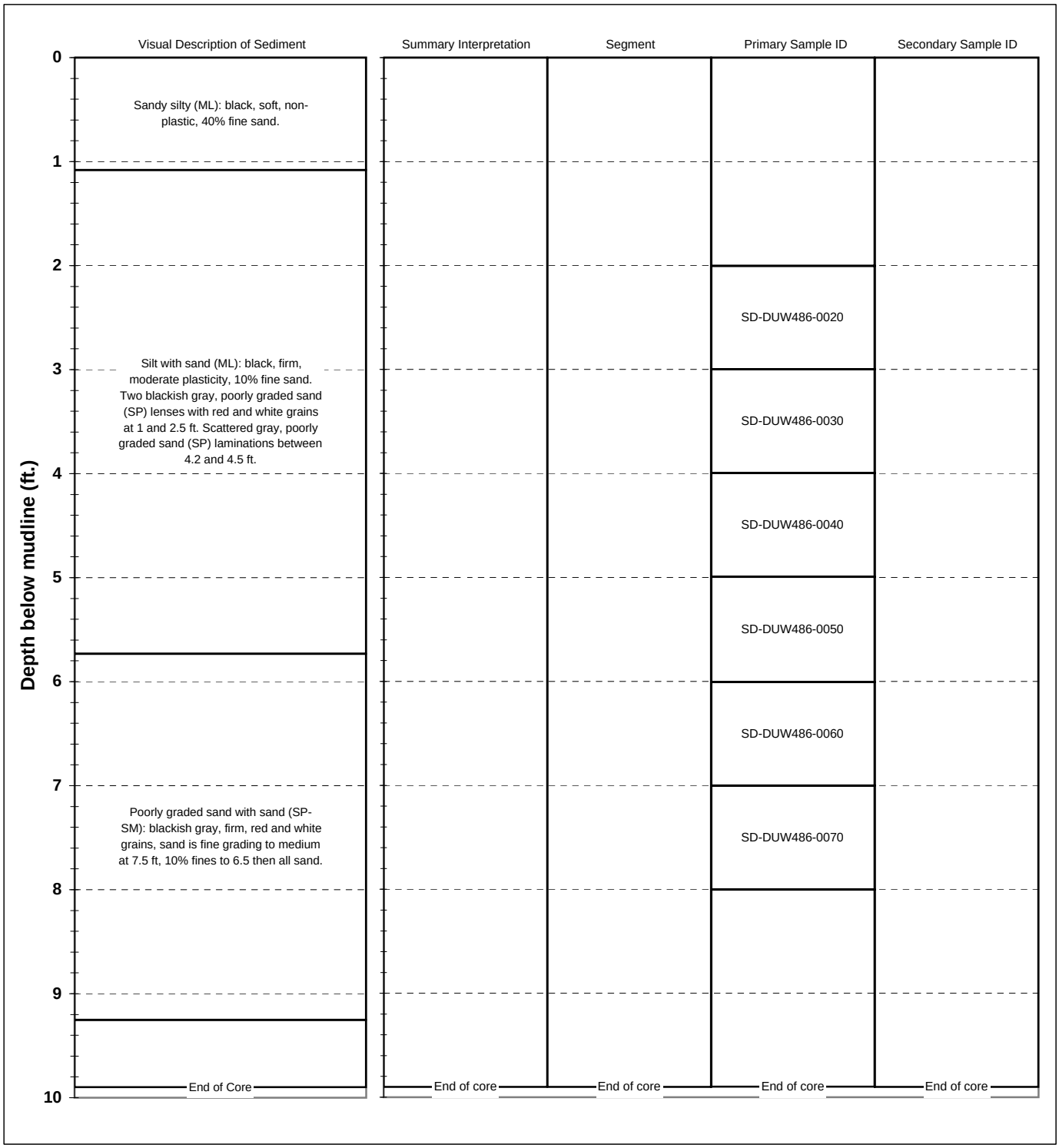
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW486**

Maximum depth of retained sediment: 9.3 ft
Mudline elevation: -11.8 **ft MLLW**
Percent recovery (on-deck): 63%

	Core collection	Laboratory processing
Date:	11/9/2009	11/9/2009
Time:	11:02	12:45

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

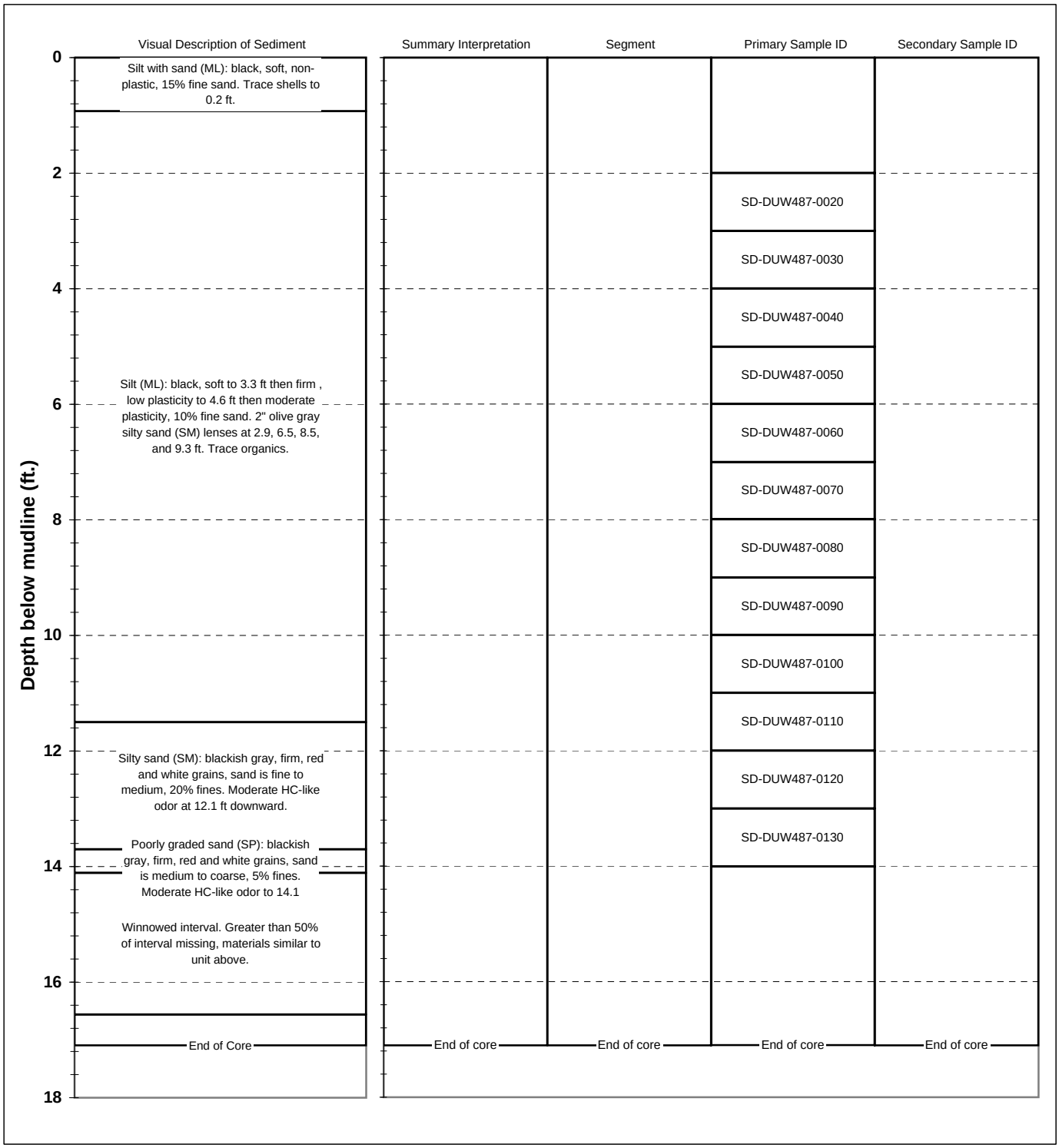
Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW487**

Maximum depth of retained sediment: 17.1 ft
Mudline elevation: -12.0 **ft MLLW**
Percent recovery (on-deck): 64%

	Core collection	Laboratory processing
Date:	11/11/2009	11/11/2009
Time:	14:20	15:20

Field Log: NPB
Summary Log: NPB



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Mudmole™ Core Summary Log

Project: 2009 Additional Characterization
Project No: 13133.003

Station: **SD-DUW488R2**

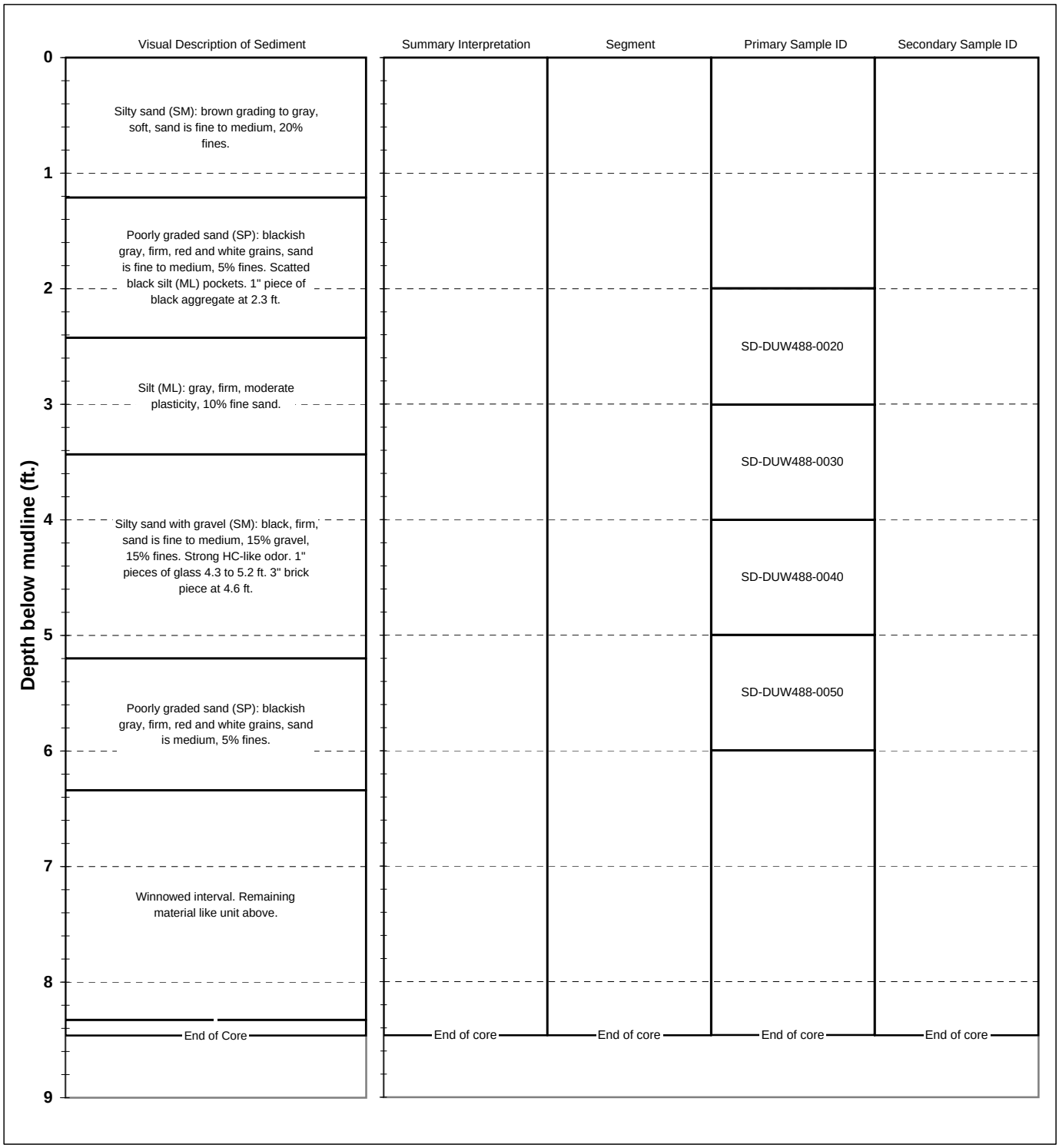
Maximum depth of retained sediment: 8.3 ft

Mudline elevation: -7.6 **ft MLLW**

Percent recovery (on-deck): 46%

	Core collection	Laboratory processing
Date:	11/13/2009	11/13/2009
Time:	9:04	11:00

Field Log: NPB
Summary Log: NPB



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File name: SD-DUW488R2.xls
Summary Core Log

APPENDIX D

Chain-of-Custody Forms

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PV43

CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 001

Recorded by: _____

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
			Analysis Containers						
AMEC Proj.No. 13133.003 **SD-DUW448-0020** COC Form Initials: RHG Date: 11/2/09 Time: 1415			1	2					3 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW448-0030** COC Form Initials: RHG Date: 11/2/09 Time: 1415					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW448-0040** COC Form Initials: RHG Date: 11/2/09 Time: 1415			1	2					3 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW448-0050** COC Form Initials: RHG Date: 11/2/09 Time: 1415					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW448-0060** COC Form Initials: RHG Date: 11/2/09 Time: 1415			1	2					3 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW448-0070** COC Form Initials: RHG Date: 11/2/09 Time: 1415					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW448-0080** COC Form Initials: RHG Date: 11/2/09 Time: 1415			1	2					3 Number of containers

Laboratory Sample Receipt	Relinquished By	Transported By	Received By
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes:	Name: [signature] Date: 11/2/09 Time: 1720		Name: J. Peterson Date: 11/2/09 Time: 1720
	Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 002

Recorded by: RHG

Checked by: _____

Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
		Analysis Containers						
AMEC Proj.No. 13133.003 SD-DUW448-0090 COC Form Initials: RHG Date: 11/2/09 Time: 1415				1				1 Number of containers
AMEC Proj.No. 13133.003 SD-DUW449-0020 COC Form Initials: RHG Date: 11/2/09 Time: 1515		1	2					3 Number of containers
AMEC Proj.No. 13133.003 SD-DUW449-0030 COC Form Initials: RHG Date: 11/2/09 Time: 1515				1				1 Number of containers
AMEC Proj.No. 13133.003 SD-DUW449-0040 COC Form Initials: RHG Date: 11/2/09 Time: 1515		1	2					3 Number of containers
AMEC Proj.No. 13133.003 SD-DUW449-0050 COC Form Initials: RHG Date: 11/2/09 Time: 1515				1				1 Number of containers
AMEC Proj.No. 13133.003 SD-DUW449-0060 COC Form Initials: RHG Date: 11/2/09 Time: 1515		1	2					3 Number of containers
Place Sample ID Label Here								Number of containers

Laboratory Sample Receipt	Relinquished By	Transported By	Received By
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes:	Name: [illegible] Date: 11/2/09 Time: 1720		Name: J. Peterson Date: 11/2/09 Time: 1720
	Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 003

Recorded by: RHG
Checked by: _____

	Sample Matrix		Analysis Containers: PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW449-0070** COC Form Initials: RHG Date: 11/2/09 Time: 1515					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW449-0080** COC Form Initials: RHG Date: 11/2/09 Time: 1515			1	2					3 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW449-0090** COC Form Initials: RHG Date: 11/2/09 Time: 1515					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW450-0020** COC Form Initials: RHG Date: 11/2/09 Time: 1425			1	2					3 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW450-0030** COC Form Initials: RHG Date: 11/2/09 Time: 1425					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW450-0040** COC Form Initials: RHG Date: 11/2/09 Time: 1425			1	2					3 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW450-0050** COC Form Initials: RHG Date: 11/2/09 Time: 1425					1				1 Number of containers

Laboratory Sample Receipt	Relinquished By	Transported By	Received By
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes:	Name: [signature] Date: 11/02/09 Time: 1720		Name: J. Peterson Date: 11/2/09 Time: 1720
	Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 004

Recorded by: RHG

Checked by: _____

Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 SD-DUW450-0060 COC Form Initials: RHG Date: 11/2/09 Time: 1425		1	2					3 Number of containers
Place Sample ID Label Here								Number of containers
Place Sample ID Label Here								Number of containers
Place Sample ID Label Here								Number of containers
Place Sample ID Label Here								Number of containers
Place Sample ID Label Here								Number of containers
Place Sample ID Label Here								Number of containers

Laboratory Sample Receipt

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Relinquished by	Transported by	Received by
Name: [illegible] Date: 11/2/09 Time: 1720		Name: J. Peterson Date: 11/2/09 Time: 1720
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 005

Recorded by: RHG

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
			Analysis Containers						
AMEC Proj.No. 13133.003 **SD-DUW451-0020** COC Form Initials: RHG Date: 11/3/09 Time: 0945			1	3					4 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW451-0030** COC Form Initials: RHG Date: 11/3/09 Time: 0945					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW451-0040** COC Form Initials: RHG Date: 11/3/09 Time: 0945			1	3					4 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW451-0050** COC Form Initials: RHG Date: 11/3/09 Time: 0945					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW451-0060** COC Form Initials: RHG Date: 11/3/09 Time: 0945			1	3					4 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW451-0070** COC Form Initials: RHG Date: 11/3/09 Time: 0945					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW451-0080** COC Form Initials: RHG Date: 11/3/09 Time: 0945			1	3					4 Number of containers

Laboratory Sample Receipt	Relinquished By	Transported By	Received By
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes: Extra VOC volume for MS/MSD For Samples SD-DUW 451-0020/0040/0060/0080	Name: RLubahn Date: 11/3/09 Time: 1436		Name: [illegible] Date: 11/3/09 Time: 1438
	Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 006

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW451-0090** COC Form Initials: RHG Date: 11/3/09 Time: 0945					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW451-0100** COC Form Initials: RHG Date: 11/3/09 Time: 0945			1	2					3 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW451-0110** COC Form Initials: RHG Date: 11/3/09 Time: 0945					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW451-0120** COC Form Initials: RHG Date: 11/3/09 Time: 0945			1	2					3 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW451-0130** COC Form Initials: RHG Date: 11/3/09 Time: 0945					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW451-0140** COC Form Initials: RHG Date: 11/3/09 Time: 0945			1	2					3 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW451-0150** COC Form Initials: RHG Date: 11/3/09 Time: 0945					1				1 Number of containers

Laboratory Sample Receipt	Transported By	Received By
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes:	Name: [illegible] Date: Time: 11/3/09 1438	Name: [illegible] Date: 11/3/09 Time: 1438
	Name: Date: Time:	Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 007

Recorded by: RHG

Checked by: _____

	Sample Matrix		Analysis Containers: PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW424-0020** COC Form Initials: RHG Date: 11/3/09 Time: 1215			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW424-0030** COC Form Initials: RHG Date: 11/3/09 Time: 1215					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW424-0040** COC Form Initials: RHG Date: 11/3/09 Time: 1215			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW424-0050** COC Form Initials: RHG Date: 11/3/09 Time: 1215					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW424-0060** COC Form Initials: RHG Date: 11/3/09 Time: 1215			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW424-0070** COC Form Initials: RHG Date: 11/3/09 Time: 1215					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW424-0080** COC Form Initials: RHG Date: 11/3/09 Time: 1215			1						1 Number of containers

Laboratory/Sample Receipt	Relinquished By	Transported By	Received By
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes:	Name: [signature] Date: 11/3/09 Time: 1438		Name: [signature] Date: 11/3/09 Time: 1438
	Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 008

Recorded by: RHG

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	Number of containers
AMEC Proj.No. 13133.003 **SD-DUW424-0090** COC Form Initials: RHG Date: 11/3/09 Time: 1215					1				1
AMEC Proj.No. 13133.003 **SD-DUW424-0100** COC Form Initials: RHG Date: 11/3/09 Time: 1215			1						1
AMEC Proj.No. 13133.003 **SD-DUW424-0110** COC Form Initials: RHG Date: 11/3/09 Time: 1215					1				1
AMEC Proj.No. 13133.003 **SD-DUW424-0120** COC Form Initials: RHG Date: 11/3/09 Time: 1215					1				1
AMEC Proj.No. 13133.003 **SD-DUW424-0130** COC Form Initials: RHG Date: 11/3/09 Time: 1215					1				1
AMEC Proj.No. 13133.003 **SD-DUW424-0140** COC Form Initials: RHG Date: 11/3/09 Time: 1215					1				1
AMEC Proj.No. 13133.003 **SD-DUW424-0150** COC Form Initials: RHG Date: 11/3/09 Time: 1215					1				1

Laboratory Sample Receipt	Relinquished By	Transported By	Received By
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes:	Name: [signature] Date: 11/3/09 Time: 1438		Name: [signature] Date: 11/3/09 Time: 1438
	Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 009

Recorded by: RHG

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
			Analysis Containers						
AMEC Proj.No. 13133.003 **SD-DUW423-0020** COC Form Initials: RHG Date: 11/3/09 Time: 1315			1						Number of containers
AMEC Proj.No. 13133.003 **SD-DUW423-0030** COC Form Initials: RHG Date: 11/3/09 Time: 1315					1				Number of containers
AMEC Proj.No. 13133.003 **SD-DUW423-0040** COC Form Initials: RHG Date: 11/3/09 Time: 1315			1						Number of containers
AMEC Proj.No. 13133.003 **SD-DUW423-0050** COC Form Initials: RHG Date: 11/3/09 Time: 1315					1				Number of containers
AMEC Proj.No. 13133.003 **SD-DUW423-0060** COC Form Initials: RHG Date: 11/3/09 Time: 1315			1						Number of containers
AMEC Proj.No. 13133.003 **SD-DUW423-0070** COC Form Initials: RHG Date: 11/3/09 Time: 1315					1				Number of containers
AMEC Proj.No. 13133.003 **SD-DUW423-0080** COC Form Initials: RHG Date: 11/3/09 Time: 1315			1						Number of containers

Laboratory Sample Receipt	Relinquished By	Transported By	Received By
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes:	Name: [illegible] Date: Time: 11/3/09 1438		Name: [illegible] Date: 11/3/09 Time: 1430
	Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

Recorded by: RHG

Checked by: _____

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 010

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW423-0090** COC Form Initials: RHG Date: 11/3/09 Time: 1315					1				Number of containers
AMEC Proj.No. 13133.003 **SD-DUW423-0100** COC Form Initials: RHG Date: 11/3/09 Time: 1315			1						Number of containers
AMEC Proj.No. 13133.003 **SD-DUW423-0110** COC Form Initials: RHG Date: 11/3/09 Time: 1315					1				Number of containers
AMEC Proj.No. 13133.003 **SD-DUW423-0120** COC Form Initials: RHG Date: 11/3/09 Time: 1315					1				Number of containers
AMEC Proj.No. 13133.003 **SD-DUW423-0130** COC Form Initials: RHG Date: 11/3/09 Time: 1315					1				Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

Laboratory Sample Receipt

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Relinquished By	Transported By	Received By
Name: [signature] Date: 11/3/09 Time: 1438		Name: [signature] Date: 11/3/09 Time: 1430
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 011

Recorded by: RHG

Checked by: _____

Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	Number of containers
AMEC Proj.No. 13133.003 **SD-DUW425-0020** COC Form Initials: RHG Date: 11/5/09 Time: 1045		1						1
AMEC Proj.No. 13133.003 **SD-DUW425-0030** COC Form Initials: RHG Date: 11/5/09 Time: 1045				1				1
AMEC Proj.No. 13133.003 **SD-DUW425-0040** COC Form Initials: RHG Date: 11/5/09 Time: 1045		1						1
AMEC Proj.No. 13133.003 **SD-DUW425-0050** COC Form Initials: RHG Date: 11/5/09 Time: 1045				1				1
AMEC Proj.No. 13133.003 **SD-DUW425-0060** COC Form Initials: RHG Date: 11/5/09 Time: 1045		1						1
AMEC Proj.No. 13133.003 **SD-DUW425-0070** COC Form Initials: RHG Date: 11/5/09 Time: 1045				1				1
AMEC Proj.No. 13133.003 **SD-DUW425-0080** COC Form Initials: RHG Date: 11/5/09 Time: 1045		1						1

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [signature] Date: 11/5/09 Time: 1635		Name: [signature] Date: 11/5/09 Time: 1635
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 012

Recorded by: RHG
Checked by: _____

Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	Number of containers
AMEC Proj.No. 13133.003 **SD-DUW425-0090** COC Form Initials: RHG Date: 11/5/09 Time: 1045				1				1
AMEC Proj.No. 13133.003 **SD-DUW425-0100** COC Form Initials: RHG Date: 11/5/09 Time: 1045		1						1
AMEC Proj.No. 13133.003 **SD-DUW485-0020** COC Form Initials: RHG Date: 11/5/09 Time: 1125		1						1
AMEC Proj.No. 13133.003 **SD-DUW485-0030** COC Form Initials: RHG Date: 11/5/09 Time: 1125				1				1
AMEC Proj.No. 13133.003 **SD-DUW485-0040** COC Form Initials: RHG Date: 11/5/09 Time: 1125		1						1
AMEC Proj.No. 13133.003 **SD-DUW485-0050** COC Form Initials: RHG Date: 11/5/09 Time: 1125				1				1
AMEC Proj.No. 13133.003 **SD-DUW485-0060** COC Form Initials: RHG Date: 11/5/09 Time: 1125		1						1

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [signature] Date: 11/5/09 Time: 1635		Name: [signature] Date: 11/5/09 Time: 1635
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 013

Recorded by: RHG

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW485-0070** COC Form Initials: RHG Date: 11/5/09 Time: 1125					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW485-0080** COC Form Initials: RHG Date: 11/5/09 Time: 1125			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW485-0090** COC Form Initials: RHG Date: 11/5/09 Time: 1125					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW485-0100** COC Form Initials: RHG Date: 11/5/09 Time: 1125			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW442-0020** COC Form Initials: RHG Date: 11/5/09 Time: 1250			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW442-0030** COC Form Initials: RHG Date: 11/5/09 Time: 1250					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW442-0040** COC Form Initials: RHG Date: 11/5/09 Time: 1250			1						1 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [signature] Date: Time: 11/5/09 635		Name: Date: 11/5/09 Time: 635
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 014

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW442-0050** COC Form Initials: RHG Date: 11/5/09 Time: 1250					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW442-0060** COC Form Initials: RHG Date: 11/5/09 Time: 1250			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW442-0070** COC Form Initials: RHG Date: 11/5/09 Time: 1250					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW442-0080** COC Form Initials: RHG Date: 11/5/09 Time: 1250			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW442-0090** COC Form Initials: ~~11/5/09~~ RHG Date: 11/5/09 Time: 1250					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW442-0100** COC Form Initials: RHG Date: 11/5/09 Time: 1250					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW426-0020** COC Form Initials: RHG Date: 11/5/09 Time: 1445			1						1 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: Kelley Bottem Date: Time: 11/5/09 1635		Name: Date: 11/5/09 Time: 1635
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 015

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW426-0030** COC Form Initials: RHG Date: 11/5/09 Time: 1445					X				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW426-0040** COC Form Initials: RHG Date: 11/5/09 Time: 1445			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW426-0050** COC Form Initials: RHG Date: 11/5/09 Time: 1445					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW426-0060** COC Form Initials: RHG Date: 11/5/09 Time: 1445			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW426-0070** COC Form Initials: RHG Date: 11/5/09 Time: 1445					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW426-0080** COC Form Initials: RHG Date: 11/5/09 Time: 1445			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW426-0090** COC Form Initials: RHG Date: 11/5/09 Time: 1445					1				1 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [signature] Date: Time: 11/5/09 1635		Name: [signature] Date: 11/5/09 Time: 1633
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 016

Recorded by: RHG

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW426-0100** COC Form Initials: RHG Date: 11/5/09 Time: 1445			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW426-0110** COC Form Initials: RHG Date: 11/5/09 Time: 1445					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW426-0120** COC Form Initials: RHG Date: 11/5/09 Time: 1445					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW427-0020** COC Form Initials: RHG Date: 11/5/09 Time: 1530			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW427-0030** COC Form Initials: RHG Date: 11/5/09 Time: 1530					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW427-0040** COC Form Initials: RHG Date: 11/5/09 Time: 1530			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW427-0050** COC Form Initials: RHG Date: 11/5/09 Time: 1530					1				1 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: Kelley Bottem Date: 11/5/09 Time: 1635		Name: RHG Date: 11/9/09 Time: 1633
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 017

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW427-0060** COC Form Initials: RHG Date: 11/5/09 Time: 1530			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW427-0070** COC Form Initials: RHG Date: 11/5/09 Time: 1530					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW427-0080** COC Form Initials: RHG Date: 11/5/09 Time: 1530			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW427-0090** COC Form Initials: RHG Date: 11/5/09 Time: 1530					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW427-0100** COC Form Initials: RHG Date: 11/5/09 Time: 1530			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW427-0110** COC Form Initials: RHG Date: 11/5/09 Time: 1530					1				1 Number of containers
Place Sample ID Label Here									Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: Kelley Bottem Date: 11/5/09 Time: 1635		Name: Date: 11/5/09 Time: 1635
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 018

Recorded by: RHG

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW443-0020** COC Form Initials: RHG Date: 11/9/09 Time: 1000			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW443-0030** COC Form Initials: RHG Date: 11/9/09 Time: 1000					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW443-0040** COC Form Initials: RHG Date: 11/9/09 Time: 1000			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW443-0050** COC Form Initials: RHG Date: 11/9/09 Time: 1000					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW443-0060** COC Form Initials: RHG Date: 11/9/09 Time: 1000			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW443-0070** COC Form Initials: RHG Date: 11/9/09 Time: 1000					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW443-0080** COC Form Initials: RHG Date: 11/9/09 Time: 1000			1						1 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [illegible] Date: 11/9/09 Time: 1700		Name: J Peterson Date: 11/9/09 Time: 1700
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 019

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	Number of containers
AMEC Proj.No. 13133.003 **SD-DUW443-0090** COC Form Initials: RHG Date: 11/9/09 Time: 1000					1				1
AMEC Proj.No. 13133.003 **SD-DUW443-0100** COC Form Initials: RHG Date: 11/9/09 Time: 1000					1				1
AMEC Proj.No. 13133.003 **SD-DUW443-0110** COC Form Initials: RHG Date: 11/9/09 Time: 1000					1				1
AMEC Proj.No. 13133.003 **SD-DUW431-0020** COC Form Initials: RHG Date: 11/9/09 Time: 1210			RG ~~1~~		1				1
AMEC Proj.No. 13133.003 **SD-DUW431-0030** COC Form Initials: RHG Date: 11/9/09 Time: 1210			RG ~~1~~		1				1
AMEC Proj.No. 13133.003 **SD-DUW431-0040** COC Form Initials: RHG Date: 11/9/09 Time: 1210			1						1
AMEC Proj.No. 13133.003 **SD-DUW431-0050** COC Form Initials: RHG Date: 11/9/09 Time: 1210					1				1

Laboratory Sample Receipt	Relinquished By	Transported By	Received By
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes:	Name: [signature] Date: 11/9/09 Time: 1700		Name: J. Peterson Date: 11/9/09 Time: 1700
	Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 020

Recorded by: RHG
Checked by: _____

Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	Number of containers
AMEC Proj.No. 13133.003 **SD-DUW431-0060** COC Form Initials: RHG Date: 11/9/09 Time: 1210		1						1
AMEC Proj.No. 13133.003 **SD-DUW486-0020** COC Form Initials: RHG Date: 11/9/09 Time: 1235				1				1
AMEC Proj.No. 13133.003 **SD-DUW486-0030** COC Form Initials: RHG Date: 11/9/09 Time: 1235				1				1
AMEC Proj.No. 13133.003 **SD-DUW486-0040** COC Form Initials: RHG Date: 11/9/09 Time: 1235		1						1
AMEC Proj.No. 13133.003 **SD-DUW486-0050** COC Form Initials: RHG Date: 11/9/09 Time: 1235				1				1
AMEC Proj.No. 13133.003 **SD-DUW486-0060** COC Form Initials: RHG Date: 11/9/09 Time: 1235		1						1
AMEC Proj.No. 13133.003 **SD-DUW486-0070** COC Form Initials: RHG Date: 11/9/09 Time: 1235				1				1

Laboratory/Sample Receipt	Relinquished By	Transferred By	Received By
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes:	Name: [illegible] Date: Time: 11/9/09 1700		Name: J. Peterson Date: 11/9/09 Time: 1700
	Name: Date: Time:		Name: Date: Time:

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Lynnwood, WA 98037
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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 021

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW432-0080** COC Form Initials: RHG Date: 11/9/09 Time: 1450					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW432-0090** COC Form Initials: RHG Date: 11/9/09 Time: 1450			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW432-0100** COC Form Initials: RHG Date: 11/9/09 Time: 1450			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW432-0110** COC Form Initials: RHG Date: 11/9/09 Time: 1450			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW432-0120** COC Form Initials: RHG Date: 11/9/09 Time: 1450					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW432-0130** COC Form Initials: RHG Date: 11/9/09 Time: 1450					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW432-0140** COC Form Initials: RHG Date: 11/9/09 Time: 1450 ~~RHG~~					1				1 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: Kelley Bottem Date: 11/9/09 Time: 1700		Name: J. Peterson Date: 11/9/09 Time: 1700
Name: Date: Time:		Name: Date: Time:

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AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 022

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW432-0150** COC Form Initials: RHG Date: 11/9/09 Time: 1450					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW433-0080** COC Form Initials: RHG Date: 11/9/09 Time: 1535					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW433-0090** COC Form Initials: RHG Date: 11/9/09 Time: 1535			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW433-0100** COC Form Initials: RHG Date: 11/9/09 Time: 1535			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW433-0110** COC Form Initials: RHG Date: 11/9/09 Time: 1535			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW433-0120** COC Form Initials: RHG Date: 11/9/09 Time: 1535					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW433-0130** COC Form Initials: RHG Date: 11/9/09 Time: 1535					1				1 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [signature] Date: 11/9/09 Time: 1700		Name: J. Peterson Date: 11/9/09 Time: 1700
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 023

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW433-0140** COC Form Initials: RHG Date: 11/9/09 Time: 1535					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW433-0150** COC Form Initials: RHG Date: 11/9/09 Time: 1535					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW433-0160** COC Form Initials: RHG Date: 11/9/09 Time: 1535					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW433-0170** COC Form Initials: RHG Date: 11/9/09 Time: 1535					1				1 Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

Laboratory Sample Receipt	Relinquished By	Transported By	Received By
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes:	Name: [signature] Date: 11/9/09 Time: 1700		Name: J. Peterson Date: 11/9/09 Time: 1700
	Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 024

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	Number of containers
AMEC Proj.No. 13133.003 **SD-DUW429-0120** COC Form Initials: RHG Date: 11/10/09 Time: 1100					1				1
AMEC Proj.No. 13133.003 **SD-DUW429-0130** COC Form Initials: RHG Date: 11/10/09 Time: 1100			1						1
AMEC Proj.No. 13133.003 **SD-DUW429-0140** COC Form Initials: RHG Date: 11/10/09 Time: 1100			1						1
AMEC Proj.No. 13133.003 **SD-DUW444-0020** COC Form Initials: RHG Date: 11/10/09 Time: 1150			1						1
AMEC Proj.No. 13133.003 **SD-DUW444-0030** COC Form Initials: RHG Date: 11/10/09 Time: 1150					1				1
AMEC Proj.No. 13133.003 **SD-DUW444-0040** COC Form Initials: RHG Date: 11/10/09 Time: 1150			1						1
AMEC Proj.No. 13133.003 **SD-DUW444-0050** COC Form Initials: RHG Date: 11/10/09 Time: 1150					1				1

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [signature] Date: 11/10/09 Time: 1738		Name: [signature] Date: 11/10/09 Time: 1738
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 025

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	Number of containers
AMEC Proj.No. 13133.003 **SD-DUW444-0060** COC Form Initials: RHG Date: 11/10/09 Time: 1150			1						1
AMEC Proj.No. 13133.003 **SD-DUW444-0070** COC Form Initials: RHG Date: 11/10/09 Time: 1150					1				1
AMEC Proj.No. 13133.003 **SD-DUW444-0080** COC Form Initials: RHG Date: 11/10/09 Time: 1150			1						1
AMEC Proj.No. 13133.003 **SD-DUW444-0090** COC Form Initials: RHG Date: 11/10/09 Time: 1150					1				1
AMEC Proj.No. 13133.003 **SD-DUW444-0100** COC Form Initials: RHG Date: 11/10/09 Time: 1150					1				1
AMEC Proj.No. 13133.003 **SD-DUW444-0110** COC Form Initials: RHG Date: 11/10/09 Time: 1150					1				1
AMEC Proj.No. 13133.003 **SD-DUW444-0120** COC Form Initials: RHG Date: 11/10/09 Time: 1150					1				1

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: Kelley Bottem Date: 11/10/09 Time: 1738		Name: J. Petersen Date: 11/10/09 Time: 1738
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 026

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	Number of containers
AMEC Proj.No. 13133.003 **SD-DUW444-0130** COC Form Initials: RHG Date: 11/10/09 Time: 1150					1				1
AMEC Proj.No. 13133.003 **SD-DUW444-0140** COC Form Initials: RHG Date: 11/10/09 Time: 1150					1				1
AMEC Proj.No. 13133.003 **SD-DUW430-0020** COC Form Initials: RHG Date: 11/10/09 Time: 1250					1				1
AMEC Proj.No. 13133.003 **SD-DUW430-0030** COC Form Initials: RHG Date: 11/10/09 Time: 1250					1				1
AMEC Proj.No. 13133.003 **SD-DUW430-0040** COC Form Initials: RHG Date: 11/10/09 Time: 1250			1						1
AMEC Proj.No. 13133.003 **SD-DUW430-0050** COC Form Initials: RHG Date: 11/10/09 Time: 1250					1				1
AMEC Proj.No. 13133.003 **SD-DUW430-0060** COC Form Initials: RHG Date: 11/10/09 Time: 1250			1						1

Laboratory/Sample Receipt	Transported By	Received By
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes:	Name: [signature] Date: 11/10/09 Time: 1738 Name: Date: Time:	Name: [signature] Date: 11/10/09 Time: 1738 Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 027

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW445-0020** COC Form Initials: CJW Date: 11/10/09 Time: 1350			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW445-0030** COC Form Initials: CJW Date: 11/10/09 Time: 1350					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW445-0040** COC Form Initials: CJW Date: 11/10/09 Time: 1350			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW445-0050** COC Form Initials: CJW Date: 11/10/09 Time: 1350					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW445-0060** COC Form Initials: CJW Date: 11/10/09 Time: 1350			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW445-0070** COC Form Initials: CJW Date: 11/10/09 Time: 1350					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW445-0080** COC Form Initials: CJW Date: 11/10/09 Time: 1350			1						1 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [signature] Date: 11/10/09 Time: 1738		Name: [signature] Date: 11/10/09 Time: 1738
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 028

Recorded by: RHG

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	Number of containers
AMEC Proj.No. 13133.003 **SD-DUW445-0090** COC Form Initials: CJW Date: 11/10/09 Time: 1350					1				1
AMEC Proj.No. 13133.003 **SD-DUW445-0100** COC Form Initials: CJW Date: 11/10/09 Time: 1350					1				1
AMEC Proj.No. 13133.003 **SD-DUW445-0110** COC Form Initials: CJW Date: 11/10/09 Time: 1350					1				1
AMEC Proj.No. 13133.003 **SD-DUW445-0120** COC Form Initials: CJW Date: 11/10/09 Time: 1350					1				1
AMEC Proj.No. 13133.003 **SD-DUW445-0130** COC Form Initials: CJW Date: 11/10/09 Time: 1350					1				1
AMEC Proj.No. 13133.003 **SD-DUW445-0140** COC Form Initials: CJW Date: 11/10/09 Time: 1350					1				1
AMEC Proj.No. 13133.003 **SD-DUW435-0140** COC Form Initials: CJW Date: 11/10/09 Time: 1535					1				1

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [illegible] Date: Time: 11/10/09 1738		Name: J. Peterson Date: 11/10/09 Time: 1738
Name: Date: Time:		Name: Date: Time:

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AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 029

Recorded by: RHG

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW435-0150** COC Form Initials: CJW Date: 11/10/09 Time: 1535			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW435-0160** COC Form Initials: CJW Date: 11/10/09 Time: 1535			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW435-0170** COC Form Initials: CJW Date: 11/10/09 Time: 1535			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW435-0180** COC Form Initials: CJW Date: 11/10/09 Time: 1535					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW435-0190** COC Form Initials: CJW Date: 11/10/09 Time: 1535					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW434-0020** COC Form Initials: RHG Date: 11/10/09 Time: 1625					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW434-0030** COC Form Initials: RHG Date: 11/10/09 Time: 1625					1				1 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [signature] Date: 11/10/09 Time: 1738		Name: [signature] Date: 11/10/09 Time: 1738
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 030

Recorded by: RHG

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW434-0040** COC Form Initials: RHG Date: 11/10/09 Time: 1625					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW434-0050** COC Form Initials: RHG Date: 11/10/09 Time: 1625					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW434-0060** COC Form Initials: RHG Date: 11/10/09 Time: 1625			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW434-0070** COC Form Initials: RHG Date: 11/10/09 Time: 1625					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW434-0080** COC Form Initials: RHG Date: 11/10/09 Time: 1625			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW434-0090** COC Form Initials: RHG Date: 11/10/09 Time: 1625					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW434-0100** COC Form Initials: RHG Date: 11/10/09 Time: 1625			1						1 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [illegible] Date: 11/10/09 Time: 1738		Name: [illegible] Date: 11/10/09 Time: 1738
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

Recorded by: RHG

Checked by: _____

AMEC Proj.No. 13133.003 Boeing Plant 2 2009 Additional Characterization COC Form 031	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW434-0110** COC Form Initials: RHG Date: 11/10/09 Time: 1625					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW434-0120** COC Form Initials: RHG Date: 11/10/09 Time: 1625					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW434-0130** COC Form Initials: RHG Date: 11/10/09 Time: 1625					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW434-0140** COC Form Initials: RHG Date: 11/10/09 Time: 1625					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW434-0150** COC Form Initials: RHG Date: 11/10/09 Time: 1625					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW434-0160** COC Form Initials: RHG Date: 11/10/09 Time: 1625					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW434-0170** COC Form Initials: RHG Date: 11/10/09 Time: 1625					1				1 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: Kelly Bottem Date: 11/10/09 Time: 1738		Name: [illegible] Date: 11/10/09 Time: 1738
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 032

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW434-0180** COC Form Initials: RHG Date: 11/10/09 Time: _____					1				1 Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [illegible] Date: Time: 11/10/09 1738		Name: [illegible] Date: 11/10/09 Time: 1738
Name: Date: Time:		Name: Date: Time:

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PX2C

CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 033

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW437-0020** COC Form Initials: RHG Date: 11/11/09 Time: 1115					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW437-0030** COC Form Initials: RHG Date: 11/11/09 Time: 1115					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW437-0040** COC Form Initials: RHG Date: 11/11/09 Time: 1115					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW437-0050** COC Form Initials: RHG Date: 11/11/09 Time: 1115					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW437-0060** COC Form Initials: RHG Date: 11/11/09 Time: 1115			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW437-0070** COC Form Initials: RHG Date: 11/11/09 Time: 1115					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW437-0080** COC Form Initials: RHG Date: 11/11/09 Time: 1115			1						1 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [signature] Date: 11/11/09 Time: 1710		Name: [signature] Date: 11/11/09 Time: 1710
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 034

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	Number of containers
AMEC Proj.No. 13133.003 **SD-DUW437-0090** COC Form Initials: RHG Date: 11/11/09 Time: 1115					1				1
AMEC Proj.No. 13133.003 **SD-DUW437-0100** COC Form Initials: RHG Date: 11/11/09 Time: 1115			1						1
AMEC Proj.No. 13133.003 **SD-DUW437-0110** COC Form Initials: RHG Date: 11/11/09 Time: 1115					1				1
AMEC Proj.No. 13133.003 **SD-DUW437-0120** COC Form Initials: RHG Date: 11/11/09 Time: 1115					1				1
AMEC Proj.No. 13133.003 **SD-DUW437-0130** COC Form Initials: RHG Date: 11/11/09 Time: 1115					1				1
AMEC Proj.No. 13133.003 **SD-DUW437-0140** COC Form Initials: RHG Date: 11/11/09 Time: 1115					1				1
AMEC Proj.No. 13133.003 **SD-DUW437-0150** COC Form Initials: RHG Date: 11/11/09 Time: 1115					1				1

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [illegible] Date: 11/11/09 Time: 1710		Name: [illegible] Date: 11/11/09 Time: 1710
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 035

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW437-0160** COC Form Initials: RHG Date: 11/11/09 Time: 1115					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW437-0170** COC Form Initials: RHG Date: 11/11/09 Time: 1115					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW436-0020** COC Form Initials: RHG Date: 11/11/09 Time: 1215					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW436-0030** COC Form Initials: RHG Date: 11/11/09 Time: 1215					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW436-0040** COC Form Initials: RHG Date: 11/11/09 Time: 1215			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW436-0050** COC Form Initials: RHG Date: 11/11/09 Time: 1215					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW436-0060** COC Form Initials: RHG Date: 11/11/09 Time: 1215			1						1 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [illegible] Date: 11/11/09 Time: 1710		Name: [illegible] Date: 11/11/09 Time: 1710
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 036

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	Number of containers
AMEC Proj.No. 13133.003 **SD-DUW436-0070** COC Form Initials: RHG Date: 11/11/09 Time: 1215					1				1
AMEC Proj.No. 13133.003 **SD-DUW436-0080** COC Form Initials: RHG Date: 11/11/09 Time: 1215			1						1
AMEC Proj.No. 13133.003 **SD-DUW436-0090** COC Form Initials: RHG Date: 11/11/09 Time: 1215					1				1
AMEC Proj.No. 13133.003 **SD-DUW436-0100** COC Form Initials: RHG Date: 11/11/09 Time: 1215			1						1
AMEC Proj.No. 13133.003 **SD-DUW436-0110** COC Form Initials: RHG Date: 11/11/09 Time: 1215					1				1
AMEC Proj.No. 13133.003 **SD-DUW436-0120** COC Form Initials: RHG Date: 11/11/09 Time: 1215					1				1
AMEC Proj.No. 13133.003 **SD-DUW436-0130** COC Form Initials: RHG Date: 11/11/09 Time: 1215					1				1

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [illegible] Date: Time: 11/11/09 1710		Name: [illegible] Date: Time: 11/11/09 1710
Name: Date: Time:		Name: Date: Time:

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Cliff Whitmus (425) 921-4023

CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 037

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW436-0140** COC Form Initials: RHG Date: 11/11/09 Time: 1215					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW436-0150** COC Form Initials: RHG Date: 11/11/09 Time: 1215					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW438-0020** COC Form Initials: RHG Date: 11/11/09 Time: 1340					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW438-0030** COC Form Initials: RHG Date: 11/11/09 Time: 1340					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW438-0040** COC Form Initials: RHG Date: 11/11/09 Time: 1340			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW438-0050** COC Form Initials: RHG Date: 11/11/09 Time: 1340					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW487-0020** COC Form Initials: RHG Date: 11/11/09 Time: 1520			RHG 1		1				1 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [signature] Date: Time: 11/11/09 1710		Name: [signature] Date: Time: 11/11/09 1710
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 038

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW487-0030** COC Form Initials: RHG Date: 11/11/09 Time: 1520					1				Number of containers
AMEC Proj.No. 13133.003 **SD-DUW487-0040** COC Form Initials: RHG Date: 11/11/09 Time: 1520			1						Number of containers
AMEC Proj.No. 13133.003 **SD-DUW487-0050** COC Form Initials: RHG Date: 11/11/09 Time: 1520					1				Number of containers
AMEC Proj.No. 13133.003 **SD-DUW487-0060** COC Form Initials: RHG Date: 11/11/09 Time: 1520			1						Number of containers
AMEC Proj.No. 13133.003 **SD-DUW487-0070** COC Form Initials: RHG Date: 11/11/09 Time: 1520					1				Number of containers
AMEC Proj.No. 13133.003 **SD-DUW487-0080** COC Form Initials: RHG Date: 11/11/09 Time: 1520			1						Number of containers
AMEC Proj.No. 13133.003 **SD-DUW487-0090** COC Form Initials: RHG Date: 11/11/09 Time: 1520					1				Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [signature] Date: 11/11/09 Time: 1710		Name: [signature] Date: 11/11/09 Time: 1710
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 039

Recorded by: RHG
Checked by: _____

Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	Number of containers
AMEC Proj.No. 13133.003 **SD-DUW487-0100** COC Form Initials: RHG Date: 11/11/09 Time: 1520				1				1
AMEC Proj.No. 13133.003 **SD-DUW487-0110** COC Form Initials: RHG Date: 11/11/09 Time: 1520				1				1
AMEC Proj.No. 13133.003 **SD-DUW487-0120** COC Form Initials: RHG Date: 11/11/09 Time: 1520				1				1
AMEC Proj.No. 13133.003 **SD-DUW487-0130** COC Form Initials: RHG Date: 11/11/09 Time: 1520				1				1
AMEC Proj.No. 13133.003 **SD-DUW439-0020** COC Form Initials: RHG Date: 11/11/09 Time: 1615				1				1
AMEC Proj.No. 13133.003 **SD-DUW439-0030** COC Form Initials: RHG Date: 11/11/09 Time: 1615				1				1
AMEC Proj.No. 13133.003 **SD-DUW439-0040** COC Form Initials: RHG Date: 11/11/09 Time: 1615		1						1

ARI Project Manager: Kelley Bottern
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [signature] Date: Time: 11/11/09 1710		Name: [signature] Date: Time: 11/11/09 1710
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 040

Recorded by: RHG

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW439-0050** COC Form Initials: RHG Date: 11/11/09 Time: 1615					1				Number of containers
AMEC Proj.No. 13133.003 **SD-DUW439-0060** COC Form Initials: RHG Date: 11/11/09 Time: 1615			1						Number of containers
AMEC Proj.No. 13133.003 **SD-DUW439-0070** COC Form Initials: RHG Date: 11/11/09 Time: 1615					1				Number of containers
AMEC Proj.No. 13133.003 **SD-DUW439-0080** COC Form Initials: RHG Date: 11/11/09 Time: 1615			1						Number of containers
AMEC Proj.No. 13133.003 **SD-DUW439-0090** COC Form Initials: RHG Date: 11/11/09 Time: 1615					1				Number of containers
AMEC Proj.No. 13133.003 **SD-DUW439-0100** COC Form Initials: RHG Date: 11/11/09 Time: 1615					1				Number of containers
AMEC Proj.No. 13133.003 **SD-DUW439-0110** COC Form Initials: RHG Date: 11/11/09 Time: 1615					1				Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [illegible] Date: [illegible] Time: 11/11/09 1710		Name: [illegible] Date: 11/11/09 Time: 11/11/09 1710
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 041

Recorded by: RHG

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW439-0120** COC Form Initials: RHG Date: 11/11/09 Time: 1615					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW439-0130** COC Form Initials: RHG Date: 11/11/09 Time: 1615					1				1 Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [illegible] Date: [illegible] Time: [illegible]		Name: [illegible] Date: 11/11/09 Time: 1710
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 042

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW440-0020** COC Form Initials: RHG Date: 11/12/09 Time: 1100					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW440-0030** COC Form Initials: RHG Date: 11/12/09 Time: 1100					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW440-0040** COC Form Initials: RHG Date: 11/12/09 Time: 1100					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW440-0050** COC Form Initials: RHG Date: 11/12/09 Time: 1100					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW440-0060** COC Form Initials: RHG Date: 11/12/09 Time: 1100			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW440-0070** COC Form Initials: RHG Date: 11/12/09 Time: 1100					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW440-0080** COC Form Initials: RHG Date: 11/12/09 Time: 1100			1						1 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [signature] Date: Time: 11/12/09 1640		Name: [signature] Date: 11/12/09 Time: 1640
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 043

Recorded by: RHG

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	Number of containers
AMEC Proj.No. 13133.003 **SD-DUW440-0090** COC Form Initials: RHG Date: 11/12/09 Time: 1100					1				1
AMEC Proj.No. 13133.003 **SD-DUW440-0100** COC Form Initials: RHG Date: 11/12/09 Time: 1100			1						1
AMEC Proj.No. 13133.003 **SD-DUW440-0110** COC Form Initials: RHG Date: 11/12/09 Time: 1100					1				1
AMEC Proj.No. 13133.003 **SD-DUW440-0120** COC Form Initials: RHG Date: 11/12/09 Time: 1100					1				1
AMEC Proj.No. 13133.003 **SD-DUW440-0130** COC Form Initials: RHG Date: 11/12/09 Time: 1100					1				1
AMEC Proj.No. 13133.003 **SD-DUW446-0020** COC Form Initials: RHG Date: 11/12/09 Time: 1355					1				1
AMEC Proj.No. 13133.003 **SD-DUW446-0030** COC Form Initials: RHG Date: 11/12/09 Time: 1355					1				1

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: Kelley Bottem Date: 11/12/09 Time: 1640		Name: [illegible] Date: 11/12/09 Time: 1646
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 044

Recorded by: RHG

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW445-0040** COC Form Initials: RHG Date: 11/12/09 Time: 1355			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW445-0050** COC Form Initials: RHG Date: 11/12/09 Time: 1355					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW445-0060** COC Form Initials: RHG Date: 11/12/09 Time: 1355			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW445-0070** COC Form Initials: RHG Date: 11/12/09 Time: 1355					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW445-0080** COC Form Initials: RHG Date: 11/12/09 Time: 1355			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW445-0090** COC Form Initials: RHG Date: 11/12/09 Time: 1355					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW446-0100** COC Form Initials: RHG Date: 11/12/09 Time: 1355					1				1 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [illegible] Date: Time: 11/12/09 1640		Name: [illegible] Date: 11/12/09 Time: [illegible]
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 045

Recorded by: RHG

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	Number of containers
AMEC Proj.No. 13133.003 **SD-DUW446-0110** COC Form Initials: RHG Date: 11/12/09 Time: 1355					1				1
AMEC Proj.No. 13133.003 **SD-DUW446-0120** COC Form Initials: RHG Date: 11/12/09 Time: 1355					1				1
AMEC Proj.No. 13133.003 **SD-DUW446-0130** COC Form Initials: RHG Date: 11/12/09 Time: 1355					1				1
AMEC Proj.No. 13133.003 **SD-DUW446-0140** COC Form Initials: RHG Date: 11/12/09 Time: 1355					1				1
AMEC Proj.No. 13133.003 **SD-DUW446-0150** COC Form Initials: RHG Date: _____ Time: 1355					1				1
AMEC Proj.No. 13133.003 **SD-DUW446-0160** COC Form Initials: RHG Date: 11/12/09 Time: 1355					1				1
AMEC Proj.No. 13133.003 **SD-DUW441-0080** COC Form Initials: RHG Date: 11/12/09 Time: 1450					1				1

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [illegible] Date: 11/12/09 Time: 1640		Name: [illegible] Date: 11/12/09 Time: [illegible]
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

Recorded by: RHG

Checked by: _____

AMEC Proj.No. 13133.003 Boeing Plant 2 2009 Additional Characterization **COC Form 046**	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW441-0090** COC Form Initials: RHG Date: 11/12/09 Time: 1450			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW441-0100** COC Form Initials: RHG Date: 11/12/09 Time: 1450			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW441-0110** COC Form Initials: RHG Date: 11/12/09 Time: 1450			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW441-0120** COC Form Initials: RHG Date: 11/12/09 Time: 1450					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW441-0130** COC Form Initials: RHG Date: 11/12/09 Time: 1450					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW441-0140** COC Form Initials: RHG Date: 11/12/09 Time: 1450					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW441-0150** COC Form Initials: RHG Date: 11/12/09 Time: 1450					1				1 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [illegible] Date: Time: 11/12/09 1640		Name: [illegible] Date: 11/12/09 Time: 1640
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 047

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW441-0160** COC Form Initials: RHG Date: 11/12/09 Time: 1450					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW450-0070** COC Form Initials: RHG Date: 11/12/09 Time: 1600					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW450-0080** COC Form Initials: RHG Date: 11/12/09 Time: 1600			1	3					4 Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [illegible] Date: 11/12/09 Time: 1640		Name: [illegible] Date: 11/12/09 Time: 1600
Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 048

Recorded by: RHG

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW447-0020** COC Form Initials: RHG Date: 11/13/09 Time: 1020			1	3					4 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW447-0030** COC Form Initials: RHG Date: 11/13/09 Time: 1020					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW447-0040** COC Form Initials: RHG Date: 11/13/09 Time: 1020			1	3					4 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW447-0050** COC Form Initials: RHG Date: 11/13/09 Time: 1020					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW488-0020** COC Form Initials: RHG Date: 11/13/09 Time: 1100			1	3					4 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW488-0030** COC Form Initials: RHG Date: 11/13/09 Time: 1100					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW488-0040** COC Form Initials: RHG Date: 11/13/09 Time: 1100			1	3					4 Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [illegible] Date: Time: 11/13/09 1250		Name: [illegible] Date: Time: 11/13/09 1250
Name: Date: Time:		Name: Date: Time:

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3500 188th Street SW, Suite 600
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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 049

Recorded by: RAG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW438-0050** COC Form Initials: RAG Date: 11/13/09 Time: 1100					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW438-0060** COC Form Initials: RAG Date: 11/13/09 Time: 1145			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW438-0070** COC Form Initials: RAG Date: 11/13/09 Time: 1145					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW438-0080** COC Form Initials: RAG Date: 11/13/09 Time: 1145			1						1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW438-0090** COC Form Initials: RAG Date: 11/13/09 Time: 1145					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW438-0100** COC Form Initials: RAG Date: 11/13/09 Time: 1145					1				1 Number of containers
Place Sample ID Label Here									Number of containers

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Name: [illegible] Date: Time: 11/13/09 1250		Name: [illegible] Date: Time: 11/13/09 1252
Name: Date: Time:		Name: Date: Time:

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PY15

CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 050

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC (HCl fixed)	Pore Water VOC (Unfixed)	
AMEC Proj.No. 13133.003 **SD-DUW425-0110** COC Form Initials: RHG Date: 11/17/09 Time: 1530					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW425-0120** COC Form Initials: RHG Date: 11/17/09 Time: 1530					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW425-0130** COC Form Initials: RHG Date: 11/17/09 Time: 1530					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW425-0140** COC Form Initials: RHG Date: 11/17/09 Time: 1530					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW485-0110** COC Form Initials: RHG Date: 11/17/09 Time: 1600					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW485-0120** COC Form Initials: RHG Date: 11/17/09 Time: 1600					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW485-0130** COC Form Initials: RHG Date: 11/17/09 Time: 1600					1				1 Number of containers

Laboratory Sample Receipt

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Relinquished By	Transported By	Received By
Name: [signature] Date: 11/17/09 Time: 1655		Name: J. Peterson Date: 11/17/09 Time: 1655
Name: Date: Time:		Name: Date: Time:

AMEC Geomatrix, Inc.
3500 188th Street SW, Suite 600
Lynnwood, WA 98037
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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 051

Recorded by: RHG

Checked by:

Sample ID Label	Sample Matrix	PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	Number of containers
AMEC Proj.No. 13133.003 SD-DUW485-0140 COC Form Initials: RHG Date: 11/17/09 Time: 1600				1				1
AMEC Proj.No. 13133.003 SD-DUW485-0150 COC Form Initials: RHG Date: 11/17/09 Time: 1600				1				1
AMEC Proj.No. 13133.003 SD-DUW485-0160 COC Form Initials: RHG Date: 11/17/09 Time: 1600				1				1
AMEC Proj.No. 13133.003 SD-DUW485-0170 COC Form Initials: RHG Date: 11/17/09 Time: 1600				1				1
Place Sample ID Label Here								
Place Sample ID Label Here								
Place Sample ID Label Here								

Laboratory Sample Receipt

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Relinquished By	Transported By	Received By
Name: [signature] Date: 11/17/09 Time: 1655		Name: J. Peterson Date: 11/17/09 Time: 1655
Name: Date: Time:		Name: Date: Time:

AMEC Geomatrix, Inc.
3500 188th Street SW, Suite 600
Lynnwood, WA 98037
Cliff Whitmus (425) 921-4023

CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 052

Recorded by: RHG
Checked by: _____

Sample	Sample Matrix		Analysis Containers: PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	Number of containers
AMEC Proj.No. 13133.003 SD-DUW425-0130 COC Form Initials: RHG Date: 11/18/09 Time: 1100					1				1
AMEC Proj.No. 13133.003 SD-DUW427-0120 COC Form Initials: RHG Date: 11/18/09 Time: 1135					1				1
AMEC Proj.No. 13133.003 SD-DUW427-0130 COC Form Initials: RHG Date: 11/18/09 Time: 1135					1				1
AMEC Proj.No. 13133.003 SD-DUW427-0140 COC Form Initials: RHG Date: 11/18/09 Time: 1135					1				1
AMEC Proj.No. 13133.003 SD-DUW427-0150 COC Form Initials: RHG Date: 11/18/09 Time: 1135					1				
AMEC Proj.No. 13133.003 SD-DUW430-0070 COC Form Initials: RHG Date: 11/18/09 Time: ~~1250~~ 1520					1				
AMEC Proj.No. 13133.003 SD-DUW430-0000 COC Form Initials: RHG Date: 11/18/09 Time: ~~1250~~ 1520			1						

Laboratory Sample Receipt	Relinquished By	Transported By	Received By
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes:	Name: [signature] Date: Time: 11/18/09 1715		Name: G. Peterson Date: 11/18/09 Time: 1715
	Name: Date: Time:		Name: Date: Time:

P439

AMEC Geomatrix, Inc.
3500 188th Street SW, Suite 600
Lynnwood, WA 98037
Cliff Whitmus (425) 921-4023

CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 053

Recorded by: RHG

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	Number of containers
AMEC Proj.No. 13133.003 SD-DUW430-0090 COC Form Initials: RHG Date: 11/18/09 Time: 1520					1				1
AMEC Proj.No. 13133.003 SD-DUW430-0100 COC Form Initials: RHG Date: 11/18/09 Time: 1520			1						1
AMEC Proj.No. 13133.003 SD-DUW430-0110 COC Form Initials: RHG Date: 11/18/09 Time: 1520					1				1
AMEC Proj.No. 13133.003 SD-DUW430-0120 COC Form Initials: RHG Date: 11/18/09 Time: 1520					1				1
AMEC Proj.No. 13133.003 SD-DUW431-0070 COC Form Initials: RHG Date: 11/18/09 Time: 1630					1				1
AMEC Proj.No. 13133.003 SD-DUW431-0080 COC Form Initials: RHG Date: 11/18/09 Time: 1630			1						1
AMEC Proj.No. 13133.003 SD-DUW431-0090 COC Form Initials: RHG Date: 11/18/09 Time: 1630					1				1

Laboratory Sample Receipt

ARI Project Manager Kelley Bottem
Project Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Relinquished By	Transported By	Received By
Name: [illegible]		Name: [illegible]
Date: 11/17/09		Date: 11/18/09
Time: 1715		Time: 1715
Name:		Name:
Date:		Date:
Time:		Time:

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Cliff Whitmus (425) 921-4023

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 054

Recorded by: RHG

Checked by: _____

	Sample Matrix		Analysis Containers: PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	Number of containers
AMEC Proj.No. 13133.003 **SD-DUW432-0160** COC Form Initials: RHG Date: 11/19/09 Time: 1130					1				1
AMEC Proj.No. 13133.003 **SD-DUW432-0170** COC Form Initials: RHG Date: 11/19/09 Time: 1130					1				1
AMEC Proj.No. 13133.003 **SD-DUW432-0180** COC Form Initials: RHG Date: 11/19/09 Time: 1130					1				1
AMEC Proj.No. 13133.003 **SD-DUW433-0180** COC Form Initials: RHG Date: 11/19/09 Time: 1215					1				1
AMEC Proj.No. 13133.003 **SD-DUW433-0190** COC Form Initials: RHG Date: 11/19/09 Time: 1215					1				1
AMEC Proj.No. 13133.003 **SD-DUW436-0160** COC Form Initials: RHG Date: 11/19/09 Time: 1320					1				1
AMEC Proj.No. 13133.003 **SD-DUW436-0170** COC Form Initials: RHG Date: 11/19/09 Time: 1320					1				1

Laboratory Sample Receipt	Relinquished By	Transported By	Received By
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes:	Name: [signature] Date: Time: 11/19/09 1703		Name: J. Peterson Date: 11/19/09 Time: 1703
	Name: Date: Time:		Name: Date: Time:

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3500 188th Street SW, Suite 600
Lynnwood, WA 98037
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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 055

Recorded by: RHG

Checked by: _____

	Sample Matrix		Analysis/Containers: PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	
AMEC Proj.No. 13133.003 **SD-DUW436-0180** COC Form Initials: RHG Date: 11/19/09 Time: 1320					1				Number of containers 1
AMEC Proj.No. 13133.003 **SD-DUW437-0180** COC Form Initials: RHG Date: 11/19/09 Time: 1445					1				Number of containers 1
AMEC Proj.No. 13133.003 **SD-DUW437-0190** COC Form Initials: RHG Date: 11/19/09 Time: 1445					1				Number of containers 1
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

Laboratory Sample Receipt

ARI Project Manager: Kelley Bottern
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Relinquished By	Transported By	Received By
Name: N. Bacha		Name: J. Peterson
Date: 11/19/09		Date: 11/19/09
Time: 1703		Time: 1703
Name:		Name:
Date:		Date:
Time:		Time:

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PY72

CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 056

Recorded by: RHG
Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	
AMEC Proj.No. 13133.003 **SD-DUW443-0120** COC Form Initials: RHG Date: 11/20/09 Time: 1000					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW443-0130** COC Form Initials: RHG Date: 11/20/09 Time: 1100					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW443-0140** COC Form Initials: RHG Date: 11/20/09 Time: 1100					1				1 Number of containers
AMEC Proj.No. 13133.003 **SD-DUW443-0150** COC Form Initials: RHG Date: 11/20/09 Time: 1100					1				1 Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

Laboratory Sample Receipt

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Relinquished By	Transported By	Received By
Name: [signature] Date: Time: 11/20/09 1455		Name: [signature] Date: Time: 11/20/09 1455
Name: Date: Time:		Name: Date: Time:

AMEC Geomatrix, Inc.
3500 188th Street SW, Suite 600
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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 057

Recorded by: RHG

Checked by: _____

	Sample Matrix		PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	
			Analysis Containers						
AMEC Proj.No. 13133.003 PW-DUW02-0160 COC Form Initials: RHG Preserved HCl No Date: 11/24/09 Time: 1210								3 *	3 Number of containers
AMEC Proj.No. 13133.003 PW-DUW02-0210 COC Form Initials: RHG Preserved HCl X Date: 11/24/09 Time: 1345							9		9 Number of containers MS/MSD volume
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

Laboratory Sample Receipt	Relinquished By	Transported By	Received By
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes: Treat as unpreserved * 7day hold.	Name: [signature] Date: 11/23 Time: 630		Name: [signature] Date: 11/24/09 Time: 1630
	Name: Date: Time:		Name: Date: Time:

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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 058

Recorded by: RHG

Checked by: _____

	Sample Matrix		Analysis Containers: PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	
AMEC Proj.No. 13133.003 PW-DUW02-0310 COC Form Initials: RHG Preserved HCl X Date: 11/25/09 Time: 1145							3		3 Number of containers
AMEC Proj.No. 13133.003 PW-DUW02-0360 COC Form Initials: RHG Preserved HCl X Date: 11/25/09 Time: 1355							3		3 Number of containers
AMEC Proj.No. 13133.003 PW-DUW02-0260 COC Form Initials: RHG Preserved HCl X Date: 11/25/09 Time: 0956							3		3 Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

Laboratory Sample Receipt

ARI Project Manager: Kelley Bottern
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Relinquished By	Transported By	Received By
Name: RGilmore Date: 11/25/09 Time: 1732		Name: [illegible] Date: Time: 11/25/09 1732
Name: Date: Time:		Name: Date: Time:

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3500 188th Street SW, Suite 600
Lynnwood, WA 98037
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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 059

Recorded by: RHG

Checked by: _____

	Sample Matrix		Analysis Containers: PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	
AMEC Proj.No. 13133.003 PW-DUW01-0210 COC Form Initials: RHG Preserved HCl X Date: 11/30/09 Time: 1305							9		9 Number of containers
AMEC Proj.No. 13133.003 PW-DUW01-0160 COC Form Initials: RHG Preserved HCl X Date: 11/30/09 Time: 1015							3		3 Number of containers
AMEC Proj.No. 13133.003 PW-DUW01-0260 COC Form Initials: RHG Preserved HCl X Date: 11/30/09 Time: 1425							3		3 Number of containers
AMEC Proj.No. 13133.003 PW-DUW01-0310 COC Form Initials: RHG Preserved HCl X Date: 11/30/09 Time: 1640							3		3 Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

Laboratory Sample Receipt	Relinquished By	Transported By	Received By
ARI Project Manager. Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes:	Name: RGhum Date: 11/30/09 Time: 1745		Name: J Peterson Date: 11/30/09 Time: 1745 ARI
	Name: Date: Time:		Name: Date: Time:

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3500 188th Street SW, Suite 600
Lynnwood, WA 98037
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PZ64

CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 060

Recorded by: RHG

Checked by: _____

	Sample Matrix		Analysis Containers: PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	
AMEC Proj.No. 13133.003 PW-DUW01-0360 COC Form Initials: RHG Preserved HCl X Date: 12/1/09 Time: 1020							3		3 Number of containers
AMEC Proj.No. 13133.003 PW-DUW06-0160 COC Form Initials: RHG Preserved HCl X Date: 12/1/09 Time: 1345							3		3 Number of containers
AMEC Proj.No. 13133.003 PW-DUW06-0210 COC Form Initials: RHG Preserved HCl X Date: 12/1/09 Time: 1615							9		9 Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

Laboratory Sample Receipt

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Relinquished By	Transported By	Received By
Name: [signature] Date: 12/1/09 Time: 1750		Name: [signature] Date: 12/1/09 Time: 1750
Name: Date: Time:		Name: Date: Time:

AMEC Geomatrix, Inc.
3500 188th Street SW, Suite 600
Lynnwood, WA 98037
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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 061

Recorded by: RHG

Checked by: _____

	Sample Matrix		Analysis Containers: PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	
AMEC Proj.No. 13133.003 PW-DUW06-0260 COC Form Initials: RHG Preserved HCl X Date: 12/2/09 Time: 1150							3		3 Number of containers
AMEC Proj.No. 13133.003 PW-DUW06-0310 COC Form Initials: RHG Preserved HCl X Date: 12/2/09 Time: 1335							3		3 Number of containers
AMEC Proj.No. 13133.003 PW-DUW06-0360 COC Form Initials: RHG Preserved HCl X Date: 12/2/09 Time: 1530							3		3 Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

Laboratory Sample Receipt	Relinquished By	Transported By	Received By
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes:	Name: [signature] Date: 12/2/09 Time: 1645		Name: J. Peterson Date: 12/2/09 Time: 1645
	Name: Date: Time:		Name: Date: Time:

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3500 188th Street SW, Suite 600
Lynnwood, WA 98037
Cliff Whitmus (425) 921-4023

CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 062

Recorded by: RHG

Checked by: _____

	Sample Matrix		Analysis Containers: PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	
AMEC Proj.No. 13133.003 PW-DUW03-0160 COC Form Initials: RHG Preserved HCl X Date: 12/3/09 Time: 1040							3		Number of containers
AMEC Proj.No. 13133.003 PW-DUW03-0210 COC Form Initials: RHG Preserved HCl X Date: 12/3/09 Time: 1250							9		Number of containers
AMEC Proj.No. 13133.003 PW-DUW03-0260 COC Form Initials: RHG Preserved HCl X Date: 12/3/09 Time: 1440							3		Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

Laboratory Sample Receipt

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Relinquished By	Transported By	Received By
Name: R Peterson Date: 12/3/09 Time: 1010		Name: J. Peterson Date: 12/3/09 Time: 1010
Name: Date: Time:		Name: Date: Time:

AMEC Geomatrix, Inc.
3500 188th Street SW, Suite 600
Lynnwood, WA 98037
Cliff Whitmus (425) 921-4023

QA25

CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 063

Recorded by: RHG

Checked by: _____

	Sample Matrix		Analysis Containers: PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	
AMEC Proj.No. 13133.003 PW-DUW03-0310 COC Form Initials: RHG Preserved HCl X Date: 12/4/09 Time: 1020							3		3 Number of containers
AMEC Proj.No. 13133.003 PW-DUW03-0360 COC Initials: RHG Preserved HCl X Date: 12/4/09 Time: 1230							3		3 Number of containers
AMEC Proj.No. 13133.003 PW-DUW0 4 - 0160 COC Form Initials: RHG Preserved HCl X Date: 12/4/09 Time: 1615							3		3 Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

Laboratory Sample Receipt
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes:

Relinquished By	Transported By	Received By
Name: Rob Gahmard Date: 12/4/09 Time: 1743		Name: [illegible] Date: 12/4/09 Time: 1744
Name: Date: Time:		Name: Date: Time:

AMEC GeoMatrix, Inc.
3500 188th Street SW, Suite 600
Lynnwood, WA 98037
Cliff Whitmus (425) 921-4023

QA53

CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 064

Recorded by: RHG

Checked by: _____

Sample Matrix		Analysis Containers: PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	
AMEC Proj.No. 13133.003 PW-DUW04-0210 COC Form Initials: RHG Preserved HCl X Date: 12/8/09 Time: 1010						9		9 Number of containers
AMEC Proj.No. 13133.003 PW-DUW04-0260 COC Form Initials: RHG Preserved HCl X Date: 12/8/09 Time: 1155						3		3 Number of containers
AMEC Proj.No. 13133.003 PW-DUW04-0310 COC Form Initials: RHG Preserved HCl X Date: 12/8/09 Time: 1330						3		3 Number of containers
AMEC Proj.No. 13133.003 PW-DUW04-0360 COC Form Initials: RHG Preserved HCl X Date: 12/8/09 Time: 1505						3		3 Number of containers
Place Sample ID Label Here								Number of containers
Place Sample ID Label Here								Number of containers
Place Sample ID Label Here								Number of containers

Laboratory Sample Receipt

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Relinquished By	Transported By	Received By
Name: RGahmon Date: 12/8/09 Time: 1618		Name: [illegible] Date: 12/8/09 Time: 1618
Name: Date: Time:		Name: Date: Time:

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3500 188th Street SW, Suite 600
Lynnwood, WA 98037
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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 065

Recorded by: RHG

Checked by: _____

	Sample Matrix		Analysis Containers: PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	
AMEC Proj.No. 13133.003 PW-DUW05-0210 COC Form Initials: RHG Preserved HCl X Date: 12/9/09 Time: 1240							3		9 Number of containers
AMEC Proj.No. 13133.003 PW-DUW05-0260 COC Form Initials: RHG Preserved HCl X Date: 12/9/09 Time: 1415							9		9 Number of containers
AMEC Proj.No. 13133.003 PW-DUW05-0310 COC Form Initials: RHG Preserved HCl X Date: 12/9/09 Time: 1545							3		3 Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

Laboratory Sample Receipt

ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization

Sediment not homogenized
Notes:

Relinquished By	Transported By	Received By
Name: [signature] Date: 12/9/09 Time: 1705		Name: [signature] Date: 12/9/09 Time: 1705
Name: Date: Time:		Name: Date: Time:

AMEC Geomatrix, Inc.
3500 188th Street SW, Suite 600
Lynnwood, WA 98037
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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 066

Recorded by: RHG
Checked by: _____

	Sample Matrix		Analysis Containers: PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	
AMEC Proj.No. 13133.003 PW-DUW05-0360 COC Form Initials: RHG Preserved HCl ✓ Date: 12/10/09 Time: 1020							3		3 Number of containers
AMEC Proj.No. 13133.003 PW-DUW05-0100 COC Form Initials: RHG Preserved HCl ✓ Date: 12/10/09 Time: 1355							3		3 Number of containers Hold Sample Do Not Analyze
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

Laboratory Sample Receipt
ARI Project Manager: Kelley Bottem
Project: Boeing Plant 2 2009 Additional Characterization
Sediment not homogenized
Notes: Hold PW-DUW05-0100 Wait for instructions.

Relinquished By	Transported By	Received By
Name: R Gilmore Date: 12/10/09 Time: 1550		Name: Date: 12/10/09 Time: 1550
Name: Date: Time:		Name: Date: Time:

AMEC Geomatrix, Inc.
3500 188th Street SW, Suite 600
Lynnwood, WA 98037
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CHAIN OF CUSTODY

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 067

Recorded by: RHG

Checked by: _____

	Sample Matrix		Analysis Containers: PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	
AMEC Proj.No. 13133.003 PW-DUW02-~~0090~~ 0100 COC Form Initials: RHG Preserved HCl X Date: 12/11/09 Time: 1045							3		Number of containers
AMEC Proj.No. 13133.003 PW-DUW01-~~0090~~ 0100 COC Form Initials: RHG Preserved HCl X Date: 12/11/09 Time: 1200							3		Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

Laboratory Sample Receipt
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes:

Relinquished By	Transported By	Received By
Name: [signature] Date: 12/11/09 Time: 1515		Name: [signature] Date: 12/11/09 Time: 1515
Name: Date: Time:		Name: Date: Time:

AMEC Geomatrix, Inc.
3500 188th Street SW, Suite 600
Lynnwood, WA 98037
Cliff Whitmus (425) 921-4023

CHAIN OF CUSTODY

Recorded by: RHG

Checked by: _____

AMEC Proj.No. 13133.003
Boeing Plant 2
2009 Additional Characterization
COC Form 068

	Sample Matrix		Analysis Containers: PCBs/TOC	Sediment VOCs	Archive Sediment		Pore Water VOC HCl fixed	Pore Water VOC Unfixed	
AMEC Proj.No. 13133.003 **SD-DUW447-0060** COC Form Initials: RHG Date: 12/15/09 Time: 1315			1						1 Number of containers
									Hold
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers
Place Sample ID Label Here									Number of containers

Laboratory Sample Receipt	Relinquished By	Transported By	Received By
ARI Project Manager: Kelley Bottem Project: Boeing Plant 2 2009 Additional Characterization Sediment not homogenized Notes: Hold sample pending instructions	Name: [signature] Date: 12/15/09 Time: 1410		Name: [signature] Date: 12/15/09 Time: 1510
	Name: Date: Time:		Name: Date: Time:

APPENDIX E

Data Validation Report

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Sayler Data Solutions, Inc.

DATA VALIDATION REPORT

Boeing Plant 2 Duwamish Sediment Other Area

Prepared for:
AMEC Geomatrix, Inc.
3500 188th Street SW, Ste 600
Lynnwood, WA 98037-4763

February 8, 2010

1.0 Introduction

Data validation was performed on the following laboratory data:

Sample ID	Sample Date	Lab ID	VOA	PCB	TOC	Total Solids
Sediments						
SD-DUW448-0020	11/2/09 2:15 PM	PV43A	X	X	X	X
SD-DUW448-0040	11/2/09 2:15 PM	PV43B	X	X	X	X
SD-DUW448-0060	11/2/09 2:15 PM	PV43C	X	X	X	X
SD-DUW448-0080	11/2/09 2:15 PM	PV43D	X	X	X	X
SD-DUW449-0020	11/2/09 3:15 PM	PV43E	X	X	X	X
SD-DUW449-0040	11/2/09 3:15 PM	PV43F	X	X	X	X
SD-DUW449-0060	11/2/09 3:15 PM	PV43G	X	X	X	X
SD-DUW449-0080	11/2/09 3:15 PM	PV43H	X	X	X	X
SD-DUW450-0020	11/2/09 2:25 PM	PV43I	X	X	X	X
SD-DUW450-0040	11/2/09 2:25 PM	PV43J	X	X	X	X
SD-DUW450-0060	11/2/09 2:25 PM	PV43K	X	X	X	X
Trip Blank 11/02	11/2/09 12:00 AM	PV43V	X			
SD-DUW423-0020	11/3/09 1:15 PM	PV72M		X	X	X
SD-DUW423-0040	11/3/09 1:15 PM	PV72N		X	X	X
SD-DUW423-0060	11/3/09 1:15 PM	PV72O		X	X	X
SD-DUW423-0080	11/3/09 1:15 PM	PV72P		X	X	X
SD-DUW423-0100	11/3/09 1:15 PM	PV72Q		X	X	X
SD-DUW424-0020	11/3/09 12:15 PM	PV72H		X	X	X
SD-DUW424-0040	11/3/09 12:15 PM	PV72I		X	X	X
SD-DUW424-0060	11/3/09 12:15 PM	PV72J		X	X	X
SD-DUW424-0080	11/3/09 12:15 PM	PV72K		X	X	X
SD-DUW424-0100	11/3/09 12:15 PM	PV72L		X	X	X
SD-DUW451-0020	11/3/09 9:45 AM	PV72A	X	X	X	X
SD-DUW451-0040	11/3/09 9:45 AM	PV72B	X	X	X	X
SD-DUW451-0060	11/3/09 9:45 AM	PV72C	X	X	X	X
SD-DUW451-0080	11/3/09 9:45 AM	PV72D	X	X	X	X
SD-DUW451-0100	11/3/09 9:45 AM	PV72E	X	X	X	X
SD-DUW451-0120	11/3/09 9:45 AM	PV72F	X	X	X	X
SD-DUW451-0140	11/3/09 9:45 AM	PV72G	X	X	X	X
Trip Blank 11/03	11/3/09 12:00 AM	V72AO	X			

Sample ID	Sample Date	Lab ID	VOA	PCB	TOC	Total Solids
SD-DUW425-0020	11/5/09 10:45 AM	PW30H		X	X	X
SD-DUW425-0040	11/5/09 10:45 AM	PW30I		X	X	X
SD-DUW425-0060	11/5/09 10:45 AM	PW30J		X	X	X
SD-DUW425-0080	11/5/09 10:45 AM	PW30K		X	X	X
SD-DUW425-0100	11/5/09 10:45 AM	PW30D		X	X	X
SD-DUW426-0020	11/5/09 2:45 PM	PW30C		X	X	X
SD-DUW426-0040	11/5/09 2:45 PM	PW30L		X	X	X
SD-DUW426-0060	11/5/09 2:45 PM	PW30M		X	X	X
SD-DUW426-0080	11/5/09 2:45 PM	PW30N		X	X	X
SD-DUW442-0060	11/5/09 12:50 PM	PW30A		X	X	X
SD-DUW442-0080	11/5/09 12:50 PM	PW30B		X	X	X
SD-DUW485-0020	11/5/09 11:25 AM	PW30E		X	X	X
SD-DUW485-0040	11/5/09 11:25 AM	PW30F		X	X	X
SD-DUW485-0060	11/5/09 11:25 AM	PW30G		X	X	X
SD-DUW426-0100	11/5/09 2:45 PM	PW31A		X	X	X
SD-DUW427-0020	11/5/09 3:30 PM	PW31B		X	X	X
SD-DUW427-0040	11/5/09 3:30 PM	PW31C		X	X	X
SD-DUW427-0060	11/5/09 3:30 PM	PW31H		X	X	X
SD-DUW427-0080	11/5/09 3:30 PM	PW31I		X	X	X
SD-DUW427-0100	11/5/09 3:30 PM	PW31J		X	X	X
SD-DUW442-0020	11/5/09 12:50 PM	PW31F		X	X	X
SD-DUW442-0040	11/5/09 12:50 PM	PW31F		X	X	X
SD-DUW485-0080	11/5/09 11:25 AM	PW31D		X	X	X
SD-DUW485-0100	11/5/09 11:25 AM	PW31E		X	X	X
SD-DUW431-0040	11/9/09 12:10 PM	PW92E		X	X	X
SD-DUW431-0060	11/9/09 12:10 PM	PW92L		X	X	X
SD-DUW432-0090	11/9/09 2:50 PM	PW92F		X	X	X
SD-DUW432-0100	11/9/09 2:50 PM	PW92G		X	X	X
SD-DUW432-0110	11/9/09 2:50 PM	PW92H		X	X	X
SD-DUW433-0090	11/9/09 3:35 PM	PW92I		X	X	X
SD-DUW433-0100	11/9/09 3:35 PM	PW92J		X	X	X
SD-DUW433-0110	11/9/09 3:35 PM	PW92K		X	X	X
SD-DUW443-0020	11/9/09 10:00 AM	PW92A		X	X	X
SD-DUW443-0040	11/9/09 10:00 AM	PW92B		X	X	X
SD-DUW443-0060	11/9/09 10:00 AM	PW92C		X	X	X
SD-DUW443-0080	11/9/09 10:00 AM	PW92D		X	X	X
SD-DUW486-0040	11/9/09 12:35 PM	PW92M		X	X	X
SD-DUW486-0060	11/9/09 12:35 PM	PW92N		X	X	X
SD-DUW429-0130	11/10/09 11:00 AM	PX08A		X	X	X
SD-DUW429-0140	11/10/09 11:00 AM	PX08B		X	X	X
SD-DUW430-0040	11/10/09 12:50 PM	PX08Q		X	X	X
SD-DUW430-0060	11/10/09 12:50 PM	PX08R		X	X	X
SD-DUW434-0060	11/10/09 4:25 PM	PX08L		X	X	X
SD-DUW434-0080	11/10/09 4:25 PM	PX08M		X	X	X
SD-DUW434-0100	11/10/09 4:25 PM	PX08N		X	X	X
SD-DUW435-0150	11/10/09 3:35 PM	PX08I		X	X	X
SD-DUW435-0160	11/10/09 3:35 PM	PX08J		X	X	X
SD-DUW435-0170	11/10/09 3:35 PM	PX08K		X	X	X
SD-DUW444-0020	11/10/09 11:50 AM	PX08C		X	X	X
SD-DUW444-0040	11/10/09 11:50 AM	PX08D		X	X	X
SD-DUW444-0060	11/10/09 11:50 AM	PX08O		X	X	X
SD-DUW444-0080	11/10/09 11:50 AM	PX08P		X	X	X
SD-DUW445-0020	11/10/09 1:50 PM	PX08E		X	X	X
SD-DUW445-0040	11/10/09 1:50 PM	PX08F		X	X	X
SD-DUW445-0060	11/10/09 1:50 PM	PX08G		X	X	X
SD-DUW445-0080	11/10/09 1:50 PM	PX08H		X	X	X
SD-DUW436-0040	11/11/09 12:15 PM	PX20D		X	X	X

Sample ID	Sample Date	Lab ID	VOA	PCB	TOC	Total Solids
SD-DUW436-0060	11/11/09 12:15 PM	PX20E		X	X	X
SD-DUW436-0080	11/11/09 12:15 PM	PX20F		X	X	X
SD-DUW436-0100	11/11/09 12:15 PM	PX20G		X	X	X
SD-DUW437-0060	11/11/09 11:15 AM	PX20A		X	X	X
SD-DUW437-0080	11/11/09 11:15 AM	PX20B		X	X	X
SD-DUW437-0100	11/11/09 11:15 AM	PX20C		X	X	X
SD-DUW438-0040	11/11/09 1:40 PM	PX20H		X	X	X
SD-DUW439-0040	11/11/09 4:15 PM	PX20L		X	X	X
SD-DUW439-0060	11/11/09 4:15 PM	PX20M		X	X	X
SD-DUW439-0080	11/11/09 4:15 PM	PX20N		X	X	X
SD-DUW487-0040	11/11/09 3:20 PM	PX20I		X	X	X
SD-DUW487-0060	11/11/09 3:20 PM	PX20J		X	X	X
SD-DUW487-0080	11/11/09 3:20 PM	PX20K		X	X	X
SD-DUW438-0060	11/13/09 11:45 AM	PX69I		X	X	X
SD-DUW438-0080	11/13/09 11:45 AM	PX69K		X	X	X
SD-DUW447-0020	11/13/09 10:20 AM	PX69A	X	X	X	X
SD-DUW447-0040	11/13/09 10:20 AM	PX69C	X	X	X	X
SD-DUW488-0020	11/13/09 11:00 AM	PX69E	X	X	X	X
SD-DUW488-0040	11/13/09 11:00 AM	PX69G	X	X	X	X
Trip Blank 11/13	11/13/09 12:00 AM	PX69N	X			
SD-DUW440-0060	11/12/09 11:00 AM	PX70A		X	X	X
SD-DUW440-0080	11/12/09 11:00 AM	PX70B		X	X	X
SD-DUW440-0100	11/12/09 11:00 AM	PX70C		X	X	X
SD-DUW441-0090	11/12/09 2:50 PM	PX70G		X	X	X
SD-DUW441-0100	11/12/09 2:50 PM	PX70H		X	X	X
SD-DUW441-0110	11/12/09 2:50 PM	PX70I		X	X	X
SD-DUW446-0040	11/12/09 1:55 PM	PX70D		X	X	X
SD-DUW446-0060	11/12/09 1:55 PM	PX70E		X	X	X
SD-DUW446-0080	11/12/09 1:55 PM	PX70F		X	X	X
SD-DUW450-0080	11/12/09 4:00 PM	PX70J	X	X	X	X
Trip Blank 11/12	11/12/09 12:00 AM	PX70K	X			
SD-DUW430-0080	11/18/09 3:20 PM	PY39A		X	X	X
SD-DUW430-0100	11/18/09 3:20 PM	PY39B		X	X	X
SD-DUW431-0080	11/18/09 4:30 PM	PY39C		X	X	X
SD-DUW423-0050	11/3/09 1:15 PM	QB14A		X	X	X
SD-DUW423-0070	11/3/09 1:15 PM	QB14B		X	X	X
SD-DUW423-0090	11/3/09 1:15 PM	QB14C		X	X	X
SD-DUW424-0090	11/3/09 12:15 PM	QB14D		X	X	X
SD-DUW424-0110	11/3/09 12:15 PM	QB14E		X	X	X
SD-DUW424-0120	11/3/09 12:15 PM	QB14F		X	X	X
SD-DUW424-0130	11/3/09 12:15 PM	QB14G		X	X	X
SD-DUW425-0070	11/5/09 10:45 AM	QB14H		X	X	X
SD-DUW425-0090	11/5/09 10:45 AM	QB14I		X	X	X
SD-DUW425-0110	11/17/09 3:30 PM	QB14J		X	X	X
SD-DUW426-0050	11/5/09 2:45 PM	QB14K		X	X	X
SD-DUW426-0070	11/5/09 2:45 PM	QB14L		X	X	X
SD-DUW426-0090	11/5/09 2:45 PM	QB14M		X	X	X
SD-DUW427-0110	11/5/09 3:30 PM	QB14N		X	X	X
SD-DUW427-0120	11/18/09 11:35 AM	QB14O		X	X	X
SD-DUW427-0130	11/18/09 11:35 AM	QB14P		X	X	X
SD-DUW427-0140	11/18/09 11:35 AM	QB14Q		X	X	X
SD-DUW427-0150	11/18/09 11:35 AM	QB14R		X	X	X
SD-DUW429-0120	11/10/09 11:00 AM	QB14S		X	X	X
SD-DUW430-0050	11/10/09 12:50 PM	QB14T		X	X	X
SD-DUW430-0070	11/18/09 3:20 PM	QB15A		X	X	X
SD-DUW430-0090	11/18/09 3:20 PM	QB15B		X	X	X
SD-DUW431-0050	11/9/09 12:50 PM	QB15C		X	X	X

Sample ID	Sample Date	Lab ID	VOA	PCB	TOC	Total Solids
SD-DUW437-0110	11/11/09 11:15 AM	QB15D		X	X	X
SD-DUW437-0120	11/11/09 11:15 AM	QB15E		X	X	X
SD-DUW437-0130	11/11/09 11:15 AM	QB15F		X	X	X
SD-DUW437-0140	11/11/09 11:15 AM	QB15G		X	X	X
SD-DUW437-0150	11/11/09 11:15 AM	QB15H		X	X	X
SD-DUW438-0070	11/13/09 11:45 AM	QB15I		X	X	X
SD-DUW438-0090	11/13/09 11:45 AM	QB15J		X	X	X
SD-DUW438-0100	11/13/09 11:45 AM	QB15K		X	X	X
SD-DUW439-0090	11/11/09 4:15 PM	QB15L		X	X	X
SD-DUW439-0100	11/11/09 4:15 PM	QB15M		X	X	X
SD-DUW439-0110	11/11/09 4:15 PM	QB15N		X	X	X
SD-DUW439-0120	11/11/09 4:15 PM	QB15O		X	X	X
SD-DUW439-0130	11/11/09 4:15 PM	QB15P		X	X	X
SD-DUW440-0070	11/12/09 11:00 AM	QB15Q		X	X	X
SD-DUW440-0090	11/12/09 11:00 AM	QB15R		X	X	X
SD-DUW440-0110	11/12/09 11:00 AM	QB15S		X	X	X
SD-DUW441-0120	11/12/09 2:50 PM	QB15T		X	X	X
SD-DUW441-0130	11/12/09 2:50 PM	QB16A		X	X	X
SD-DUW442-0050	11/5/09 12:50 PM	QB16B		X	X	X
SD-DUW442-0070	11/5/09 12:50 PM	QB16C		X	X	X
SD-DUW442-0090	11/5/09 12:50 PM	QB16D		X	X	X
SD-DUW443-0090	11/9/09 10:00 AM	QB16E		X	X	X
SD-DUW443-0100	11/9/09 10:00 AM	QB16F		X	X	X
SD-DUW450-0070	11/12/09 4:00 PM	QB16G		X	X	X
SD-DUW451-0110	11/3/09 9:45 AM	QB16H		X	X	X
SD-DUW451-0130	11/3/09 9:45 AM	QB16I		X	X	X
SD-DUW451-0150	11/3/09 9:45 AM	QB16J		X	X	X
SD-DUW485-0070	11/5/09 11:25 AM	QB16K		X	X	X
SD-DUW485-0090	11/5/09 11:25 AM	QB16L		X	X	X
SD-DUW486-0050	11/9/09 12:35 PM	QB16M		X	X	X
SD-DUW486-0070	11/9/09 12:35 PM	QB16N		X	X	X
SD-DUW487-0090	11/11/09 3:20 PM	QB16O		X	X	X
SD-DUW487-0100	11/11/09 3:20 PM	QB16P		X	X	X
SD-DUW487-0110	11/11/09 3:20 PM	QB16Q		X	X	X
SD-DUW487-0120	11/11/09 3:20 PM	QB16R		X	X	X
SD-DUW487-0130	11/11/09 3:20 PM	QB16S		X	X	X
SD-DUW432-0120	11/9/09 2:50 PM	QB19Q		X	X	X
SD-DUW432-0130	11/9/09 2:50 PM	QB19R		X	X	X
SD-DUW432-0140	11/9/09 2:50 PM	QB19S		X	X	X
SD-DUW432-0150	11/9/09 2:50 PM	QB19T		X	X	X
SD-DUW434-0110	11/10/09 4:25 PM	QB19J		X	X	X
SD-DUW434-0120	11/10/09 4:25 PM	QB19K		X	X	X
SD-DUW434-0130	11/10/09 4:25 PM	QB19L		X	X	X
SD-DUW434-0140	11/10/09 4:25 PM	QB19M		X	X	X
SD-DUW434-0150	11/10/09 4:25 PM	QB19N		X	X	X
SD-DUW435-0180	11/10/09 3:35 PM	QB19C		X	X	X
SD-DUW435-0190	11/10/09 3:35 PM	QB19D		X	X	X
SD-DUW443-0110	11/9/09 10:00 AM	QB19P		X	X	X
SD-DUW444-0090	11/10/09 11:50 AM	QB19E		X	X	X
SD-DUW444-0100	11/10/09 11:50 AM	QB19F		X	X	X
SD-DUW444-0110	11/10/09 11:50 AM	QB19G		X	X	X
SD-DUW444-0120	11/10/09 11:50 AM	QB19H		X	X	X
SD-DUW444-0130	11/10/09 11:50 AM	QB19I		X	X	X
SD-DUW445-0050	11/10/09 1:50 PM	QB19A		X	X	X
SD-DUW445-0070	11/10/09 1:50 PM	QB19B		X	X	X
SD-DUW445-0090	11/10/09 1:50 PM	QB19O		X	X	X
SD-DUW433-0120	11/9/09 3:35 PM	QB20A		X	X	X

Sample ID	Sample Date	Lab ID	VOA	PCB	TOC	Total Solids
SD-DUW433-0130	11/9/09 3:35 PM	QB20B		X	X	X
SD-DUW433-0140	11/9/09 3:35 PM	QB20C		X	X	X
SD-DUW436-0110	11/11/09 12:15 PM	QB20J		X	X	X
SD-DUW436-0120	11/11/09 12:15 PM	QB20K		X	X	X
SD-DUW436-0130	11/11/09 12:15 PM	QB20L		X	X	X
SD-DUW436-0140	11/11/09 12:15 PM	QB20M		X	X	X
SD-DUW436-0150	11/11/09 12:15 PM	QB20N		X	X	X
SD-DUW443-0120	11/20/09 11:00 AM	QB20D		X	X	X
SD-DUW443-0130	11/20/09 11:00 AM	QB20E		X	X	X
SD-DUW443-0140	11/20/09 11:00 AM	QB20F		X	X	X
SD-DUW446-0050	11/12/09 1:55 PM	QB20G		X	X	X
SD-DUW446-0070	11/12/09 1:55 PM	QB20H		X	X	X
SD-DUW446-0090	11/12/09 1:55 PM	QB20I		X	X	X
SD-DUW448-0050	11/2/09 2:15 PM	QB20O		X	X	X
SD-DUW448-0070	11/2/09 2:15 PM	QB20P		X	X	X
SD-DUW448-0090	11/2/09 2:15 PM	QB20Q		X	X	X
SD-DUW449-0050	11/2/09 3:15 PM	QB20R		X	X	X
SD-DUW449-0070	11/2/09 3:15 PM	QB20S		X	X	X
SD-DUW449-0090	11/2/09 3:15 PM	QB20T		X	X	X
SD-DUW431-0070	11/18/09 4:30 PM	QB24A		X	X	X
SD-DUW431-0090	11/18/09 4:30 PM	QB24B		X	X	X
SD-DUW447-0050	11/13/09 10:20 AM	QB24C		X	X	X
SD-DUW436-0160	11/19/09 1:20 PM	QB32A		X	X	X
SD-DUW447-0060	12/15/09 1:15 PM	QB58A		X	X	X
SD-DUW433-0150	11/9/09 3:35 PM	QE15A		X	X	X
SD-DUW433-0160	11/9/09 3:35 PM	QE15B		X	X	X
SD-DUW433-0170	11/9/09 3:35 PM	QE15C		X	X	X
SD-DUW434-0160	11/10/09 4:25 PM	QE15E		X	X	X
SD-DUW434-0170	11/10/09 4:25 PM	QE15F		X	X	X
SD-DUW434-0180	11/10/09 4:25 PM	QE15G		X	X	X
SD-DUW437-0160	11/11/09 11:15 AM	QE15H		X	X	X
SD-DUW437-0170	11/11/09 11:15 AM	QE15I		X	X	X
SD-DUW439-0070	11/11/09 4:15 PM	QE15K		X	X	X
SD-DUW444-0140	11/10/09 11:50 AM	QE15D		X	X	X
SD-DUW446-0100	11/12/09 1:55 PM	QE15M		X	X	X
SD-DUW446-0110	11/12/09 1:55 PM	QE15N		X	X	X
SD-DUW446-0120	11/12/09 1:55 PM	QE15O		X	X	X
SD-DUW446-0130	11/12/09 1:55 PM	QE15P		X	X	X
SD-DUW446-0140	11/12/09 1:55 PM	QE15Q		X	X	X
SD-DUW446-0150	11/12/09 1:55 PM	QE15R		X	X	X
SD-DUW446-0160	11/12/09 1:55 PM	QE15S		X	X	X
SD-DUW487-0070	11/11/09 3:20 PM	QE15J		X	X	X
SD-DUW488-0050	11/13/09 11:00 AM	QE15L		X	X	X
SD-DUW432-0160	11/19/09 11:30 AM	QE19A		X	X	X
SD-DUW432-0170	11/19/09 11:30 AM	QE19B		X	X	X
SD-DUW432-0180	11/19/09 11:30 AM	QE19C		X	X	X
SD-DUW433-0180	11/19/09 12:15 PM	QE19D		X	X	X
SD-DUW433-0190	11/19/09 12:15 PM	QE19E		X	X	X
SD-DUW436-0170	11/19/09 1:20 PM	QE19F		X	X	X
SD-DUW436-0180	11/19/09 1:20 PM	QE19G		X	X	X
SD-DUW437-0180	11/19/09 2:45 PM	QE19H		X	X	X
SD-DUW437-0190	11/19/09 2:45 PM	QE19I		X	X	X
Pore Waters						
PW-DUW02-0160	11/24/09 12:10 PM	PZ15A	X			
PW-DUW02-0210	11/24/09 1:45 PM	PZ15B	X			
Trip Blank 11/24	11/24/09 12:00 AM	PZ15C	X			
PW-DUW02-0260	11/25/09 9:56 AM	PZ39C	X			

Sample ID	Sample Date	Lab ID	VOA	PCB	TOC	Total Solids
PW-DUW02-0310	11/25/09 11:45 AM	PZ39A	X			
PW-DUW02-0360	11/25/09 1:55 PM	PZ39B	X			
Trip Blank 11/25	11/25/09 12:00 AM	PZ39D	X			
PW-DUW01-0160	11/30/09 10:15 AM	PZ51B	X			
PW-DUW01-0210	11/30/09 1:05 PM	PZ51A	X			
PW-DUW01-0260	11/30/09 2:25 PM	PZ51C	X			
PW-DUW01-0310	11/30/09 4:40 PM	PZ51D	X			
Trip Blank 11/30	11/30/09 12:00 AM	PZ51E	X			
PW-DUW01-0360	12/1/09 10:20 AM	PZ64A	X			
PW-DUW06-0160	12/1/09 1:45 PM	PZ64B	X			
PW-DUW06-0210	12/1/09 4:15 PM	PZ64C	X			
Trip Blank 12/01	12/1/09 12:00 AM	PZ64D	X			
PW-DUW06-0260	12/2/09 11:50 AM	PZ86A	X			
PW-DUW06-0310	12/2/09 1:35 PM	PZ86B	X			
PW-DUW06-0360	12/2/09 3:30 PM	PZ86C	X			
Trip Blank 12/02	12/2/09 12:00 AM	PZ86D	X			
PW-DUW03-0160	12/3/09 10:40 AM	QA05A	X			
PW-DUW03-0210	12/3/09 12:50 PM	QA05B	X			
PW-DUW03-0260	12/3/09 2:40 PM	QA05C	X			
Trip Blank 12/03	12/3/09 12:00 AM	QA05D	X			
PW-DUW03-0310	12/4/09 10:20 AM	QA25A	X			
PW-DUW03-0360	12/4/09 12:30 PM	QA25B	X			
PW-DUW04-0160	12/4/09 4:15 PM	QA25C	X			
Trip Blank 12/04	12/4/09 12:00 AM	QA25D	X			
PW-DUW04-0210	12/8/09 10:10 AM	QA53A	X			
PW-DUW04-0260	12/8/09 11:55 AM	QA53B	X			
PW-DUW04-0310	12/8/09 1:30 PM	QA53C	X			
PW-DUW04-0360	12/8/09 3:05 PM	QA53D	X			
Trip Blank 12/08	12/8/09 12:00 AM	QA53E	X			
PW-DUW05-0210	12/9/09 12:40 PM	QA71A	X			
PW-DUW05-0260	12/9/09 2:15 PM	QA71B	X			
PW-DUW05-0310	12/9/09 3:45 PM	QA71C	X			
Trip Blank 12/09	12/9/09 12:00 AM	QA71D	X			
PW-DUW05-0100	12/10/09 1:55 PM	QA87B	X			
PW-DUW05-0360	12/10/09 10:20 AM	QA87A	X			
Trip Blank 12/10	12/10/09 12:00 AM	QA87C	X			
PW-DUW01-0100	12/11/09 12:00 PM	QB10B	X			
PW-DUW02-0100	12/11/09 10:45 AM	QB10A	X			
Trip Blank 12/11	12/11/09 12:00 AM	QB10C	X			

Validation: A summary validation was performed for these analyses. Validation was performed by Cari Sayler. Data qualifiers are summarized in section 5.0 of this report.

Requested analyses: Volatile organic analyses were performed by EPA method 8260C. Polychlorinated biphenyl (PCB) analyses were performed by EPA Method 8082. Total Organic Carbon (TOC) analyses were performed by Plumb, 1981. Total solids analyses were performed by EPA method 160.3. Method references match those specified in the QAPP. Analyses were performed by Analytical Resources, Inc. in Tukwila, Washington.

Sample chain-of-custodies were reviewed. All requested analyses were performed.

Sample number transcription: Sample IDs in the electronic data deliverable (EDD) were compared to the chain-of-custody for each sample. The following

discrepancies were noted: Samples SD-DUW442-0020 and SD-DUW442-0040 were listed on the EDD as samples SD-DUW422-0020 and SD-DUW422-0040. These IDs were corrected in the EDD. All other sample IDs matched the chain of custody.

2.0 Volatile Organic Analyses

Quality control analysis frequencies: The QAPP specifies that the following quality control samples be analyzed one per analytical batch or one per twenty samples, whichever is more frequent: method blank, and laboratory control sample (LCS). A matrix spike (MS) and MS duplicate (MSD) must be analyzed one per twenty samples. In addition, surrogate compounds must be measured in each field and quality control sample. These frequencies were met.

Holding times: Sediment samples and must be analyzed within 14 days of collection. Preserved pore water samples must be analyzed within 14 days of extraction from sediments. Unpreserved pore water samples must be analyzed within 7 days of extraction from sediments. These holding times were met with the following exceptions:

Sample ID	Days, Sample to Extraction	Days, Extraction to Analysis	Days, Sample to Analysis
Sediments			
SD-DUW449-0040RE	15	0	15
SD-DUW450-0040RE	22	0	22
SD-DUW451-0140RE	21	0	21

Positive and non-detect results in these reanalyses are qualified as estimated.

All pore water samples except PW-DUW02-0160 were listed on the chain-of-custody as preserved. 2-Chloroethylvinylether was reported in these samples with the footnote "2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample." Reporting limits for this analyte were rejected in all pore water samples except PW-DUW02-0160.

Instrument calibration: Data usability criteria for calibrations include maximum relative standard deviations (RSDs) of ±30% or minimum correlation coefficients (R^2) of 0.990 for each initial calibration, and maximum % differences of ±25% for each continuing calibration.

Method 8260C recommends minimum relative response factors (RRF) between 0.05 and 0.5 for various compounds, but allows low responses for non-critical target analytes. The current functional guideline specifies minimum RRFs of 0.010 for poor performers and 0.050 for the remaining compounds.

These criteria were met in the initial calibration.

The following continuing calibration RRFs were below the functional guidelines minimum RRF:

Analysis Date / Instrument	Analyte	RRF	Minimum RRF
Sediments			
11/18 NT9	2-Chloroethylvinylether	0.009	0.010

Analysis Date / Instrument	Analyte	RRF	Minimum RRF
11/24 NT9	2-Chloroethylvinylether	0.009	0.010

2-Chloroethylvinyl ether results in the associated samples are rejected as unusable.

The following continuing calibration percent differences exceeded ± 25%:

Analysis Date / Instrument	Analyte	% Difference	Lab SDG
Sediments			
11/13 NT9	2-Chloroethylvinylether	-51.4	PV43, PV72
11/13 NT9	Acetone	-26.7	PV43, PV72
11/13 NT9	Chloromethane	48.9	PV43, PV72
11/13 NT9	Vinyl chloride	35.7	PV43, PV72
11/16 NT9	2-Chloroethylvinylether	-43.2	PV43, PV72
11/17 NT10	Chloroethane	27.9	PV72
11/17 NT10	Vinyl chloride	26.6	PV72
11/17 NT9	2-Chloroethylvinylether	-51.4	PV43, PV72
11/17 NT9	Acetone	-27.1	PV43, PV72
11/18 NT9	2-Chloroethylvinylether	-75.7	PV72, PX69
11/18 NT9	Chloromethane	32.3	PV72, PX69
11/24 NT9	2-Chloroethylvinylether	-75.7	PV43, PV72
Pore Waters			
11/25 NT5	Bromomethane	-33.4	PZ15
11/30 NT5	2-Butanone	-25.0	PZ39
11/30 NT5	Acetone	-27.0	PZ39
11/30 NT5	Vinyl acetate	-25.8	PZ39
12/7 NT5	Acetone	-25.4	PZ64
12/7 NT5	Bromomethane	-37.2	PZ64
12/8 NT5	Acetone	-31.7	PZ85, QA05, QA25
12/8 NT5	Bromomethane	-40.0	PZ85, QA05, QA25
12/10 NT5	Acetone	-33.3	QA71
12/10 NT5	Bromomethane	-43.9	QA71
12/11 NT5	Bromomethane	-37.6	QA87
12/14 NT5	Bromomethane	-33.6	QA87, QB10

Positive results associated with high (positive) calibration % differences are qualified as estimated, and non-detect results are considered unaffected. Positive and non-detect results associated with low (negative) calibration % differences are qualified as estimated.

Laboratory blank results: Criteria for blanks are that analyte concentrations must be below the RL, or below 5% of the lowest associated sample concentration. The following contamination was detected in the method blanks:

Blank ID	Analyte	Concentration (ug/L)	RL (ug/L)
Pore Waters			
09-29593-PZ64MB	Methylene Chloride	0.3J	0.50

Sample results with on-column concentrations below five times this level should be considered not detected at the reported value and are qualified as undetected.

Trip blank results: Criteria for blanks are that analyte concentrations must be below the RL, or below 5% of the lowest associated sample concentration. The following contamination was detected in the trip blanks:

Blank ID	Analyte	Concentration (ug/L)	RL (ug/L)
Sediments			
Trip Blank 11/02	Methylene Chloride	4.1	2.0
Pore Waters			
Trip Blank 11/24	Chloromethane	0.6	0.20
Trip Blank 11/24	Acetone	4Q	2.5
Trip Blank 11/25	Acetone	8.7Q	2.5
Trip Blank 11/30	Acetone	9.2	2.5
Trip Blank 12/01	Chloromethane	0.5	0.20
Trip Blank 12/01	Carbon Disulfide	0.2	0.20
Trip Blank 12/08	Acetone	16	2.5
Trip Blank 12/08	Carbon Disulfide	0.3	0.20
Trip Blank 12/09	Chloromethane	0.3	0.20
Trip Blank 12/09	Acetone	3.6Q	2.5

Due to the sporadic nature of contamination, an action limit of the highest detected blank concentration for each analyte was created and applied to all samples. Sample results with concentrations below five times these levels should be considered not detected at the reported value and are qualified as undetected. Sample results with concentrations between five and ten times these levels are qualified as estimated. Sample results with concentrations above ten times these levels are considered unaffected.

Surrogate recoveries: Surrogate recoveries were within laboratory control limits with the following exceptions:

Sample ID	Surrogate	Recovery (%)	Lab Control Limit
Sediments			
SD-DUW451-0020MSD	d4-1,2-Dichloroethane	73.4	75.0 - 152
SD-DUW451-0060MS	Bromofluorobenzene	160	64.0 - 120
SD-DUW451-0060MSD	Bromofluorobenzene	170	64.0 - 120
SD-DUW451-0080MS	Bromofluorobenzene	146	64.0 - 120
SD-DUW451-0080MSD	Bromofluorobenzene	171	64.0 - 120
SD-DUW448-0040	Bromofluorobenzene	170	64.0 - 120
SD-DUW448-0040RE	Bromofluorobenzene	185	64.0 - 120
SD-DUW449-0040	d4-1,2-Dichloroethane	70.3	75.0 - 152
SD-DUW451-0060	Bromofluorobenzene	229	64.0 - 120
SD-DUW451-0060RE	Bromofluorobenzene	212	64.0 - 120

For samples with low recoveries, both positive and non-detect results are qualified as estimated. For samples with high recoveries, positive results are qualified as estimated and non-detect results are considered unaffected. Qualifiers are not assigned to QC samples.

LCS recoveries: The following LCS recoveries were outside the laboratory control limit:

QC ID	Analyte	Recovery (%)	Lab Control Limit
Sediments			
09-26243-PV43LCS	Chloromethane	145	54.0 - 133
09-26243-PV43LCSD	Chloromethane	148	54.0 - 133
09-26243-PV43LCS	Vinyl Chloride	134	62.0 - 132
09-26243-PV43LCSD	Vinyl Chloride	136	62.0 - 132
09-26243-PV43LCS	2-Chloroethylvinylether	50.8	52.0 - 138
09-26244-PV43LCSD	Chloroethane	72.6	74.0 - 127

QC ID	Analyte	Recovery (%)	Lab Control Limit
09-26244-PV43LCSD	1,1,1-Trichloroethane	78.8	80.0 - 135
09-26244-PV43LCSD	Carbon Tetrachloride	71.2	76.0 - 136
09-26244-PV43LCSD	Chlorobenzene	83.4	88.0 - 124
09-26248-PV43LCS	Acetone	57.6	59.0 - 128
09-26248-PV43LCS	1,2-Dichloroethane	73.0	74.0 - 131
09-26248-PV43LCS	2-Butanone	69.2	73.0 - 125
09-26248-PV43LCS	Vinyl Acetate	72.6	80.0 - 128
09-26248-PV43LCS	1,1,2-Trichloroethane	73.6	79.0 - 124
09-26248-PV43LCS	trans-1,3-Dichloropropene	76.8	78.0 - 130
09-26248-PV43LCS	2-Chloroethylvinylether	36.4	52.0 - 138
09-26248-PV43LCSD	2-Chloroethylvinylether	45.6	52.0 - 138
09-26248-PV43LCS	4-Methyl-2-Pentanone (MIBK)	69.2	71.0 - 130
09-26252-PV43LCS	2-Butanone	72.8	73.0 - 125
09-26252-PV43LCS	Vinyl Acetate	77.6	80.0 - 128
09-26252-PV43LCS	2-Chloroethylvinylether	21.6	52.0 - 138
09-26252-PV43LCSD	2-Chloroethylvinylether	27.4	52.0 - 138
09-26421-PV72LCS	Chloromethane	145	54.0 - 133
09-26421-PV72LCSD	Chloromethane	148	54.0 - 133
09-26421-PV72LCS	Vinyl Chloride	134	62.0 - 132
09-26421-PV72LCSD	Vinyl Chloride	136	62.0 - 132
09-26421-PV72LCS	2-Chloroethylvinylether	50.8	52.0 - 138
09-26423-PV72LCSD	Chloroethane	72.6	74.0 - 127
09-26423-PV72LCSD	1,1,1-Trichloroethane	78.8	80.0 - 135
09-26423-PV72LCSD	Carbon Tetrachloride	71.2	76.0 - 136
09-26423-PV72LCSD	Chlorobenzene	83.4	88.0 - 124
09-26424-PV72LCS	trans-1,2-Dichloroethene	79.4	80.0 - 126
09-26424-PV72LCS	1,1,1-Trichloroethane	78.4	80.0 - 135
09-26424-PV72LCS	Carbon Tetrachloride	73.4	76.0 - 136
09-26424-PV72LCS	2-Chloroethylvinylether	12.2	52.0 - 138
09-26424-PV72LCSD	2-Chloroethylvinylether	12.8	52.0 - 138
09-26424-PV72LCS	Chlorobenzene	86.6	88.0 - 124
09-26426-PV72LCS	Acetone	57.6	59.0 - 128
09-26426-PV72LCS	1,2-Dichloroethane	73.0	74.0 - 131
09-26426-PV72LCS	2-Butanone	69.2	73.0 - 125
09-26426-PV72LCS	Vinyl Acetate	72.6	80.0 - 128
09-26426-PV72LCS	1,1,2-Trichloroethane	73.6	79.0 - 124
09-26426-PV72LCS	trans-1,3-Dichloropropene	76.8	78.0 - 130
09-26426-PV72LCS	2-Chloroethylvinylether	36.4	52.0 - 138
09-26426-PV72LCSD	2-Chloroethylvinylether	45.6	52.0 - 138
09-26426-PV72LCS	4-Methyl-2-Pentanone (MIBK)	69.2	71.0 - 130
09-26427-PV72LCS	2-Butanone	72.8	73.0 - 125
09-26427-PV72LCS	Vinyl Acetate	77.6	80.0 - 128
09-26427-PV72LCS	2-Chloroethylvinylether	21.6	52.0 - 138
09-26427-PV72LCSD	2-Chloroethylvinylether	27.4	52.0 - 138
09-26461-PV72LCS	Acetone	61.6	66.0 - 136
09-28195-PX69LCS	trans-1,2-Dichloroethene	79.4	80.0 - 126
09-28195-PX69LCS	1,1,1-Trichloroethane	78.4	80.0 - 135
09-28195-PX69LCS	Carbon Tetrachloride	73.4	76.0 - 136
09-28195-PX69LCS	2-Chloroethylvinylether	12.2	52.0 - 138
09-28195-PX69LCSD	2-Chloroethylvinylether	12.8	52.0 - 138
09-28195-PX69LCS	Chlorobenzene	86.6	88.0 - 124
09-28201-PX69LCS	trans-1,2-Dichloroethene	79.2	80.0 - 126
09-28201-PX69LCS	1,1,1-Trichloroethane	78.4	80.0 - 135
09-28201-PX69LCS	Carbon Tetrachloride	73.6	76.0 - 136
09-28201-PX69LCS	2-Chloroethylvinylether	12.3	52.0 - 138
09-28201-PX69LCSD	2-Chloroethylvinylether	12.8	52.0 - 138
09-28201-PX69LCS	Chlorobenzene	86.4	88.0 - 124
09-28217-PX70LCS	trans-1,2-Dichloroethene	79.4	80.0 - 126

QC ID	Analyte	Recovery (%)	Lab Control Limit
09-28217-PX70LCS	1,1,1-Trichloroethane	78.4	80.0 - 135
09-28217-PX70LCS	Carbon Tetrachloride	73.4	76.0 - 136
09-28217-PX70LCS	2-Chloroethylvinylether	12.2	52.0 - 138
09-28217-PX70LCSD	2-Chloroethylvinylether	12.8	52.0 - 138
09-28217-PX70LCS	Chlorobenzene	86.6	88.0 - 124
Pore Waters			
09-29728-PZ86LCSD	Acetone	64.6	66.0 - 136
09-29801-QA05LCSD	Acetone	64.6	66.0 - 136
09-29975-QA25LCSD	Acetone	64.6	66.0 - 136
09-30337-QA71LCSD	Bromomethane	59.0	61.0 - 140

For results with low recoveries, both positive and non-detect results are qualified as estimated in the associated samples. For results with high recoveries, positive results are qualified as estimated and non-detect results are considered unaffected.

MS recoveries: MS recoveries were within the laboratory limits with the following exceptions:

QC ID	Analyte	Recovery (%)	Lab Control Limit
Sediments			
SD-DUW451-0020MSD	Chloromethane	175	30.0 - 160
SD-DUW451-0020MSD	Vinyl Chloride	175	47.0 - 159
SD-DUW451-0020MSRE	1,1-Dichloroethene	130	74.0 - 120
SD-DUW451-0020MSD	1,1-Dichloroethene	148	74.0 - 120
SD-DUW451-0020MSRE	Vinyl Acetate	0	30.0 - 160
SD-DUW451-0020MSD	Vinyl Acetate	0	30.0 - 160
SD-DUW451-0020MSRE	trans-1,3-Dichloropropene	29.2	30.0 - 160
SD-DUW451-0020MSRE	2-Chloroethylvinylether	14.6	30.0 - 160
SD-DUW451-0020MSD	2-Chloroethylvinylether	13.6	30.0 - 160
SD-DUW451-0020MSD	Trichlorofluoromethane	179	30.0 - 160
SD-DUW451-0040MS	1,1,2,2-Tetrachloroethane	175	30.0 - 160
SD-DUW451-0040MSD	1,1,2,2-Tetrachloroethane	168	30.0 - 160
SD-DUW451-0060MS	Chloromethane	176	30.0 - 160
SD-DUW451-0060MSD	Chloromethane	167	30.0 - 160
SD-DUW451-0060MS	1,1-Dichloroethene	133	74.0 - 120
SD-DUW451-0060MSD	1,1-Dichloroethene	125	74.0 - 120
SD-DUW451-0060MS	Vinyl Acetate	0	30.0 - 160
SD-DUW451-0060MSD	Vinyl Acetate	0	30.0 - 160
SD-DUW451-0060MSD	cis-1,3-Dichloropropene	28.0	30.0 - 160
SD-DUW451-0060MSD	trans-1,3-Dichloropropene	29.1	30.0 - 160
SD-DUW451-0060MSD	2-Hexanone	170	30.0 - 160
SD-DUW451-0060MS	1,1,2,2-Tetrachloroethane	1080	30.0 - 160
SD-DUW451-0060MSD	1,1,2,2-Tetrachloroethane	953	30.0 - 160
SD-DUW451-0080MSD	Chloromethane	167	30.0 - 160
SD-DUW451-0080MSD	1,1-Dichloroethene	132	74.0 - 120
SD-DUW451-0080MS	Vinyl Acetate	0	30.0 - 160
SD-DUW451-0080MSD	Vinyl Acetate	0	30.0 - 160
SD-DUW451-0080MS	cis-1,3-Dichloropropene	29.8	30.0 - 160
SD-DUW451-0080MSD	cis-1,3-Dichloropropene	25.5	30.0 - 160
SD-DUW451-0080MS	trans-1,3-Dichloropropene	29.4	30.0 - 160
SD-DUW451-0080MSD	trans-1,3-Dichloropropene	24.3	30.0 - 160
SD-DUW451-0080MS	2-Chloroethylvinylether	24.0	30.0 - 160
SD-DUW451-0080MSD	2-Chloroethylvinylether	27.1	30.0 - 160
SD-DUW451-0080MS	1,1,2,2-Tetrachloroethane	612	30.0 - 160
SD-DUW451-0080MSD	1,1,2,2-Tetrachloroethane	1020	30.0 - 160
SD-DUW447-0020MS	Vinyl Acetate	26.1	30.0 - 160
SD-DUW447-0020MSD	Vinyl Acetate	12.4	30.0 - 160

QC ID	Analyte	Recovery (%)	Lab Control Limit
SD-DUW447-0020MS	2-Chloroethylvinylether	0	30.0 - 160
SD-DUW447-0020MSD	2-Chloroethylvinylether	18.5	30.0 - 160
SD-DUW447-0020MS	Ethylbenzene	82.8	87.0 - 133
SD-DUW447-0020MSD	Ethylbenzene	78.4	87.0 - 133
Pore Waters			
PW-DUW02-0210MS	2-Chloroethylvinylether	0	10.0 - 125
PW-DUW02-0210MSD	2-Chloroethylvinylether	0	10.0 - 125
PW-DUW02-0210MS	4-Methyl-2-Pentanone (MIBK)	135	80.0 - 124
PW-DUW02-0210MSD	4-Methyl-2-Pentanone (MIBK)	141	80.0 - 124
PW-DUW02-0210MS	2-Hexanone	136	63.0 - 126
PW-DUW02-0210MSD	2-Hexanone	136	63.0 - 126
PW-DUW02-0210MSD	Styrene	75.0	77.0 - 135
PW-DUW03-0210MS	2-Chloroethylvinylether	0	10.0 - 125
PW-DUW03-0210MSD	2-Chloroethylvinylether	0	10.0 - 125
PW-DUW03-0210MS	Styrene	33.0	77.0 - 135
PW-DUW03-0210MSD	Styrene	38.0	77.0 - 135
PW-DUW04-0210MS	Methylene Chloride	122	74.0 - 120
PW-DUW04-0210MS	Chloroform	124	79.0 - 120
PW-DUW04-0210MS	4-Methyl-2-Pentanone (MIBK)	131	80.0 - 124
PW-DUW04-0210MSD	4-Methyl-2-Pentanone (MIBK)	130	80.0 - 124
PW-DUW04-0210MS	2-Hexanone	134	63.0 - 126
PW-DUW04-0210MSD	2-Hexanone	136	63.0 - 126

For results with recoveries below functional guidelines action limit of 10%, positive results are qualified as estimated in the native sample and non-detect results are rejected as unusable. For results with low recoveries above 10%, both positive and non-detect results are qualified as estimated in the native samples. For results with high recoveries, positive results are qualified as estimated in the native samples and non-detect results are considered unaffected.

Because vinyl acetate was not recovered in three of the five sediment MS/MSD pairs, detection limits for vinyl acetate in all sediment samples are rejected as unusable.

2-Chloroethylvinylether was not recovered in a majority of the pore water MS/MSD pairs, likely due to the unsuitability of analyzing this analyte in preserved samples. Reporting limits for this analyte have already been rejected in pore waters and no further action is required.

<u>LCS/LCSD RPDs:</u> RPDs were within the laboratory control limits with the following exceptions:

QC ID	Analyte	RPD	Lab Control Limit
Sediments			
09-26244-PV43LCSD	2-Chloroethylvinylether	31.2	30
09-26422-PV72LCSD	Acetone	32.2	30
09-26423-PV72LCSD	2-Chloroethylvinylether	31.2	30
09-26461-PV72LCSD	Acetone	32.2	30

Positive results in the associated samples are qualified as estimated.

<u>MS/MSD RPDs:</u> RPDs were within the laboratory control limits with the following exceptions:

QC ID	Analyte	RPD	Lab Control Limit
Sediments			
SD-DUW451-0060MSD	Bromoform	30.1	30
SD-DUW451-0080MSD	Carbon Tetrachloride	36.8	30
SD-DUW451-0080MSD	1,1,2,2-Tetrachloroethane	50.9	30
SD-DUW447-0020MSD	Vinyl Acetate	74.1	30

Positive results in the native samples are qualified as estimated.

Multiple reported results: Unless quality control results warrant the rejection of one result, multiple reported results are evaluated according to the following guidelines

(1) If both results are non-detects, the lower reporting limit was selected.
(2) If one result was not detected and the other detected, the detection was selected.
(3) If both results were detections, the following additional criteria were applied:
   (a) If one result was off-scale and one was on-scale, the on-scale result was selected.
   (b) If associated QC results indicated high bias, the lower concentration result was selected.
   (c) If associated QC results indicated no, low, or mixed biases, the higher concentration result was selected.

This approach is conservative, and is considered most protective of the environment. The results not selected as the best result to report are qualified R1, rejected due to the availability of better results.

Laboratory qualifiers: Various results are flagged M to indicate poor spectral match. The corresponding validation qualifier “N”, compound is presumed present, is assigned.

Additionally, the laboratory narratives indicates that areas for d4-1,4-Dichlorobenzene are outside of the 50 to 200% range in the following six samples: SD-DUW448-0040, SD-DUW449-0040, SD-DUW450-0040, SD-DUW451-0060, SD-DUW451-0140, and SD-DUW451-0140 RE. Analytes in these six samples associated with this internal standard are qualified as estimated.

Reporting limits: RLs were elevated above QAPP levels in some samples due to necessary dilutions. RLs were slightly elevated in other samples due to reduced sample size. No qualifiers are assigned on the basis of reporting limits.

No qualifiers are assigned on the basis of reporting limits.

Overall assessment: Documentation was found to be clear and complete.

2-Chloroethylvinylether is unsuitable for analysis in preserved water samples resulting in unusable detection limits. Vinyl acetate was not recovered in the majority of the sediment matrix spikes also resulting in unusable detection limits.

Additional data in certain samples were qualified as estimated based on specific exceedances of holding times, continuing calibration % differences, surrogate recoveries, internal standard areas, LCS and MS recoveries, and LCS/D and MS/D RPDs.

With the exception of rejected 2-chloroethylvinylether and vinyl acetate results, volatile organic data, as qualified, are acceptable for use.

3.0 PCB Analyses

Quality control analysis frequencies: The QAPP specifies that the following quality control samples be analyzed one per analytical batch or one per twenty samples, whichever is more frequent: method blank, and laboratory control sample (LCS). A matrix spike (MS) and MS duplicate (MSD) must be analyzed one per twenty samples and a regional reference material (RRM) must be analyzed one per fifty samples. In addition, surrogate compounds must be measured in each field and quality control sample. These frequencies were met.

Holding times: Refrigerated sediment samples must be extracted within 14 days of collection. Frozen sediment samples must be extracted within 1 year of collection. Extracts must be analyzed within 40 days of extraction. These holding times were met.

Instrument calibration: Data usability criteria for calibrations include minimum correlation coefficients of 0.990 or maximum RSDs of ±20% for each initial calibration, and maximum % differences of ±25% for each continuing calibration. All initial calibration compound RSDs were within 20%. Continuing calibration % differences were within ±25% with the following exceptions:

The % difference (25.2%) for the third aroclor 1260 quantitation peak on the ZB35 column of the 11/21/09 13:40 continuing calibration and the % difference (25.2%) for the fourth aroclor 1248 quantitation peak on the ZB35 column of the 12/23/09 21:09 continuing calibration exceeded the 25% criteria.

The exceedances were slight, and the average % difference for each aroclor was well within the 25% criteria. No qualifiers are assigned.

Laboratory blank results: Criteria for blanks are that analyte concentrations must be below the RL, or below 5% of the lowest associated sample concentration. These criteria were met.

Surrogate recoveries: Surrogates were not recovered in samples with high dilution factors. This represents an absence of information and does not indicate poor accuracy. No qualifiers are assigned. The remaining surrogate recoveries were within QAPP limits with the following exceptions:

Sample ID	Surrogate	Recovery (%)	Control Limit
SD-DUW448-0020	Decachlorobiphenyl	Not reported	30 - 150
SD-DUW488-0040	Decachlorobiphenyl	Not reported	30 - 150
SD-DUW487-0120	Tetrachlorometaxylene	Not reported	30 - 150
SD-DUW488-0050	Tetrachlorometaxylene	Not reported	30 - 150

The laboratory noted interferences and the remaining surrogate recovery in each sample was within limits, and no qualifiers are assigned.

LCS recoveries: LCS recoveries were within the QAPP specified limits of 50-130%.

SRM recoveries: SRM recoveries ranged from 65 to 123%. Nine of the ten SRMs were within the within the advisory limits of 19-112%. No qualifiers are assigned.

MS recoveries: MS recoveries were within the QAPP limits with the following exceptions:

QC ID	Analyte	Recovery (%)	Control Limit
SD-DUW451-0020MSRE	Aroclor 1016	206	40 - 140
SD-DUW451-0020MSD	Aroclor 1016	165	40 - 140
SD-DUW430-0050MS	Aroclor 1016	141	40 - 140
SD-DUW436-0160MSD	Aroclor 1260	181	40 - 140

Aroclor 1016 was not detected in the native samples, and no qualifiers are required. Aroclor 1260 is qualified as estimated in sample SD-DUW436-0160.

MS/MSD RPDs: MS/D RPDs were within the QAPP specified limits of 50%.

Multiple reported results: Multiple reported results are evaluated according to the guidelines in section 2.0.

Laboratory qualifiers: Various results are flagged Y to indicate elevated reporting limits. These results are qualified “UY” to clarify that the aroclor was not detected. Additionally, several results were flagged “P” to indicate that the dual column RPD exceeded 40%. These results are qualified as estimated.

Reporting limits: The RLs of some aroclors were elevated above 130 ug/Kg due to sample dilutions, reduced sample size, or analytical interferences. In each case, the sample also contained detected aroclors and the impact on the total PCB value is minimal. No qualifiers are assigned on the basis of reporting limits.

Overall assessment: Documentation was found to be clear and complete. Calibration data demonstrate acceptable instrument performance. One aroclor 1260 result was qualified due to high MS recovery and five were estimated due to high dual column RPDs. Laboratory control sample results demonstrate acceptable accuracy and precision. Multiple analysis results were reduced to the most appropriate to use. No data were rejected and data completeness goals were met.

PCB data, as qualified, are acceptable for use.

4.0 General Chemistry Analyses

Quality control analysis frequencies: For total organic carbon, the following quality control samples were analyzed in each batch: Method blank, SRM, and LCS. A one per twenty frequency was achieved for MS and laboratory triplicate. For total solids, a method blank and laboratory triplicate were analyzed in each batch. Quality control samples were sufficient to evaluate precision and accuracy as appropriate for the method.

Holding times: Holding times are as follows:

Analysis	Holding time if refrigerated	Holding time if frozen
TOC	28 days	6 months

Analysis	Holding time if refrigerated	Holding time if frozen
Total Solids	14 days	6 months

Samples were analyzed within the holding times .

Instrument calibration: Instrument calibration criteria are as follows:

Analysis	Criteria
TOC	Initial calibration $R^2 > 0.990$ Continuing calibration recovery within 90-110%
Total Solids	Calibration mass within $\pm$ 0.1 g

These criteria were met.

Laboratory blank results: Criteria for method blanks are that analyte concentrations must be below the PQL, or below 10% of the lowest associated sample concentration. This criterion was met for all method blanks.

LCS recoveries: Control limits were 75-125% for TOC. These criteria were met.

SRM results: Control limits were 75-125% for TOC. These criteria were met.

MS recoveries: Control limits were 75-125% for TOC. These criteria were met.

Duplicate and triplicate results: Control limits were 20% for TOC and total solids. These criteria were met with the following exceptions:

QC ID	Analyte	RSD	Lab Control Limit
SD-DUW448-0020LT	Total Organic Carbon	34.5	20.0
SD-DUW442-0060LT	Total Organic Carbon	20.1	20.0
SD-DUW426-0100LT	Total Organic Carbon	20.3	20.0
SD-DUW441-0130LT	Total Organic Carbon	32.2	20.0
SD-DUW447-0060LT	Total Organic Carbon	23.2	20.0

TOC is qualified as estimated in these samples.

Overall assessment: Documentation was found to be clear and complete. Laboratory QC results demonstrate acceptable accuracy and precision.

General chemistry results, as qualified, are acceptable for use.

5.0 Qualifier Summary Table

Client ID	Analyte(s)	Qualifier	Reason
Volatile Analyses			
PW-DUW01-0100	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW01-0100	Acetone, Bromomethane	UJ	Low CCV %D
PW-DUW01-0160	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW01-0160	Acetone, Chloromethane	U	Blank Contamination
PW-DUW01-0210	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW01-0210	Acetone	U	Blank Contamination
PW-DUW01-0260	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW01-0260	Acetone	U	Blank Contamination
PW-DUW01-0310	2-Chloroethylvinylether	R	Unsuitable for preserved analysis

Client ID	Analyte(s)	Qualifier	Reason
PW-DUW01-0310	Acetone	U	Blank Contamination
PW-DUW01-0360	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW01-0360	Acetone	UJ	Blank Contamination, Low CCV %D
PW-DUW01-0360	Bromomethane	UJ	Low CCV %D
PW-DUW01-0360	Methylene Chloride	U	Blank Contamination
PW-DUW02-0100	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW02-0100	Acetone	UJ	Blank Contamination, Low CCV %D
PW-DUW02-0100	Bromomethane	UJ	Low CCV %D
PW-DUW02-0160	Acetone	U	Blank Contamination
PW-DUW02-0160	Bromomethane	UJ	Low CCV %D
PW-DUW02-0210	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW02-0210	Acetone	U	Blank Contamination
PW-DUW02-0210	Bromomethane	UJ	Low CCV %D
PW-DUW02-0210	Styrene	UJ	Low MSD recovery
PW-DUW02-0260	2-Butanone, Bromomethane, Vinyl Acetate	UJ	Low CCV %D
PW-DUW02-0260	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW02-0260	Acetone	UJ	Blank Contamination, Low CCV %D
PW-DUW02-0310	2-Butanone, Acetone, Bromomethane, Vinyl Acetate	UJ	Low CCV %D
PW-DUW02-0310	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW02-0360	2-Butanone, Bromomethane, Vinyl Acetate	UJ	Low CCV %D
PW-DUW02-0360	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW02-0360	Acetone	UJ	Blank Contamination, Low CCV %D
PW-DUW03-0160	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW03-0160	Acetone	UJ	Low CCV %D, Low LCSD recovery
PW-DUW03-0160	Bromomethane	UJ	Low CCV %D
PW-DUW03-0210	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW03-0210	Acetone	UJ	Blank Contamination, Low CCV %D, Low LCSD recovery
PW-DUW03-0210	Bromomethane	UJ	Low CCV %D
PW-DUW03-0210	Styrene	UJ	Low MS & MSD recoveries
PW-DUW03-0260	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW03-0260	Acetone	UJ	Blank Contamination, Low CCV %D, Low LCSD recovery
PW-DUW03-0260	Bromomethane	UJ	Low CCV %D
PW-DUW03-0310	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW03-0310	Acetone	UJ	Low CCV %D, Low LCSD recovery
PW-DUW03-0310	Bromomethane	UJ	Low CCV %D
PW-DUW03-0360	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW03-0360	Acetone	UJ	Low CCV %D, Low LCSD recovery
PW-DUW03-0360	Bromomethane	UJ	Low CCV %D
PW-DUW04-0160	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW04-0160	Acetone	UJ	Blank Contamination, Low CCV %D, Low LCSD recovery
PW-DUW04-0160	Bromomethane	UJ	Low CCV %D
PW-DUW04-0210	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW04-0210	Acetone	U	Blank Contamination
PW-DUW04-0260	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW04-0260	Acetone, Chloromethane	U	Blank Contamination
PW-DUW04-0310	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW04-0310	Acetone	U	Blank Contamination
PW-DUW04-0360	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW04-0360	Acetone	U	Blank Contamination
PW-DUW05-0100	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW05-0100	Acetone	UJ	Blank Contamination, Low CCV %D
PW-DUW05-0100	Bromomethane	UJ	Low CCV %D
PW-DUW05-0210	2-Butanone, Acetone	UJ	Low CCV %D
PW-DUW05-0210	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW05-0210	Bromomethane	UJ	Low CCV %D, Low LCSD recovery

Client ID	Analyte(s)	Qualifier	Reason
PW-DUW05-0260	2-Butanone	UJ	Low CCV %D
PW-DUW05-0260	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW05-0260	Acetone	UJ	Blank Contamination, Low CCV %D
PW-DUW05-0260	Bromomethane	UJ	Low CCV %D, Low LCSD recovery
PW-DUW05-0310	2-Butanone	UJ	Low CCV %D
PW-DUW05-0310	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW05-0310	Acetone	UJ	Blank Contamination, Low CCV %D
PW-DUW05-0310	Bromomethane	UJ	Low CCV %D, Low LCSD recovery
PW-DUW05-0310	Chloromethane	U	Blank Contamination
PW-DUW05-0360	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW05-0360	Acetone	U	Blank Contamination
PW-DUW05-0360	Bromomethane	UJ	Low CCV %D
PW-DUW06-0160	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW06-0160	Acetone	UJ	Blank Contamination, Low CCV %D
PW-DUW06-0160	Bromomethane	UJ	Low CCV %D
PW-DUW06-0210	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW06-0210	Acetone	UJ	Blank Contamination, Low CCV %D
PW-DUW06-0210	Bromomethane	UJ	Low CCV %D
PW-DUW06-0260	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW06-0260	Acetone	UJ	Blank Contamination, Low CCV %D, Low LCSD recovery
PW-DUW06-0260	Bromomethane	UJ	Low CCV %D
PW-DUW06-0310	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW06-0310	Acetone	UJ	Blank Contamination, Low CCV %D, Low LCSD recovery
PW-DUW06-0310	Bromomethane	UJ	Low CCV %D
PW-DUW06-0360	2-Chloroethylvinylether	R	Unsuitable for preserved analysis
PW-DUW06-0360	Acetone	UJ	Low CCV %D, Low LCSD recovery
PW-DUW06-0360	Bromomethane	UJ	Low CCV %D
SD-DUW447-0020	1,1,1-Trichloroethane, Carbon Tetrachloride, Chlorobenzene, trans-1,2-Dichloroethene	UJ	Low LCS recovery
SD-DUW447-0020	2-Chloroethylvinylether	R	Low CCV RRF, Very low MS recovery
SD-DUW447-0020	Acetone	U	Blank Contamination
SD-DUW447-0020	Carbon Disulfide	J	Blank Contamination
SD-DUW447-0020	Ethylbenzene	UJ	Low MS & MSD recoveries
SD-DUW447-0020	Vinyl Acetate	R	Low MS & MSD recoveries, High MS/MSD RPD, Not recovered in majority of MS/MSDs
SD-DUW447-0040	1,1,1-Trichloroethane, Carbon Tetrachloride, Chlorobenzene, trans-1,2-Dichloroethene	UJ	Low LCS recovery
SD-DUW447-0040	2-Chloroethylvinylether	R	Low CCV RRF
SD-DUW447-0040	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
SD-DUW448-0020	2-Chloroethylvinylether	UJ	Low CCV %D, Low LCS recovery
SD-DUW448-0020	Acetone	J	Blank Contamination, Low CCV %D
SD-DUW448-0020	Methylene Chloride	U	Blank Contamination
SD-DUW448-0020	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
SD-DUW448-0040	Acetone	U	Blank Contamination
SD-DUW448-0040	All except Acetone, Carbon Disulfide, Vinyl Acetate	R1	Another result available
SD-DUW448-0040	Carbon Disulfide	J	High surrogate recovery
SD-DUW448-0040	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
SD-DUW448-0040 RE	1,1,1-Trichloroethane, Carbon Tetrachloride, Chlorobenzene, Chloroethane	UJ	Low LCSD recovery
SD-DUW448-0040 RE	2-Butanone	J	High surrogate recovery

Client ID	Analyte(s)	Qualifier	Reason
SD-DUW448-0040 RE	2-Chloroethylvinylether	UJ	Low CCV %D
SD-DUW448-0040 RE	Acetone, Carbon Disulfide	R1	Another result available
SD-DUW448-0040 RE	Methylene Chloride	U	Blank Contamination
SD-DUW448-0040 RE	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
SD-DUW448-0060	2-Chloroethylvinylether	UJ	Low CCV %D, Low LCS recovery
SD-DUW448-0060	Acetone, Methylene Chloride	U	Blank Contamination
SD-DUW448-0060	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
SD-DUW448-0080	2-Chloroethylvinylether	UJ	Low CCV %D, Low LCS recovery
SD-DUW448-0080	Acetone, Methylene Chloride	U	Blank Contamination
SD-DUW448-0080	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
SD-DUW449-0020	2-Chloroethylvinylether	UJ	Low CCV %D, Low LCS recovery
SD-DUW449-0020	Acetone, Methylene Chloride	U	Blank Contamination
SD-DUW449-0020	Carbon Disulfide	J	Blank Contamination
SD-DUW449-0020	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
SD-DUW449-0040	Acetone	UJ	Blank Contamination, Low surrogate recovery
SD-DUW449-0040	All except Acetone, Vinyl Acetate	R1	Another result available
SD-DUW449-0040	Vinyl Acetate	R	Low surrogate recovery, Not recovered in majority of MS/MSDs
SD-DUW449-0040 RE	1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloro-1,2,2-trifluoroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dichloropropane, 2-Hexanone, Benzene, Bromodichloromethane, Bromoform, Bromomethane, Carbon Tetrachloride, Chlorobenzene, Chloroethane, Chloroform, Chloromethane, cis-1,2-Dichloroethene, cis-1,3-Dichloropropene, Dibromochloromethane, Ethylbenzene, m,p-Xylene, o-Xylene, Styrene, Tetrachloroethene, Toluene, trans-1,2-Dichloroethene, Trichloroethene, Trichlorofluoromethane, Vinyl Chloride	UJ	Hold time exceeded
SD-DUW449-0040 RE	1,1,2-Trichloroethane, 1,2-Dichloroethane, 4-Methyl-2-Pentanone (MIBK), trans-1,3-Dichloropropene	UJ	Hold time exceeded, Low LCS recovery
SD-DUW449-0040 RE	2-Butanone	J	Hold time exceeded, Low LCS recovery
SD-DUW449-0040 RE	2-Chloroethylvinylether	UJ	Hold time exceeded, Low CCV %D, Low LCS & LCSD recoveries
SD-DUW449-0040 RE	Acetone	R1	Another result available
SD-DUW449-0040 RE	Carbon Disulfide	J	Hold time exceeded
SD-DUW449-0040 RE	Methylene Chloride	UJ	Blank Contamination, Hold time exceeded
SD-DUW449-0040 RE	Vinyl Acetate	R	Hold time exceeded, Low LCS recovery, Not recovered in majority of MS/MSDs
SD-DUW449-0060	1,1,1-Trichloroethane, Carbon Tetrachloride, Chlorobenzene, Chloroethane	UJ	Low LCSD recovery
SD-DUW449-0060	2-Chloroethylvinylether	UJ	Low CCV %D
SD-DUW449-0060	Acetone, Methylene Chloride	U	Blank Contamination
SD-DUW449-0060	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
SD-DUW449-0080	2-Chloroethylvinylether	UJ	Low CCV %D, Low LCS recovery
SD-DUW449-0080	Acetone, Methylene Chloride	U	Blank Contamination
SD-DUW449-0080	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
SD-DUW450-0020	2-Chloroethylvinylether	UJ	Low CCV %D, Low LCS recovery

Client ID	Analyte(s)	Qualifier	Reason
SD-DUW450-0020	Acetone, Methylene Chloride	U	Blank Contamination
SD-DUW450-0020	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
SD-DUW450-0040	2-Chloroethylvinylether	UJ	Low CCV %D, Low LCS recovery
SD-DUW450-0040	Acetone	J	Blank Contamination, Low CCV %D
SD-DUW450-0040	All except 2-Butanone, 2-Chloroethylvinylether, Acetone, Carbon Disulfide, cis-1,2-Dichloroethene, Vinyl Acetate	R1	Another result available
SD-DUW450-0040	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
SD-DUW450-0040 RE	2-Butanone, Acetone, Carbon Disulfide, cis-1,2-Dichloroethene	R1	Another result available
SD-DUW450-0040 RE	2-Chloroethylvinylether	R	Hold time exceeded, Low CCV RRF
SD-DUW450-0040 RE	All except 2-Butanone, 2-Chloroethylvinylether, Acetone, Carbon Disulfide, cis-1,2-Dichloroethene, Methylene Chloride, Vinyl Acetate	UJ	Hold time exceeded
SD-DUW450-0040 RE	Methylene Chloride	UJ	Blank Contamination, Hold time exceeded
SD-DUW450-0040 RE	Vinyl Acetate	R	Hold time exceeded, Low LCS recovery, Not recovered in majority of MS/MSDs
SD-DUW450-0060	2-Chloroethylvinylether	UJ	Low CCV %D, Low LCS recovery
SD-DUW450-0060	Acetone, Methylene Chloride	U	Blank Contamination
SD-DUW450-0060	Carbon Disulfide	J	Blank Contamination
SD-DUW450-0060	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
SD-DUW450-0080	1,1,1-Trichloroethane, Carbon Tetrachloride, Chlorobenzene, trans-1,2-Dichloroethene	UJ	Low LCS recovery
SD-DUW450-0080	2-Chloroethylvinylether	R	Low CCV RRF
SD-DUW450-0080	Carbon Disulfide	J	Blank Contamination
SD-DUW450-0080	Methylene Chloride	U	Blank Contamination
SD-DUW450-0080	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
SD-DUW451-0020	1,1,2-Trichloroethane, 1,2-Dichloroethane, 2-Butanone, 4-Methyl-2-Pentanone (MIBK)	UJ	Low LCS recovery
SD-DUW451-0020	2-Chloroethylvinylether	UJ	Low CCV %D, Low LCS & LCSD recoveries, Low MS & MSD recoveries
SD-DUW451-0020	Acetone	UJ	Blank Contamination, Low LCS recovery
SD-DUW451-0020	Methylene Chloride	U	Blank Contamination
SD-DUW451-0020	trans-1,3-Dichloropropene	UJ	Low LCS recovery, Low MS recovery
SD-DUW451-0020	Vinyl Acetate	R	Low LCS recovery, Very low MS & MSD recoveries
SD-DUW451-0040	Acetone	UJ	Low LCS recovery
SD-DUW451-0040	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
SD-DUW451-0060	1,1,1-Trichloroethane, 1,1-Dichloroethene, 2-Butanone, Acetone, Benzene, Carbon Disulfide, Chloroethane, Chloroform, Chloromethane, cis-1,2-Dichloroethene, cis-1,3-Dichloropropene, Ethylbenzene, m,p-Xylene, Methylene Chloride, Styrene, trans-1,3-Dichloropropene, Trichloroethene, Vinyl Chloride	R1	Another result available
SD-DUW451-0060	1,1,2,2-Tetrachloroethane, Bromoform	UJ	Low IS area
SD-DUW451-0060	2-Chloroethylvinylether	UJ	Low CCV %D

Client ID	Analyte(s)	Qualifier	Reason
SD-DUW451-0060	Carbon Tetrachloride, Chlorobenzene	UJ	Low LCSD recovery
SD-DUW451-0060	o-Xylene	J	High surrogate recovery
SD-DUW451-0060	Vinyl Acetate	R	Very low MS & MSD recoveries
SD-DUW451-0060 RE	1,1,2,2-Tetrachloroethane, 1,1,2-Trichloro-1,2,2-trifluoroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,2-Dichloropropane, 2-Chloroethylvinylether, 2-Hexanone, 4-Methyl-2-Pentanone (MIBK), Bromodichloromethane, Bromoform, Bromomethane, Carbon Tetrachloride, Chlorobenzene, Dibromochloromethane, o-Xylene, Tetrachloroethene, Toluene, trans-1,2-Dichloroethene, Trichlorofluoromethane	R1	Another result available
SD-DUW451-0060 RE	2-Butanone	J	Low LCS recovery, High surrogate recovery
SD-DUW451-0060 RE	Acetone	J	Low CCV %D, Low LCS recovery, High surrogate recovery
SD-DUW451-0060 RE	Carbon Disulfide, m,p-Xylene, Trichloroethene, Vinyl Chloride	J	High surrogate recovery
SD-DUW451-0060 RE	cis-1,3-Dichloropropene	UJ	Low MSD recovery
SD-DUW451-0060 RE	Methylene Chloride	U	Blank Contamination
SD-DUW451-0060 RE	trans-1,3-Dichloropropene	UJ	Low LCS recovery, Low MSD recovery
SD-DUW451-0060 RE	Vinyl Acetate	R	Low LCS recovery, Very low MS & MSD recoveries
SD-DUW451-0080	1,1,1-Trichloroethane, Carbon Tetrachloride, Chlorobenzene, Chloroethane	UJ	Low LCSD recovery
SD-DUW451-0080	2-Butanone	N	Poor spectral match
SD-DUW451-0080	2-Chloroethylvinylether	UJ	Low CCV %D, Low MS & MSD recoveries
SD-DUW451-0080	Acetone, Methylene Chloride	U	Blank Contamination
SD-DUW451-0080	cis-1,3-Dichloropropene, trans-1,3-Dichloropropene	UJ	Low MS & MSD recoveries
SD-DUW451-0080	Vinyl Acetate	R	Very low MS & MSD recoveries
SD-DUW451-0100	Acetone	UJ	Low LCS recovery
SD-DUW451-0100	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
SD-DUW451-0120	1,1,2-Trichloroethane, 1,2-Dichloroethane, 4-Methyl-2-Pentanone (MIBK), trans-1,3-Dichloropropene	UJ	Low LCS recovery
SD-DUW451-0120	2-Butanone	J	Low LCS recovery
SD-DUW451-0120	2-Chloroethylvinylether	UJ	Low CCV %D, Low LCS & LCSD recoveries
SD-DUW451-0120	Acetone	J	Blank Contamination, Low CCV %D, Low LCS recovery
SD-DUW451-0120	Carbon Disulfide	J	Blank Contamination
SD-DUW451-0120	Methylene Chloride	U	Blank Contamination
SD-DUW451-0120	Vinyl Acetate	R	Low LCS recovery, Not recovered in majority of MS/MSDs
SD-DUW451-0140	1,1,1-Trichloroethane, Carbon Tetrachloride, Chlorobenzene, Chloroethane	UJ	Low LCSD recovery
SD-DUW451-0140	1,1,2,2-Tetrachloroethane, Bromoform	UJ	Low IS area
SD-DUW451-0140	2-Chloroethylvinylether	UJ	Low CCV %D
SD-DUW451-0140	Acetone, Methylene Chloride	R1	Another result available
SD-DUW451-0140	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
SD-DUW451-0140 RE	2-Chloroethylvinylether	R	Hold time exceeded, Low CCV RRF
SD-DUW451-0140 RE	Acetone	J	Blank Contamination, Hold time exceeded

Client ID	Analyte(s)	Qualifier	Reason
SD-DUW451-0140 RE	All except 2-Chloroethylvinylether, Acetone, Methylene Chloride, Vinyl Acetate	R1	Another result available
SD-DUW451-0140 RE	Methylene Chloride	UJ	Blank Contamination, Hold time exceeded
SD-DUW451-0140 RE	Vinyl Acetate	R	Hold time exceeded, Low LCS recovery, Not recovered in majority of MS/MSDs
SD-DUW488-0020	1,1,1-Trichloroethane, Carbon Tetrachloride, Chlorobenzene, trans-1,2-Dichloroethene	UJ	Low LCS recovery
SD-DUW488-0020	2-Chloroethylvinylether	R	Low CCV RRF
SD-DUW488-0020	Acetone	J	Blank Contamination
SD-DUW488-0020	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
SD-DUW488-0040	1,1,1-Trichloroethane, Carbon Tetrachloride, Chlorobenzene, trans-1,2-Dichloroethene	UJ	Low LCS recovery
SD-DUW488-0040	2-Chloroethylvinylether	R	Low CCV RRF
SD-DUW488-0040	Vinyl Acetate	R	Not recovered in majority of MS/MSDs
Trip Blank 12/01	Methylene Chloride	U	Blank Contamination
Polychlorinated Biphenyl Analyses			
SD-DUW424-0020	Aroclor 1248, Aroclor 1254, Aroclor 1260	R1	Another result available
SD-DUW424-0020 RE	Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242	R1	Another result available
SD-DUW424-0020 RE	Aroclor 1260	UY	Clarification of Y flag
SD-DUW424-0040	Aroclor 1248, Aroclor 1254, Aroclor 1260	R1	Another result available
SD-DUW424-0040 RE	Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242	R1	Another result available
SD-DUW424-0040 RE	Aroclor 1260	UY	Clarification of Y flag
SD-DUW424-0080	Aroclor 1248	UY	Clarification of Y flag
SD-DUW424-0080	Aroclor 1254, Aroclor 1260	R1	Another result available
SD-DUW424-0080 RE	All except Aroclor 1254, Aroclor 1260	R1	Another result available
SD-DUW424-0080 RE	Aroclor 1260	UY	Clarification of Y flag
SD-DUW424-0090	Aroclor 1248	UY	Clarification of Y flag
SD-DUW425-0020	Aroclor 1248	UY	Clarification of Y flag
SD-DUW425-0020	Aroclor 1254, Aroclor 1260	R1	Another result available
SD-DUW425-0020 RE	All except Aroclor 1254, Aroclor 1260	R1	Another result available
SD-DUW425-0040	Aroclor 1248	UY	Clarification of Y flag
SD-DUW425-0060	Aroclor 1248	UY	Clarification of Y flag
SD-DUW425-0070	Aroclor 1248	UY	Clarification of Y flag
SD-DUW426-0020	Aroclor 1248	UY	Clarification of Y flag
SD-DUW426-0020	Aroclor 1254, Aroclor 1260	R1	Another result available
SD-DUW426-0020 RE	All except Aroclor 1254, Aroclor 1260	R1	Another result available
SD-DUW427-0020	Aroclor 1248	UY	Clarification of Y flag
SD-DUW427-0040	Aroclor 1248, Aroclor 1254	R1	Another result available
SD-DUW427-0040	Aroclor 1260	UY	Clarification of Y flag
SD-DUW427-0040 RE	All except Aroclor 1248, Aroclor 1254	R1	Another result available
SD-DUW427-0040 RE	Aroclor 1248	UY	Clarification of Y flag
SD-DUW427-0060	Aroclor 1248	UY	Clarification of Y flag
SD-DUW427-0080	Aroclor 1248	UY	Clarification of Y flag
SD-DUW427-0100	Aroclor 1248	UY	Clarification of Y flag
SD-DUW429-0120	Aroclor 1248	UY	Clarification of Y flag
SD-DUW431-0050	Aroclor 1254	UY	Clarification of Y flag
SD-DUW432-0100	Aroclor 1254	UY	Clarification of Y flag
SD-DUW432-0120	Aroclor 1248	UY	Clarification of Y flag
SD-DUW432-0130	Aroclor 1248	UY	Clarification of Y flag
SD-DUW432-0140	Aroclor 1248, Aroclor 1254	UY	Clarification of Y flag
SD-DUW432-0150	Aroclor 1248, Aroclor 1254	UY	Clarification of Y flag
SD-DUW432-0160	Aroclor 1254	UY	Clarification of Y flag
SD-DUW432-0170	Aroclor 1254	UY	Clarification of Y flag
SD-DUW432-0180	Aroclor 1260	UY	Clarification of Y flag
SD-DUW433-0110	Aroclor 1248	UY	Clarification of Y flag

Client ID	Analyte(s)	Qualifier	Reason
SD-DUW433-0120	Aroclor 1254	UY	Clarification of Y flag
SD-DUW433-0130	Aroclor 1254	UY	Clarification of Y flag
SD-DUW433-0140	Aroclor 1248, Aroclor 1254	UY	Clarification of Y flag
SD-DUW433-0150	Aroclor 1254	UY	Clarification of Y flag
SD-DUW433-0160	Aroclor 1254	UY	Clarification of Y flag
SD-DUW433-0170	Aroclor 1254	UY	Clarification of Y flag
SD-DUW433-0180	Aroclor 1254	UY	Clarification of Y flag
SD-DUW433-0190	Aroclor 1254	UY	Clarification of Y flag
SD-DUW434-0060	Aroclor 1248	UY	Clarification of Y flag
SD-DUW434-0080	Aroclor 1248	UY	Clarification of Y flag
SD-DUW434-0100	Aroclor 1248	UY	Clarification of Y flag
SD-DUW434-0110	Aroclor 1248, Aroclor 1254	UY	Clarification of Y flag
SD-DUW434-0120	Aroclor 1248, Aroclor 1254	UY	Clarification of Y flag
SD-DUW434-0130	Aroclor 1254	UY	Clarification of Y flag
SD-DUW434-0140	Aroclor 1254	UY	Clarification of Y flag
SD-DUW436-0040	Aroclor 1254, Aroclor 1260	R1	Another result available
SD-DUW436-0040 RE	All except Aroclor 1254, Aroclor 1260	R1	Another result available
SD-DUW436-0100	Aroclor 1254, Aroclor 1260	R1	Another result available
SD-DUW436-0100 RE	All except Aroclor 1254, Aroclor 1260	R1	Another result available
SD-DUW436-0110	Aroclor 1248, Aroclor 1254	UY	Clarification of Y flag
SD-DUW436-0120	Aroclor 1254	UY	Clarification of Y flag
SD-DUW436-0130	Aroclor 1248, Aroclor 1254	UY	Clarification of Y flag
SD-DUW436-0140	Aroclor 1254	UY	Clarification of Y flag
SD-DUW436-0150	Aroclor 1254	UY	Clarification of Y flag
SD-DUW436-0160	Aroclor 1260	J	High MSD recovery
SD-DUW437-0110	Aroclor 1254	UY	Clarification of Y flag
SD-DUW437-0120	Aroclor 1254	UY	Clarification of Y flag
SD-DUW437-0130	Aroclor 1254	UY	Clarification of Y flag
SD-DUW437-0140	Aroclor 1254	UY	Clarification of Y flag
SD-DUW437-0150	Aroclor 1254	UY	Clarification of Y flag
SD-DUW437-0160	Aroclor 1248, Aroclor 1254	UY	Clarification of Y flag
SD-DUW438-0040	Aroclor 1254, Aroclor 1260	R1	Another result available
SD-DUW438-0040 RE	All except Aroclor 1254, Aroclor 1260	R1	Another result available
SD-DUW438-0060	Aroclor 1248	UY	Clarification of Y flag
SD-DUW438-0070	Aroclor 1254	UY	Clarification of Y flag
SD-DUW439-0040	Aroclor 1248	UY	Clarification of Y flag
SD-DUW439-0070	Aroclor 1254	UY	Clarification of Y flag
SD-DUW439-0090	Aroclor 1254	UY	Clarification of Y flag
SD-DUW439-0100	Aroclor 1254	UY	Clarification of Y flag
SD-DUW440-0060	Aroclor 1242	UY	Clarification of Y flag
SD-DUW440-0070	Aroclor 1248, Aroclor 1260	UY	Clarification of Y flag
SD-DUW441-0090	Aroclor 1248	UY	Clarification of Y flag
SD-DUW441-0100	Aroclor 1248	UY	Clarification of Y flag
SD-DUW441-0110	Aroclor 1248	UY	Clarification of Y flag
SD-DUW442-0020	Aroclor 1248	UY	Clarification of Y flag
SD-DUW442-0040	Aroclor 1248	UY	Clarification of Y flag
SD-DUW442-0050	Aroclor 1248	UY	Clarification of Y flag
SD-DUW442-0070	Aroclor 1254	UY	Clarification of Y flag
SD-DUW443-0090	Aroclor 1248	UY	Clarification of Y flag
SD-DUW443-0090	Aroclor 1260	J	High dual column RPD
SD-DUW444-0020	Aroclor 1248	UY	Clarification of Y flag
SD-DUW444-0040	Aroclor 1248	UY	Clarification of Y flag
SD-DUW444-0060	Aroclor 1248	UY	Clarification of Y flag
SD-DUW444-0080	Aroclor 1248	UY	Clarification of Y flag
SD-DUW444-0100	Aroclor 1248, Aroclor 1254	UY	Clarification of Y flag
SD-DUW444-0110	Aroclor 1248, Aroclor 1254	UY	Clarification of Y flag
SD-DUW444-0120	Aroclor 1248, Aroclor 1254	UY	Clarification of Y flag
SD-DUW444-0130	Aroclor 1248, Aroclor 1254	UY	Clarification of Y flag
SD-DUW445-0050	Aroclor 1248	UY	Clarification of Y flag
SD-DUW445-0060	Aroclor 1248	UY	Clarification of Y flag
SD-DUW445-0090	Aroclor 1254	UY	Clarification of Y flag
SD-DUW446-0040	Aroclor 1248, Aroclor 1254	UY	Clarification of Y flag
SD-DUW446-0050	Aroclor 1254	UY	Clarification of Y flag
SD-DUW446-0070	Aroclor 1254	UY	Clarification of Y flag
SD-DUW446-0090	Aroclor 1254	UY	Clarification of Y flag

Client ID	Analyte(s)	Qualifier	Reason
SD-DUW446-0100	Aroclor 1254	UY	Clarification of Y flag
SD-DUW447-0020	Aroclor 1248	UY	Clarification of Y flag
SD-DUW447-0040	Aroclor 1248	UY	Clarification of Y flag
SD-DUW447-0050	Aroclor 1248	UY	Clarification of Y flag
SD-DUW447-0060	Aroclor 1248	UY	Clarification of Y flag
SD-DUW448-0040	Aroclor 1248	UY	Clarification of Y flag
SD-DUW448-0040	Aroclor 1260	J	High dual column RPD
SD-DUW448-0050	Aroclor 1248	UY	Clarification of Y flag
SD-DUW448-0050	Aroclor 1260	J	High dual column RPD
SD-DUW448-0070	Aroclor 1248	UY	Clarification of Y flag
SD-DUW448-0070	Aroclor 1260	J	High dual column RPD
SD-DUW449-0050	Aroclor 1254	UY	Clarification of Y flag
SD-DUW449-0090	Aroclor 1260	J	High dual column RPD
SD-DUW450-0070	Aroclor 1254	UY	Clarification of Y flag
SD-DUW451-0040	Aroclor 1248	UY	Clarification of Y flag
SD-DUW451-0040	Aroclor 1254, Aroclor 1260	R1	Another result available
SD-DUW451-0040 DL	All except Aroclor 1254, Aroclor 1260	R1	Another result available
SD-DUW451-0040 DL	Aroclor 1260	UY	Clarification of Y flag
SD-DUW485-0020	Aroclor 1248	UY	Clarification of Y flag
SD-DUW485-0040	Aroclor 1248	UY	Clarification of Y flag
SD-DUW485-0060	Aroclor 1248	UY	Clarification of Y flag
SD-DUW485-0070	Aroclor 1248	UY	Clarification of Y flag
SD-DUW486-0040	Aroclor 1254	UY	Clarification of Y flag
SD-DUW486-0050	Aroclor 1248	UY	Clarification of Y flag
SD-DUW487-0070	Aroclor 1248, Aroclor 1254	UY	Clarification of Y flag
SD-DUW487-0100	Aroclor 1248	UY	Clarification of Y flag
SD-DUW487-0120	Aroclor 1248, Aroclor 1254	UY	Clarification of Y flag
SD-DUW487-0130	Aroclor 1248	UY	Clarification of Y flag
SD-DUW488-0020	Aroclor 1248	UY	Clarification of Y flag
SD-DUW488-0040	Aroclor 1248	UY	Clarification of Y flag
SD-DUW488-0050	Aroclor 1248	UY	Clarification of Y flag
General Chemistry Analyses			
SD-DUW426-0100	Total Organic Carbon	J	High lab triplicate RPD
SD-DUW441-0130	Total Organic Carbon	J	High lab triplicate RPD
SD-DUW442-0060	Total Organic Carbon	J	High lab triplicate RPD
SD-DUW445-0050	Total Organic Carbon	J	Low MS recovery
SD-DUW447-0060	Total Organic Carbon	J	High lab triplicate RPD
SD-DUW448-0020	Total Organic Carbon	J	High lab triplicate RPD

6.0 Abbreviations and Definitions

DV Qualifier	Definition
U	The material was analyzed for, but was not detected above the level of the associated value.
UY	The reporting limit was elevated due to interferences. The material was analyzed for, but was not detected above the level of he associated value.
J	The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a tentative identification.
UJ	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample result is rejected. The presence or absence of the analyte cannot be verified and data are not usable.
R1	This sample result has been rejected in favor of a more accurate and/or precise result. The other result should be used.

Abbreviation	Definition

Abbreviation	Definition
DV	Data validation
LCS	Laboratory control sample
MS	Matrix spike
MSD	Matrix spike duplicate
NA	Not Applicable
RPD	Relative percent difference
RRM	Regional reference material
RSD	Relative standard deviations
SRM	Standard reference material
Surr	Surrogate

7.0 References

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USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review, Office of Emergency and Remedial Response, U.S. Environmental Protection Agency, October 2004, EPA540-R-04-004.

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