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Final
Sediment Monitoring Summary Report 2008 Remedial Dredging

Environmental Monitoring, Sampling, and Analysis

New Bedford Harbor Superfund Site

New Bedford Harbor, MA

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Sediment Monitoring Summary Report
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New Bedford Harbor Superfund Site
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TABLE OF CONTENTS

Executive Summary v

1.0 INTRODUCTION 1

1.1 Site Description 1
1.2 Project Objectives 3
1.2.1 Pierce Mill Cove 3
1.2.2 North of Wood Street 4
1.2.3 OU3 Pilot Cap Site 4

2.0 METHODS 5

2.1 Sediment Collections 5
2.1.1 Pierce Mill Cove 5
2.1.2 North of Wood Street 9
2.1.3 OU3 Pilot Cap Site 10
2.1.4 Quality Control 10
2.2 Sample Processing 10
2.2.1 Photo documentation 11
2.2.2 Visual Characterization and Sub-sampling for Chemical Testing 11
2.3 Chemical Testing 12
2.3.1 Polychlorinated Biphenyls 12
2.3.2 Quality Control 13
2.4 Data Analysis 13

3.0 RESULTS 15

3.1 Field Activities 15
3.1.1 Pierce Mill Cove 15
3.1.2 North of Wood Street 17
3.1.3 OU3 Pilot Cap Site 18
3.2 Chemical Testing 19
3.2.1 Pierce Mill Cove 19
3.2.2 North of Wood Street 19
3.2.3 OU3 Pilot Cap Site 20
3.3 Quality Control 20
3.3.1 Field Activities 20
3.3.2 Chemical Testing 20

4.0 DISCUSSION 25

4.1 Vertical Elevation Results Related to Dredging 25
4.2 PCB Trends at the North of Wood Street 26
4.2.1 River Sediments 26
4.2.2 Shoreline Soils 27
4.3 PCB Trends OU3 Pilot Cap Site 28

5.0 REFERENCES 30

LIST OF TABLES

Table 1. Elevation Data From the 2008 Pre-dredge Sampling Event, Pierce Mill Cove. 16
Table 2. Elevation Data from the 2008 Post-dredge Sampling Event, Pierce Mill Cove. 17
Table 3. Summary of Samples Collected at the North of Wood Street, 2008. 18
Table 4. Summary of Samples Collected at the OU3 Pilot Cap Site, 2008. 19
Table 5. Total PCB Concentrations in Surface Sediment at the Site, 2008. 21

LIST OF FIGURES

Figure 1. Location of the Site in Southeastern Massachusetts. 1
Figure 2. New Bedford Harbor. 2
Figure 3. 2008 Dredge Area. 3
Figure 4. Pierce Mill Cove Planned Dredge Area with Z-blocks and Target Dredge Elevations. 4
Figure 5. Pre- and Post-dredge Sample Locations, Pierce Mill Cove. 5
Figure 6. Graphical Depiction of Sediment Core Measurements. 8
Figure 7. North of Wood Street Sampling Locations. 9
Figure 8. OU3 Pilot Cap Site Sampling Locations. 10
Figure 9A. Example Box Plot. 13
Figure 9B. Example Output from ANOVA. 13
Figure 10. Pre-dredge Thickness of OL Layer at Pierce Mill Cove. 15
Figure 11. Total PCB Concentrations in Post-dredge Sediment at Pierce Mill Cove, 2008. 22
Figure 12. Total PCB Concentrations in Sediment/Soil at North of Wood Street, 2008. 23
Figure 13. Total PCB Concentrations in Sediment at the OU3 Pilot Cap Site, 2008. 24
Figure 14. Correlation between Sediment Thickness of the OL Layer and Total PCB in Post-dredge Sediment, Pierce Mill Cove. 25
Figure 15. Distribution of Total PCB in River Sediment at the North of Wood Street, 2003-2008. 26
Figure 16. Temporal Trends in Total PCB (log normalized) in River Sediment at the North of Wood Street, 2003-2008. 27
Figure 17. Distribution of Total PCB in Shoreline Soil at the North of Wood Street, 2006-2008. 27
Figure 18. Temporal Trends in Total PCB (log normalized) in Shoreline Soil at the North of Wood Street, 2006-2008. 28
Figure 19. Distribution of Total PCB in Sediment at the OU3 Pilot Cap Site, 2005-2008. 28
Figure 20. Temporal Trends in Total PCB (log normalized) in Sediment at Ridge (A) and Valley (B) Locations at the OU3 Pilot Cap, 2005-2008. 29

APPENDICES

Appendix A: Field Sample Data
Appendix B: PCB Analytical Data

ACRONYMS AND ABBREVIATIONS

ANOVA	analysis of variance
CAD	confined aquatic disposal
DMU	dredge management unit
ID	identification
IS	internal standard
LCS	laboratory control sample
mg/kg	milligrams per kilogram
MPC	measurement performance criteria
MS/MSD	matrix spike/matrix spike duplicate
NS&T	National Status and Trends
NWS	North of Wood Street
PCB	polychlorinated biphenyl
QA	quality assurance
QC	quality control
ROD	Record of Decision
TTFW	Tetra Tech Foster Wheeler, Inc.
USACE NAE	U.S. Army Corps of Engineers, New England District
USCS	United Soil Classification System
USEPA	United States Environmental Protection Agency

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EXECUTIVE SUMMARY

Sediment monitoring was performed in 2008 at the New Bedford Harbor Superfund Site (site), located in New Bedford, Massachusetts. Sediment samples were collected at three areas of the site to characterize polychlorinated biphenyl (PCB) contamination in surface sediments: Pierce Mill Cove, North of Wood Street (NWS), and the OU3 pilot cap site.

Pierce Mill Cove

Pierce Mill Cove is located in the upper harbor north of Sawyer Street. Remedial dredging was performed at Pierce Mill Cove from August 18 through October 21, 2008, resulting in the removal of approximately 20,000 cubic yards of contaminated sediments. Dredging activities targeted removal of sediments to the approximate depth of the target dredge elevation (where, based on modeling, PCB concentrations are predicted to be less than the 10 milligrams per kilogram [mg/kg] remediation criteria). Sediment monitoring activities in 2008 included: 1) the collection of pre-dredge cores to determine the elevation of the visual transition and sediment thickness of the OL layer ('OL' in the United Soil Classification System [USCS], defined as 'organic silt, organic clay') to assist dredge planning; and 2) post-dredge coring to assess the overall performance of the dredging operation and support future needs.

Pre- and post-dredge sediment cores were typically comprised of two layers. The surface layer was characterized by fine-grained loose black organic silt with high moisture content ('OL'). Below this layer, the sediment type was generally comprised of moderately firm olive-gray clay ('OH' in the USCS, defined as organic clay, organic silt). In many cases the post-dredge cores had less distinct visual transitions compared to pre-dredge cores, and the transition occurred over a relatively broad band (>0.5 ft) of mixed sediment. The overall thickness of the OL layer was reduced as a result of dredging. That is, the thickness of the OL layer in the pre-dredge cores ranged from 0.5 to 2.2 ft and the thickness of the OL layer in the post-dredge cores ranged from 0.3 to 1.6 ft.

Concentrations of total PCB in the post-dredge cores ranged from 10 to 47 mg/kg. Post-dredge cores with a thicker OL layer generally had higher concentrations of total PCB, except stations bb28 and T38 where the total PCB concentrations were low relative to other sediments with similar sediment thickness.

North of Wood Street

The NWS area is located at the far northern end of the upper harbor. This area was prioritized for restoration activities based on its proximity to shoreline residential and recreational land use areas. The NWS area was remediated in 2002-2003, and again (in a small shoreline area missed in 2002-2003) in 2005. Long-term sediment monitoring has been performed since 2004 to assess the effectiveness of prior remediation and potential recontamination of this area due to sediment transport from unremediated areas of the Harbor. In 2008, sediment cores were collected at 21 locations, including 14 in-river locations and seven shoreline soil locations. Sediment cores were visually characterized and the 0 to 0.5 ft of surface analyzed for PCBs.

Many of the river sediments had similar physical characteristics, characterized by a layer of fine black silt underlain by sand, clay or silt. Sediment samples closer to the shore and further

upstream typically contained more sand. Shoreline soils were generally comprised of brown sand and/or organic silt underlain by sand.

Concentrations of total PCB ranged from 0.98 to 180 mg/kg in surface sediments sampled at the NWS area in 2008. The highest concentrations (>100 mg/kg) were measured in sediment at subtidal stations 055 and 039, located in the vicinity of the Wood Street bridge. Lower concentrations of total PCB (<10 mg/kg) were typically measured in sediment sampled further upstream and closer to the shore.

Total PCB concentrations were substantially lower in the shoreline soil samples, ranging from 0.076 to 0.67 mg/kg. Total PCB concentrations were below the applicable recreational cleanup criteria (25 mg/kg) at all shoreline locations sampled at the NWS area in 2008.

Long-term monitoring data suggest that post-remediation concentrations of total PCB have increased in river sediment, but not in shoreline soils. The post-remediation increase at river sediment locations could be associated with contaminant transport from the upper harbor during dredging activities or from natural transport (e.g., sediment resuspension and transport during tidal cycles or high winds) of contaminated sediment from unremediated areas of the Harbor. Annual sediment monitoring will continue at the NWS area as needed to assess the potential for recontamination from the unremediated areas of the Harbor immediately to the south.

OU3 Pilot Cap Site

The OU3 Pilot Cap site is a localized area of elevated PCB contamination located outside the hurricane barrier in New Bedford, Massachusetts. In 2005, this area was capped with parent material dredged during the construction of a confined aquatic disposal (CAD) cell in New Bedford Harbor. Annual monitoring has been performed since 2005 (shortly after completion of the capping activity) to determine the effectiveness of cap placement in lowering surficial sediment PCB concentrations, as well as the extent of change in PCB concentrations over time. In 2008, sediment grab samples were collected at 17 locations, encompassing a series of stations representative of ridge and valley locations at the pilot cap site. Sediment grabs were visually characterized and the 0 to 0.3 ft of surface was analyzed for PCBs.

All of the OU3 surface sediment samples had similar physical characteristics, characterized by fine sand with some silt. Based on the visual examination of the sediment grabs, sediment at the valley locations often contained more silt compared to sediment at the ridge locations. Concentrations of total PCB were also slightly higher at the valley locations (concentrations ranged from 0.23 to 6.0 mg/kg) compared to ridge locations (concentrations ranged from 0.26 to 2.2 mg/kg).

Long-term monitoring data suggest that there have been no significant differences in total PCB concentrations at the ridge locations, whereas total PCB concentrations at valley locations decreased significantly in 2008 compared 2005. The 2008 decrease at valley locations could reflect the deposition of cleaner material at these locations. Overall, the long-term monitoring data suggest that the cap remains effective in terms of lowering surficial PCB contamination.

1.0 INTRODUCTION

1.1 Site Description

The New Bedford Harbor Superfund Site (hereafter referred to as the site), located in Bristol County, Massachusetts, extends from the shallow northern reaches of the Acushnet River estuary south through the commercial harbor of New Bedford and into 17,000 adjacent acres of Buzzards Bay (Figure 1). Industrial and urban development surrounding the Harbor has resulted in sediments becoming contaminated with high concentrations of many pollutants, notably polychlorinated biphenyls (PCBs) and heavy metals. Two manufacturers in the area used PCBs while producing electronic devices from the 1940s to the late 1970s, when the use of PCBs was banned by the U.S. Environmental Protection Agency (USEPA). Based on human health concerns and ecological risk assessments, USEPA added New Bedford Harbor to the National Priorities List in 1983 as a designated Superfund Site. Through an Interagency Agreement between the USEPA and the U.S. Army Corps of Engineers, New England District (USACE NAE), the USACE is responsible for carrying out the design and implementation of the remedial measures at the site. The site has been divided into three areas – the upper, lower and outer harbors – consistent with geographical features of the area and gradients of contamination (Figure 2).

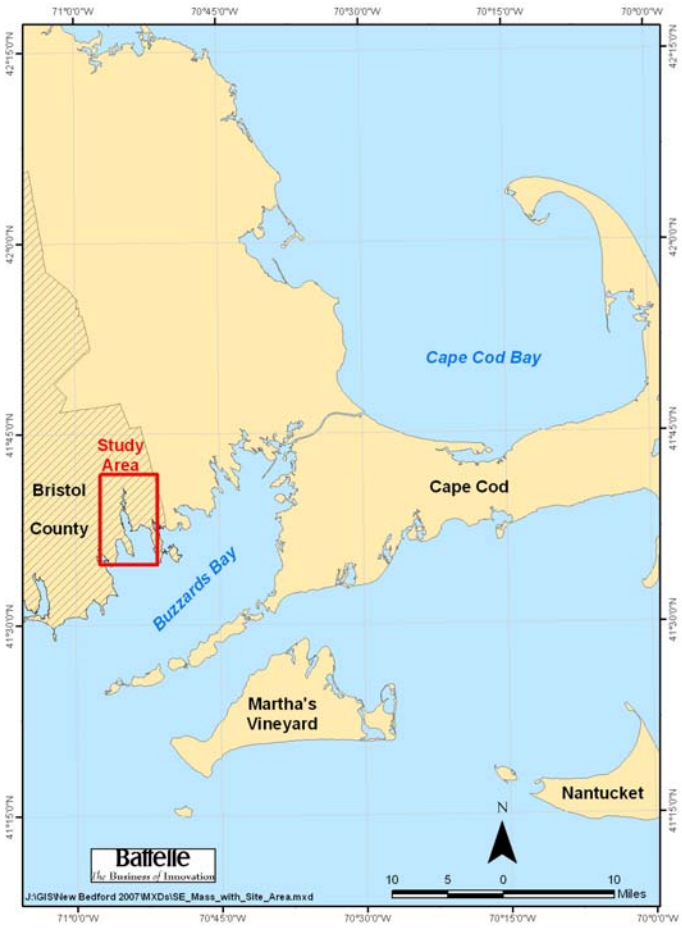

Figure 1. Location of the Site in Southeastern Massachusetts.

The shoreline Aerovox manufacturing facility located in New Bedford, Massachusetts, used PCBs in the manufacture of electrical capacitors from approximately 1940 to 1977. This facility is located in the upper harbor (Figure 2) and is considered one of the major sources of historic PCB contamination to New Bedford Harbor. The highest concentrations of PCBs were found in sediments in a 5-acre area in the northern portion of the Acushnet River Estuary adjacent to the Aerovox facility. These 'hot spot' sediments, which contained PCBs upwards of 100,000 milligrams per kilogram (mg/kg), were removed between 1994 and 1995 as part of USEPA's 1990 "Hot Spot" Record of Decision (ROD). Full scale remediation dredging per the 1998 Upper and Lower Harbor ROD was initiated in 2004 and has continued with annual funding every year since.

Another known source of PCB contamination in New Bedford Harbor is related to activities at the Cornell-Dubilier mill on the western shore of the outer harbor (Figure 2). In 2005, a 15 acre underwater cap pilot project was implemented near Cornell-Dubilier to cap PCB-contaminated sediments.

The remediation of this site per the 1998 ROD involves the excavation and dredging of approximately 900,000 cubic yards (cy) of PCB contaminated sediment. The majority of contaminated material is being removed utilizing a hydraulic dredge that pumps dredge slurry to the project's Sawyer Street facility where it is mechanically processed to remove all sand, gravel, and debris material. The silt and clay size materials are then pumped to the Area D Dewatering Facility located on Herman Melville Boulevard, where it is mechanically dewatered and transported off-site for disposal.

The site is divided into a series of Dredge Management Units (DMU) based on contamination levels, contamination sources, topography, and other factors. In 2008, remediation activities at the site included shoreline excavation adjacent to the Aerovox facility and hydraulic dredging at Pierce Mill Cove. This report presents results from sediment monitoring performed during dredging activities at Pierce Mill Cove, which encompasses sections of DMU-19, DMU-20, DMU-21, DMU-23, DMU-24, and DMU-25 (Figure 3). Monitoring results associated with shoreline excavation activities conducted adjacent to the Aerovox facility are reported in Jacobs (2009).

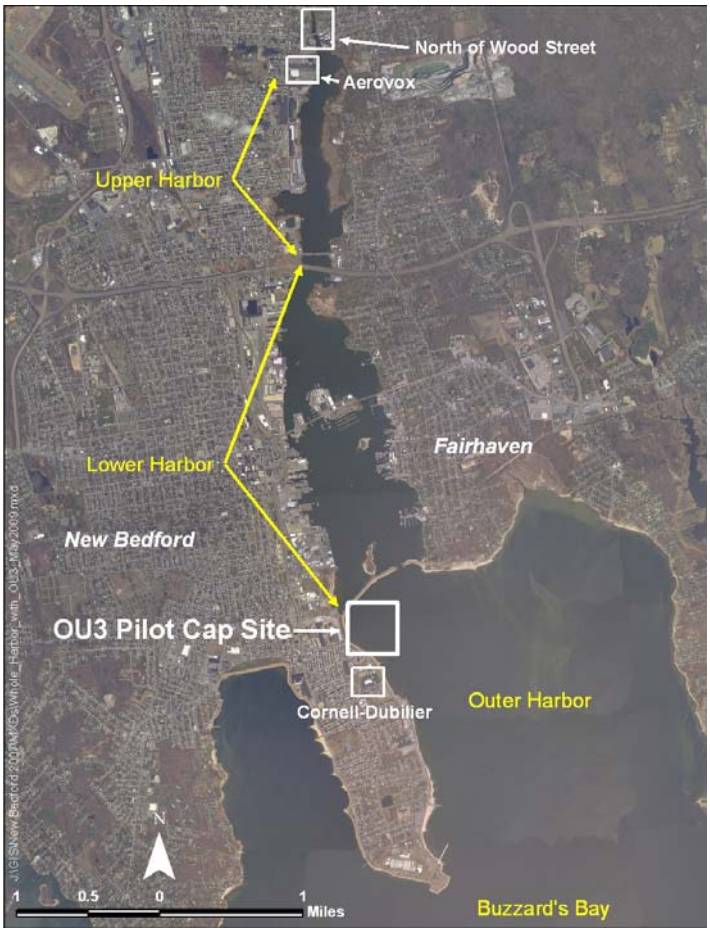

Figure 2. New Bedford Harbor.

This report also presents results from sediment monitoring performed in 2008 at the North of Wood Street (NWS) and OU3 pilot cap areas. The NWS area is located at the far northern end of the upper harbor (Figure 2). This area was remediated in 2002-2003 and again (for an area missed initially in 2002-2003) in 2005. Annual sediment monitoring has been performed at the NWS area since 2004 to assess the effectiveness of prior remediation and potential recontamination of this area due to sediment transport from unremediated areas of the Harbor. The OU3 area is located in the outer harbor (Figure 2). An underwater cap was placed over PCB-contaminated sediments at this area in 2005 and annual monitoring has been performed since then to assess the effectiveness of the underwater cap.

1.2 Project Objectives

The objectives of the 2008 sediment monitoring program were to perform monitoring in support of the remedial dredging activities at the Pierce Mill Cove dredge area and to characterize PCB contamination in surface sediments at the Pierce Mill Cove, NWS and OU3 areas of the site.

1.2.1 Pierce Mill Cove

Sediment monitoring at the Pierce Mill Cove dredge area (Figure 3) included pre-dredge coring to determine the elevation of the visual transition and sediment thickness of the OL layer ('OL' in the United Soil Classification System [USCS], defined as 'organic silt, organic clay') to assist dredge planning and post-dredge coring to assess the overall performance of the dredging operation and support future needs.

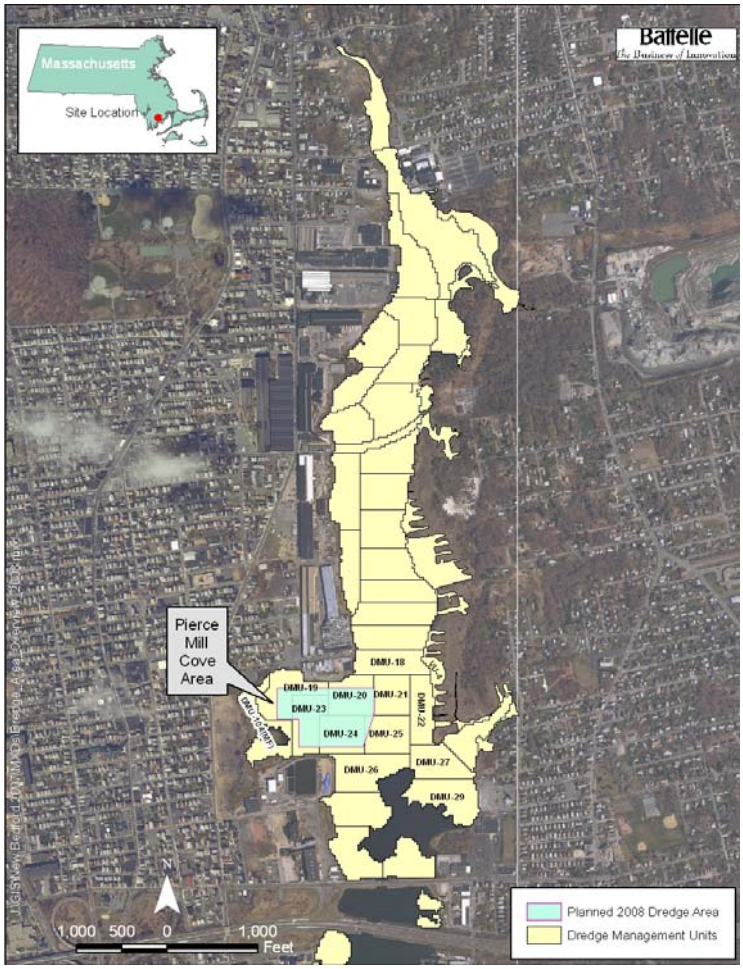

Figure 3. 2008 Dredge Area.

Pre-dredge Sediment Sampling. The entire upper harbor, including the planned Pierce Mill Cove dredge area depicted in Figure 4, have been parceled into discrete 25-foot by 25-foot 'z-blocks'. During remedial design, a geostatistical model was used to predict a target elevation for dredging each z-block. This target dredge elevation, as shown in Figure 4, represents the elevation below which PCB concentrations are predicted to be less than the 10 mg/kg remediation criteria at the Pierce Mill Cove dredge area. Using target dredge elevations in combination with bathymetric data, a preliminary dredge plan was developed, which estimated the required depth of dredging and the thickness of the overlying sediment to be removed. The pre-dredge sediment sampling plan was designed to confirm these estimates or adjust elevations as needed. Coring locations were placed onto the z-block map to achieve sufficient spatial coverage for making an evaluation of the target dredge elevations (Figure 4). Visual characterization data from the pre-dredge cores was used by USACE NAE and Jacobs Engineering Group (Jacobs) to prepare the final 2008 dredge plan (Jacobs, 2009).

Post-dredge Sediment Sampling. Post-dredge sediment sampling was conducted to assess the sediment condition relative to the target dredge elevation for the 2008 dredging event and to assist with future site needs. Post-dredge cores were visually characterized to determine the elevation

and thickness of overlying material remaining after the completion of dredging. Samples selected by USACE NAE were chemically tested to assess PCB concentrations remaining in the sediments following the completion of dredge activities; samples tested were selected based on location, color change, and core stratigraphy.

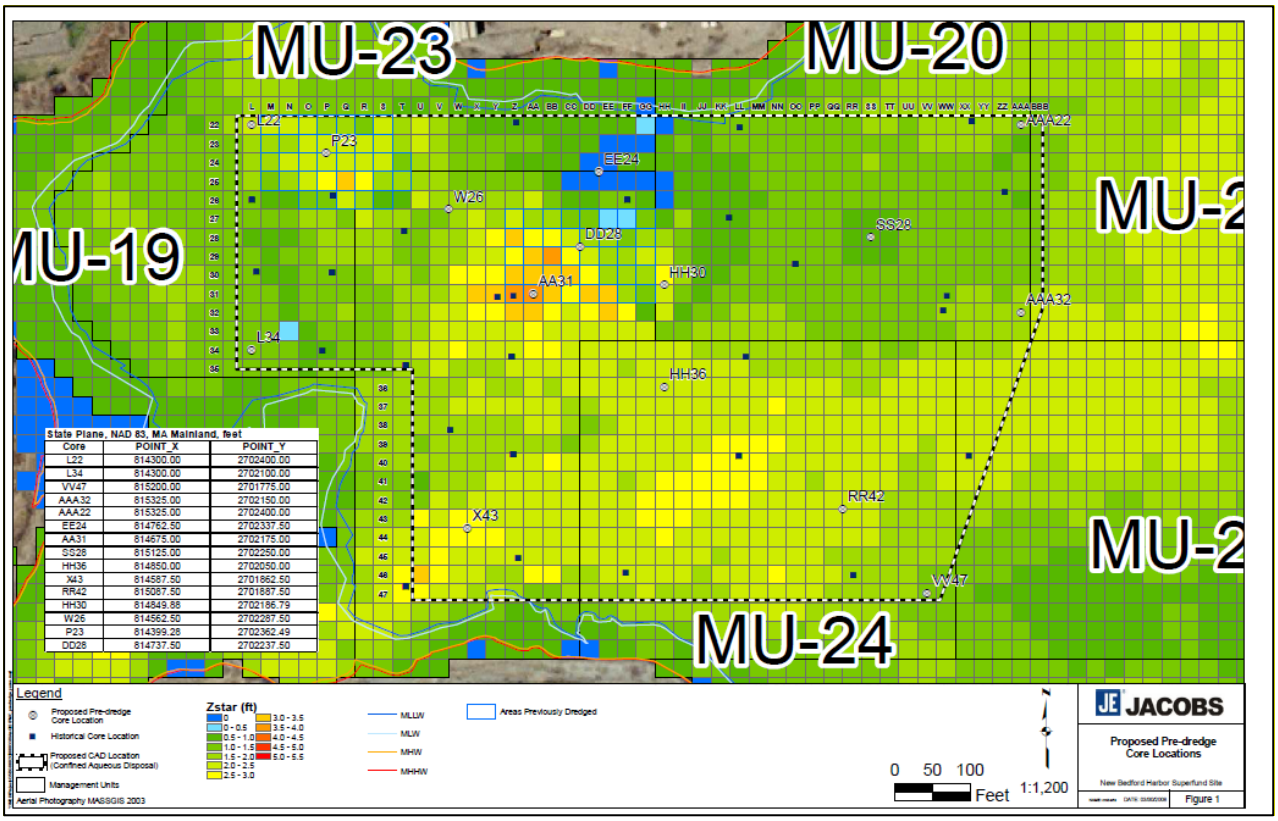

Figure 4. Pierce Mill Cove Planned Dredge Area with Z-blocks and Target Dredge Elevations. (Source: Jacobs, 2009)

1.2.2 North of Wood Street

Long-term sediment monitoring has been performed at the NWS area since 2004 to assess the effectiveness of prior remediation and potential recontamination of this area due to sediment transport from unremediated areas of the Harbor. The objectives of the 2008 monitoring activities were to characterize PCB contamination in surficial river sediment and shoreline soils at the NWS area, and evaluate the 2008 data in context of the larger monitoring period and the cleanup criteria established in the 1998 ROD: 1 mg/kg for residential shoreline areas, 10 mg/kg for the sub-tidal sediments, 25 mg/kg for the top foot of recreational land use shoreline soils, and 50 mg/kg for shoreline soils deeper than the top foot in residential and recreational land use areas.

1.2.3 OU3 Pilot Cap Site

Long-term monitoring has been performed at the OU3 pilot cap area since 2005 to assess the effectiveness of the cap. The objectives of the 2008 monitoring activities were to characterize PCB contamination in surface sediments collected at the OU3 cap area, and to evaluate the 2008 data in context of the larger monitoring period (2005-2007).

2.0 METHODS

Methods used to collect and analyze sediment samples are summarized below and described in detail in the project Field Sampling Plan (Battelle 2008a) and Quality Assurance Project Plan (Battelle, 2008b).

2.1 Sediment Collections

2.1.1 Pierce Mill Cove

Pre- and post-dredge core samples were collected at the Pierce Mill Cove dredge area (Figure 5). Sediment cores were collected with a push-core sampling device utilizing 3-inch diameter Lexan™ core barrels. The sampling device was designed to securely hold one end of a pre-cut length of core barrel. Core lengths were targeted so that penetration exceeded the expected depth of the target dredge elevation by at least one foot. A piston assembly inside the core barrel was used to create suction during retrieval of the sample to prevent sediment loss from the bottom of the barrel.

Once the individual components of the push-core sampler were assembled, sample collection was achieved as follows. The core assembly was measured from the bottom of the core to the top of the assembly. The piston assembly was positioned just inside the leading end of the core liner and the piston line was held loosely on deck. The device was lowered into the water until the leading end of the core bore barrel contacted the sediment surface. The piston attachment line was then tied off securely on the deck of the survey vessel, thus fixing the elevation of the piston assembly. In driving the push-core into the sediment, the piston created a syringe effect as the core liner was driven past the fixed elevation of the piston. The core liner was then driven to the maximum depth of either refusal or the limiting depth allowed by the length of the piston attachment line. When retrieving the core assembly (with sample), tension was held on the piston line so that the piston and

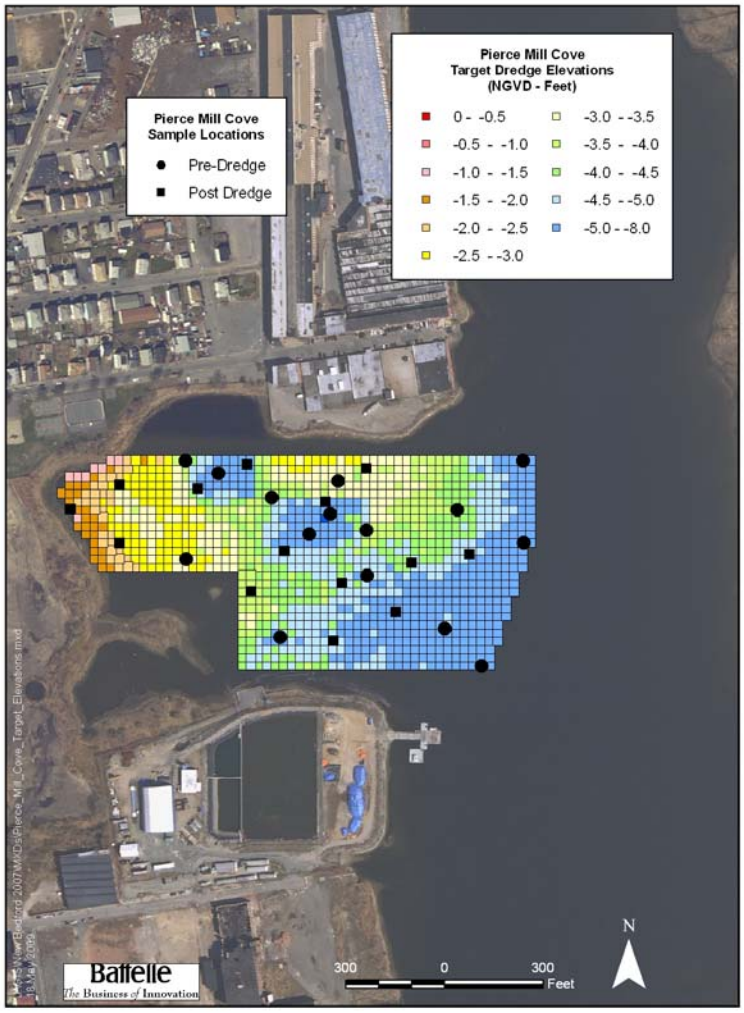

Figure 5. Pre- and Post-dredge Sample Locations, Pierce Mill Cove. (Sample locations shown with respect to Z-blocks and target dredge elevations)

sample were not pulled back down the core liner by suction from the sediments. The sampler was recovered onto the deck of the survey vessel. The bottom end of the core barrel was fitted with a plastic cap, after which the sediment on the external body of the sampler was rinsed off. After thoroughly cleaning the sampling device, the core liner was removed from the socket assembly, the piston assembly was removed, and the top of the core liner was fitted with a plastic end cap.

Upon recovery, the core was examined for acceptability. The goal of the sampling was to identify visual transitions in the field. If it did not appear that a clear transition layer was captured, the field team used professional judgment to determine the cause. Possible causes included: 1) the core was not long/deep enough to capture transition layers; 2) smearing of overlying sediments obscured the transition; and 3) the entire core was composed of the characteristic native material. For the first two causes the collection of a second core (longer for cause 1) at the same location was conducted. For the third cause the field team repositioned slightly and collected a second core. Other factors that were considered in determining acceptability included: 1) too much water at the top of the core; 2) signs of significant compaction at the top of the core; and 3) signs of loss of sediment from the bottom of the core. Because of the wide range of possible scenarios, overall core acceptability was based on the experience and judgment of the Chief Scientist and the field team. All decision making was documented on the Sediment Sampling Log sheets (Appendix A).

Determination of the accurate vertical elevation of the samples was critical in achieving the objectives of the project. Elevation of the water levels, sediment-water interface, apparent target dredge elevation, and other sediment transition zones were all critical measurements for this project (see Section 3 and Appendix A). The project elevation datum is MLW NGVD-29. A series of measurements were conducted for each sample to correct elevations for tidal fluctuations. All measurements were recorded as ±0.1 feet. The required measurements and techniques are listed below. See Figure 6 for graphical depiction of the measurements.

A = **Water depth**. The water depth was recorded using a measuring pole.

B = **Length of push-core assembly**. Prior to deployment, the full length of the push-core assembly from the top of the handle to the bottom edge of the core liner was recorded.

C = **Water surface to top of core assembly handle**. Once the core assembly was fully inserted (refusal or full core penetration), the length of the assembly remaining above the water surface was recorded.

D = **Core Length**. The core length, from bottom to top, was measured and recorded.

E = **Surveyed elevation**. Prior to operations, the dredge contractor installed a fixed sheet pile with markings indicating a survey elevation (NGVD 29). This elevation was recorded and served as the reference point for all elevation calculations.

F = **Water surface from surveyed elevation**. After sample collection, the survey vessel navigated to the fixed sheet pile with surveyed elevations (position to be determined) and the distance from the water surface to the surveyed elevation was recorded.

From these measurements a number of calculations were made to determine true elevations:

E - *F* = **Elevation of water surface** (G).

G - *(B* - *C)* = **Elevation of bottom of core** (*H*).

The *H* elevation (bottom of core) was used to determine the elevation of all visual transitions, including apparent target dredge elevation, i.e.:

H + *(distance to visual transition)* = **Elevation of visual transition** (target dredge elevation)

H + D = **Elevation of sediment-water interface** (I).

The elevation of the sediment-water interface was also calculated from:

G - *A* = **Elevation of sediment-water interface** (I_2).

I and I_2 were compared at each station. In soft sediments the sediment-water interface may have been difficult to discern from soundings (i.e., it is difficult to feel). Additionally, the sediment-water interface within a core was subject to compaction during collection, settling after recovery, and other factors that may have impacted the accuracy of elevation measurements. If *I* and I_2 varied by more than 1.0 foot, the core was discarded and a new sample collected.

Once the core was deemed acceptable, a Sediment Sampling Log sheet was completed. Sample collection data, including collection date and time, station coordinates, and sample identification (ID), were documented on Sediment Sampling Log forms. The field measurements required for determining vertical elevation of the sediment-water interface and each transitional layer was also included on the Sediment Sampling Log sheet. The core barrel was labeled with a sample ID, date, and the orientation for the top of the core. Chain of Custody for each core section was initiated in the field. Core samples were capped tightly, stored on ice in the field, and transferred to the Sawyer Street field trailer for processing (Section 2.2).

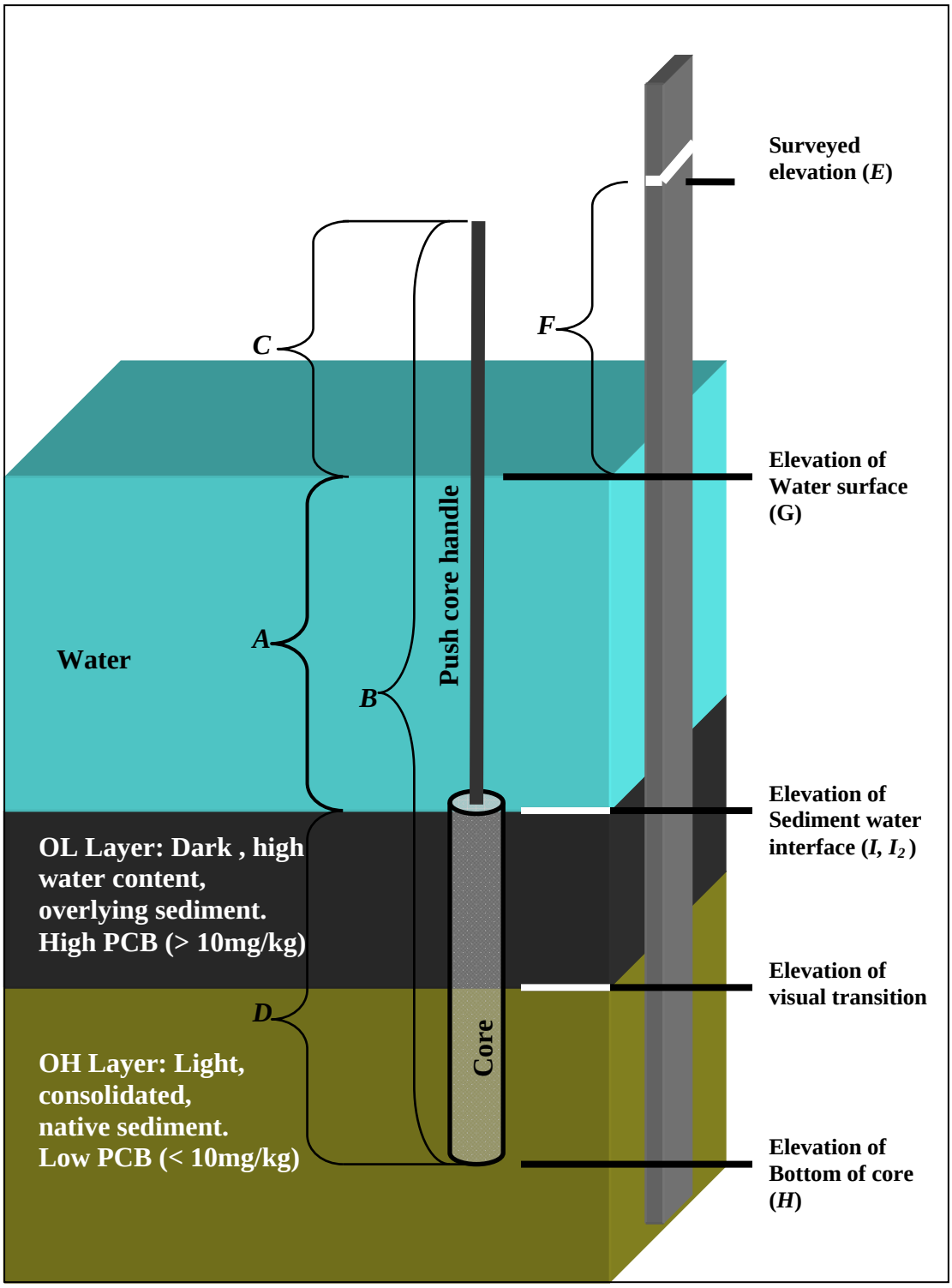

Figure 6. Graphical Depiction of Sediment Core Measurements.

2.1.2 North of Wood Street

Twenty-one (21) locations were sampled in 2008, including 14 sediment stations in the river and seven soil stations located at recreational and residential land use shoreline soil areas along the east and west side of the river (Figure 7). Station locations were based on locations sampled previously in 2006 and 2007 (Battelle, 2007 and 2008c).

In-river sediments were collected in Lexan™ core barrels attached to a stainless steel push-core sampler. In all cases, a one foot core was targeted. Samples in deeper waters were collected from a boat, while shallow water samples were collected by wading. The push-core sampler is designed to securely hold one end of a pre-cut length of core barrel. The stainless steel socket which holds the core liner was attached to a suitable length of push rod based on the water depths for the sampling effort. A piston assembly inside the core barrel was used to create suction during retrieval of the sample so that no sediment was lost from the bottom the barrel. The piston assembly was positioned just inside the leading end of the core liner and the piston line was held loosely on deck. The device was lowered into the water until the leading end of the core bore barrel contacted the sediment surface. The piston attachment line was then tied off securely on the deck, thus fixing the elevation of the piston assembly. In driving the push-core into the sediment, the piston created a syringe effect as the core liner was driven past the fixed elevation of the piston. The sampler was recovered onto the deck of the survey vessel. The bottom end of the core barrel was fitted with a plastic cap, after which the sediment on the external body of the sampler was rinsed off. After thoroughly cleaning the sampling device, the core liner was removed from the socket assembly, the piston assembly was then removed, and the top of the core liner was fitted with a plastic end cap. Shoreline soil samples were collected in Lexan™ core barrels inserted into a soil auger. Sample collection data, including collection date and time, station coordinates, and sample ID, were documented on Sediment Sampling Log forms (Appendix A). All cores were kept intact in the liners and returned to the Sawyer Street field trailer for processing (Section 2.2).

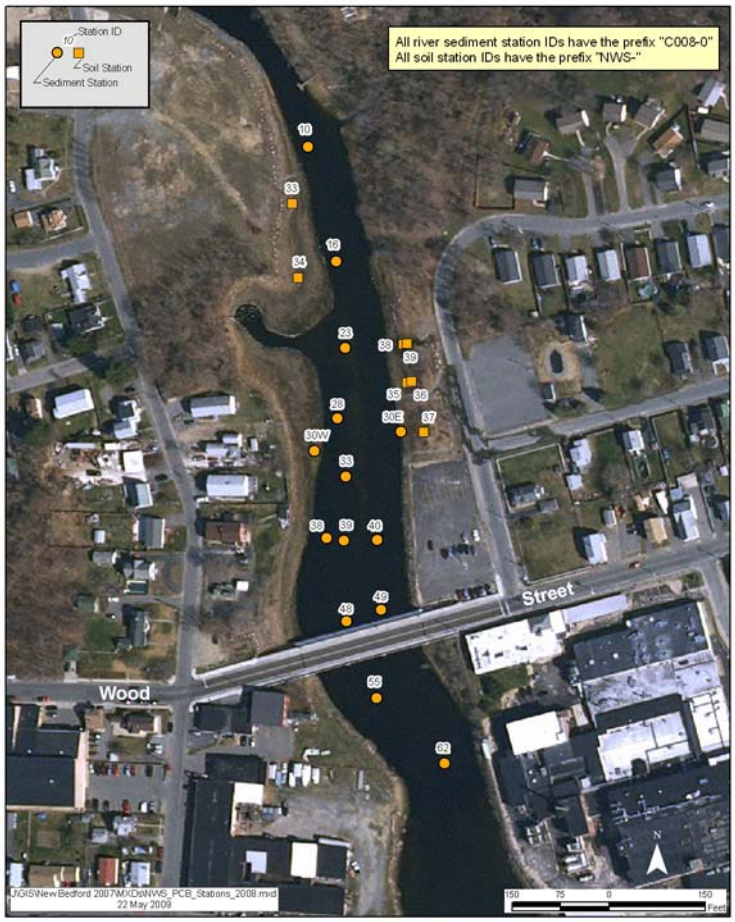

Figure 7. North of Wood Street Sampling Locations.

2.1.3 OU3 Pilot Cap Site

Sediment sampling was conducted at 17 locations at the OU3 Pilot Cap site to collect surficial sediments for PCB analysis. Sample locations are consistent with previous investigations (ENSR, 2006), and encompass a series of stations representative of ridge and valley locations at the pilot cap site (Figure 8).

The vessel transited to the target locations and the surface feature (i.e., ridge and valley) was assessed using the fathometer. Clearly discernable features (ridges and valleys) were evident at some stations (i.e., OU01, OU12 and OU16), but not others. Surface grab samples were collected at the target coordinates using a 0.04m^2 modified Van Veen grab sampler. Sample collection data, including collection date and time, station coordinates, and sample ID, were documented on Sediment Sampling Log forms (Appendix A). All samples were returned to the Sawyer Street field trailer for processing (Section 2.2).

2.1.4 Quality Control

A routine set of quality control (QC) samples, including field duplicates, equipment blanks, and quality assurance (QA) splits, were collected to evaluate the sampling and analytical data quality. One field duplicate and one equipment blank were collected during the NWS and OU3 sampling events. One QA split was collected for each event (Pierce Mill Cove, NWS and OU3); QA splits were shipped to ESS Laboratory, an independent testing laboratory identified by USACE NAE.

2.2 Sample Processing

Sediment samples were kept on ice and transferred to the Sawyer Street field trailer for processing. Sediment samples were photo-documented, visually characterized, and sub-sampled for chemical testing as described below.

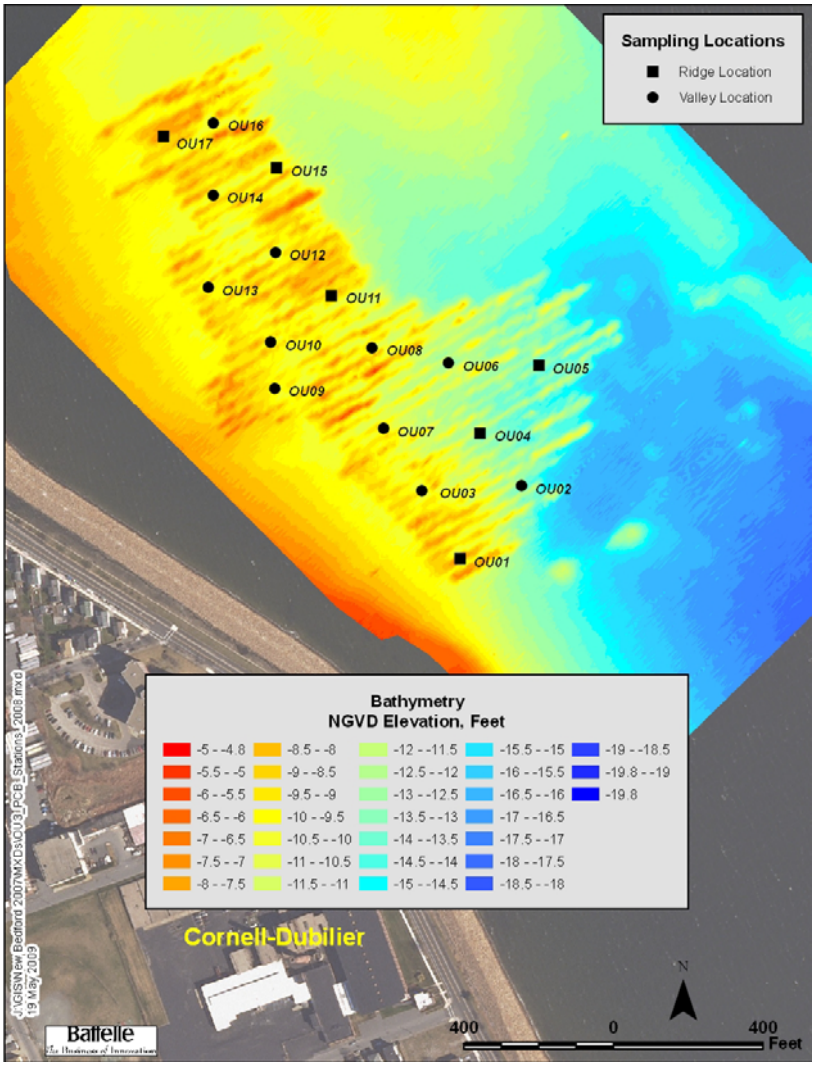

Figure 8. OU3 Pilot Cap Site Sampling Locations.
(Bathymetry conducted by Jacobs in March 2009)

2.2.1 Photo documentation

In general, previous investigations have shown that dark, high water content, organic silts in the surface sediment are associated with elevated PCBs (Foster Wheeler Environmental Corporation, 2001 and 2002; ENSR, 2004 and 2005). These sediments fall under the "OL" description in the USCS (organic silt, organic clay). At the site these contaminated OL sediments generally overlie lighter colored, more consolidated native clays which have lower PCBs concentrations. The use of this visual transition as a general indicator of the vertical location of contamination provides a rapid and inexpensive method to assess dredge targets and performance.

To document this visual transition, all sediment cores were documented with digital photographs. Each photograph contained the following elements in the frame:

- *The sediment core*. Photographing was done through the clear liner.
- *Measurement reference*. A tape measure (or equivalent) marked in decimal feet ran parallel to length of the core.
- *Sample identifier*. A card, paper, whiteboard, or equivalent was placed next to the core with the following written information:
    - Sample ID – an alpha numeric code that identifies sample matrix, sampling year, station location, and depth interval sampled
    - Sample Collection Date

2.2.2 Visual Characterization and Sub-sampling for Chemical Testing

Following photo documentation, all sediment samples were visually characterized and sub-sampled for chemical testing as described below. Copies of the sample field logs and custody records are maintained with the project files at Battelle.

Pierce Mill Cove, Pre-dredge Cores. Each sediment core was visually characterized and the physical characteristics (i.e., material type, color, consistency, particle size and odor) documented on the Sediment Sampling Log forms (Appendix A). Sediment cores were not sub-sampled for chemical testing, but were archived frozen at the site for possible analysis at a later date.

Pierce Mill Cove, Post-dredge Cores. Each sediment core was visually characterized and the physical characteristics (i.e., material type, color, consistency, particle size and odor) documented on the Sediment Sampling Log forms (Appendix A). A sub-set of the cores were sub-sampled for PCB analysis (i.e., stations X33, T38, CC27, T22, D32, D25, and bb28); core segments tested were selected based on location, color change, and core stratigraphy. Cores not selected for chemical testing were archived frozen at the site.

Based on the visual characterization, a segment from top of the core to the visual interface was collected for analysis. A 6-inch segment below the visual interface was also sampled and archived frozen at the site for potential future analysis. The sediment was removed from the core using a decontaminated metal spoon and homogenized in a disposable aluminum bowl. Dedicated processing equipment was used for each sample to minimize the potential for cross-contamination and reduce the use of solvents. Samples were collected into pre-cleaned, 8-oz glass jars with Teflon® lined lids and transferred on ice to Battelle for chemical testing.

North of Wood Street Cores. Each core was visually characterized and physical characteristics (i.e., material type, color, consistency, particle size and odor) documented on the Sediment Sampling Log forms (Appendix A). All sediment cores were sub-sampled for chemical testing. Two samples were taken from each core (i.e., depth intervals 0 to 0.5 ft and 0.5 to 1.0 ft), homogenized, and placed into sample containers. The sample from the 0.0 to 0.5 foot interval was submitted for PCB analysis. The sample from the 0.5 to 1.0-foot interval was frozen and archived at the site until further notice. Samples were collected into pre-cleaned, 8-oz glass jars with Teflon® lined lids and transferred on ice to Battelle for PCB analysis.

OU3 Pilot Cap Sediment Grabs. The material type for each sediment grab was documented on the Sediment Sampling Log forms (Appendix A). The surface 0.3 ft from each sample was homogenized and sub-sampled for PCB analysis. Samples were collected into pre-cleaned, 8-oz glass jars with Teflon® lined lids and transferred on ice to Battelle for chemical testing.

2.3 Chemical Testing

2.3.1 Polychlorinated Biphenyls

Chemical testing of the sediment samples for PCB congeners and homologues was performed by Battelle, located in Duxbury, MA. Prior to analysis, samples were air-dried overnight to ensure percent solids in the samples were >50%. Approximately 5 g of the air-dried sample was spiked with surrogates and extracted using accelerated solvent extraction following modified USEPA Method 3545. The extracts were processed through activated copper for sulfur removal and then received disposable Florisil column clean-up. The post-Florisil extract was concentrated, fortified with internal standards (IS), and submitted for analysis.

All sample extracts were analyzed for the 18 National Status and Trends (NS&T) congeners using gas chromatography/electron capture detection by dual column confirmation, following modified USEPA Method 8082. Sample data were quantified by the method of internal standards, using the IS compounds. Positive congener results were confirmed by a secondary column confirmation analysis with the higher of the two results reported, unless analyst discretion required otherwise (e.g., the result without an interference signal was reported). Congener results that were greater than 40% different between the first and second column analysis were ‘p’ qualified.

The project requires that a minimum of 7.5% of the samples be analyzed for PCB homologues to evaluate the comparability of the PCB congener-homologue data, and verify the relationship between congeners and homologue groups as a defensible means of performing total PCB analysis (Jacobs, 2005). For the 2008 dredge season, approximately 13% of the sediment samples (6 out of 45 total samples) were analyzed for PCB homologues using gas chromatography/mass spectrometry, following modified USEPA Method 8270C. Specifically, two samples were selected at random from each of the collection areas: Pierce Mill Cove, NWS, and OU3. The homologue analysis was performed using the sample extract from the congener analysis (i.e., the same extract was analyzed by two methods to determine PCB congener [Method 8082] and homologue [Method 8270C] data). Sample data were quantified by the method of internal standards, using the IS compounds.

Concentrations of total PCB were calculated using the congener and homologue results to assess how comparable the methods (i.e., congeners vs. homologues) are with respect to determining the concentration of total PCB in sediment sampled at the site. Based on a previous site-specific correlation study, total PCB was calculated as the sum of the 18 NS&T congeners multiplied by the project-specific factor for upper and lower harbor sediments of 2.6. Total PCB was also calculated as the sum of the homologues. Total PCB was also calculated as the sum of the homologues. A value of zero (0) was used in the summation for non-detects. PCB congener and homologue results are reported in mg/kg dry weight to two significant figures in this report.

2.3.2 Quality Control

A routine set of QC samples were prepared with each batch of 20 or fewer project samples to monitor data quality in terms of accuracy and precision. Each batch of project samples included one method blank, one laboratory control sample (LCS), and one matrix spike and matrix spike duplicate (MS/MSD). For the post-dredge core samples, a laboratory duplicate was analyzed in place of a field duplicate.

2.4 Data Analysis

Microsoft® Excel 2003 and JMP (The Statistical Discovery Software, a business unit of SAS Institute, Inc.) were used to characterize the sediment PCB data and assess potential trends in the long-term monitoring data. Total concentrations of PCB were used in all data evaluations. XY scatter plots were prepared in Excel to evaluate the correlation between sediment thickness and PCBs. Box plots were prepared in JMP to illustrate the sample distribution for total PCB. Figure 9A shows a sample box plot, where the box plot displays the median (represented by the center horizontal line), the 25th percentile (represented by the bottom of the box), and the 75th percentile (represented by the top of the box). The vertical lines, or whiskers, are drawn from the box to the most extreme point within 1.5 interquartile range. (An interquartile range is the distance between the 25th and the 75th percentiles). Values above or below the whiskers represent potential outliers.

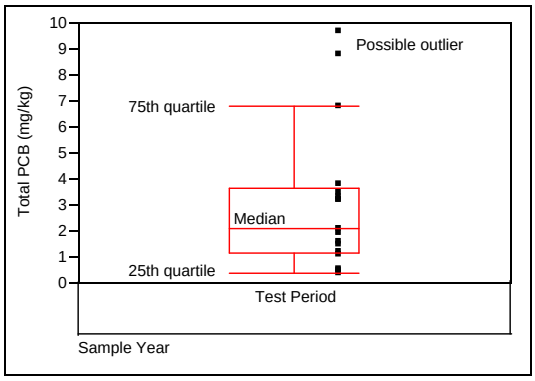

Figure 9A. Example Box Plot.

PCB data were also evaluated statistically in JMP by using the one way analysis of variance (ANOVA) to determine if there were significant differences among the sampling periods. The ANOVA used the natural logarithms of the total PCB data because this transformation stabilized the variance and better represented the apparent trends in the data. Figure 9B shows an example of the output from the ANOVA, where the diamonds illustrates a sample mean and 95% confidence interval. Overlap marks are drawn above and below the group mean. For groups with equal sample sizes, overlapping marks indicate that the

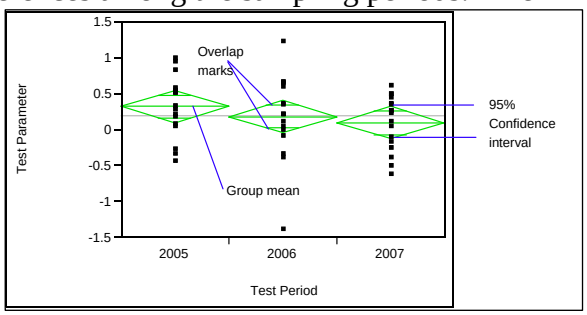

Figure 9B. Example Output from ANOVA.

two group means are not significantly different at the 95% confidence level. The line across the chart represents the overall response mean (arithmetic mean of all data). Wherever the ANOVA results indicated there was a significant difference among the sampling periods, a Tukey least significant difference test was performed to characterize the relationships among the periods.

3.0 RESULTS

3.1 Field Activities

Results from the sediment monitoring activities performed at the Pierce Mill Cove, NWS and OU3 areas of the site are described below. Complete field data including sample collection information and digital photographs of the sediment cores are provided in Appendix A. Digital photographs of the cores were uploaded to the New Bedford Harbor project database. These photographs are linked in the database to the location information and to the analytical results and can be viewed individually.

3.1.1 Pierce Mill Cove

Sediment monitoring activities conducted in support of the remedial dredging at Pierce Mill Cove included pre- and post-dredge core sampling. Pre-dredge coring was performed to determine the elevation of the visual transition and sediment thickness of the OL layer to assist dredge planning. Post-dredge coring was performed to assess the overall performance of the dredging operation and support future needs.

Pre-dredge Core Sampling. Pre-dredge cores were collected on May 30, 2008 at 15 locations identified by Jacobs. Sediment cores were examined to determine the elevation of the visual transition and sediment thickness of the OL layer. The thickness of the OL layer ranged from 0.5 to 2.2 ft (Table 1, Figure 10). These data were used by USACE NAE and Jacobs to refine the target dredge elevations for the final 2008 dredge plan (Jacobs, 2009).

The physical characteristics of the pre-dredge cores were typical of sediments previously described at the site, although surface sediments were generally more sandy compared to other dredge areas sampled in previous years. The cores were generally comprised of two distinct layers. The surface layer was characterized by fine-grained, loose black organic silt ('OL' in the USCS) with some sand. This surface layer ranged from about 0.5 to 2.2-ft of OL (Table 1). The thickness of the OL layer was generally higher in the northwest region of the cove and lower to the east near the river (Figure 10). Below this OL layer the sediment type was generally comprised of moderately firm olive-gray clay ('OH' in the USCS, defined as organic clay, organic silt).

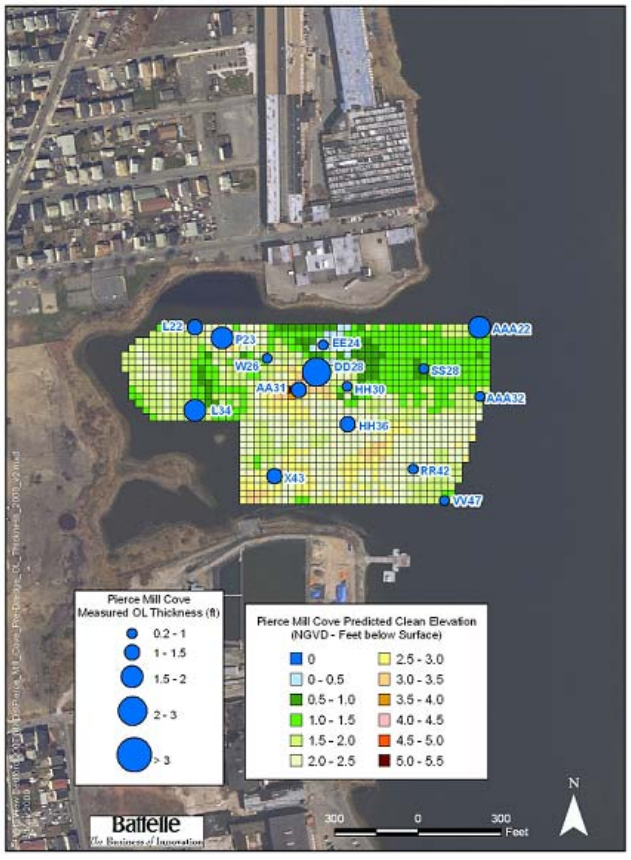

Figure 10. Pre-dredge Thickness of OL Layer at Pierce Mill Cove.

Table 1. Elevation Data From the 2008 Pre-dredge Sampling Event[a], Pierce Mill Cove.

Station	Northing NAD 83 MA, ft	Easting NAD 83 MA, ft	Elevation of visual transition (native to OL) (NVGD, ft)	Measured Sediment Thickness of OL Layer (ft)
VV47	2701774.17	815199.91	-5.8	0.70
VV47 (duplicate)	2701774.17	815199.91	-5.8	0.80
RR42	2701887.10	815088.07	-4.6	0.90
AAA32	2702149.76	815326.76	-5.7	0.80
SS28	2702249.43	815125.35	-4.2	0.80
AAA22	2702399.18	815324.55	-6.2	1.70
HH30	2702186.76	814849.38	-4.1	0.60
HH36	2702049.74	814850.42	-4.2	1.10
DD28	2702238.06	814738.27	-7.6	2.20
W26	2702288.30	814561.37	-3.8	0.80
AA31	2702174.42	814675.76	-5.7	1.40
EE24	2702336.82	814762.41	-3.1	0.50
L34	2702099.57	814300.54	-3.7	1.60
P23	2702361.75	814399.16	-6.4	1.90
L22	2702399.44	814300.16	-3.6	1.30
X43	2701862.15	814586.72	-4.1	1.50

[a] Samples collected on May 30, 2008.

Post-Dredge Sediment Sampling. Post-dredge sediment cores were collected on December 5, 2008 to verify the final sediment condition at the end of the 2008 dredge season. Post-dredge cores were collected at 14 locations identified by Jacobs; none of which represented locations sampled during the pre-dredge coring event. Post-dredge cores were examined to determine the elevation of the visual transition and sediment thickness of the OL layer (Table 2). The thickness of the OL layer remaining in the sediment after completion of dredging activities at Pierce Mill Cove ranged from 0.3 to 1.6-ft (Table 2).

The post-dredge cores had the same general physical characteristics as was observed in the pre-dredge events. Nearly all of the post-dredge cores were comprised of two distinct layers (OL overlying OH); no clear transition was evident for the post-dredge cores collected at stations DD44 and T38. The visual transition zone in many of the post-dredge cores was noticeably different from the pre-dredge cores. That is, there were fewer cores with sharp demarcations between the OL and OH layers, and these blurred transitions tended to be thicker (>0.5-ft) compared to the pre-dredge cores.

Table 2. Elevation Data from the 2008 Post-dredge Sampling Event[a], Pierce Mill Cove.

Station	Northing NAD 83 MA, ft	Easting NAD 83 MA, ft	Elevation Measurements (NGVD ft)			Measured Sediment Thickness of OL Layer (ft)	Actual vs. Predicted Transition Elevation (ft)[c]
			Target Dredge Elevation[b]	Measured Elevation of Visual Transition (Native to OL)	Measured Elevation of Sediment Surface		
DD44	2701849.68	814748.15	-4.9	-6.7	-5.4	1.3	-1.8
EE37	2702026.51	814773.70	-4.6	-5.1	-4.8	0.3	-0.5
X33	2702123.59	814599.03	-4.8	-5.3	-4.2	1.1	-0.5
T38[d]	2701999.16	814510.51	-3.7	-5.3	-3.9	1.4	-1.6
CC27	2702273.74	814726.35	-5.6	-7.3	-6.4	0.9	-1.7
T22	2702387.21	814486.89	-5.5	-5.2	-4.8	0.4	0.3
N25	2702310.66	814338.21	-4.7	-3.0	-2.6	0.4	1.7
N25(duplicate)	2702310.66	814338.21	-4.7	-3.5	-2.7	0.8	1.2
D32	2702147.00	814099.75	-2.1	-3.7	-3.2	0.5	-1.6
D25	2702324.58	814100.24	-3.0	-3.2	-2.5	0.7	-0.2
bb28	2702250.56	813949.35	-1.6	-3.9	-2.9	1.0	-2.3
HH23	2702375.29	814850.30	-3.1	-4.8	-3.2	1.6	-1.7
NN34	2702089.21	814987.03	-4.4	-3.7	-3.0	0.7	0.7
LL40	2701936.86	814939.77	-5.6	-4.0	-2.9	1.1	1.6
UU33	2702113.75	815162.06	-4.5	-4.7	-3.7	1.0	-0.2

[a] Samples collected on December 5, 2008.
[b] Source: Jacobs (2009).
[c] Actual vs. Predicted = Measured Elevation of Visual Transition (ft) – Target Dredge Elevation (ft).
[d] QA split collected and sent to independent testing laboratory.

3.1.2 North of Wood Street

River sediment and shoreline soil samples were collected at the NWS area in November and December, 2008 (Table 3). All samples were visually examined to characterize the physical characteristics of the one foot of surface sediment/soil (Appendix A).

River Sediment. Many of the river sediments had similar physical characteristics, characterized by a layer (0.2 to 0.8 feet) of fine black silt underlain by sand, clay or silt. The physical characteristics of sediment located closer to the shoreline and further upstream were different compared to in-river sediment locations. For example, station 030W, located near the western shore of the river, was comprised of brown sand with organic material underlain by sand and gravel. Station 030E, located near the eastern shore of the river, was uniformly comprised of medium sand throughout the entire one foot core. Station 010, located at the northern boundary of the NWS area, was comprised of medium to coarse, grey-black sand and gravel.

Shoreline Soil. Soils located along the western shore were generally comprised of sand underlain by sand and gravel. Soils located along the eastern shore were generally comprised of fine to coarse, loose brown organic silt and sand underlain by gravel, silt and sand. Shoreline soils at stations NWS-34, NWS-35, NWS-36, and NWS-37 had a more uniform composition within the top one foot.

Table 3. Summary of Samples Collected at the North of Wood Street, 2008.

Station	Sample Type	Collection Date	Collection Time	Northing (NAD 83 MA ft)	Easting (NAD 83 MA ft)
Study Samples					
010	River Sediment	12/3/08	1204	2709128.94	815353.74
016		12/3/08	1140	2708949.2	815397.87
023		12/3/08	1126	2708814.59	815412.09
028		12/3/08	1112	2708704.43	815400.22
030E		11/20/08	0905	2708683.7	815498.6
030W		11/20/08	1004	2708653.30	815363.80
033		12/3/08	1102	2708613.29	815412.90
038[a]		12/3/08	1050	2708517.71	815383.18
039		12/3/08	1028	2708513.84	815410.39
040		12/3/08	1017	2708514.69	815462.20
048		12/3/08	0950	2708387.52	815414.40
049		12/3/08	1002	2708405.78	815468.41
055		12/3/08	0924	2708266.99	815461.10
055 REP		12/3/08	0935	2708266.99	815461.10
062		12/3/08	0915	2708165.92	815567.28
NWS-33	Shoreline Soil	11/20/08	1109	2709039.40	815330.20
NWS-34		11/20/08	1100	2708923.90	815338.80
NWS-35		11/20/08	0922	2708759.89	815508.68
NWS-36		11/20/08	0932	2708761.25	815516.12
NWS-37		11/20/08	0913	2708682.25	815534.72
NWS-38		11/20/08	0940	2708819.27	815503.15
NWS-39		11/20/08	0944	2708820.21	815508.55
QC Samples					
055 REP	Field duplicate	12/3/2008	9:35:00	2708266.99	815461.1
038	QA Split	12/3/2008	10:50:00	2708517.71	815383.18
EB	Equipment blank	11/20/2008	13:35:00	—	—

[a] QA split collected and sent to independent testing laboratory.

3.1.3 OU3 Pilot Cap Site

Sediment grab samples were collected in October 2008 at 17 locations at the OU3 Pilot Cap site (Table 4). Based on a visual characterization of the surface sediments (Appendix A), sediments were generally comprised of fine sand with some silt. Sediments from valley locations often had more silt compared to ridge locations. Algal mats and seaweed were observed at many of the locations (Appendix A).

Table 4. Summary of Samples Collected at the OU3 Pilot Cap Site, 2008.

Station	Collection Date	Collection Time	Northing (NAD 83 MA ft)	Easting (NAD 83 MA ft)
Study Samples				
OU01	10/6/2008	14:00	2685668.74	817983.57
OU02[a]	10/6/2008	14:49	2685864.94	818148.87
OU03	10/6/2008	14:26	2685852.81	817883.21
OU04	10/7/2008	10:09	2686006.17	818038.56
OU05	10/7/2008	9:45	2686187.28	818195.19
OU06	10/7/2008	9:25	2686192.94	817953.68
OU07	10/7/2008	10:43	2686017.93	817778.95
OU08	10/7/2008	8:57	2686233.99	817749.23
OU09	10/6/2008	12:47	2686125.16	817487.92
OU10	10/6/2008	12:14	2686249.50	817478.51
OU11	10/6/2008	11:53	2686374.39	817641.09
OU12	10/6/2008	11:08	2686489.87	817490.14
OU13	10/6/2008	11:27	2686395.40	817310.32
OU14	10/6/2008	10:46	2686643.80	817323.85
OU15	10/6/2008	10:26	2686715.37	817494.27
OU16	10/6/2008	9:54	2686837.18	817325.12
OU17	10/6/2008	9:34	2686800.94	817191.41
QC Samples				
OU16 (field duplicate)	10/6/2008	10:05	2686837.18	817325.12
OU02 (QA Split)	10/6/2008	14:49	2685864.94	818148.87
EB (Equipment blank)	10/6/2008	13:05	—	—

[a] QA split collected and sent to independent testing laboratory.

3.2 Chemical Testing

This section summarizes the PCB results for sediment samples collected at the Pierce Mill Cove, NWS, and OU3 pilot cap areas in 2008. Total PCB results are summarized in Table 5. Complete test results, along with results from the analysis of field- and laboratory-based QC samples, are provided in Appendix B. Results from the analysis of field-based QA split samples were reported directly to USACE NAE by the independent testing laboratory.

3.2.1 Pierce Mill Cove

Post-dredge concentrations of total PCB in the surface OL layer ranged from 10 mg/kg to 47 mg/kg (Table 5, Figure 11). These data suggest that PCB concentrations in surface sediment after dredging were within an order of magnitude of the predicted concentrations based on the geostatistical model.

3.2.2 North of Wood Street

Total PCB concentrations in surface (0 to 0.5 ft) sediment samples at the NWS area ranged from 0.98 to 180 mg/kg (Table 5). The highest concentrations of total PCB (>100 mg/kg) were measured at subtidal stations 055 and 039 (Figure 12). Lower concentrations of total PCB (<10

mg/kg) were measured in sediment collected closer to the shoreline (stations 030W and 030E) and further upstream (station 010) (Figure 12, Table 5).

Total PCB concentrations were substantially lower in the shoreline soils compared to the river sediments, with concentrations ranging from 0.076 to 0.67 mg/kg (Table 5). Total PCB concentrations were below the residential cleanup criteria (1 mg/kg) at all shoreline locations sampled at the NWS area in 2008.

3.2.3 OU3 Pilot Cap Site

Concentrations of total PCB measured in surface sediment sampled in 2008 at the OU3 pilot cap site are shown in Figure 13 and summarized in Table 5. Overall, concentrations of total PCB were slightly higher at the valley locations (concentrations ranged from 0.23 to 6.0 mg/kg, Table 5) compared to ridge locations (concentrations ranged from 0.26 to 2.2 mg/kg, Table 5).

3.3 Quality Control

Results from the field- and laboratory-based QC samples are reported with the sample data provided in Appendix B. Results from the analysis of the field- and laboratory-based QC samples were evaluated against the measurement performance criteria (MPC) to evaluate the data quality in terms of accuracy and precision.

3.3.1 Field Activities

Results from the field-based QC samples were acceptable with respect to the MPC, indicating that the sampling methods were in control. That is, PCBs were undetected in the equipment blanks (Appendix B) and total PCB concentrations were comparable between the field replicates (Table 5).

3.3.2 Chemical Testing

QA/QC narratives that summarize the results from the laboratory-based QC samples against the MPC are provided in Appendix B. Results from the laboratory-based QC samples met the MPC, indicating that the laboratory methods were in control and that these data are useable. For example, the target compounds were undetected in the method blanks, indicating that the methods were free of contamination. In addition, recovery and precision results for the laboratory-based QC samples (i.e., LCS, MS, MSD and laboratory duplicate) were acceptable for all target compounds, indicating that the methods were in control.

A sub-set of the sediment samples were also analyzed for PCB homologues. Total PCB concentrations, calculated using both the congener and homologue data, are summarized in Table 5. The relative percent difference between the total PCB values, calculated using both the congener and homologue data, was within 15%, indicating that the two methods are comparable. Total PCB calculated by the homologue method was biased high compared to the congener method in five of the six samples (Table 5).

Table 5. Total PCB Concentrations in Surface Sediment at the Site, 2008.

Study Area	Sample Type	Station	Depth Interval (ft)	Total PCB[a] (mg/kg)
Pierce Mill Cove	Post-dredge cores	X33	0.0-1.1	45/49 [b]
		T38	0.0-1.0	12
		CC27	0.0-0.9	47
		T22	0.0-0.4	37
		D32	0.0-0.5	19
		D25	0.0-0.7	24
		bb28	0.0-1.0	10/11 [b]
North of Wood Street	River sediment	010	0.0-0.5	2.3
		016	0.0-0.5	29
		023	0.0-0.5	44/51[b]
		028	0.0-0.5	76
		030E	0.0-0.5	1.1
		030W	0.0-0.5	0.98
		033	0.0-0.5	74
		038	0.0-0.5	33
		039	0.0-0.5	140
		040	0.0-0.5	24
		048	0.0-0.5	46
		049	0.0-0.5	23/26[b]
		055	0.0-0.5	180/150[c]
		062	0.0-0.5	58
	Shoreline soil	NWS-33	0.0-0.5	0.19
		NWS-34	0.0-0.5	0.2
		NWS-35	0.0-0.5	0.67
		NWS-36	0.0-0.5	0.18
		NWS-37	0.0-0.5	0.13
		NWS-38	0.0-0.5	0.076
		NWS-39	0.0-0.5	0.14
OU3 Pilot Cap Site	Sediment grabs – Ridge locations	OU1	0.0-0.3	1.1
		OU4	0.0-0.3	1.6
		OU5	0.0-0.3	0.28
		OU11	0.0-0.3	0.26
		OU15	0.0-0.3	2.2
		OU17	0.0-0.3	0.57
	Sediment grabs – Valley locations	OU2	0.0-0.3	3.5
		OU3	0.0-0.3	0.23
		OU6	0.0-0.3	1.3
		OU7	0.0-0.3	0.99
		OU8	0.0-0.3	0.5
		OU9	0.0-0.3	0.84
		OU10	0.0-0.3	0.54
		OU12	0.0-0.3	0.73/0.85 [b]
		OU13	0.0-0.3	6/5.8 [b]
		OU14	0.0-0.3	0.9
		OU16	0.0-0.3	2.2/1.8 [c]

[a] Total PCB = sum 18 NS&T congeners * 2.6.
[b] Total PCB based on sum of homologues.
[c] Total PCB result for field duplicate.

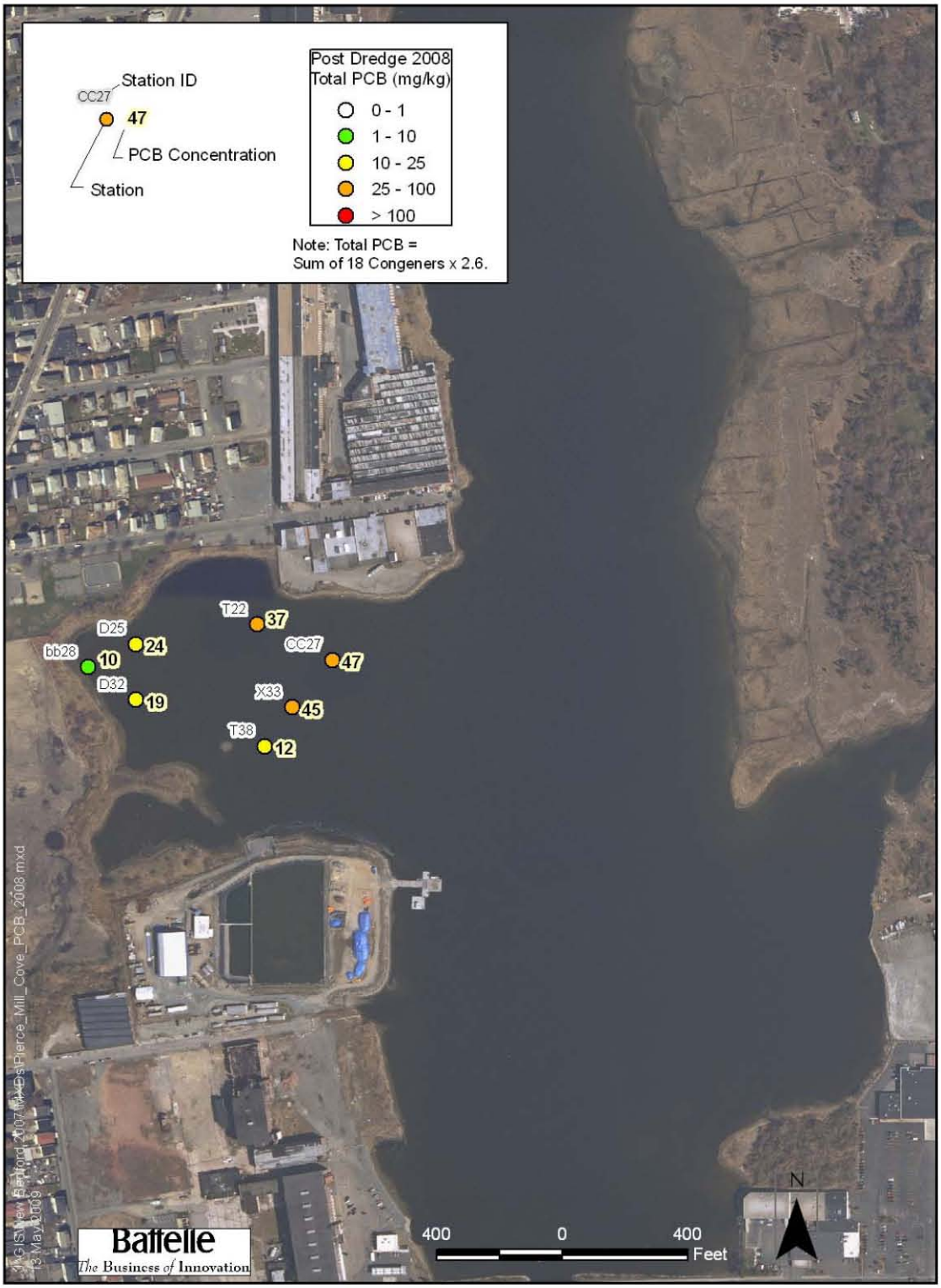

Figure 11. Total PCB Concentrations in Post-dredge Sediment at Pierce Mill Cove, 2008.

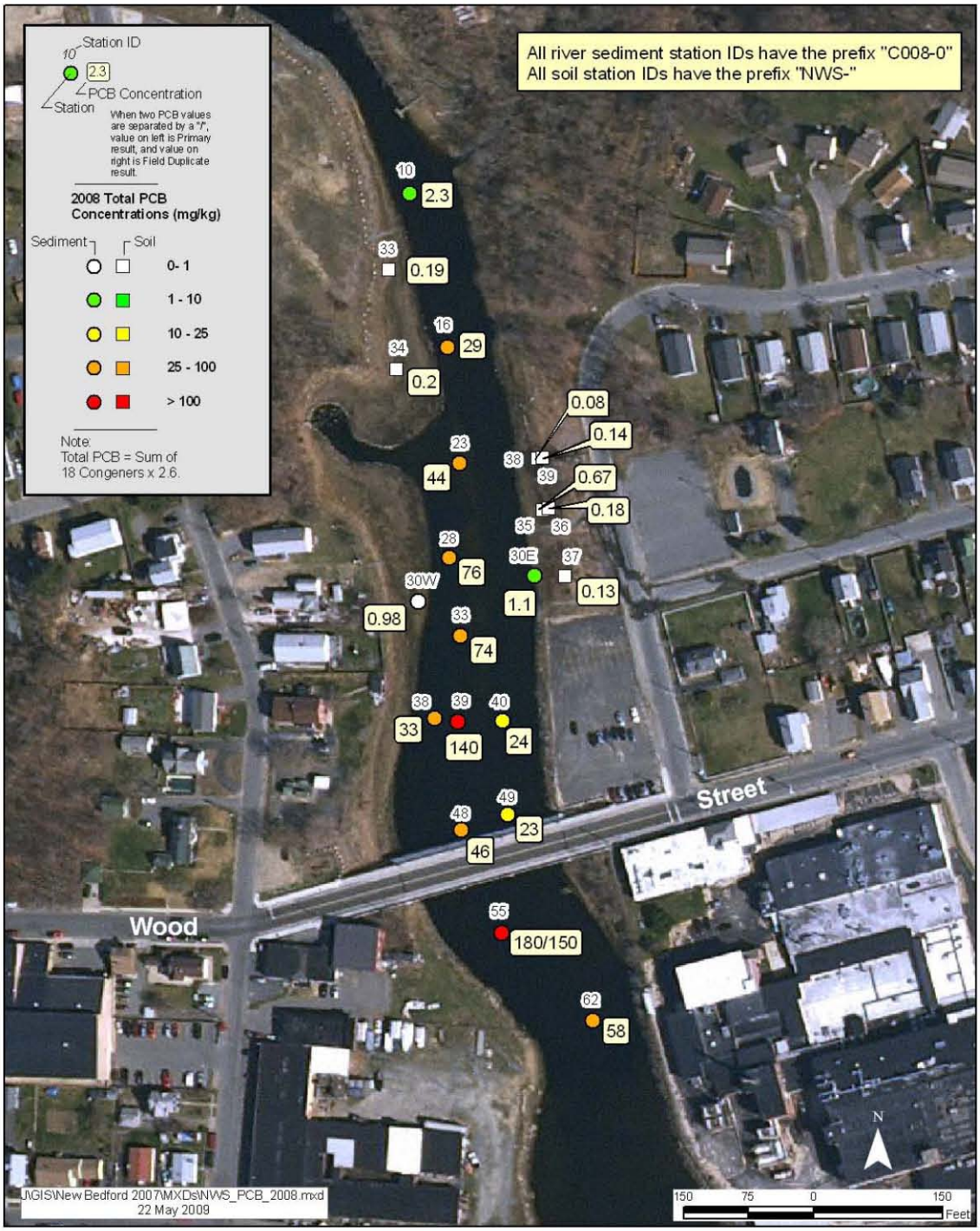

Figure 12. Total PCB Concentrations in Sediment/Soil at North of Wood Street, 2008.

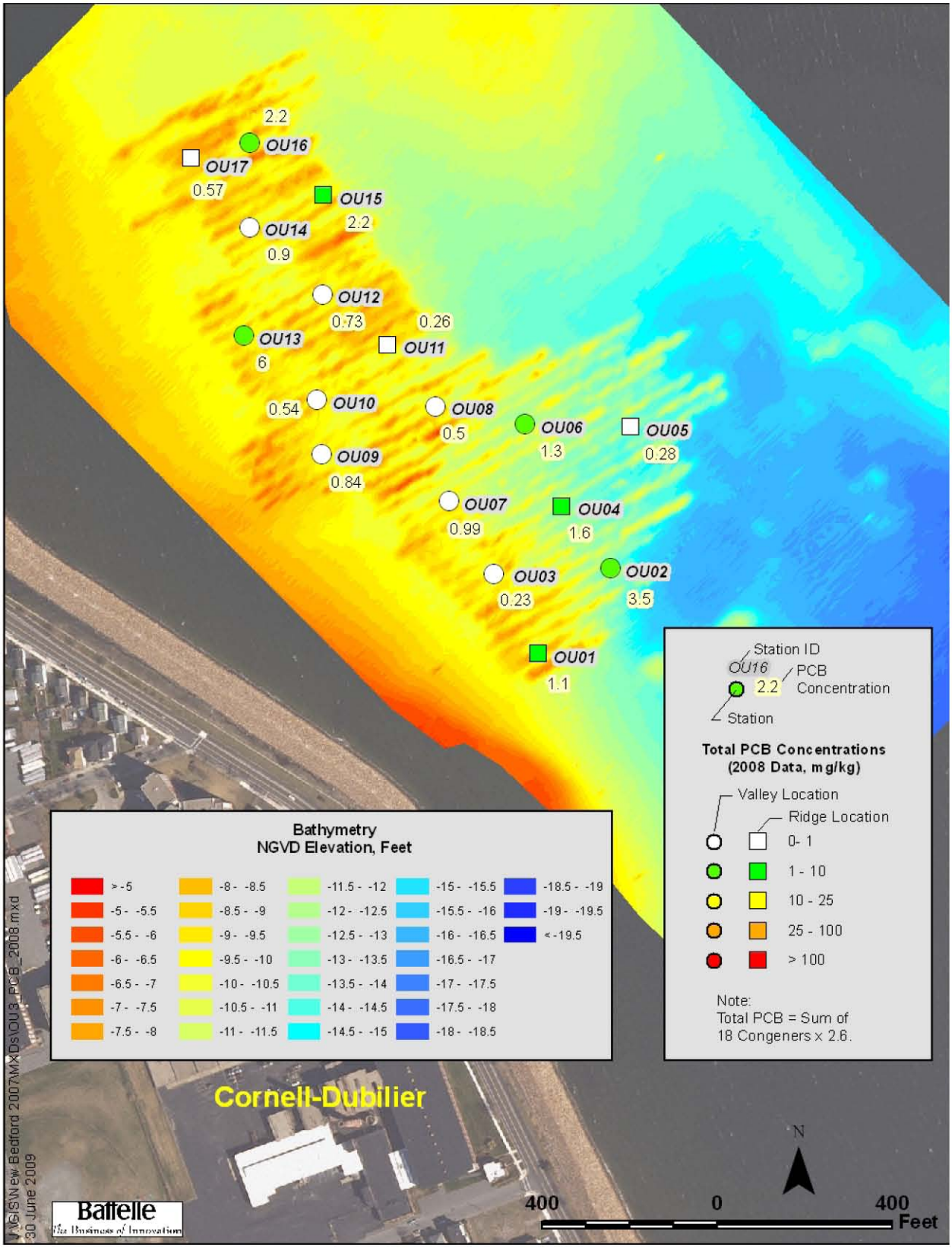

Figure 13. Total PCB Concentrations in Sediment at the OU3 Pilot Cap Site, 2008.
(Bathymetry conducted by Jacobs in March 2009)

4.0 DISCUSSION

4.1 Vertical Elevation Results Related to Dredging

The collection of post-dredge cores provided a characterization of the post-dredge sediment condition relative to the pre-dredge condition as well as setting a baseline for recently dredged areas. This baseline informs the planning process for subsequent years and provides feedback regarding re-deposition of sediments from dredging or natural processes.

Comparison of the visual characterization of the pre- and post-dredge cores revealed that the depth of the sediment surface and the overall thickness of OL layers were reduced at the Pierce Mill Cove dredge area. These were clear and expected results of the dredging. The thickness of the OL layer in pre-dredge cores ranged from 0.5 to 2.2 ft, with a median thickness of 1.0 ft. The thickness of the OL layer in the post-dredge cores ranged from 0.3 to 1.6 ft, with a median thickness of 0.85 ft.

Other post-dredge observations related to the visual transition between sediment types were also apparent. For example, in many cases, the post-dredge cores had less distinct visual transitions. In these cases, the transitions occurred over a relatively broad band (>0.5-ft) of mixed sediment. In most of these cases it appeared that the visual transition zone may have been disturbed during dredge related activities. In many cases (10 out of 15), the elevation of the post-dredge visual transition also occurred at a deeper elevation than predicted (Table 2).

There was an insufficient number of observations from the 2008 dredge season (n = 7) to meaningfully evaluate the correlation between the thickness of the OL layer and total PCB concentrations in the Pierce Mill Cove post-dredge sediments. The limited data suggest that sediments with a thicker OL layer have higher concentrations of total PCB, except at stations T38 and bb28 where the total PCB concentrations were relatively low compared to other sediments with similar sediment thickness (Figure 14).

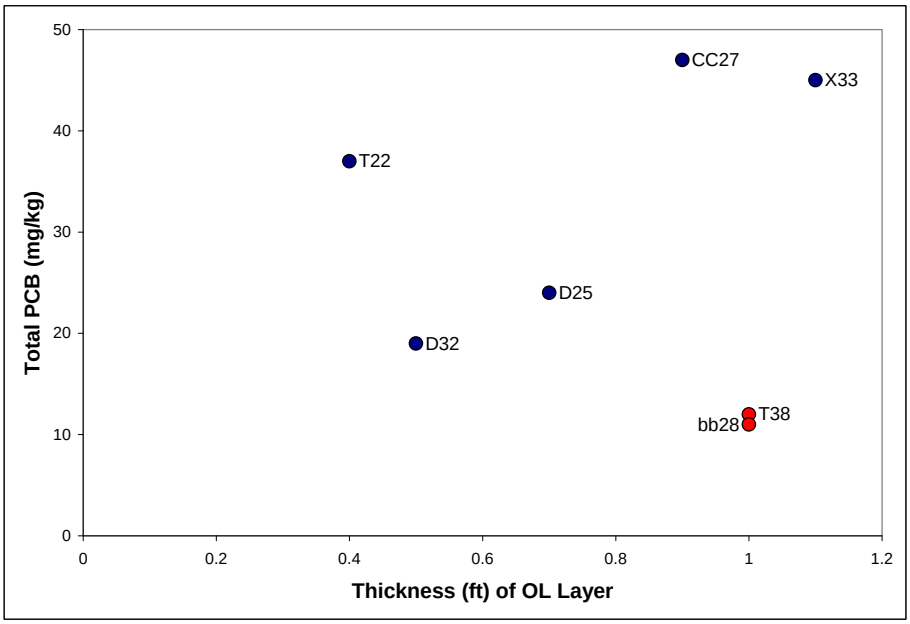

Figure 14. Correlation between Sediment Thickness of the OL Layer and Total PCB in Post-dredge Sediment, Pierce Mill Cove.

4.2 PCB Trends at the North of Wood Street

Several investigations have been conducted to characterize PCB contamination at the NWS area following remediation activities conducted in 2002-2003 to remove PCB-contaminated sediments and soils from the river and surrounding shoreline (Tetra Tech FW, Inc. [TTFW], 2004). A confirmatory sampling event was conducted by TTFW immediately following the remediation in February 2003 (North of Wood Street Cleanup Zone Map, USEPA, 2009). ENSR conducted four sampling events in the area to evaluate changes in river sediment PCB concentrations that may have occurred due to seasonal influence and/or remediation activities, as follows: August 2004 (pre-dredging), May 2005 (spring flow conditions), September 2005 (pre-dredging, late summer flow), and January 2006 (post-dredging). Annual monitoring has been performed since 2006 to further assess potential recontamination of the NWS area; sampling events were conducted in the late fall (November/December) after completion of dredging activities for the season.

4.2.1 River Sediments

The long-term monitoring data indicate that total PCB concentrations in river sediment at the NWS area are spatially and temporally variable (Figures 15 and 16). The variability among the PCB data may reflect differences in bulk sediment characteristics (e.g., grain size and organic carbon content), the highly dynamic nature of the system (e.g., tides, storm waves, high spring river flows), which can influence resuspension and transport of bottom sediment in the area, or a combination of these factors. In general, median concentrations of total PCB are lower and the distribution of the data less variable in surface sediment sampled at the upstream boundary of the study area (i.e., stations 010, 016, and 023) and near the shore (i.e., station 030E and 030W) compared to downstream locations (Figure 15).

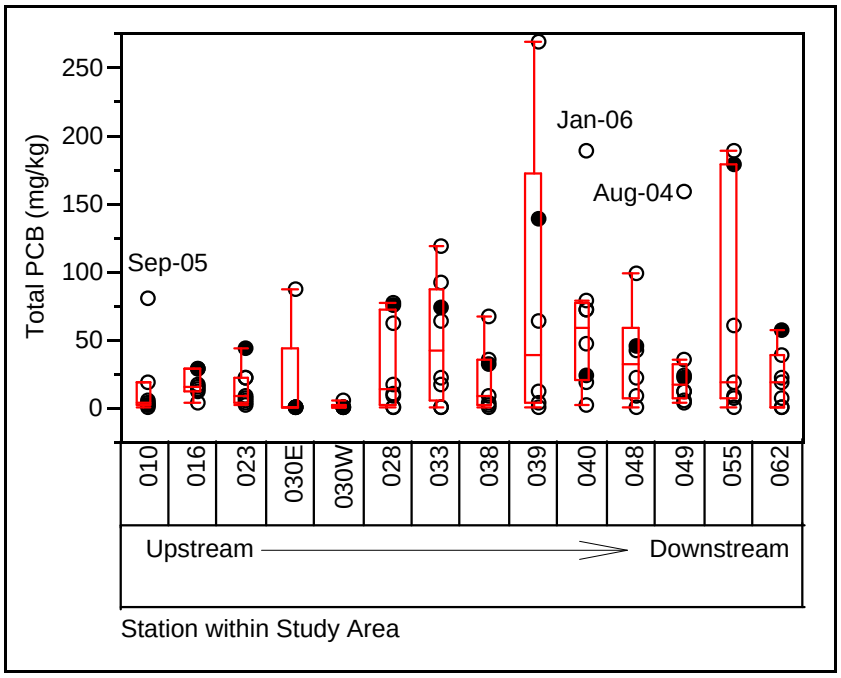

Figure 15. Distribution of Total PCB in River Sediment at the North of Wood Street, 2003-2008. (open circles represent 2003-2007 data and filled circles represent 2008 data)

Concentrations of total PCB (log transformed) in sediment sampled at a common group of locations (stations 023, 028, 033, 040, 049) across all sampling periods from 2003 to 2008 are shown in Figure 16. The lowest concentrations of total PCB in river sediment were measured in 2003, immediately following the remediation of the NWS area in the winter of 2002-2003. A post-remediation increase was observed in 2004 (Figure 16). While total PCB

concentrations decreased in the two subsequent sampling periods, post-remediation levels in recent years remain elevated compared to 2003 (Figure 16). Statistical analysis indicates that the post-remediation data from the August 2004, May 2005, and November 2006 to 2008 sampling periods are significantly high than that seen in February 2003 and September 2005 ($p = 0.001$)[1]. The post-remediation increase could have resulted from contaminant transport from the upper harbor during dredging activities, natural transport of contaminated sediment from unremediated areas of the Harbor during tidal cycles, storms or high winds, or a combination of these factors. A sediment trap study conducted in the vicinity of the Wood Street bridge also showed that natural transport processes and human activities such as remedial dredging can influence the deposition of PCB-contaminated sediment material at the NWS area (Battelle, 2009).

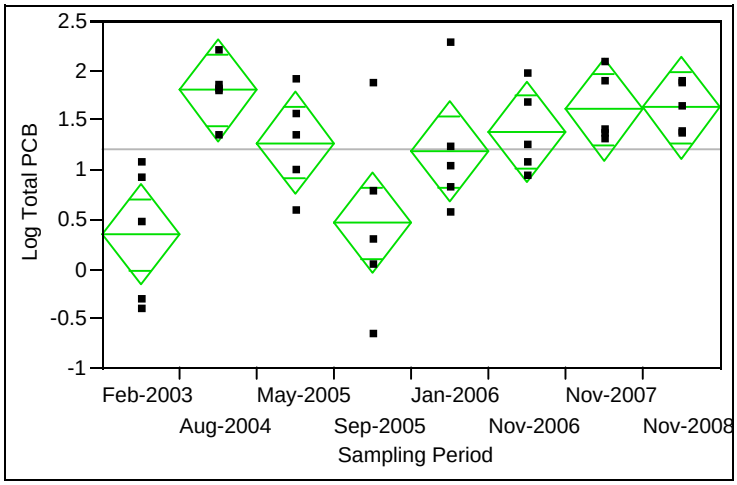

Figure 16. Temporal Trends in Total PCB (log normalized) in River Sediment at the North of Wood Street, 2003-2008. (common stations 023, 028, 033, 040 and 049; symbols represent the individual data points, diamonds illustrates the sample mean and 95% confidence interval)

Annual sediment monitoring will continue at the NWS area as needed to assess the potential for recontamination from the unremediated Harbor areas immediately to the south.

4.2.2 Shoreline Soils

In December 2005, Jacobs Engineering performed additional remediation at the eastern shoreline of the NWS area to remove contaminated soils that were inadvertently missed during the 2002-2003 remediation. Post-remediation concentrations of total PCB have been below the recreational cleanup criteria (25 mg/kg recreational shoreline land use criteria) at all shoreline locations since 2006 (Figure 17), suggesting that the remediation was effective in terms of achieving the cleanup criteria.

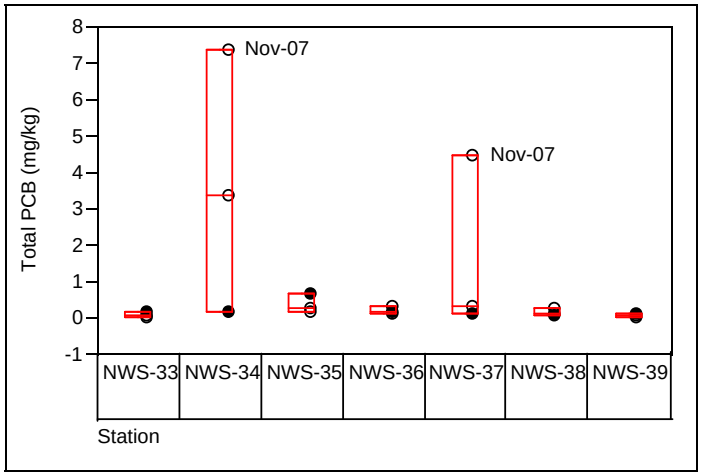

Figure 17. Distribution of Total PCB in Shoreline Soil at the North of Wood Street, 2006-2008. (open circles represent the 2006-2007 data and filled circles represent the 2008 data)

[1] The post-remediation data (i.e., means) from the following sampling periods are not significantly different:
Group A: August 2004, May 2005, January 2006, and November 2006 through 2008;
Group B: January 2006 and September 2005; and
Group C: February 2003 and September 2005.

The monitoring data indicate that concentrations of total PCB in shoreline soils have been uniformly low over space and time, except at stations NWS-34 and NWS-37 (Figure 17). Total PCB concentrations at these locations were elevated in 2007, but decreased in 2008 returning to low levels representative of other shoreline locations (Figure 17). There were no significant differences in total PCB concentrations among the sampling periods (Figure 18).

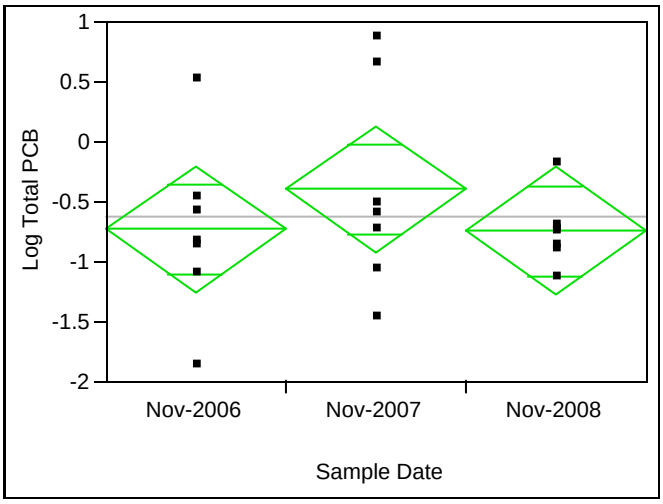

Figure 18. Temporal Trends in Total PCB (log normalized) in Shoreline Soil at the North of Wood Street, 2006-2008. (symbols represent the individual data points, diamonds illustrates the sample mean and 95% confidence interval)

4.3 PCB Trends OU3 Pilot Cap Site

The OU3 Pilot Cap site is a localized area of elevated PCB contamination located outside the hurricane barrier in New Bedford, MA (Figure 2). In 2005, this area was capped with parent material dredged during the construction of a CAD cell in New Bedford Harbor. Annual monitoring has been performed since 2005 (shortly after completion of the capping activity) to determine the effectiveness of cap placement in lowering surficial sediment PCB concentrations, as well as the extent of change in PCB concentrations over time.

The long-term monitoring data indicate that total PCB concentrations are uniformly low over space and time at most locations sampled at the OU3 pilot cap (Figure 19). Total PCB concentrations are spatially and temporally variable at valley stations OU12, OU13, and OU14 (Figure 19). Total PCB concentrations in surface sediments sampled in 2008 were among the lowest measured over the monitoring period, especially at valley locations (Figure 19).

There were no significant differences in total PCB concentrations (log transformed) among the sampling periods at ridge locations (Figure 20A). However, concentrations of total PCB were significantly lower ($p = 0.04$) at valley locations in 2008 compared to 2005 (Figure 20B). The decrease could reflect the deposition of cleaner material at these locations.

Overall, the long-term monitoring data suggest that the cap remains effective in terms of the surficial PCB data (i.e., no change and/or increase in surficial PCB contamination).

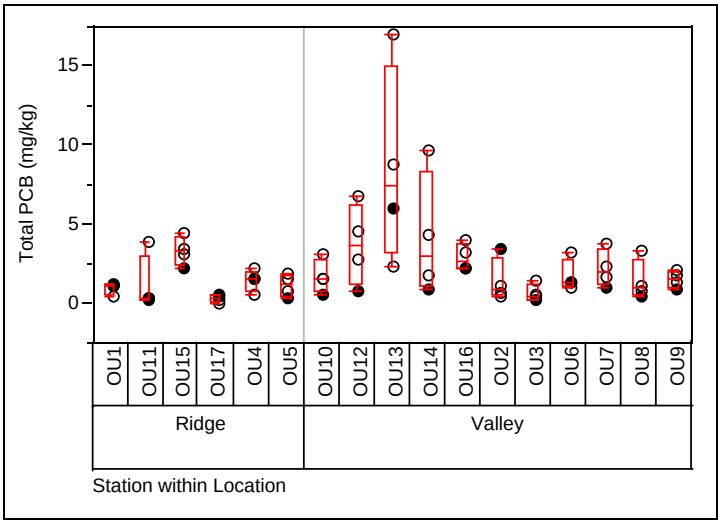

Figure 19. Distribution of Total PCB in Sediment at the OU3 Pilot Cap Site, 2005-2008. (open circles represent 2005-2007 data and filled circles represent 2008 data)

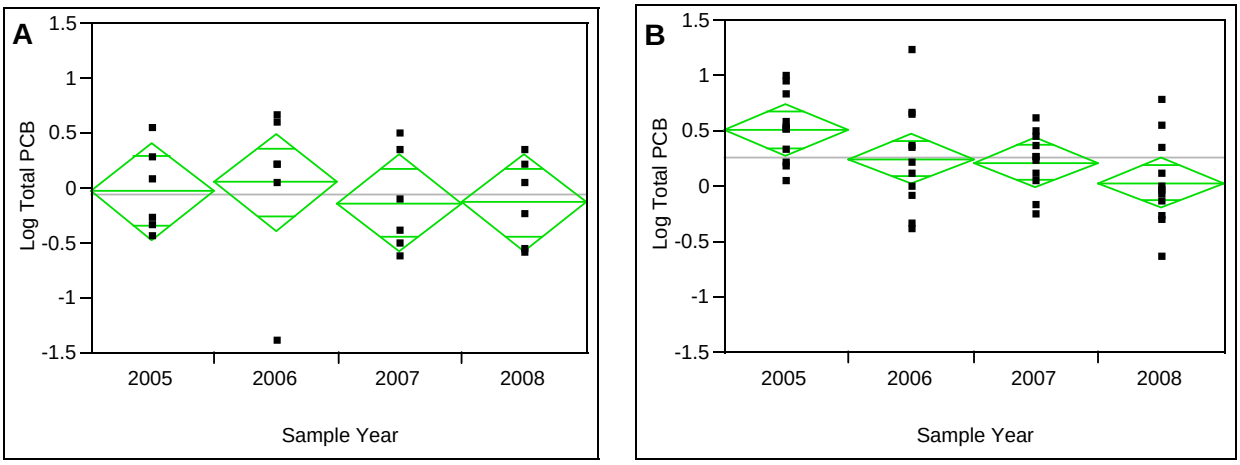

Figure 20. Temporal Trends in Total PCB (log normalized) in Sediment at Ridge (A) and Valley (B) Locations at the OU3 Pilot Cap, 2005-2008. (symbols represent individual data points (log normalized) and diamonds illustrates the sample mean and 95% confidence interval)

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Appendix A

Field Sample Data

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Pierce Mill Cove

Pre-dredge Sediment Cores

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Project Name:	*New Bedford Harbor Environmental Monitoring*	**Project #:**	*G606422*
Location:	*New Bedford, MA*	**Vessel:**	*5/V Gale Force*
Client:	*USACE NAE*	**Chief Scientist:**	Mike Walsh

Station ID:	VV47	Time On Station:	0914	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08A-VV47-00-15	Northing (NAD 83):	2701774.17	Water Depth (*A*):	① ~~3.5~~ 3.6
Logged by:	MW/AM	Easting (NAD 83):	815199.91	Length of push core assembly (*B*):	6.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.37	Water surface to top of handle (*C*):	① ~~.9~~ ~~1.7~~ ~~1.6~~ 1.8
Date:	5/30/08	Predicted Tide (ft):	—	Length of core (from bottom) (*D*):	1.5
		Time of Collection:	① ~~0922~~ ~~0926~~ ~~0929~~ 0937	Surveyed elevation (NVGD 29) (*E*):	—
		Time Depart Station:	1000	Water surface from surveyed elevation (*F*):	-1.4

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	-1.4
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-6.6
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-5.8
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-5.1
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-5.0
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	—

Elevation (NVGD) (i.e. Bottom = *H*)		Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.5			Silt Sand	Black gray	loose	Fine to med			
0.8			Clay Sand	Olive	firm	Fine to med			Heavy Streaking
0.0									

File ID of digital photograph(s):

Comments:

① 1st Attempt N/G
2nd Attempt N/G
3rd Attempt N/G

S-Ø8A-VV47-ØØ-15
5/30/08

Battelle
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Project Name: *New Bedford Harbor Environmental Monitoring* **Project #:** *G606422*
Location: *New Bedford, MA* **Vessel:** *R/V Gale Force*
Client: *USACE NAE* **Chief Scientist:** Mike Walsh

Station ID:	VV47	Time On Station:	0914	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08A-VV47-0022-DUP	Northing (NAD 83):	2701774.17	Water Depth (*A*):	3.5
Logged by:	MW/AM	Easting (NAD 83):	815199.91	Length of push core assembly (*B*):	7.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.37	Water surface to top of handle (*C*):	1.2
Date:	5/30/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	2.2
		Time of Collection:	0945	Surveyed elevation (NVGD 29) (*E*):	
		Time Depart Station:	1000	Water surface from surveyed elevation (*F*):	-1.4

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	-1.4
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-7.2
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-5.8
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-5.0
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-4.9
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2.2		Silt Sand Shells	gray/Black	loose				marbled silt/sand/shells
1.4		Clay some Sand Shells	Olive gray	firm				↓ Streaking
0.0								

File ID of digital photograph(s):

Comments:

S-08A-VV47-00-22-DUP
5/30/08

Battelle
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Project Name: *New Bedford Harbor Environmental Monitoring* **Project #:** *G606422*
Location: *New Bedford, MA* **Vessel:** *R/V Gale Force*
Client: *USACE NAE* **Chief Scientist:** Mike Walsh

Station ID:	RR 42	Time On Station:	1006	**All measurements are ±0.1 feet**	
Core Sample ID:	S-084-RR42-00-19	Northing (NAD 83):	2701887.10	Water Depth (*A*):	22
Logged by:	MW/AM	Easting (NAD 83):	815058.07	Length of push core assembly (*B*):	7.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.08	Water surface to top of handle (*C*):	2.8
Date:	5/30/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.9
		Time of Collection:	1006	Surveyed elevation (NVGD 29) (*E*):	
		Time Depart Station:	1016	Water surface from surveyed elevation (*F*):	-1.4

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	-1.4
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-5.6
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-4.6
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-3.7
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-3.6
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.9		Silt sand	gray Black	loose	fine to med			Marbled silt/sand over silt
1.0		Clay some shells some sand	Olive gray	firm	fine to med			Clay ↓ streaking
0.0								

File ID of digital photograph(s):

Comments:

S-Ø8A-RR42-ØØ-.19
5/30/08

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Project Name: *New Bedford Harbor Environmental Monitoring* **Project #:** *G606422*
Location: *New Bedford, MA* **Vessel:** *R/V Gale Force*
Client: *USACE NAE* **Chief Scientist:** Mike Walsh

Station ID:	AAA32	Time On Station:	1026	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08A-AAA32-00-15	Northing (NAD 83):	2702149.76	Water Depth (*A*):	3.4
Logged by:	MW/AM	Easting (NAD 83):	815326.76	Length of push core assembly (*B*):	6.7
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.4	Water surface to top of handle (*C*):	1.5
Date:	5/30/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.5
		Time of Collection:	1032	Surveyed elevation (NVGD 29) (*E*):	
		Time Depart Station:	1034	Water surface from surveyed elevation (*F*):	-1.2

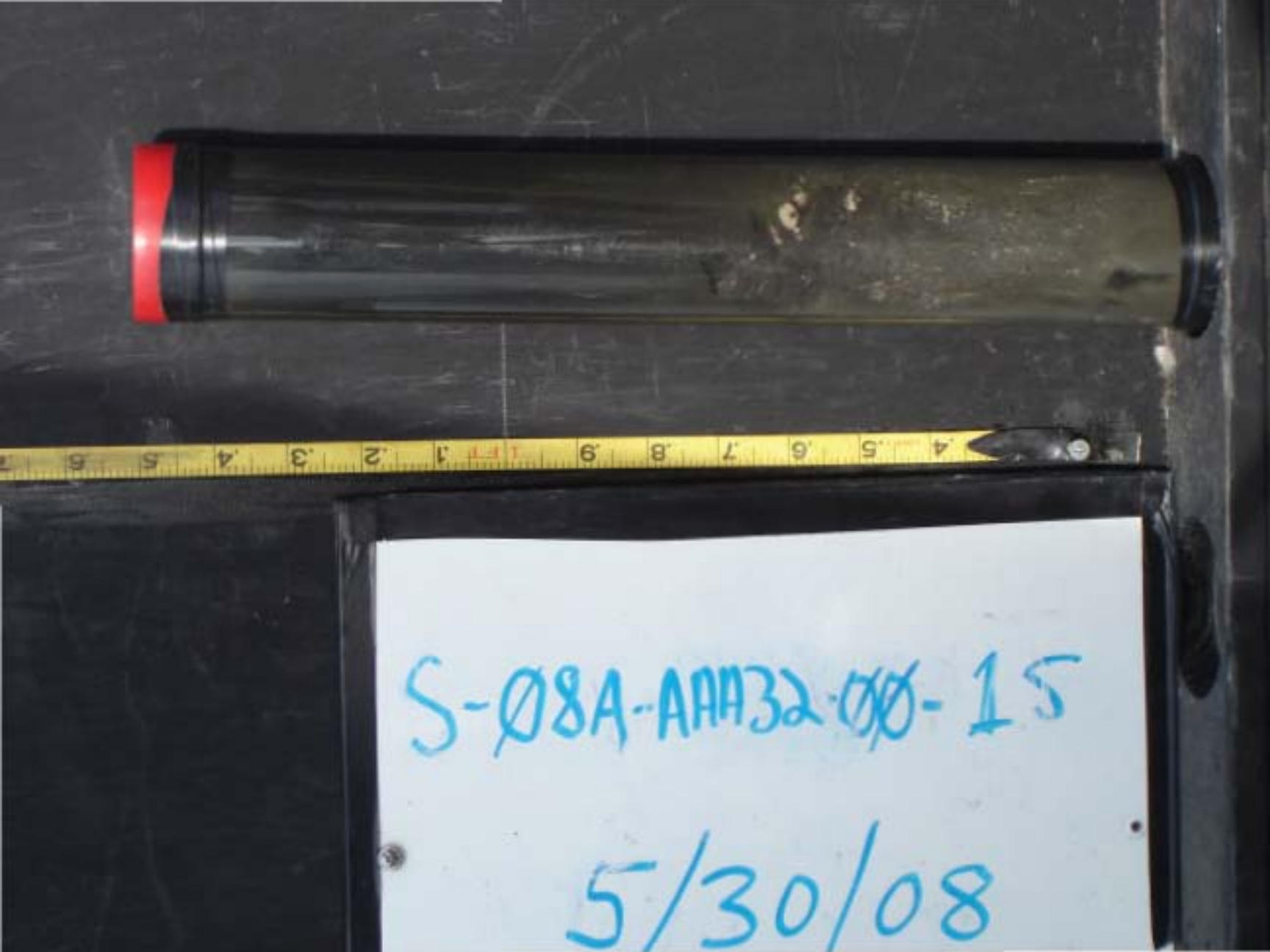
Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	-1.2
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-6.4
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-5.7
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-4.9
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-4.6
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.5		Si/L sand shells	Black	100%	Fine to large			
0.7		Sand shells clay Silt	Olive gray	100%	Fine to large			
0.0								

File ID of digital photograph(s):

Comments:


S-Ø8A-AAA32-ØØ-15
5/30/08

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Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist: Mike Walsh

Station ID:	SS28	Time On Station:	1039	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08A-SS28-00-14	Northing (NAD 83):	2702249.43	Water Depth (*A*):	2.1
Logged by:	MW/AM	Easting (NAD 83):	815125.35	Length of push core assembly (*B*):	7.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	4.14	Water surface to top of handle (*C*):	①3.9 3.4
Date:	5/30/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.4
		Time of Collection:	①1047 1057	Surveyed elevation (NVGD 29) (*E*):	
		Time Depart Station:	1107	Water surface from surveyed elevation (*F*):	-1.2

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	-1.2
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-4.8
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-4.2
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-3.4
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-3.3
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	—

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.4		Sand Silt	Dark gray	loose	Fine to med			Sand/shells well-mixed throughout
1.1		Silt Sand	Black	loose	Fine to large			
0.6		Sand Clay Shells	Olive gray	loose	Fine to large			
0.0								

File ID of digital photograph(s):

Comments:
① 1st Attempt N/G

S-Ø8A-SS28-ØØ-14
5/30/08

Battelle
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Project Name: *New Bedford Harbor Environmental Monitoring* **Project #:** *G606422*
Location: *New Bedford, MA* **Vessel:** *R/V Gale Force*
Client: *USACE NAE* **Chief Scientist:** Mike Walsh

Station ID:	AAA22	Time On Station:	1120	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08A-AAA22-00-24	Northing (NAD 83):	2702399.18	Water Depth (*A*):	3.3
Logged by:	MW/AM	Easting (NAD 83):	815324.55	Length of push core assembly (*B*):	7.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.49	Water surface to top of handle (*C*):	1.3
Date:	5/30/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	2.4
		Time of Collection:	1122	Surveyed elevation (NVGD 29) (*E*):	
		Time Depart Station:	1128	Water surface from surveyed elevation (*F*):	-1.2

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	-1.2
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-6.9
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-6.2
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-4.5
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-4.5
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	—

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2.4		Silt	Black	loose	fine to mid			Sand mixed throughout
1.3		clay/silt	gray/black	firm	fine			Blurred transition
0.7		Clay	Olive gray	firm	fine			
0.0								

File ID of digital photograph(s):

Comments:

S-08A-AAA22-00-24
5/30/08

Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist: Mike Walsh

Station ID:	HH30	Time On Station:	1134	**All measurements are ±0.1 feet**	
Core Sample ID:	S-084-HH30-00-19	Northing (NAD 83):	270 2186.76	Water Depth (*A*):	2.3
Logged by:	MW/AM	Easting (NAD 83):	814849.38	Length of push core assembly (*B*):	7.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	1.78	Water surface to top of handle (*C*):	2.5
Date:	5/30/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.9
		Time of Collection:	1142	Surveyed elevation (NVGD 29) (*E*):	
		Time Depart Station:	1155	Water surface from surveyed elevation (*F*):	-0.9

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	-0.9
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-5.4
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-4.1
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-3.5
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-3.2

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.9		Silt sand	Black	loose	fine			Trace Sand Throughout
1.3		Clay Shells Sand	Olive gray	firm	fine			
0.0								

File ID of digital photograph(s):

Comments:

S-08A-HH30-00-19
5/30/08

Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* **Project #:** *G606422*
Location: *New Bedford, MA* **Vessel:** *R/V Gale Force*
Client: *USACE NAE* **Chief Scientist:** Mike Walsh

Station ID:	MH36	Time On Station:	1201	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08A-MH36-00-22	Northing (NAD 83):	270 2049.74	Water Depth (*A*):	2.1
Logged by:	MW/AM	Easting (NAD 83):	814850.42	Length of push core assembly (*B*):	5.6
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.39	Water surface to top of handle (*C*):	1.1
Date:	5/30/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	2.2
		Time of Collection:	1203	Surveyed elevation (NVGD 29) (*E*):	
		Time Depart Station:	1212	Water surface from surveyed elevation (*F*):	-0.8

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	-0.8
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-5.3
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-4.2
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-3.1
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-2.9
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	—

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2.2		Silt	Black	loose	fine			
1.4		Clay Silt	gray	firm	fine			Blurred Transition
1.1		Clay some shells	Olive gray	firm	fine to med			
0.0								

File ID of digital photograph(s):

Comments:

S-08A-HH36-00-22
5/30/08

✓

Battelle
The Business of Innovation

Project Name:	*New Bedford Harbor Environmental Monitoring*	**Project #:**	*G606422*
Location:	*New Bedford, MA*	**Vessel:**	*R/V Gale Force*
Client:	*USACE NAE*	**Chief Scientist:**	Mike Walsh

Station ID:	DD 28	Time On Station:	1218	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08A-DD28-00-27	Northing (NAD 83):	2702238.06	Water Depth (*A*):	① ~~8.1~~ 5.2
Logged by:	MW/AM	Easting (NAD 83):	814738.27	Length of push core assembly (*B*):	① ~~9.0~~ 10.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.3	Water surface to top of handle (*C*):	① ~~1.6~~ 2.2
Date:	5/30/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	2.7
		Time of Collection:	① ~~1220~~ 1228	Surveyed elevation (NVGD 29) (*E*):	
		Time Depart Station:	1238	Water surface from surveyed elevation (*F*):	-0.3

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	-0.3
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-8.1
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-7.6
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-5.4
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-5.5
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	—

Elevation (NVGD) (I.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2.7	② ~~Silt some sand~~	Silt some sand	Black	loose	fine to med			
0.5								
0.0		Clay	Olive gray	firm	fine			

File ID of digital photograph(s):

Comments:

① 1st Attempt N/G Strong H_2S odor

② WL MW 5/30

S-08A-DD28-00-27
5/30/08

Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* **Project #:** *G606422*
Location: *New Bedford, MA* **Vessel:** *R/V Gale Force*
Client: *USACE NAE* **Chief Scientist:** Mike Walsh

Station ID:	W26	Time On Station:	1246	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08A-OW26-00-20	Northing (NAD 83):	2702288.3	Water Depth (*A*):	① 25 2.6
Logged by:	MW/AM	Easting (NAD 83):	814561.37	Length of push core assembly (*B*):	7.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	3.12	Water surface to top of handle (*C*):	① 20 2.1
Date:	5/30/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	2.0
		Time of Collection:	① 1248 1251	Surveyed elevation (NVGD 29) (*E*):	
		Time Depart Station:	1301	Water surface from surveyed elevation (*F*):	-0.1

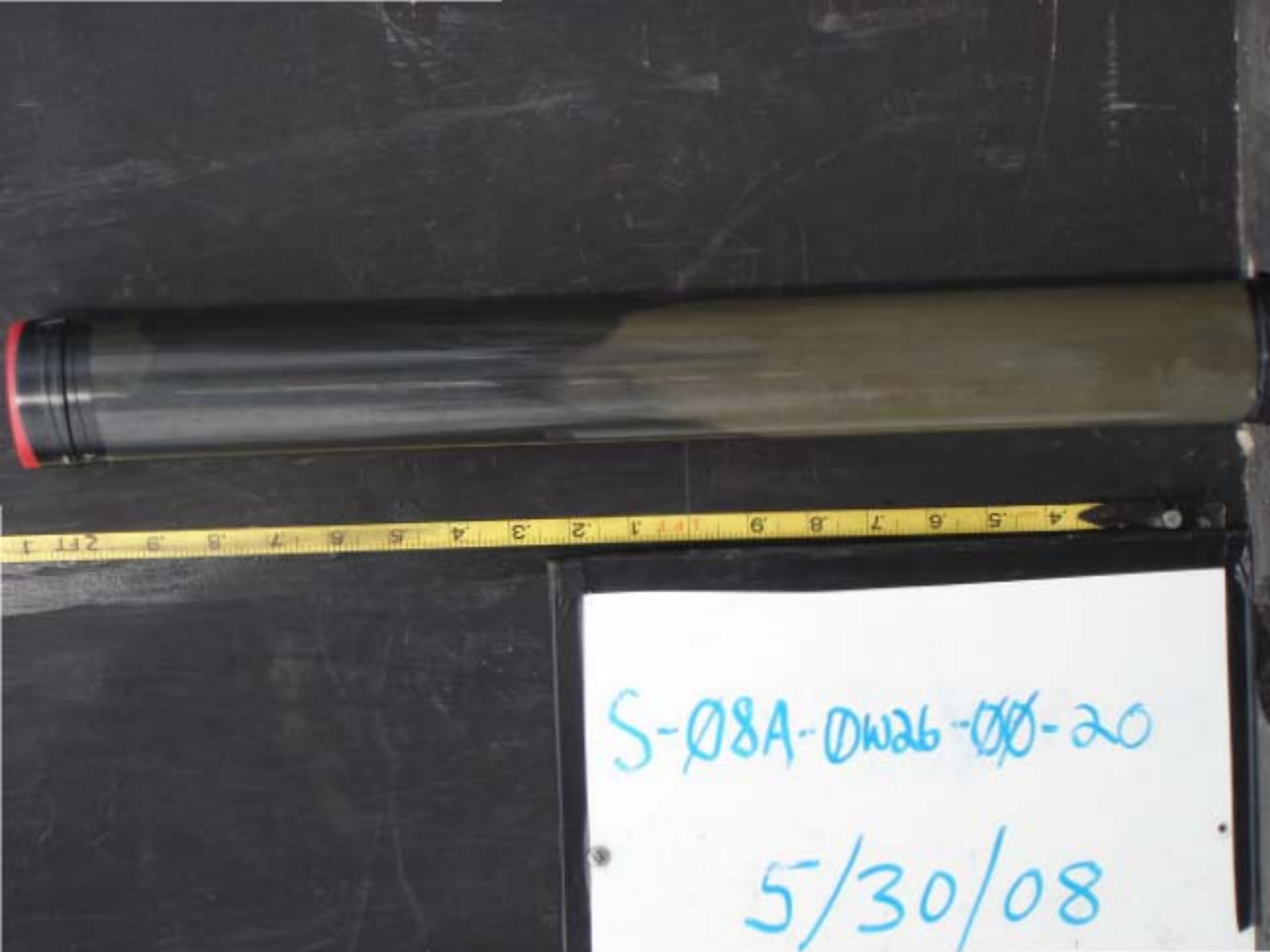
Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	-0.1
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-5.0
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-3.8
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-3.0
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-2.7
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	—

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2.0		Silt some sand	Black	loose	fine			some sand on surface
1.2		Clay	olive gray	firm	fine			
0.0								

File ID of digital photograph(s):

Comments:
① 1st Attempt N/G


S-08A-DW26-00-20
5/30/08

Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist: Mike Walsh

Station ID:	AA31	Time On Station:	1311	**All measurements are ±0.1 feet**	
Core Sample ID:	S-084-AA31-00-23	Northing (NAD 83):	270217**4**.42	Water Depth (*A*):	4.2
Logged by:	MW/KM	Easting (NAD 83):	814675.76	Length of push core assembly (*B*):	7.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	3.25	Water surface to top of handle (*C*):	0.3
Date:	5/30/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	2.3
		Time of Collection:	1313	Surveyed elevation (NVGD 29) (*E*):	
		Time Depart Station:	1318	Water surface from surveyed elevation (*F*):	±0.1

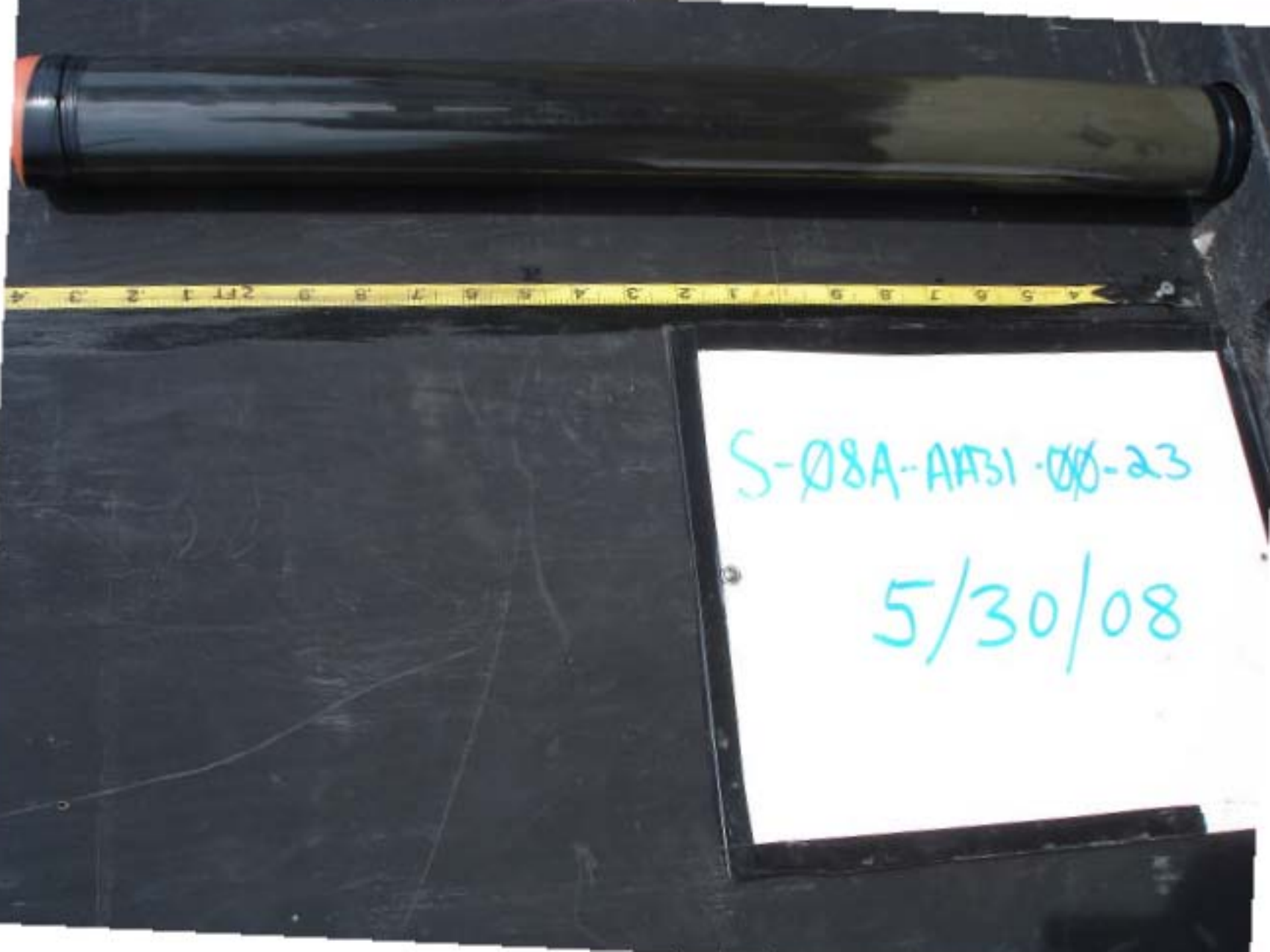
Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	+0.1
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-6.6
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-5.7
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-4.3
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-4.1
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	—

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2.3		Silt	Black	loose	fine			
0.9		Clay Flecks of Silt	Olive gray	firm	fine			
0.0								

File ID of digital photograph(s):

Comments:


S-08A-AA31-00-23
5/30/08

✓

Battelle
The Business of Innovation

Project Name:	*New Bedford Harbor Environmental Monitoring*	**Project #:**	*G606422*
Location:	*New Bedford, MA*	**Vessel:**	*R/V Gale Force*
Client:	*USACE NAE*	**Chief Scientist:**	Mike Walsh

Station ID:	EE24	Time On Station:	1325	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08A-EE24-00-14	Northing (NAD 83):	2702336.82	Water Depth (*A*):	① ~~2.5~~ 3.0
Logged by:	MW/AM	Easting (NAD 83):	814762.41	Length of push core assembly (*B*):	① ~~5.6~~ 6.1
Collection Mechanism:	*Push-Core*	GPS Accuracy:	3.19	Water surface to top of handle (*C*):	① 1.7 1.6
Date:	5/30/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.4
		Time of Collection:	① ~~1326~~ 1336	Surveyed elevation (NVGD 29) (*E*):	
		Time Depart Station:	1343	Water surface from surveyed elevation (*F*):	+0.5

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	+0.5
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-4.0
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-3.1
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-2.6
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-2.5
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	—

Elevation (NVGD) (I.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.4		silt sand	gray Blk over Black	loose	fine to med			Marbled silt/sand on top ~~[illegible]~~
0.9								SAND throughout
		Clay sand	olive	firm	fine to med			
0.0								

File ID of digital photograph(s):

Comments:

① 1st Attempt N/G

S-08A-EE24-00-.14

Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist: Mike Walsh

Station ID:	L34	Time On Station:	1351	**All measurements are ±0.1 feet**	
Core Sample ID:	S-084-0L34-00-24	Northing (NAD 83):	2702099.57	Water Depth (*A*):	2.6
Logged by:	MW/AM	Easting (NAD 83):	814300.54	Length of push core assembly (*B*):	7.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.29	Water surface to top of handle (*C*):	1.8
Date:	5/30/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	2.4
		Time of Collection:	1354	Surveyed elevation (NVGD 29) (*E*):	
		Time Depart Station:	1404	Water surface from surveyed elevation (*F*):	+0.7

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	+0.7
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-4.5
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-3.7
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-2.1
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-1.9
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	—

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2.4		Silt Sand	Black gray	loose	fine to med			marbled silt sand at surface
1.6		Clay Silt	gray	firm	fine			Blurred/Mixed Transition
0.8		Clay	Olive gray	firm	fine			
0.0								

File ID of digital photograph(s):

Comments:

J-08A-0L34-00-211
5/30/08

Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist: Mike Walsh

Station ID:	P23	Time On Station:	1410	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08A-BP23-00-30	Northing (NAD 83):	270236 1.75	Water Depth (*A*):	5.4
Logged by:	MW/AM	Easting (NAD 83):	814399.16	Length of push core assembly (*B*):	9.7
Collection Mechanism:	*Push-Core*	GPS Accuracy:	1.92	Water surface to top of handle (*C*):	1.2
Date:	5/30/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	3.0
		Time of Collection:	1412	Surveyed elevation (NVGD 29) (*E*):	
		Time Depart Station:	1419	Water surface from surveyed elevation (*F*):	+1.0

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	+1.0
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-7.5
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-6.4
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-4.5
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-4.4
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	—

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
3.0		S: H some shells	Black	loose	fine to med			
1.8		clay silt	gray Black	firm	fine			Blurred/mixed transition
1.1		clay	Olive gray	firm	fine			Some Streaking
0.0								

File ID of digital photograph(s):

Comments:

S-08A-0P23-00-30
5/30/08

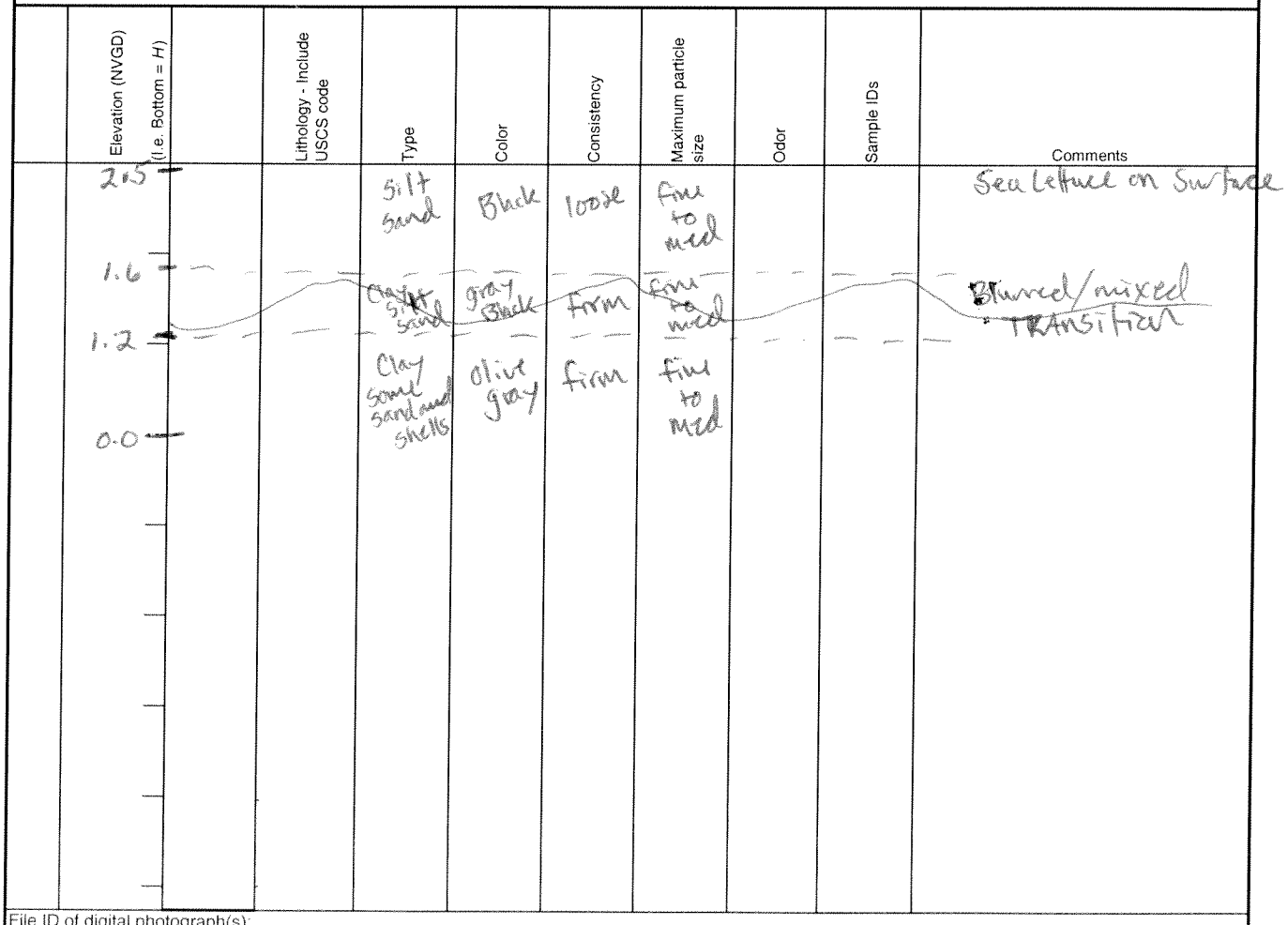
Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* **Project #:** *G606422*
Location: *New Bedford, MA* **Vessel:** *R/V Gale Force*
Client: *USACE NAE* **Chief Scientist:** Mike Walsh

Station ID:	L22	Time On Station:	1422	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08A-0L22-00-25	Northing (NAD 83):	2702399.44	Water Depth (*A*):	3.6
Logged by:	MW/AM	Easting (NAD 83):	894300.16	Length of push core assembly (*B*):	8.5
Collection Mechanism:	*Push-Core*	GPS Accuracy:	1.95	Water surface to top of handle (*C*):	2.4
Date:	5/30/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	2.5
		Time of Collection:	1424	Surveyed elevation (NVGD 29) (*E*):	
		Time Depart Station:	1432	Water surface from surveyed elevation (*F*):	+1.3

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	+1.3
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-4.8
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-3.6
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-2.3
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-2.3
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	—



File ID of digital photograph(s):

Comments:

S-08A-0L22-00-25
5/30/08

Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* **Project #:** *G606422*
Location: *New Bedford, MA* **Vessel:** *R/V Gale Force*
Client: *USACE NAE* **Chief Scientist:** Mike Walsh

Station ID:	X43	Time On Station:	1441	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08A-BX43-00-24	Northing (NAD 83):	2701862.15	Water Depth (*A*):	3.8
Logged by:	MW/AM	Easting (NAD 83):	814586.72	Length of push core assembly (*B*):	8.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.3	Water surface to top of handle (*C*):	1.5
Date:	5/30/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	2.4
		Time of Collection:	1443	Surveyed elevation (NVGD 29) (*E*):	
		Time Depart Station:	1451	Water surface from surveyed elevation (*F*):	+1.5

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	+1.5
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-5.0
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-4.1
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-2.6
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-2.3
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	—

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2.4		Silt	Black	loose	fine			
1.7		Clay Silt	Black to gray	firm	fine			
0.9		Clay sand shells	Olive gray	firm	fine to med			
0.0								

File ID of digital photograph(s):

Comments:

S-08A-3X13-00-21

5/30/08

Pierce Mill Cove

Post-dredge Sediment Cores

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Battelle
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Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	DD44	Time On Station:	0901	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08C-DD44-00-13	Northing (NAD 83):	270184.68	Water Depth (*A*):	5.0
Logged by:	AEM/MRF	Easting (NAD 83):	314748.15	Length of push core assembly (*B*):	8.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	3.15	Water surface to top of handle (*C*):	+3@1.5
Date:	12/5/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.3
		Time of Collection:	0910	Surveyed elevation (NVGD 29) (*E*):	—
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge PNC	Time Depart Station:	0914	Water surface from surveyed elevation (*F*):	-0.7

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	-0.2
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-6.7
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-6.7
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-5.4
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-5.2
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	-0.2 ✓

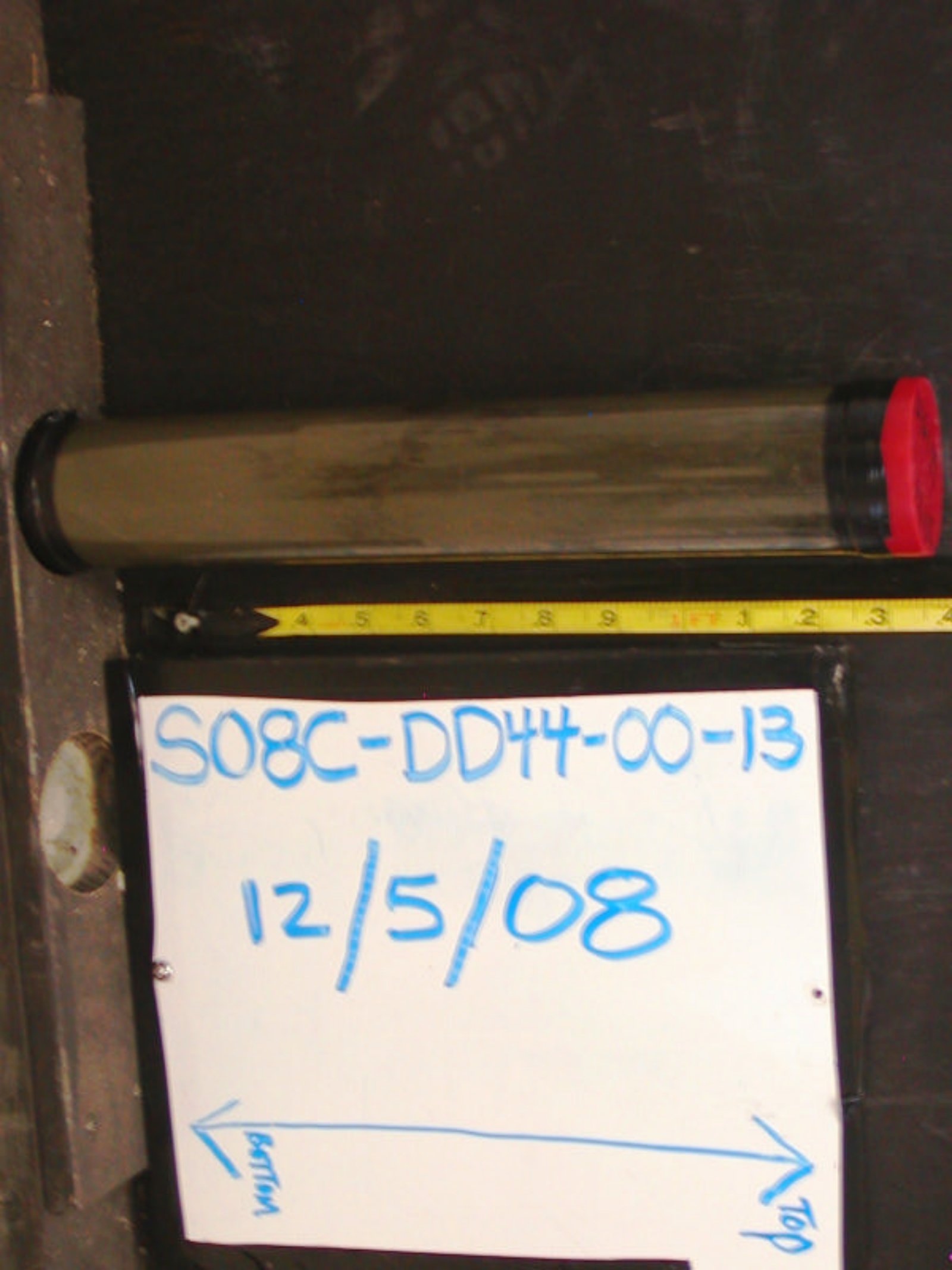
Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
-1.3	no clear transition	clay	brown/gray w/streaks of black	firm	fine			
0.0								

File ID of digital photograph(s): S-08C-DD44-00-13.JPG

Comments:

① 1st attmpt NS AEM 12/5/08

No samples taken for TOC analysis
JMT 1/14/09


S08C-DD44-00-13
12/5/08
Bottom
Top

Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* **Project #:** *G606422*
Location: *New Bedford, MA* **Vessel:** *R/V Gale Force*
Client: *USACE NAE* **Chief Scientist:**

Station ID:	EE37	Time On Station:	0918	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08C-EE37-00-13	Northing (NAD 83):	270226.51	Water Depth (*A*):	~~4.7~~ 4.5 ②
Logged by:	MEM/MRF	Easting (NAD 83):	841773.70	Length of push core assembly (*B*):	8.0
Collection Mechanism:	Push-Core	GPS Accuracy:	3.37	Water surface to top of handle (*C*):	~~1.5~~ 1.4 ② 2.0
Date:	12/5/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.3
		Time of Collection:	935	Surveyed elevation (NVGD 29) (*E*):	—
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge (PMC)	Time Depart Station:	0939	Water surface from surveyed elevation (*F*):	-0.1

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	-0.1
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-6.1
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-5.1
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-4.8
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-4.6
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	-0.2 ✓

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.3		silty sand	dark brown	loose	med small			No Sample taken for PCB analysis 1/14/09 SMT
1.0					fine			
		clay	gravy	firm				
0.0								

File ID of digital photograph(s): S-08C-EE37-00-13.JPG

Comments:

① 1st Attempt N/G

② 2nd Attempt is good core but calculations don't add up; water depth re-measured; calculations now correct

SOC-EE37-00-13

12/5/08

TOP

BOTTOM

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Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	X33	Time On Station:	0942	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08C-X33-00-16	Northing (NAD 83):	270123.59	Water Depth (*A*):	4.1
Logged by:	MEM/MRF	Easting (NAD 83):	814599.03	Length of push core assembly (*B*):	3.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.2	Water surface to top of handle (*C*):	2.2
Date:	12/5/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.6
		Time of Collection:	0946	Surveyed elevation (NVGD 29) (*E*):	
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge	Time Depart Station:	0950	Water surface from surveyed elevation (*F*):	0.0

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	0.0
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-5.8
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-5.3
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-4.2
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-4.1
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	-0.1 ✓

Elevation (NVGD) (i.e. Bottom = *H*)		Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
-1.6			silt	brownish black	fine → loose	fine			11/5/09 - Core cut - top 1.1' feet thawed bottom 1.1'-1.6' frozen archive JMT
-0.5	visual transition				firm				
			clay	light gray	firm	fine			
0.0									1/16/09 - top 1.1' subsampled ID: S-08C-X33-00-11 JMT

File ID of digital photograph(s): S-08C-0X33-00-16.JPG

Comments:

S-08C-0X33.00-16

12/15/08

TOP

BOTTOM

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Project Name:	*New Bedford Harbor Environmental Monitoring*	**Project #:**	*G606422*
Location:	*New Bedford, MA*	**Vessel:**	*R/V Gale Force*
Client:	*USACE NAE*	**Chief Scientist:**	

Station ID:	T38	Time On Station:	0956	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08C-OT38-00-14	Northing (NAD 83):	2701999.16	Water Depth (*A*):	~~4.0~~ ~~4.2~~ 4.3
Logged by:	AEM/MRF	Easting (NAD 83):	814510.51	Length of push core assembly (*B*):	8.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.08	Water surface to top of handle (*C*):	~~3.0~~ 2.1
Date:	12/5/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.4
		Time of Collection:	1034	Surveyed elevation (NVGD 29) (*E*):	—
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge PMC	Time Depart Station:	1042	Water surface from surveyed elevation (*F*):	0.6

Calculations for Determination of Z* Elevation

(*G*)	Elevation of Water Surface (NVGD): *E - F*	0.6
(*H*)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-5.3
(*z**)	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-5.3
(*I*)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-3.9
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-3.7
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	-0.2 ✓

Elevation (NVGD) (I.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.4	No clear transition	↑ seaweed ↓	↑ silty clay ↓	gray w/ mixed black	firm	fine		1/15/09 - core cut top 1.0' foot thrown
① disregard 0.4								1.0'-1.4' frozen archive JMT
0.0								1/16/09 - top 1.0' subsampled for PCB congeners analysis + QA split
								ID: S-08C-T38-00-16

File ID of digital photograph(s): S-08C-OT38-00-14.JPG

Comments:

① No clear transition, appears to be all native material possible that theres a small amount of overlying material at top which has streaked down core.

SOBC-OT38-00-11H

12/5/08

TOP

BOTTOM

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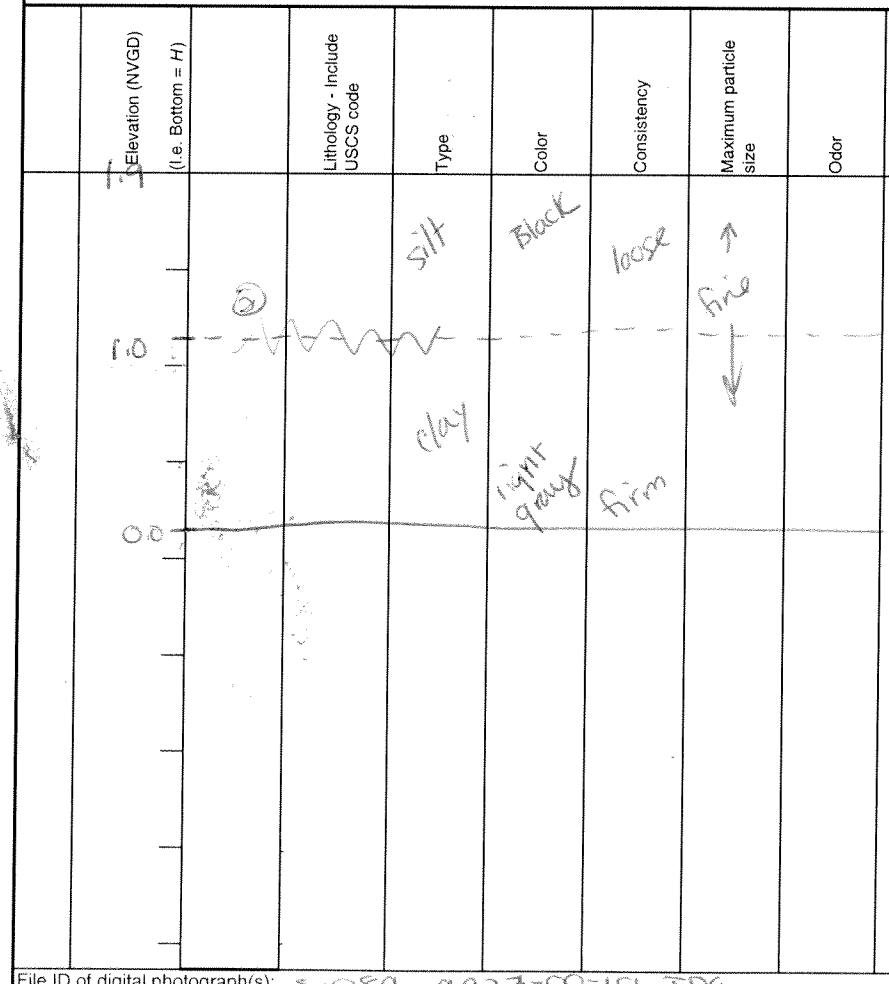
Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	CC27	Time On Station:	1045	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08C-CC27-00-19	Northing (NAD 83):	2702273.74	Water Depth (*A*):	~~6.7~~ 7.0 ~~7.1~~
Logged by:	AEM/MRF	Easting (NAD 83):	814726.35	Length of push core assembly (*B*):	~~9.2~~ ~~10.2~~ 10.1
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.3	Water surface to top of handle (*C*):	~~0.2~~ 0.4 0.8
Date:	12/5/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.9
		Time of Collection:	1120	Surveyed elevation (NVGD 29) (*E*):	—
Survey Type:	Pre-Dredge Prog-Dredge (Post-Dredge) PMC	Time Depart Station:	1126	Water surface from surveyed elevation (*F*):	1.0

Calculations for Determination of Z* Elevation

(*G*)	Elevation of Water Surface (NVGD): *E - F*	1.0
(*H*)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-8.3
(*z**)	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-7.3
(*I*)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-6.4
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-6.1
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	-0.3 ✓



1/16/09 -
top 0.9 feet subsampled *
bottom 0.9 - 1.9' archived
JMT

* sample dropped lost top ~1 inch of core
ID: S-08C - CC27-00-09'
JMT

1/15/09 - Core cut + thawed top 0.9'

File ID of digital photograph(s): S-08C - CC27-00-19.JPG

Comments:
① 1st 3 attempts N/G, try w/3 ft. tube
② some streaking

SOBC-CC27-08-19

12/5/08

TOP

BOTTOM

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Project Name:	*New Bedford Harbor Environmental Monitoring*	**Project #:**	*G606422*
Location:	*New Bedford, MA*	**Vessel:**	*R/V Gale Force*
Client:	*USACE NAE*	**Chief Scientist:**	

Station ID:	T22	Time On Station:	1131	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08C-OT22-00-13	Northing (NAD 83):	2702387.21	Water Depth (*A*):	6.0
Logged by:	AEM/MRF	Easting (NAD 83):	814486.89	Length of push core assembly (*B*):	8.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	3.22	Water surface to top of handle (*C*):	① ~~0.4~~ 0.6
Date:	12/5/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.3
		Time of Collection:	1145	Surveyed elevation (NVGD 29) (*E*):	—
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge (TMC)	Time Depart Station:	1150	Water surface from surveyed elevation (*F*):	1.3

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	1.3
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-6.1
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-5.2
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-4.8
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-4.7
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	-0.1 ✓

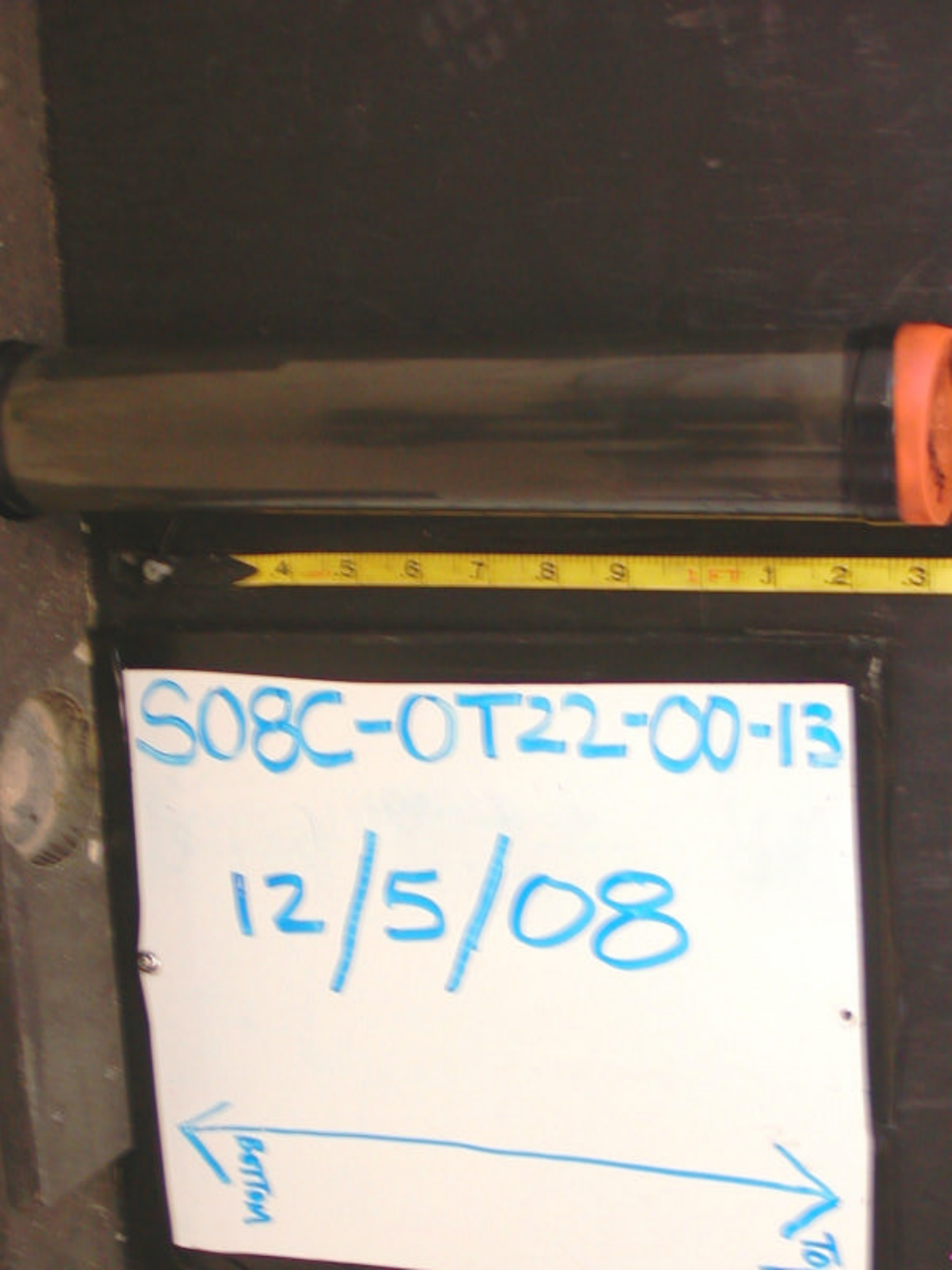
Elevation (NVGD) (I.e. Bottom = *H*)		Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.3			silt	black	loose				1/15/09 - core cut
0.9	②		~~silt~~ clay	streaking of black light gray	firm	fine			top 0-0.4' thawed
0.0									bottom 0.4' - 1.3' frozen archive
									1/16/09 - top 0.4' subsampled for PCB Congene analysis ID: S-08C-T22-00-04

File ID of digital photograph(s): S-08C-OT22-00-13.JPG

Comments:

① 1st attempt N/G

② A lot of streaking, transition most likely close to top


S08C-0T22-00-13
12/5/08
BOTTOM

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Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	N25	Time On Station:	1155	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08C-ON25-00-13	Northing (NAD 83):	2702310.66	Water Depth (*A*):	4.1
Logged by:	AEM/MRF	Easting (NAD 83):	514338.21	Length of push core assembly (*B*):	3.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.69	Water surface to top of handle (*C*):	~~2.0~~ 2.6
Date:	12/5/08	Predicted Tide (ft):		Length of core (from bottom) (*D*): ①	~~1.3~~ 1.3
		Time of Collection:	1200	Surveyed elevation (NVGD 29) (*E*):	—
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge PMC	Time Depart Station:	~~1204~~ 1215	Water surface from surveyed elevation (*F*):	1.5

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	1.5
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-3.9
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-3.0
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-2.6
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-2.6
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	0.0 ✓

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
-1.3		silt	dark brown	loose	fine			No sample taken for PCB analysis SMF 1/15/09
0.9		clay	gray	firm	fine			
0.0								

File ID of digital photograph(s): S-08C-ON25-00-13.JPG

Comments:
① Need longer barrel to collect sufficient amount of recovery.
① disregard AEM 12/5/08
② A lot of streaking in transition @ 0.9 AEM 12/5/08

S-08C-0M25-00-12

12/5/08

TOP

BOTTOM

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Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	N25	Time On Station:	1155	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08C-ON25-00-15-REP	Northing (NAD 83):	270231066	Water Depth (*A*):	4.1
Logged by:	AEM/MRF	Easting (NAD 83):	814338.2	Length of push core assembly (*B*):	8.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.6m	Water surface to top of handle (*C*):	2.3
Date:	12/5/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.5
		Time of Collection:	1209	Surveyed elevation (NVGD 29) (*E*):	
Survey Type:	Pre-Dredge Prog-Dredge (Post-Dredge) PMC	Time Depart Station:	1215	Water surface from surveyed elevation (*F*):	1.5

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	1.5
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-4.2
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-3.5
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-2.7
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-2.6
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	0.1 ✓

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.5		silt	brownish black	soft	fine			No Sample taken for PCB analysis JMT 1/15/09
0.7		clay	gray	firm	firm			
0.1 to 0.2			dark black					
0.0								

File ID of digital photograph(s): S-08C-ON25-00-15-REP.JPG

Comments:

S-08C-ON25-00-15-
REP
12/15/08
TOP
BOTTOM

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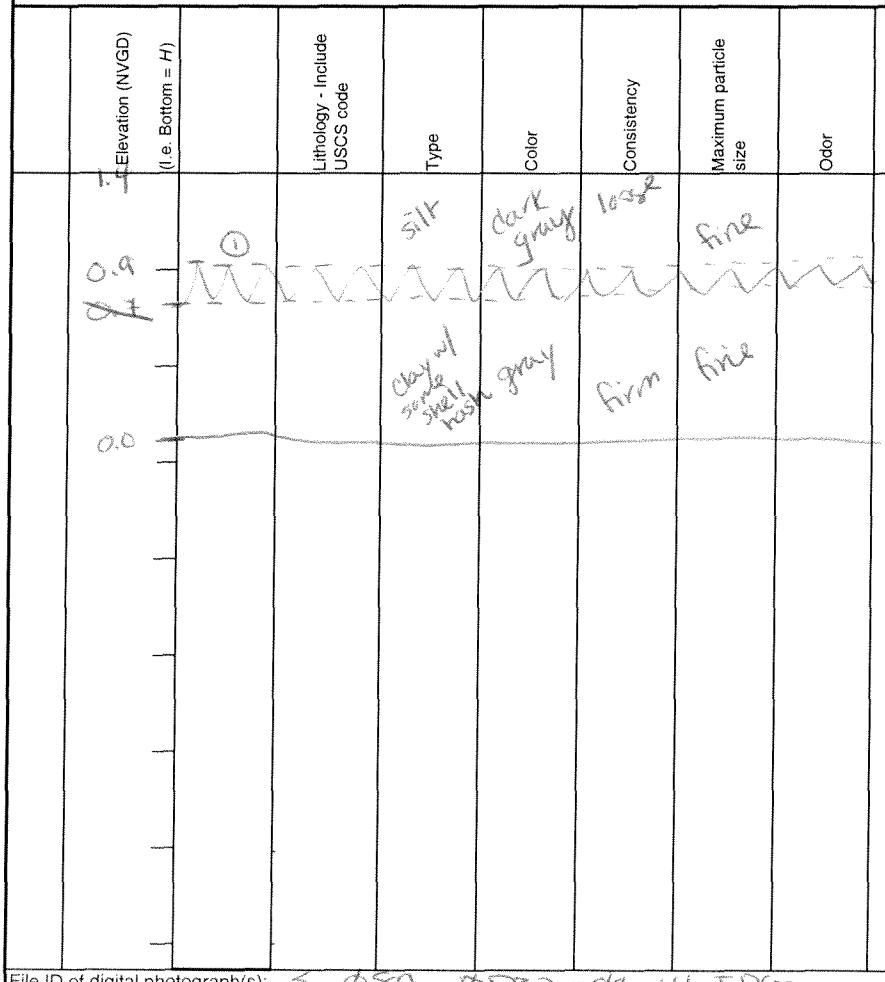
Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	D32	Time On Station:	1225	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08C-D32-00-14	Northing (NAD 83):	2702147.00	Water Depth (*A*):	4.8
Logged by:	AEM/MRF	Easting (NAD 83):	814099.75	Length of push core assembly (*B*):	8.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	3.19	Water surface to top of handle (*C*):	1.7
Date:	12/5/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.4
		Time of Collection:	1227	Surveyed elevation (NVGD 29) (*E*):	
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge PMC	Time Depart Station:	1234	Water surface from surveyed elevation (*F*):	1.7

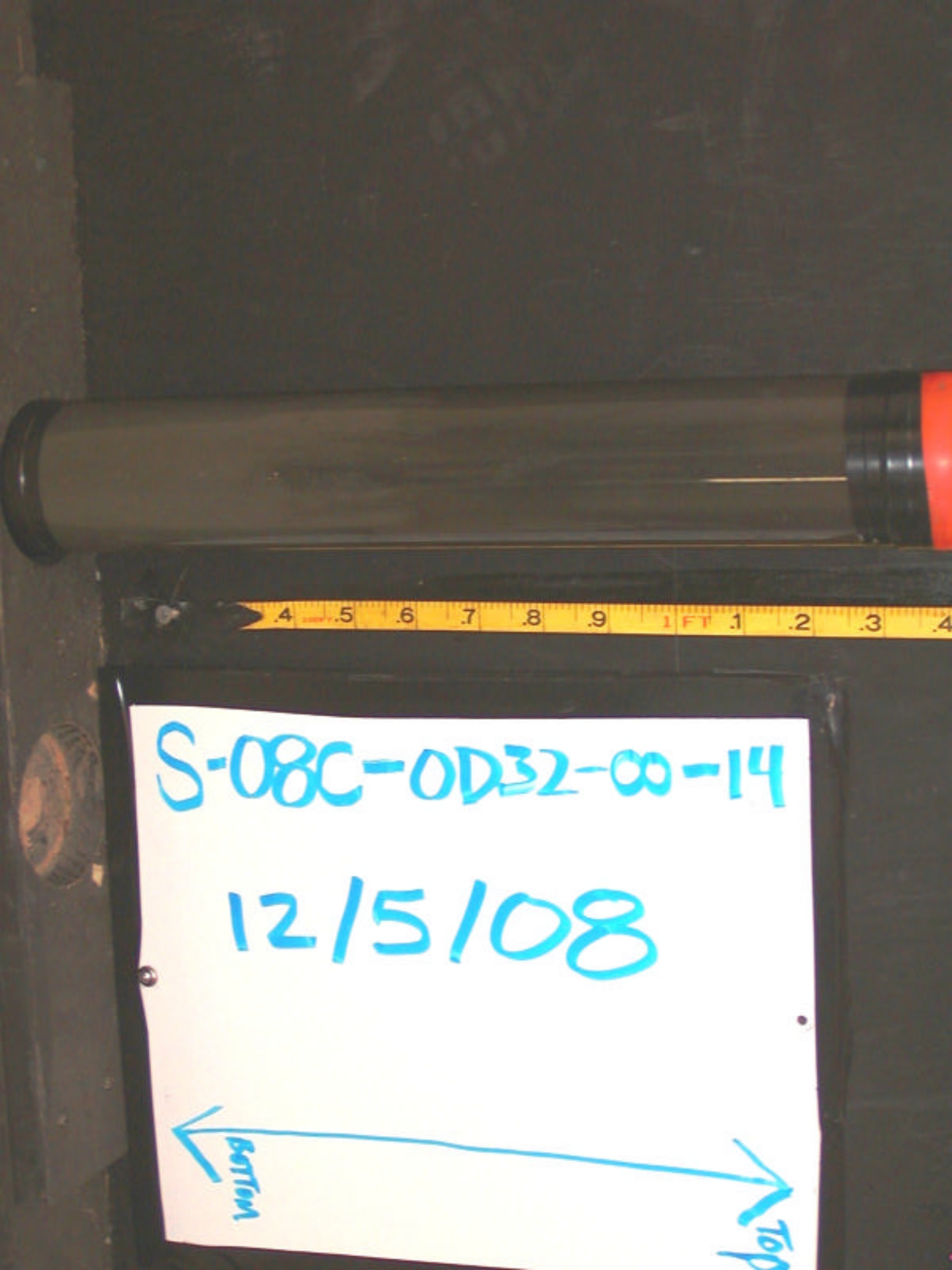
Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	1.7
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-4.6
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-3.7
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-3.2
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-3.1
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	-0.1 ✓



File ID of digital photograph(s): S-08C-D32-00-14.JPG

Comments: ①streaking; top of horizon most likely @ 0.9 AEM 12/5/08


.4 .5 .6 .7 .8 .9 1 FT .1 .2 .3 .4
S-08C-0D32-00-14
12/5/08
Bottom
Top

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Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	D25	Time On Station:	1238	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08C-0D25-00-15	Northing (NAD 83):	2702324.58	Water Depth (*A*):	4.2
Logged by:	AEM/MRF	Easting (NAD 83):	814100.24	Length of push core assembly (*B*):	8.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	3.31	Water surface to top of handle (*C*): ①	~~3.5~~ 2.7
Date:	12/5/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.5
		Time of Collection:	1244	Surveyed elevation (NVGD 29) (*E*):	—
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge PMC	Time Depart Station:	1248	Water surface from surveyed elevation (*F*):	1.8

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	1.8
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-4.0
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-3.2
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-2.5
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-2.4
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	-0.1 ✓

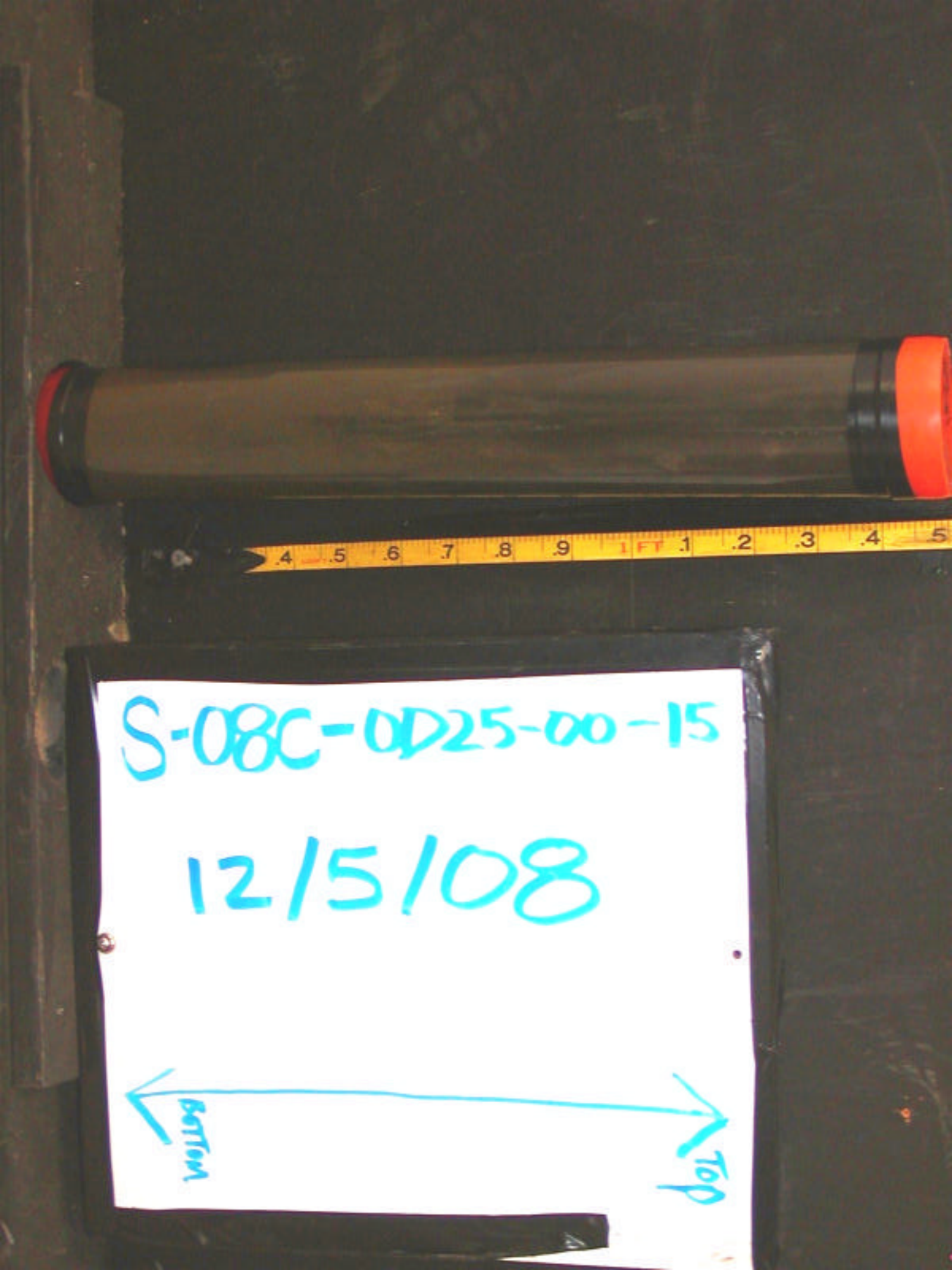
Elevation (NVGD) (i.e. Bottom = *H*)		Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.5			silty sand	dark gray	loose	med			1/16/09 - top 0.7' subsampled for PCB congener analysis ② (S-08C-D25-00-07)
0.8	Visual transition		clayey silt	grayish brown	firm	med			Bottom 0.7' – 1.5' archived frozen
0.0									1/15/09 - one cut SAT

File ID of digital photograph(s): S-08C-0D25-00-15.JPG

Comments:

① Hammered in and remeasured AEM 12/5/08

② s/b C ; ID: S-08C-D25-00-07 AEM 1/20/09


.4 .5 .6 .7 .8 .9 1 FT .1 .2 .3 .4 .5
S-08C-0D25-00-15
12/5/08
BOTTOM
TOP

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The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	bb28	Time On Station:	1250	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08C-bb28-00-15	Northing (NAD 83):	2702250.56	Water Depth (*A*):	4.5
Logged by:	AEM/MCF	Easting (NAD 83):	813949.35	Length of push core assembly (*B*):	8.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.38	Water surface to top of handle (*C*):	1.8
Date:	12/5/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.5
		Time of Collection:	1253	Surveyed elevation (NVGD 29) (*E*):	
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge (TMC)	Time Depart Station:	1300	Water surface from surveyed elevation (*F*):	1.8

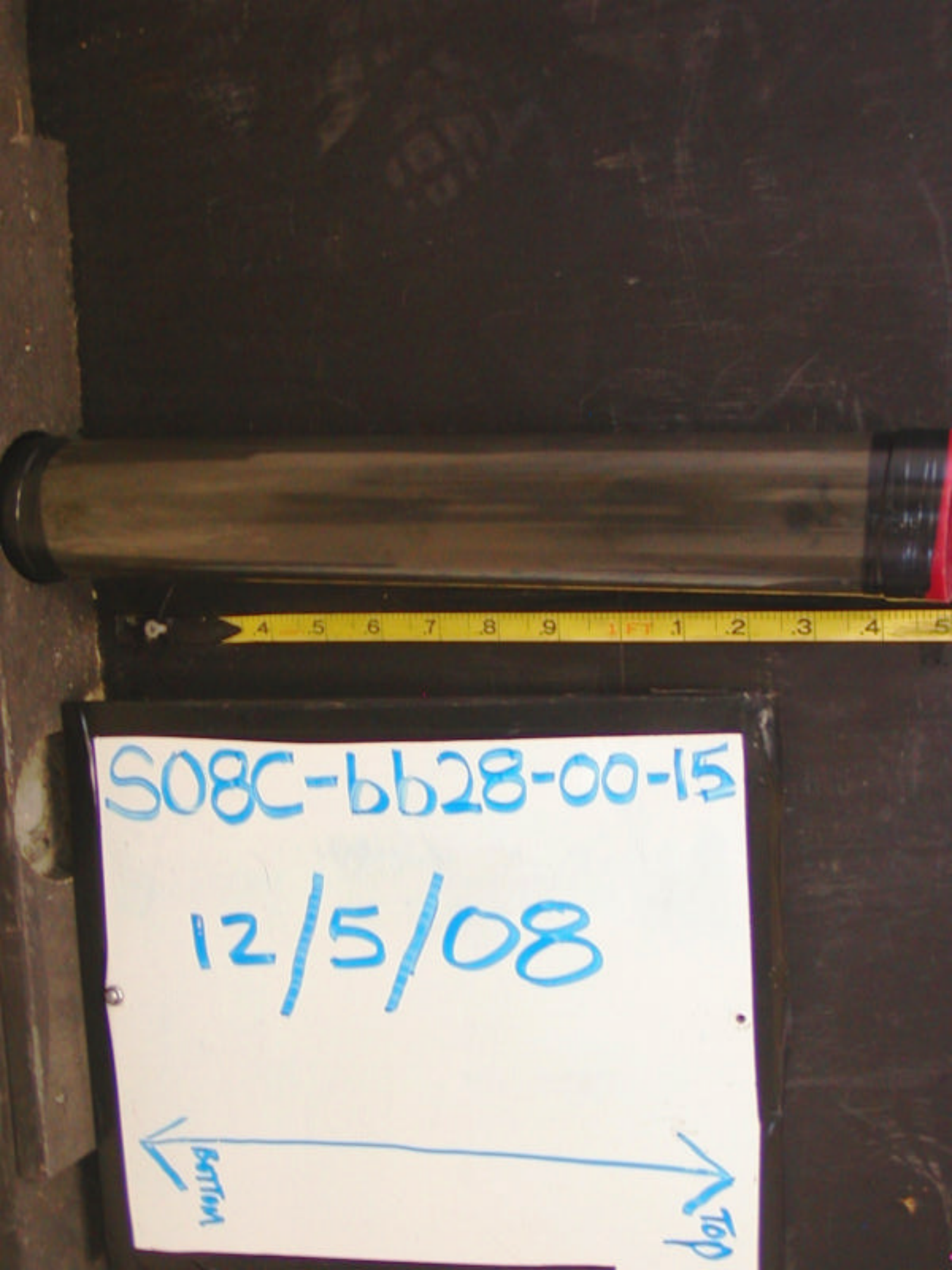
Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	1.8
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-4.4
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-3.9
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-2.9
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-2.7
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	-0.2 ✓

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.5		silt	black	loose	fine			1/15/09 - core cut top 1.0 thawed bottom 1.0-1.5' frozen archived
0.5	seaweed	clay	gray	firm	fine			1/16/09 - top 1.0' subsampled for PCB congener + Homologue analysis ID S-08C-bb28-00-10 JMI
0.0								

File ID of digital photograph(s): S-08C-bb28-00-15.JPG

Comments:


S08C-bb28-00-15
12/5/08
Bottom
Top

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The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	HH23	Time On Station:	1306	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08C-HH23-00-16	Northing (NAD 83):	2702375.24	Water Depth (*A*):	4.9
Logged by:	AEM/MRF	Easting (NAD 83):	814850.3	Length of push core assembly (*B*):	3.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.42	Water surface to top of handle (*C*):	1.4
Date:	10/5/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.60
		Time of Collection:	1310	Surveyed elevation (NVGD 29) (*E*):	—
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge	Time Depart Station:	1313	Water surface from surveyed elevation (*F*):	1.8

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	1.8
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-4.8
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-4.8
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-3.2
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-3.1
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	-0.1 ✓

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.6	some seaweed	fine sandy clay	brown grading light gray	firm	small-fine			no clear transition
0.0								No sample taken for TCB analyses 1/15/09 JMT

File ID of digital photograph(s): S-08C-HH23-00-16.JPG

Comments:

SOBC-HH23-00-16

12/5/08

TOP

BOTTOM

Battelle
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Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	NN34	Time On Station:	1321	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08C-NN34-00-12	Northing (NAD 83):	2702059.21	Water Depth (*A*):	4.6
Logged by:	AEM/MEF	Easting (NAD 83):	814987.03	Length of push core assembly (*B*):	8.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.20	Water surface to top of handle (*C*):	2.0
Date:	12/5/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.2
		Time of Collection:	1325	Surveyed elevation (NVGD 29) (*E*):	
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge PMC	Time Depart Station:	1331	Water surface from surveyed elevation (*F*):	1.8

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	1.8
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-4.2
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-3.7
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-3.0
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-2.8
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	-0.2 ✓

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.2		black silt	black	loose	fine			No sample taken for PCB analysis JMT 1/16/09
0.5		clay	olive gray	firm	fine			
0.0								

File ID of digital photograph(s): S-08C-NN34-00-12.JPG

Comments:

S-08C-NMBH-08-12

12/5/08

TOP

BOTTOM

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Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	LL40	Time On Station:	1335	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08C-LL40-00-16	Northing (NAD 83):	2701936.56	Water Depth (*A*):	4.6
Logged by:	AEM/MRF	Easting (NAD 83):	814939.77	Length of push core assembly (*B*):	8.1
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.12	Water surface to top of handle (*C*):	~~1.6~~ 1.9
Date:	12/5/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.6
		Time of Collection:	1347	Surveyed elevation (NVGD 29) (*E*):	
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge RMC	Time Depart Station:	1351	Water surface from surveyed elevation (*F*):	1.7

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	1.7
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-4.5
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-4.0
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-2.9
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-2.9
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	0.0 ✓

Elevation (NVGD) (i.e. Bottom = *H*)		Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.6			silt	brownish black	loose	fine			
0.5	visual transition		clay	gray	firm	fine			No sample taken for PCB analysis JMT 1/15/09
0.0									

File ID of digital photograph(s): S-08C-LL40-00-16.JPG

Comments:

① 1st attempt N/G AEM 12/5/08

S-08C-LL40-00-16

12/5/08

TOP

BOTTOM

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Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	UU33	Time On Station:	1355	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08C-UU33-00-17	Northing (NAD 83):	2702113.75	Water Depth (*A*):	5.2
Logged by:	AEM/MRF	Easting (NAD 83):	815162.06	Length of push core assembly (*B*):	9.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.01	Water surface to top of handle (*C*):	1.9
Date:	12/5/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.7
		Time of Collection:	1359	Surveyed elevation (NVGD 29) (*E*):	—
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge	Time Depart Station:	1407	Water surface from surveyed elevation (*F*):	1.7

Calculations for Determination of Z* Elevation

(G)	Elevation of Water Surface (NVGD): *E - F*	1.7
(H)	Elevation of the bottom of the core (NVGD): *G - (B - C)*	-5.4
(z)*	Elevation of visual transition (NVGD): *H + (distance to visual transition)*	-4.7
(I)	Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*	-3.7
(I_2)	Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*	-3.5
	(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)	-0.2 ✓

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.7		silt	black	base	fine			
-3.7		clay w/shell hash	light gray	firm	fine			N: Sample taken for PCB analysis JMT 1/15/09
0.0								

File ID of digital photograph(s): S-08C-UU33-00-17.JPG

Comments:

SOBC-UW33-00-12

12/15/08

TOP

BOTTOM

North of Wood Street Sediments

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Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	C008-30E	Time On Station:	9:03	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08D-C008-30E-00-10	Northing (NAD 83):	2708683.7	Water Depth (*A*):	NA
Logged by:	AFM	Easting (NAD 83):	815498.6	Length of push core assembly (*B*):	NA
Collection Mechanism:	~~Push Core~~ Auger	GPS Accuracy:	1.91	Water surface to top of handle (*C*):	NA
Date:	11/20/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.0
		Time of Collection:	9:05	Surveyed elevation (NVGD 29) (*E*):	NA
Survey Type:	Pre-Dredge Prog-Dredge (Post-Dredge) NWS	Time Depart Station:	9:10	Water surface from surveyed elevation (*F*):	NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)		Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0			sand	yellowish brown to olive		med			uniform - no transition line seen
0.0									

File ID of digital photograph(s): S-08D-C008-30E-00-10

Comments:

S-08D-C008-30E

-00-10

11/20/08

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Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID: NWS-037 Time On Station: 9:12 **All measurements are ±0.1 feet**
Core Sample ID: S-08D-NWS-037-00-10 Northing (NAD 83): 2708652.25 Water Depth (*A*): NA
Logged by: AEM Easting (NAD 83): 315534.72 Length of push core assembly (*B*):
Collection Mechanism: ~~Push-Core~~ Hunter GPS Accuracy: ~~10~~ 1.93 Water surface to top of handle (*C*):
Date: 11/20/08 Predicted Tide (ft): Length of core (from bottom) (*D*): 1.0
Time of Collection: 9:13 Surveyed elevation (NVGD 29) (*E*):
Survey Type: Pre-Dredge Prog-Dredge (Post-Dredge) NWS Time Depart Station: 9:20 Water surface from surveyed elevation (*F*):

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0		organics						uniform - no transition seen
		silty sand through out	rusty brown					
0.0		gravel			large			

File ID of digital photograph(s): S-08D-NWS-37-00-10.JPG

Comments:

S-08D-MWS-37

00-10

11/20/08

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Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID: NWS-35 Time On Station: 0921 **All measurements are ±0.1 feet**
Core Sample ID: S-08D-NWS-35-00-10 Northing (NAD 83): 2705759.5 Water Depth (*A*): NA
Logged by: AEH Easting (NAD 83): 815505.65 Length of push core assembly (*B*):
Collection Mechanism: ~~Push Core~~ Auger GPS Accuracy: 2.05 Water surface to top of handle (*C*):
Date: 11/20/08 Predicted Tide (ft): Length of core (from bottom) (*D*): 1.0
Time of Collection: 9:22 Surveyed elevation (NVGD 29) (*E*):
Survey Type: Pre-Dredge Prog-Dredge (Post-Dredge) Time Depart Station: 9:29 Water surface from surveyed elevation (*F*):
NWS

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0	SM	sand w/organic material	mottled brown and grey	firm	fine to large fragment			No transition seen - uniform core
0.0		silty sand some gravel						

File ID of digital photograph(s): S-08D-NWS-35-00-10.JPG

Comments:

S-08D-MW35-
00-10

11/20/08

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Project Name:	*New Bedford Harbor Environmental Monitoring*	**Project #:**	*G606422*
Location:	*New Bedford, MA*	**Vessel:**	*R/V Gale Force*
Client:	*USACE NAE*	**Chief Scientist:**	

Station ID:	NWS-36	Time On Station:	0931	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08D-NWS36-00-10	Northing (NAD 83):	2708761.25	Water Depth (*A*):	NA
Logged by:	AEM	Easting (NAD 83):	815516.12	Length of push core assembly (*B*):	
Collection Mechanism:	~~Push-Core~~ Auger	GPS Accuracy:	1.90	Water surface to top of handle (*C*):	
Date:	11/20/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.0
		Time of Collection:	0932	Surveyed elevation (NVGD 29) (*E*):	
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge	Time Depart Station:	0937	Water surface from surveyed elevation (*F*):	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

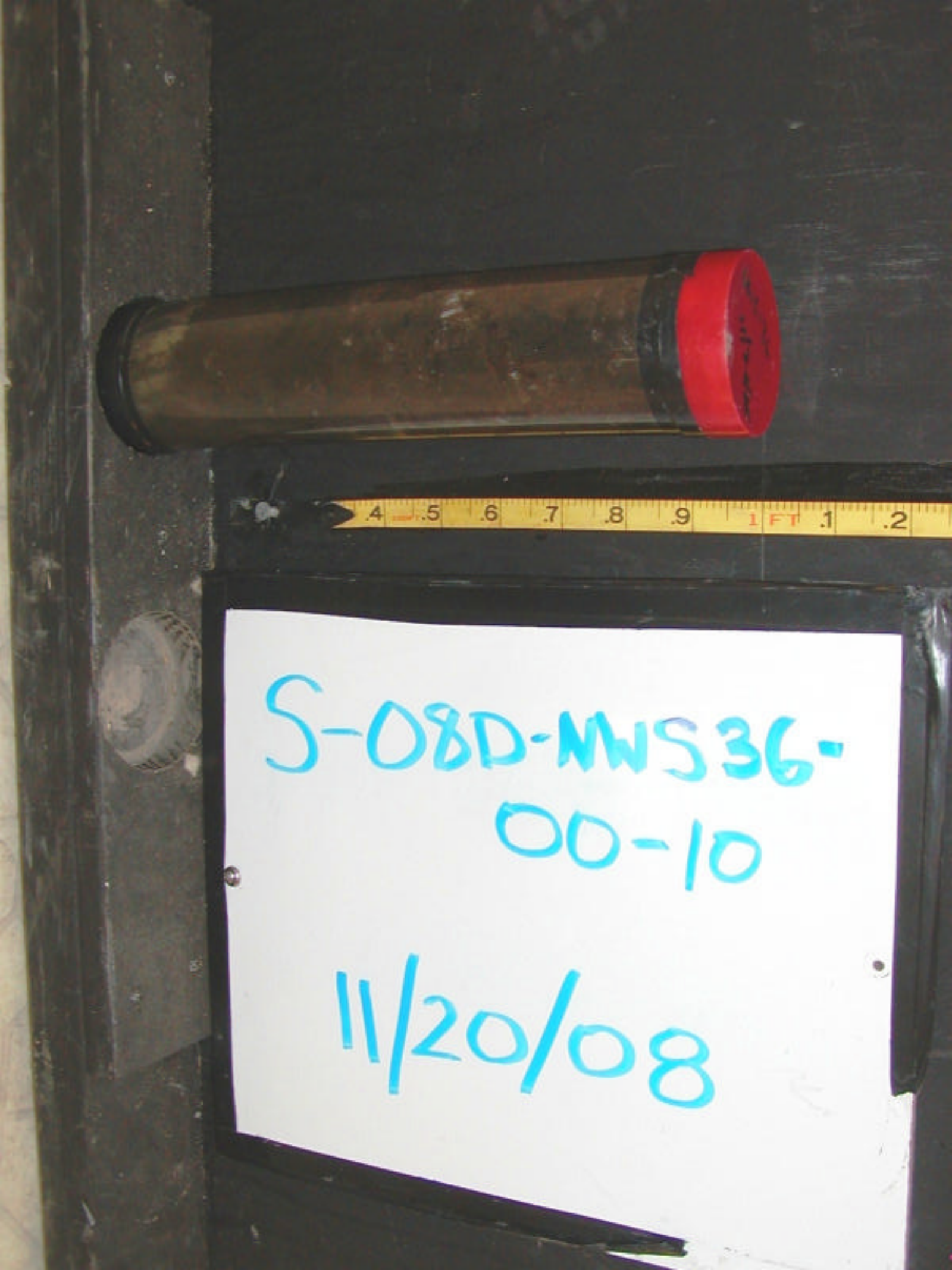
(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (I.e. Bottom = *H*)		Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0			sand + silt w/organic	mostly brown		large			No transition seen uniform core slight Δ in color @ bottom
0			gravel + sand	some gray					

File ID of digital photograph(s): S-08D-NWS-36-00-10.JPG

Comments:


.4 .5 .6 .7 .8 .9 1 FT .1 .2
S-08D-NWS36-00-10
11/20/08

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Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	NWS38	Time On Station:	9:39	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08D-NWS38-00-10	Northing (NAD 83):	270384.17	Water Depth (*A*):	N.A
Logged by:	AEM	Easting (NAD 83):	815503.15	Length of push core assembly (*B*):	
Collection Mechanism:	*Push-Core*	GPS Accuracy:	3.3	Water surface to top of handle (*C*):	
Date:	11/20/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.0
		Time of Collection:	9:40	Surveyed elevation (NVGD 29) (*E*):	
Survey Type:	Pre-Dredge Prog-Dredge (Post-Dredge) NWS	Time Depart Station:	9:41	Water surface from surveyed elevation (*F*):	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

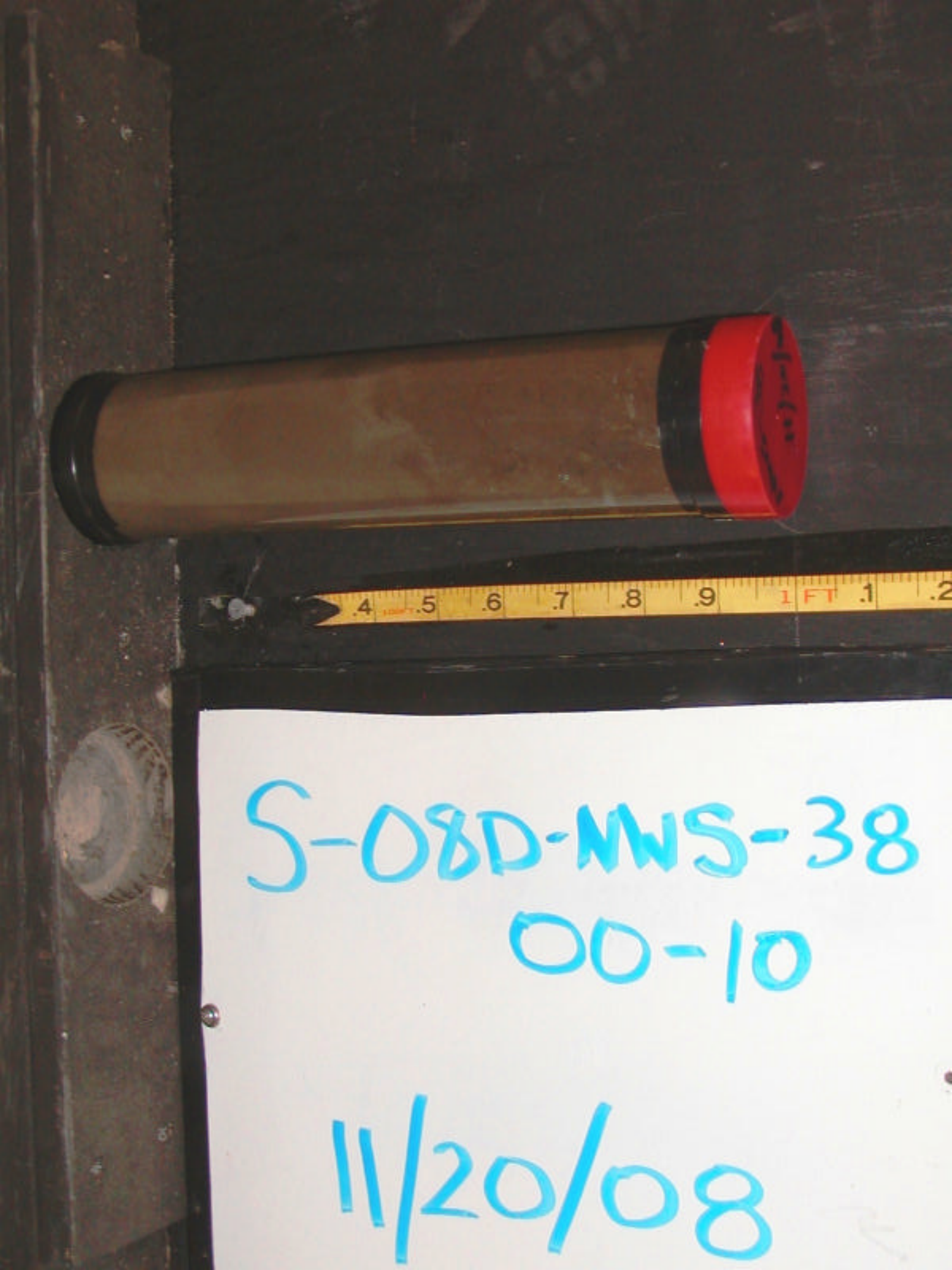
(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)		Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0			sand	brown		med.			
0.5			silty sand	light gray					
0.0									

File ID of digital photograph(s): S-08D-NWS-38-00-10.JPG

Comments: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11/20/08

Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	NWS-39	Time On Station:	0943	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08D-NWS39-00-10	Northing (NAD 83):	270515.20	Water Depth (*A*):	NA
Logged by:	AEM	Easting (NAD 83):	315505.55	Length of push core assembly (*B*):	NA
Collection Mechanism:	~~Push-Core~~ Auger	GPS Accuracy:	1.96	Water surface to top of handle (*C*):	NA
Date:	11/20/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.0
		Time of Collection:	0944	Surveyed elevation (NVGD 29) (*E*):	NA
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge NWS	Time Depart Station:	0947	Water surface from surveyed elevation (*F*):	NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)		Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0			silty sand	dark brown		large			
			0.4 gravel	light gray					
0.0									

File ID of digital photograph(s): S-08D-NWS-39-00-10.JPG

Comments:

S-08D-MWS-39
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11/20/08

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Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	C008-30W	Time On Station:	10:03	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08D-C008-30W-00-19	Northing (NAD 83):	270865 3.3	Water Depth (*A*):	NA
Logged by:	AEM	Easting (NAD 83):	815363.8	Length of push core assembly (*B*):	NA
Collection Mechanism:	~~Push Core~~ Auger	GPS Accuracy:	2.52	Water surface to top of handle (*C*):	NA
Date:	11/20/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.0
		Time of Collection:	10:04	Surveyed elevation (NVGD 29) (*E*):	NA
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge NHS	Time Depart Station:	10:07	Water surface from surveyed elevation (*F*):	NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)		Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0			organic material sand	brown		large			Bottom 0.03 D in ester
		organics	sandy gravel	light gray					
0.0									

File ID of digital photograph(s): S-08D-C008-30W-00-10.JPG

Comments:

S-08D-C008-30W

-00-10

11/20/08

Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	NWS-34	Time On Station:	10:59	**All measurements are ±0.1 feet**	
Core Sample ID:	S-OSD-NWS34-00-10	Northing (NAD 83):	2708923.9	Water Depth (*A*):	NA
Logged by:	AEM	Easting (NAD 83):	815335.8	Length of push core assembly (*B*):	NA
Collection Mechanism:	~~Push-Core~~ Auger	GPS Accuracy:	3.75	Water surface to top of handle (*C*):	NA
Date:	11/20/06	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.0
		Time of Collection:	11:00	Surveyed elevation (NVGD 29) (*E*):	NA
Survey Type:	Pre-Dredge Prog-Dredge (Post-Dredge) NWS	Time Depart Station:	11:06	Water surface from surveyed elevation (*F*):	NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

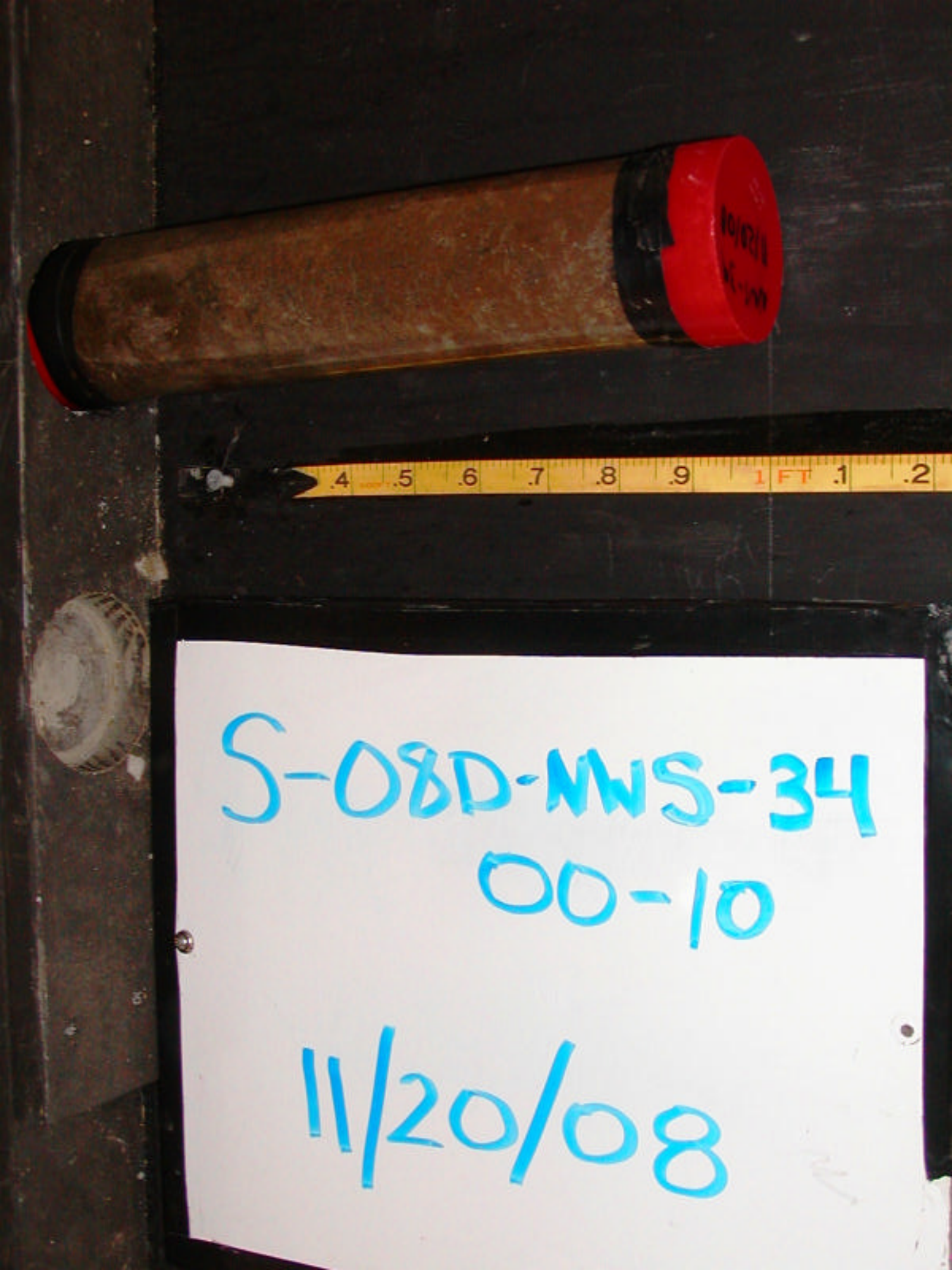
(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)		Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0			sand	brown		large			uniform throughout core
0.0			big gravel						

File ID of digital photograph(s): S-OSD-NWS-34-00-10.JPG

Comments: Peat


S-08D-NWS-34
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11/20/08

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The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	NWS-33	Time On Station:	11:08	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08D-NWS33-00-10	Northing (NAD 83):	2709039.40	Water Depth (*A*):	NA
Logged by:	AEH	Easting (NAD 83):	515330.30	Length of push core assembly (*B*):	
Collection Mechanism:	*Push-Core*	GPS Accuracy:	3.0+	Water surface to top of handle (*C*):	
Date:	11/20/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.0
		Time of Collection:	11:09	Surveyed elevation (NVGD 29) (*E*):	
Survey Type:	Pre-Dredge Prog-Dredge (Post-Dredge) NWS	Time Depart Station:	11:11	Water surface from surveyed elevation (*F*):	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)		Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0			sand	rusty brown					
Horizon @ 0.4			-0.4						
0.0			dk sand	gray					

File ID of digital photograph(s): S-08D-NWS-33-00-10.JPG

Comments:

S-08D-MWS-33
00-10
11/20/08

Battelle
The Business of Innovation

Project Name:	*New Bedford Harbor Environmental Monitoring*	**Project #:**	*G606422*
Location:	*New Bedford, MA*	**Vessel:**	*R/V Gale Force*
Client:	*USACE NAE*	**Chief Scientist:**	

Station ID:	C008-062	Time On Station:	1848	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08D-C008-062-00-16	Northing (NAD 83):	2708165.92	Water Depth (*A*):	~~3.3~~ 3.5
Logged by:	PC	Easting (NAD 83):	815567.28	Length of push core assembly (*B*):	8.2
Collection Mechanism:	*Push-Core*	GPS Accuracy:	3.01	Water surface to top of handle (*C*):	* ~~4.0~~ ~~3.3~~ ** 3.
Date:	~~4~~ 12/3/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.6
		Time of Collection:	915	Surveyed elevation (NVGD 29) (*E*):	NA
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge NWS	Time Depart Station:	917	Water surface from surveyed elevation (*F*):	NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (I.e. Bottom = *H*)		Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.6			silt w/ fine sand	dark brown/ black	firm	sm - fine			
0.6			clay w/ sand	light brown	firm	fine			
0.0									

File ID of digital photograph(s): S-08D-C008-062-00-16.5PG

Comments:

* Not a good core

** Not a good core

S-08D-0008-0062-00-16

12/3/08

Top

Bottom

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Project Name:	*New Bedford Harbor Environmental Monitoring*	**Project #:**	*G606422*
Location:	*New Bedford, MA*	**Vessel:**	*R/V Gale Force*
Client:	*USACE NAE*	**Chief Scientist:**	

Station ID:	C008-055	Time On Station:	0921	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08D-C008-055-00-15	Northing (NAD 83):	2708266.99	Water Depth (*A*):	5.5
Logged by:	AEM	Easting (NAD 83):	815461.10	Length of push core assembly (*B*):	8.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.52	Water surface to top of handle (*C*):	0.9
Date:	12/3/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.5
		Time of Collection:	0934	Surveyed elevation (NVGD 29) (*E*):	NA
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge NWS	Time Depart Station:	0940	Water surface from surveyed elevation (*F*):	NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (I.e. Bottom = *H*)		Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.5			fine sandy silt	Dark Brown/ Black	soft/ loose	fine			
0.5			organic mat.						
			clay	gradual light brown	firm	fine			
0.0									

File ID of digital photograph(s): S-08D-C008-055-00-15.JPG

Comments:

S-08D-0008-055-00-15

12/3/08

Top

Bottom

Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	NBC3-CS5	Time On Station:	0921	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08D-NBC3-055-00-16-REP	Northing (NAD 83):	270826.99	Water Depth (*A*):	5.6
Logged by:	AEM	Easting (NAD 83):	815461.10	Length of push core assembly (*B*):	3.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.52	Water surface to top of handle (*C*):	0.7
Date:	12/3/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.6
		Time of Collection:	935	Surveyed elevation (NVGD 29) (*E*):	NA
Survey Type:	Pre-Dredge Prog-Dredge (Post-Dredge) NBS	Time Depart Station:	940	Water surface from surveyed elevation (*F*):	NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

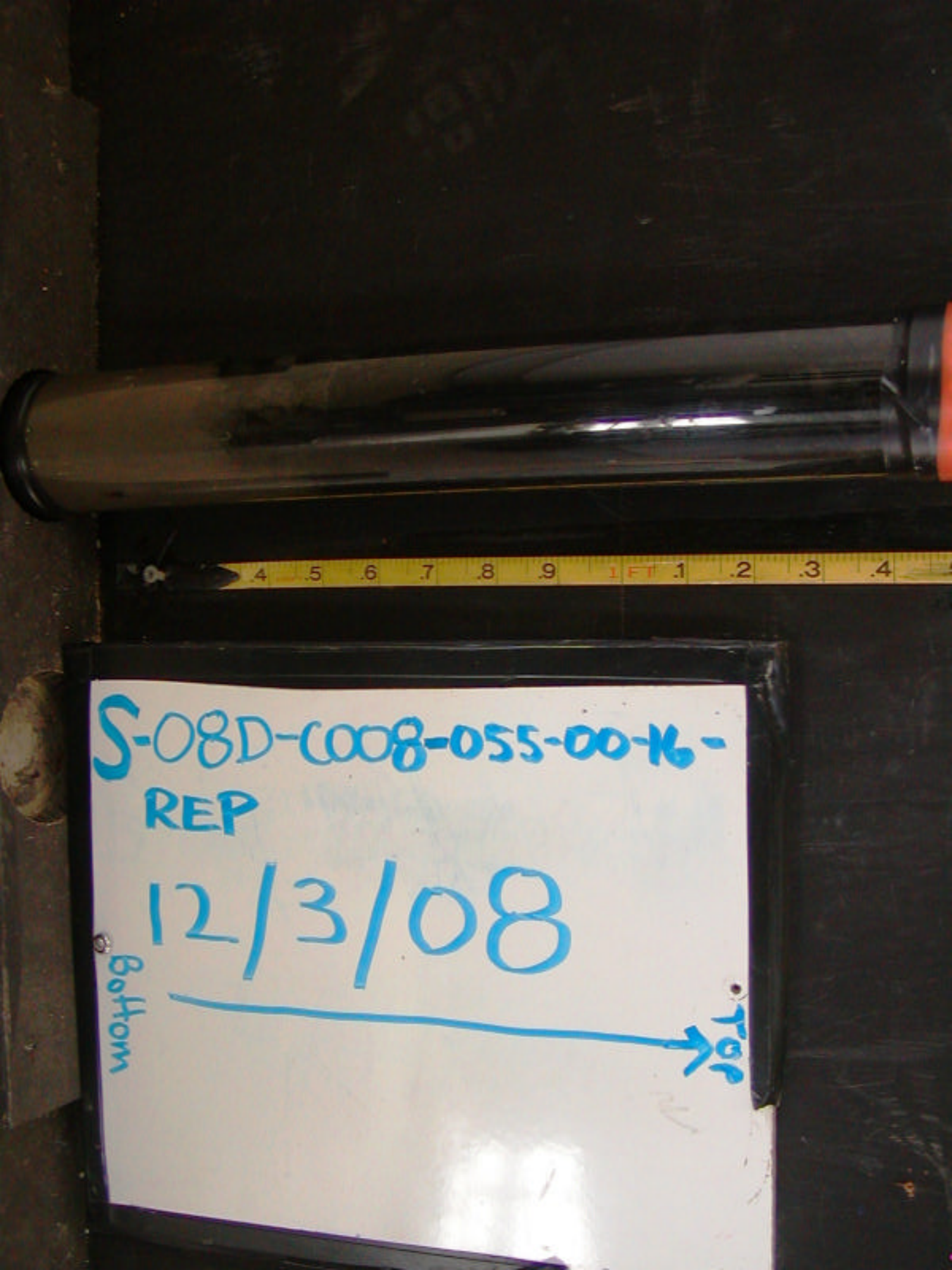
(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
-1.6		sandy silt	dark brown/black	loose	fine			
-0.5	(sea lettuce)	organic mat.						
0.0		silt	light brown	firm	fine			

File ID of digital photograph(s): S-08D-C005-055-00-16-REP.JPG

Comments:

05/b-REP
AEM 12/3/08


.4 .5 .6 .7 .8 .9 1 FT .1 .2 .3 .4
S-08D-C008-055-00-16-
REP
12/3/08
Bottom
Top

Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	C008-048	Time On Station:	0946	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08D-C008-048-00-16	Northing (NAD 83):	2708387.52	Water Depth (*A*):	5.0
Logged by:	AEM	Easting (NAD 83): ①	815414.40	Length of push core assembly (*B*):	8.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.58	Water surface to top of handle (*C*):	1.2
Date:	12/3/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.6
		Time of Collection:	0950	Surveyed elevation (NVGD 29) (*E*):	NA
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge NOAA	Time Depart Station:	0955	Water surface from surveyed elevation (*F*):	NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.6		silty w/ organic matter	dark brown/ black	loose	small	—		
0.5.6	silty transition							shaky transition
0.0		clay	light brown	firm	small	—		

File ID of digital photograph(s): S-08D-C008-048-00-16 SPG

Comments: ① close GPS signal under bridge

S-08D-0008-048-00-16

12/3/08

Top

Bottom

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Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	C005-049	Time On Station:	0958	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08D-C005049-00-12	Northing (NAD 83):	2768405.78	Water Depth (*A*):	4.2
Logged by:	AFM	Easting (NAD 83):	815468.41	Length of push core assembly (*B*):	8.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.77	Water surface to top of handle (*C*):	2.5
Date:	12/3/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.2
		Time of Collection:	1002	Surveyed elevation (NVGD 29) (*E*):	NA
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge (NOS)	Time Depart Station:	1006	Water surface from surveyed elevation (*F*):	NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.2		sand	Dark Black	loose	fine-med			
0.9								
0.7		clay	light gray brown	firm	small			
0.2								
0.0								

File ID of digital photograph(s): S-08D-C005-049-00-12.JPG

Comments:

S-08D-0008-004-00-12

12/3/08

Top

Bottom

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Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	C005-040	Time On Station:	1014	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08D-C005-040-00-12	Northing (NAD 83):	270854.65	Water Depth (*A*):	5.7
Logged by:	AEM	Easting (NAD 83):	815462.20	Length of push core assembly (*B*):	3.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.09	Water surface to top of handle (*C*):	1.0
Date:	12/3/05	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.2
		Time of Collection:	1017	Surveyed elevation (NVGD 29) (*E*):	NA
Survey Type:	Pre-Dredge Prog-Dredge (Post-Dredge) NWS	Time Depart Station:	1020	Water surface from surveyed elevation (*F*):	NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)		Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.2			fine sandy silt	dark brown		fine			
0.2			clay	light brown	firm	fine			
0.0									

File ID of digital photograph(s): S-08D-C005-040-00-12.JPG

Comments:

S-08D-008-OHO-A-12

12/3/08

Top

Bottom

Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	COUS-039	Time On Station:	1024	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08D-COUS-039-00-12	Northing (NAD 83):	270857384	Water Depth (*A*):	4.8
Logged by:	AEM	Easting (NAD 83):	815410.39	Length of push core assembly (*B*):	3.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.07	Water surface to top of handle (*C*):	1.9
Date:	12/3/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.2
		Time of Collection:	1028	Surveyed elevation (NVGD 29) (*E*):	NA
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge	Time Depart Station:	1034	Water surface from surveyed elevation (*F*):	NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

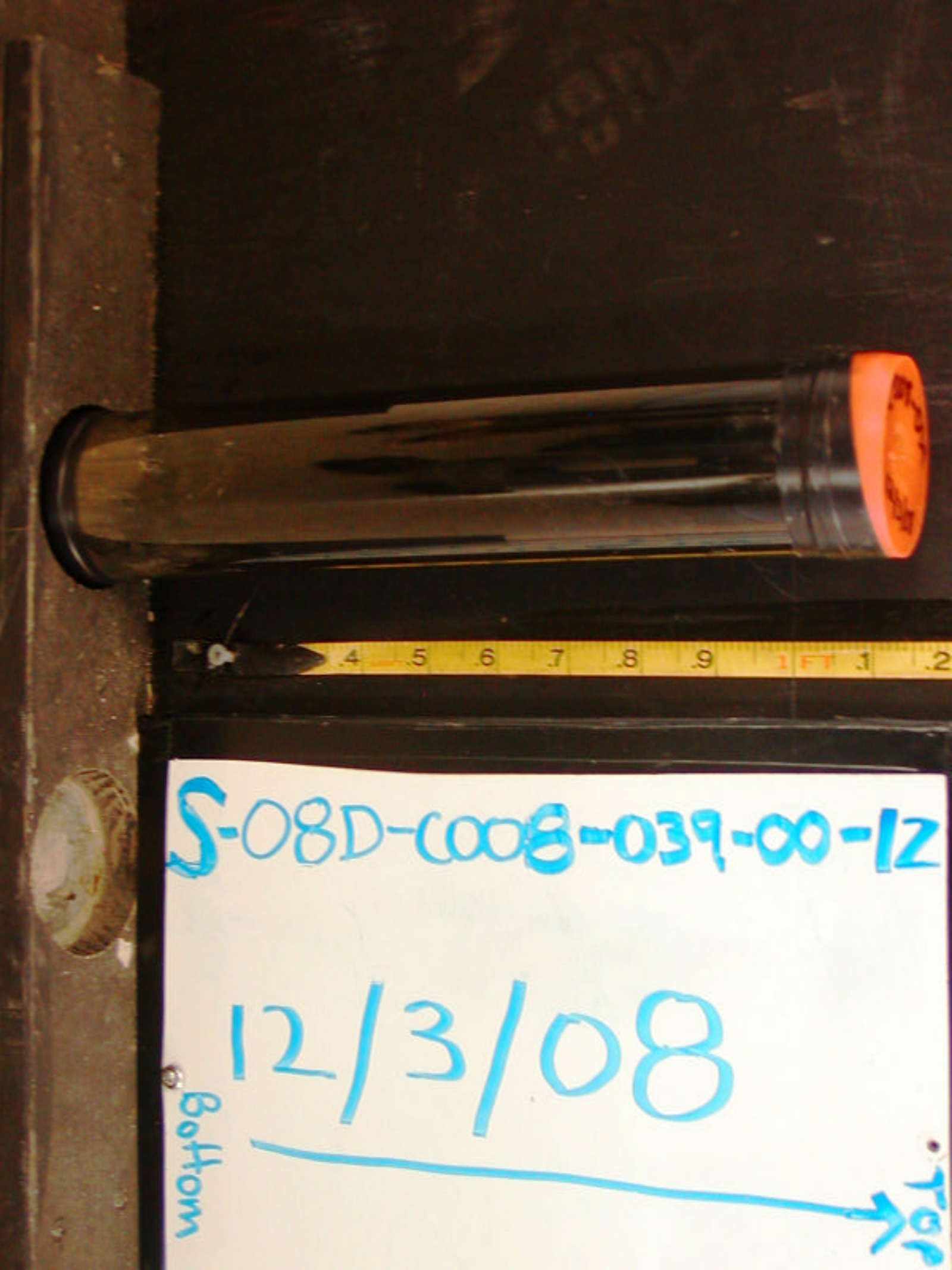
(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)		Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.2			fine sandy silt	dark brown/ black	loose	fine			
0.2		w/sand & shell hash → clayey		light brown		fine			
0.0									

File ID of digital photograph(s): S-08D-COUS-039-00-12.JPG

Comments:

Large shell and coarse sand @ bottom.


S-08D-C008-039-00-12
12/3/08
Bottom
Top

Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring*
Location: *New Bedford, MA*
Client: *USACE NAE*

Project #: *G606422*
Vessel: *R/V Gale Force*
Chief Scientist:

Station ID:	C008-038	Time On Station:	1035	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08D-C008-038-00-13	Northing (NAD 83):	2708517.71	Water Depth (*A*):	4.0
Logged by:	AEM	Easting (NAD 83):	815383.18	Length of push core assembly (*B*):	8.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.35	Water surface to top of handle (*C*):	2.5
Date:	12/3/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.3
		Time of Collection:	① ~~1035~~ s/b 1050	Surveyed elevation (NVGD 29) (*E*):	NA
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge NWS	Time Depart Station:	1055	Water surface from surveyed elevation (*F*):	NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (I.e. Bottom = *H*)		Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.3		organic mat.	sand w/silt	dark brown	loose	fine			
0.5-0.7	gradual transition		sandy clay	grading light gray/brown	firm	fine			
0.0									

water at top
some settling

File ID of digital photograph(s): S-08D-C008-038-00-13.JPG

Comments:

① 2 attempts; 1st was no good AEM 12/3/08

S-08D-0008-038-00-13

12/3/08

Top

Bottom

Battelle
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Project Name: *New Bedford Harbor Environmental Monitoring* **Project #:** *G606422*
Location: *New Bedford, MA* **Vessel:** *R/V Gale Force*
Client: *USACE NAE* **Chief Scientist:**

Station ID:	C008-033	Time On Station:	1058	**All measurements are ±0.1 feet**	
Core Sample ID:	S-05D-C008-033-00-12	Northing (NAD 83):	270861.329	Water Depth (*A*):	4.2
Logged by:	AEM	Easting (NAD 83):	815412.90	Length of push core assembly (*B*):	8.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.34	Water surface to top of handle (*C*):	2.4
Date:	12/3/05	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.2
		Time of Collection:	1102	Surveyed elevation (NVGD 29) (*E*):	NA
Survey Type:	Pre-Dredge Prog-Dredge (Post-Dredge) NEWS	Time Depart Station:	1106	Water surface from surveyed elevation (*F*):	NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.2	↑ organic breaks	silty sand	dark black	loose	small			
0.5		sand/ gravel	light brown	loose	mud			
0.0								

File ID of digital photograph(s): S-05D-C008-033-00-12.JPG

Comments:

S-08D-0008-0033-00-17

12/3/08

Top

Bottom

Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	C005-028	Time On Station:	1108	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08D-C005-028-00-15	Northing (NAD 83):	2708704.43	Water Depth (*A*):	4.1
Logged by:	AEM	Easting (NAD 83):	815400.22	Length of push core assembly (*B*):	8.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	3.68	Water surface to top of handle (*C*):	2.4
Date:	12/3/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.5
		Time of Collection:	1112	Surveyed elevation (NVGD 29) (*E*):	NA
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge NWS	Time Depart Station:	1116	Water surface from surveyed elevation (*F*):	NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

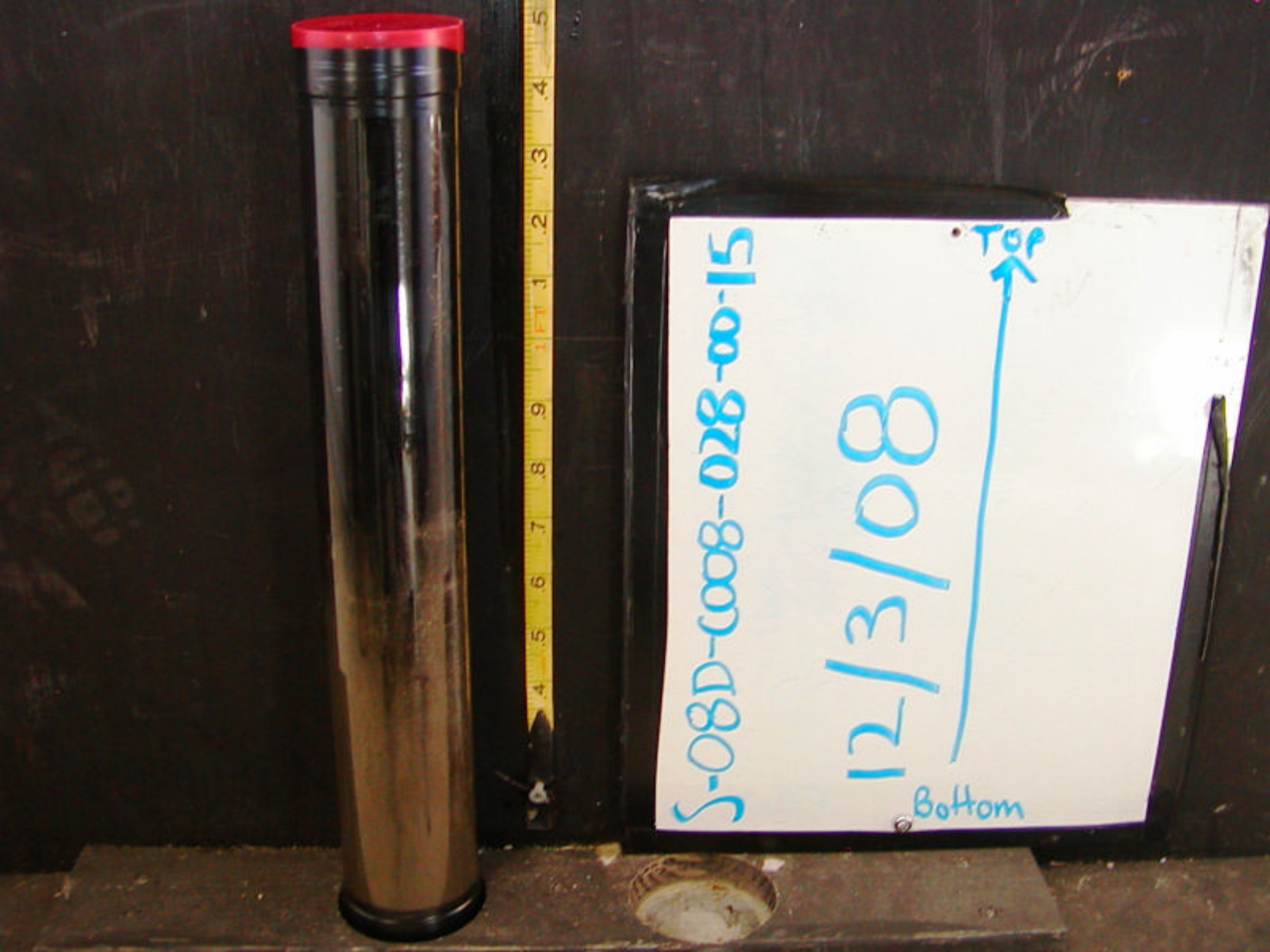
(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
-1.5		silt organic mat.	dark black	loose	small			
0.7 Horizon					mud			
0.0		sand + clay	light gray/brown firm					

File ID of digital photograph(s): S-08D-C005-028-00-15.JPG

Comments:


S-08D-0008-028-00-15
12/3/08
Top
Bottom

Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	C008-023	Time On Station:	1119	**All measurements are ±0.1 feet**	
Core Sample ID:	S-06D-C008-023-00-14	Northing (NAD 83):	270881 4.59	Water Depth (*A*):	4.3
Logged by:	AEM	Easting (NAD 83):	815412.09	Length of push core assembly (*B*):	8.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	3.99	Water surface to top of handle (*C*):	2.1
Date:	12/3/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.4
		Time of Collection:	1126	Surveyed elevation (NVGD 29) (*E*):	NA
Survey Type:	Pre-Dredge Prog-Dredge (Post-Dredge) NWS	Time Depart Station:	1129	Water surface from surveyed elevation (*F*):	NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.4		sandy silt	dark Black Brown	loose				
0.6 Transition		silt/clay						
0.0		clay	lighter Brown	firm	small			

File ID of digital photograph(s): S-06D-C008-023-00-14.JPG

Comments:

S-08D-0008-023-00-14

12/3/08

Top

Bottom

Battelle
The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	C008-016	Time On Station:	1132	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08D-C008-016-CC-1	Northing (NAD 83):	2708949.2	Water Depth (*A*):	4.0
Logged by:	AEM	Easting (NAD 83):	815397.87	Length of push core assembly (*B*):	3.1
Collection Mechanism:	*Push-Core*	GPS Accuracy:	3.52	Water surface to top of handle (*C*):	2.8
Date:	9/3/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.1
		Time of Collection:	1140	Surveyed elevation (NVGD 29) (*E*):	NA
Survey Type:	Pre-Dredge Prog-Dredge Post-Dredge (NWS)	Time Depart Station:	1145	Water surface from surveyed elevation (*F*):	NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.1		sand	grayish black		med.			
0.9		silty clay some sand	not well mixed light brown	firm	fine			
0.0								

File ID of digital photograph(s): S-08D-C008-016-CC-11.JPG

Comments:

S-08D-0008-016-00-11

12/3/08

Top

Bottom

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The Business of Innovation

Project Name: *New Bedford Harbor Environmental Monitoring* Project #: *G606422*
Location: *New Bedford, MA* Vessel: *R/V Gale Force*
Client: *USACE NAE* Chief Scientist:

Station ID:	C008-010	Time On Station:	1151	**All measurements are ±0.1 feet**	
Core Sample ID:	S-08D-C008-010-00-1	Northing (NAD 83):	2709128.94	Water Depth (*A*):	3.3
Logged by:	AEM	Easting (NAD 83):	815353.74	Length of push core assembly (*B*):	8.0
Collection Mechanism:	*Push-Core*	GPS Accuracy:	2.98	Water surface to top of handle (*C*):	3.3
Date:	12/3/08	Predicted Tide (ft):		Length of core (from bottom) (*D*):	1.1
		Time of Collection:	1204	Surveyed elevation (NVGD 29) (*E*):	NA
Survey Type:	Pre-Dredge Prog-Dredge (Post-Dredge)	Time Depart Station:	1210	Water surface from surveyed elevation (*F*):	NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): *E - F*

(H) Elevation of the bottom of the core (NVGD): *G - (B - C)*

(z)* Elevation of visual transition (NVGD): *H + (distance to visual transition)*

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): *H + D*

(I_2) Elevation of the sediment-water interface as measured from water depth (NVGD): *G - A*

(Note if $I \neq I_2$ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = *H*)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.1		↑ sand (coarse) gravel ↓	dark gray + black	firm	mud - layer coarse			uniform color
0.0								

File ID of digital photograph(s): S-08D-C008-010-00-1.JPG

Comments:

S-08D-0008-000-00-11

12/3/08

Top

Bottom

OU3 Pilot Cap Samples

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Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: *Gale Force*

Field Measurements

Survey ID: **2008 OU3**
Station ID: OU17
Date: 10/6/08
Recorded by: JMT

Station Depth (ft): 8.2
Time on Station: 0925
Time off Station: 0940

Attempt #1		Grab Size: 0.1-m²
Northing: ~~2686803.33~~	2686800.54	Analyses: PCB
Easting: ~~817168.16~~	817191.41	
Collection Time:	0934	
Sample ID:	S-08B-OU17-00-03	

Sample Description: Grey f. sand some algal mat tubes some shell hash

Attempt #2		Grab Size: 0.1-m²
Northing:		Analyses: PCB
Easting:		
Collection Time:		
Sample ID:		

Sample Description:

Additional Comments:

Field Measurements

Survey ID: **2008 OU3**
Station ID: OU16
Date: 10/6/08
Recorded by: MRF

Station Depth (ft): 10.1
Time on Station: 0951
Time off Station: 1010

Attempt #1		Grab Size: 0.1-m²
Northing:	2686837.18	Analyses: PCB
Easting:	817325.12	
Collection Time:	0954	
Sample ID:	S-08B OU16-00-03	

Sample Description: grey/Brown lots of seaweed slipper limpt shells

Valley location

Attempt #2		Grab Size: 0.1-m²
Northing:	2686837.18	Analyses: PCB
Easting:	817325.12	
Collection Time:	1005	
Sample ID:	S-08B-OU16-00-03-REP	

Sample Description: seaweed slipper limpets

Additional Comments: (1) repositioned

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: *Gale Force*

Field Measurements

Survey ID: **2008 OU3**	Station Depth (ft): 9.1	
Station ID: OU15	Time on Station: 1020	
Date:	Time off Station: 1031	
Recorded by: MRF		
Bottom OP	Attempt #1	Grab Size: 0.1-m^2
	Northing: 26867 15.37	Analyses: PCB
	Easting: 817494.27	
	Collection Time: ~~1023~~ 1026	
	Sample ID: S-08B-OU15-00-03	

Sample Description: olive brown silty f. sand, some tubes, shell hash + seaweed

	Attempt #2	Grab Size: 0.1-m^2
	Northing:	Analyses: PCB
	Easting:	
	Collection Time:	
	Sample ID:	

Sample Description:

Additional Comments:

Field Measurements

Survey ID: **2008 OU3**	Station Depth (ft): 9.0	
Station ID: OU14	Time on Station: 1043	
Date: 10/6/08	Time off Station: 1049	
Recorded by: MRF		
	Attempt #1	Grab Size: 0.1-m^2
	Northing: 26866 43.80	Analyses: PCB
	Easting: 817323.85	
	Collection Time: 1046	
	Sample ID: S-08B-OU14-00-03	

Sample Description: light tan very f. sand seaweed minor shell hash

	Attempt #2	Grab Size: 0.1-m^2
	Northing:	Analyses: PCB
	Easting:	
	Collection Time:	
	Sample ID:	

Sample Description:

Additional Comments:

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: *Gale Force*

Field Measurements

Survey ID: **2008 OU3**	Station Depth (ft): 11.1
Station ID: OU12	Time on Station: 1107
Date: 10/6/08	Time off Station: 1114
Recorded by: MRF	

	Attempt #1	Grab Size: 0.1-m^2
	Northing: 2686489.87	Analyses: PCB
	Easting: 817490.14	
	Collection Time: 1108	
	Sample ID: S-08B-OU12-00-03	

Sample Description: lots of seaweed slipper limpets
~~Ff~~ lt. grey brown very f. silty Sand
Valley location

	Attempt #2	Grab Size: 0.1-m^2
	Northing:	Analyses: PCB
	Easting:	
	Collection Time:	
	Sample ID:	

Sample Description:

Additional Comments:

Field Measurements

Survey ID: **2008 OU3**	Station Depth (ft): 9.1
Station ID: OU13	Time on Station: 1125
Date: 10/6/08	Time off Station:
Recorded by: MRF	

	Attempt #1	Grab Size: 0.1-m^2
	Northing: 2686395.40	Analyses: PCB
	Easting: 817310.32	
	Collection Time: 1127	
	Sample ID: S-08B-OU13-00-03	

Sample Description: shell hash thin algal mat a few small tubes
Very f. ~~silty~~ ① sandy silt

① more silt than sand. MRF 10/6/08

	Attempt #2	Grab Size: 0.1-m^2
	Northing:	Analyses: PCB
	Easting:	
	Collection Time:	
	Sample ID:	

Sample Description:

Additional Comments:

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: *Gale Force*

Field Measurements

Survey ID: **2008 OU3**
Station ID: OU11
Date: 10/6/08
Recorded by: MCF

Station Depth (ft): 9.1
Time on Station: 1142
Time off Station: 1158

1st grab V6 1 rak
2nd grab V6 washed
3rd grab washed

Attempt #1	Grab Size: 0.1-m^2
Northing: 2686374.39	Analyses: PCB
Easting: 817641.05	
Collection Time: ~~1146~~ ~~1148~~ ~~1151~~ 1153	
Sample ID: S-08B-OU11-00-03	

Sample Description:
f-m Sand tubeses

Attempt #2	Grab Size: 0.1-m^2
Northing:	Analyses: PCB
Easting:	
Collection Time:	
Sample ID:	

Sample Description:

Additional Comments:

Field Measurements

Survey ID: **2008 OU3**
Station ID: OU10
Date: 10/6/08
Recorded by: MCF

Station Depth (ft): 10.9
Time on Station: 12:11
Time off Station: 1223

Attempt #1	Grab Size: 0.1-m^2
Northing: 2686249.50	Analyses: PCB
Easting: 817478.51	
Collection Time: 1214	
Sample ID: S-08B-OU10-00-03	

Sample Description: limpets, rocks, f. Sand brown, Seaweed

Attempt #2	Grab Size: 0.1-m^2
Northing:	Analyses: PCB
Easting:	
Collection Time:	
Sample ID:	

Sample Description:

Additional Comments:

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: *Gale Force*

Field Measurements

Survey ID: **2008 OU3**
Station ID: OU09
Date: 10/6/08
Recorded by: MEF

Station Depth (ft): 10.9
Time on Station: 1245
Time off Station: 1253

Attempt #1	Grab Size: 0.1-m²
Northing: 2686125.16	Analyses: PCB
Easting: 817487.92	
Collection Time: 1247	
Sample ID: S-08B-OU09-00-03	

Sample Description: seaweed shell hash light brown f sand

Attempt #2	Grab Size: 0.1-m²
Northing:	Analyses: PCB
Easting:	
Collection Time:	
Sample ID:	

Sample Description:

Additional Comments:
Collect blanks @ 1305

Field Measurements

Survey ID: **2008 OU3**
Station ID: OU01
Date: 10/6/08
Recorded by:

Station Depth (ft): 8.6
Time on Station: 1349
Time off Station: 1405

1350 - N6 all seaweed
1353 - "
1356 - N6 not enough

Attempt #1	Grab Size: 0.1-m²
Northing: 2685668.74	Analyses: PCB
Easting: 817983.57	
Collection Time: ~~1350~~ 1400	
Sample ID: S-08B-OU01-00-03	

Sample Description: light grey tan f sandy silt w/ pebbles some algae + burrows sample from ridge

Attempt #2	Grab Size: 0.1-m²
Northing:	Analyses: PCB
Easting:	
Collection Time:	
Sample ID:	

Sample Description:

Additional Comments:

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: *Gale Force*

Field Measurements

Survey ID: **2008 OU3**
Station ID: OU03
Date: 10/6/03
Recorded by: MRF
N24-N6-OP

Station Depth (ft): 11.0
Time on Station: 1421
Time off Station: 1430

Attempt #1	Grab Size: 0.1-m²
Northing: 2685852.31	Analyses: PCB
Easting: ~~817888.21~~ 817883.21	
Collection Time: ~~1424~~ 1426	
Sample ID: S-08B-OU03-00-03	

Sample Description: f. sand
limpits, worm tubes, shell hash, + seaweed

Attempt #2	Grab Size: 0.1-m²
Northing:	Analyses: PCB
Easting:	
Collection Time:	
Sample ID:	

Sample Description:

Additional Comments:

Field Measurements

Survey ID: **2008 OU3**
Station ID: OU02
Date: ~~10/6/08~~ ①
Recorded by: MRF
10/6/08

Station Depth (ft): 13.2
Time on Station: 1445
Time off Station: 1510

Attempt #1	Grab Size: 0.1-m²
Northing: 2685869.94	Analyses: PCB
Easting: 818148.87	
Collection Time: 1449	
Sample ID: S-08B-OU02-00-03	

Sample Description: f. sandy silt seaweed
anoxic small
sm shrimp
QA Split Collected

Attempt #2	Grab Size: 0.1-m²
Northing:	Analyses: PCB
Easting:	
Collection Time:	
Sample ID:	

Sample Description:

Additional Comments:
① S/B 10/6/08 MRF

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: *Gale Force*

Field Measurements

Survey ID: **2008 OU3**
Station ID: OU08
Date: 10/7/08
Recorded by: MRF

Station Depth (ft): 9.3
Time on Station: 0843
Time off Station: 0904

0851 - VG washout
0852 "

Attempt #1	Grab Size: 0.1-m²
Northing: 2686233.99	Analyses: PCB
Easting: 817749.23	
Collection Time: ~~0851~~ ~~0852~~ 0857	
Sample ID: S-08B-OU08-00-03	

Sample Description: dark brown f-m sand w/ pebbles + shell msb

Attempt #2	Grab Size: 0.1-m²
Northing:	Analyses: PCB
Easting:	
Collection Time:	
Sample ID:	

Sample Description:

Additional Comments:

Field Measurements

Survey ID: **2008 OU3**
Station ID: OU06
Date: 10/7/08
Recorded by: MRF

Station Depth (ft): 11.8
Time on Station: 0911
Time off Station:

0912 - VG OP
0915 "
0920 - VG - H,t the same spot

Attempt #1	Grab Size: 0.1-m²
Northing: 2686192.94	Analyses: PCB
Easting: 817953.68	
Collection Time: ~~0912~~ 0915 0925	
Sample ID: S-08B-OU06-00-03	

Sample Description: algae, limpets
gray brown f. sandy silt w/ algal mat

Attempt #2	Grab Size: 0.1-m²
Northing:	Analyses: PCB
Easting:	
Collection Time:	
Sample ID:	

Sample Description:

Additional Comments:

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: *Gale Force*

Field Measurements

Survey ID: **2008 OU3**
Station ID: OU05
Date: 10/7/08
Recorded by: MEF

Station Depth (ft): 11.7
Time on Station: 0944
Time off Station: _____

0945

Attempt #1	Grab Size: 0.1-m^2
Northing: 268618 7.28	Analyses: PCB
Easting: 818195.19	
Collection Time: 0945	
Sample ID: S-08B-OU05-00-03	

Sample Description:
F-M Sand brown
tubes + Algal mat

Attempt #2	Grab Size: 0.1-m^2
Northing:	Analyses: PCB
Easting:	
Collection Time:	
Sample ID:	

Sample Description:

Additional Comments:

Field Measurements

Survey ID: **2008 OU3**
Station ID: OU04
Date: 10/7/08
Recorded by: MEF

Station Depth (ft): 12.4
Time on Station: 1008
Time off Station: _____

1009

Attempt #1	Grab Size: ~~0.1-m^2~~ 0.04 m^2
Northing: 2686006.17	Analyses: PCB
Easting: 818038.56	
Collection Time: 1009	
Sample ID: S-08B-OU04-00-03	

Sample Description: brown/grey very f. sandy silt
see lethus

Attempt #2	Grab Size: ~~0.1-m^2~~ 0.04 m^2
Northing:	Analyses: PCB
Easting:	
Collection Time:	
Sample ID:	

Sample Description:

Additional Comments:

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: *Gale Force*

Field Measurements

Survey ID: **2008 OU3**	Station Depth (ft): 9.3	
Station ID: 0007	Time on Station: 1041	
Date: 10/7/08	Time off Station: 1048	
Recorded by: MKF		
	Attempt #1	Grab Size: 0.1-m^2 (0.04m^2)
	Northing: 2686017.35	Analyses: PCB
	Easting: 817778.95	
	Collection Time: 1043	
	Sample ID: S-08B-0007-00-03	

Sample Description: Grey/brown w/ algal mat sloped on 1 side f. sandy silt

	Attempt #2	Grab Size: 0.1-m^2
	Northing:	Analyses: PCB
	Easting:	
	Collection Time:	
	Sample ID:	

Sample Description:

Additional Comments:

Field Measurements

Survey ID: **2008 OU3**	Station Depth (ft):	
Station ID:	Time on Station:	
Date:	Time off Station:	
Recorded by:		
	Attempt #1	Grab Size: 0.1-m^2
	Northing:	Analyses: PCB
	Easting:	
	Collection Time:	
	Sample ID:	

Sample Description:

	Attempt #2	Grab Size: 0.1-m^2
	Northing:	Analyses: PCB
	Easting:	
	Collection Time:	
	Sample ID:	

Sample Description:

Additional Comments:

Appendix B

PCB Analytical Data

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Pierce Mill Cove

Post-dredge Sediment Cores

-PCB Analytical Results
-QA/QC Summaries and Data
-Lab Qualifiers
-Chain of Custodies

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Appendix B

2008 Post-Dredge Sediment PCB Analytical Results

Station Id	bb28			CC27			D25		
Collection Date	12/05/2008			12/05/2008			12/05/2008		
Fraction	TOTAL			TOTAL			TOTAL		
Field Qc Code	SA			SA			SA		
Samp Id	S-08C-bb28-00-10			S-08C-CC27-00-09			S-08C-D25-00-07		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	0.14		MG/KG_DRYWT	0.53		MG/KG_DRYWT	0.29		MG/KG_DRYWT
2,2',5-Tricb	0.27		MG/KG_DRYWT	1.24		MG/KG_DRYWT	0.6		MG/KG_DRYWT
2,4,4'-Tricb	0.65		MG/KG_DRYWT	3.01		MG/KG_DRYWT	1.3		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.35		MG/KG_DRYWT	2.4	p	MG/KG_DRYWT	0.83		MG/KG_DRYWT
2,2',5,5'-Tetracb	0.67		MG/KG_DRYWT	4.2		MG/KG_DRYWT	1.44		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.26		MG/KG_DRYWT	0.69		MG/KG_DRYWT	0.62		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.36		MG/KG_DRYWT	1.25		MG/KG_DRYWT	0.97		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.08		MG/KG_DRYWT	0.21		MG/KG_DRYWT	0.24		MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.36		MG/KG_DRYWT	1.15		MG/KG_DRYWT	0.93		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.05		MG/KG_DRYWT	0.2		MG/KG_DRYWT	0.15		MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.24		MG/KG_DRYWT	1.13		MG/KG_DRYWT	0.73		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.33		MG/KG_DRYWT	1.54		MG/KG_DRYWT	0.88		MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.04		MG/KG_DRYWT	0.17		MG/KG_DRYWT	0.09		MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.04		MG/KG_DRYWT	0.23		MG/KG_DRYWT	0.12		MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.03		MG/KG_DRYWT	0.22		MG/KG_DRYWT	0.08		MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.02	U	MG/KG_DRYWT	0.03	p	MG/KG_DRYWT	0.01	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.02	U	MG/KG_DRYWT	0.02	J	MG/KG_DRYWT	0.01	J	MG/KG_DRYWT
Decacb - Congener	0.02	U	MG/KG_DRYWT	0.03	U	MG/KG_DRYWT	0.02	U	MG/KG_DRYWT
Total PCB Congeners (sum CONG x factor)	10.		MG/KG_DRYWT	47.		MG/KG_DRYWT	24.		MG/KG_DRYWT
Total MonoCB	0.04	U	MG/KG_DRYWT						
Total DiCB	0.59		MG/KG_DRYWT						
Total TriCB	2.88		MG/KG_DRYWT						
Total TetraCB	3.6		MG/KG_DRYWT						
Total PentaCB	2.58		MG/KG_DRYWT						
Total HexaCB	1.43		MG/KG_DRYWT						
Total HeptaCB	0.3	J	MG/KG_DRYWT						
Total OctaCB	0.01	J	MG/KG_DRYWT						
Total NonaCB	0.06	U	MG/KG_DRYWT						
DecaCB - Homologue	0.02	U	MG/KG_DRYWT						
Total PCB Homologues (sum HOM)	11.		MG/KG_DRYWT						

Appendix B

2008 Post-Dredge Sediment PCB Analytical Results

Station Id	D32			T22			T38		
Collection Date	12/05/2008			12/05/2008			12/05/2008		
Fraction	TOTAL			TOTAL			TOTAL		
Field Qc Code	SA			SA			SA		
Samp Id	S-08C-D32-00-05			S-08C-T22-00-04			S-08C-T38-00-10		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	0.3		MG/KG_DRYWT	0.49		MG/KG_DRYWT	0.14	p	MG/KG_DRYWT
2,2',5-Tricb	0.6		MG/KG_DRYWT	1.03		MG/KG_DRYWT	0.28		MG/KG_DRYWT
2,4,4'-Tricb	1.17		MG/KG_DRYWT	2.16		MG/KG_DRYWT	0.61		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.67		MG/KG_DRYWT	1.31		MG/KG_DRYWT	0.36		MG/KG_DRYWT
2,2',5,5'-Tetracb	1.29		MG/KG_DRYWT	2.78		MG/KG_DRYWT	0.6		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.42		MG/KG_DRYWT	0.71		MG/KG_DRYWT	0.39		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.68		MG/KG_DRYWT	1.26		MG/KG_DRYWT	0.58		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.13		MG/KG_DRYWT	0.22		MG/KG_DRYWT	0.11		MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.67		MG/KG_DRYWT	1.21		MG/KG_DRYWT	0.55		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.11		MG/KG_DRYWT	0.17		MG/KG_DRYWT	0.07		MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.51		MG/KG_DRYWT	0.94		MG/KG_DRYWT	0.34		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.67		MG/KG_DRYWT	1.32		MG/KG_DRYWT	0.46		MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.07		MG/KG_DRYWT	0.13		MG/KG_DRYWT	0.04		MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.09		MG/KG_DRYWT	0.18		MG/KG_DRYWT	0.06		MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.06		MG/KG_DRYWT	0.15		MG/KG_DRYWT	0.04		MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.01	pJ	MG/KG_DRYWT	0.02	pJ	MG/KG_DRYWT	0.02	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.01	pJ	MG/KG_DRYWT	0.02	J	MG/KG_DRYWT	0.01	pJ	MG/KG_DRYWT
Decacb - Congener	0.03	U	MG/KG_DRYWT	0.03	U	MG/KG_DRYWT	0.02	U	MG/KG_DRYWT
Total PCB Congeners (sum CONG x factor)	19.		MG/KG_DRYWT	37.		MG/KG_DRYWT	12.		MG/KG_DRYWT
Total MonoCB									
Total DiCB									
Total TriCB									
Total TetraCB									
Total PentaCB									
Total HexaCB									
Total HeptaCB									
Total OctaCB									
Total NonaCB									
DecaCB - Homologue									
Total PCB Homologues (sum HOM)									

Appendix B

2008 Post-Dredge Sediment PCB Analytical Results

Station Id	X33		
Collection Date			12/05/2008
Fraction	TOTAL		
Field Qc Code	SA		
Samp Id	S-08C-X33-00-11		
Description	Result	Final Qual	Unit
2,4'-Dicb	0.5		MG/KG_DRYWT
2,2',5-Tricb	1.08		MG/KG_DRYWT
2,4,4'-Tricb	2.3		MG/KG_DRYWT
2,2',3,5'-Tetracb	1.39		MG/KG_DRYWT
2,2',5,5'-Tetracb	2.38		MG/KG_DRYWT
2,3',4,4'-Tetracb	1.29		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	2.17		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.37		MG/KG_DRYWT
2,3',4,4',5-Pentacb	1.93		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.22		MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	1.24		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	1.67		MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.17		MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.23		MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.16		MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.02	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.02	J	MG/KG_DRYWT
Decacb - Congener	0.03	U	MG/KG_DRYWT
Total PCB Congeners (sum CONG x factor)	45.		MG/KG_DRYWT
Total MonoCB	0.05	J	MG/KG_DRYWT
Total DiCB	1.83		MG/KG_DRYWT
Total TriCB	10.79		MG/KG_DRYWT
Total TetraCB	14.81		MG/KG_DRYWT
Total PentaCB	13.52		MG/KG_DRYWT
Total HexaCB	6.31		MG/KG_DRYWT
Total HeptaCB	1.28		MG/KG_DRYWT
Total OctaCB	0.22	J	MG/KG_DRYWT
Total NonaCB	0.04	J	MG/KG_DRYWT
DecaCB - Homologue	0.01	J	MG/KG_DRYWT
Total PCB Homologues (sum HOM)	49.		MG/KG_DRYWT

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PCB Congeners – Sediment QA/QC Summary
Batch 09-0015

PROJECT: USACE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment
SAMPLE CUSTODY: Sediment samples were collected between 12/3/2008 – 12/5/2008 and hand delivered to the Battelle Duxbury Chemistry Sample Custodian on 1/14/2009. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. They were stored in the walk-in freezer until preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (mg/kg dry wt)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	≤30% RPD (analytes must be > 5x MDL to be used for data quality assessment)	RL: 0.03

METHOD: Sediment samples were extracted for PCB congeners following modified EPA Method 3545. Sediments were air-dried overnight, and approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was concentrated, processed through activated copper, florisil cleanup column, and concentrated. Next, the extract was concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Sediments of this batch were extracted within 1 year of sample holding time for frozen sediments. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
09-0015	12/03/2008 – 12/05/2008	1/29/2009	2/13/2009 – 2/15/2009

09-0015

Sample ID	Battelle ID
S-08D-C008-049-00-05	Q6160
S-08D-C008-023-00-05	Q6161
S-08C-X33-00-11	Q6171
S-08C-T38-00-10	Q6172
S-08C-CC27-00-09	Q6173
S-08C-T22-00-04	Q6174
S-08C-D32-00-05	Q6175
S-08C-D25-00-07	Q6176
S-08C-bb28-00-10	Q6177

PCB Congeners – Sediment QA/QC Summary
Batch 09-0015

BLANK: A procedural blank (PB) was prepared with each analytical batch. Blanks were analyzed to ensure the sample extraction and analysis methods were free of contamination.

09-0015 – No target analytes were detected in the procedural blank.

LABORATORY CONTROL SAMPLE: A laboratory control sample (LCS) was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy.

09-0015 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

MATRIX SPIKE/MATRIX SPIKE DUPLICATE: A pair of matrix spike (MS) and matrix spike duplicate samples (MSD) was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. The RPD between percent recoveries was calculated to measure the data quality in terms of precision.

09-0015 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%). All RPDs met the criteria of <30%.

REPLICATES: Laboratory duplicate analysis was performed with this analytical batch. RPDs between duplicate analyses were calculated to measure data quality in terms of precision.

09-0015 – No exceedences noted. All RPDs between duplicate samples met the criteria of <30%.

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

09-0015 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

CALIBRATIONS: The GC/ECD was calibrated with a 6 level curve, with a correlation coefficient of >0.995. Each batch of samples analyzed is bracketed by continuing calibration verification (CCV) sample, run at a frequency of minimally every 24 hours. The %D between the initial calibration (ICAL) and the continuing calibration samples should be <20% for each compound, <15% on average. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%.

09-0015 – All calibration criteria were met.

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Procedural Blank	
Battelle ID	BM759PB-P	
Sample Type	PB	
Collection Date	01/29/09	
Extraction Date	01/29/09	
Analysis Date	02/13/09	
Analytical Instrument	ECD	
% Moisture	54.07	
% Lipid	NA	
Matrix	SEDIMENT	
Sample Size	4.67	
Size Unit-Basis	G_DRY	
Units	MG/KG_DRY	
Cl2(8)	0.03	U
Cl3(18)	0.03	U
Cl3(28)	0.03	U
Cl4(44)	0.03	U
Cl4(52)	0.03	U
Cl4(66)	0.03	U
Cl5(101)	0.03	U
Cl5(105)	0.03	U
Cl5(118)	0.03	U
Cl6(128)	0.03	U
Cl6(138)	0.03	U
Cl6(153)	0.03	U
Cl7(170)	0.03	U
Cl7(180)	0.03	U
Cl7(187)	0.03	U
Cl8(195)	0.03	U
Cl9(206)	0.03	U
Cl10(209)	0.03	U
Surrogate Recoveries (%)		
Cl3(34)	69	
Cl6(152)	73	

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	060208-03: Sand, White Quartz, -50+70			
Battelle ID	BM761LCS-P			
Sample Type	LCS			
Collection Date	01/29/09			
Extraction Date	01/29/09			
Analysis Date	02/14/09			
Analytical Instrument	ECD			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	10.51			
Size Unit-Basis	G_DRY			
Units	MG/KG_DRY	Target	% Recovery	Qualifier
Cl2(8)	0.31	0.38	81	
Cl3(18)	0.3	0.38	79	
Cl3(28)	0.29	0.38	76	
Cl4(44)	0.29	0.38	76	
Cl4(52)	0.28	0.38	74	
Cl4(66)	0.27	0.38	71	
Cl5(101)	0.28	0.38	73	
Cl5(105)	0.32	0.38	84	
Cl5(118)	0.29	0.38	76	
Cl6(128)	0.29	0.38	76	
Cl6(138)	0.28	0.38	73	
Cl6(153)	0.31	0.38	81	
Cl7(170)	0.3	0.38	78	
Cl7(180)	0.3	0.38	79	
Cl7(187)	0.29	0.38	76	
Cl8(195)	0.3	0.38	79	
Cl9(206)	0.31	0.38	81	
Cl10(209)	0.32	0.38	84	

Surrogate Recoveries (%)

Cl3(34)	76
Cl6(152)	80

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	S-08C-T38-00-10		S-08C-T38-00-10				
Battelle ID	Q6172-P		Q6172MS-P				
Sample Type	SA		MS				
Collection Date	12/05/08		12/5/2008				
Extraction Date	01/29/09		1/29/2009				
Analysis Date	02/14/09		2/14/2009				
Analytical Instrument	ECD		ECD				
% Moisture	39.07		39.52				
% Lipid	NA		NA				
Matrix	SEDIMENT		SEDIMENT				
Sample Size	6.25		6.14				
Size Unit-Basis	G_DRY		G_DRY				
Units	MG/KG_DRY		MG/KG_DRY			Target	% Recovery	Qualifier
Cl2(8)	0.14	p	0.67			0.65	81	
Cl3(18)	0.28		0.8	E		0.65	80	
Cl3(28)	0.61		1.15	E		0.65	83	
Cl4(44)	0.36		0.89	E		0.65	81	
Cl4(52)	0.6		1.13	E		0.65	81	
Cl4(66)	0.39		1.1	E		0.65	109	
Cl5(101)	0.58		1.12	E		0.65	83	
Cl5(105)	0.11		0.66			0.65	84	
Cl5(118)	0.55		1.1	E		0.65	84	
Cl6(128)	0.07		0.57			0.66	76	
Cl6(138)	0.34		0.87	E		0.65	81	
Cl6(153)	0.46		1	E		0.65	83	
Cl7(170)	0.04		0.57			0.65	81	
Cl7(180)	0.06		0.59			0.65	81	
Cl7(187)	0.04		0.55			0.65	78	
Cl8(195)	0.02	U	0.54			0.65	83	
Cl9(206)	0.01	pJ	0.56			0.65	84	
Cl10(209)	0.02	U	0.56			0.65	86	
Surrogate Recoveries (%)								
Cl3(34)	71		77					
Cl6(152)	77		82					

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	S-08C-T38-00-10						
Battelle ID	Q6172MSD-P						
Sample Type	MSD						
Collection Date	12/5/2008						
Extraction Date	1/29/2009						
Analysis Date	2/14/2009						
Analytical Instrument	ECD						
% Moisture	39.01						
% Lipid	NA						
Matrix	SEDIMENT						
Sample Size	6.51						
Size Unit-Basis	G_DRY						
Units	MG/KG_DRY		Target	% Recovery	Qualifier	RPD (%)	Qualifier
Cl2(8)	0.65		0.62	83		2.4	
Cl3(18)	0.77	E	0.62	80		0.0	
Cl3(28)	1.17	E	0.62	91		9.2	
Cl4(44)	0.85	E	0.62	80		1.2	
Cl4(52)	1.07	E	0.61	76		6.4	
Cl4(66)	0.9	E	0.62	83		27.1	
Cl5(101)	1.06	E	0.62	78		6.2	
Cl5(105)	0.61		0.62	81		3.6	
Cl5(118)	1.05	E	0.62	81		3.6	
Cl6(128)	0.53		0.62	74		2.7	
Cl6(138)	0.81	E	0.62	76		6.4	
Cl6(153)	0.94	E	0.62	78		6.2	
Cl7(170)	0.53		0.62	79		2.5	
Cl7(180)	0.55		0.62	79		2.5	
Cl7(187)	0.5		0.62	75		3.9	
Cl8(195)	0.5		0.62	81		2.4	
Cl9(206)	0.52		0.62	83		1.2	
Cl10(209)	0.53		0.62	86		0.0	

Surrogate Recoveries (%)

Cl3(34)	82
Cl6(152)	78

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	S-08C-bb28-00-10	S-08C-bb28-00-10			
Battelle ID	Q6177-P	Q6177DUP-P			
Sample Type	SA	QADU			
Collection Date	12/05/08	12/5/2008			
Extraction Date	01/29/09	1/29/2009			
Analysis Date	02/15/09	2/15/2009			
Analytical Instrument	ECD	ECD			
% Moisture	50.17	50.8			
% Lipid	NA	NA			
Matrix	SEDIMENT	SEDIMENT			
Sample Size	5.15	5			
Size Unit-Basis	G_DRY	G_DRY			
Units	MG/KG_DRY	MG/KG_DRY		RPD	Qualifier
Cl2(8)	0.14	0.17		19.4	
Cl3(18)	0.27	0.3		10.5	
Cl3(28)	0.65	0.77		16.9	
Cl4(44)	0.35	0.37		5.6	
Cl4(52)	0.67	0.71		5.8	
Cl4(66)	0.26	0.31		17.5	
Cl5(101)	0.36	0.41		13.0	
Cl5(105)	0.08	0.09		11.8	
Cl5(118)	0.36	0.35		2.8	
Cl6(128)	0.05	0.05		0.0	
Cl6(138)	0.24	0.23		4.3	
Cl6(153)	0.33	0.31		6.3	
Cl7(170)	0.04	0.03		28.6	
Cl7(180)	0.04	0.04		0.0	
Cl7(187)	0.03	0.03		0.0	
Cl8(195)	0.02 U	0.03	U	NA	
Cl9(206)	0.02 U	0.01	pJ	NA	
Cl10(209)	0.02 U	0.03	U	NA	
Surrogate Recoveries (%)					
Cl3(34)	84	92			
Cl6(152)	85	80			

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PCB Homologues – SEDIMENT QA/QC SUMMARY
Batch 09-0015

PROJECT: New Bedford Harbor Water Quality Monitoring
PARAMETER: PCB Homologues
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment
SAMPLE CUSTODY: Sediment samples were collected between 12/3/2008 – 12/5/2008 and hand delivered to the Battelle Duxbury Chemistry Sample Custodian on 1/14/2009. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. They were stored in the walk-in freezer until preparation could begin. All sediment samples were extracted for PCB congener analyses by GC/ECD. 7.5% percent of the sediment samples were chosen for PCB homologue analysis. From this batch samples S-08D-C008-049-00-05, S-08D-C008-023-00-05, S-08C-X33-00-11, and S-08C-bb28-00-10 were analyzed for PCB homologues.

	Reference Method	Method Blank	Surrogate Recovery	LCS/MS/MSD Recovery	Sample Replicate Relative Precision	Reporting Limits (mg/Kg dry wt)
PCB Homologues	1668A & 8270D	< ss-RL	40-120%	40-120% MS spike must be >5 x background	<30% RPD MS spike must be >5 x background	0.03 – 0.84

METHOD: Sediment samples were extracted for PCBs following modified EPA Method 3545. Sediments were air-dried overnight, and approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was concentrated, processed through activated copper, florisil cleanup column, and concentrated. Extracts were then fortified with internal standards (IS). Extracts designated for PCB homologue analysis were analyzed using gas chromatography/mass spectrometry (GC/MS), following Battelle SOP 5-315 which is based on key components of EPA Methods 1668A and 8270D. Sample data were quantified by the method of internal standards, using the IS compounds.

HOLDING TIMES: These frozen sediment samples were extracted within 1-year holding time. Extracts were analyzed within 40 days of extraction. All holding times were met.

Batch	Collection Date	Extraction Date	Analysis Date
09-0015	12/03/08-12/05/08	1/29/09	2/07/09-2/08/09

09-0015

Sample ID	**Battelle ID**
S-08D-C008-049-00-05	Q6160
S-08D-C008-023-00-05	Q6161
S-08C-X33-00-11	Q6171
S-08C-bb28-00-10	Q6177

PCB Homologues – SEDIMENT QA/QC SUMMARY
Batch 09-0015

BLANK: A procedural blank (PB) was prepared with the analytical batch. Blanks are analyzed to ensure the sample extraction and analysis methods were free of contamination.

09-0015 – No exceedences noted. No target analytes were detected in the procedural blank at a concentration greater than the sample-specific reporting limit.

LABORATORY CONTROL SAMPLE: A laboratory control sample (LCS) was prepared with the analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy.

09-0015 – No exceedences noted. All recoveries were within the laboratory control limits (40%-120%).

MATRIX SPIKE/MATRIX SPIKE DUPLICATE: A pair of matrix spike (MS) and matrix spike duplicate samples (MSD) was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. The RPD between percent recoveries was calculated to measure the data quality in terms of precision.

09-0015 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%). All RPDs met the criteria of <30%.

REPLICATES: Laboratory duplicate analysis was performed with this analytical batch. RPDs between duplicate analyses were calculated to measure data quality in terms of precision.

09-0015 – No exceedences noted. All RPDs between duplicate samples met the criteria of <30%.

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

09-0015 – No exceedences noted. All recoveries were within the laboratory control limits (40%-120%).

CALIBRATION: The GC/MS is calibrated with a minimum of a 6-point curve. The co-efficient of determination must be > 0.995 for each target analyte in the initial calibration (ICAL). Each batch of samples analyzed is bracketed by a continuing calibration verification (CCV) sample, run at a frequency of every 12 hours (minimally). This percent difference (PD) for the CCV should be <25% for individual analytes. Additionally an instrument calibration check (ICC) sample was run with the initial calibration. The PD for the ICC should be < 25% for each analyte.

09-0015 – No initial calibration exceedences noted.
No CCV exceedence.
No ICC exceedence.

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Procedural Blank	
Battelle ID	BM759PB-P	
Sample Type	PB	
Collection Date	01/29/09	
Extraction Date	01/29/09	
Analysis Date	02/07/09	
Analytical Instrument	MS	
% Moisture	54.07	
% Lipid	NA	
Matrix	SEDIMENT	
Sample Size	4.67	
Size Unit-Basis	G_DRY	
Units	MG/KG_DRY	
LOC 1	0.06	U
LOC 2	0.3	U
LOC 3	0.45	U
LOC 4	0.84	U
LOC 5	0.69	U
LOC 6	0.78	U
LOC 7	0.6	U
LOC 8	0.3	U
LOC 9	0.09	U
LOC 10	0.03	U

Surrogate Recoveries (%)

Cl3(34)	72
Cl6(152)	79

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	060208-03: Sand, White Quartz, -50+70			
Battelle ID	BM760LCS-P			
Sample Type	LCS			
Collection Date	01/29/09			
Extraction Date	01/29/09			
Analysis Date	02/07/09			
Analytical Instrument	MS			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	10.24			
Size Unit-Basis	G_DRY			
Units	MG/KG_DRY	Target	% Recovery	Qualifier
LOC 1	0.1	0.10	100	
LOC 2	0.17	0.15	115	
LOC 3	0.26	0.25	104	
LOC 4	0.47	0.45	105	
LOC 5	0.58	0.55	106	
LOC 6	0.57	0.55	104	
LOC 7	0.35	0.33	105	
LOC 8	0.28	0.30	94	
LOC 9	0.09	0.10	90	
LOC 10	0.04	0.05	79	

Surrogate Recoveries (%)

Cl3(34)	88
Cl6(152)	98

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	S-08C-X33-00-11	S-08C-X33-00-11			
Battelle ID	Q6171-P	Q6171MS-P			
Sample Type	SA	MS			
Collection Date	12/05/08	12/5/2008			
Extraction Date	01/29/09	1/29/2009			
Analysis Date	02/07/09	2/7/2009			
Analytical Instrument	MS	MS			
% Moisture	60.51	60.55			
% Lipid	NA	NA			
Matrix	SEDIMENT	SEDIMENT			
Sample Size	4.01	4.06			
Size Unit-Basis	G_DRY	G_DRY			
Units	MG/KG_DRY	MG/KG_DRY	Target	% Recovery	Qualifier
LOC 1	0.05 J	0.24	0.25	76	
LOC 2	1.83	2.16	0.37	89	
LOC 3	10.79	11.57	0.63	124	
LOC 4	14.81	15.85	1.13	92	
LOC 5	13.52	14.91	1.38	101	
LOC 6	6.31	7.57	1.38	92	
LOC 7	1.28	2.04	0.84	90	
LOC 8	0.22 J	0.91	0.75	92	
LOC 9	0.04 J	0.24	0.25	80	
LOC 10	0.01 J	0.1	0.13	70	
Surrogate Recoveries (%)					
Cl3(34)	84	83			
Cl6(152)	81	79			

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	S-08C-X33-00-11					
Battelle ID	Q6171MSD-P					
Sample Type	MSD					
Collection Date	12/5/2008					
Extraction Date	1/29/2009					
Analysis Date	2/7/2009					
Analytical Instrument	MS					
% Moisture	60.44					
% Lipid	NA					
Matrix	SEDIMENT					
Sample Size	3.97					
Size Unit-Basis	G_DRY					
Units	MG/KG_DRY	Target	% Recovery	Qualifier	RPD (%)	Qualifier
LOC 1	0.25	0.26	78		2.6	
LOC 2	3.02	0.38	313		111.4	
LOC 3	17.73	0.64	1080		158.8	
LOC 4	24.33	1.15	827		160.0	
LOC 5	22.62	1.41	644		145.8	
LOC 6	10.97	1.41	331		113.0	
LOC 7	2.65	0.86	159		55.4	
LOC 8	1.1	0.77	115		22.2	
LOC 9	0.27	0.26	90		11.8	
LOC 10	0.12	0.13	84		18.2	

Surrogate Recoveries (%)

Cl3(34)	88
Cl6(152)	81

Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	S-08C-bb28-00-10		S-08C-bb28-00-10			
Battelle ID	Q6177-P		Q6177DUP-P			
Sample Type	SA		QADU			
Collection Date	12/05/08		12/5/2008			
Extraction Date	01/29/09		1/29/2009			
Analysis Date	02/08/09		2/8/2009			
Analytical Instrument	MS		MS			
% Moisture	50.17		50.8			
% Lipid	NA		NA			
Matrix	SEDIMENT		SEDIMENT			
Sample Size	5.15		5			
Size Unit-Basis	G_DRY		G_DRY			
Units	MG/KG_DRY		MG/KG_DRY		RPD	Qualifier
LOC 1	0.04	U	0.06	U	NA	
LOC 2	0.59		0.56		5.2	
LOC 3	2.88		2.97		3.1	
LOC 4	3.6		3.9		8.0	
LOC 5	2.58		2.64		2.3	
LOC 6	1.43		1.46		2.1	
LOC 7	0.3	J	0.3	J	NA	
LOC 8	0.01	J	0.01	J	NA	
LOC 9	0.06	U	0.09	U	NA	
LOC 10	0.02	U	0.03	U	NA	
Surrogate Recoveries (%)						
Cl3(34)	82		82			
Cl6(152)	76		76			

Qualifiers:

B	Analyte concentration found in the sample at < 5 x the level detected in the procedural blank
D	Dilution run. Initial run outside linear range of instrument
E	Estimate, result is greater than the highest concentration level in the calibration
H	Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract
J	Analyte detected below the sample specific reporting limit
ME	Significant Matrix Interference - Estimated value
N	Quality Control value is outside the accuracy or precision data quality objective (DQO)
NA	Not applicable
T	Holding time exceeded
U	Analyte not detected at 3:1 signal:noise ratio. Reporting limit is reported.
p	The relative percent difference (RPD) between the values obtained from the dual columns is >40%.

Battelle
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ShpNo SHP-090121-01

Battelle Project No:

Sample Receipt Form

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:** USACE - NED

Received by: Thorn, Jonathan **Date/Time Received:** Friday, January 16, 2009 12:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered **Tracking Number:** Not Recorded

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal Condition	Container Condition	Temp C	Smps
1 of 1	No Container		None	Not Applicable	Not Applicable	Ambient	29

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): Ambient Temperature Blank used ☐ Yes ☑ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☑ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☑ Yes ☐ No ☐ Unknown /Lot No.: Unknown

Storage Location: Chem North: Freezer - F0002 (Walk-in) **BDO IDs Assigned:** Q6149 - Q6177

Samples logged in by: Thorn, Jonathan **Date/Time:** 01/16/2009 12:00 AM

Approved By: **Approved On:**

Authorized By: **Authorized On:**

Battelle
The Business of Innovation

ShpNo SHP-090121-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ Authorized ☐

Project Number: G606422 **Client:** USACE - NED

Received by: Thorn, Jonathan **Date/Time Received:** Friday, January 16, 2009 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q6149	S-08D-C008-30W-00-05	11/20/08 0:00	01/21/09 8:33	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6150	S-08D-C008-30E-00-05	11/20/08 0:00	01/21/09 8:40	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6151	S-08D-NWS-35-00-05	11/20/08 0:00	01/21/09 9:00	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6152	S-08D-NWS-34-00-05	11/20/08 0:00	01/21/09 9:03	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6153	S-08D-NWS-36-00-05	11/20/08 0:00	01/21/09 9:03	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6154	S-08D-NWS-33-00-05	11/20/08 0:00	01/21/09 9:03	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6155	S-08D-NWS-37-00-05	11/20/08 0:00	01/21/09 9:04	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6156	S-08D-NWS-38-00-05	11/20/08 0:00	01/21/09 9:04	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6157	S-08D-NWS-39-00-05	11/20/08 0:00	01/21/09 9:06	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6158	S-08D-C008-038-00-05	12/03/08 0:00	01/21/09 9:07	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6159	S-08D-C008-028-00-05	12/03/08 0:00	01/21/09 9:08	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6160	S-08D-C008-049-00-05	12/03/08 0:00	01/21/09 9:09	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6161	S-08D-C008-023-00-05	12/03/08 0:00	01/21/09 9:10	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6162	S-08D-C008-016-00-05	12/03/08 0:00	01/21/09 9:12	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6163	S-08D-C008-039-00-05	12/03/08 0:00	01/21/09 9:12	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6164	S-08D-C008-040-00-05	12/03/08 0:00	01/21/09 9:13	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6165	S-08D-C008-062-00-05	12/03/08 0:00	01/21/09 9:13	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6166	S-08D-C008-048-00-05	12/03/08 0:00	01/21/09 9:14	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6167	S-08D-C008-033-00-05	12/03/08 0:00	01/21/09 9:14	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6168	S-08D-C008-055-00-05	12/03/08 0:00	01/21/09 9:15	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6169	S-08D-C008-055-00-05-REP	12/03/08 0:00	01/21/09 9:15	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6170	S-08D-C008-010-00-05	12/03/08 0:00	01/21/09 9:16	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6171	S-08C-X33-00-11	12/05/08 0:00	01/21/09 9:16	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6172	S-08C-T38-00-10	12/05/08 0:00	01/21/09 9:17	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6173	S-08C-CC27-00-09	12/05/08 0:00	01/21/09 9:17	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6174	S-08C-T22-00-04	12/05/08 0:00	01/21/09 9:17	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6175	S-08C-D32-00-05	12/05/08 0:00	01/21/09 9:18	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6176	S-08C-D25-00-07	12/05/08 0:00	01/21/09 9:18	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	

Battelle
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ShpNo SHP-090121-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:** USACE - NED

Received by: Thorn, Jonathan **Date/Time Received:** Friday, January 16, 2009 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q6177	S-08C-bb28-00-10	12/05/08 0:00	01/21/09 9:19	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	

Total Samples: 29

Deliver to Battelle Duxbury - Lab

Battelle
The Business of Innovation
397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Chain of Custody

Proj. No: G606422 | Proj. Name: NBH - NWS + Post-Dredge

SAMPLERS: Signature: Jessica Tenzan + Patrick Curran

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	LAB BATTELLE ID	Field ID ~~CLIENT ID~~	SAMPLE DESCRIPTION	PEST	PCB Congeners	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER PCB Homologues	ACIDIFIED	PRESERVED	Total Number of Containers
11/20/08		Q6149	S-08D-C008-30W-00-05	Sediment		✓									1
		Q6150	S-08D-C008-30E-00-05			✓									1
		Q6151	S-08D-NWS-35-00-05			✓									1
		Q6152	S-08D-NWS-34-00-05			✓									1
		Q6153	S-08D-NWS-36-00-05			✓									1
		Q6154	S-08D-NWS-33-00-05			✓									1
		Q6155	S-08D-NWS-37-00-05			✓									1
		Q6156	S-08D-NWS-38-00-05			✓									1
		Q6157	S-08D-NWS-39-00-05			✓									1
12/3/08		Q6158	S-08D-C008-038-00-05			✓									1
		Q6159	S-08D-C008-028-00-05			✓									1
		Q6160	S-08D-C008-049-00-05			✓						✓			1
		Q6161	S-08D-C008-023-00-05			✓						✓			1
		Q6162	S-08D-C008-016-00-05			✓									1
		Q6163	S-08D-C008-039-00-05			✓									1
		Q6164	S-08D-C008-040-00-05			✓									1
		Q6165	S-08D-C008-062-00-05			✓									1

Relinquished by:	Date/Time	Received by:	Date/Time
Jessica M Tenzan	1/16/09 1410		1/16/09 1410
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: all samples were frozen from date of collection ~~to~~ until 1/14/09.

ORIGINAL

Deliver to: Battelle Duxbury

Battelle
The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
560622	NBH- NWS + Post Dredge

SAMPLERS: Signature: Jessica Tenzen + Patrick Cannon

DATE	TIME	BATTELLE ID LAB	Field ID ~~CLIENT ID~~	SAMPLE DESCRIPTION	PEST	PCB Congeners	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER Homologues	ACIDIFIED	PRESERVED	Total Number of Containers
12/3/08		Q6166	S-08D-C008-048-00-05	Sediment		✓									1
		Q6167	S-08D-C008-033-00-05			✓									1
		Q6168	S-08D-C008-055-00-05			✓									1
		Q6169	S-08D-C008-055-00-05-REP			✓									1
		Q6170	S-08D-C008-010-00-05			✓									1
12/5/08		Q6171	S-08C-X33-00-11			✓									1
		Q6172	S-08C-T38-00-10			✓									1
		Q6173	S-08C-CC27-00-09			✓									1
		Q6174	S-08C-T22-00-04			✓									1
		Q6175	S-08C-D32-00-05			✓									1
		Q6176	S-08C-D25-00-07			✓									1
		Q6177	S-08C-bb28+00-10			✓						✓			1

Relinquished by:	Date/Time	Received by:	Date/Time
Jessi M Jenzen	1/16/09 1410		1/16/09 1410
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:
Samples collected on 12/3/08 were frozen until 1/14/09
Samples collected on 12/5-/08 were frozen until 1/15/09

ORIGINAL

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OU3 Pilot Cap

Sediment Grabs

-PCB Analytical Results
-QA/QC Summaries and Data
-Lab Qualifiers
-Chain of Custodies

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Appendix B

2008 OU3 Pilot Cap Sediment PCB Analytical Results

Station Id	EB			OU01			OU02		
Start Date	10/06/2008			10/06/2008			10/06/2008		
Fraction	TOTAL			TOTAL			TOTAL		
Field Qc Code	EB			SA			SA		
Samp Id	EB-100608-01			S-08B-OU01-00-03			S-08B-OU02-00-03		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	0.0012	U	UG/L	0.01452		MG/KG_DRYWT	0.16562		MG/KG_DRYWT
2,2',5-Tricb	0.0012	U	UG/L	0.02204		MG/KG_DRYWT	0.13432		MG/KG_DRYWT
2,4,4'-Tricb	0.0012	U	UG/L	0.0491		MG/KG_DRYWT	0.23264		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.0012	U	UG/L	0.0301		MG/KG_DRYWT	0.06091		MG/KG_DRYWT
2,2',5,5'-Tetracb	0.0012	U	UG/L	0.0533		MG/KG_DRYWT	0.15031		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.0012	U	UG/L	0.03113		MG/KG_DRYWT	0.09661		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.0012	U	UG/L	0.0401		MG/KG_DRYWT	0.09776		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.0012	U	UG/L	0.01454		MG/KG_DRYWT	0.05331	p	MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.0012	U	UG/L	0.0479		MG/KG_DRYWT	0.15019		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.0012	U	UG/L	0.00675		MG/KG_DRYWT	0.00402	pJ	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.0012	U	UG/L	0.03825		MG/KG_DRYWT	0.08548		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.0012	U	UG/L	0.04584		MG/KG_DRYWT	0.10246		MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.0012	U	UG/L	0.00374		MG/KG_DRYWT	0.03107	U	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.0012	U	UG/L	0.00506		MG/KG_DRYWT	0.03107	U	MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.0012	U	UG/L	0.00323		MG/KG_DRYWT	0.03095	U	MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.0012	U	UG/L	0.00274	U	MG/KG_DRYWT	0.03107	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.0012	U	UG/L	0.00274	U	MG/KG_DRYWT	0.03107	U	MG/KG_DRYWT
Decacb - Congener	0.0012	U	UG/L	0.00274	U	MG/KG_DRYWT	0.03107	U	MG/KG_DRYWT
Total MonoCB									
Total DiCB									
Total TriCB									
Total TetraCB									
Total PentaCB									
Total HexaCB									
Total HeptaCB									
Total OctaCB									
Total NonaCB									
DecaCB - Homologue									
Total PCB Congeners (sum CONG x factor)		U	UG/L	1.1		MG/KG_DRYWT	3.5		MG/KG_DRYWT
Total PCB Homologues (sum HOM)									

Appendix B

2008 OU3 Pilot Cap Sediment PCB Analytical Results

Station Id	OU03			OU04			OU05		
Start Date	10/06/2008			10/07/2008			10/07/2008		
Fraction	TOTAL			TOTAL			TOTAL		
Field Qc Code	SA			SA			SA		
Samp Id	S-08B-OU03-00-03			S-08B-OU04-00-03			S-08B-OU05-00-03		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	0.00766		MG/KG_DRYWT	0.064		MG/KG_DRYWT	0.00715		MG/KG_DRYWT
2,2',5-Tricb	0.0064		MG/KG_DRYWT	0.042		MG/KG_DRYWT	0.00575		MG/KG_DRYWT
2,4,4'-Tricb	0.01299		MG/KG_DRYWT	0.10844		MG/KG_DRYWT	0.01427		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.00369		MG/KG_DRYWT	0.02845	p	MG/KG_DRYWT	0.00477		MG/KG_DRYWT
2,2',5,5'-Tetracb	0.01046		MG/KG_DRYWT	0.07667		MG/KG_DRYWT	0.01279		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.00788		MG/KG_DRYWT	0.04584		MG/KG_DRYWT	0.00936		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.00698		MG/KG_DRYWT	0.05048		MG/KG_DRYWT	0.00944		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.00406	p	MG/KG_DRYWT	0.02808	p	MG/KG_DRYWT	0.00507		MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.01205		MG/KG_DRYWT	0.07876		MG/KG_DRYWT	0.0155		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.00035	pJ	MG/KG_DRYWT	0.02772	U	MG/KG_DRYWT	0.00105	pJ	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.00723		MG/KG_DRYWT	0.04327		MG/KG_DRYWT	0.0103		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.00859		MG/KG_DRYWT	0.05157		MG/KG_DRYWT	0.01239		MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.00271	U	MG/KG_DRYWT	0.02772	U	MG/KG_DRYWT	0.00013	pJ	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.00271	U	MG/KG_DRYWT	0.02772	U	MG/KG_DRYWT	0.00017	pJ	MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.0027	U	MG/KG_DRYWT	0.02761	U	MG/KG_DRYWT	0.0027	U	MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.00271	U	MG/KG_DRYWT	0.02772	U	MG/KG_DRYWT	0.00271	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.00271	U	MG/KG_DRYWT	0.02772	U	MG/KG_DRYWT	0.00271	U	MG/KG_DRYWT
Decacb - Congener	0.00271	U	MG/KG_DRYWT	0.02772	U	MG/KG_DRYWT	0.00271	U	MG/KG_DRYWT
Total MonoCB									
Total DiCB									
Total TriCB									
Total TetraCB									
Total PentaCB									
Total HexaCB									
Total HeptaCB									
Total OctaCB									
Total NonaCB									
DecaCB - Homologue									
Total PCB Congeners (sum CONG x factor)	0.23		MG/KG_DRYWT	1.6		MG/KG_DRYWT	0.28		MG/KG_DRYWT
Total PCB Homologues (sum HOM)									

Appendix B

2008 OU3 Pilot Cap Sediment PCB Analytical Results

Station Id	OU06			OU07			OU08		
Start Date	10/07/2008			10/07/2008			10/07/2008		
Fraction	TOTAL			TOTAL			TOTAL		
Field Qc Code	SA			SA			SA		
Samp Id	S-08B-OU06-00-03			S-08B-OU07-00-03			S-08B-OU08-00-03		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	0.04486		MG/KG_DRYWT	0.02772		MG/KG_DRYWT	0.01643		MG/KG_DRYWT
2,2',5-Tricb	0.03248		MG/KG_DRYWT	0.02364		MG/KG_DRYWT	0.01223		MG/KG_DRYWT
2,4,4'-Tricb	0.09118		MG/KG_DRYWT	0.04903		MG/KG_DRYWT	0.02774		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.02054	J	MG/KG_DRYWT	0.01897		MG/KG_DRYWT	0.00923		MG/KG_DRYWT
2,2',5,5'-Tetracb	0.06485		MG/KG_DRYWT	0.03999		MG/KG_DRYWT	0.02176		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.03664		MG/KG_DRYWT	0.02746		MG/KG_DRYWT	0.01485		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.03978		MG/KG_DRYWT	0.03164		MG/KG_DRYWT	0.01551		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.02567	pJ	MG/KG_DRYWT	0.0166		MG/KG_DRYWT	0.00828		MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.06591		MG/KG_DRYWT	0.05073		MG/KG_DRYWT	0.02482		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.02864	U	MG/KG_DRYWT	0.00685		MG/KG_DRYWT	0.0024	J	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.03544		MG/KG_DRYWT	0.03594		MG/KG_DRYWT	0.01699		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.041		MG/KG_DRYWT	0.04133		MG/KG_DRYWT	0.02034		MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.02864	U	MG/KG_DRYWT	0.00331	p	MG/KG_DRYWT	0.0008	pJ	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.02864	U	MG/KG_DRYWT	0.00386		MG/KG_DRYWT	0.00093	pJ	MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.02852	U	MG/KG_DRYWT	0.00246	J	MG/KG_DRYWT	0.00051	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.02864	U	MG/KG_DRYWT	0.00274	U	MG/KG_DRYWT	0.00273	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.02864	U	MG/KG_DRYWT	0.00274	U	MG/KG_DRYWT	0.00273	U	MG/KG_DRYWT
Decacb - Congener	0.02864	U	MG/KG_DRYWT	0.00069	pJ	MG/KG_DRYWT	0.00273	U	MG/KG_DRYWT
Total MonoCB									
Total DiCB									
Total TriCB									
Total TetraCB									
Total PentaCB									
Total HexaCB									
Total HeptaCB									
Total OctaCB									
Total NonaCB									
DecaCB - Homologue									
Total PCB Congeners (sum CONG x factor)	1.3		MG/KG_DRYWT	0.99		MG/KG_DRYWT	0.5		MG/KG_DRYWT
Total PCB Homologues (sum HOM)									

Appendix B

2008 OU3 Pilot Cap Sediment PCB Analytical Results

Station Id	OU09			OU10			OU11		
Start Date	10/06/2008			10/06/2008			10/06/2008		
Fraction	TOTAL			TOTAL			TOTAL		
Field Qc Code	SA			SA			SA		
Samp Id	S-08B-OU09-00-03			S-08B-OU10-00-03			S-08B-OU11-00-03		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	0.0425		MG/KG_DRYWT	0.0207		MG/KG_DRYWT	0.00686		MG/KG_DRYWT
2,2',5-Tricb	0.03376		MG/KG_DRYWT	0.01591		MG/KG_DRYWT	0.00599		MG/KG_DRYWT
2,4,4'-Tricb	0.05247		MG/KG_DRYWT	0.0315		MG/KG_DRYWT	0.01417		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.01732		MG/KG_DRYWT	0.01047		MG/KG_DRYWT	0.00464		MG/KG_DRYWT
2,2',5,5'-Tetracb	0.03894		MG/KG_DRYWT	0.02529		MG/KG_DRYWT	0.01263		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.02232		MG/KG_DRYWT	0.01678		MG/KG_DRYWT	0.00794		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.02189		MG/KG_DRYWT	0.01617		MG/KG_DRYWT	0.00851		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.01048		MG/KG_DRYWT	0.00848		MG/KG_DRYWT	0.00439	p	MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.03226		MG/KG_DRYWT	0.02529		MG/KG_DRYWT	0.01351		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.0032		MG/KG_DRYWT	0.00229	J	MG/KG_DRYWT	0.00085	pJ	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.02001		MG/KG_DRYWT	0.01635		MG/KG_DRYWT	0.00914		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.02374		MG/KG_DRYWT	0.01854		MG/KG_DRYWT	0.01087		MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.0011	pJ	MG/KG_DRYWT	0.00058	pJ	MG/KG_DRYWT	0.00271	U	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.00111	pJ	MG/KG_DRYWT	0.00066	pJ	MG/KG_DRYWT	0.00004	pJ	MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.00059	pJ	MG/KG_DRYWT	0.00019	pJ	MG/KG_DRYWT	0.0027	U	MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.00272	U	MG/KG_DRYWT	0.00275	U	MG/KG_DRYWT	0.00271	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.00272	U	MG/KG_DRYWT	0.00275	U	MG/KG_DRYWT	0.00271	U	MG/KG_DRYWT
Decacb - Congener	0.00272	U	MG/KG_DRYWT	0.00275	U	MG/KG_DRYWT	0.00271	U	MG/KG_DRYWT
Total MonoCB									
Total DiCB									
Total TriCB									
Total TetraCB									
Total PentaCB									
Total HexaCB									
Total HeptaCB									
Total OctaCB									
Total NonaCB									
DecaCB - Homologue									
Total PCB Congeners (sum CONG x factor)	0.84		MG/KG_DRYWT	0.54		MG/KG_DRYWT	0.26		MG/KG_DRYWT
Total PCB Homologues (sum HOM)									

Appendix B

2008 OU3 Pilot Cap Sediment PCB Analytical Results

Station Id	OU12			OU13			OU14		
Start Date	10/06/2008			10/06/2008			10/06/2008		
Fraction	TOTAL			TOTAL			TOTAL		
Field Qc Code	SA			SA			SA		
Samp Id	S-08B-OU12-00-03			S-08B-OU13-00-03			S-08B-OU14-00-03		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	0.02881		MG/KG_DRYWT	0.34404		MG/KG_DRYWT	0.05948		MG/KG_DRYWT
2,2',5-Tricb	0.02164		MG/KG_DRYWT	0.27833		MG/KG_DRYWT	0.03142		MG/KG_DRYWT
2,4,4'-Tricb	0.04527		MG/KG_DRYWT	0.4354		MG/KG_DRYWT	0.08066		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.0156		MG/KG_DRYWT	0.15072		MG/KG_DRYWT	0.01433	pJ	MG/KG_DRYWT
2,2',5,5'-Tetracb	0.03347		MG/KG_DRYWT	0.31096		MG/KG_DRYWT	0.04643		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.0217		MG/KG_DRYWT	0.1504		MG/KG_DRYWT	0.02378	pJ	MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.02193		MG/KG_DRYWT	0.1444		MG/KG_DRYWT	0.01735	pJ	MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.01085		MG/KG_DRYWT	0.06395		MG/KG_DRYWT	0.01422	pJ	MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.03244		MG/KG_DRYWT	0.17853		MG/KG_DRYWT	0.03689		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.00343		MG/KG_DRYWT	0.01267	pJ	MG/KG_DRYWT	0.02795	U	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.02014		MG/KG_DRYWT	0.10781		MG/KG_DRYWT	0.01096	pJ	MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.02368		MG/KG_DRYWT	0.12869		MG/KG_DRYWT	0.0093	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.00132	pJ	MG/KG_DRYWT	0.00104	pJ	MG/KG_DRYWT	0.0022	pJ	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.00135	J	MG/KG_DRYWT	0.00146	pJ	MG/KG_DRYWT	0.02795	U	MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.00085	pJ	MG/KG_DRYWT	0.02864	U	MG/KG_DRYWT	0.02783	U	MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.00275	U	MG/KG_DRYWT	0.02876	U	MG/KG_DRYWT	0.02795	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.00275	U	MG/KG_DRYWT	0.02876	U	MG/KG_DRYWT	0.02795	U	MG/KG_DRYWT
Decacb - Congener	0.00275	U	MG/KG_DRYWT	0.02876	U	MG/KG_DRYWT	0.02795	U	MG/KG_DRYWT
Total MonoCB	0.02	U	MG/KG_DRYWT	0.12	U	MG/KG_DRYWT			
Total DiCB	0.07	J	MG/KG_DRYWT	0.67		MG/KG_DRYWT			
Total TriCB	0.21		MG/KG_DRYWT	2.15		MG/KG_DRYWT			
Total TetraCB	0.24	J	MG/KG_DRYWT	1.39	J	MG/KG_DRYWT			
Total PentaCB	0.22	J	MG/KG_DRYWT	1.22	J	MG/KG_DRYWT			
Total HexaCB	0.1	J	MG/KG_DRYWT	0.38	J	MG/KG_DRYWT			
Total HeptaCB	0.01	J	MG/KG_DRYWT	1.2	U	MG/KG_DRYWT			
Total OctaCB	0.1	U	MG/KG_DRYWT	0.6	U	MG/KG_DRYWT			
Total NonaCB	0.03	U	MG/KG_DRYWT	0.18	U	MG/KG_DRYWT			
DecaCB - Homologue	0.01	U	MG/KG_DRYWT	0.06	U	MG/KG_DRYWT			
Total PCB Congeners (sum CONG x factor)	0.73		MG/KG_DRYWT	6.		MG/KG_DRYWT	0.9		MG/KG_DRYWT
Total PCB Homologues (sum HOM)	0.85		MG/KG_DRYWT	5.8		MG/KG_DRYWT			

Appendix B

2008 OU3 Pilot Cap Sediment PCB Analytical Results

Station Id	OU15			OU16			OU16		
Start Date	10/06/2008			10/06/2008			10/06/2008		
Fraction	TOTAL			TOTAL			TOTAL		
Field Qc Code	SA			SA			REP		
Samp Id	S-08B-OU15-00-03			S-08B-OU16-00-03			S-08B-OU16-00-03-REP		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	0.11453		MG/KG_DRYWT	0.12567		MG/KG_DRYWT	0.09268		MG/KG_DRYWT
2,2',5-Tricb	0.0779		MG/KG_DRYWT	0.08225		MG/KG_DRYWT	0.06771		MG/KG_DRYWT
2,4,4'-Tricb	0.16451		MG/KG_DRYWT	0.16505		MG/KG_DRYWT	0.14472		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.0487		MG/KG_DRYWT	0.03369		MG/KG_DRYWT	0.03552		MG/KG_DRYWT
2,2',5,5'-Tetracb	0.10912		MG/KG_DRYWT	0.0993		MG/KG_DRYWT	0.0897		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.05936		MG/KG_DRYWT	0.05517		MG/KG_DRYWT	0.05218		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.05596		MG/KG_DRYWT	0.0489		MG/KG_DRYWT	0.04624		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.03125	p	MG/KG_DRYWT	0.0322	p	MG/KG_DRYWT	0.02897	p	MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.08372		MG/KG_DRYWT	0.08224		MG/KG_DRYWT	0.07611		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.02806	U	MG/KG_DRYWT	0.02829	U	MG/KG_DRYWT	0.02812	U	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.04475		MG/KG_DRYWT	0.04136		MG/KG_DRYWT	0.03661		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.0514		MG/KG_DRYWT	0.04682		MG/KG_DRYWT	0.03865		MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.02806	U	MG/KG_DRYWT	0.02829	U	MG/KG_DRYWT	0.02812	U	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.02806	U	MG/KG_DRYWT	0.02829	U	MG/KG_DRYWT	0.02812	U	MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.02795	U	MG/KG_DRYWT	0.02817	U	MG/KG_DRYWT	0.028	U	MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.02806	U	MG/KG_DRYWT	0.02829	U	MG/KG_DRYWT	0.02812	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.02806	U	MG/KG_DRYWT	0.02829	U	MG/KG_DRYWT	0.02812	U	MG/KG_DRYWT
Decacb - Congener	0.02806	U	MG/KG_DRYWT	0.01646	pJ	MG/KG_DRYWT	0.02812	U	MG/KG_DRYWT
Total MonoCB									
Total DiCB									
Total TriCB									
Total TetraCB									
Total PentaCB									
Total HexaCB									
Total HeptaCB									
Total OctaCB									
Total NonaCB									
DecaCB - Homologue									
Total PCB Congeners (sum CONG x factor)	2.2		MG/KG_DRYWT	2.2		MG/KG_DRYWT	1.8		MG/KG_DRYWT
Total PCB Homologues (sum HOM)									

Appendix B

2008 OU3 Pilot Cap Sediment PCB Analytical Results

Station Id	OU17		
Start Date			10/06/2008
Fraction	TOTAL		
Field Qc Code	SA		
Samp Id	S-08B-OU17-00-03		
Description	Result	Final Qual	Unit
2,4'-Dicb	0.03165		MG/KG_DRYWT
2,2',5-Tricb	0.02004		MG/KG_DRYWT
2,4,4'-Tricb	0.03798		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.01121		MG/KG_DRYWT
2,2',5,5'-Tetracb	0.0243		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.01678		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.01357		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.00776		MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.02241		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.00179	J	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.01442		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.01723		MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.00039	pJ	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.00046	pJ	MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.00023	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.00275	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.00275	U	MG/KG_DRYWT
Decacb - Congener	0.00275	U	MG/KG_DRYWT
Total MonoCB			
Total DiCB			
Total TriCB			
Total TetraCB			
Total PentaCB			
Total HexaCB			
Total HeptaCB			
Total OctaCB			
Total NonaCB			
DecaCB - Homologue			
Total PCB Congeners (sum CONG x factor)	0.57		MG/KG_DRYWT
Total PCB Homologues (sum HOM)			

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PCB Congeners – Sediment QA/QC Summary
Batch 08-0284

PROJECT: USACE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment
SAMPLE CUSTODY: Sediment samples were collected on 10/6/2008 – 10/7/2008 and hand delivered to the Battelle Duxbury Chemistry Sample Custodian on 10/7/2008. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. They were stored in the walk-in freezer until preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (ng/g dry wt)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	≤30% RPD (analytes must be > 5x MDL to be used for data quality assessment)	RL: 2.73

METHOD: Sediment samples were extracted for PCB congeners following modified EPA Method 3545. Sediments were air-dried overnight, and approximately 10 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was concentrated, processed through activated copper, florisil cleanup column, and concentrated. Next, the extract was concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Sediments of this batch were extracted within 1 year of sample holding time for frozen sediments. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
08/0284	10/6/08-10/7/08	10/13/08	10/21/2008 – 10/24/2008

08-0284

Sample ID	Battelle ID
S-08B-OU17-00-03	Q5020
S-08B-OU16-00-03	Q5021
S-08B-OU16-00-03-REP	Q5022
S-08B-OU15-00-03	Q5023
S-08B-OU14-00-03	Q5024
S-08B-OU12-00-03	Q5025
S-08B-OU13-00-03	Q5026
S-08B-OU11-00-03	Q5027
S-08B-OU10-00-03	Q5028
S-08B-OU09-00-03	Q5029
S-08B-OU01-00-03	Q5031

PCB Congeners – Sediment QA/QC Summary
Batch 08-0284

S-08B-OU03-00-03	Q5032
S-08B-OU02-00-03	Q5033
S-08B-OU08-00-03	Q5034
S-08B-OU06-00-03	Q5035
S-08B-OU05-00-03	Q5036
S-08B-OU04-00-03	Q5037
S-08B-OU07-00-03	Q5038

BLANK: A procedural blank (PB) was prepared with each analytical batch. Blanks were analyzed to ensure the sample extraction and analysis methods were free of contamination.

08-0284 – No target analytes were detected in the procedural blank.

LABORATORY CONTROL SAMPLE: A laboratory control sample (LCS) was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy.

08-0284 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

MATRIX SPIKE/MATRIX SPIKE DUPLICATE: A pair of matrix spike (MS) and matrix spike duplicate samples (MSD) was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. The RPD between percent recoveries was calculated to measure the data quality in terms of precision.

08-0284 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%). All RPDs met the criteria of <30%.

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

08-0284 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

CALIBRATIONS: The GC/ECD was calibrated with a 6 level curve, with a correlation coefficient of >0.995. Each batch of samples analyzed is bracketed by continuing calibration verification (CCV) sample, run at a frequency of minimally every 24 hours. The %D between the initial calibration (ICAL) and the continuing calibration samples should be <25% for each compound. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%.

08-0284 – All calibration criteria were met.

Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Procedural Blank	
Battelle ID	BM492PB-P	
Sample Type	PB	
Collection Date	10/13/08	
Extraction Date	10/13/08	
Analysis Date	10/21/08	
Analytical Instrument	ECD	
% Moisture	1.88	
% Lipid	NA	
Matrix	SEDIMENT	
Sample Size	5.03	
Size Unit-Basis	G_DRY	
Units	NG/G_DRY	
Cl2(8)	2.72	U
Cl3(18)	2.73	U
Cl3(28)	2.73	U
Cl4(44)	2.72	U
Cl4(52)	2.74	U
Cl4(66)	2.74	U
Cl5(101)	2.72	U
Cl5(105)	2.73	U
Cl5(118)	2.76	U
Cl6(128)	2.73	U
Cl6(138)	2.76	U
Cl6(153)	2.72	U
Cl7(170)	2.73	U
Cl7(180)	2.73	U
Cl7(187)	2.72	U
Cl8(195)	2.73	U
Cl9(206)	2.73	U
Cl10(209)	2.73	U

Surrogate Recoveries (%)

Cl3(34)	70
Cl6(152)	80

Battelle
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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Laboratory Control Sample			
Battelle ID	BM493LCS-P			
Sample Type	LCS			
Collection Date	10/13/08			
Extraction Date	10/13/08			
Analysis Date	10/21/08			
Analytical Instrument	ECD			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	5.03			
Size Unit-Basis	G_DRY			
Units	NG/G_DRY	Target	% Recovery	Qualifier
Cl2(8)	765.74	899.01	85	
Cl3(18)	768.4	899.01	85	
Cl3(28)	690.74	897.42	77	
Cl4(44)	775.58	898.21	86	
Cl4(52)	772.06	896.62	86	
Cl4(66)	840.65	897.42	94	
Cl5(101)	792.32	898.21	88	
Cl5(105)	809.46	897.42	90	
Cl5(118)	816.32	897.42	91	
Cl6(128)	813.22	901.39	90	
Cl6(138)	792.12	898.21	88	
Cl6(153)	816.92	897.42	91	
Cl7(170)	818.93	900.60	91	
Cl7(180)	792.94	899.80	88	
Cl7(187)	797.49	899.01	89	
Cl8(195)	848.18	899.01	94	
Cl9(206)	801.3	899.01	89	
Cl10(209)	805.3	899.40	90	

Surrogate Recoveries (%)

Cl3(34)	86
Cl6(152)	93

Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	S-08B-OU17-00-03		S-08B-OU17-00-03				
Battelle ID	Q5020-P		Q5020MS-P				
Sample Type	SA		MS				
Collection Date	10/06/08		10/6/2008				
Extraction Date	10/13/08		10/13/2008				
Analysis Date	10/21/08		10/22/2008				
Analytical Instrument	ECD		ECD				
% Moisture	NA		0.49				
% Lipid	NA		NA				
Matrix	SEDIMENT		SEDIMENT				
Sample Size	5.00		2.5				
Size Unit-Basis	G_DRY		G_DRY				
Units	NG/G_DRY		NG/G_DRY		Target	% Recovery	Qualifier
Cl2(8)	31.65		1682.85	E	1808.80	91	
Cl3(18)	20.04		1668.19		1808.80	91	
Cl3(28)	37.98		1557.98		1805.60	84	
Cl4(44)	11.21		1673.52	E	1807.20	92	
Cl4(52)	24.3		1692.64	E	1804.00	92	
Cl4(66)	16.78		1829.19	E	1805.60	100	
Cl5(101)	13.57		1682.4	E	1807.20	92	
Cl5(105)	7.76		1759.96	E	1805.60	97	
Cl5(118)	22.41		1728.05	E	1805.60	94	
Cl6(128)	1.79	J	1728.11	E	1813.60	95	
Cl6(138)	14.42		1665.47	E	1807.20	91	
Cl6(153)	17.23		1710.5	E	1805.60	94	
Cl7(170)	0.39	pJ	1746.02	E	1812.00	96	
Cl7(180)	0.46	pJ	1716.48	E	1810.40	95	
Cl7(187)	0.23	pJ	1661.12	E	1808.80	92	
Cl8(195)	2.75	U	1907.77	E	1808.80	105	
Cl9(206)	2.75	U	1756.29	E	1808.80	97	
Cl10(209)	2.75	U	1725.54	E	1809.60	95	

Surrogate Recoveries (%)

Cl3(34)	63	92
Cl6(152)	84	94

Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	S-08B-OU17-00-03						
Battelle ID	Q5020MSD-P						
Sample Type	MSD						
Collection Date	10/6/2008						
Extraction Date	10/13/2008						
Analysis Date	10/22/2008						
Analytical Instrument	ECD						
% Moisture	0.86						
% Lipid	NA						
Matrix	SEDIMENT						
Sample Size	2.49						
Size Unit-Basis	G_DRY						
Units	NG/G_DRY		Target	% Recovery	Qualifier	RPD (%)	Qualifier
Cl2(8)	1703.41	E	1816.06	92		1.1	
Cl3(18)	1695.31	E	1816.06	92		1.1	
Cl3(28)	1618.51	E	1812.85	87		3.5	
Cl4(44)	1765.22	E	1814.46	97		5.3	
Cl4(52)	1762.97	E	1811.24	96		4.3	
Cl4(66)	1954.44	E	1812.85	107		6.8	
Cl5(101)	1790.78	E	1814.46	98		6.3	
Cl5(105)	1850.16	E	1812.85	102		5.0	
Cl5(118)	1806.62	E	1812.85	98		4.2	
Cl6(128)	1796.08	E	1820.88	99		4.1	
Cl6(138)	1743.75	E	1814.46	95		4.3	
Cl6(153)	1793.73	E	1812.85	98		4.2	
Cl7(170)	1819.79	E	1819.28	100		4.1	
Cl7(180)	1792.46	E	1817.67	99		4.1	
Cl7(187)	1744.56	E	1816.06	96		4.3	
Cl8(195)	1985.3	E	1816.06	109		3.7	
Cl9(206)	1797.61	E	1816.06	99		2.0	
Cl10(209)	1772.7	E	1816.87	98		3.1	

Surrogate Recoveries (%)

Cl3(34)	93
Cl6(152)	95

PCB Homologues – SEDIMENT QA/QC SUMMARY
Batch 08-0284

PROJECT: New Bedford Harbor Water Quality Monitoring
PARAMETER: PCB Homologues
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment
SAMPLE CUSTODY: Sediment samples were collected on 10/6/2008 – 10/7/2008 and hand delivered to the Battelle Duxbury Chemistry Sample Custodian on 10/7/2008. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. They were stored in the walk-in freezer until preparation could begin. All sediment samples were extracted for PCB congener analyses by GC/ECD. 7.5% percent of the sediment samples were chosen for PCB homologue analysis. From this batch samples S-08B-OU12-00-03 and S-08B-OU13-00-03 were analyzed for PCB homologues

	Reference Method	Method Blank	Surrogate Recovery	LCS/MS/MSD Recovery	Sample Replicate Relative Precision	Reporting Limits (mg/Kg dry wt)
PCB Homologues	1668A & 8270D	< ss-RL	40-120%	40-120% MS spike must be >5 x background	<30% RPD MS spike must be >5 x background	0.18 – 4.02

METHOD: Sediment samples were extracted for PCBs following modified EPA Method 3545. Sediments were air-dried overnight, and approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was concentrated, processed through activated copper, florisil cleanup column, and concentrated. Extracts were then fortified with internal standards (IS). Extracts designated for PCB homologue analysis were analyzed using gas chromatography/mass spectrometry (GC/MS), following Battelle SOP 5-315 which is based on key components of EPA Methods 1668A and 8270D. Sample data were quantified by the method of internal standards, using the IS compounds.

HOLDING TIMES: These frozen sediment samples were extracted within 1-year holding time. Extracts were analyzed within 40 days of extraction. All holding times were met.

Batch	Collection Date	Extraction Date	Analysis Date
08-0284	10/6/08	10/13/08	11/3/08

PCB Homologues – SEDIMENT QA/QC SUMMARY
Batch 08-0284

08-0284

Sample ID	**Battelle ID**
S-08B-OU12-00-03	Q5025
S-08B-OU13-00-03	Q5026

BLANK: A procedural blank (PB) was prepared with the analytical batch. Blanks are analyzed to ensure the sample extraction and analysis methods were free of contamination.

08-0284 – No exceedences noted.

Comments – No target analytes were detected in the procedural blank at a concentration greater than the sample-specific reporting limit.

LABORATORY CONTROL SAMPLE: A laboratory control sample (LCS) was prepared with the analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy.

08-0284 – No exceedences noted. All recoveries were within the laboratory control limits (40%-120%).

Comments – None.

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

08-0284 – No exceedences noted. All recoveries were within the laboratory control limits (40%-120%).

Comments – None.

CALIBRATION: The GC/MS is calibrated with a minimum of a 6-point curve. The co-efficient of determination must be > 0.995 for each target analyte in the initial calibration (ICAL). Each batch of samples analyzed is bracketed by a continuing calibration verification (CCV) sample, run at a frequency of every 12 hours (minimally). This percent difference (PD) for the CCV should be <25% for individual analytes. Additionally an instrument calibration check (ICC) sample was run with the initial calibration. The PD for the ICC should be < 25% for each analyte.

08-0284 – No initial calibration exceedences noted.
No CCV exceedence.
No ICC exceedence.

Comments – None.

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Procedural Blank	
Battelle ID	BM492PB-P	
Sample Type	PB	
Collection Date	10/13/08	
Extraction Date	10/13/08	
Analysis Date	11/03/08	
Analytical Instrument	MS	
% Moisture	1.88	
% Lipid	NA	
Matrix	SEDIMENT	
Sample Size	5.03	
Size Unit-Basis	G_DRY	
Units	MG/KG_DRY	
LOC 1	0.02	U
LOC 2	0.1	U
LOC 3	0.15	U
LOC 4	0.28	U
LOC 5	0.23	U
LOC 6	0.26	U
LOC 7	0.2	U
LOC 8	0.1	U
LOC 9	0.03	U
Cl10(209)	0.01	U

Surrogate Recoveries (%)

Cl3(34)	101
Cl6(152)	118

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Laboratory Control Sample			
Battelle ID	BM493LCS-P			
Sample Type	LCS			
Collection Date	10/13/08			
Extraction Date	10/13/08			
Analysis Date	11/03/08			
Analytical Instrument	MS			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	5.03			
Size Unit-Basis	G_DRY			
Units	MG/KG_DRY	Target	% Recovery	Qualifier
LOC 1	0.18	0.20	89	
LOC 2	0.99	1.10	90	
LOC 3	1.87	2.10	89	
LOC 4	3.66	4.09	89	
LOC 5	4.02	4.30	93	
LOC 6	3.23	3.50	92	
LOC 7	2.86	3.08	93	
LOC 8	1.32	1.40	94	
LOC 9	0.9	1.00	90	
Cl10(209)	0.73	0.90	81	
Surrogate Recoveries (%)				
Cl3(34)	92			
Cl6(152)	115			

PCB Congeners – Water QA/QC Summary
Batch 08-0282

PROJECT: USACE-NAE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Equipment Blank
SAMPLE CUSTODY: The equipment blank sample was collected on 10/6/2008 and hand delivered to the Chemistry Department by the Battelle Field Group. No custody issues were noted. The sample was logged into LIMS and received unique Battelle ID. The sample was stored at 4°C in an access controlled walk-in refrigerator until sample preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (ug/L)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	<30% RPD (analytes must be > 5x MDL to be used for data quality assessment)	RL: ~ 0.0013

METHOD: The equipment blank was extracted for PCB Congeners following modified EPA Method 3510C. Approximately 1 liter of water was spiked with surrogates and extracted three times with dichloromethane using separatory funnel techniques. Combined extract was dried over anhydrous sodium sulfate, concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Water samples were extracted within 7 days of sample collection. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
08-0282	10/6/2008	10/9/2008	10/13/2008

PCB Congeners – Water QA/QC Summary
Batch 08-0282

LIST OF SAMPLES:

08-0282

Sample ID	**Battelle ID**
EB-100608-01	Q5030

BLANK: A procedural blank (PB) was prepared with each analytical batch. Blanks were analyzed to ensure the sample extraction and analysis methods were free of contamination.

08-0282 – No exceedences noted. No target PCBs were detected in the PB.

LABORATORY CONTROL SAMPLE: A laboratory control sample (LCS) was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy.

08-0282 – All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

08-0282 – No exceedence noted**.** All percent recoveries were within the laboratory control limit (40%-120%).

CALIBRATIONS: The GC/ECD was calibrated with a minimum 6 level curve, with a linear correlation coefficient of >0.995. Each batch of samples analyzed is bracketed by continuing calibration verification (CCV) sample, run at a frequency of minimally every 24 hours. The %D between the initial calibration (ICAL) and the continuing calibration samples should be <20% for each compound. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%.

08-0282 – Some compounds were over-responding in the CCVs. However, because no compound was detected in the authentic sample, no corrective action was taken.

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Project Client: USACE - North Atlantic Division
Project Name: NBH Equipment Blank Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Procedural Blank	
Battelle ID	BM487PB-P	
Sample Type	PB	
Collection Date	10/09/08	
Extraction Date	10/09/08	
Analysis Date	10/13/08	
Analytical Instrument	ECD	
% Moisture	NA	
% Lipid	NA	
Matrix	WATER	
Sample Size	1.00	
Size Unit-Basis	L_LIQUID	
Units	UG/L_LIQUID	
Cl2(8)	0.0012	U
Cl3(18)	0.0013	U
Cl3(28)	0.0013	U
Cl4(44)	0.0012	U
Cl4(52)	0.0013	U
Cl4(66)	0.0013	U
Cl5(101)	0.0012	U
Cl5(105)	0.0013	U
Cl5(118)	0.0013	U
Cl6(128)	0.0013	U
Cl6(138)	0.0013	U
Cl6(153)	0.0012	U
Cl7(170)	0.0013	U
Cl7(180)	0.0013	U
Cl7(187)	0.0012	U
Cl8(195)	0.0013	U
Cl9(206)	0.0013	U
Cl10(209)	0.0013	U

Surrogate Recoveries (%)

Cl3(34)	101
Cl6(152)	105

Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Equipment Blank Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Laboratory Control Sample			
Battelle ID	BM488LCS-P			
Sample Type	LCS			
Collection Date	10/09/08			
Extraction Date	10/09/08			
Analysis Date	10/13/08			
Analytical Instrument	ECD			
% Moisture	NA			
% Lipid	NA			
Matrix	WATER			
Sample Size	1.00			
Size Unit-Basis	L_LIQUID			
Units	UG/L_LIQUID	Target	% Recovery	Qualifier
Cl2(8)	0.0499	0.05	100	
Cl3(18)	0.0487	0.05	97	
Cl3(28)	0.0409	0.05	82	
Cl4(44)	0.0481	0.05	96	
Cl4(52)	0.0476	0.05	95	
Cl4(66)	0.0495	0.05	99	
Cl5(101)	0.0484	0.05	97	
Cl5(105)	0.0483	0.05	97	
Cl5(118)	0.0511	0.05	102	
Cl6(128)	0.0498	0.05	99	
Cl6(138)	0.0492	0.05	98	
Cl6(153)	0.0498	0.05	100	
Cl7(170)	0.0526	0.05	105	
Cl7(180)	0.0516	0.05	103	
Cl7(187)	0.0508	0.05	101	
Cl8(195)	0.0521	0.05	104	
Cl9(206)	0.0529	0.05	105	
Cl10(209)	0.054	0.05	108	

Surrogate Recoveries (%)

Cl3(34)	106
Cl6(152)	113

Qualifiers:

B	Analyte concentration found in the sample at < 5 x the level detected in the procedural blank
D	Dilution run. Initial run outside linear range of instrument
E	Estimate, result is greater than the highest concentration level in the calibration
H	Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract
J	Analyte detected below the sample specific reporting limit
ME	Significant Matrix Interference - Estimated value
N	Quality Control value is outside the accuracy or precision data quality objective (DQO)
NA	Not applicable
T	Holding time exceeded
U	Analyte not detected at 3:1 signal:noise ratio. Reporting limit is reported.
p	The relative percent difference (RPD) between the values obtained from the dual columns is >40%.

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ShpNo SHP-081008-02

Battelle Project No:

Sample Receipt Form

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Tuesday, October 07, 2008 12:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered **Tracking Number:** NA

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal Condition	Container Condition	Temp C	Smps
1 of 1	Cooler	NA	None	Not Applicable	Intact	4.0	19

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 4 Temperature Blank used ☐ Yes ☑ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: Chem South: Refrigerator - R0003 (Upper Cold **BDO IDs Assigned:** Q5020 - Q5038

Samples logged in by: Seyfert, Jeannine **Date/Time:** 10/07/2008 12:00 AM

Approved By: **Approved On:**

Authorized By: **Authorized On:**

Battelle
The Business of Innovation

ShpNo SHP-081008-02

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ Authorized ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Tuesday, October 07, 2008 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q5020	S-08B-OU17-00-03	10/06/08 9:34	10/08/08 13:40	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			MS/MSD
Q5021	S-08B-OU16-00-03	10/06/08 9:54	10/08/08 13:41	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5022	S-08B-OU16-00-03-REP	10/06/08 10:05	10/08/08 13:41	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5023	S-08B-OU15-00-03	10/06/08 10:26	10/08/08 13:42	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5024	S-08B-OU14-00-03	10/06/08 10:46	10/08/08 13:42	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5025	S-08B-OU12-00-03	10/06/08 11:08	10/08/08 13:43	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5026	S-08B-OU13-00-03	10/06/08 11:27	10/08/08 13:43	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5027	S-08B-OU11-00-03	10/06/08 11:53	10/08/08 13:43	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5028	S-08B-OU10-00-03	10/06/08 12:14	10/08/08 13:44	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5029	S-08B-OU09-00-03	10/06/08 12:47	10/08/08 13:50	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5030	EB-100608-01	10/06/08 13:05	10/08/08 13:51	1	WATER	4	NA	NA	NA	R0003 (Upper C			EQUIPMENT BLANK
Q5031	S-08B-OU01-00-03	10/06/08 14:00	10/08/08 13:52	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5032	S-08B-OU03-00-03	10/06/08 14:26	10/08/08 13:53	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5033	S-08B-OU02-00-03	10/06/08 14:49	10/08/08 13:53	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5034	S-08B-OU08-00-03	10/07/08 8:57	10/08/08 13:53	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5035	S-08B-OU06-00-03	10/07/08 9:25	10/08/08 13:54	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5036	S-08B-OU05-00-03	10/07/08 9:45	10/08/08 13:54	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5037	S-08B-OU04-00-03	10/07/08 10:09	10/08/08 13:55	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5038	S-08B-OU07-00-03	10/07/08 10:43	10/08/08 13:56	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			

Total Samples: 19

Battelle
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Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No: G606422
Proj. Name: New Bedford Harbor OU3

SAMPLERS: Signature: J. Fahey, A. Murphy, + M. Fitzpatrick

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	LAB ID ~~BATTELLE ID~~	FIELD ID ~~CLIENT ID~~	SAMPLE DESCRIPTION	STATION #		PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
10/6/08	0934	Q5020	S-08B-OU17-00-03	Sediment	OU17	ex Materials MS/MSD		✓									1
	0954	Q5021	S-08B-OU16-00-03		OU16			✓									1
	1005	Q5022	S-08B-OU16-00-03-REP		OU16	Field DUP		✓									1
	1026	Q5023	S-08B-OU15-00-03		OU15			✓									1
	1046	Q5024	S-08B-OU14-00-03		OU14			✓									1
	1108	Q5025	S-08B-OU12-00-03		OU12	extra for homeless		✓									1
	1127	Q5026	S-08B-OU13-00-03		OU13			✓									1
	1153	Q5027	S-08B-OU11-00-03		OU11			✓									1
	1214	Q5028	S-08B-OU10-00-03		OU10			✓									1
	1247	Q5029	S-08B-OU09-00-03		OU09			✓									1
	1305	Q5030	EB-100608-01	Equipment Blank		water		✓									2
	1400	Q5031	S-08B-OU01-00-03	Sediment	OU01			✓									1
	1426	Q5032	S-08B-OU03-00-03		OU03			✓									1
	1449	Q5033	S-08B-OU02-00-03		OU02			✓									1
10/7/08	0857	Q5034	S-08B-OU08-00-03		OU08			✓									1
	0925	Q5035	S-08B-OU06-00-03		OU06			✓									1
	0945	Q5036	S-08B-OU05-00-03		OU05			✓									1

Relinquished by:	Date/Time	Received by:	Date/Time
Matthew K Nyhan	10/4/08 1400	Jeannine Seyfert	10-7-08 14:00

Comments:

ORIGINAL

Battelle
The Business of Innovation

Chain of Custody

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Proj. No	Proj. Name
G606422	NBH-003

SAMPLERS: Signature

J. Farley, M. Fitzpatrick, A. Murphy

DATE	TIME	LAB ID ~~BATTELLE ID~~	FIELD ID ~~CLIENT ID~~	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
				STATION											
10/7/08	1009	Q5037	S-08B-0004-00-03	0014 Sediment		✓									1
↓	1043	Q5038	S-08B-0087-00-03	0087 ↓		✓									1

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	10/7/08 1400	Jeannine Seyfert	10-7-08 14:00
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

North of Wood Street

River Sediment and Marsh Soil Cores

-PCB Analytical Results
-QA/QC Summaries and Data
-Lab Qualifiers
-Chain of Custodies

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	C008-010			C008-016		
Start Date			12/03/2008			12/03/2008
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-C008-010-00-05			S-08D-C008-016-00-05		
Field Qc Code	SA			SA		
Description	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**
2,4'-Dicb	0.113		MG/KG_DRYWT	0.812	D	MG/KG_DRYWT
2,2',5-Tricb	0.213		MG/KG_DRYWT	2.065	D	MG/KG_DRYWT
2,4,4'-Tricb	0.204		MG/KG_DRYWT	2.185	D	MG/KG_DRYWT
2,2',3,5'-Tetracb	0.075		MG/KG_DRYWT	0.777	D	MG/KG_DRYWT
2,2',5,5'-Tetracb	0.140		MG/KG_DRYWT	2.471	D	MG/KG_DRYWT
2,3',4,4'-Tetracb	0.032		MG/KG_DRYWT	0.374		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.025		MG/KG_DRYWT	0.579		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.009	pJ	MG/KG_DRYWT	0.074		MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.021		MG/KG_DRYWT	0.451		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.004	J	MG/KG_DRYWT	0.070		MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.016		MG/KG_DRYWT	0.411		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.017		MG/KG_DRYWT	0.624		MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.001	J	MG/KG_DRYWT	0.058		MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.002	J	MG/KG_DRYWT	0.079		MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.014	U	MG/KG_DRYWT	0.068		MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.014	U	MG/KG_DRYWT	0.007	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.014	U	MG/KG_DRYWT	0.009	J	MG/KG_DRYWT
Decacb - Congener	0.014	U	MG/KG_DRYWT	0.016	U	MG/KG_DRYWT
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	2.3		MG/KG_DRYWT	29.		MG/KG_DRYWT
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	C008-023			C008-028		
Start Date	12/03/2008			12/03/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-C008-023-00-05			S-08D-C008-028-00-05		
Field Qc Code	SA			SA		
Description	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**
2,4'-Dicb	1.190		MG/KG_DRYWT	1.726	D	MG/KG_DRYWT
2,2',5-Tricb	2.040		MG/KG_DRYWT	3.885	D	MG/KG_DRYWT
2,4,4'-Tricb	3.460		MG/KG_DRYWT	5.868	D	MG/KG_DRYWT
2,2',3,5'-Tetracb	1.320		MG/KG_DRYWT	2.021	D	MG/KG_DRYWT
2,2',5,5'-Tetracb	3.900		MG/KG_DRYWT	7.463	D	MG/KG_DRYWT
2,3',4,4'-Tetracb	0.670		MG/KG_DRYWT	1.442		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	1.160		MG/KG_DRYWT	1.875	D	MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.130		MG/KG_DRYWT	0.207		MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.880		MG/KG_DRYWT	1.268	D	MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.090		MG/KG_DRYWT	0.152		MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.670		MG/KG_DRYWT	0.929	D	MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	1.130		MG/KG_DRYWT	1.576	D	MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.090		MG/KG_DRYWT	0.203		MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.120		MG/KG_DRYWT	0.290		MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.140		MG/KG_DRYWT	0.353		MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.010	pJ	MG/KG_DRYWT	0.036	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.020	pJ	MG/KG_DRYWT	0.045		MG/KG_DRYWT
Decacb - Congener	0.040	U	MG/KG_DRYWT	0.000	J	MG/KG_DRYWT
Total MonoCB	0.1		MG/KG_DRYWT			
Total DiCB	3.42		MG/KG_DRYWT			
Total TriCB	16.52		MG/KG_DRYWT			
Total TetraCB	16.48		MG/KG_DRYWT			
Total PentaCB	8.84		MG/KG_DRYWT			
Total HexaCB	4.4		MG/KG_DRYWT			
Total HeptaCB	1.02		MG/KG_DRYWT			
Total OctaCB	0.24	J	MG/KG_DRYWT			
Total NonaCB	0.03	J	MG/KG_DRYWT			
DecaCB - Homologue	0.04	U	MG/KG_DRYWT			
Total PCB Congeners (sum CONG x factor)	44.		MG/KG_DRYWT	76.		MG/KG_DRYWT
Total PCB Homologues (sum HOM)	51.		MG/KG_DRYWT			

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	C008-030E			C008-30W		
Start Date			11/20/2008			11/20/2008
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-C008-30E-00-05			S-08D-C008-30W-00-05		
Field Qc Code	SA			SA		
Description	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**
2,4'-Dicb	0.005	J	MG/KG_DRYWT	0.015	U	MG/KG_DRYWT
2,2',5-Tricb	0.039		MG/KG_DRYWT	0.029		MG/KG_DRYWT
2,4,4'-Tricb	0.082		MG/KG_DRYWT	0.068		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.026		MG/KG_DRYWT	0.021		MG/KG_DRYWT
2,2',5,5'-Tetracb	0.101		MG/KG_DRYWT	0.085		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.016		MG/KG_DRYWT	0.022		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.032		MG/KG_DRYWT	0.038		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.008	pJ	MG/KG_DRYWT	0.007	J	MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.033		MG/KG_DRYWT	0.038		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.002	J	MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.025		MG/KG_DRYWT	0.022		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.035		MG/KG_DRYWT	0.040		MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.003	pJ	MG/KG_DRYWT	0.003	pJ	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.004	J	MG/KG_DRYWT	0.004	J	MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.000	pJ	MG/KG_DRYWT	0.002	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.014	U	MG/KG_DRYWT	0.015	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.001	pJ	MG/KG_DRYWT	0.001	pJ	MG/KG_DRYWT
Decacb - Congener	0.014	U	MG/KG_DRYWT	0.015	U	MG/KG_DRYWT
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	1.1		MG/KG_DRYWT	0.98		MG/KG_DRYWT
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	C008-033			C008-038		
Start Date	12/03/2008			12/03/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-C008-033-00-05			S-08D-C008-038-00-05		
Field Qc Code	SA			SA		
Description	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**
2,4'-Dicb	1.508	D	MG/KG_DRYWT	0.416	D	MG/KG_DRYWT
2,2',5-Tricb	3.497	D	MG/KG_DRYWT	1.334	D	MG/KG_DRYWT
2,4,4'-Tricb	5.780	D	MG/KG_DRYWT	2.460	D	MG/KG_DRYWT
2,2',3,5'-Tetracb	1.904	D	MG/KG_DRYWT	0.832	D	MG/KG_DRYWT
2,2',5,5'-Tetracb	7.265	D	MG/KG_DRYWT	3.488	D	MG/KG_DRYWT
2,3',4,4'-Tetracb	1.470		MG/KG_DRYWT	0.599		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	1.903	D	MG/KG_DRYWT	0.962	D	MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.212		MG/KG_DRYWT	0.122		MG/KG_DRYWT
2,3',4,4',5-Pentacb	1.247	D	MG/KG_DRYWT	0.687	D	MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.163		MG/KG_DRYWT	0.095		MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.968	D	MG/KG_DRYWT	0.501	D	MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	1.643	D	MG/KG_DRYWT	0.885	D	MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.206		MG/KG_DRYWT	0.106		MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.291		MG/KG_DRYWT	0.147		MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.360		MG/KG_DRYWT	0.182		MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.043	p	MG/KG_DRYWT	0.016	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.048		MG/KG_DRYWT	0.020		MG/KG_DRYWT
Decacb - Congener	0.002	pJ	MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	74.		MG/KG_DRYWT	33.		MG/KG_DRYWT
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	C008-039			C008-040		
Start Date	12/03/2008			12/03/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-C008-039-00-05			S-08D-C008-040-00-05		
Field Qc Code	SA			SA		
Description	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**
2,4'-Dicb	3.369	D	MG/KG_DRYWT	0.409	D	MG/KG_DRYWT
2,2',5-Tricb	6.985	D	MG/KG_DRYWT	0.972	D	MG/KG_DRYWT
2,4,4'-Tricb	10.554	D	MG/KG_DRYWT	1.944	D	MG/KG_DRYWT
2,2',3,5'-Tetracb	3.792	D	MG/KG_DRYWT	0.576	D	MG/KG_DRYWT
2,2',5,5'-Tetracb	13.780	D	MG/KG_DRYWT	2.193	D	MG/KG_DRYWT
2,3',4,4'-Tetracb	1.582	D	MG/KG_DRYWT	0.618		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	3.586	D	MG/KG_DRYWT	0.568	D	MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.344		MG/KG_DRYWT	0.097		MG/KG_DRYWT
2,3',4,4',5-Pentacb	2.298	D	MG/KG_DRYWT	0.405	D	MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.279		MG/KG_DRYWT	0.093		MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	1.844	D	MG/KG_DRYWT	0.505		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	3.237	D	MG/KG_DRYWT	0.445	D	MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.374		MG/KG_DRYWT	0.068		MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.530		MG/KG_DRYWT	0.095		MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.674		MG/KG_DRYWT	0.132		MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.072	p	MG/KG_DRYWT	0.011	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.097		MG/KG_DRYWT	0.017	J	MG/KG_DRYWT
Decacb - Congener	0.019	pJ	MG/KG_DRYWT	0.007	pJ	MG/KG_DRYWT
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	140.		MG/KG_DRYWT	24.		MG/KG_DRYWT
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	C008-048			C008-049		
Start Date	12/03/2008			12/03/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-C008-048-00-05			S-08D-C008-049-00-05		
Field Qc Code	SA			SA		
Description	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**
2,4'-Dicb	0.741	D	MG/KG_DRYWT	0.450		MG/KG_DRYWT
2,2',5-Tricb	1.967	D	MG/KG_DRYWT	0.910		MG/KG_DRYWT
2,4,4'-Tricb	3.715	D	MG/KG_DRYWT	1.760		MG/KG_DRYWT
2,2',3,5'-Tetracb	1.136	D	MG/KG_DRYWT	0.670		MG/KG_DRYWT
2,2',5,5'-Tetracb	4.556	D	MG/KG_DRYWT	2.160		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.651	D	MG/KG_DRYWT	0.320		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	1.271	D	MG/KG_DRYWT	0.650		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.187		MG/KG_DRYWT	0.060		MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.875	D	MG/KG_DRYWT	0.480		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.130		MG/KG_DRYWT	0.040		MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.646	D	MG/KG_DRYWT	0.380		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	1.046	D	MG/KG_DRYWT	0.660		MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.149		MG/KG_DRYWT	0.050		MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.208		MG/KG_DRYWT	0.070		MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.249		MG/KG_DRYWT	0.090		MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.025	pJ	MG/KG_DRYWT	0.010	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.030		MG/KG_DRYWT	0.010	J	MG/KG_DRYWT
Decacb - Congener	0.028	U	MG/KG_DRYWT	0.020	U	MG/KG_DRYWT
Total MonoCB				0.06		MG/KG_DRYWT
Total DiCB				1.43		MG/KG_DRYWT
Total TriCB				7.76		MG/KG_DRYWT
Total TetraCB				8.48		MG/KG_DRYWT
Total PentaCB				4.93		MG/KG_DRYWT
Total HexaCB				2.68		MG/KG_DRYWT
Total HeptaCB				0.58		MG/KG_DRYWT
Total OctaCB				0.1	J	MG/KG_DRYWT
Total NonaCB				0.01	J	MG/KG_DRYWT
DecaCB - Homologue				0.02	U	MG/KG_DRYWT
Total PCB Congeners (sum CONG x factor)	46.		MG/KG_DRYWT	23.		MG/KG_DRYWT
Total PCB Homologues (sum HOM)				26.		MG/KG_DRYWT

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	C008-055			C008-055		
Start Date	12/03/2008			12/03/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-C008-055-00-05			S-08D-C008-055-00-05-REP		
Field Qc Code	SA			REP		
Description	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**
2,4'-Dicb	3.945	D	MG/KG_DRYWT	3.004	D	MG/KG_DRYWT
2,2',5-Tricb	9.068	D	MG/KG_DRYWT	7.081	D	MG/KG_DRYWT
2,4,4'-Tricb	13.736	D	MG/KG_DRYWT	11.265	D	MG/KG_DRYWT
2,2',3,5'-Tetracb	5.731	D	MG/KG_DRYWT	4.315	D	MG/KG_DRYWT
2,2',5,5'-Tetracb	19.691	D	MG/KG_DRYWT	15.233	D	MG/KG_DRYWT
2,3',4,4'-Tetracb	1.434	D	MG/KG_DRYWT	1.280	D	MG/KG_DRYWT
2,2',4,5,5'-Pentacb	4.125	D	MG/KG_DRYWT	3.553	D	MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.451		MG/KG_DRYWT	0.287		MG/KG_DRYWT
2,3',4,4',5-Pentacb	2.751	D	MG/KG_DRYWT	2.314	D	MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.352		MG/KG_DRYWT	0.234		MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	2.586	D	MG/KG_DRYWT	2.045	D	MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	4.497	D	MG/KG_DRYWT	3.685	D	MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.457		MG/KG_DRYWT	0.304		MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.644		MG/KG_DRYWT	0.428		MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.861		MG/KG_DRYWT	0.577		MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.090	p	MG/KG_DRYWT	0.056	p	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.117	p	MG/KG_DRYWT	0.074		MG/KG_DRYWT
Decacb - Congener	0.023	pJ	MG/KG_DRYWT	0.007	J	MG/KG_DRYWT
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	180.		MG/KG_DRYWT	150.		MG/KG_DRYWT
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	C008-062			FIELDQC		
Start Date	12/03/2008			11/20/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-C008-062-00-05			EB-112008-EB1		
Field Qc Code	SA			EB		
Description	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**
2,4'-Dicb	2.070	D	MG/KG_DRYWT	0.001	U	UG/L
2,2',5-Tricb	4.607	D	MG/KG_DRYWT	0.001	U	UG/L
2,4,4'-Tricb	4.425	D	MG/KG_DRYWT	0.001	U	UG/L
2,2',3,5'-Tetracb	0.750	D	MG/KG_DRYWT	0.001	U	UG/L
2,2',5,5'-Tetracb	6.223	D	MG/KG_DRYWT	0.001	U	UG/L
2,3',4,4'-Tetracb	0.615		MG/KG_DRYWT	0.001	U	UG/L
2,2',4,5,5'-Pentacb	0.903	D	MG/KG_DRYWT	0.001	U	UG/L
2,3,3',4,4'-Pentacb	0.086		MG/KG_DRYWT	0.001	U	UG/L
2,3',4,4',5-Pentacb	0.626	D	MG/KG_DRYWT	0.001	U	UG/L
2,2',3,3',4,4'-Hexacb	0.084		MG/KG_DRYWT	0.001	U	UG/L
2,2',3,4,4',5'-Hexacb	0.432	D	MG/KG_DRYWT	0.001	U	UG/L
2,2',4,4',5,5'-Hexacb	0.931	D	MG/KG_DRYWT	0.001	U	UG/L
2,2',3,3',4,4',5-Heptacb	0.122		MG/KG_DRYWT	0.001	U	UG/L
2,2',3,4,4',5,5'-Heptacb	0.173		MG/KG_DRYWT	0.001	U	UG/L
2,2',3,4',5,5',6-Heptacb	0.248		MG/KG_DRYWT	0.001	U	UG/L
2,2',3,3',4,4',5,6-Octacb	0.024	p	MG/KG_DRYWT	0.001	U	UG/L
2,2',3,3',4,4',5,5',6-Nonacb	0.035		MG/KG_DRYWT	0.001	U	UG/L
Decacb - Congener	0.003	pJ	MG/KG_DRYWT	0.001	U	UG/L
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	58.		MG/KG_DRYWT		U	UG/L
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	NWS-33			NWS-34		
Start Date	11/20/2008			11/20/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-NWS-33-00-05			S-08D-NWS-34-00-05		
Field Qc Code	SA			SA		
Description	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**
2,4'-Dicb	0.003		MG/KG_DRYWT	0.004		MG/KG_DRYWT
2,2',5-Tricb	0.007		MG/KG_DRYWT	0.008		MG/KG_DRYWT
2,4,4'-Tricb	0.011		MG/KG_DRYWT	0.011		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.005		MG/KG_DRYWT	0.004		MG/KG_DRYWT
2,2',5,5'-Tetracb	0.017		MG/KG_DRYWT	0.015		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.004		MG/KG_DRYWT	0.004		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.005		MG/KG_DRYWT	0.006		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.002		MG/KG_DRYWT	0.002		MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.006		MG/KG_DRYWT	0.008		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.001	J	MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.005		MG/KG_DRYWT	0.006		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.006		MG/KG_DRYWT	0.007		MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.001	J	MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.001	J	MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.000	pJ	MG/KG_DRYWT	0.000	J	MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.002	U	MG/KG_DRYWT	0.002	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.000	pJ	MG/KG_DRYWT	0.000	pJ	MG/KG_DRYWT
Decacb - Congener	0.002	U	MG/KG_DRYWT	0.002	U	MG/KG_DRYWT
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	0.19		MG/KG_DRYWT	0.2		MG/KG_DRYWT
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	NWS-35			NWS-36		
Start Date	11/20/2008			11/20/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-NWS-35-00-05			S-08D-NWS-36-00-05		
Field Qc Code	SA			SA		
Description	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**
2,4'-Dicb	0.010		MG/KG_DRYWT	0.004		MG/KG_DRYWT
2,2',5-Tricb	0.017		MG/KG_DRYWT	0.008		MG/KG_DRYWT
2,4,4'-Tricb	0.031		MG/KG_DRYWT	0.010		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.018		MG/KG_DRYWT	0.004		MG/KG_DRYWT
2,2',5,5'-Tetracb	0.040		MG/KG_DRYWT	0.012		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.018		MG/KG_DRYWT	0.003		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.024		MG/KG_DRYWT	0.004		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.006		MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.029		MG/KG_DRYWT	0.006		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.004		MG/KG_DRYWT	0.000	J	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.021		MG/KG_DRYWT	0.004		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.028		MG/KG_DRYWT	0.006		MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.003		MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.005		MG/KG_DRYWT	0.006	p	MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.002		MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.000	pJ	MG/KG_DRYWT	0.000	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.000	pJ	MG/KG_DRYWT	0.000	pJ	MG/KG_DRYWT
Decacb - Congener	0.002	U	MG/KG_DRYWT	0.002	U	MG/KG_DRYWT
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	0.67		MG/KG_DRYWT	0.18		MG/KG_DRYWT
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	NWS-37			NWS-38		
Start Date	11/20/2008			11/20/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-NWS-37-00-05			S-08D-NWS-38-00-05		
Field Qc Code	SA			SA		
Description	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**
2,4'-Dicb	0.002	U	MG/KG_DRYWT	0.000	pJ	MG/KG_DRYWT
2,2',5-Tricb	0.001	J	MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,4,4'-Tricb	0.004		MG/KG_DRYWT	0.004		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.002	J	MG/KG_DRYWT	0.002	J	MG/KG_DRYWT
2,2',5,5'-Tetracb	0.010		MG/KG_DRYWT	0.006		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.004		MG/KG_DRYWT	0.002		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.005		MG/KG_DRYWT	0.002		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.002		MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.006		MG/KG_DRYWT	0.003		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.001	J	MG/KG_DRYWT	0.000	J	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.005		MG/KG_DRYWT	0.003		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.007		MG/KG_DRYWT	0.003		MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.001	J	MG/KG_DRYWT	0.001	pJ	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.002	J	MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.000	J	MG/KG_DRYWT	0.002	U	MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.000	pJ	MG/KG_DRYWT	0.002	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.000	pJ	MG/KG_DRYWT	0.000	pJ	MG/KG_DRYWT
Decacb - Congener	0.002	U	MG/KG_DRYWT	0.002	U	MG/KG_DRYWT
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	0.13		MG/KG_DRYWT	0.076		MG/KG_DRYWT
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	NWS-39		
Start Date			11/20/2008
Fraction	TOTAL		
Samp Id	S-08D-NWS-39-00-05		
Field Qc Code	SA		
Description	**Result**	**Final Qual**	**Unit**
2,4'-Dicb	0.002	U	MG/KG_DRYWT
2,2',5-Tricb	0.001	J	MG/KG_DRYWT
2,4,4'-Tricb	0.006		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.004		MG/KG_DRYWT
2,2',5,5'-Tetracb	0.008		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.005		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.005		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.002	J	MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.006		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.001	J	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.005		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.006		MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.001	J	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.003	p	MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.000	J	MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.002	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.000	pJ	MG/KG_DRYWT
Decacb - Congener	0.002	U	MG/KG_DRYWT
Total MonoCB			
Total DiCB			
Total TriCB			
Total TetraCB			
Total PentaCB			
Total HexaCB			
Total HeptaCB			
Total OctaCB			
Total NonaCB			
DecaCB - Homologue			
Total PCB Congeners (sum CONG x factor)	0.14		MG/KG_DRYWT
Total PCB Homologues (sum HOM)			

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PCB Congeners – Sediment QA/QC Summary
Batch 09-0014

PROJECT: USACE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment
SAMPLE CUSTODY: Sediment samples were collected between 12/3/2008 – 12/5/2008 and hand delivered to the Battelle Duxbury Chemistry Sample Custodian on 1/14/2009. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. They were stored in the walk-in freezer until preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (mg/kg dry wt)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	≤30% RPD (analytes must be > 5x MDL to be used for data quality assessment)	RL: 0.0013

METHOD: Sediment samples were extracted for PCB congeners following modified EPA Method 3545. Sediments were weighed, air-dried overnight, spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was concentrated, processed through activated copper, florisil cleanup column, and concentrated. Next, the extract was concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Sediments of this batch were extracted within 1 year of sample holding time for frozen sediments. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
09-0014	12/03/2008 – 12/05/2008	1/27/2009	2/11/2009 – 2/25/2009

09-0014

Sample ID	Battelle ID
S-08D-C008-30W-00-05	Q6149
S-08D-C008-30E-00-05	Q6150
S-08D-NWS-35-00-05	Q6151
S-08D-NWS-34-00-05	Q6152
S-08D-NWS-36-00-05	Q6153
S-08D-NWS-33-00-05	Q6154
S-08D-NWS-37-00-05	Q6155
S-08D-NWS-38-00-05	Q6156
S-08D-NWS-39-00-05	Q6157
S-08D-C008-038-00-05	Q6158
S-08D-C008-028-00-05	Q6159

PCB Congeners – Sediment QA/QC Summary
Batch 09-0014

S-08D-C008-016-00-05	Q6162
S-08D-C008-039-00-05	Q6163
S-08D-C008-040-00-05	Q6164
S-08D-C008-062-00-05	Q6165
S-08D-C008-048-00-05	Q6166
S-08D-C008-033-00-05	Q6167
S-08D-C008-055-00-05	Q6168
S-08D-C008-055-00-05-REP	Q6169
S-08D-C008-010-00-05	Q6170

BLANK: A procedural blank (PB) was prepared with each analytical batch. Blanks were analyzed to ensure the sample extraction and analysis methods were free of contamination.

09-0014 – No target analytes were detected in the procedural blank.

LABORATORY CONTROL SAMPLE: A laboratory control sample (LCS) was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy.

09-0014 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

MATRIX SPIKE/MATRIX SPIKE DUPLICATE: A pair of matrix spike (MS) and matrix spike duplicate samples (MSD) was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. The RPD between percent recoveries was calculated to measure the data quality in terms of precision.

09-0014 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%). All RPDs met the criteria of <30%.

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

09-0014 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

CALIBRATIONS: The GC/ECD was calibrated with a 6 level curve, with a correlation coefficient of >0.995. Each batch of samples analyzed is bracketed by continuing calibration verification (CCV) sample, run at a frequency of minimally every 24 hours. The %D between the initial calibration (ICAL) and the continuing calibration samples should be <20% for each compound, <15% on average. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%.

09-0014 – All calibration criteria were met.

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Procedural Blank	
Battelle ID	BM757PB-P	
Sample Type	PB	
Collection Date	01/27/09	
Extraction Date	01/27/09	
Analysis Date	02/23/09	
Analytical Instrument	ECD	
% Moisture	NA	
% Lipid	NA	
Matrix	SEDIMENT	
Sample Size	10.79	
Size Unit-Basis	G_DRY	
Units	MG/KG_DRY	
Cl2(8)	0.0013	U
Cl3(18)	0.0013	U
Cl3(28)	0.0013	U
Cl4(44)	0.0013	U
Cl4(52)	0.0013	U
Cl4(66)	0.0013	U
Cl5(101)	0.0013	U
Cl5(105)	0.0013	U
Cl5(118)	0.0013	U
Cl6(128)	0.0013	U
Cl6(138)	0.0013	U
Cl6(153)	0.0013	U
Cl7(170)	0.0013	U
Cl7(180)	0.0013	U
Cl7(187)	0.0013	U
Cl8(195)	0.0013	U
Cl9(206)	0.0013	U
Cl10(209)	0.0013	U

Surrogate Recoveries (%)

Cl3(34)	71
Cl6(152)	84

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Laboratory Control Sample			
Battelle ID	BM758LCS-P			
Sample Type	LCS			
Collection Date	01/27/09			
Extraction Date	01/27/09			
Analysis Date	02/11/09			
Analytical Instrument	ECD			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	10.84			
Size Unit-Basis	G_DRY			
Units	MG/KG_DRY	Target	% Recovery	Qualifier
Cl2(8)	0.2789	0.37	75	
Cl3(18)	0.2682	0.37	72	
Cl3(28)	0.2494	0.37	68	
Cl4(44)	0.2613	0.37	71	
Cl4(52)	0.2595	0.37	70	
Cl4(66)	0.2629	0.37	71	
Cl5(101)	0.2583	0.37	70	
Cl5(105)	0.2762	0.37	75	
Cl5(118)	0.2656	0.37	72	
Cl6(128)	0.2567	0.37	69	
Cl6(138)	0.2546	0.37	69	
Cl6(153)	0.2744	0.37	74	
Cl7(170)	0.2788	0.37	75	
Cl7(180)	0.2696	0.37	73	
Cl7(187)	0.2609	0.37	70	
Cl8(195)	0.2713	0.37	73	
Cl9(206)	0.2783	0.37	75	
Cl10(209)	0.2835	0.37	77	

Surrogate Recoveries (%)

Cl3(34)	75
Cl6(152)	74

Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	S-08D-NWS-33-00-05		S-08D-NWS-33-00-05			
Battelle ID	Q6154-P		Q6154MS-P			
Sample Type	SA		MS			
Collection Date	11/20/08		11/20/2008			
Extraction Date	01/27/09		1/27/2009			
Analysis Date	02/24/09		2/12/2009			
Analytical Instrument	ECD		ECD			
% Moisture	17.9		17.14			
% Lipid	NA		NA			
Matrix	SEDIMENT		SEDIMENT			
Sample Size	8.58		8.68			
Size Unit-Basis	G_DRY		G_DRY			
Units	MG/KG_DRY		MG/KG_DRY	Target	% Recovery	Qualifier
Cl2(8)	0.0029		0.4383	0.46	94	
Cl3(18)	0.0067		0.4346	0.46	93	
Cl3(28)	0.011		0.4139	0.46	87	
Cl4(44)	0.005		0.417	0.46	89	
Cl4(52)	0.0165		0.4329	0.46	90	
Cl4(66)	0.0037		0.4062	0.46	87	
Cl5(101)	0.0053		0.4114	0.46	88	
Cl5(105)	0.0021		0.4669	0.46	101	
Cl5(118)	0.0055		0.4243	0.46	91	
Cl6(128)	0.0009	J	0.408	0.46	88	
Cl6(138)	0.0047		0.4196	0.46	90	
Cl6(153)	0.0056		0.4451	0.46	95	
Cl7(170)	0.0006	J	0.4439	0.46	96	
Cl7(180)	0.0008	J	0.4316	0.46	93	
Cl7(187)	0.0003	pJ	0.4194	0.46	91	
Cl8(195)	0.0016	U	0.4317	0.46	93	
Cl9(206)	0.0002	pJ	0.4363	0.46	94	
Cl10(209)	0.0016	U	0.4397	0.46	95	
Surrogate Recoveries (%)						
Cl3(34)	69		90			
Cl6(152)	83		92			

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	S-08D-NWS-33-00-05					
Battelle ID	Q6154MSD-P					
Sample Type	MSD					
Collection Date	11/20/2008					
Extraction Date	1/27/2009					
Analysis Date	2/12/2009					
Analytical Instrument	ECD					
% Moisture	15.38					
% Lipid	NA					
Matrix	SEDIMENT					
Sample Size	8.47					
Size Unit-Basis	G_DRY					
Units	MG/KG_DRY	Target	% Recovery	Qualifier	RPD (%)	Qualifier
Cl2(8)	0.4117	0.47	86		8.9	
Cl3(18)	0.4058	0.47	84		10.2	
Cl3(28)	0.3613	0.47	74		16.1	
Cl4(44)	0.393	0.47	82		8.2	
Cl4(52)	0.4031	0.47	82		9.3	
Cl4(66)	0.3899	0.47	82		5.9	
Cl5(101)	0.3848	0.47	80		9.5	
Cl5(105)	0.4768	0.47	100		1.0	
Cl5(118)	0.3986	0.47	83		9.2	
Cl6(128)	0.3838	0.48	81		8.3	
Cl6(138)	0.3895	0.47	81		10.5	
Cl6(153)	0.4117	0.47	86		9.9	
Cl7(170)	0.4215	0.47	89		7.6	
Cl7(180)	0.4119	0.47	87		6.7	
Cl7(187)	0.3963	0.47	84		8.0	
Cl8(195)	0.4102	0.47	87		6.7	
Cl9(206)	0.418	0.47	88		6.6	
Cl10(209)	0.419	0.47	89		6.5	

Surrogate Recoveries (%)

Cl3(34)	83
Cl6(152)	83

PCB Congeners – Sediment QA/QC Summary
Batch 09-0015

PROJECT: USACE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment
SAMPLE CUSTODY: Sediment samples were collected between 12/3/2008 – 12/5/2008 and hand delivered to the Battelle Duxbury Chemistry Sample Custodian on 1/14/2009. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. They were stored in the walk-in freezer until preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (mg/kg dry wt)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	≤30% RPD (analytes must be > 5x MDL to be used for data quality assessment)	RL: 0.03

METHOD: Sediment samples were extracted for PCB congeners following modified EPA Method 3545. Sediments were air-dried overnight, and approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was concentrated, processed through activated copper, florisil cleanup column, and concentrated. Next, the extract was concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Sediments of this batch were extracted within 1 year of sample holding time for frozen sediments. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
09-0015	12/03/2008 – 12/05/2008	1/29/2009	2/13/2009 – 2/15/2009

09-0015

Sample ID	Battelle ID
S-08D-C008-049-00-05	Q6160
S-08D-C008-023-00-05	Q6161
S-08C-X33-00-11	Q6171
S-08C-T38-00-10	Q6172
S-08C-CC27-00-09	Q6173
S-08C-T22-00-04	Q6174
S-08C-D32-00-05	Q6175
S-08C-D25-00-07	Q6176
S-08C-bb28-00-10	Q6177

PCB Congeners – Sediment QA/QC Summary
Batch 09-0015

BLANK: A procedural blank (PB) was prepared with each analytical batch. Blanks were analyzed to ensure the sample extraction and analysis methods were free of contamination.

09-0015 – No target analytes were detected in the procedural blank.

LABORATORY CONTROL SAMPLE: A laboratory control sample (LCS) was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy.

09-0015 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

MATRIX SPIKE/MATRIX SPIKE DUPLICATE: A pair of matrix spike (MS) and matrix spike duplicate samples (MSD) was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. The RPD between percent recoveries was calculated to measure the data quality in terms of precision.

09-0015 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%). All RPDs met the criteria of <30%.

REPLICATES: Laboratory duplicate analysis was performed with this analytical batch. RPDs between duplicate analyses were calculated to measure data quality in terms of precision.

09-0015 – No exceedences noted. All RPDs between duplicate samples met the criteria of <30%.

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

09-0015 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

CALIBRATIONS: The GC/ECD was calibrated with a 6 level curve, with a correlation coefficient of >0.995. Each batch of samples analyzed is bracketed by continuing calibration verification (CCV) sample, run at a frequency of minimally every 24 hours. The %D between the initial calibration (ICAL) and the continuing calibration samples should be <20% for each compound, <15% on average. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%.

09-0015 – All calibration criteria were met.

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Procedural Blank	
Battelle ID	BM759PB-P	
Sample Type	PB	
Collection Date	01/29/09	
Extraction Date	01/29/09	
Analysis Date	02/13/09	
Analytical Instrument	ECD	
% Moisture	54.07	
% Lipid	NA	
Matrix	SEDIMENT	
Sample Size	4.67	
Size Unit-Basis	G_DRY	
Units	MG/KG_DRY	
Cl2(8)	0.03	U
Cl3(18)	0.03	U
Cl3(28)	0.03	U
Cl4(44)	0.03	U
Cl4(52)	0.03	U
Cl4(66)	0.03	U
Cl5(101)	0.03	U
Cl5(105)	0.03	U
Cl5(118)	0.03	U
Cl6(128)	0.03	U
Cl6(138)	0.03	U
Cl6(153)	0.03	U
Cl7(170)	0.03	U
Cl7(180)	0.03	U
Cl7(187)	0.03	U
Cl8(195)	0.03	U
Cl9(206)	0.03	U
Cl10(209)	0.03	U
Surrogate Recoveries (%)		
Cl3(34)	69	
Cl6(152)	73	

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	060208-03: Sand, White Quartz, -50+70			
Battelle ID	BM761LCS-P			
Sample Type	LCS			
Collection Date	01/29/09			
Extraction Date	01/29/09			
Analysis Date	02/14/09			
Analytical Instrument	ECD			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	10.51			
Size Unit-Basis	G_DRY			
Units	MG/KG_DRY	Target	% Recovery	Qualifier
Cl2(8)	0.31	0.38	81	
Cl3(18)	0.3	0.38	79	
Cl3(28)	0.29	0.38	76	
Cl4(44)	0.29	0.38	76	
Cl4(52)	0.28	0.38	74	
Cl4(66)	0.27	0.38	71	
Cl5(101)	0.28	0.38	73	
Cl5(105)	0.32	0.38	84	
Cl5(118)	0.29	0.38	76	
Cl6(128)	0.29	0.38	76	
Cl6(138)	0.28	0.38	73	
Cl6(153)	0.31	0.38	81	
Cl7(170)	0.3	0.38	78	
Cl7(180)	0.3	0.38	79	
Cl7(187)	0.29	0.38	76	
Cl8(195)	0.3	0.38	79	
Cl9(206)	0.31	0.38	81	
Cl10(209)	0.32	0.38	84	

Surrogate Recoveries (%)

Cl3(34)	76
Cl6(152)	80

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	S-08C-T38-00-10		S-08C-T38-00-10				
Battelle ID	Q6172-P		Q6172MS-P				
Sample Type	SA		MS				
Collection Date	12/05/08		12/5/2008				
Extraction Date	01/29/09		1/29/2009				
Analysis Date	02/14/09		2/14/2009				
Analytical Instrument	ECD		ECD				
% Moisture	39.07		39.52				
% Lipid	NA		NA				
Matrix	SEDIMENT		SEDIMENT				
Sample Size	6.25		6.14				
Size Unit-Basis	G_DRY		G_DRY				
Units	MG/KG_DRY		MG/KG_DRY			Target	% Recovery	Qualifier
Cl2(8)	0.14	p	0.67			0.65	81	
Cl3(18)	0.28		0.8	E		0.65	80	
Cl3(28)	0.61		1.15	E		0.65	83	
Cl4(44)	0.36		0.89	E		0.65	81	
Cl4(52)	0.6		1.13	E		0.65	81	
Cl4(66)	0.39		1.1	E		0.65	109	
Cl5(101)	0.58		1.12	E		0.65	83	
Cl5(105)	0.11		0.66			0.65	84	
Cl5(118)	0.55		1.1	E		0.65	84	
Cl6(128)	0.07		0.57			0.66	76	
Cl6(138)	0.34		0.87	E		0.65	81	
Cl6(153)	0.46		1	E		0.65	83	
Cl7(170)	0.04		0.57			0.65	81	
Cl7(180)	0.06		0.59			0.65	81	
Cl7(187)	0.04		0.55			0.65	78	
Cl8(195)	0.02	U	0.54			0.65	83	
Cl9(206)	0.01	pJ	0.56			0.65	84	
Cl10(209)	0.02	U	0.56			0.65	86	
Surrogate Recoveries (%)								
Cl3(34)	71		77					
Cl6(152)	77		82					

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	S-08C-T38-00-10						
Battelle ID	Q6172MSD-P						
Sample Type	MSD						
Collection Date	12/5/2008						
Extraction Date	1/29/2009						
Analysis Date	2/14/2009						
Analytical Instrument	ECD						
% Moisture	39.01						
% Lipid	NA						
Matrix	SEDIMENT						
Sample Size	6.51						
Size Unit-Basis	G_DRY						
Units	MG/KG_DRY		Target	% Recovery	Qualifier	RPD (%)	Qualifier
Cl2(8)	0.65		0.62	83		2.4	
Cl3(18)	0.77	E	0.62	80		0.0	
Cl3(28)	1.17	E	0.62	91		9.2	
Cl4(44)	0.85	E	0.62	80		1.2	
Cl4(52)	1.07	E	0.61	76		6.4	
Cl4(66)	0.9	E	0.62	83		27.1	
Cl5(101)	1.06	E	0.62	78		6.2	
Cl5(105)	0.61		0.62	81		3.6	
Cl5(118)	1.05	E	0.62	81		3.6	
Cl6(128)	0.53		0.62	74		2.7	
Cl6(138)	0.81	E	0.62	76		6.4	
Cl6(153)	0.94	E	0.62	78		6.2	
Cl7(170)	0.53		0.62	79		2.5	
Cl7(180)	0.55		0.62	79		2.5	
Cl7(187)	0.5		0.62	75		3.9	
Cl8(195)	0.5		0.62	81		2.4	
Cl9(206)	0.52		0.62	83		1.2	
Cl10(209)	0.53		0.62	86		0.0	

Surrogate Recoveries (%)

Cl3(34)	82
Cl6(152)	78

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	S-08C-bb28-00-10	S-08C-bb28-00-10			
Battelle ID	Q6177-P	Q6177DUP-P			
Sample Type	SA	QADU			
Collection Date	12/05/08	12/5/2008			
Extraction Date	01/29/09	1/29/2009			
Analysis Date	02/15/09	2/15/2009			
Analytical Instrument	ECD	ECD			
% Moisture	50.17	50.8			
% Lipid	NA	NA			
Matrix	SEDIMENT	SEDIMENT			
Sample Size	5.15	5			
Size Unit-Basis	G_DRY	G_DRY			
Units	MG/KG_DRY	MG/KG_DRY		RPD	Qualifier
Cl2(8)	0.14	0.17		19.4	
Cl3(18)	0.27	0.3		10.5	
Cl3(28)	0.65	0.77		16.9	
Cl4(44)	0.35	0.37		5.6	
Cl4(52)	0.67	0.71		5.8	
Cl4(66)	0.26	0.31		17.5	
Cl5(101)	0.36	0.41		13.0	
Cl5(105)	0.08	0.09		11.8	
Cl5(118)	0.36	0.35		2.8	
Cl6(128)	0.05	0.05		0.0	
Cl6(138)	0.24	0.23		4.3	
Cl6(153)	0.33	0.31		6.3	
Cl7(170)	0.04	0.03		28.6	
Cl7(180)	0.04	0.04		0.0	
Cl7(187)	0.03	0.03		0.0	
Cl8(195)	0.02 U	0.03	U	NA	
Cl9(206)	0.02 U	0.01	pJ	NA	
Cl10(209)	0.02 U	0.03	U	NA	
Surrogate Recoveries (%)					
Cl3(34)	84	92			
Cl6(152)	85	80			

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PCB Homologues – SEDIMENT QA/QC SUMMARY
Batch 09-0015

PROJECT: New Bedford Harbor Water Quality Monitoring
PARAMETER: PCB Homologues
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment
SAMPLE CUSTODY: Sediment samples were collected between 12/3/2008 – 12/5/2008 and hand delivered to the Battelle Duxbury Chemistry Sample Custodian on 1/14/2009. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. They were stored in the walk-in freezer until preparation could begin. All sediment samples were extracted for PCB congener analyses by GC/ECD. 7.5% percent of the sediment samples were chosen for PCB homologue analysis. From this batch samples S-08D-C008-049-00-05, S-08D-C008-023-00-05, S-08C-X33-00-11, and S-08C-bb28-00-10 were analyzed for PCB homologues.

	Reference Method	Method Blank	Surrogate Recovery	LCS/MS/MSD Recovery	Sample Replicate Relative Precision	Reporting Limits (mg/Kg dry wt)
PCB Homologues	1668A & 8270D	< ss-RL	40-120%	40-120% MS spike must be >5 x background	<30% RPD MS spike must be >5 x background	0.03 – 0.84

METHOD: Sediment samples were extracted for PCBs following modified EPA Method 3545. Sediments were air-dried overnight, and approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was concentrated, processed through activated copper, florisil cleanup column, and concentrated. Extracts were then fortified with internal standards (IS). Extracts designated for PCB homologue analysis were analyzed using gas chromatography/mass spectrometry (GC/MS), following Battelle SOP 5-315 which is based on key components of EPA Methods 1668A and 8270D. Sample data were quantified by the method of internal standards, using the IS compounds.

HOLDING TIMES: These frozen sediment samples were extracted within 1-year holding time. Extracts were analyzed within 40 days of extraction. All holding times were met.

Batch	Collection Date	Extraction Date	Analysis Date
09-0015	12/03/08-12/05/08	1/29/09	2/07/09-2/08/09

09-0015

Sample ID	**Battelle ID**
S-08D-C008-049-00-05	Q6160
S-08D-C008-023-00-05	Q6161
S-08C-X33-00-11	Q6171
S-08C-bb28-00-10	Q6177

PCB Homologues – SEDIMENT QA/QC SUMMARY
Batch 09-0015

BLANK: A procedural blank (PB) was prepared with the analytical batch. Blanks are analyzed to ensure the sample extraction and analysis methods were free of contamination.

09-0015 – No exceedences noted. No target analytes were detected in the procedural blank at a concentration greater than the sample-specific reporting limit.

LABORATORY CONTROL SAMPLE: A laboratory control sample (LCS) was prepared with the analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy.

09-0015 – No exceedences noted. All recoveries were within the laboratory control limits (40%-120%).

MATRIX SPIKE/MATRIX SPIKE DUPLICATE: A pair of matrix spike (MS) and matrix spike duplicate samples (MSD) was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. The RPD between percent recoveries was calculated to measure the data quality in terms of precision.

09-0015 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%). All RPDs met the criteria of <30%.

REPLICATES: Laboratory duplicate analysis was performed with this analytical batch. RPDs between duplicate analyses were calculated to measure data quality in terms of precision.

09-0015 – No exceedences noted. All RPDs between duplicate samples met the criteria of <30%.

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

09-0015 – No exceedences noted. All recoveries were within the laboratory control limits (40%-120%).

CALIBRATION: The GC/MS is calibrated with a minimum of a 6-point curve. The co-efficient of determination must be > 0.995 for each target analyte in the initial calibration (ICAL). Each batch of samples analyzed is bracketed by a continuing calibration verification (CCV) sample, run at a frequency of every 12 hours (minimally). This percent difference (PD) for the CCV should be <25% for individual analytes. Additionally an instrument calibration check (ICC) sample was run with the initial calibration. The PD for the ICC should be < 25% for each analyte.

09-0015 – No initial calibration exceedences noted.
No CCV exceedence.
No ICC exceedence.

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Procedural Blank	
Battelle ID	BM759PB-P	
Sample Type	PB	
Collection Date	01/29/09	
Extraction Date	01/29/09	
Analysis Date	02/07/09	
Analytical Instrument	MS	
% Moisture	54.07	
% Lipid	NA	
Matrix	SEDIMENT	
Sample Size	4.67	
Size Unit-Basis	G_DRY	
Units	MG/KG_DRY	
LOC 1	0.06	U
LOC 2	0.3	U
LOC 3	0.45	U
LOC 4	0.84	U
LOC 5	0.69	U
LOC 6	0.78	U
LOC 7	0.6	U
LOC 8	0.3	U
LOC 9	0.09	U
LOC 10	0.03	U

Surrogate Recoveries (%)

Cl3(34)	72
Cl6(152)	79

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	060208-03: Sand, White Quartz, -50+70			
Battelle ID	BM760LCS-P			
Sample Type	LCS			
Collection Date	01/29/09			
Extraction Date	01/29/09			
Analysis Date	02/07/09			
Analytical Instrument	MS			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	10.24			
Size Unit-Basis	G_DRY			
Units	MG/KG_DRY	Target	% Recovery	Qualifier
LOC 1	0.1	0.10	100	
LOC 2	0.17	0.15	115	
LOC 3	0.26	0.25	104	
LOC 4	0.47	0.45	105	
LOC 5	0.58	0.55	106	
LOC 6	0.57	0.55	104	
LOC 7	0.35	0.33	105	
LOC 8	0.28	0.30	94	
LOC 9	0.09	0.10	90	
LOC 10	0.04	0.05	79	

Surrogate Recoveries (%)

Cl3(34)	88
Cl6(152)	98

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	S-08C-X33-00-11	S-08C-X33-00-11			
Battelle ID	Q6171-P	Q6171MS-P			
Sample Type	SA	MS			
Collection Date	12/05/08	12/5/2008			
Extraction Date	01/29/09	1/29/2009			
Analysis Date	02/07/09	2/7/2009			
Analytical Instrument	MS	MS			
% Moisture	60.51	60.55			
% Lipid	NA	NA			
Matrix	SEDIMENT	SEDIMENT			
Sample Size	4.01	4.06			
Size Unit-Basis	G_DRY	G_DRY			
Units	MG/KG_DRY	MG/KG_DRY	Target	% Recovery	Qualifier
LOC 1	0.05 J	0.24	0.25	76	
LOC 2	1.83	2.16	0.37	89	
LOC 3	10.79	11.57	0.63	124	
LOC 4	14.81	15.85	1.13	92	
LOC 5	13.52	14.91	1.38	101	
LOC 6	6.31	7.57	1.38	92	
LOC 7	1.28	2.04	0.84	90	
LOC 8	0.22 J	0.91	0.75	92	
LOC 9	0.04 J	0.24	0.25	80	
LOC 10	0.01 J	0.1	0.13	70	
Surrogate Recoveries (%)					
Cl3(34)	84	83			
Cl6(152)	81	79			

Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	S-08C-X33-00-11					
Battelle ID	Q6171MSD-P					
Sample Type	MSD					
Collection Date	12/5/2008					
Extraction Date	1/29/2009					
Analysis Date	2/7/2009					
Analytical Instrument	MS					
% Moisture	60.44					
% Lipid	NA					
Matrix	SEDIMENT					
Sample Size	3.97					
Size Unit-Basis	G_DRY					
Units	MG/KG_DRY	Target	% Recovery	Qualifier	RPD (%)	Qualifier
LOC 1	0.25	0.26	78		2.6	
LOC 2	3.02	0.38	313		111.4	
LOC 3	17.73	0.64	1080		158.8	
LOC 4	24.33	1.15	827		160.0	
LOC 5	22.62	1.41	644		145.8	
LOC 6	10.97	1.41	331		113.0	
LOC 7	2.65	0.86	159		55.4	
LOC 8	1.1	0.77	115		22.2	
LOC 9	0.27	0.26	90		11.8	
LOC 10	0.12	0.13	84		18.2	

Surrogate Recoveries (%)

Cl3(34)	88
Cl6(152)	81

Battelle
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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	S-08C-bb28-00-10		S-08C-bb28-00-10			
Battelle ID	Q6177-P		Q6177DUP-P			
Sample Type	SA		QADU			
Collection Date	12/05/08		12/5/2008			
Extraction Date	01/29/09		1/29/2009			
Analysis Date	02/08/09		2/8/2009			
Analytical Instrument	MS		MS			
% Moisture	50.17		50.8			
% Lipid	NA		NA			
Matrix	SEDIMENT		SEDIMENT			
Sample Size	5.15		5			
Size Unit-Basis	G_DRY		G_DRY			
Units	MG/KG_DRY		MG/KG_DRY		RPD	Qualifier
LOC 1	0.04	U	0.06	U	NA	
LOC 2	0.59		0.56		5.2	
LOC 3	2.88		2.97		3.1	
LOC 4	3.6		3.9		8.0	
LOC 5	2.58		2.64		2.3	
LOC 6	1.43		1.46		2.1	
LOC 7	0.3	J	0.3	J	NA	
LOC 8	0.01	J	0.01	J	NA	
LOC 9	0.06	U	0.09	U	NA	
LOC 10	0.02	U	0.03	U	NA	
Surrogate Recoveries (%)						
Cl3(34)	82		82			
Cl6(152)	76		76			

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PCB Congeners – Water QA/QC Summary
Batch 08-0314

PROJECT: USACE-NAE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Equipment Blank
SAMPLE CUSTODY: The equipment blank sample was collected on 11/20/2008 and hand delivered to the Chemistry Department by the Battelle Field Group. No custody issues were noted. The sample was logged into LIMS and received unique Battelle ID. The sample was stored at 4°C in an access controlled walk-in refrigerator until sample preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (ug/L)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	<30% RPD (analytes must be > 5x MDL to be used for data quality assessment)	RL: ~ 0.0013

METHOD: The equipment blank was extracted for PCB Congeners following modified EPA Method 3510C. Approximately 1 liter of water was spiked with surrogates and extracted three times with dichloromethane using separatory funnel techniques. Combined extract was dried over anhydrous sodium sulfate, concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Water samples were extracted within 7 days of sample collection. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
08-0314	11/20/2008	11/24/2008	12/06/2008

PCB Congeners – Water QA/QC Summary
Batch 08-0314

LIST OF SAMPLES:

08-0314

Sample ID	**Battelle ID**
EB-112008-EB1	Q5585

BLANK: A procedural blank (PB) was prepared with each analytical batch. Blanks were analyzed to ensure the sample extraction and analysis methods were free of contamination.

08-0314 – No exceedences noted. No target PCBs were detected in the PB.

LABORATORY CONTROL SAMPLE: A laboratory control sample (LCS) was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy.

08-0314 – All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

08-0314 – No exceedence noted**.** All percent recoveries were within the laboratory control limit (40%-120%).

CALIBRATIONS: The GC/ECD was calibrated with a minimum 6 level curve, with a linear correlation coefficient of >0.995. Each batch of samples analyzed is bracketed by continuing calibration verification (CCV) sample, run at a frequency of minimally every 24 hours. The %D between the initial calibration (ICAL) and the continuing calibration samples should be <20% for each compound. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%.

08-0314 – All calibration criteria were met.

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Project Client: USACE - North Atlantic Division
Project Name: NBH Equipment Blank Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Procedural Blank	
Battelle ID	BM623PB-P	
Sample Type	PB	
Collection Date	11/24/08	
Extraction Date	11/24/08	
Analysis Date	12/06/08	
Analytical Instrument	ECD	
% Moisture	NA	
% Lipid	NA	
Matrix	WATER	
Sample Size	1.00	
Size Unit-Basis	L_LIQUID	
Units	UG/L_LIQUID	
Cl2(8)	0.0012	U
Cl3(18)	0.0013	U
Cl3(28)	0.0013	U
Cl4(44)	0.0012	U
Cl4(52)	0.0013	U
Cl4(66)	0.0013	U
Cl5(101)	0.0012	U
Cl5(105)	0.0013	U
Cl5(118)	0.0013	U
Cl6(128)	0.0013	U
Cl6(138)	0.0013	U
Cl6(153)	0.0012	U
Cl7(170)	0.0013	U
Cl7(180)	0.0013	U
Cl7(187)	0.0012	U
Cl8(195)	0.0013	U
Cl9(206)	0.0013	U
Cl10(209)	0.0013	U

Surrogate Recoveries (%)

Cl3(34)	86
Cl6(152)	88

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The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Equipment Blank Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Laboratory Control Sample				
Battelle ID	BM624LCS-P				
Sample Type	LCS				
Collection Date	11/24/08				
Extraction Date	11/24/08				
Analysis Date	12/06/08				
Analytical Instrument	ECD				
% Moisture	NA				
% Lipid	NA				
Matrix	WATER				
Sample Size	1.00				
Size Unit-Basis	L_LIQUID				
Units	UG/L_LIQUID		Target	% Recovery	Qualifier
Cl2(8)	0.037		0.05	74	
Cl3(18)	0.0385	E	0.05	77	
Cl3(28)	0.0363		0.05	73	
Cl4(44)	0.0422	E	0.05	84	
Cl4(52)	0.0415	E	0.05	83	
Cl4(66)	0.042	E	0.05	84	
Cl5(101)	0.0416	E	0.05	83	
Cl5(105)	0.042	E	0.05	84	
Cl5(118)	0.0417	E	0.05	83	
Cl6(128)	0.0409	E	0.05	81	
Cl6(138)	0.0413	E	0.05	82	
Cl6(153)	0.0424	E	0.05	85	
Cl7(170)	0.0425	E	0.05	85	
Cl7(180)	0.0415	E	0.05	83	
Cl7(187)	0.0418	E	0.05	83	
Cl8(195)	0.0406	E	0.05	81	
Cl9(206)	0.0402	E	0.05	80	
Cl10(209)	0.0403	E	0.05	81	

Surrogate Recoveries (%)

Cl3(34)	82
Cl6(152)	84

Qualifiers:

B	Analyte concentration found in the sample at < 5 x the level detected in the procedural blank
D	Dilution run. Initial run outside linear range of instrument
E	Estimate, result is greater than the highest concentration level in the calibration
H	Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract
J	Analyte detected below the sample specific reporting limit
ME	Significant Matrix Interference - Estimated value
N	Quality Control value is outside the accuracy or precision data quality objective (DQO)
NA	Not applicable
T	Holding time exceeded
U	Analyte not detected at 3:1 signal:noise ratio. Reporting limit is reported.
p	The relative percent difference (RPD) between the values obtained from the dual columns is >40%.

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ShpNo SHP-090121-01

Battelle Project No:

Sample Receipt Form

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:** USACE - NED

Received by: Thorn, Jonathan **Date/Time Received:** Friday, January 16, 2009 12:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered **Tracking Number:** Not Recorded

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal Condition	Container Condition	Temp C	Smps
1 of 1	No Container		None	Not Applicable	Not Applicable	Ambient	29

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): Ambient Temperature Blank used ☐ Yes ☑ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☑ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☑ Yes ☐ No ☐ Unknown /Lot No.: Unknown

Storage Location: Chem North: Freezer - F0002 (Walk-in) **BDO IDs Assigned:** Q6149 - Q6177

Samples logged in by: Thorn, Jonathan **Date/Time:** 01/16/2009 12:00 AM

Approved By: **Approved On:**

Authorized By: **Authorized On:**

Battelle
The Business of Innovation

ShpNo SHP-090121-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ Authorized ☐

Project Number: G606422 **Client:** USACE - NED

Received by: Thorn, Jonathan **Date/Time Received:** Friday, January 16, 2009 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q6149	S-08D-C008-30W-00-05	11/20/08 0:00	01/21/09 8:33	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6150	S-08D-C008-30E-00-05	11/20/08 0:00	01/21/09 8:40	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6151	S-08D-NWS-35-00-05	11/20/08 0:00	01/21/09 9:00	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6152	S-08D-NWS-34-00-05	11/20/08 0:00	01/21/09 9:03	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6153	S-08D-NWS-36-00-05	11/20/08 0:00	01/21/09 9:03	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6154	S-08D-NWS-33-00-05	11/20/08 0:00	01/21/09 9:03	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6155	S-08D-NWS-37-00-05	11/20/08 0:00	01/21/09 9:04	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6156	S-08D-NWS-38-00-05	11/20/08 0:00	01/21/09 9:04	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6157	S-08D-NWS-39-00-05	11/20/08 0:00	01/21/09 9:06	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6158	S-08D-C008-038-00-05	12/03/08 0:00	01/21/09 9:07	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6159	S-08D-C008-028-00-05	12/03/08 0:00	01/21/09 9:08	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6160	S-08D-C008-049-00-05	12/03/08 0:00	01/21/09 9:09	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6161	S-08D-C008-023-00-05	12/03/08 0:00	01/21/09 9:10	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6162	S-08D-C008-016-00-05	12/03/08 0:00	01/21/09 9:12	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6163	S-08D-C008-039-00-05	12/03/08 0:00	01/21/09 9:12	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6164	S-08D-C008-040-00-05	12/03/08 0:00	01/21/09 9:13	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6165	S-08D-C008-062-00-05	12/03/08 0:00	01/21/09 9:13	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6166	S-08D-C008-048-00-05	12/03/08 0:00	01/21/09 9:14	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6167	S-08D-C008-033-00-05	12/03/08 0:00	01/21/09 9:14	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6168	S-08D-C008-055-00-05	12/03/08 0:00	01/21/09 9:15	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6169	S-08D-C008-055-00-05-REP	12/03/08 0:00	01/21/09 9:15	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6170	S-08D-C008-010-00-05	12/03/08 0:00	01/21/09 9:16	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6171	S-08C-X33-00-11	12/05/08 0:00	01/21/09 9:16	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6172	S-08C-T38-00-10	12/05/08 0:00	01/21/09 9:17	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6173	S-08C-CC27-00-09	12/05/08 0:00	01/21/09 9:17	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6174	S-08C-T22-00-04	12/05/08 0:00	01/21/09 9:17	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6175	S-08C-D32-00-05	12/05/08 0:00	01/21/09 9:18	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6176	S-08C-D25-00-07	12/05/08 0:00	01/21/09 9:18	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	

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ShpNo SHP-090121-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:** USACE - NED

Received by: Thorn, Jonathan **Date/Time Received:** Friday, January 16, 2009 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q6177	S-08C-bb28-00-10	12/05/08 0:00	01/21/09 9:19	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	

Total Samples: 29

Deliver to Battelle Duxbury - Lab

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

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The Business of Innovation

Chain of Custody

Proj. No: G606422
Proj. Name: NBH - NWS + Post-Dredge

SAMPLERS: Signature: Jessica Tenzen + Patrick Curran

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	LAB BATTELLE ID	Field ID ~~CLIENT ID~~	SAMPLE DESCRIPTION	PEST	PCB Aroclors	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER PCB Homologues	ACIDIFIED	PRESERVED	Total Number of Containers
11/20/08		Q6149	S-08D-C008-30W-00-05	Sediment		✓									1
		Q6150	S-08D-C008-30E-00-05			✓									1
		Q6151	S-08D-NWS-35-00-05			✓									1
		Q6152	S-08D-NWS-34-00-05			✓									1
		Q6153	S-08D-NWS-36-00-05			✓									1
		Q6154	S-08D-NWS-33-00-05			✓									1
		Q6155	S-08D-NWS-37-00-05			✓									1
		Q6156	S-08D-NWS-38-00-05			✓									1
		Q6157	S-08D-NWS-39-00-05			✓									1
12/3/08		Q6158	S-08D-C008-038-00-05			✓									1
		Q6159	S-08D-C008-028-00-05			✓									1
		Q6160	S-08D-C008-049-00-05			✓						✓			1
		Q6161	S-08D-C008-023-00-05			✓						✓			1
		Q6162	S-08D-C008-016-00-05			✓									1
		Q6163	S-08D-C008-039-00-05			✓									1
		Q6164	S-08D-C008-040-00-05			✓									1
		Q6165	S-08D-C008-062-00-05			✓									1

Relinquished by:	Date/Time	Received by:	Date/Time
Jessica M Tenzen	1/16/09 1410		1/16/09 1410
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: all samples were frozen from date of collection ~~to~~ until 1/14/09.

ORIGINAL

Deliver to: Battelle Duxbury

Battelle
The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
560622	NBH- NWS + Post Dredge

SAMPLERS: Signature: Jessica Tenzen + Patrick Cannon

DATE	TIME	BATTELLE ID LAB	Field ID ~~CLIENT ID~~	SAMPLE DESCRIPTION	PEST	PCB Congeners	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER Homologues	ACIDIFIED	PRESERVED	Total Number of Containers
12/3/08		Q6166	S-08D-C008-048-00-05	Sediment		✓									1
		Q6167	S-08D-C008-033-00-05			✓									1
		Q6168	S-08D-C008-055-00-05			✓									1
		Q6169	S-08D-C008-055-00-05-REP			✓									1
		Q6170	S-08D-C008-010-00-05			✓									1
12/5/08		Q6171	S-08C-X33-00-11			✓									1
		Q6172	S-08C-T38-00-10			✓									1
		Q6173	S-08C-CC27-00-09			✓									1
		Q6174	S-08C-T22-00-04			✓									1
		Q6175	S-08C-D32-00-05			✓									1
		Q6176	S-08C-D25-00-07			✓									1
		Q6177	S-08C-bb28+00-10			✓						✓			1

Relinquished by:	Date/Time	Received by:	Date/Time
Jessi M Jenzen	1/16/09 1410		1/16/09 1410
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:
Samples collected on 12/3/08 were frozen until 1/14/09
Samples collected on 12/5-/08 were frozen until 1/15/09

ORIGINAL

Battelle
The Business of Innovation

ShpNo SHP-081121-01

Battelle Project No:

Sample Receipt Form

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Thursday, November 20, 2008 12:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered **Tracking Number:** NA

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal Condition	Container Condition	Temp C	Smps
1 of 1	Cooler	NA	None	Not Applicable	Intact	4.0	1

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 4 Temperature Blank used ☐ Yes ☑ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: Unknown

Storage Location: Chem South: Refrigerator - R0003 (Upper Cold **BDO IDs Assigned:** Q5585 - Q5585

Samples logged in by: Seyfert, Jeannine **Date/Time:** 11/20/2008 12:00 AM

Approved By: **Approved On:**

Authorized By: **Authorized On:**

Battelle
The Business of Innovation

ShpNo SHP-081121-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Thursday, November 20, 2008 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q5585	EB-112008-EB1	11/20/08 13:35	11/21/08 8:36	2	WATER	4	NA	NA	NA	R0003 (Upper C			Equipment blank - Auge

Total Samples: 1

Battelle
The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
60060472	NBH sediment

SAMPLERS: Signature: Annie Murphy

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
11/20/08	13:35	EB-112008-EB1	BDOLINS Q5585	equipment blank - Auger		✓									2

Relinquished by:	Date/Time	Received by:	Date/Time
Annie Murphy	11/20/08	Jeannine Seyfert	11-20-08 17:00
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

US ARMY CORPS
OF ENGINEERS
New England District

Contract No. DACW33-03-D-0004

Delivery Order No. 22

June 2009

Final
Water Quality Monitoring Summary Report

2008 Remedial Dredging

Environmental Monitoring, Sampling, and Analysis

New Bedford Harbor Superfund Site

New Bedford Harbor, MA

Final Report
Water Quality Monitoring Summary Report
2008 Remedial Dredging

Environmental Monitoring, Sampling, and Analysis
New Bedford Harbor Superfund Site
New Bedford Harbor, Massachusetts

Submitted to:

Department of the Army
U.S. Army Corps of Engineers
North Atlantic Division
New England District

Contract Number: DACW33-03-D-0004
Delivery Order Number: 22

Prepared by:

Battelle
397 Washington Street
Duxbury, MA 02332
(781) 934-0571

June 2009

Battelle
The Business *of* Innovation

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TABLE OF CONTENTS

Executive Summary iii

1.0 INTRODUCTION 1
1.1 Site Description 1
1.2 Project Objectives 2
1.3 Water Quality Monitoring Program 3

2.0 METHODS 4
2.1 Monitoring and Sampling Approach 4
2.1.1 Study Area 4
2.1.2 Sampling Design 4
2.1.3 *In-situ* Water Quality Monitoring 6
2.1.4 Discrete Water Sampling 8
2.2 Laboratory Testing 9
2.2.1 Total Suspended Solids and Turbidity Analyses 11
2.2.2 Polychlorinated Biphenyl Analyses 11
2.2.3 Toxicity Analyses 12
2.2.3.1 Test Species 12
2.2.3.2 Site Water Samples and Laboratory Control Water 12
2.2.3.3 Bioassay Tests 13
2.2.3.4 Data Analysis 14
2.2.3.5 Quality Control 14

3.0 SURVEY CHRONOLOGY AND DAILY OBSERVATIONS 15

4.0 RESULTS 23
4.1 Dredging Summary 23
4.2 Field Monitoring Summary 24
4.2.1 Boat-based Monitoring 24
4.2.2 Fixed-point Continuous Monitoring 26
4.2.3 Collection of Discrete Water Samples 30
4.3 Laboratory Testing Summary 31
4.3.1 Total Suspended Solids and Turbidity 31
4.3.2 Polychlorinated Biphenyls 33
4.3.3 Toxicity 33
4.3.3.1 Sea Urchin (*Arbacia punctalata*) 33
4.3.3.2 Mysid (*Americamysis bahia*) 33
4.4.3.3 Red alga (*Champia parvula*) 34
4.3.4 Quality Control 36

5.0 DISCUSSION 37
5.1 Fishery and Wildlife Observations 37
5.2 Suspended Sediment and Sediment Transport from Dredging Activities 38
5.3 Impacts to the Water Column 39

6.0 REFERENCES 42

LIST OF TABLES

Table 1. Sample Collection Requirements and Participating Laboratories……...9
Table 2. Boat-based Monitoring and Sampling Activities at Pierce Mill Cove (PMC), 2008……26
Table 3. Summary Statistics Continuous *In-situ* Turbidity Data, August 18 to October 22, 2008…….28
Table 4. Summary of Total Suspended Solids (TSS) and Turbidity Results……..31
Table 5. Summary of Total Suspended Solids, Turbidity, PCB and Toxicity Sample Results in Discrete Water Samples Collected at the Pierce Mill Cove (PMC) Dredge Area, 2008…..……..35

LIST OF FIGURES

Figure 1. Location of the Site in Southeastern, MA…….……1
Figure 2. Overview of New Bedford Harbor Superfund Site…….…...1
Figure 3. 2008 Dredge Areas…….2
Figure 4. Water Quality Monitoring Locations at the Pierce Mill Cove Dredge Area……..3
Figure 5. Decision Sequence for Level III Water Quality Monitoring……...…...5
Figure 6. Location of Fixed Point YSI Sensors……7
Figure 7. Fixed Point YSI Mooring Configuration……....8
Figure 8. Decision Sequence for Sample Analysis……..10
Figure 9. Mud Cat™ Hydraulic Dredge……...……23
Figure 10. Debris Removal Excavator……24
Figure 11. Photograph of August 20, 2008 Plume……...25
Figure 12. Example of Turbidity Signals Related to Dredging and Tidal Direction during Week 1 of Dredging at the Pierce Mill Cove……..…28
Figure 13. Continuous Dissolved Oxygen Data at the North (top) and South (bottom) Moorings, August through October 2008……..……..30
Figure 14. Total Suspended Solids and Turbidity Results in Site Water Samples Collected Prior to and During Dredging Activities…….……...32
Figure 15. Swans Observed Along Pierce Mill Cove Dredge Boundary During Dredging Operations…..37
Figure 16. Correlation between TSS and Turbidity (top) and between TSS and total PCBs (bottom) in Discrete Water Sampled in 2008 at the Pierce Mill Cove Dredge Area……..…….…….39
Figure 17. Correlation between Distance from Dredging Activity and TSS and Turbidity (top) and total PCB (bottom) in Discrete Water Sampled in 2008 at the Pierce Mill Cove Dredge Area…....40

APPENDICES

Appendix A: Water Quality Monitoring Field Logs and Tide Data
Appendix B: Continuous *In Situ* Water Quality Data
Appendix C: Total Suspended Solids and Turbidity Analytical Data
Appendix D: Total and Dissolved PCB Analytical Data
Appendix E: Toxicity Analytical Data

EXECUTIVE SUMMARY

In 2008, remediation activities at the New Bedford Harbor Superfund site included shoreline excavation adjacent the Aerovox facility and hydraulic dredging at the Pierce Mill Cove to remove contaminated sediments. Water quality monitoring was performed during remediation activities to provide field reconnaissance information to gauge the extent of potential water quality impacts that may result from remediation operations and to ensure that the dredging activities were conducted in a manner that did not hinder the seasonal migration of anadromous fish to and from the Acushnet River. This report presents key findings from the water quality monitoring performed at the Pierce Mill Cove dredge area; water quality monitoring performed during shoreline excavation activities at the Aerovox facility is reported in Jacobs (2009).

Remediation dredging was performed at the Pierce Mill Cove dredge area from August 18 through October 21, 2008, resulting in the removal of approximately 20,000 cubic yards of contaminated sediments. Water quality monitoring was performed prior to the onset of dredging to establish baseline conditions and during dredging to verify the protectiveness of the project-based turbidity criterion. Water quality monitoring was performed each day during the first week of dredging and one day a week thereafter until dredging was complete. The monitoring program included boat-based monitoring to monitor *in-situ* turbidity and observe the dredge area for sediment plumes and fish and wildlife passage; deployment of moored sensors to collect continuous, *in-situ* water quality data to supplement boat-based monitoring data; and collection of discrete water samples for physical, chemical, and biological testing to assess the protectiveness of the project-based turbidity criterion. Boat-based *in-situ* turbidity measurements were evaluated against the project criteria, including the *project criterion* defined as 50 Nephelometric Turbidity Units (NTU) above background measured 600 feet (ft) down-current of the dredging and associated activities and the *warning level* defined as an exceedance of 50 NTU above background at 300 ft down-current of the dredging and associated activities. The monitoring protocol required that if the warning level was exceeded, the USACE was contacted immediately to determine what, if any, operational modifications might be warranted to abate the condition and to reduce the potential for a criteria exceedance at the 600-ft transect. During the 2008 dredging period, neither the warning level nor the project criterion was exceeded at any time during the boat-based monitoring.

Prior to the onset of dredging activities at the Pierce Mill Cove dredge area, *in-situ* turbidity readings were low (<2 NTU) both inside the dredge area and at the reference stations located approximately 1,000 ft north and south of the dredge boundary. During dredging, *in-situ* turbidity readings remained low at the reference locations and increased at the dredge area compared to baseline conditions. The highest *in-situ* turbidity readings were generally observed in close proximity (<200 ft) to the debris removal and dredging activities, but were of short duration.

Neither the boat-based monitoring nor the continuous *in-situ* turbidity data revealed frequent or substantive turbidity plumes during dredging activities. When turbidity plumes were observed, they often occurred south of the Pierce Mill Cove dredge area and were generally weak. Turbidity plumes to the north were rarely observed, probably because water flow was generally to the south and the land mass to the north acted as a barrier to reduce the migration of a north-

flowing plume. The continuous *in-situ* turbidity data revealed some weak turbidity plumes, which were sustained only under certain tidal and wind conditions. Generally, if the dredge or debris removal barge was working during a flood tide with the wind from the south or southwest, the north mooring data showed some peaks in turbidity. Conversely, a turbidity plume was apparent in the south mooring data when dredge activities occurred during an ebbing tide with wind from the north or northeast. The wind appeared to have had less of an effect during an ebbing tide because both the tide and the flow of the Acushnet River forced the plume south. Overall, lack of substantive plumes observed during dredging may be attributed to the physical setting of the dredge area, which is relatively isolated from the physical processes of the upper harbor (i.e., currents and particularly the resulting flushing). Additionally, the physical properties of the dredged material, which had a high percentage of sand, could also explain the limited extent and duration of the observed plumes.

Throughout the dredge season large numbers of fish were observed. Lower trophic level baitfish were consistently observed moving throughout the river from Sawyer Street to Wood Street. Larger predatory fish were also sporadically seen. Birds such as great blue herons, gulls, swans, cormorants, egrets, osprey, and other wading birds were observed feeding along the shoreline during these weeks. During this time period, when fish were most abundant, there appeared to be no restriction of movement past the dredge area.

Discrete water samples were collected at locations representing a full range of turbidities to evaluate the relationships, if any, among turbidity, total suspended solids (TSS) content, polychlorinated biphenyls (PCB), and toxicity data, and to confirm the protectiveness of the project turbidity criterion. PCB concentrations in whole water (unfiltered) samples increased with increasing TSS and proximity to the dredging operations. While site water near the dredge area had elevated TSS, turbidity, and PCBs (whole water), levels decreased with increasing distance from the dredging activities. More importantly, dissolved PCBs, which are thought to be the fraction that causes direct toxicity to marine organisms and may be subjected to long range transport, remained low regardless of the TSS levels or proximity to or from the dredging activities. While measurable water column impacts were observed based on toxicity testing, these effects were either limited to samples collected well within the dredging boundary or did not appear to be directly associated with elevated TSS and turbidity and subsequent increase in PCBs. Overall, the PCB and toxicity data confirmed that the project criterion continues to be ecologically protective, while still allowing remediation efforts to progress.

1.0 INTRODUCTION

1.1 Site Description

The New Bedford Harbor Superfund Site (Site), located in Bristol County, Massachusetts (MA), extends from the shallow northern reaches of the Acushnet River estuary south through the commercial harbor of New Bedford and into 17,000 adjacent acres of Buzzards Bay (Figure 1). Industrial and urban development surrounding the harbor has resulted in sediments becoming contaminated with high concentrations of many pollutants, notably polychlorinated biphenyls (PCBs) and heavy metals. Two manufacturers in the area used PCBs while producing electronic devices from 1940s to the late 1970s, when the use of PCBs was banned by the U.S. Environmental Protection Agency (USEPA). Based on human health concerns and ecological risk assessments, USEPA added New Bedford Harbor to the National Priorities List in 1983 as a designated Superfund Site. Through an Interagency Agreement between the USEPA and the U.S. Army Corps of Engineers, New England District (USACE NAE), the USACE is responsible for carrying out the design and implementation of the remedial measures at the Site. The Site has been divided into three areas – the upper, lower and outer harbors – consistent with geographical features of the area and gradients of contamination (Figure 2).

Figure 1. Location of the Site in Southeastern, MA

The shoreline Aerovox manufacturing facility located in New Bedford, MA used PCBs in the manufacture of electrical capacitors from approximately 1940 to 1977. This facility is located in the upper harbor and is considered one of the major sources of historic PCB contamination to New Bedford Harbor. The highest concentrations of PCBs were found in sediments in a 5-acre area in the northern portion of the Acushnet River Estuary adjacent to the Aerovox facility. These 'hot spot' sediments, which contained PCBs upwards of 100,000 milligrams per kilogram (mg/kg), were removed between 1994 and 1995 as part of USEPA's 1990 "Hot Spot" Record of Decision (ROD). Full scale remediation dredging per the 1998 Upper and Lower Harbor ROD was initiated in 2004 and has continued with annual funding every year since. Another known source of PCB contamination in New Bedford Harbor is related to activities at the Cornell-Dubilier mill on the western shore of the outer harbor. In 2005, a 15 acre underwater cap pilot project (Figure 2) was implemented near Cornell-Dubilier to cap PCB contaminated sediments.

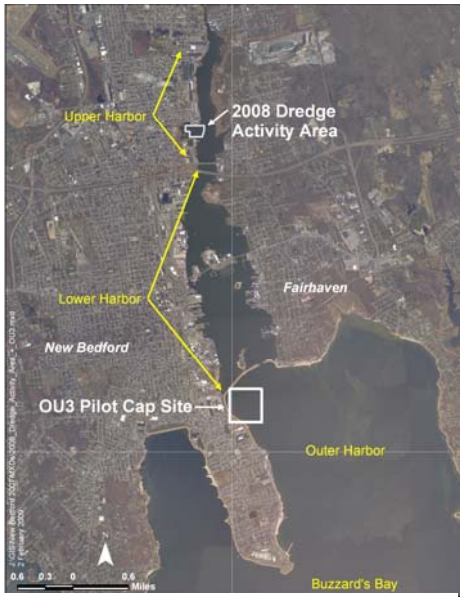


Figure 2. Overview of New Bedford Harbor Superfund Site

The remediation of this site per the 1998 ROD involves the excavation and dredging of approximately 900,000 cubic yards of PCB contaminated sediment. The majority of contaminated material is being removed utilizing a hydraulic dredge that pumps dredge slurry to the project's Sawyer Street facility where it is mechanically processed to remove all sand, gravel, and debris material. The silt and clay size materials are then pumped to the Area D Dewatering Facility located on Herman Melville Boulevard where it is mechanically dewatered and transported off-site for disposal.

The Site is divided into a series of Dredge Management Units (DMU) based on contamination levels, contamination sources, topography, and other factors. In 2008, remediation activities at the Site included shoreline excavation adjacent to the Aerovox facility and hydraulic dredging at the Pierce Mill Cove. This report presents results from water quality monitoring performed during dredging activities at Pierce Mill Cove, which encompasses sections of DMU-19, DMU-20, DMU-21, DMU-23, DMU-24, and DMU-25 (Figure 3). Water quality monitoring results associated with shoreline excavation activities conducted adjacent to the Aerovox facility are reported in Jacobs (2009).

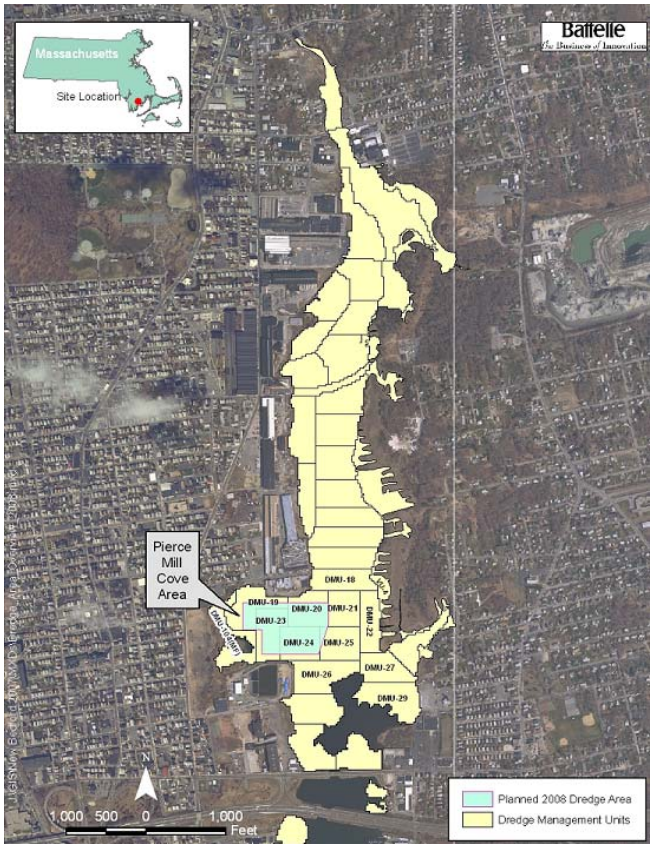


Figure 3. 2008 Dredge Areas

1.2 Project Objectives

The resuspension of sediments during dredging, and dredging related activities, can transport contaminated sediments away from the dredge area. Additionally, contaminated sediments suspended in the water column present a concern for potential toxicity to aquatic organisms in the project area. The primary objective of the 2008 monitoring effort was to conduct boat-based field monitoring to provide field reconnaissance information to the USACE, USEPA and dredging operators, to gauge the extent of water quality impacts resulting from dredging operations. Field reconnaissance information primarily included *in-situ* turbidity monitoring and visual observations of the dredge area for sediment plumes resulting from dredging operations. *In-situ* turbidity monitoring results were evaluated against project-specific values, including 1) the *project criterion* defined as an exceedance of 50 Naphelometric Turbidity Units (NTU) above background measured 600 feet (ft) down-current of dredging and associated activities and 2) the *warning level* defined as an exceedance of 50 NTU above background at 300 ft down-current of dredging and associated activities. If the warning criteria was exceeded, the USACE was contacted immediately to determine what, if any, operational modifications may be warranted to abate the condition and to reduce the potential for a criteria exceedance at the 600-ft transect.

The field reconnaissance information was used to make operational adjustments needed to limit the dispersal of suspended sediments and their associated contaminants as well as limit the extent of biological impacts to the water column. An additional objective was to ensure that the dredging activities were conducted in a manner which did not hinder the seasonal migration of anadromous fish in the Acushnet River (i.e., fish are able to successfully navigate past dredging operations).

1.3 Water Quality Monitoring Program

The focus of the 2008 water quality monitoring program was to assess near-field water column impacts as well as the extent of sediment resuspension and transport away from the dredging operation. These data were used to guide project operations to minimize environmental impacts, limit potential recontamination of previously dredged areas, ensure that the dredging activities were conducted in a manner that did not hinder the seasonal migration of anadromous fish to and from the Acushnet River, and to determine the degree and extent of sediment plumes advecting away from the site during dredging operations. To meet this objective, a tiered monitoring approach was employed which incorporated field measurements of turbidity and water quality parameters. Additionally, discrete water samples were collected for physical, chemical, and biological testing on a periodic basis as needed. Water column measurements were conducted along four transects of the dredge area described below and illustrated in Figure 4. As dredging operations moved throughout the dredge area, the monitoring locations moved relative to those activities as follows:

- **Reference:** A reference station 1,000 ft up-current of dredging operations provided background conditions. A reference station was identified for the Pierce Mill Cove dredge area for both ebb and flood tide conditions.
- **Dredge Boundary:** Measurements were made at the edge of the dredge area. This is defined as a down-current location as close as practicable and as safety allows.
- **300 ft Down-current:** Defined as a set of transects, 300 ft down-current from the dredging operation (ebb and flood).
- **600 ft Down-current:** Defined as a set of transects, 600 ft down-current from the dredging operation (ebb and flood).

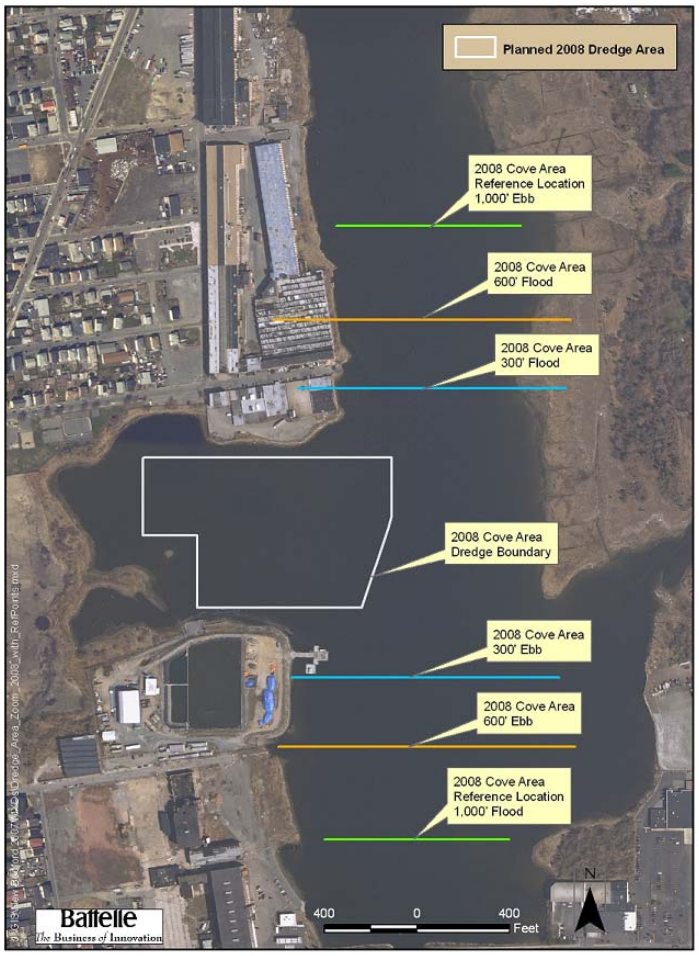


Figure 4. Water Quality Monitoring Locations at the Pierce Mill Cove Dredge Area

2.0 METHODS

Methods used to establish the sampling approach, conduct *in-situ* monitoring, and collect and analyze discrete samples are summarized below and described in detail in the project Quality Assurance Project Plan (QAPP; Battelle, 2008a) and Field Sampling Plan (FSP; Battelle 2008b).

2.1 Monitoring and Sampling Approach

The established monitoring and sampling approach for this program employs a variety of methods to characterize sediment resuspension, sediment transport, and its potential impact on water quality. As with previous monitoring efforts, a tiered approach is employed using varying levels of monitoring intensity to assess and gauge dredging related water quality impacts as described in Section 2.1.2. Throughout the monitoring period, water quality monitoring was performed along transects immediately adjacent to the dredge operation, at defined distances down-current, and at an up-current reference station as described in Section 2.1.3.

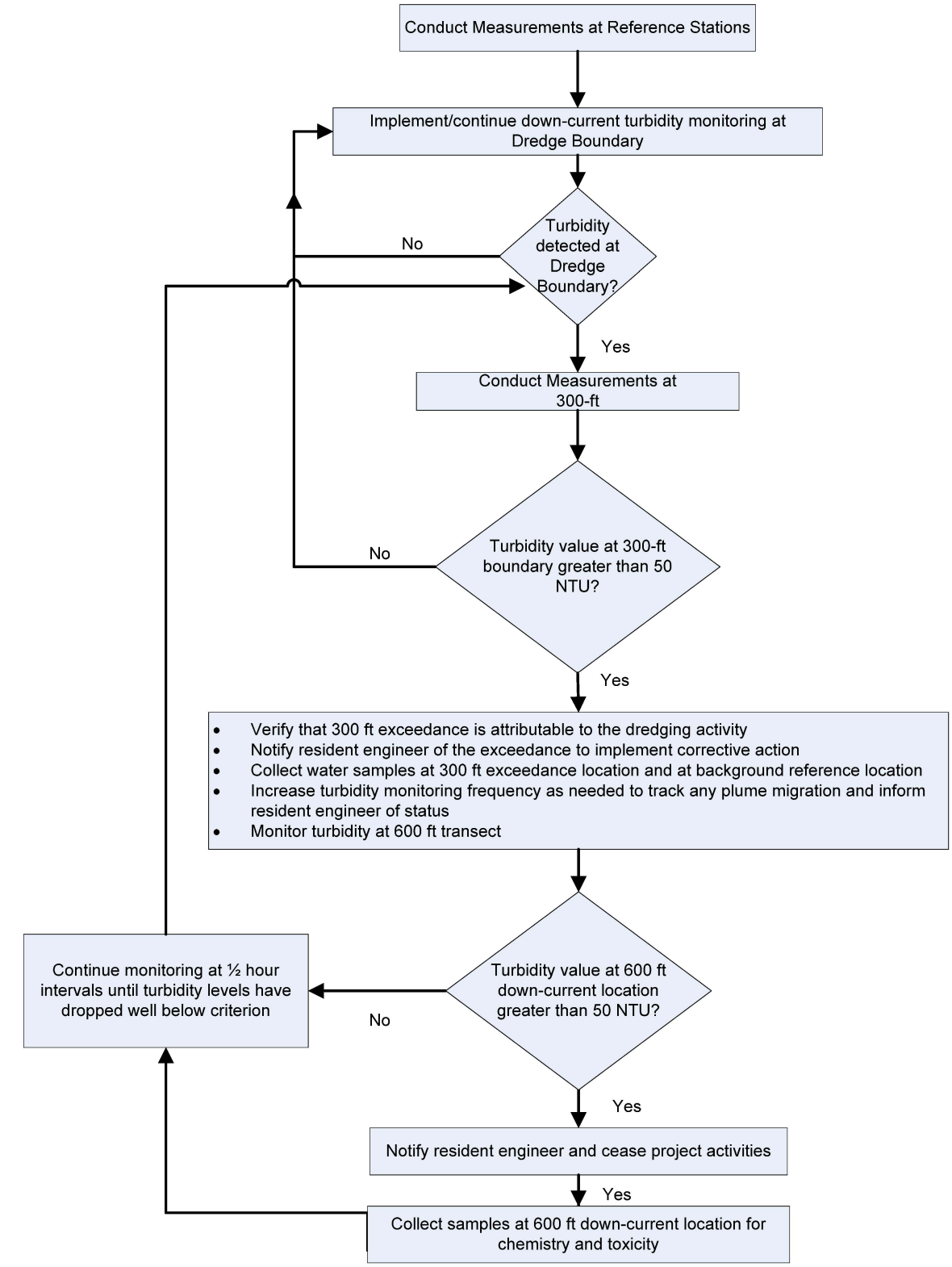
2.1.1 Study Area

The Acushnet River is tidally influenced. The tide, together with variability in freshwater flow, determines the current direction and its influence on the transport of suspended sediments. On ebb tides, "down-current" is always to the south. However, on flood tides flow is often, though not always, to the north. Occasionally the flow is southward during times of flood tide because a strong freshwater inflow overpowers the flood. Several times throughout the 2008 monitoring program a clear stratification of the water column was observed. In these cases higher density, saline tidal waters were overlain by lower density freshwater. Frequently the incoming tidal water was moving north, while the freshwater lens was flowing south. These physical water properties were closely monitored throughout the day, and adjustments were made in the sampling design to accurately assess sediment resuspension and its transport in all directions. Throughout this report the term "down-current" always refer to the direction of water movement relative to the dredging operations at that point in time regardless of geographical direction (north or south).

In 2008, remedial dredging was performed at the Pierce Mill Cove area, located in the upper harbor north of Sawyer Street. The cove is a unique area in that it is relatively isolated from the physical processes of the upper harbor (i.e., current and particularly the resulting flushing). During low tides, the intertidal bottom is generally exposed at the western region of the cove.

2.1.2 Sampling Design

The overall approach utilized an adaptive, criteria-based sampling scheme to monitor project-related water quality impacts (Figure 5). This was divided into a series of sampling 'levels' which varied in analytical sample collection intensity. The more intensive levels were utilized when there was greater potential for a specific dredging activity to have an impact on water quality. This was particularly true for new activities or activities in new areas. Based on information from these sampling levels, sampling was reduced to the lower intensity levels when appropriate. Sampling Levels I, II, and III were designed to collect water samples at designated distances away from the dredge operation to limit the extent of impact (Boundary, 300 ft, and 600 ft). A reference station located 1,000 feet up-current from the dredge area (see Section 2.1.3) was used to establish background turbidity readings.



Notes: 1:50 NTU value was defined as 50 NTU above background turbidity level

Figure 5. Decision Sequence for Level III Water Quality Monitoring

Sampling Levels include:

- **Level I** represents a sampling approach for discrete samples and was conducted for those activities considered to have the greatest potential to impact water quality or when new conditions were encountered. Level I sampling included collection of discrete water samples at designated locations: Reference, Dredge Boundary, 300 ft down-current, and 600 ft down-current. At each station discrete water samples were collected for all test parameters from the depth of highest turbidity, based on the *in situ* readings.

  Since 2006, Level I sampling has been modified to also collect discrete samples at locations representing a full range of turbidities (25-100 NTU) to evaluate relationships, if any, among the turbidity, PCB, and toxicity data and to confirm that the current criteria were adequately protective of the aquatic environment. Sampling was often performed in close proximity (<300 ft) to the dredging operations in order to capture elevated turbidity levels. The modified Level I sampling did not represent exceedances of the water quality criteria (i.e., project criterion or warning levels).

- **Level II** represents a lower level of monitoring intensity compared to Level I, and was performed when there was decreased concern for water quality impacts from dredging activities. Similar to Level I, Level II was designed to collect samples based on distance from dredge activities although 600 ft samples were not required due to the decreased concern for far-field impact(s).

- **Level III** represents routine, boat-based monitoring performed during dredging activities to evaluate *in situ* turbidity readings against the project-specific water quality criteria (i.e., project criterion and warning level). Collection of discrete water samples for laboratory testing was conditional based on results of *in situ* turbidity monitoring and/or visual observations of sheens or sediment plumes advecting away from the dredge area.

2.1.3 *In-situ* Water Quality Monitoring

Water quality monitoring was conducted prior to the onset of dredging at Pierce Mill Cove and throughout the dredge season to collect *in-situ* measurements of depth, turbidity, temperature, salinity, and dissolved oxygen at the following locations:

- **Reference Station** – At the start of each sampling day the vessel transited to the reference station located 1,000 ft up-current from the active dredge area. This location was outside the influence of any localized turbidity sources (e.g., combined sewer overflow discharges or storm water drains), and was representative of the water flowing through the deeper channel areas up-current of the dredge area. Water depth was measured with a lead-line or stadia rod and the result recorded in the field log. The *in situ* sensors were lowered slowly and allowed to equilibrate at one foot intervals through the water column with care taken to avoid placing the instruments on the sediment bottom. As the sensors were lowered, the sampling personnel observed the turbidity readings and identified the depth of the highest turbidity values. After the full "downcast" was completed, the sensors were pulled back up through the water column and held at the location of highest turbidity. The *in situ* readings for all parameters at this depth were recorded on the Field Log Sheet. This reading served as the background value for subsequent turbidity readings taken throughout the day. Discrete samples were collected as required (see Section 2.1.2). Reference locations were revisited to

obtain new turbidity readings if conditions changed during the day. Examples of relevant changes include change in tidal flow; change in dredge operations; and changing weather conditions such as rain events which can dramatically alter ambient water quality conditions.

- **Dredge Boundary** – Following the collection of *in situ* readings at the reference location, the sampling team transited to the down-current side of dredging operations. Downcast i*n situ* readings were collected as close to the dredge and/or debris removal rig as safety allowed to identify the turbidity maximum and collect *in-situ* measurements at that location during the upcast, in the same manner described above for the reference location. Discrete samples were collected depending on the sampling requirements for that survey day (i.e., Levels I, II, and III).
- **300 ft Down-current** – From the dredge operations, the sampling vessel operated along a transect (Figure 4) across the width of the harbor collecting *in situ* readings. Real-time data was used to identify any suspended sediment plumes. The focus was on identifying the centroid of the plume (highest turbidity readings) as well as the plume boundaries (lowest turbidity readings above background). High and low readings along the transects were recorded to show the relative intensity of the plume as well as its spatial dimensions. Once the centroid was identified, subsequent readings were concentrated at this location to identify fluctuations in the plume intensity and potential exceedances of the warning criterion. Discrete samples were collected depending on the sampling requirements for that survey day (i.e., Levels I, II, and III).
- **600 ft Down-current** – From the dredge operations, *in situ* readings were collected along a transect across the width of the river (Figure 4). Discrete samples were collected, if required based on the sampling requirements for that survey day (i.e., Levels I, II, and III).
- **Fixed Point Stations** – YSI (Yellow Springs Instruments) sondes (6920 water quality sensors), with internal data logging units, were deployed at fixed locations approximately 300 to 400-ft up-current and down-current of the Pierce Mill Cove dredge boundary (Figure 6). Continuous, *in-situ* water quality data, including water temperature, salinity, dissolved oxygen,

Figure 6. Location of Fixed Point YSI Sensors

and turbidity, were recorded (sensors programmed to collect a thirty second sample every 10 minutes) over the entire dredge season to supplement boat-based monitoring data.

The sensor suite was suspended horizontally below two surface buoys (one highflier and one mooring ball) to capture near-surface turbidity readings (Figure 7). The sensor suite was attached to an anchor using a weighted line to prevent the line from wrapping around the sensors during changes in the tide. The sensors remained approximately 1.5 ft below the water surface as the tide rose and fell. The water depth was never less than 1.5 ft so that the sensors never rested on the bottom at low tide. Routine maintenance was performed on the sensors approximately every two weeks: the sensors were cleaned, recalibrated, data downloaded, and the batteries replaced, as needed.

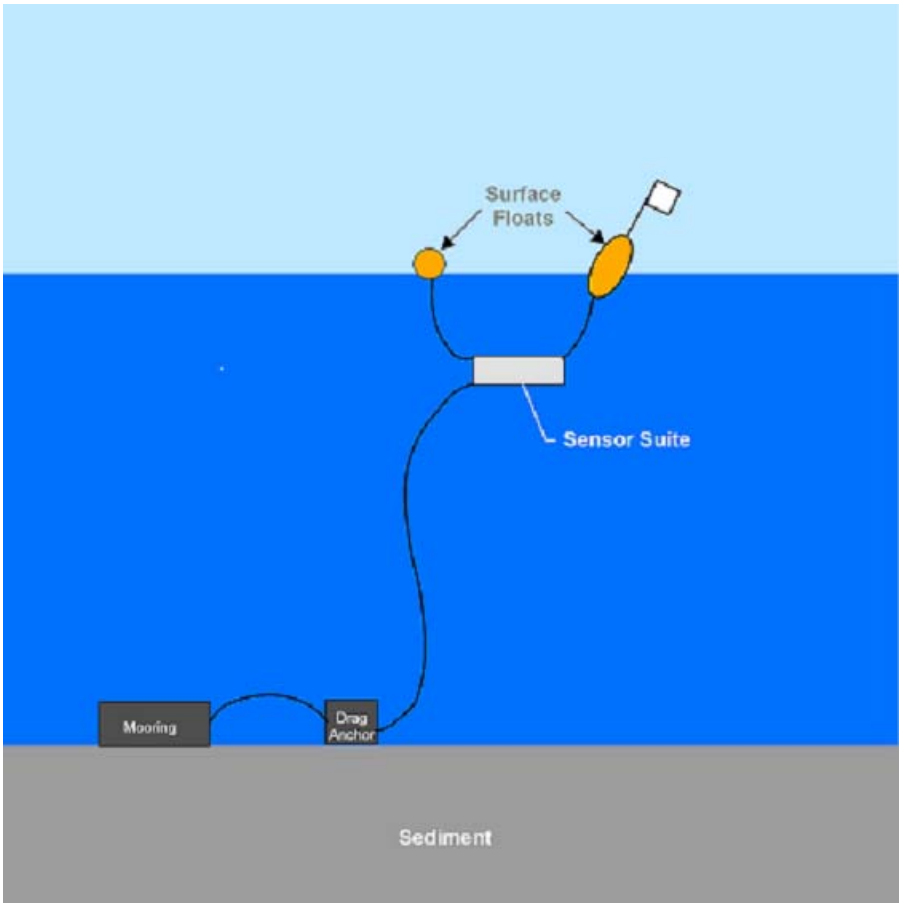


Figure 7. Fixed Point YSI Mooring Configuration

2.1.4 Discrete Water Sampling

Discrete water samples were collected using a 12-volt Teflon diaphragm pump equipped with tygon tubing. Prior to collecting samples at each location, water was pumped continuously through the system for approximately two to three minutes to flush the equipment. This purging ensured that the system was cleared prior to actual sample collection to avoid potential site to site cross-contamination. The YSI *in situ* sensor was placed in the water near the tubing inlet during collection to ensure that the sensor measurements and the analytical results were representative of the same parcel of water.

Following purging, water from the pump outlet was collected directly into the appropriate sample containers for laboratory testing (Table 1). Following collection, samples were stored cold (on ice in coolers or in field trailer refrigerator) until delivery to the participating laboratories (Table 1).

A routine set of field-based quality control (QC) samples were collected to monitor data quality. Field samples included one equipment blank and one field replicate with each set of 20 or fewer field samples. Field QC samples were collected for all test parameters (Table 1), except toxicity testing.

Table 1. Sample Collection Requirements and Participating Laboratories.

Test Parameter	Sample Volume	Sample Container	Preser-vation	Storage Condi-tion	Holding Times[1]	Analytical Lab
Total Suspended Solids	1 L	HDPE Bottle	Ice	4 ± 2 °C	7 Days	**Alpha Analytical** 320 Forbes Blvd. Mansfield, MA 02048 508-822-9300
Turbidity					48 Hours	
Polychlorinated Biphenyls (unfiltered and dissolved[2] phase samples)	1-L each	Amber Glass Bottle	Ice	4 ± 2 °C	7 Days	**Battelle Duxbury** 397 Washington Street Duxbury, MA 02332 781-952-5200
Metals[3]	500 mL	HDPE Bottle	$HN0_3$	4 ± 2 °C	6 Months	
Toxicity	5 gal	2.5 gallon Cubitainer	Ice	4 ± 2 °C	24 Hours	**EnviroSystems, Inc** One Lafayette Road P.O. Box 778 Hampton, NH 03843 603-926-3345

[1] Holding time to initial lab preparation.
[2] Samples for dissolved analysis were filtered at the analytical laboratory.
[3] Metals samples were archived at Battelle, Duxbury.

2.2 Laboratory Testing

Laboratory testing was performed on contingency based and/or preplanned discrete water samples. Contingency based samples, collected in the event of an exceedance to the warning level (i.e., turbidity in excess of the 50 NTU above background at 300-ft down-current of the dredge activity), were analyzed according to the program's decision sequence for sample analysis (Figure 8). At the direction of USACE NAE, Level I planned samples were submitted for total suspended solids (TSS), turbidity, PCB (total and dissolved phases), and toxicity testing (analysis of archived samples for metals was not requested). Laboratory testing methods are summarized below and described in detail in the project QAPP (Battelle, 2008a).

A routine set of laboratory-based QC samples was prepared with the project samples designated for physical and chemical testing to monitor data quality in terms of accuracy and precision. Depending upon the analysis, QC samples included a procedural blank, laboratory control sample (LCS), matrix spike (MS), matrix spike duplicate (MSD), and laboratory duplicate. Specific QC samples and the associated measurement quality objectives are discussed in the project QAPP (Battelle, 2008a).

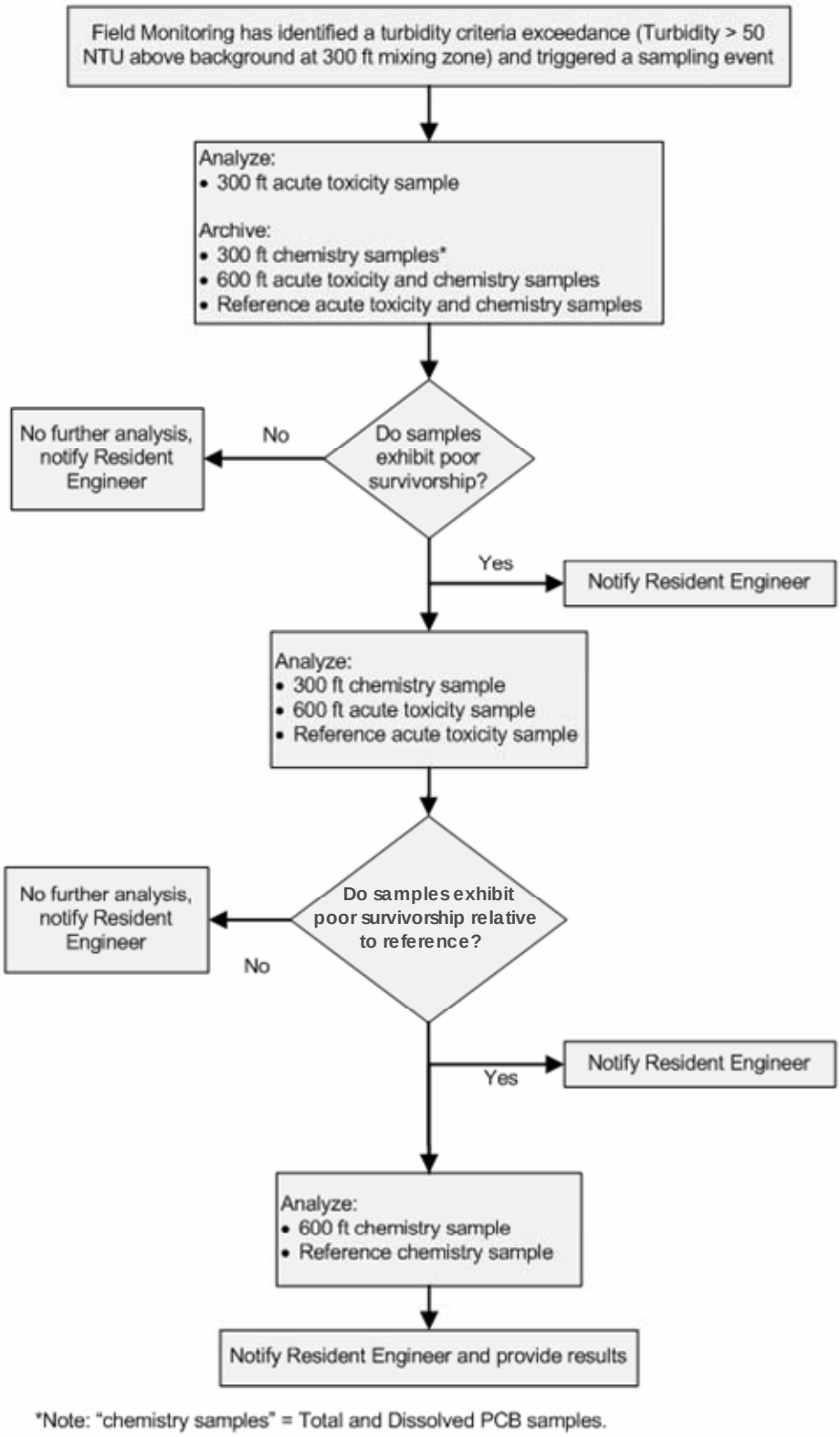


Figure 8. Decision Sequence for Sample Analysis

2.2.1 Total Suspended Solids and Turbidity Analyses

In addition to real-time *in-situ* turbidity monitoring, lab-based analyses of discrete water samples for TSS and turbidity were conducted by Alpha Analytical. Water samples were analyzed for TSS following Alpha Analytical SOP *Total Suspended Solids (TSS) Non-Filterable Residue, Rev. 5.0*, which is based on a modified USEPA Method 160.2. Briefly, a well-mixed sample was filtered through a 0.45 µ membrane filter and the residual retained on the filter was dried and weighed. Results were reported on a milligram dry-weight basis per volume of water filtered (mg/L). Water samples were analyzed for turbidity following Alpha Analytical SOP *Turbidity 180.1, Rev. 2.2,* which is based on USEPA Method 180.1. Sample results were reported in NTU.

For each batch of 20 or fewer samples, a laboratory method blank, LCS, and laboratory duplicate, was processed and analyzed with the field samples for TSS and turbidity.

2.2.2 Polychlorinated Biphenyl Analyses

PCB analyses for the 18 National Status and Trends (NS&T) congeners were conducted by Battelle, using both whole water (unfiltered) and dissolved (filtered) samples. Water samples designated for dissolved PCB analysis were filtered through solvent-rinsed glass fiber filters (1 micron pore size) at the analytical laboratory. Generally, the sample filtration was conducted within 24 hours of sample collection.

Water samples (unfiltered and filtered) were extracted following modified USEPA Method 3510C (Battelle SOP 5-200). Approximately one liter of the water sample (whole water or filtered) was spiked with surrogate internal standards and extracted three times with dichloromethane using separatory funnel techniques. The combined extract was dried over anhydrous sodium sulfate, concentrated, treated with copper for sulfur removal, and solvent exchanged into hexane. The extract was then processed through disposable Florisil columns for further clean-up. The post Florisil extract was concentrated, fortified with internal standards (IS), and analyzed for 18 PCB congeners by gas chromatography/electron capture detector (GC/ECD) using dual column confirmation, following modified USEPA Method 8082 (Battelle SOP 5-128). Sample data were quantified by the method of internal standards, using the IS compounds. Sample extracts were diluted and re-analyzed, as needed, so that the congener response was within the linear range of the calibration.

For each batch of 20 or fewer samples, a laboratory method blank, LCS, MS, and MSD was processed and analyzed with the field samples. Insufficient water was available to prepare a MS and MSD with the water samples collected on August 21, 2008.

Sample results were reported in micrograms per liter (µg/L) for the individual congeners and as total PCB, calculated as the sum of 18 NS&T congeners and referred to as "SUM 18 CONG". A value of zero was used in the summation for non-detects. Because no appropriate multiplier is available from previous studies to correlate SUM 18 CONG to total PCB concentration in the water samples of the New Bedford Harbor, SUM 18 CONG is used in this report as an indicator of the relative level of PCB contamination in the water samples. Note that SUM 18 CONG only represents a fraction of the total PCB concentration in the water samples.

2.2.3 Toxicity Analyses

Acute and chronic (sub-lethal) exposure screening assays were performed on discrete water samples collected from New Bedford Harbor to evaluate the potential toxicity of the water samples associated with dredging activities. Assay design included a laboratory control treatment and one or more discrete water samples, generally including a site reference sample. Samples were evaluated "As Received" without dilutions. Testing was based on programs and protocols developed by the USEPA (2002a and 2002b) primarily designed to provide standard approaches for the evaluation of toxicological effects of discharges on aquatic organisms, and for the analysis of water samples. Testing included the following assays: modified 2 day acute and 7 day chronic assays conducted with the mysid shrimp, *Americamysis bahia*, and the red macro alga, *Champia parvula*, and 60 minute chronic fertilization assays conducted with the purple sea urchin, *Arbacia punctulata*. All mysid and urchin fertilization assays and the acute survival portion of the algal assays were conducted by EnviroSystems, Inc. (ESI) located in Hampton, New Hampshire. Additionally, the algal assays were also conducted by the Saskatchewan Research Council, SRC, Saskatoon, Saskatchewan, Canada in order to provide data in the event that the assay conducted by ESI failed to meet all acceptability criteria.

2.2.3.1 Test Species

A. bahia, ≤5 days old, were obtained from cultures maintained by Aquatic Research Organisms (ARO), Hampton, New Hampshire. Juvenile shrimp were collected daily, isolated, and placed in a rearing tank for up to 6 days. Holding tanks were maintained in a flow-through culture mode at a temperature of 25≤2°C. At the start of the assays the mysids were 7 days old. Juveniles were fed ≤24 hour old brine shrimp on a daily basis. Water temperature, salinity, and pH were monitored on a daily basis. Prior to testing organisms were siphoned from the rearing tanks to a holding vessel, and then transferred to test chambers using a large bore pipet, minimizing the amount of water added to test solutions.

A. punctulata adults were obtained from cultures maintained by ESI. The original stock was obtained from a commercial supplier. Male and female urchins were maintained in separate chambers as recommended by protocol (USEPA 2002a and 2002b). Adult urchins were induced to spawn by the injection of a potassium chloride solution. The viability of gametes obtained was determined prior to their addition to the test solutions. Eggs and/or sperm that would not result in a fertilized egg were rejected from the pool of gametes used in the assay.

C. parvula specimens were obtained from stock cultures maintained by the Saskatchewan Research Council. Original stocks were obtained from the University of Texas algal collection. The male and female plants were maintained in separate culture vessels under sterile conditions. Algal cultures were maintained on an orbital shaker (100 revolutions per minute) at 23±2°C under 16 hour light: 8 hours dark at 40 to 75 foot candles light intensity. Cultures are "cropped" and transferred to fresh nutrient solutions on a weekly basis.

2.2.3.2 Site Water Samples and Laboratory Control Water

Prior to testing in the laboratory, samples were evaluated to document salinity, conductivity, and total residual chlorine. Total residual chlorine was measured by amperometric titration (MDL 0.05 mg/L). Prior to use in the assays the salinity of the samples was adjusted, if necessary, to

predetermined levels using artificial sea salts for *A. bahia* and *A. punctulata* assays, and GP-2 salts (USEPA 2002a and 2002b) for the *C. parvula* assays. The salinity of samples for the *A. bahia* acute and chronic exposure assays was adjusted to 25±2‰ while the salinity for samples used for the *A. punctulata* and *C. parvula* assays was adjusted to 30±2‰. Samples with initial salinity measurements above these levels were not adjusted.

Laboratory control water used for mysid and sea urchin assays was collected from the Hampton/Seabrook Estuary. This water is classified as SA-1 and has been used to culture marine test organisms since 1981. The laboratory control water used in the algal assay, collected from Rye, New Hampshire, is the same water used in culture maintenance. Prior to use, seawater used in the algal assays was filtered through glass fiber filters and sterilized. Dilution water used in the algal assays conducted by SRC was natural seawater collected from the West Coast of Canada. Salinity of the water samples was adjusted using commercial sea salts.

2.2.3.3 Bioassay Tests

***Americamysis bahia* Modified Acute and Chronic Exposure Bioassays**

Modified acute and chronic exposure screening assays were conducted in a static renewal test mode with renewals made at 24-hour intervals. The 7 day assays were conducted at a temperature of 26 ±1°C with a photoperiod of 16:8 hours light:dark. Mysids were maintained in 250 mL beakers containing 150 mL of test solution. Approximately 100 mL of the test solution were replaced each day. The assay incorporated 8 replicates with 5 organisms/replicate. Survival and dissolved oxygen were measured daily in each replicate prior to test solution renewal. Salinity, temperature and pH were recorded in a composite sample of the "old" test solution and in the "new" test solution prior to being added to the test chamber. Incubator temperatures were also recorded on a daily basis.

During the test, mysids were fed ≤24 hour old *Artemia* nauplii. On Day 7 of the assay, surviving mysids were removed from test solutions, rinsed to remove any surface detritus and salts, and transferred to tared foils and dried for 24 hours at 103°C. Foils were weighed to the nearest 0.01 mg. Mean dry weights per individual were obtained by dividing the net dry weight of all surviving organisms by the number of organisms added at the start of the assay.

***Arbacia punctulata* Chronic Exposure Fertilization Assays**

Gametes were obtained by potassium chloride injection to induce spawning. Sperm were collected dry, diluted to achieve a concentration of approximately 5.0×10^7 sperm/mL in the site water treatments. Sperm solutions were added to 5 mL aliquots of each sample being evaluated and allowed to remain in the test solutions for 60 minutes before the addition of unfertilized eggs. Each treatment incorporated a total of four replicates. After 20 minutes of exposure the assay was terminated by the addition of 0.2 mL of preservative. Aliquots of preserved solution were counted to determine numbers of fertilized and unfertilized eggs. Fertilization was accepted based on the presence or absence of a fertilization membrane around the egg.

Champia parvula Modified Acute and Chronic Exposure Assays

The 7 day red algae assay was conducted with a 2 day exposure period to the site waters and laboratory control treatments. Each treatment used four replicates with five female branches and one male branch per replicate. Temperature was maintained at 23±1°C. The light source was cool white and fluorescent bulbs set on a 16:8 hours light:dark cycle, with a light intensity of 40 to 75 foot candles. Light intensity was checked at the start of each assay. Temperatures were monitored on a daily basis. Test chambers were 200 mL borosilicate glass beakers. After 2 days exposure, female branch tips were transferred to approximately 100 mL of recovery medium with added nutrients and allowed to recover and mature for 5 days. During transfer, plants were examined to determine the physical condition of the individual branches. Branches showing signs of degeneration were noted and used to establish an acute endpoint. After the recovery period, the number of cystocarps (reproductive bodies) on each female branch were counted.

2.2.3.4 Data Analysis

Statistical analysis of acute and chronic exposure data was completed using CETIS (Comprehensive Environmental Toxicity Testing System) software. The program computes acute and chronic exposure endpoints based on USEPA decision tree guidelines specified in individual test methods. For chronic exposure endpoints statistical significance was accepted at $\propto < 0.05$.

2.2.3.5 Quality Control

As part of the toxicity testing laboratory quality control program, standard reference toxicant assays are conducted on a regular basis for each test species to provide relative health and response data while allowing for comparison with historic data sets.

3.0 SURVEY CHRONOLOGY AND DAILY OBSERVATIONS

Water quality monitoring was performed prior to the onset of dredging activities at Pierce Mill Cove to establish baseline conditions. Following the onset of dredging, water quality monitoring was performed every day during week one and one day a week thereafter until completion of dredging activities. All turbidity readings referenced in this section are the actual values from the sensor and are not corrected for background levels. High and low tide data for each day that water quality monitoring was performed during operations is summarized below; all times are Eastern Daylight Time (EDT). Complete tide data over the course of the entire 2008 dredge season are provided in Appendix A.

Week of June 2, 2008 (Baseline)

June 5, 2008:

- **Tidal stage:** High tide at 0945 and 2208 EDT; low tide at 0327 and 1524 EDT.
- **Dredge activity:** No active dredging at the Pierce Mill Cove area.
- **Monitoring activity**: Baseline water quality monitoring. Shakedown of equipment and *in situ* measurements of depth, turbidity, temperature, salinity, and dissolved oxygen at nearfield (dredge area) and farfield (300-ft, 600-ft, and 1000-ft north and south of dredge boundary) reference) locations based on flood and ebb tides. Baseline water quality monitoring was conducted to represent a typical monitoring day under normal dredging or debris removal conditions through two tidal cycles.
- **Fishery and Wildlife Observations:** No fin fish passage noted. Other wildlife observations consisted of numerous jellyfish, and occasional swans, gulls and egrets.
- **Results summary:** In general, turbidity readings ranged between 0.1 and 2.2 NTU throughout the nearfield and farfield areas and over both tidal cycles. Lower turbidity values 0.1-0.5 NTU were observed in the western portion of the dredge area, while slightly higher values 0.6-2 NTU were observed in the eastern portion of the dredge area adjacent to the Acushnet River. Discrete water samples were collected for total suspended solids (TSS) and turbidity analyses based on tide (i.e., 2 tidal cycles) and location (i.e., central location within dredge area, 300-ft and 600-ft down-current of dredge boundary) to establish baseline conditions and as a calibration of water quality monitoring equipment.

Week of August 18, 2008 (Week 1)

August 18, 2008:

- **Tidal stage:** High tide at 09:35 and 21:52 EDT; low tide at 2:54 and 15:10 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove.
- **Monitoring activity**: Week 1, Day 1 of Level III monitoring. Deployed moorings equipped with *in situ* water quality meters at two locations: approximately 300 ft up-current and down-current of the eastern dredge boundary. Monitored low water and flood tide.
- **Fishery and Wildlife Observations:** Bait fish and larger fish moving in channel. Gulls and cormorants also observed feeding throughout the area.
- **Results summary:** Readings collected at reference location, value of 1.75 NTU. Dissolved oxygen values throughout the survey area ranged from 4.19 mg/L to 8.59 mg/L, with lower values to the south and higher values to the north. Several transects run

along the outside of the eastern boundary. Turbidity values ranged from 2 NTU to 7.8 NTU in the morning and from 2 NTU to 18 NTU in the afternoon. Turbidity plume (8 NTU to 18 NTU) observed along eastern boundary of dredge area (within approximately 600-ft of debris removal/dredging activities); higher turbidity readings only observed for approximately 3-4 minutes. No oil sheens observed. No samples collected.

August 19, 2008:

- **Tidal stage:** High tide at 10:16 and 22:33 EDT; low tide at 03:29 and 15:52 EDT.
- **Dredge activity:** Debris removal and active dredging in central cove area. Debris removal barge moved at approximately 10:30 EDT.
- **Monitoring activity:** Week 1, Day 2 of Level III monitoring. Monitored low water and flood tide.
- **Fishery and Wildlife Observations:** Fish (bait fish and predatory fish) observed throughout the dredge area and near the dock. Gulls, osprey, and cormorants also observed feeding in the dredge area. A yellow spotted turtle was also observed near the mid channel area.
- **Results summary:** Readings collected at reference location, values of 1.9–2.5 NTU. Dissolved oxygen values throughout the survey area ranged from 4.84 mg/L to 10.4 mg/L, with lower values to the south (<5 mg/L) and higher values to the north (>5 mg/L). Several transects run along the outside of the eastern boundary. Turbidity values ranged from 2 NTU to 27 NTU in the morning and from 2 NTU to 10 NTU in the afternoon. Short duration, turbidity plumes up to 15 NTU observed at the southeast corner of the dredge area. Higher turbidity values (20 to 27 NTU) observed along the eastern boundary of the dredge area during the ebb tide; dredge operations ceased for approximately 15 to 20 minutes and turbidity values decreased to 1–3 NTU. No oil sheens observed. No samples collected.

August 20, 2008:

- **Tidal stage:** High tide at 10:59 and 23:17 EDT; low tide at 04:07 and 16:37 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove.
- **Monitoring activity:** Week 1, Day 3 of Level III monitoring. Monitored low water and flood tide.
- **Fishery and Wildlife Observations:** Predatory fish observed feeding on bait fish near dock. Fish observed jumping throughout the survey area and four swans observed inside the dredge boundary.
- **Results summary:** Readings collected at reference location, values of 1.25 to 1.65 NTU. Dissolved oxygen values throughout the survey area ranged from 3.82 mg/L to 4.98 mg/L. Several transects run along the outside of the eastern boundary. Turbidity values ranged from 2 NTU to 13 NTU in the morning and from 2 NTU to 18 NTU in the afternoon. Higher turbidity values of 9–18 NTU were observed near southeast boundary of the dredge area; turbidity values were sporadic and of short duration. A notable plume was observed dissipating south from the dredge area (see Section 4.2.1). No oil sheens observed. No samples collected.

August 21, 2008:

- **Tidal stage:** High tide at 11:46 EDT; low tide at 04:47 and 17:25 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove.
- **Monitoring activity:** Week 1, Day 4 of Level III monitoring. Monitored low water and flood tide.
- **Fishery and Wildlife Observations:** Cormorants, gulls, and fish observed feeding throughout the dredge area. One large (approximately 24 inch length) dead fish observed near the outside of the boom.
- **Results summary:** Readings collected at reference location, values of 0.2–0.3 NTU. Dissolved oxygen values throughout the survey area ranged from 5.42 mg/L to 7.09 mg/L. Several transects run along the outside of the eastern boundary. Turbidity readings were less than 3 NTU during the morning. A well defined, light brown plume with turbidity readings up to 32 NTU was observed outside the southern dredge boundary during the ebb tide. Conducted Level I planned sampling during ebb tide and along turbidity gradient; samples (14-20 NTU sample, 25-32 NTU sample, and reference sample) collected for toxicity, TSS, turbidity, total and dissolved PCBs, and metals. No oil sheens observed.

August 22, 2008:

- **Tidal stage:** High tide at 00:06 and 12:39 EDT; low tide at 05:23 and 18:19 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove.
- **Monitoring activity:** Week 1, Day 5 of Level III monitoring. Monitored low water and flood tide.
- **Fishery and Wildlife Observations:** Fish, gulls and cormorants observed throughout the survey area.
- **Results summary:** Readings collected at reference location, values of 4.0–4.3 NTU. Dissolved oxygen values throughout the area ranged from 4.72 mg/L to 5.79 mg/L. Several transects run along the outside of the eastern boundary. No turbidity plumes observed; turbidity readings ranged from 2.1 NTU to 4.6 NTU. No oil sheens observed. No samples collected.

Week of August 25, 2008 (Week 2)

August 28, 2008:

- **Tidal stage:** High tide at 06:20 and 18:47 EDT; low tide at 00:23 and 12:24 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove throughout the morning. Debris removal was stopped for the early afternoon.
- **Monitoring activity**: Week 2, Day 1 of Level III monitoring. Monitored ebb tide through low water and the beginning of flood tide.
- **Fishery and Wildlife Observations:** Bait fish and predatory fish observed along the eastern boundary of the dredge area and near the dock. Gulls and cormorants also observed throughout the area.
- **Results summary:** Readings collected at reference locations, values of 1.9 NTU to 2.05 NTU. Dissolved oxygen values throughout the survey area ranged from 3.80 mg/L to 4.73 mg/L, with slightly lower values to the south compared to the north. Several transects run along the outside of the eastern boundary. Turbidity values ranged from 2

NTU to 30 NTU in the morning and from 2 NTU to 12 NTU in the afternoon. Poorly defined turbidity plume (8 NTU to 30 NTU) observed south of the southern boundary of dredge area (within approximately 800-ft of debris removal/dredging activities); higher turbidity readings of 18 NTU to 30 NTU were very short lived. As the tide started to come in and debris removal stopped, all readings dropped back to less than 6.2 NTU. No oil sheens observed. No samples collected.

Week of September 1, 2008 (Week 3)

September 3, 2008:

- **Monitoring activity**: None. The sensors deployed at the moorings were serviced. The sensors were cleaned, recalibrated, and the batteries replaced.

September 4, 2008:

- **Tidal stage:** High tide at 11:38 and 23:55 EDT; low tide at 04:40 and 17:18 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove throughout the morning. Debris removal and dredging was stopped for most of the early afternoon.
- **Monitoring activity**: Week 3, Day 1 of Level III monitoring. Monitored ebb tide through low water and the beginning of flood tide.
- **Fishery and Wildlife Observations:** Bait fish and predatory fish observed at the south reference area, along the eastern boundary of the dredge area, and near the dock. Small predatory fish were observed feeding in the afternoon along the eastern boundary. Gulls and cormorants also observed throughout the area.
- **Results summary:** Readings collected at reference locations, values of 1.75 NTU to 2.5 NTU. Dissolved oxygen values throughout the survey area ranged from 4.80 mg/L to 5.68 mg/L. Several transects run along the outside of the eastern boundary. Turbidity values ranged from 1.5 NTU to 7 NTU in the morning and from 1.5 NTU to 12 NTU in the afternoon. Poorly defined turbidity plume (4 NTU to 12 NTU) observed east of the eastern boundary of dredge area while dredging and debris removal were inactive and the tide was changing directions. Some small (1 to 3 inch) patches of oil sheens were observed just outside the northeast dredge boundary in the morning. No samples collected.

Week of September 8, 2008 (Week 4)

September 11, 2008:

- **Tidal stage:** High tide at 05:34 and 17:55 EDT; low tide at 11:05 EDT.
- **Dredge activity:** Debris removal in the morning until about 10:00 when the tide was too low for the barge to move. Active dredging at Pierce Mill Cove throughout the morning and afternoon- dredging activity was occasionally down for 15-30 minute intervals.
- **Monitoring activity**: Week 4, Day 1 of Level III monitoring. Monitored ebb tide through low water and the beginning of flood tide.
- **Fishery and Wildlife Observations:** Bait fish and predatory fish observed throughout the area that was monitored. Gulls observed resting on the floating pipeline.
- **Results summary:** Readings collected at reference locations, values of 2.4 NTU to 4.0 NTU. Dissolved oxygen values throughout the survey area ranged from 5.41 mg/L to 8.97 mg/L. Monitoring inside the dredge boundary showed 20 NTU to 30 NTU in the

vicinity of the dredge and support boats. In very close proximity to the debris removal barge (30-50 feet east), readings of 35 NTU to 45 NTU were observed but of short duration. Water depths in the monitoring area around the barge ranged from less than 1 foot to about 2 feet. Several transects were run along the outside of the eastern boundary following cessation of debris removal activities. Turbidity values ranged from 2 NTU to 10 NTU. A poorly defined turbidity plume (4 NTU to 10 NTU) was observed north east of the boundary area while dredging was active. No oil sheens observed. No samples collected.

Week of September 15, 2008 (Week 5)

September 16, 2008:

- **Monitoring activity**: None. The sensors deployed at the moorings were serviced. The sensors were cleaned, recalibrated, and the batteries replaced.

September 17, 2008:

- **Monitoring activity**: None. Boat-based *in-situ* water quality monitoring was not performed because dredging and debris removal activities were terminated from September 17 to 19 to perform repairs to the pipeline.

Week of September 22, 2008 (Week 6)

September 23, 2008:

- **Tidal stage:** High tide at 03:03 and 15:37 EDT; low tide at 08:34 and 22:07 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove throughout the morning and afternoon; dredging activity was occasionally down for 15-30 minute intervals and debris removal was not operational until approximately 09:15 EDT.
- **Monitoring activity**: Week 6, Day 1 of Level III monitoring. Monitored slack low tide through most of the flood tide.
- **Fishery and Wildlife Observations:** Bait fish and predatory fish observed throughout the area that was monitored. Gulls observed resting on the floating pipeline.
- **Results summary:** Readings collected at reference locations, values of 2.8 NTU to 3.4 NTU. Dissolved oxygen values throughout the survey area ranged from 5.28 mg/L to 6.25 mg/L. Several transects were run along the outside of the eastern boundary. Turbidity values ranged from 2 NTU to 18 NTU in the morning with the highest readings observed just south of the south-eastern boundary near the dock. In the afternoon, readings ranged from 3.4 to 38 NTU. A well defined turbidity plume was observed in the surface water near the edge of the western shoreline south of the dredge boundary. The plume was short lived (approximately 15 to 20 minutes) and occurred 50 minutes after the debris removal barge was moved from the central dredge area into the western dredge area. No oil sheen was observed and no samples were collected.

Week of September 29, 2008 (Week 7)

September 29, 2008:

- **Monitoring activity**: None. The sensors deployed at the moorings were serviced. The sensors were cleaned, recalibrated, and the batteries replaced.

October 1, 2008:

- **Tidal stage:** High tide at 09:41 EDT and 21:59 EDT; low tide at 15:37 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove; dredging activity and debris removal was occasionally down for 15-30 minute until approximately 11:00 EDT.
- **Monitoring activity**: Week 7, Day 1 of Level III monitoring and Level I planned sampling. Monitored end of slack flood tide through part of the ebb tide.
- **Fishery and Wildlife Observations:** Small fish observed jumping near the boundary of the dredge area that was monitored. Gulls and cormorants observed resting on the floating pipeline.
- **Results summary:** Readings collected at reference locations had values of 3.8 NTU to 4.5 NTU. Dissolved oxygen values throughout the survey area ranged from 5.38 mg/L to 7.42 mg/L. Transects were run along the outside of the eastern boundary before entering the dredge area. Transects were also run inside the dredge area; higher, sustained turbidity readings were recorded approximately 125 feet from the debris removal activities located in the northwest corner next to the dredge. Level I planned samples were collected during the ebb tide along a turbidity gradient ranging from 3.8 NTU to 65 NTU. Samples were collected for total suspended solids, turbidity, toxicity, and PCBs; archived samples were also collected for metals. The first set of samples was collected at 11:23 EDT approximately 125 feet from the debris removal. The average turbidity level was 57 NTU with a range between 50-65 NTU. The second set of samples was collected at 11:50 EDT approximately 200 feet from the debris removal. The average turbidity was 24 NTU with a range of between 19-26 NTU. The final set was collected at the north reference location with a turbidity value of 3.8 NTU. Field QC samples were also collected, including a field replicate, equipment blank, and 'extra' water for lab-based QC samples. No oil sheen was observed.

Week of October 6, 2008 (Week 8)

October 8, 2008:

- **Tidal stage:** High tide at 3:08 EDT and 15:34 EDT; low tide at 7:58 EDT and 21:07 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove; dredging activity and debris removal was down periodically throughout the morning.
- **Monitoring activity**: Week 8, Day 1 of Level III monitoring; monitored flood tide throughout the day.
- **Fishery and Wildlife Observations:** Small fish observed jumping near the boundary of the dredge area that was monitored. Birds, including great blue heron, gulls, swans, and cormorants observed in the area.
- **Results summary:** Readings collected at reference locations had values of 0.5 NTU to 1.6 NTU. Dissolved oxygen values throughout the survey area ranged from 3.90 mg/L to 6.16 mg/L. Transects were run inside the dredge boundary in the eastern most section. Turbidity values ranged from 1.5 NTU to 13.6 NTU in the morning with the highest readings observed about 50-100 feet east of the dredge activity. In the afternoon, readings ranged from 1.0 NTU to 11.0 NTU; higher turbidity readings were again measured due east of the dredge activity. At 13:45 EDT the dredge activity was moved to the western most portion of the dredge area. All turbidity levels decreased to 2-3 NTU

in the survey area (eastern portion of dredge area). A small oil sheen was observed due east of the dredge in the morning. No samples were collected.

October 9, 2008:

- **Monitoring activity**: None. The sensors deployed at the moorings were serviced. The sensors were cleaned, recalibrated, and the batteries replaced.

Week of October 13, 2008 (Week 9)

October 15, 2008:

- **Tidal stage:** High tide at 08:39 EDT and 21:01 EDT; low tide at 14:33 EDT.
- **Dredge activity:** Debris removal throughout the morning in the south west corner of the middle dredge area of Pierce Mill Cove. Active dredging in the morning in the far northwest corner of the western most area. No debris removal was performed in the afternoon; dredging occurred in the southern portion of the middle dredge area.
- **Monitoring activity**: Week 9, Day 1 of Level III monitoring; monitored ebb tide throughout the day.
- **Fishery and Wildlife Observations:** Birds, including great blue heron, gulls, swans, and cormorants observed in the area.
- **Results summary:** Readings collected at reference locations had values of 3.7 NTU to 4.2 NTU. Dissolved oxygen values throughout the survey area ranged from 5.80 mg/L to 7.31 mg/L. During the morning, transects were run inside the dredge boundary in the eastern most section. Turbidity values ranged from 3.6 NTU to 33.4 NTU in the morning with the highest readings observed about 50-100 feet east of the debris removal. During the afternoon, transects were run just outside the southeast dredge boundary (low tide prevented access to inside the dredge boundary). In the afternoon during low tide, there was a period of high turbidity readings due east and southeast of the dredge activity. Turbidity readings were higher in close proximity to the dredge activity (i.e., 60-80 NTU 50-100 feet east of dredge) and decreased with increasing distance from the dredge activity (i.e., 20-30 NTU about 200 feet southeast of dredge activity (next to the dock) and 10-12 NTU about 325 feet southeast of dredge activity). The turbidity plume was sustained for about 45 minutes and abated when dredging stopped around 14:00 EDT. By 14:40 EDT, the turbidity plume had diminished and turbidity levels about 20 feet east of the dock (about 200 feet from dredging activity) dropped to 6.8 NTU. No oil sheens were observed. No samples were collected.

Week of October 20, 2008 (Week 10)

October 20, 2008:

- **Tidal stage:** Low tide at 05:59 EDT and 19:07 EDT; high tide at 13:06 EDT.
- **Dredge activity:** Active dredging in southern area of the middle section of Pierce Mill Cove throughout the day. Debris removal in northeast area of the western-most section in the afternoon.
- **Monitoring activity**: Week 10, Day 1 of Level III monitoring. Monitored flood tide in the morning and ebb tide in the afternoon.
- **Fishery and Wildlife Observations:** Birds, including gulls, cormorants, and swans observed near dredge area and resting along pipeline.

- **Results summary:** The background turbidity readings at the reference sites ranged from 1.3 NTU (at the northern reference in the afternoon) to 1.8 NTU (at the southern reference in the morning). Transects were run along the eastern boundary of the Pierce Mill Cove dredge area throughout the morning; turbidity readings ranged from 1.3-3.2 NTU. In the afternoon, transects were run inside the eastern dredge boundary; turbidity readings ranged from 4.4-8.2 NTU, with the highest turbidity (8.2 NTU) observed approximately 150 feet due east of the debris removal. A low level turbidity plume was visible in the afternoon from the debris removal south just past the southern mooring. No oil sheens observed. No samples were collected.

Week of October 27, 2008 (Week 11)

October 30, 2008:

- **Monitoring activity**: None. The sensors deployed at the moorings were retrieved for the last time.

4.0 RESULTS

Results from the field reconnaissance activities performed at and around the Pierce Mill Cove dredge area and the laboratory testing of discrete water quality samples are presented in this section. Complete results are provided as appendices to this report.

4.1 Dredging Summary

Remedial dredging at the Pierce Mill Cove area was initiated on August 18, 2008 and completed on October 21, 2008. The Pierce Mill Cove dredging area was divided into three sections with sheet pilings running north to south. The western most section, which includes parts of DMU-19 and DMU-23, is intertidal and therefore dredging could not always be conducted during low tides. To maintain efficiency a second dredge was set up. When low water prevented dredging in the western most section of the cove, dredge crews moved over to the second dredge. This approach meant that the dredging location was variable from day to day and even within one work day. The middle section of the cove area included DMU-23, DMU-20, and DMU-24 and the eastern portion encompassed sections of DMU-20, DMU-24, DM-25, and DMU-21. Dredging in all three parts of the Pierce Mill Cove Area was conducted in a West-East orientation during most of the dredging season.

Once the dredge areas were determined, sheet piling was placed around the perimeter of each section, at approximately 50 ft spacing. A perimeter cable was run around the sheet piles at approximately the high tide mark. Also along the perimeter, floating, absorbent oil booms were placed to contain any surface oil slicks. A 'gate' in the south eastern end of the dredge area was used for all vessels entering or leaving the operation. However, navigating from the dredge boundary at the gate to the reference areas was hindered by floating pipelines.

Dredging was performed using a Mud Cat™ hydraulic dredge equipped with a horizontal auger (Figure 9). The dredge was propelled by winching itself along a transverse cable which spans the dredge area. As a pass was completed, support crews relocated the cable to position for the next pass. Dredged material was pumped through a pipeline to a booster pump, then to the desanding facility at Sawyer Street. Following desanding, the remaining fine material was pumped via a separate pipeline to the dewatering, treatment, and handling facility in the Lower Harbor. In total, Jacobs estimated that dredging removed approximately 20,000 cubic yards of material from Pierce Mill Cove in 2008.

Figure 9. Mud Cat™ Hydraulic Dredge

Because hydraulic dredges can not process large debris it was necessary to conduct separate removal operations prior to the dredging of a particular area. Debris removal was accomplished by 'raking' the bottom with a barge-mounted excavator with two forked jaws that opened and

closed (Figure 10). The two jaws scraped the bottom and closed into each other to capture the debris. Debris scows secured to the side of the debris removal platform stored the debris and were moved offsite as needed. Support boats were used throughout the operation to transport crews, maintain dredges, handle the pipeline, and move barges.

Figure 10. Debris Removal Excavator

4.2 Field Monitoring Summary

Water quality monitoring was conducted in an adaptive manner to assess potential impacts to water quality in response to changing operational and weather related conditions. The monitoring approach was modified as tides and winds changed; as dredges changed areas; as debris removal activities changed; and as warranted based on support activities. The proximity of the monitoring activities to the dredging operations was also largely influenced by tidal conditions, safety concerns, and access issues. For example, during the first three weeks of dredging, access to the dredge area was limited due to safety concerns and the pipeline, which depending upon the degree to which it was submerged, obstructed access to the interior of the dredge area. As a result, water quality monitoring was primarily performed along the eastern dredge boundary during the first three weeks of dredging. Depending on the location of the dredge activities inside the dredge area, the distance between the monitoring vessel and dredge operations ranged from 200 ft to 800 ft. During the last seven weeks of dredging, the monitoring vessel was able to access the interior of the dredge area, thereby ensuring that water quality monitoring was often performed in close proximity (<200 ft) to the dredge activities. When safety allowed, the monitoring team also worked in tight radiuses (50-100 ft) around the active dredges.

Overall, neither the warning level nor the project criterion was exceeded during the 2008 monitoring at the Pierce Mill Cove dredge area. Level I planned discrete water samples were collected, however, to assess the potential effects of dredging and related activities on water quality during dredge operations. Water quality monitoring and sampling activities are described below and summarized in Table 2.

4.2.1 Boat-based Monitoring

Boat-based water quality monitoring was performed daily during the first week of dredging at the Pierce Mill Cove and once a week thereafter until dredging was completed on October 21, 2008. Site conditions and *in-situ* water quality measurements collected during boat-based monitored are summarized in Section 3.0 and documented in the field logs provided in Appendix A. Water quality monitoring was performed primarily along the eastern dredge boundary, and to a lesser extent inside the dredge area. Access to the dredge area was limited due to the pipeline configuration and safety concerns.

Prior to the onset of dredging activities at the Pierce Mill Cove dredge area, *in-situ* turbidity readings were low (<2 NTU) both inside the dredge area and at the reference stations located 1,000 ft north and south of the dredge boundary. During dredging, *in-situ* turbidity readings at

the dredge area increased compared to baseline conditions, with readings ranging from 1 to 80 NTU depending upon the proximity to dredging activities and tide conditions. For example, the maximum reading of 80 NTU was recorded on October 15, 2008 during an ebbing tide and within approximately 50- to 100-ft from dredge activities; turbidity readings decreased with increasing distance from the dredge operations. On this occasion, dredge activities were ceased due to low tide and the plume subsided. A high turbidity reading of 46.5 NTU was also recorded less than 200 ft from debris removal activities during a low tide on September 11, 2008. On this occasion, debris removal activities were ceased and turbidity readings returned to background conditions (Appendix A). *In-situ* turbidity readings along the eastern boundary of the dredge area were frequently less than 10 NTU during dredging activities. Readings as high as 32 NTU also occurred, but were of short duration (<5 minutes). During dredging, *in-situ* turbidity readings at the north and south reference stations were less than 5 NTU.

Turbidity plumes observed during boat-based monitoring were generally weak (frequently <20 NTU) and infrequent. When turbidity plumes were observed, they often occurred south of the cove area. Turbidity plumes to the north were rarely observed, probably because water flow was generally to the south and the land mass to the north acts as a barrier to reduce the migration of a north-flowing plume.

Notable plumes were observed on August 20, 21, and 28, September 23, and October 15 and 20, 2008. All of these observations occurred during an ebb tide. Among these plumes, the maximum turbidity reading of 80 NTU was recorded within 50- to 100-ft of the active dredge on October 15, 2008. Dredging activity was ceased due to low tide and the turbidity readings returned to near background levels. Figure 11 is a photograph taken on August 20, 2008 and shows the visible plume dissipating south from the dredge area.

Weak, yet notable, turbidity plumes were also observed due east of the dredge area on August 18 and 19, and September 4, 2008. Among these plumes, the maximum turbidity reading was 27 NTU. These particular observations all occurred at slack tides when the wind was blowing from the west southwest.

Figure 11. Photograph of August 20, 2008 Plume. (south mooring located in upper right quadrant)

Table 2. Boat-based Monitoring and Sampling Activities at Pierce Mill Cove (PMC), 2008. (a)

Week	Date	Sampling Level	Sample Description	Sample ID[(b)]	Test Parameters
NA	6/5/2008	Baseline	Center of PMC, flood	WQ-XXX-001-060508	TSS, TUR
			300-ft north of dredge boundary	WQ-XXX-002-060508	
			600-ft north of dredge boundary	WQ-XXX-003-060508	
			Center of PMC, ebb	WQ-XXX-004-060508	
			300-ft south of dredge boundary	WQ-XXX-005-060508	
			600-ft south of dredge boundary	WQ-XXX-006-060508	
1	8/18/2008	III	NA	NA	NA
	8/19/2008	III	NA	NA	NA
	8/20/2008	III	NA	NA	NA
	8/21/2008	I (planned)	40-ft north dock; 25-32 NTU	WQ-XXX-01-082108	DPC, TPC, TSS, TUR, TOX, MET
			Southeast of dock; 14-20 NTU	WQ-XXX-02-082108	
			PMC north reference	WQ-XXX-03-082108	
	8/22/2008	III	NA	NA	NA
2	8/28/2008	III	NA	NA	NA
3	9/4/2008	III	NA	NA	NA
4	9/11/2008	III	NA	NA	NA
6	9/23/2008	III	NA	NA	NA
7	10/1/2008	I (planned)	125-ft east of debris removal; 50-65 NTU	WQ-XXX-001-100108 WQ-XXX-001-100108-REP	DPC, TPC, TSS, TUR, TOX, MET
			200-ft east of debris removal; 19-27 NTU	WQ-XXX-002-100108	
			PMC north reference	WQ-XXX-003-100108	
8	10/8/2008	III	NA	NA	NA
9	10/15/2008	III	NA	NA	NA
10	10/20/2008	III	NA	NA	NA

(a) See Section 3.0 for description of monitoring activities, site conditions and deployment and servicing of fixed-point moorings.
(b) See Key for description of the "XXX" in the Sample ID.

Key

"XXX" = DPC (Dissolved PCB), TPC (Total PCB), TSS (Total Suspended Solids), TUR (Turbidity), TOX (Toxicity) or MET (Metals). NA – Not Applicable

4.2.2 Fixed-point Continuous Monitoring

Water quality sensors were deployed on the first day of active dredging (August 18, 2008) and remained in service until October 30, 2008, approximately one week after dredging was completed. The deployment of the continuously recording water quality sensors provided additional information that complimented the adaptive monitoring approach discussed above. The location of sensors both northeast and southeast of the dredge area provides information regarding tidal influences on sediment suspension and transport. Continuous readings provided water quality data for periods when adaptive sampling was not performed, such as inactive dredge periods (nights and weekends), thereby providing background condition for data comparison. Dredging operations frequently stopped and started due to mechanical or physical

issues and the location of activities was highly variable. Moreover, the Pierce Mill Cove dredge area was divided into three sections, which were actively dredged at various times depending on the tides and other factors. As a result, it is not always possible to ascertain how specific time periods in the continuous record relate to dredge activities. However, because dredging did not occur on nights or weekends it is appropriate to use these time periods to define 'inactivity' and to use daytime to define 'activity' of the dredging operation. In this way, it is possible to distinguish dredging related water characteristics from background conditions.

Continuous *in-situ* turbidity data collected at the fixed point moorings located approximately 300- to 400-ft north and south of the Pierce Mill Cove dredge boundary are provided in Appendix B. Data from a representative period during the monitoring season are shown in Figure 12; turbidity data are shown along with tidal elevation and a 50 NTU reference value. The 50 NTU reference value is provided as a guideline only, and does not represent the project criterion (50 NTU above background at the 600-ft from dredging activity). The turbidity data as plotted have not been corrected for background. The background turbidity signal in the river is influenced by tidal conditions, stream flow, wind, and other factors. As a result the background turbidity signal can fluctuate on scales from minutes to days. In general, the background turbidity signal at the reference stations ranged from <1 to 5 NTU (Appendix A). A value of 50 NTU from the moored sensors represents a turbidity reading that is approximately 45-49 NTU above background.

Turbidity signals related to dredge activity were clearly observed in the continuous *in situ* data (Figure 12 and Appendix B). These signals manifest as peaks in turbidity above background. The influences of tidal height and flow direction on sediment plume transport are also evident in these data (Figure 12 and Appendix B). Figure 12 shows the turbidity record from both moorings during Week 1 of dredging, including the following weekend. Nights and weekends are shaded on the figure to indicate periods of inactivity in the dredging operation. The following details water quality characteristics observed in the continuous record during this first week of dredging. The letters below correspond to the letters shown in Figure 12.

A. On an incoming tide, current flow is predominately towards the north. As a result, any suspended sediment plumes related to dredging would be expected to be evident at the northern mooring and would not be expected at the southern mooring. This was observed to some extent during the first week of dredging where, during the rising tide, the northern turbidity was greater than the southern turbidity (labeled 'A'). The peaks observed on August 19, 2008 (approximately 25 NTU) provide the clearest example of this, as dredging operations were active for a complete tide cycle.

B. During the outgoing tide, the effect is reversed such that the southern mooring registers a turbidity peak ('B') while the turbidity measured at the northern mooring returns to background.

C. Weak turbidity peaks (labeled 'C', <5 NTU) observed on days with no dredging activities (August 23-25, 2008) are indicative of background levels of turbidity.

D. Throughout the record, occasional spurious readings are evident (labeled 'D', narrow peaks such as the >50 NTU reading on August 23, 2008). These are typically a single reading likely caused by momentary blockage of the turbidity sensor and do not indicate actual water column turbidity.

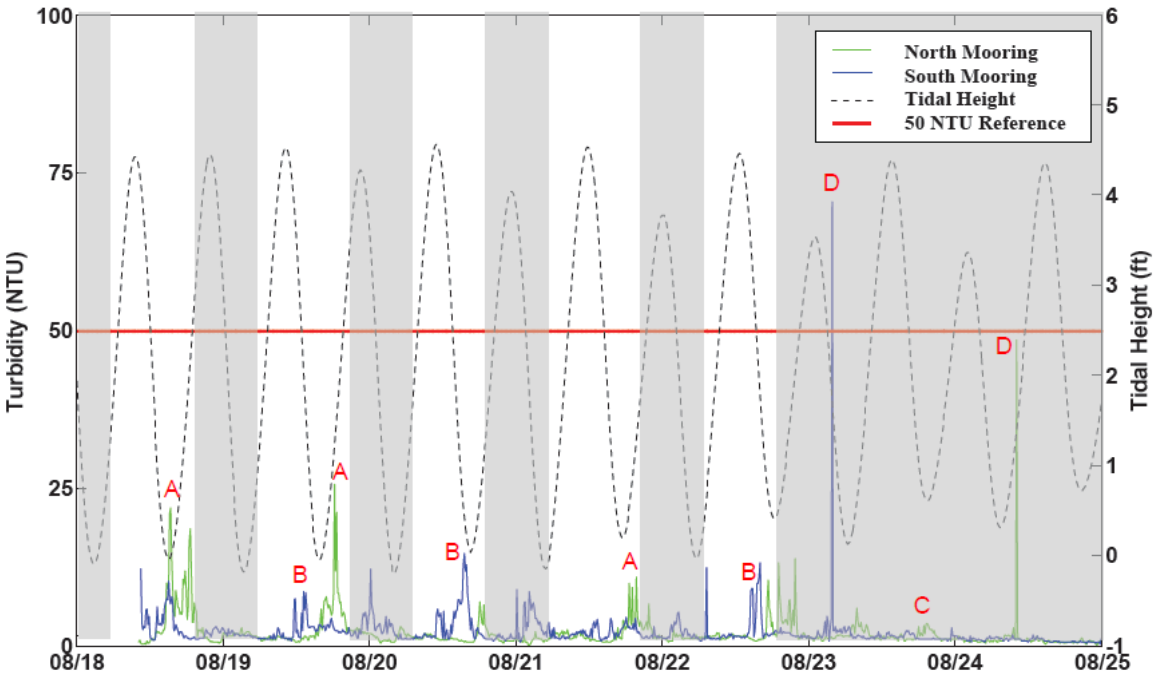


Figure 12. Example of Turbidity Signals Related to Dredging and Tidal Direction during Week 1 of Dredging at the Pierce Mill Cove (shaded areas indicated nights and weekends).

Statistical summaries of the continuous *in-situ* turbidity data from the moored sensors during dredging and non-dredging periods are summarized in Table 3. The statistical summaries include the following information for turbidity at each mooring: number of records, minimum reading, maximum reading, average reading, standard deviation, and date and time of the maximum reading. Overall, the average turbidity readings at both the north and south moorings were representative of background conditions, during both dredging and non-dredging periods. Turbidity readings on average were slightly higher at the south mooring compared to the north mooring.

Table 3. Summary Statistics Continuous *In-situ* Turbidity Data, August 18 to October 22, 2008.

Mooring	Activity[1]	Continuous *In-situ* Turbidity (NTU) Record					
		Number of Records[2]	Mini-mum	Maxi-mum	Average	Standard Deviation	Date/Time of Maximum
North mooring	Dredging	2906	0	38	2.7	3.7	September 11, 2008, 10:00 EDT
	Non-dredging	6474	0	95	2.3	3.6	September 22, 2008, 0:00 EDT
South mooring	Dredging	2740	0.1	92	3.5	4.1	September 25, 2008, 09:10 EDT
	Non-dredging	6356	0	84	3.5	3.6	October 1, 2008, 01:36 EDT

[1] Dredging period includes data from Mondays through Fridays, 07:00 EDT to 18:00 EDT. Non-dredging period includes data from nights (between 18:00 EDT and 07:00 EDT), weekends, and September 16, 2008 at 13:00 EDT through September 19, 2008 when dredging activities were ceased to repair the pipeline.
[2] Spurious readings were excluded from the statistical summaries; where spurious readings are single readings with anomalously high values (>100 NTU) likely caused by momentary blockage of the turbidity sensor.

The continuous *in-situ* turbidity data are similar to the boat-based monitoring data in that these data did not reveal substantive (above 50 NTU) or sustained turbidity plumes (Figure 12 and Appendix B). During dredging activities, turbidity readings above 50 NTU were recorded at the south mooring on September 25, 2008 (92 NTU at 09:10 EDT, Appendix B, Figure B-6) and on October 22, 2008 (83 NTU at 10:20 EDT, Appendix B, Figure B-10). While turbidity readings were somewhat elevated in the subsequent samples[1], values decreased and returned to near background levels within 30 minutes. There was no unusual weather on these dates that could explain the elevated readings. For example, there was little to no rain and temperatures and wind speeds were moderate (during the mornings of September 25 and October 22, 2008 air temperatures were approximately 15° C and 7° C, respectively, and average wind speeds were 7-8 meters per second [m/s] and 10-11 m/s, respectively [NOAA, 2009a and Weather Underground, 2009]).

Boat-based monitoring was not performed on September 25 or October 22, 2008, and there are no field reconnaissance data to better understand why the turbidity readings at the south mooring were elevated on these occasions. Even so, the elevated turbidity readings at the south mooring do not appear to represent an exceedance of the project criterion, primarily because the elevated turbidity values are based on a single sensor reading, rather than multiple sustained high readings. Sensor data from previous monitoring years suggests that a single high reading could be associated with a temporary blockage of the sensor, rather than indicative of a turbidity plume. Moreover, the fixed point sensor at the south mooring was located approximately 300 ft from the dredge boundary, whereas the project criterion is based on turbidity readings 50 NTU or higher above background 600 ft down-current from the dredging activity. Overall, the elevated turbidity readings (>50 NTU) recorded at the south mooring on September 25 and October 22, 2008 may have been associated with a local phenomena or possibly caused by a temporary blockage of the turbidity sensor.

The lack of substantive plumes (>50 NTU) observed in 2008 dredge season data from the moored sensors may be attributed to the physical setting of the dredge area, which is relatively isolated from the physical processes of the upper harbor (i.e., currents and particularly the resulting flushing). Additionally, the physical properties of the dredged material, which according to Jacobs had a high percentage of sand, could also explain the limited extent and duration of the observed plumes. The continuous *in-situ* turbidity data did reveal some weak turbidity plumes, which were sustained only under certain tidal and wind conditions. Generally, if the dredge or debris removal barge was working during a flood tide with the wind from the south or southwest, the north mooring data showed some peaks in turbidity. For example on the afternoon of August 19, 2008, the turbidity plume (approximately 25 NTU) detected by the north mooring (Figure 12, 'A' data) correlates with the incoming tide and the wind from the southwest (winds 7-9 m/s; NOAA, 2009b). Conversely, a turbidity plume (approximately 9 NTU) is apparent in the south mooring data when dredge activities occurred during an ebbing tide (Figure 12, 'B' data) with wind from the north or northeast. The wind appears to have less of an effect during an ebbing tide because both the tide and the flow of the Acushnet river force the plume

[1] September 25, 2008 readings from south senor: 92 NTU at 09:10 EDT, followed by 20 NTU at 09:20 EDT, 33 NTU at 09:30 EDT, and 8 NTU at 09:40 EDT.
October 22, 2008 readings from south sensor: 83 NTU at 10:20 EDT, followed by 23 NTU at 10:30 EDT, 10 NTU at 10:40 EDT, and 0.9 NTU at 10:50 EDT.

south. For example, the wind was from the south-southwest (winds 8-10 m/s) during the ebbing tide on October 16, 2008, the south mooring data show a sustained plume (approximately 23 NTU; Appendix B, Figure B-9).

Continuous *in-situ* dissolved oxygen data were collected at both moorings throughout the majority of the deployments (Figure 13). The dissolved oxygen values remained relatively steady throughout dredge operations in 2008, generally ranging from 5-10 mg/L at both the north and south moorings. As in 2007, dissolved oxygen readings were typically higher during midday and decreased throughout the night and early morning. Some of these diurnal fluctuations were as much as 4 mg/L while others were less than 1 mg/L. The magnitude of these fluctuations in dissolved oxygen may be attributed to the productivity rates of the phytoplankton.

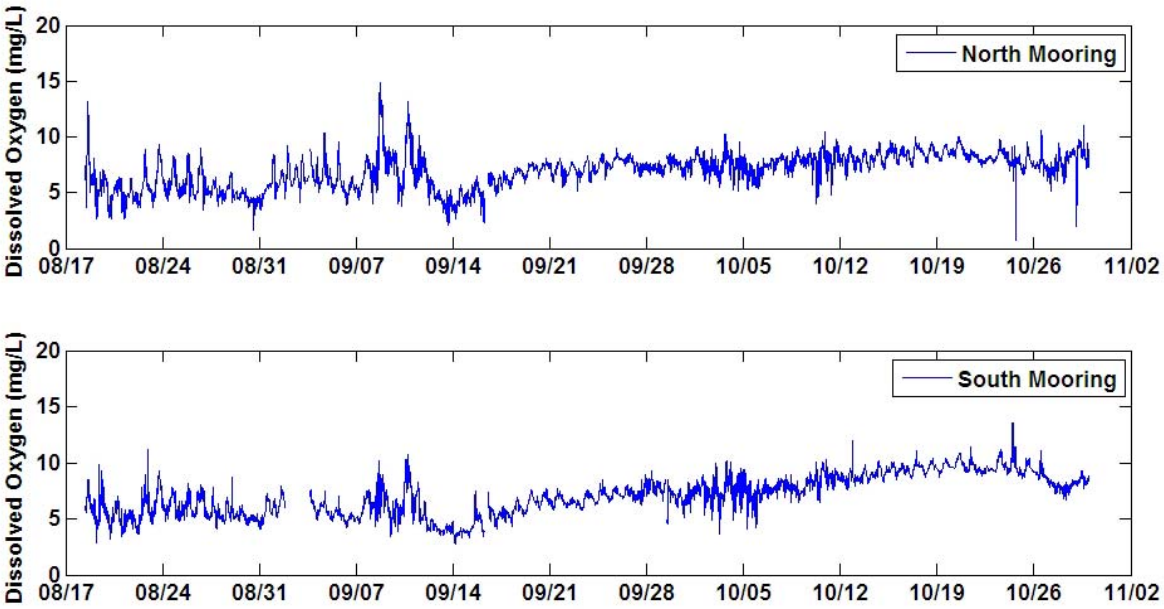


Figure 13. Continuous Dissolved Oxygen Data at the North (top) and South (bottom) Moorings, August through October 2008

4.2.3 Collection of Discrete Water Samples

Discrete water samples were collected during three events throughout the 2008 monitoring season (Table 2). Samples were not collected in response to an exceedance of the warning level or project criterion. Rather, planned samples were collected either to establish baseline conditions prior to the onset of dredging or to verify the protectiveness of the project criterion during dredging activities. Sampling to establish baseline conditions was performed on June 5, 2008; discrete water samples were collected at three locations (center region of the dredge area during flood and ebb tide and 300-ft and 600-ft north and south of the dredge boundary) for TSS and turbidity. During dredging activities, Level I planned samples were collected on August 21, 2008 and again on October 1, 2008. Sampling was performed over a turbidity gradient during the ebb tide. Sampling was performed in close proximity (<300-ft) to the dredging operations to collect water representative of higher turbidity levels. Level I planned samples were collected for TSS, turbidity, PCBs (total and dissolved), and toxicity. Results from the analysis of discrete water samples are presented in Section 4.3.

4.3 Laboratory Testing Summary

This section includes the results from the analysis of discrete water samples collected (Table 2) to establish baseline conditions prior to the onset of dredging and to verify the protectiveness of the project criterion during dredging activities. Discrete water samples collected to establish baseline conditions were analyzed for TSS and turbidity. Discrete water samples collected during dredging activities (weeks 1 and 7) were analyzed for TSS, turbidity, PCBs and toxicity. Sample results are summarized in Tables 3 and 4; complete test results are provided as appendices to the report (Appendix C includes TSS and turbidity data; Appendix D includes PCB data; and Appendix E includes toxicity test results).

4.3.1 Total Suspended Solids and Turbidity

Total suspended solids concentrations in site water samples ranged from 5.1 mg/L to 15.4 mg/L during baseline conditions and from 6.5 mg/L to 76.5 mg/L during dredging activities (Table 4). Turbidity values in site water samples were less than 2 NTU during baseline conditions and ranged from 2.21 NTU to 32.5 NTU during dredging activities (Table 4). Turbidity values in site water samples generally decreased with increasing distance from the dredging activity (Table 4 and Figure 14), with the lowest values (<3 NTU) measured at the reference station located approximately 1,000-ft north of the dredge boundary.

Lab-based turbidity values in discrete water samples were generally comparable to *in-situ* readings measured in the field during boat-based monitoring (Table 4). Lab-based TSS and turbidity results were also comparable between the field replicate samples (Table 4), indicating that the sampling and analytical methods were reproducible.

Table 4. Summary of Total Suspended Solids (TSS) and Turbidity Results.

Sample Period	Sampling Level	Sample ID WQ-TSS/TURB-	Sample Description[1]	Lab-based		Field-based
				TSS (mg/L)	Turbidity (NTU)	Turbidity (NTU)
6/5/2008 Baseline	NA	001-060508	Center of PMC, flood	7.3	1.62	1.9-2.2
		002-060508	300-ft north of dredge boundary, flood	15.4	1.92	0.8
		003-060508	600-ft north of dredge boundary, flood	5.1	1.68	0.9-1.1
		004-060508	Center of PMC, ebb	6.1	1.45	0.3
		005-060508	300-ft south of dredge boundary, ebb	13.5	1.6	0.6-0.9
		006-060508	600-ft south of dredge boundary, ebb	5.6	1.52	0.6-1.1
8/21/2008 Week 1	Level I planned	01-082108	40-ft north dock; (600-ft from debris removal and dredge activity)	36	26.5	25-32
		02-082108	Southeast of dock; (800-ft from debris removal and dredge activity)	29.7	20.1	14-20
		03-082108	PMC north reference	6.5	2.44	0.2-0.3
10/1/2008 Week 7	Level I planned	001-100108	125-ft east of debris removal	76.5 (61.2[2])	32.5 (29.8[2])	50-65
		002-100108	200-ft east of debris removal	55.2	28.1	19-27
		003-100108	PMC north reference	33.4	2.21	3.7-3.8

[1] Samples are collected either based on distance (e.g., 300 ft north of Dredge Boundary) or turbidity levels (e.g., 14-20NTU), see Section 4.2 for further discussion on sample locations.

[2] Field replicate value.

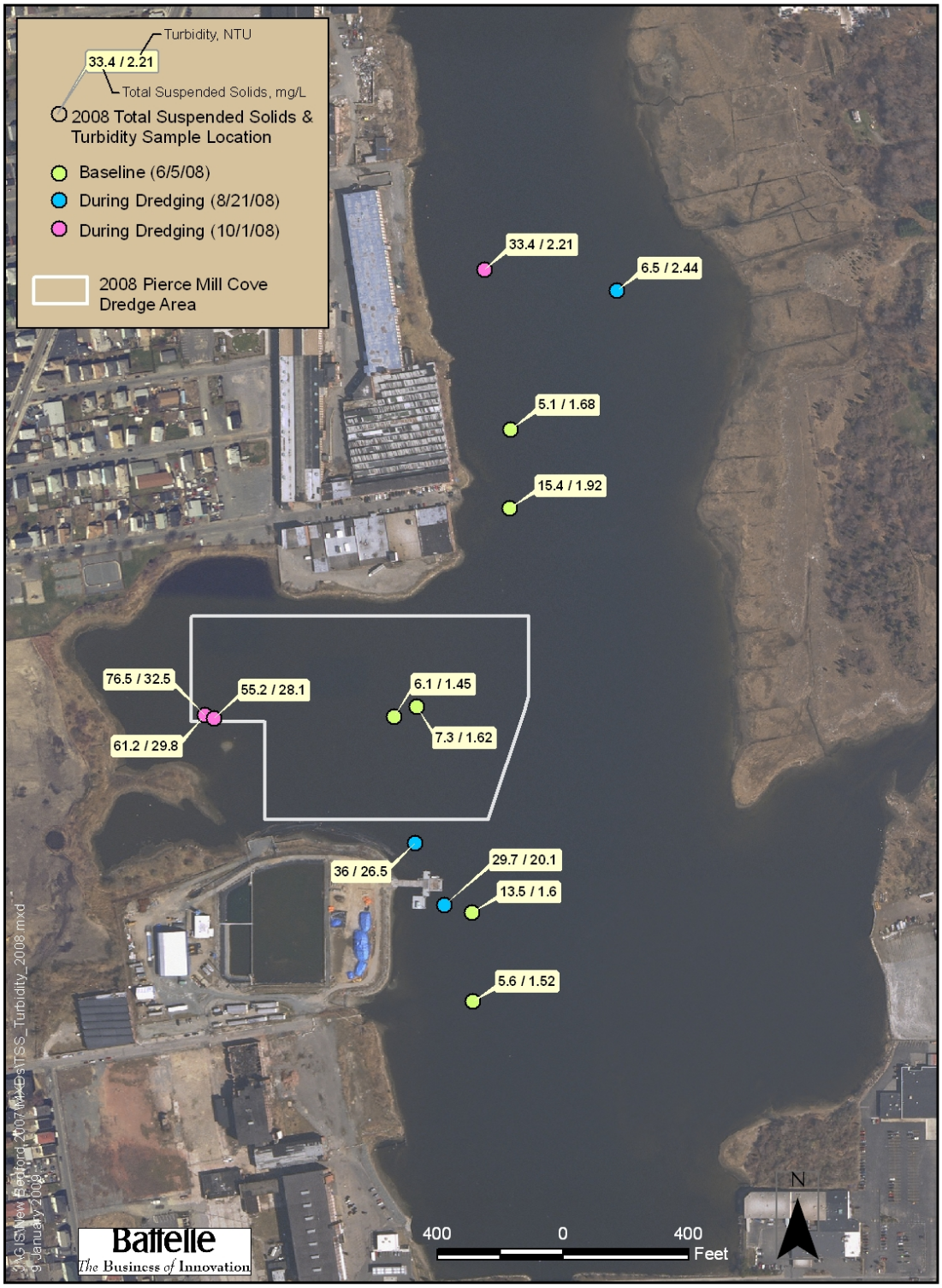


Figure 14. Total Suspended Solids and Turbidity Results in Site Water Samples Collected Prior to and During Dredging Activities.

4.3.2 Polychlorinated Biphenyls

PCB results are presented as total concentrations (i.e., SUM 18 CONG) in Table 5; results for individual congeners are reported with the complete analytical data provided in Appendix D. Concentrations of the SUM 18 CONG ranged from 0.22 µg/L to 1.7 µg/L in the total (unfiltered) water samples, and from 0.14 µg/L to 0.31 µg/L in the dissolved phase samples (Table 5). The dissolved phase samples contained the lowest PCB concentrations, and were uniformly low throughout the sampling area. In contrast, PCB concentrations in the total (unfiltered) samples were higher in water sampled in close proximity to the dredging activities and lower in water sampled further away (i.e., north reference station) (Table 5).

Results from the field-based QC samples indicate that the sampling and analytical methods were reproducible (PCB results were similar between the original and replicate samples, Table 5) and free of contamination (i.e., PCBs were undetected at levels above the sample reporting limit in the equipment blank).

4.3.3 Toxicity

Toxicity results from the acute and chronic (sub-lethal) exposure assays performed on site water samples collected during dredging activities at the Pierce Mill Cove are summarized in Table 5. Results are presented for the test endpoints: survival, growth, development and reproduction. Results for test endpoints for each sample were statistically compared to those from both the event-specific site reference sample and the laboratory control sample.

4.3.3.1 Sea Urchin (*Arbacia punctalata*)

60-min sperm cell fertilization –All three site water samples collected during week 1 of dredging (August 21, 2008 event) showed low percent fertilization, ranging from 34.1% in the site reference sample to 56.2% in the 25-32 NTU sample. Fertilization rates for all samples were significantly lower compared to the laboratory control (88.7%). Fertilization rates for the 14-20 NTU and 25-32 NTU samples were also significantly different (higher) compared to the site reference sample.

Percent fertilization values in the three samples collected during week 7 of dredging (October 1, 2008 event) ranged from 83.9% in the 19-26 NTU sample to 95.6% in the 50-65 NTU sample. Percent fertilization values for all samples were significantly lower compared to the laboratory control (98.8%). Percent fertilization values for the 19-26 NTU sample was significantly lower compared to the site reference sample. In general, mean percent fertilization in the samples collected during week 7 was greater than 80%, indicating that while some impact relative to the laboratory control and site reference samples was observed, the impact was relatively small.

4.3.3.2 Mysid (*Americamysis bahia*)

48-hr survival – Mean percent survival in the site water samples collected during week 1 of dredging (August 21, 2008 event) ranged from 87.5% in the site reference sample to 100% in the 14-20 NTU and 25-32 NTU samples. Percent survival in the site reference sample was significantly lower compared to the laboratory control. Percent survival in the 14-20 NTU and 25-32 NTU samples was not statistically different compared to the site reference sample.

Mean percent survival in the site water samples collected during week 7 of dredging (October 1, 2008 event) ranged from 92.5% in the 50-65 NTU sample to 100% in the site reference samples. Mean percent survival values were not significantly different compared either to the laboratory control or the site reference sample. Moreover, mean percent survival values in all samples (collected on October 1, 2008) were within 5% of the laboratory control sample, indicating overall survival was excellent.

7-day mean survival – Mean percent survival in the site water samples collected during week 1 of the dredging (August 21, 2008 event) ranged from 85% in the site reference sample to 92.5% in the 14-20 NTU sample. Percent survival values were not significantly different compared either to the laboratory control or the site reference sample.

Mean percent survival in the site water samples collected during week 7 of the dredging (October 1, 2008 event) ranged from 87.5% in the 50-65 NTU sample to 97.5% in the 19-26 NTU and site reference samples. Percent survival values were not significantly different compared either to the laboratory control or the site reference sample.

7-day mean biomass – The 7-day mean biomass in the three site water samples collected during week 1 of the dredging (August 21, 2008 event) ranged from 0.2630 mg/mysid in the 14-20 NTU sample to 0.3215 mg/mysid in the site reference sample. Biomass values were not significantly different compared either to the laboratory control or the site reference sample.

Biomass measurements could not be performed on the site water samples collected during week 7 of dredging (October 1, 2008 event) because the dry organism samples were inadvertently lost in the laboratory.

4.4.3.3 Red alga (*Champia parvula*)

48-hr mean survival – All site water samples collected during weeks 1 and 7 of the dredging (August 21 and October 1, 2008 events) had 100% survival, indicating no acute impact to the alga.

7-day mean reproduction – Mean reproduction in the site water samples collected during week 1 of the dredging (August 21, 2008 event) ranged from 0.0 cystocarp/tip in the 25-32 NTU sample to 4.9 cystocarp/tip in the site reference sample. Mean reproduction values in all three samples were significantly lower compared to the laboratory control. Mean reproduction values in the 14-20 NTU and 25-32 NTU samples were also significantly lower compared to the site reference sample, and showed no or limited cystocarp production.

Mean reproduction in the site water samples collected during week 7 of the dredging (October 1, 2008 event) ranged from 2.7 cystocarp/tip in the 50-65 NTU sample to 17.1 cystocarp/tip in the site reference sample. Mean reproduction values in all three samples were significantly lower compared to the laboratory control. Mean reproduction values in the 50-65 NTU and 19-26 NTU samples were also significantly lower compared to the site reference sample.

Table 5. Summary of Total Suspended Solids, Turbidity, PCB and Toxicity Sample Results in Discrete Water Samples Collected at the Pierce Mill Cove (PMC) Dredge Area, 2008.

Sample Period	Estimated Distance from Dredge (ft)	Sample Description	TSS (mg/L)	Turb-idity (NTU)	Total PCB[1] Results (µg/L)		Toxicity Results					
							Sea Urchin (*A. punct-alata*)	Mysid (*A. bahia*)			Red alga (*C. parvula*)	
					Total	Diss-olved	mean fertiliza-tion (%)	48-hr mean survival (%)	7-day mean survival (%)	7-day mean biomass (mg/mysid)	48-hr mean survival (%)	7-day mean repro-duction (cysto-carp/tip)
Week 1 8/21/08	NA	Toxicity Lab Control	N/A	N/A	N/A	N/A	88.7	97.5	95.0	0.217	100	10.53
	40-ft north dock; 600-ft from debris removal and dredge activity	25-32NTU	36	26.5	0.98	0.22	**56.2**[2,3]	100	87.5	0.3012	100	**0.00**[2,3]
	Southeast of dock; 800-ft from debris removal and dredge activity	14-20NTU	29.7	20.1	0.88	0.2	**36.2**[2,3]	100	92.5	0.2630	100	**0.10**[2,3]
	1000-ft	PMC North Reference	6.5	2.44	0.42	0.31	**34.1**[2]	**87.5**[2]	85.0	0.3215	100	**4.90**[2]
Week 7 10/1/08	NA	Toxicity Lab Control	NA	NA	NA	NA	98.8	97.5	97.5	No data[5]	100	33.10
	125-ft East of debris removal	50-65NTU	76.5 (61.2[4])	32.5 (29.8[4])	1.7 (1.84[4])	0.26 (0.25[4])	**95.6**[2]	92.5	87.5	No data[5]	100	**2.70**[2,3]
	200-ft East of debris removal	19-26NTU	55.2	28.1	1.1	0.22	**83.9**[2,3]	97.5	97.5	No data[5]	100	**6.15**[2,3]
	1,000-ft	PMC North Reference	33.4	2.21	0.22	0.14	**93.3**[2]	100	97.5	No data[5]	100	**17.10**[2]
	NA	Equipment Blank	NA	NA	Not detected	NA	NA	NA	NA	NA	NA	NA

NA – Not Applicable
[1] Sum of 18 NS&T congeners.
[2] **Bold values** are significantly different from associated laboratory control sample.
[3] **Bold values** are significantly different from associated reference sample.
[4] Replicate value.
[5] 7-day *a. bahia* biomass measurement for 10/1/08 samples could not be performed because of inadvertent loss of dry organism samples occurred in the toxicity laboratory.

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4.3.4 Quality Control

The review of the laboratory QC data is documented in case or QA/QC narratives, which are provided with the sample data as appendices to this report. In general, the quality of the data is acceptable and the analytical methods are in control. For example, target parameters were undetected in the method/procedural blanks, indicating that the methods were free of contamination. Moreover, recovery and precision results for the laboratory-based QC samples (i.e., LCS, MS, MSD, and duplicates) were acceptable for all test parameters, indicating that the methods are in control.

5.0 DISCUSSION

The field monitoring program was designed to assess the potential impacts of dredging on water quality with an ultimate goal of minimizing harm to biological components of the system. To achieve that goal the monitoring was carried out in several ways:

- Adaptive *in situ* monitoring was used to track sediment plumes in real-time. This design allowed for immediate feedback to the dredging operation so that potential issues could be addressed before ecological harm was incurred.
- Pre-defined sampling provided guidelines for collection of analytical samples. The results of these analyses provide critical data regarding the chemical and biological impacts of dredging related activities on the system.
- Continuous *in-situ* data collection provided detailed information during periods when human-based sampling was not possible and when potential anthropogenic disturbances to the systems were minimal.
- Observational monitoring was conducted during all aspects of the program. This included anecdotal observations of fish passage and behavior, and observations of non-targeted parameters such as oil sheens and weather conditions. Like the adaptive *in situ* monitoring, observational monitoring provides rapid feedback to managers and operators and can help to minimize ecological risk.

5.1 Fishery and Wildlife Observations

Information pertaining to fish passage and behavior are based on visual observations recorded by field staff throughout the 2008 monitoring season. Throughout the dredge season large numbers of fish were observed in the study area. Lower trophic level baitfish were consistently observed moving throughout the river from Sawyer Street to Wood Street. Larger predatory fish such as striped bass and bluefish were also sporadically seen. Birds such as great blue herons, gulls, swans, cormorants, egrets, osprey, and other wading birds were observed feeding along the shoreline during these weeks (Figure 15). During this time period, when fish were most abundant, there appeared to be no restriction of movement past the dredge area. No fish kill events were observed during the 2008 dredge season.

Figure 15. Swans Observed Along Pierce Mill Cove Dredge Boundary During Dredging Operations

5.2 Suspended Sediment and Sediment Transport from Dredging Activities

As in previous years a project-specific warning level of 50 NTUs above background 300 ft down current of dredging operations was set as a threshold for sample collection and assessment of operations. A project criterion of 50 NTUs above background at 600 ft down current was set as a threshold for immediate cessation of operations related to the exceedance. During the 2008 dredge season there were no exceedances of either the warning level or the project criterion.

During operations there were three general activities with potential to generate suspended sediment plumes; 1) dredging, 2) debris removal, and 3) support activities. Access to the interior of the dredge area was limited during the 2008 dredging season due to safety concerns and the pipeline configuration (e.g., pipeline was not submerged and obstructed access). As a result, there was less direct field reconnaissance information collected in close proximity to the dredging operations compared to previous monitoring years from which to draw conclusions regarding which of these activities (dredging, debris removal, and/or support activities) contributed to the most significant plumes. Even so, key findings from the 2008 field reconnaissance activities were generally consistent with previous monitoring years (Battelle, 2007 and 2008c). That is, dredging itself created virtually no measurable or sustained sediment plumes above 50 NTU as evidenced by the boat-based and continuous *in-situ* turbidity monitoring data (Sections 4.2.1 and 4.2.2). Next, sediment plumes and higher turbidity readings tended to be observed in close proximity to the dredging operations and dissipated with increasing distance from the operations. Among the 2008 boat-based, *in-situ* turbidity data, the highest readings (>30 NTU) were more often observed within 200 ft of the dredging or debris removal activities. Elevated turbidity readings (upwards of 40 NTU) were also occasionally observed further away from the dredge operations, especially near the dock located immediately south of the dredge boundary. Finally, when turbidity plumes were observed, they tended to be extremely short lived, both spatially and temporally. In cases where the plume extended past the dredge boundary, the turbidity readings would generally persist for less than 5-10 minutes before returning to levels near background. The physical properties of the dredged material (i.e., high sand content) likely contributed to the limited extent and duration of the observed plumes.

Suspended sediment plumes related to debris removal activities tended to be pulsed in nature. That is, as the debris removal bucket would come up through the water column turbidity would quickly begin to increase. Turbidity plumes associated with both debris removal and active dredging tended to be more prominent during an ebbing or slack tide. When observed, turbidity plumes tended to dissipate in a southerly direction from the dredge area. Turbidity plumes to the north were rarely observed, probably because water flow was generally to the south and the land mass to the north acts as a barrier to reduce the migration of a north-flowing plume.

The short term, pulsed nature of the suspended sediment plumes was also observed in the continuous *in situ* data record. Excluding spurious readings, turbidity peaks at the northern and southern mooring locations between the 300 ft and 600 ft transects were always below 50 NTU when compared to background. On an incoming tide, current flow was predominately towards the north and as a result, any suspended sediment plumes related to dredging was observed at the northern mooring. During the outgoing tide, the effect was reversed so that any suspended sediment plumes were observed at the southern mooring. Weak turbidity peaks seen on days with no dredging activities were indicative of background levels of turbidity (<5 NTU).

Individual spikes were visible in the record above 50 NTU, but as discussed earlier, these are spurious single readings likely caused by momentary blockage of the turbidity sensor and not representative of water column turbidity.

5.3 Impacts to the Water Column

Overall, the observed trends among the 2008 site water data for TSS, turbidity, and PCB data are similar to trends observed in the 2006 and 2007 water quality monitoring programs (Battelle, 2007 and 2008c). For example, there was a strong, positive correlation between TSS and turbidity and between TSS and total PCBs (Figure 16) in the water samples (whole-water, unfiltered) collected during the 2008 dredge season, suggesting that turbidity and PCB levels increase with increasing TSS. The correlation analysis revealed that one of the water samples (sample WQ-003-100108, collected at the north reference station on October 1, 2008) had an unusually high TSS value relative to both the turbidity and PCB results (Figure 16). These data, together with the good agreement between the *in-situ* and lab-based measurements of turbidity in this sample (see Table 5, sample WQ-003-100108) suggest that the TSS value measured in the discrete water sample may be an outlier. The correlation between TSS and turbidity and between TSS and total PCBs is considerably stronger if sample WQ-003-100108 is excluded from the analysis[2].

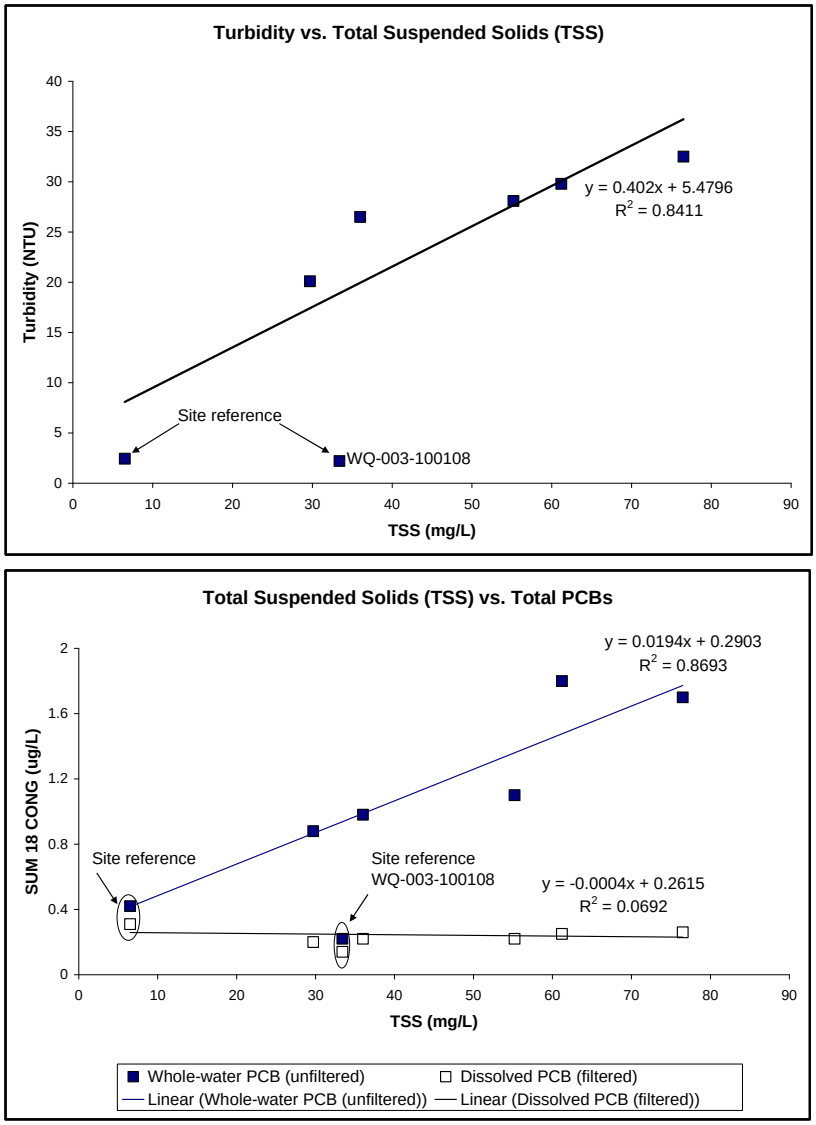

Figure 16. Correlation between TSS and Turbidity (top) and between TSS and total PCBs (bottom) in Discrete Water Sampled in 2008 at the Pierce Mill Cove Dredge Area

TSS did not correlate well with total PCBs in the dissolved phase (filtered) samples (Figure 16, bottom). The poor correlation likely reflects that PCB's in general are hydrophobic and not very soluble in water. The chlorination level and

[2] Figure 16 (top), TSS by turbidity – $R^2 = 0.67$ with sample WQ-003-100108 or $R^2 = 0.84$ if sample excluded. Figure 16 (bottom), TSS by total PCB – $R^2 = 0.71$ with sample WQ-003-100108 or $R^2 = 0.87$ if sample excluded.

molecular weight can also influence the solubility of PCB's in water (e.g., lower chlorination level, lower molecular weight PCBs are more soluble than higher chlorination level, higher molecular weight PCBs), which in turn can influence the PCB distribution pattern in the dissolved phase.

There was a strong, negative correlation between distance from the dredging activities and whole-water levels of TSS, turbidity, and PCBs (Figure 17), suggesting that TSS, turbidity and PCB levels decrease with increasing distance from the dredging activity. In contrast, PCB concentrations in the dissolved phase samples did not correlate well with distance from the dredging activities (Figure 17, bottom). Instead, dissolved PCB concentrations were similar across the study area regardless of the proximity to or from the dredging activities (Figure 17, bottom). Dissolved PCBs in the water column is considered a direct indicator of water quality, and the dissolved fraction may be subjected to long range transport. The relatively constant dissolved PCB concentrations at the reference sites and targeted turbidity locations (sampled in close proximity to the dredging activities) suggested that dredging-derived resuspended sediments did not result in substantial increase in dissolved PCB levels, and therefore had limited impact on water quality.

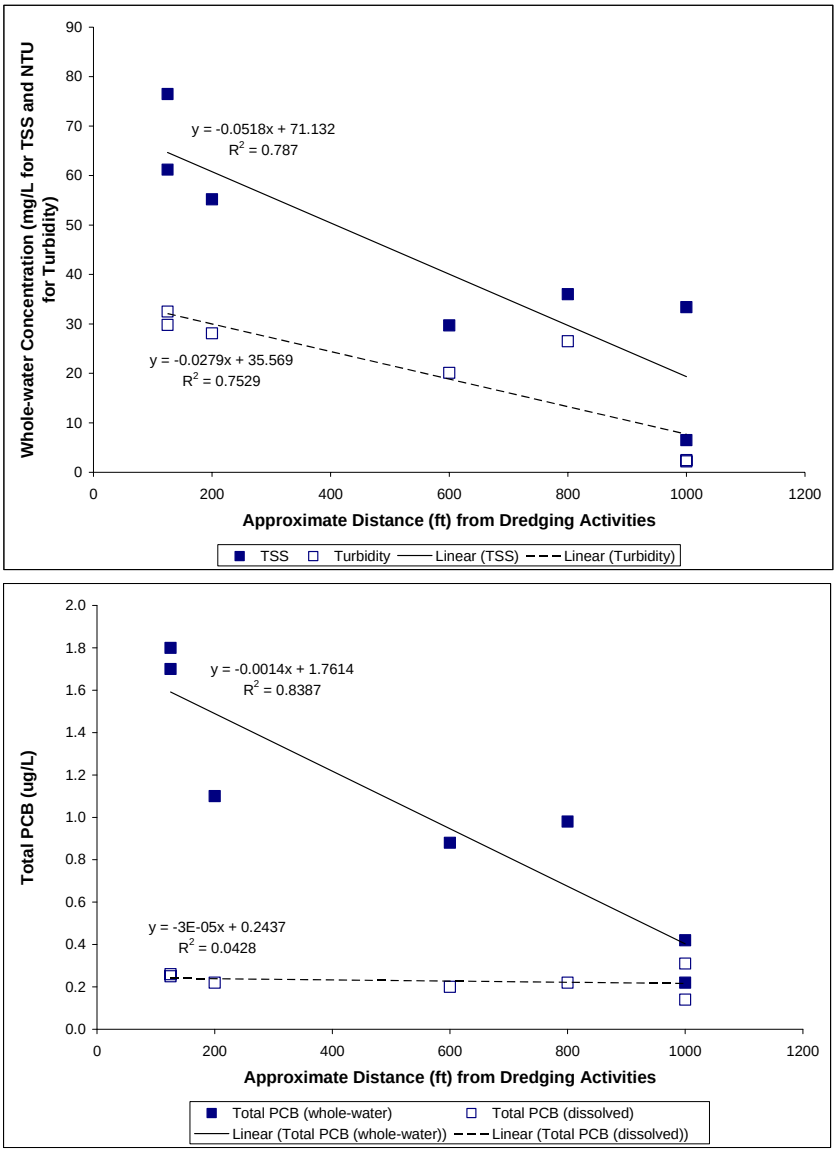

Figure 17. Correlation between Distance from Dredging Activity and TSS and Turbidity (top) and total PCB (bottom) in Discrete Water Sampled in 2008 at the Pierce Mill Cove Dredge Area

Unlike the 2006 and 2007 monitoring program, whole-water PCB concentrations in water sampled at the Pierce Mill Cove dredge area varied within a relatively low and narrow concentration range (0.22 µg/L to 1.8 µg/L). The slope of the correlation between TSS and total PCBs for the 2008 program was 0.019 (Figure 16, bottom), which is approximately one-tenth of the slope observed in the 2007 program for Area G (Battelle 2008c) and one-

thirtieth of the slope observed in the 2006 program for Areas A and B (Battelle, 2007). These results suggest that the resuspended sediment particles at the Pierce Mill Cove dredge area may be less contaminated compared to sediments in other dredge areas at the Site (monitored during previous years). This is consistent with dredging observations that indicated the sediment material removed from Pierce Mill Cove had a high sand content. Coarse, sandy sediments presumably with low organic carbon content are generally expected to be less 'contaminated' compared to silty sediments with higher organic carbon content. This supposition will be further evaluated once PCB results are available from the post-dredge sediment cores collected at the Pierce Mill Cove dredge area.

Toxicity testing showed limited significant reduction in endpoints for all species (Table 5). Mean survival in the 48-hr mysid and red alga tests were not significantly different compared to the reference, indicating that there were no measurable acute impacts from exposure of the test species, *A. bahia* and *C. parvula*, to water collected at Pierce Mill Cove during dredging activities. In contrast, sublethal effects were observed for the 60-minute fertilization and 7-day reproduction tests. For example, *A. punctalata* fertilization rates were generally low for the site water samples collected on August 21, 2008, and were significantly different compared to the reference for all but one of the site water samples collected during dredging activities (Table 5). In addition, *C. parvula* mean reproduction was significantly lower than reference (and control) for all water samples collected at the Pierce Mill Cove dredge area (Table 5). *Champia parvula* exposed to site water collected 600-ft down-current of debris removal and dredging activities on August 21, 2008 had the lowest cystocarp production. While there do appear to be measurable water column impacts, especially with respect to sublethal effect endpoints (*A. punctulata* fertilization and *C. parvula* mean reproduction), they are generally limited to samples containing elevated TSS, turbidity and PCBs. Among the samples collected on August 21, 2008, the sample with the highest dissolved concentrations of PCBs (reference site sample) also had the lowest *A. bahia* survival and *C. parvula* mean reproduction rates. Interestingly, this sample did not have elevated TSS or turbidity, nor was it sampled in close proximity to the dredging activities, suggesting that that other factors could have contributed to the observed water column impacts. Among the samples collected on October 1, 2008, the sample with the highest TSS, turbidity, and PCBs (total and dissolved) also had the lowest *A. bahia* survival and *C. parvula* mean reproduction rates.

In conclusion, turbidity plumes observed during the 2008 water quality monitoring program were generally limited to areas immediately adjacent to dredging and debris removal. The majority of turbidity plumes were relatively short lived and isolated to the surface of the water column. While site water near the dredge area had elevated TSS, turbidity, and PCBs (total phase), levels decreased with increasing distance from the dredging activities. More importantly, dissolved PCBs, which are thought to be the fraction that causes direct toxicity to marine organisms and may be subjected to long range transport, remained low regardless of the TSS levels or proximity to or from the dredging activities. While measurable water column impacts were observed based on toxicity testing, these effects were either limited to samples collected well within the dredging boundary or did not appear to be directly associated with elevated TSS and turbidity and subsequent increase in PCBs (i.e., reference sample collected on August 21, 2008). Overall, data collected confirmed that the project criterion continues to be ecologically protective, while still allowing remediation efforts to progress.

6.0 REFERENCES

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Appendix A

Water Quality Monitoring Field Logs and Tide Data

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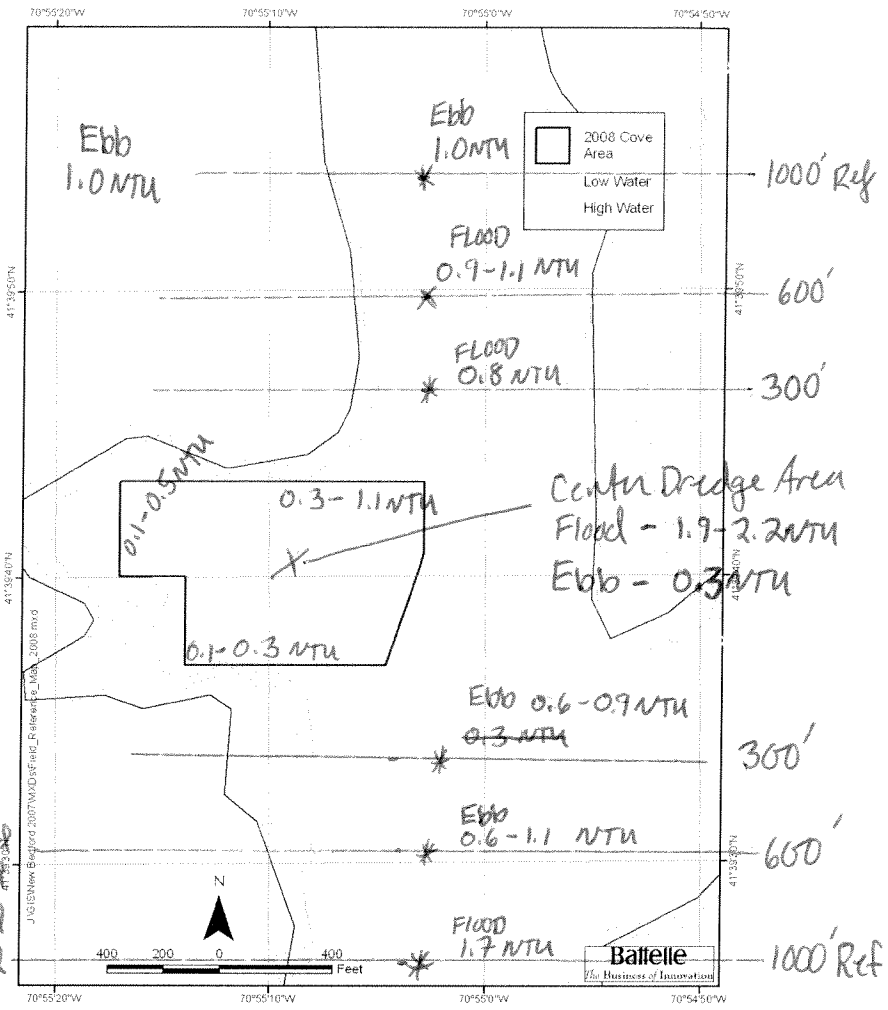
Battelle — Daily Field Summary Sheet for Water Quality Monitoring

Date: 6/5/08
Weather: Overcast / wind North 10-15
Tides:
High @ 0945
Low @ 1524
High @ 2208

Monitoring Period:
From: 0900 **To:** 1230

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
No dredge / Debris Removal
Baseline Monitoring



Turbidity Summary

Location Sensor/water	Turbidity (NTU)	Depth (ft)	
Ref South 1000'	1.7	8.1' and 1.1'	Flood
300' North	0.8	1.0' to 5.0'	Flood
Center Dredge Area	2.0 - 2.2	1.0' to 4.8'	Flood
600' North	0.9 - 1.0	1.0' to 5.0	Flood
1000' North	1.0	1.0 to 5.0	EBB
Center of Dredge Area	0.3	2.2	EBB
300' South of Dredge	0.6 - 0.9	2.4 - 5.0	EBB
600' South	0.6 - 1.1	1.0 - 5.0	EBB

Oil sheen/ Debris:
None

Wildlife observations: Many Jellyfish, Swans, Egrets, Gulls

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) WQ-TSS-001(006)-060508 **Turbidity (500ml)** WQ-TURB-001(006)-060508
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes: Baseline Water Quality - Samples taken at the Center of the dredge Area, the 300' north and south points and the 600' north and South points. Turbidity Ranged from 0.6 NTU to 2.2 NTU throughout the Area and through the Tide cycle.

Sampling Crew: M. Walsh, M. Fitzpatrick
Chief Scientist Signature: Mike Walsh

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Water Quality Monitoring
In situ Data Field Form

Dredging Location	Pierce Mill Cove
Dredging Description	None / Baseline Water Quality
Survey Vessel	Gale Force
Chief Scientist	M. Walsh
Sampling Technician	M. Fitzpatrick
Vessel Captain	M. Walsh
Other Personnel	—
Weather conditions	Overcast / wind North @ 10-15

Date	6/5/08
Page	1 of 2

Tide information	
High	0945
Low	1524
High	2208
Low	

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity NTU	Salinity	DO mg/l	Temp C	Notes
1000' South	Reference	0919	2700746.99	815228.68	10.000'	8.124	1.7	30.82	6.43	17.80	NEAR Bottom - pH-7.54
1000' South	Reference	0923	2700746.99	815228.68	10'	1.135	1.7	30.56	6.38	17.78	pH-7.54 NEAR SURFACE
~Center of Dredge Area		0934	2702123.86	814993.92	6'	4.807	2.0	30.70	6.24	17.81	pH 7.56 NEAR Bottom
					6'	1.045	1.9	30.68	6.22	17.80	pH 7.56 NEAR SURFACE
					6'	2.008	2.2	30.68	6.18	17.81	pH 7.56 SAMPLES TAKEN 1.5-2.2 NTU
~300' North of Dredge Area		1000	2702756.32	815289.77	6.2'	2.490	0.8	30.21	5.84	17.78	pH 7.50 SAMPLES TAKEN 0.7 NTU
					6.2'	5.005	0.8	30.26	5.72	17.81	pH 7.49 NEAR BOTTOM
					6.2'	1.008	0.8	30.22	5.76	17.78	pH 7.49 NEAR SURFACE
~600' North of Dredge Area		1006	2703005.30	815290.56	6.2'	2.515	0.9	30.23	6.07	17.72	pH 7.52 SAMPLES TAKEN 1.0 NTU
					6.2'	5.012	1.1	30.25	6.14	17.71	pH 7.53 NEAR BOTTOM
					6.2'	1.041	1.0	30.24	6.4	17.70	pH 7.52 NEAR SURFACE
~1000' North of Dredge Area		1025	2703433.92	815213.48	6.3'	5.019	1.0	30.23	6.10	17.73	pH 7.52 NEAR BOTTOM
					6.3'	1.007	1.0	30.20	6.15	17.70	pH 7.52 NEAR SURFACE

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Water Quality Monitoring
In situ Data Field Form

Dredging Location	Pierce Mill Cove Area
Dredging Description	None Baseline Water Quality
Survey Vessel	Gale Force
Chief Scientist	M. Walsh
Sampling Technician	M. Fitzpatrick
Vessel Captain	M. Walsh
Other Personnel	—
Weather conditions	Overcast / wind North 10-15

Date	6/5/08
Page	2 of 2

Tide information	
High	0945
Low	1524
High	2208
Low	

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity NTU	Salinity	DO mg/l	Temp	Notes
Ebb	Center of Dredge Area	1114	2702090.77	814921.46	4.3	2.253	0.3 NTU	30.43	6.01 mg/l	17.66	PH-7.52 Samples Collected Turb 0.3 NTU
Ebb	300' South of Dredge Area	1130	2701466.93	815170.05	6.1	2.450	0.9	30.22	6.03	17.62	PH-7.51 Samples Collected Turb 0.9
					6.1	4.990	0.8	30.31	6.03	17.68	PH-7.51
					6.1	1.095	0.6	30.10	6.07	17.63	PH-7.51
Ebb	600' South of Dredge Area	1150	2701185.27	815173.21	6.2	3.055	0.9	30.28	6.00	17.66	PH-7.50 Samples Collected Turb 0.9 NTU
					6.2	5.025	1.1	30.33	5.94	17.69	PH-7.50
					6.2	1.044	0.6	30.14	6.03	17.61	PH-7.50

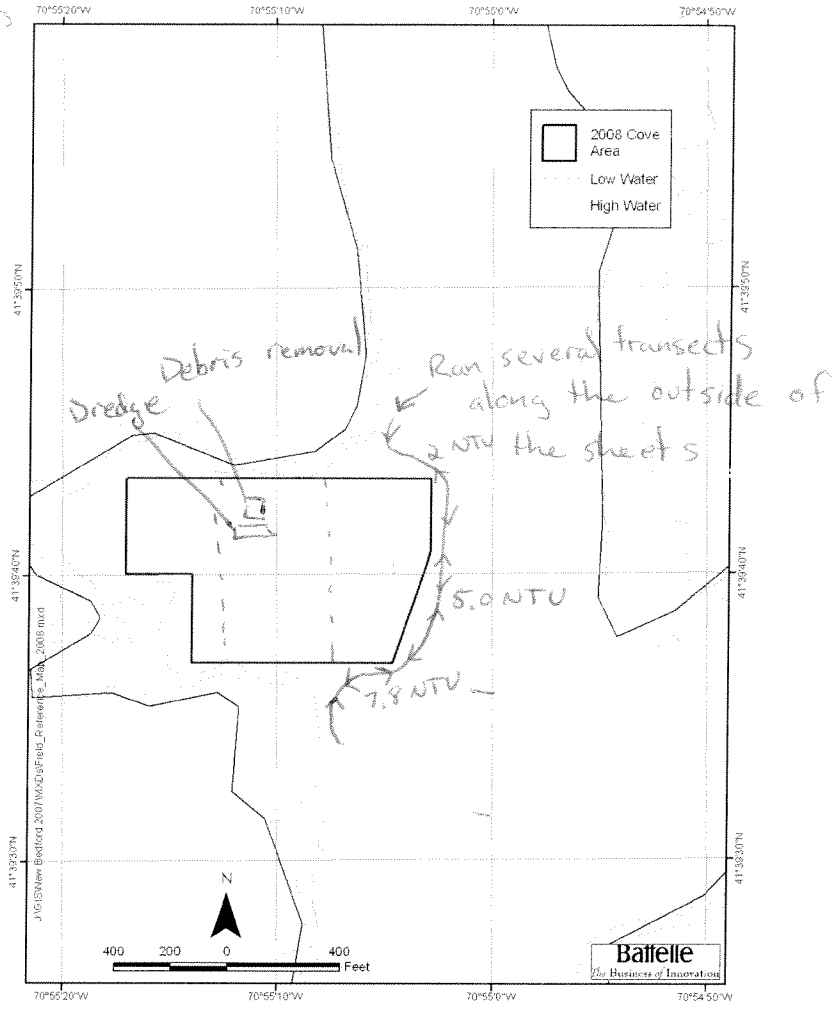
Battelle Daily Field Summary Sheet for Water Quality Monitoring

Date: 08/18/2008
Weather: Sunny, clear, mid-80's
Tides: SW wind
high @ ~~8:50~~ 9:35
low @ ~~13:50~~ 15:10
high @ 21:52

Monitoring Period:
From: 930 **To:** 1200

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris removal
actively dredging



Turbidity Summary

Location ~~Sensor/water~~	Turbidity (NTU)	Depth (ft)
~~1.0/ 1.5~~ (WL meas 8/18/08)	~~1.75~~	Sensor/water
Ref N	1.75	1.0/9.5

Oil sheen/ Debris:
None

Wildlife observations: bait fish + larger fish moving in channel

Samples Collected for Laboratory Analysis – Sample IDs: None
TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes: Deployed moorings @ ~0945 and ~ 1010

Sampling Crew: Matt Fitzpatrick
Chief Scientist Signature: Matt Fitzpatrick Amanda Maxemchuk

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Water Quality Monitoring
In situ Data Field Form

Dredging Location	New Bedford Harbor Cove Area
Dredging Description	Debris removal & hydraulic dredging
Survey Vessel	Gale Force
Chief Scientist	Matt Fitzpatrick
Sampling Technician	Amanda Mayernchuk
Vessel Captain	Matt Fitzpatrick
Other Personnel	
Weather conditions	Sunny & clear; mid-80's

Date	08/18/2008
Page	1 of 2

Tide information	
High	~~8:50~~ AM 9:35
Low	~~1:30~~ PM 15:10
High	
Low	

Station Number	Time	Latitude (N)	Longitude (E)	Water depth	Sample Depth	Turbidity (NTU)	Salinity (psu)	DO (mg/L)	Temp (°C)	Notes
Ref-South	1040	2700~~7~~56.00	815152.97	9.8 ft	8.5 ft	4.0	28.62	9.43 (61.8%)	23.62	pH = 7.64 su
Ref-South	1042	"	"	"	8.78	4.6	28.58	9.19 (58.9%)	26.64	pH = 7.63 su
Ref-North	1050	2703159.87	815367.04	9.5 ft	1.0	1.7	25.71	7.42 (106.1%)	24.36	pH = 8.18 su
Ref-North	1059	"	"	"	1.0	1.8	25.47	8.59 (118.9%)	24.44	pH = 8.17

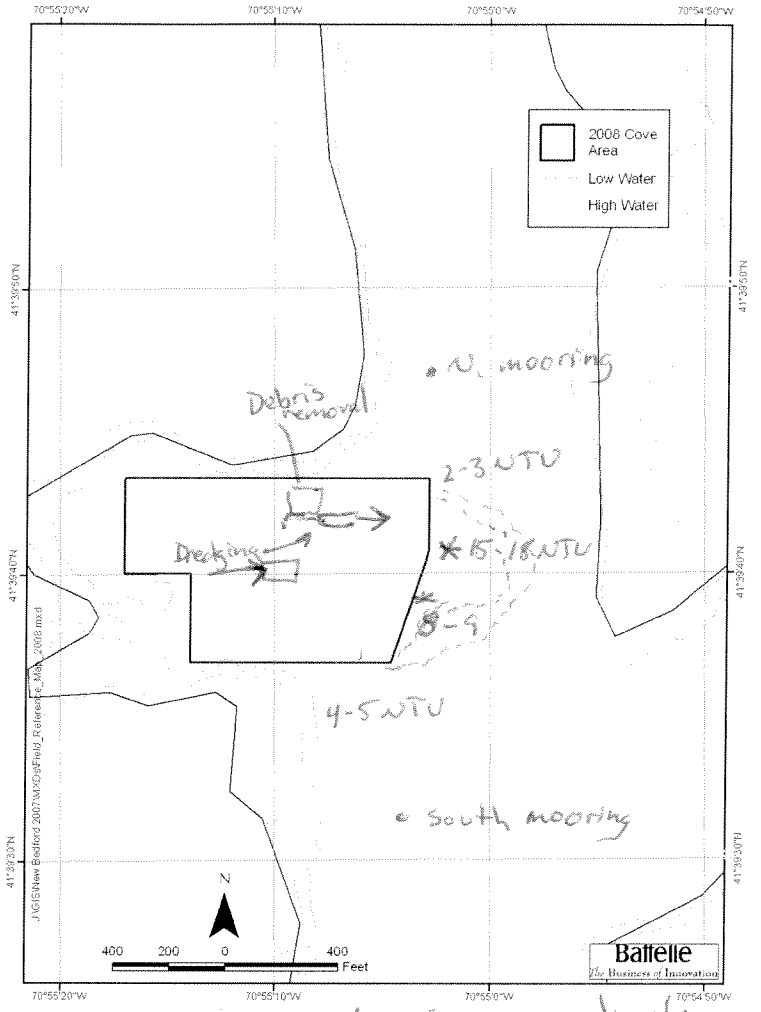
Battelle — Daily Field Summary Sheet for Water Quality Monitoring

Date: 8/18/08
Weather: Sunny + hot sw wind ~ 15 kts
Tides:
high @ 0935
Low @ 1510
high @ 2152

Monitoring Period:
From: 1300 **To:** 1500

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris removal dredging



* higher readings were only observed for 3-4 minutes of 2 transects

Turbidity Summary

Location Sensor/water	Turbidity (NTU)	Depth (ft)
NE Boundary	2-3 NTU	1.5'
E Boundary	8-15	1.5'
SE Boundary	4-5 NTU	1.5'

Oil sheen/ Debris:
None

Wildlife observations: Gulls + cormorants

Samples Collected for Laboratory Analysis – Sample IDs: None
TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes:

Sampling Crew: Matt Kilpatrick Amanda Maxemchuk
Chief Scientist Signature: Matthew Galvin

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Cove area
Dredging Description	Debris removal + Dredging
Survey Vessel	Gale Force
Chief Scientist	Matt Fitzpatrick
Sampling Technician	Amanda Maxemchuk
Vessel Captain	Matt Fitzpatrick
Other Personnel	
Weather conditions	Sunny + Hot SW wind ~ 15 kts

Date	8/18/08
Page	2 of 2

Tide information	
High	935
Low	1510
High	2152
Low	

Station Number	Time	Latitude Northing	Longitude	Water depth	Sample Depth	Turbidity WL meter	Salinity	DO	Temp	Notes
N-ref	1330	2703391.58	815437	5.5	1.2	~~25.9~~ 3.6	23.22	9.94	25.9	pH = 8.3
								140%		
N-Ref	1335	↓	↓	5.5	1.3	3.2	23.02	10.12	25.91	pH = 8.9 % sat 140
Eastern Boundary	1408	2701934.21	815386.64	7.5	1.7	11.9-135	26.06	~~140%~~ 113.7%	26.22	pH = 8.12

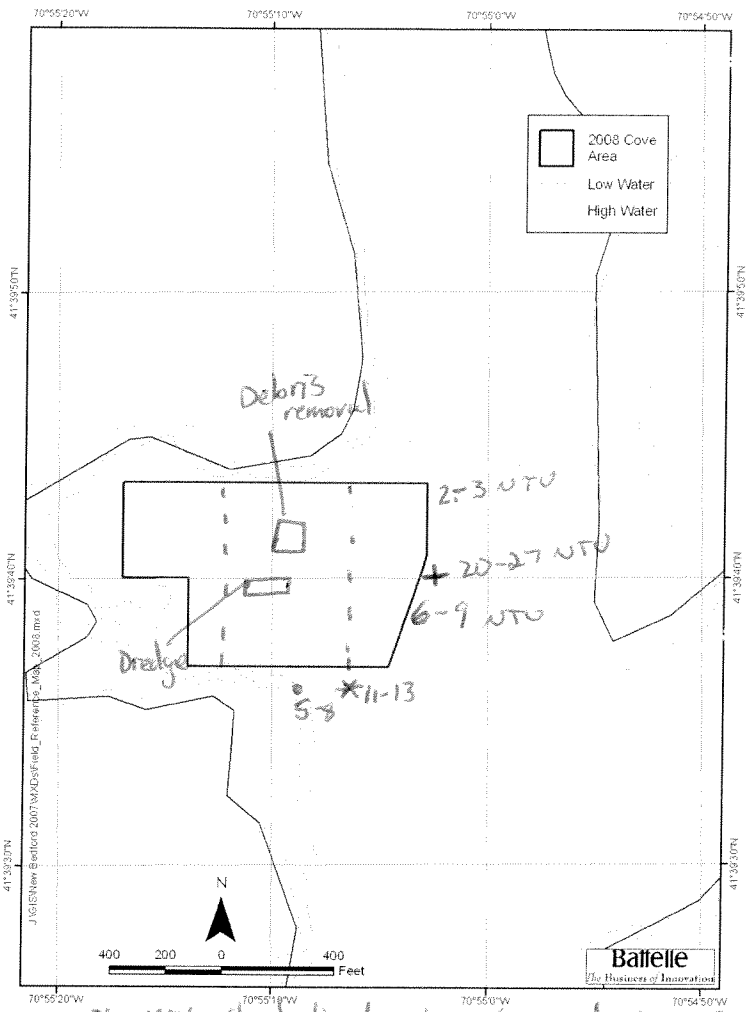
Battelle — Daily Field Summary Sheet for Water Quality Monitoring

Date: 8/19/08
Weather: Sunny light west wind
Tides:
Low @ 0329
high @ 1016
Low @ 1552

Monitoring Period:
From: 0800 **To:** 1200

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris Removal + Dredging in central cove area
1030 - Debris removal barge being moved.



Turbidity Summary

Location Sensor/water	Turbidity (NTU)	Depth (ft)
NE corner	2-3	surface ~1'
Eastern edge	6-9 NTU	1.0'
SE corner	11-13	1.0

* very short lived plumes up to 15 NTU to
+ Near slack tide (1030) readings increased to 20-27 NT
- @1130 dredge opps stopped for ~15-20 min; reading along transect dropped to 1-3 NTU

Oil sheen/ Debris:

Wildlife observations: fish (bait fish + predatory fish) spotted near dock, S Ref, NE corner of boundary and most of the area. Yellow spotted turtle near mid channel

Samples Collected for Laboratory Analysis – Sample IDs: None

TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes: See comments under map

Sampling Crew: Matt Fitzpatrick, Amanda Maxemchuk
Chief Scientist Signature: Matthew R Fitzpatrick

Battelle — Daily Field Summary Sheet for Water Quality Monitoring

Date: 8/19/08

Weather: partly cloudy, a large front appears to be moving in — NW wind 10-15 w/gusts to 20

Tides:

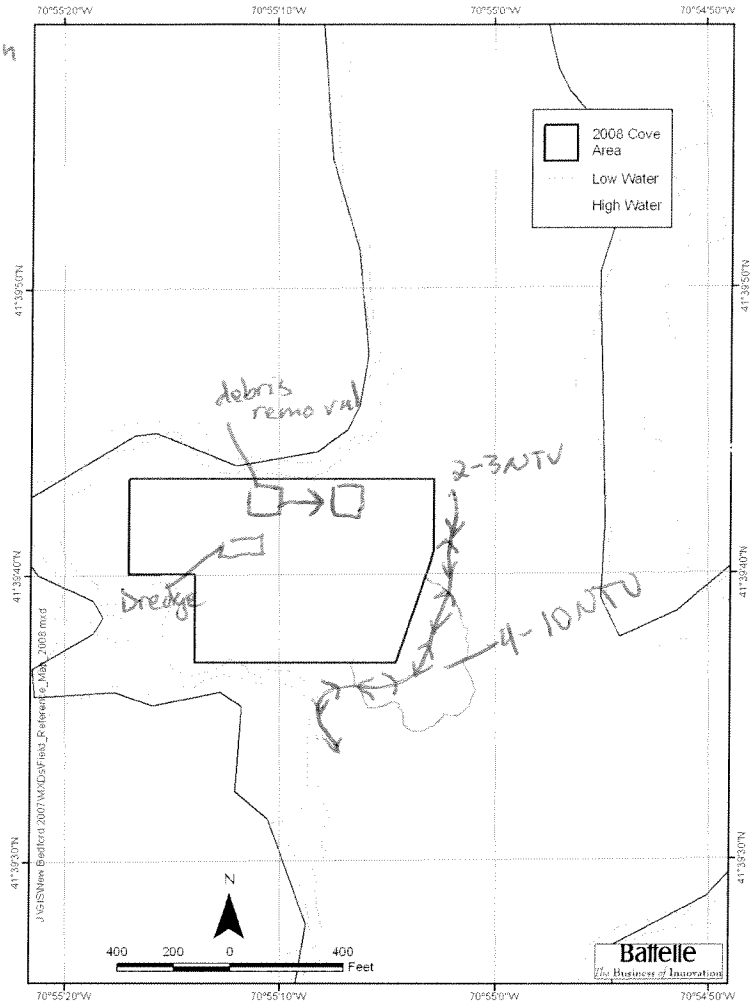
Low	@	0329
high	@	1016
Low	@	1557

Monitoring Period:
From: 1300 **To:** 1430

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris Removal and active dredging in central cove area

Debris Barge moved to eastern side @ 1400



Turbidity Summary

Location Sensor/water	Turbidity (NTU)	Depth (ft)
N. Reference	1.9-2.5	1'/5.8'
NE Boundary	2-3	1.2'
E Boundary	4-10	1.2'/6.2'
SE Boundary	4-6	1.2'/6.0'

Oil sheen/ Debris: None

Wildlife observations: Gulls, Osprey, cormerants fishing in dredge area

Samples Collected for Laboratory Analysis – Sample IDs: None

TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes: low turbidity throughout the eastern dredge boundary no noticable increase in turbidity when the debris removal was moved east

Sampling Crew: Matt Fitzpatrick, Amanda Maxemchuk
Chief Scientist Signature: _____

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Cove Area
Dredging Description	Debris removal + Dredging in central covered area
Survey Vessel	Gale Force
Chief Scientist	Matt Fitzpatrick
Sampling Technician	Amanda Maxemchuk
Vessel Captain	Matt Fitzpatrick
Other Personnel	
Weather conditions	Sunny light west wind

Date	8/19/08
Page	1 of 2

Tide information	
High	
Low	0329
High	1016
Low	1552

Station Number	Time	~~Latitude~~ Northing	~~Longitude~~ Easting	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
S. Ref	0830	2700669.55	815082.14	5.7	4.5	3.3	28.69	9.84 67.6%	23.89	pH = 7.78
S. Ref	0837	2700667.71	815085.13	5.7	4.6	3.0	28.67	4.85 67.8%	23.89	pH = 7.78
SE Boundary	0920	2701777.74	815342.51	9.2	1.8	1.2①	28.14	5.18 72.4%	24.06	pH = 7.81
wood st bridge	0942	2705245.77	815517.05	8.4	7.2	20.0	25.2	.32 4.5%	25.44	pH = 7.23 water is red w/ lg algal clumps @ .5'
"	0948	"	"	8.4	~~3~~.05	7.5	7.1	10.4 128.7	23.9	pH = 8.0
4th Short strip SE corner	1029	2701910.18	815321.26	9.2	0.65	27.6	28.15	5.22 73.0%	24.63	pH = 7.74 ; Debris removal
mid channel	1047	2703841.06	8156374.09	>12	1.0	14.2	28.05	5.42 76.7%	24.81	pH = 7.81
N. Ref	1111	2703446.01	815380.99	11.0	1.2	1.1-1.3	23.8	6.63 91.5%	24.83	pH = 8.14
N. Ref	1118			11.0	1.2	1.3	23.25	7.32 101.7%	24.8	pH = 8.35

① very short lived plume followed by 2.8 NTU

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Cove area
Dredging Description	dredging in central area Debris removal in central then Eastern area
Survey Vessel	Gale Force
Chief Scientist	Matt Fitzpatrick
Sampling Technician	Amanda Maxemchuk
Vessel Captain	Matt Fitzpatrick
Other Personnel	—
Weather conditions	Partly Cloudy NW wind 10-15 Gusts to 20

Date	8/19/08
Page	2 of 2

Tide information	
High	—
Low	0329
High	1016
Low	1552

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
N Ref	1300	270347.618	815271.42	5.8	1.0	1.9	20.8	10.13 ~~9.66~~ 139.8%	25.12	pH=8.5
N Ref	1305	↓	↓	5.8	1.0	2.5	25.52	8.11 113.2%	25.05	pH=8.41

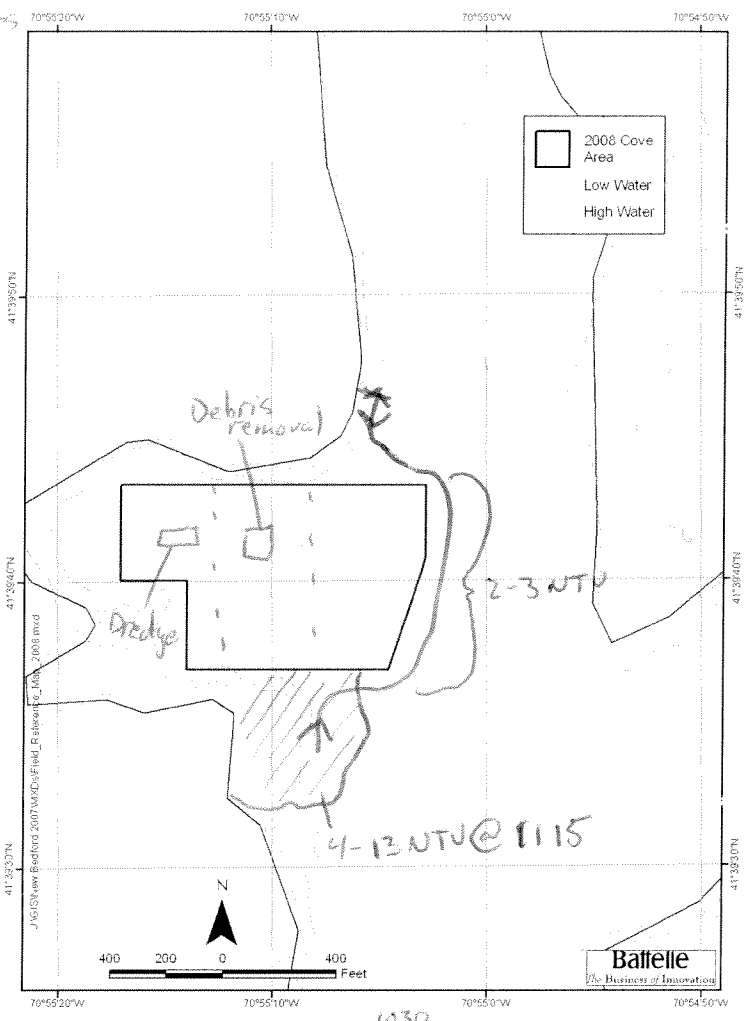
Battelle Daily Field Summary Sheet for Water Quality Monitoring

Date: 8/20/08
Weather: Sunny NW wind ~ 10kts
Tides:
Low @ 0407
High @ 1055
Low @ 1637

Monitoring Period:
From: 0815 **To:** 1200

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris removal and dredging in cove area



Turbidity Summary

Location Sensor/water	Turbidity (NTU)	Depth (ft)
S. Ref	4	2.2' / 5.5'
S. Ref	1.65	1.0' / 6.5'
40' east of dock	4-10 NTU	1.0 / 7.6'

from 0945 to 1030 ~~1015~~ no readings exceeded 3 NTU along the transect line

Oil sheen/ Debris:

Wildlife observations: predatory fish feeding on baitfish near dock

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes: Returned to dock @ 0900, turbidity probe was giving slightly negative values (-.1 to -.3). recalibrate the probe.
At 1130 readings briefly spiked to 18NTU while debris barge was being moved

Sampling Crew: Matthew Fitzpatrick, Amanda Maxemchuk
Chief Scientist Signature: Matthew R Fitzpatrick

Battelle Daily Field Summary Sheet for Water Quality Monitoring

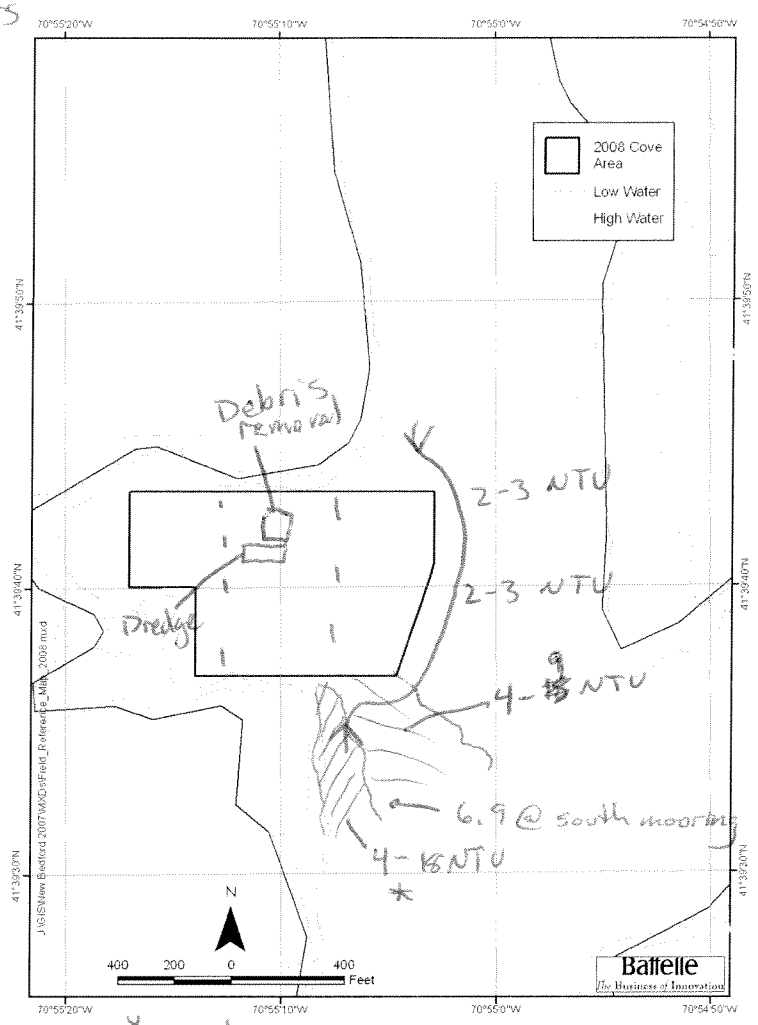
Date: 8/20/08
Weather: Sunny NW wind ~5 kts
Tides:

Low	@	0407
high	@	1057
Low	@	1637

Monitoring Period:
From: 1300 **To:** 1500

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris removal + active Dredging



Turbidity Summary

Location Sensor/water	Turbidity (NTU)	Depth (ft)
N Ref	1.3	1.0/6.3
UE Boundary	2-3	~1.0'
E Boundary	2-3	~1.0'
SE Boundary	~3-5	~1.0'
Southern Boundary near dock	4-18	~1.0'

* readings of 9-18 NTU were sporadic and short in duration.

Oil sheen/ Debris:
None

Wildlife observations: fish + baitfish jumping throughout the survey area, 4 Swans inside dredge boundary

Samples Collected for Laboratory Analysis – Sample IDs: None

TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes:

Sampling Crew: Matthew Fitzpatrick, Amanda Maxemchuk
Chief Scientist Signature: Matthew Fitzpatrick

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Cove Area
Dredging Description	Debris removal and dredging
Survey Vessel	Gale Force
Chief Scientist	Matt Fitzpatrick
Sampling Technician	Amanda Maxemchuk
Vessel Captain	Matt Fitzpatrick
Other Personnel	
Weather conditions	Sunny NW wind 10-15 kts

Date	8/20/08
Page	1 of 1

Tide information	
High	—
Low	0407
High	1057
Low	1637

Station Number	Time	~~Latitude~~ Northing	~~Longitude~~ Easting	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
S. Ref	0829	2700760.18	815115.41	5.5'	2.2'	.9	28.8	4.13	22.81	pH = 7.76
								56.7%		
S Ref	0835	↓	↓	5.5'	2.2'	.4	28.79	4.12	22.82	pH = 7.76
								56.4%		
S. Ref	0935	2700757.76	815104.43	6.5'	1.0'	1.7	29.16	4.03	22.97	pH = 7.78
								55.5%		
S. Ref	0940	↓	↓	6.5'	1.0'	1.6	29.13	4.05	22.95	pH = 7.77
								55.7		
near dock	1047	2701571.48	815140.16	7.6'	1.2'	9.5	28.24	3.82	22.71	pH = 7.67
								52.2%		
N. Ref	1138	2703487.88	815292.64	8.4'	1.1'	.8	27.18	4.31	22.64	pH = 7.71
								58.6%		
N. Ref	1142	↓	↓	8.4	1.1'	.8	27.07	4.42	22.65	pH = 7.71
								59.9%		
N. Ref	1307	2703460.85	815269.62	6.6	1.0'	1.2	26.08	4.98	23.58	pH = 7.76
								68.1%		
N. Ref	1312	↓	↓	6.6	1.0'	1.3	25.83	4.85	23.68	pH = 7.76
								67.4%		
Near dock	1418	2701645.60	815157.29	4.8	1.2	8.8-15.4	27.48	4.38	23.98	pH = 7.72
								60.9%		

* turbidity probe recalibrated @ 0900. MRF 8/20/08

Battelle — Daily Field Summary Sheet for Water Quality Monitoring

(WD) MRF 8/26/08

Date: ~~9/21/08~~ 8/21/08

Weather: Sunny Light N wind

Tides:

Low @ 0947
high @ 1146
Low @ 1725

Monitoring Period:

From: 0900 **To:** 1200
1245 to 1520 ①

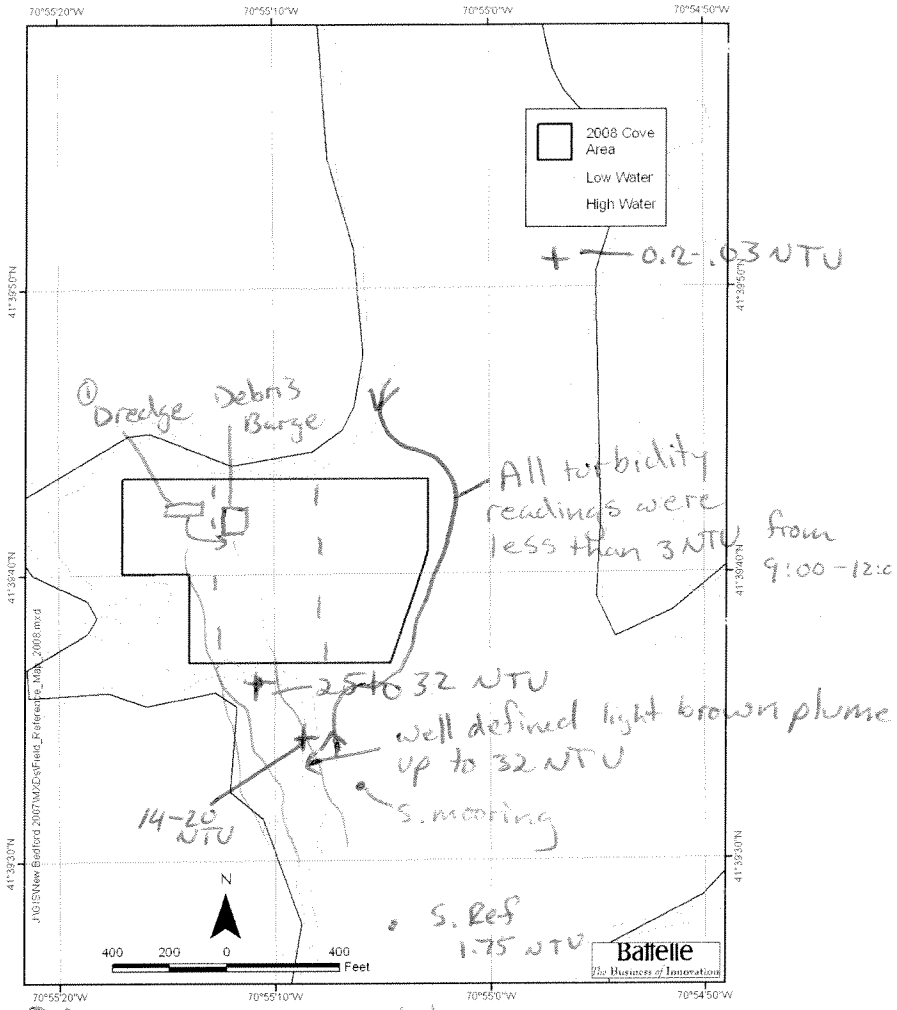
Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:

Debris removal and active dredging

Turbidity Summary

Location Sensor/water	Turbidity (NTU)	Depth (ft)
S. Ref	1.75	1.6' / 5.0'
NE Boundary	1.0	1.0 / 8.6
E Boundary	1.2	1.0 / 8.6
SE Boundary	1.1	1.0 / 8.3
40' N of Dock	25-32 NTU	1.3 / 4.9
SE of Dock	14-20.5 NTU	1.28 / 4.4
N. Ref	.2-.3 NTU	1.4 / 4.6



① Dredging was in the central area of the Cove

+ = where samples were collected

Oil sheen/ Debris:

None

Wildlife observations: Cormorants, gulls, lots of baitfish and larger predatory fish feeding from the N. Ref area to the S. Ref area. 1 (24") dead eel near the outside of the boom

Samples Collected for Laboratory Analysis – Sample IDs: ~~None~~

TSS (1L) _____ **Turbidity (500ml)** _____

Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____

Toxicity (21L) _____ **Metals (500ml)** _____

Notes: Sample IDs:

WQ-XXX-01-082108
WQ-XXX-02-082108
WQ-XXX-03-082108

XXX indicates sample type
TUR = Turbidity
TOX = Toxicity
MET = metals
TSS = TSS
TCB = Total PCB
DCB = Dissolved PCB

Sampling Crew: Matt Fitzpatrick, Amanda Mexemchuk

Chief Scientist Signature: Matthew R Fitzpatrick

① Time was the collection time of the final sample. MRF 8/26/08

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Cove area
Dredging Description	
Survey Vessel	Gale force
Chief Scientist	Matt Fitzpatrick
Sampling Technician	Amanda Maxemchuk
Vessel Captain	Matt Fitzpatrick
Other Personnel	—
Weather conditions	Sunny light north wind becoming S 10-15 around Noon

Date	8/21/08
Page	1 of

Tide information	
High	—
Low	0447
High	1146
Low	1725

Station Number	Time	Latitude Northing	Longitude Easting	Water depth (ft)	Sample Depth (ft)	Turbidity NTU	Salinity PSU	DO mg/L	Temp °C	Notes
S. Ref	0907	2700748.6	815103.43	5.0	1.6'	1.7	29.15	6.70/91.6%	22.61	No pH is available
S. Ref	0919	↓	↓	5.0	1.6'	1.8	29.08	6.65/91.8%	22.58	for the day
E Bound	1103	2702129.3	815389.7	8.6	1.0'	1.2	29.76	6.76/92.5%	22.76	
SE Bound	1109	2701704.61	815253.65	8.3	1.0'	1.1	29.64	6.74/92.3%	22.91	
↓	1112	↓	↓	8.3	6.4'	2.1→1.8	29.85	6.65/91.8%	22.63	
NE Bound	1122	2702483.72	815417.56	8.6	1.0'	0.9→1.2	29.49	6.58	22.49	90.9% sat
N. Ref	1255	2703449.81	815267.3	7.4	1.0	.4	29.08	6.78	23.62	94.6%
N. Ref	1259	↓	↓	7.4	1.0	.2	29.08	6.69	23.61	93.2%
40' N of dock	1420	2701682.97	814988.46	4.9	1.3	32.4→25	29.35	5.42	23.51	75.5% - sample collected
S. East end of Dock	~~1445~~ 1502	2701490.0	815081.9	4.4	1.28	14.1→~~15.6~~ 20.5	29.43	6.03	23.51	83.2% - sample collected WQ-XXX-02-082108
N. Ref	1520	2703449.3	815631.3	4.6	1.4	0.2-0.3	28.42	7.09	24.14	99.3% - Sample collected WQ-XXX-03-082108

Battelle Daily Field Summary Sheet for Water Quality Monitoring

Date: 8/22/08
Weather: Sunny light variable wind

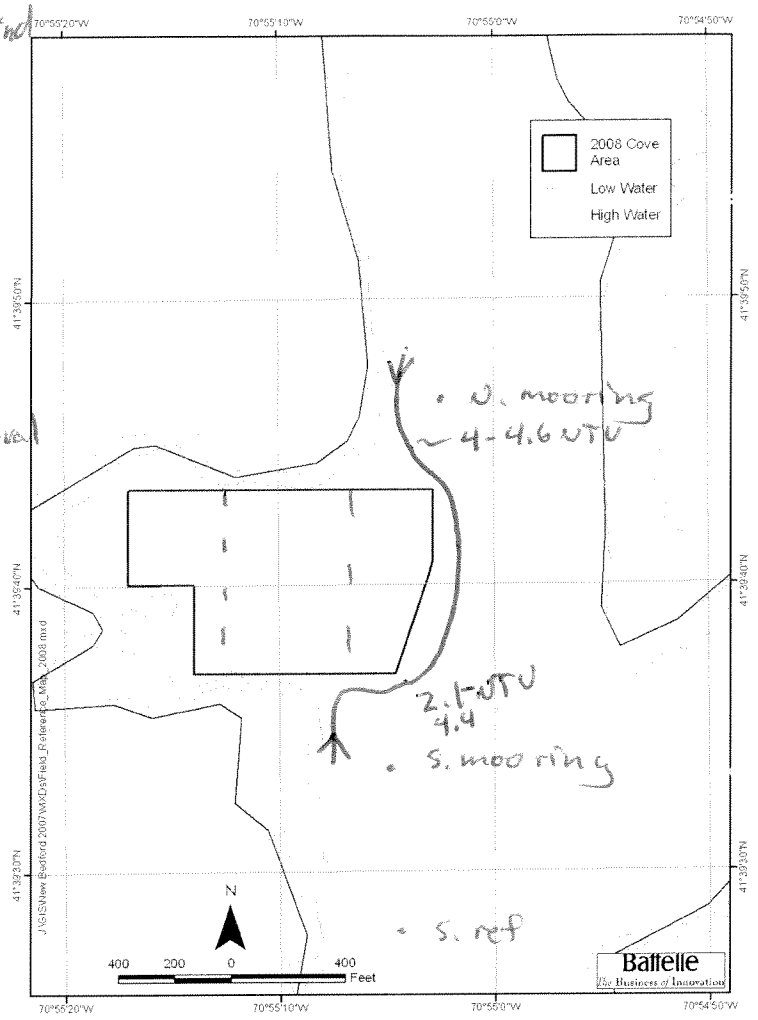
Tides:

high	@	0:06
Low	@	5:23
high	@	12:39
Low		18:14

Monitoring Period:
From: 0830 **To:** 1215

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Active dredging and Debris removal



Turbidity Summary

Location Sensor/water	Turbidity (NTU)	Depth (ft)
S. Ref	4.1	3.0/3.8
NE of Boundary	3.5-4.4	~~3.5-3.5~~ 3.5-4.4 / 4.4
E of Boundary	3.0-4.2	1.7-6.4 / 7.4
SE of Boundary	2.9-3.5	1.3-6.6 / 7.8
40' N of dock	3.8-4.5	1.2-9.8 / 6.4

Oil sheen/ Debris:
None

Wildlife observations: Large predatory fish (~24") + baitfish from N. Ref to S. Ref area
Numerous Gulls and Cormorants in the area

Samples Collected for Laboratory Analysis – Sample IDs: None

TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes:
No readings above 4.6 NTU were observed

Sampling Crew: Rich Restuchi Matt Fitzpatrick
Chief Scientist Signature: Matthew Fitzpatrick

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Cove Area
Dredging Description	Debris removal + dredging
Survey Vessel	Gale force
Chief Scientist	Matt Fitzpatrick
Sampling Technician	Rich Reshuchi
Vessel Captain	Matt Fitzpatrick
Other Personnel	
Weather conditions	Sunny light South wind

Date	8/22/08
Page	1 of

Tide information	
High	0:06
Low	5:23
High	12:39
Low	18:19

Station Number	Time	Latitude Northing	Longitude Easting	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes pH	Notes % sat
S. Ref	0840	2700747.8	815090.68	3.8	3.0	4.2	30.10	4.72	22.89	pH=7.64	64.8
↓	0847	↓	↓	3.8	2.97	4.0	30.09	5.15	22.89	7.65	71.2
300'N of ~50'W of mooring	0934	2702741.01	815311.36	4.4	3.3	4.4	30.18	4.73	22.97	7.60	65.6
NE corner	0938	↓	↓	4.4	1.57	3.5	30.06	5.11	23.00	7.62	70.1%
E of Bound	0958	2701973.88	815368.26	7.4	1.7	3.0	30.15	5.78	22.73	7.70	74.9
E of Bound	1004	↓	↓	7.4	~~6.8~~ 6.45	4.2	30.43	5.70	22.69	7.7	74.1
SE of Bound	1117	2701706.48	815247.78	7.8	1.31	2.9	30.39	5.67	22.92	7.73	78.6
↓	1120	↓	↓	7.8	6.64	3.5	30.51	5.79	22.86	7.73	80.4
40'W of fdrl	1157	2701669.62	814993.83	6.4	1.24	4.5	30.33	5.63	23.03	7.72	77.9
↓	1203	↓	↓	6.4	4.81	3.8	30.55	5.60	22.91	7.73	77.7

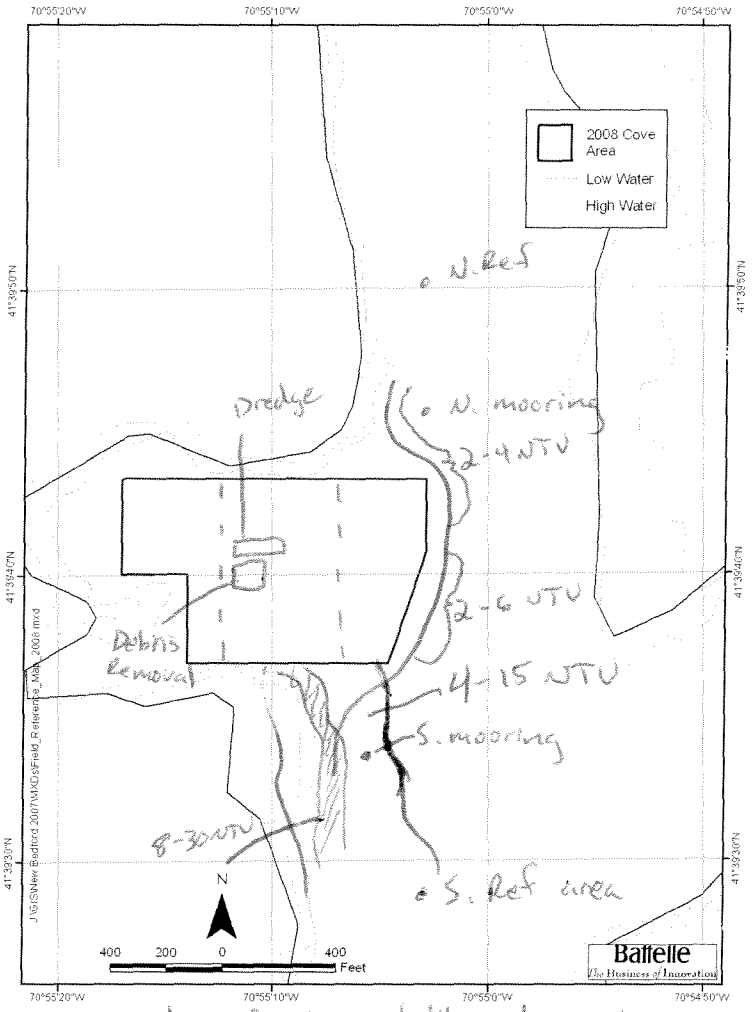
Battelle — Daily Field Summary Sheet for Water Quality Monitoring

Date: 8/28/08
Weather: sunny light N wind
Tides:
high @ 0620
low @ 1224
high @ 1847

Monitoring Period:
From: 0750 **To:** 1150

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
Active Dredging + Debris Removal



poorly defined turbidity plume w/ average values around 10 NTU. a few very short lived plumes of 18-30 NTU observed.

Turbidity Summary

Location / Sensor/water	Turbidity (NTU)	Depth (ft)
N. Ref	2.05	3.7 / 6.8
NE Bound	3.4 → 2	1-5.6 / 6.8
E Bound	1.9 → 6.4	1.1-6.5 / 7.3
SE Bound	~~1.05 → 5.3~~ 2.2-MB	1.05-5.3 / 6.8
40' NE of Dock	10.2 - 23.3	.9-2.5 / 4.1
10' SE of mooring	8.4 - 10.5	1.0-5.4 / 7.7

Oil sheen/ Debris:
None

Wildlife observations: Gulls + Cormorants throughout the area. Predatory fish + Baitfish seen @: the dock, NE Boundary

Samples Collected for Laboratory Analysis – Sample IDs: None

TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes:

Sampling Crew: Matt Kirpatrick + Jessica Fahey
Chief Scientist Signature: Matthew A Kirpatrick

Battelle Daily Field Summary Sheet for Water Quality Monitoring

Date: 8/28

Weather: Partly cloudy NE Wind ~ 10-15

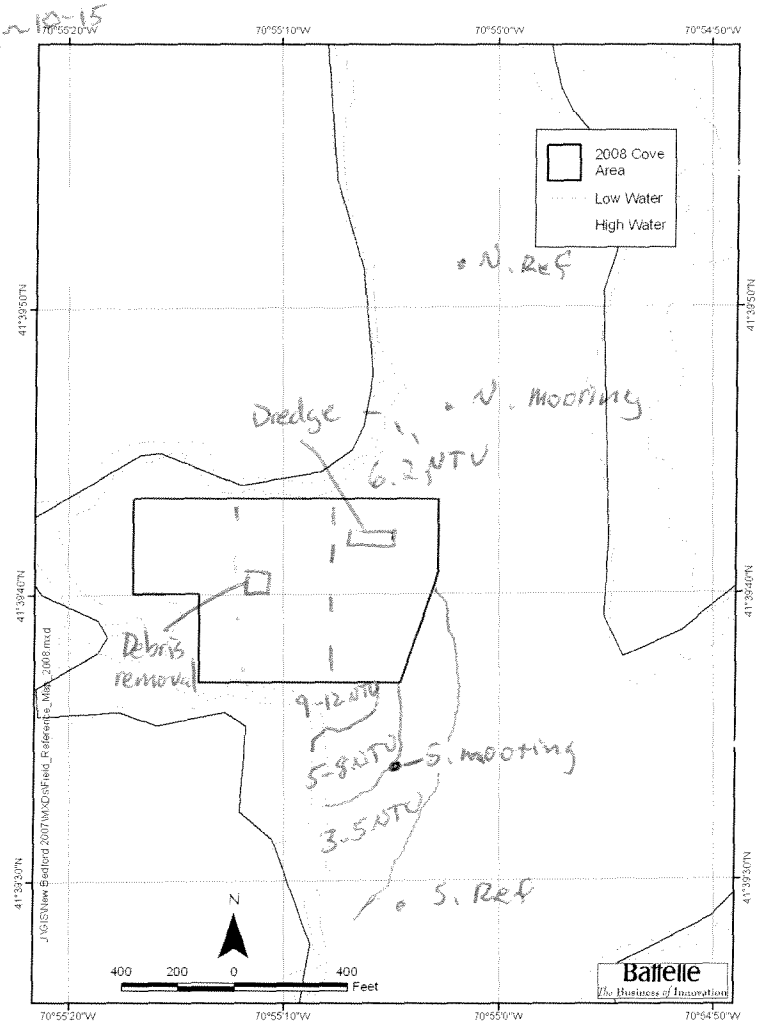
Tides:

high	@	0620
low	@	1224
high	@	1847

Monitoring Period:
From: 1230 **To:** 1440

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Active dredging & debris removal from 1230 to 1400



Turbidity Summary

Location Sensor/water	Turbidity (NTU)	Depth (ft)
10' E of dock	9-12	1.0
west of S. mooring	5-8	1.0
S. Ref	4.5-4.7	1.5 / 5.8
N. Ref	1.9	7.7 / 3.5

all readings dropped below 5 NTU by 1345 except just North of the boundary where reading increased slightly

Oil sheen/ Debris:
None

Wildlife observations: Small predatory fish feeding on baitfish near SE boundary

Samples Collected for Laboratory Analysis – Sample IDs: None

TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes:

Sampling Crew: Matt Fitzpatrick Jessica Fahey
Chief Scientist Signature: Matthew R Fitzpatrick

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Cove Area
Dredging Description	Active dredging + debris removal
Survey Vessel	Gale force
Chief Scientist	Matt Kilpatrick
Sampling Technician	Jessica Fahey
Vessel Captain	Matt Kilpatrick
Other Personnel	
Weather conditions	Sunny light N wind

Date	8/28/08
Page	1 of 1

Tide information	
High	0620
Low	1224
High	1847
Low	

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes DO %	Notes pH
R of North	0811	2703446.0	815274.08	6.8	3.59	2.0	30.90	4.73	22.53	65.3	7.76
↓	0816	↓	↓	6.8	3.56	2.1	30.87	4.50	22.52	62.2	7.74
NE Bound	0901	2702454.66	815426.38	6.8	5.6	3.4	30.94	4.08	22.44	56.2	7.74
↓	0905	↓	↓	6.8	1.0	2.0	29.53	4.28	21.85	57.8	7.71
E. Bound	0911	2702096.56	815409.75	7.3	6.5	6.4	30.98	3.99	22.43	55.1	7.74
↓	0915	↓	↓	7.3	1.1	1.9	29.60	4.24	21.94	57.6	7.71
SE Bound	0945	2701728.16	815289.55	6.8	5.8	6.7	30.79	4.16	22.43	57.3	7.71
↓	0947	↓	↓	6.8	2.9	14.8	30.58	4.12	22.32	56.8	7.69
	0951			6.8	1.05	3.2	30.13	4.26	22.34	58.3	7.70
~40' NE of DaL	1015	2701610.49	815105.98	4.1	.91	10.2	29.96	3.95	22.53	54.2	7.66
↓	1020	↓	↓	4.1	2.95	23.3	30.20	3.81	22.57	52.5	7.64
~40' SE of	1026	2701381.82	815230.34	7.7	1.0	8.4	30.14	3.97	22.57	54.7	7.60
S. Mooring	1029	↓	↓	7.7	3.5	10.2	30.19	3.90	22.50	53.7	7.66
	1032			7.7	5.4	10.5	30.39	3.80	22.47	52.4	7.66
S. Ref	1236	2700765.71	815232.71	5.8	1.5	4.7	30.13	4.05	23.31	56.6	7.67
↓	1240	↓	↓	5.8	1.5	4.5	30.13	3.89	23.33	54.4	7.67
N. Ref	1252	2703460.12	815246.17	3.5	.71	1.9	29.74	4.52	24.08	63.6	7.70
↓	1255	↓	↓	3.5	.77	1.9	29.67	4.60	24.18	65.4	7.68

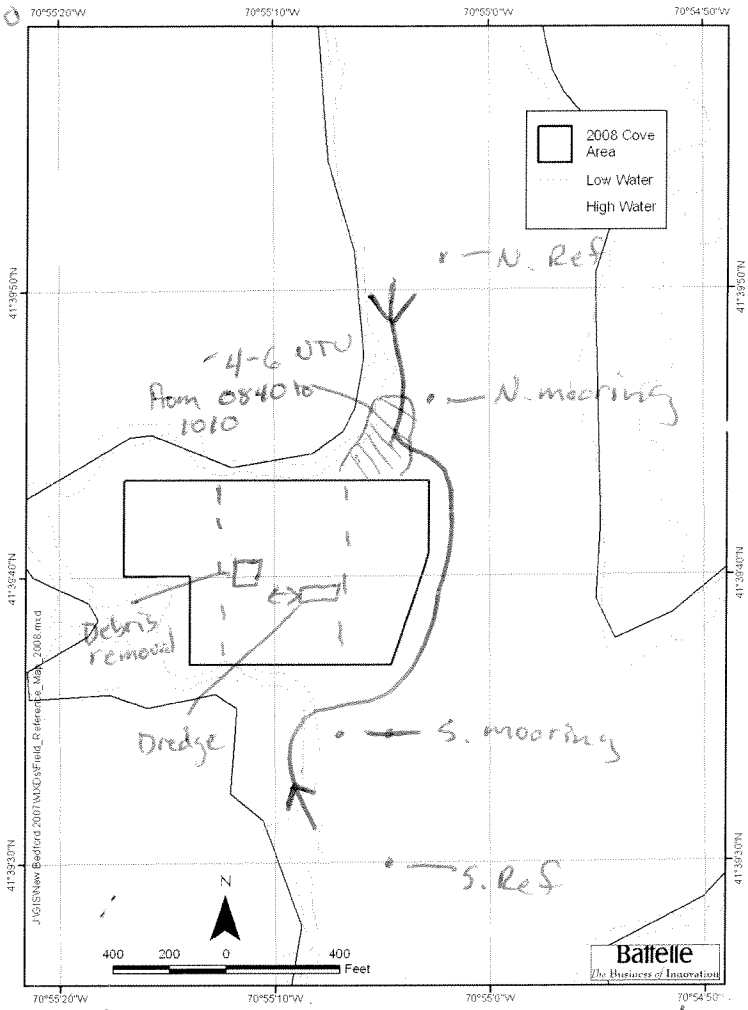
Battelle — Daily Field Summary Sheet for Water Quality Monitoring

Date: 9/4/08
Weather: Partly Sunny S wind @ 5-10
Tides:
Low @ 440
high @ 1138
low @ 1718
high 2355

Monitoring Period:
From: 0745 **To:** 1145

Tidal Stage: (HWS) Ebb LWS (Flood)

Dredging Activity:
Active Dredging + Debris removal in central cove area



After ~1030 no readings exceeded 3.5 NTU

Turbidity Summary

Location Sensor/water	Turbidity (NTU)	Depth (ft)
South Ref.	2.5 NTU	2.5/4.25
North Ref	4.3/3.3	4.8/0.86
N. Mooring	3.1/3.0	5.6/1.0
S. Mooring	2.9/2.2	1-5.1/6.2
580' N of Boundary	4.5/4.7	1.9-3.9/5.0
290' N of Boundary	3.4/4.1	1-3.6/4.7

Oil sheen/ Debris:
Minor sheen near NE Boundary

Wildlife observations: Predatory fish and baitfish observed near S. Reference. Near the dock and along the eastern boundary. Cormorants + gulls throughout the area

Samples Collected for Laboratory Analysis – Sample IDs: None

TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes: Very low turbidity observed from 0745 to 1145. All readings were within 1.5 to 7 NTU

Sampling Crew: Matt Fitzpatrick Jess Fahey Annie Murphy
Chief Scientist Signature: Matthew A Fitzpatrick

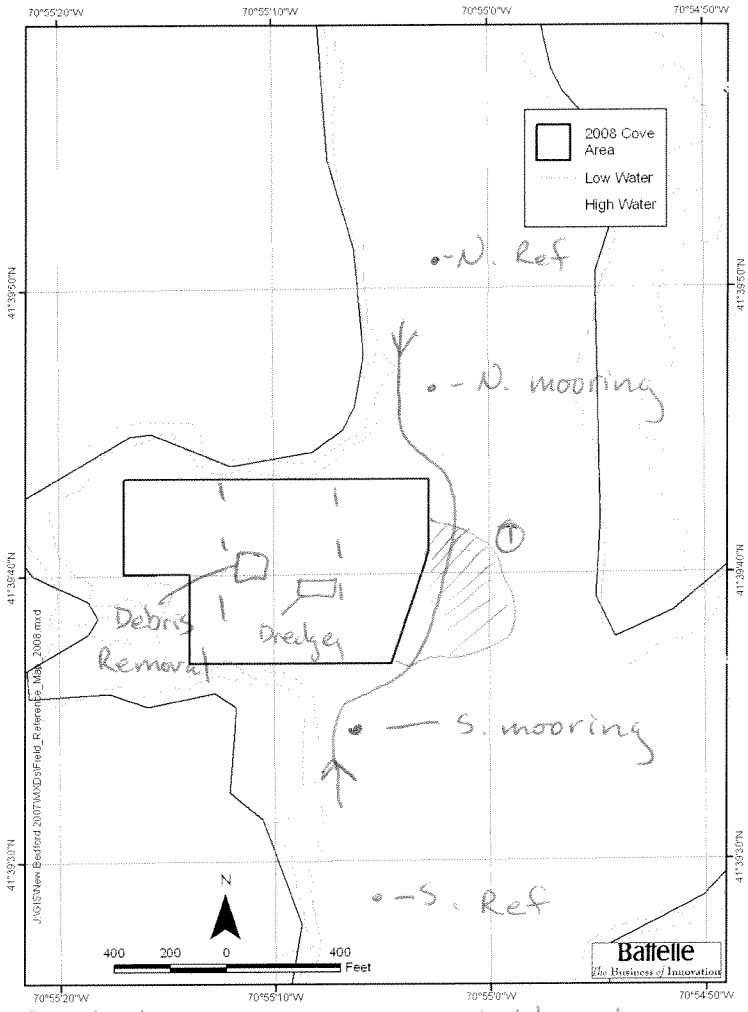
Battelle Daily Field Summary Sheet for Water Quality Monitoring

Date: 9/4/08
Weather: partly sunny
Tides:
Low @ 0440
high @ 1138
Low @ 1718
high 2355

Monitoring Period:
From: 1230 **To:** 1330

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
Dredging and Debris removal inactive until ~1315



Turbidity Summary

Location Sensor/water	Turbidity (NTU)	Depth (ft)
N. Ref.	1.75	3.2 / 6.5
100' from SE corner (towards the NE)	7.4	1-8.4 / 9.5

① Poorly defined low turbidity plume, values ranged from 4-12 NTU - the average was 6-7. All of the observed readings ranged from 1.5 to 40

Oil sheen/ Debris:
None

Wildlife observations: Numerous small predatory fish feeding on small baitfish near the eastern boundary

Samples Collected for Laboratory Analysis – Sample IDs: None
TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes:
Start dredging + debris removal @ 1:15 pm

Sampling Crew: Matt Fitzpatrick Jessica Fahey Annie Murphy
Chief Scientist Signature: Matthew R Fitzpatrick

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Cove Area
Dredging Description	Dredging + Debris removal
Survey Vessel	Gale Force
Chief Scientist	Matt Fitzpatrick
Sampling Technician	Jess Fahey
Vessel Captain	Annie Murphy
Other Personnel	—
Weather conditions	mostly cloudy 5 wind 5-10kts

Date	9/4/08
Page	1 of 1

Tide information	
~~High~~	—
Low	0440
High	1138
Low	1718
High	2355

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes pH	Notes DO % sat.
South Ref.	08:05	2700738.80	815078.50	4.25	2.5	2.7 NTU	30.93	5.5mg	22.05	7.81	75.5%
↓	↓	↓	↓	↓	2.5	2.3 NTU	30.91	5.6	22.05	7.83	77.4%
North Ref.	08:40	2703517.31	815263.81	5.8	4.8	4.3 NTU	30.79	4.8	22.15	7.80	65.5%
↓	↓	↓	↓	↓	0.86	3.3 NTU	30.67	5.18	22.08	7.85	71%
N. Mooring	09:15	2702791.82	815405.25	6.7	5.6	3.1 NTU	30.94	5.07	22.09	7.82	69.6%
↓	↓	↓	↓	6.7	1.0	3.0 NTU	30.84	5.16	22.13	7.83	70.8%
S. Mooring	09:33	2701420.47	815152.00	6.2	5.1	2.9 NTU	31.01	5.14	22.05	7.82	70.5%
↓	↓	↓	↓	↓	1.0	2.2 NTU	31.01	5.19	22.09	7.82	71.1%
580 ft. North Dredge Bound	9:57	2703040.72	815205.39	5.0	3.9	4.5 NTU	30.93	5.14	22.16	7.82	70.2%
↓	↓	↓	↓	↓	0.9	4.7 NTU	30.88	5.04	22.23	7.81	69.3%
290 ft North Dredge Bound	10:04	2702695.59	815243.48	4.7	3.6	3.4 NTU	30.90	5.23	22.31	7.83	72%
↓	10:06	↓	↓	↓	1.0	4.1 NTU	30.83	5.35	22.36	7.85	73.1%
North Ref.	12:47	2703517.91	815203.38	6.5	3.2	1.7 NTU	30.95	5.68	22.72	7.64	78.8
↓	↓	↓	↓	↓	3.2	1.8 NTU	30.98	5.5	22.76	7.63	76.3
100 ft. SE border	1:20	2701826.17	815351.19	9.5	1.0	9.4 NTU	30.98	5.36	23.35	7.78	75.3
↓	1:23	↓	↓	↓	8.4	7.4 NTU	31.36	4.97	22.40	7.75	68.7

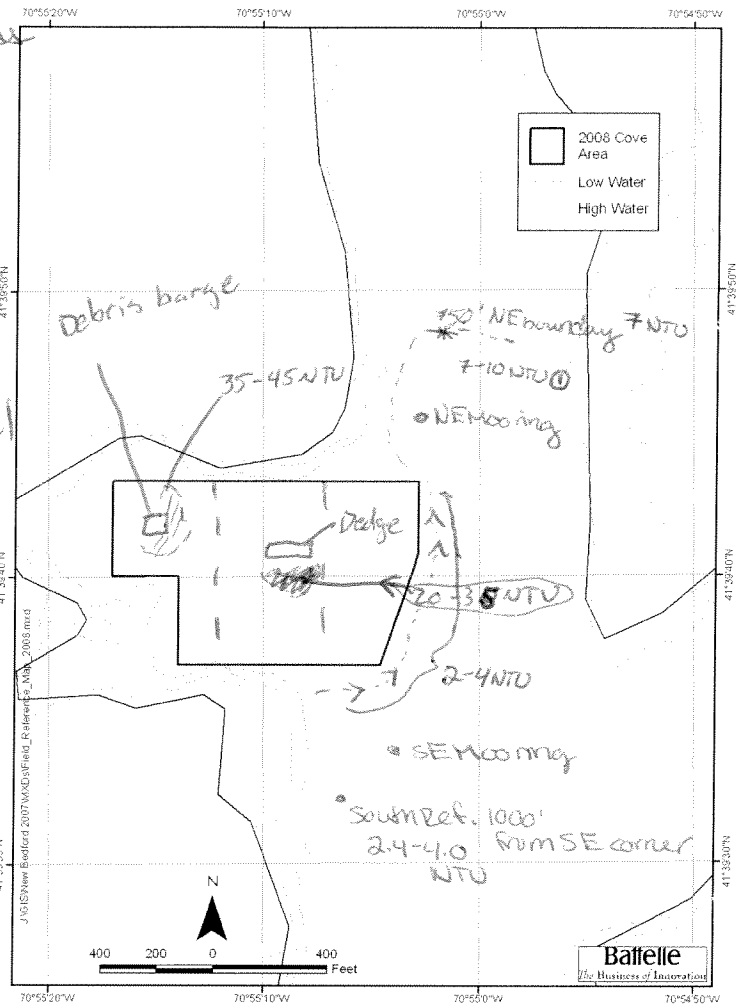
Battelle — Daily Field Summary Sheet for Water Quality Monitoring

Date: 9/11/08
Weather: SSW wind 5-10 sunny some clouds
Tides:
High @ 5:34
Low @ 11:05
High @ 17:55

Monitoring Period:
From: 0915 **To:** 1400

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Active dredging / debris removal
1000 Debris Removal Stopped (low tide)
1230 Dredging stopped until ~ 1PM
Resumed dredging



2702224.4 814212.0 - Debris barge
~ 2702120 ~ 814797.0 - Dredge

Turbidity Summary

Location Sensor/water	Turbidity (NTU)	Depth (ft)
S. Ref	2.4-4.0	2.69
N. Mooring	2.5-8.7	3.38-0.73
500' N of boundary	5.1	0.73
near dredge	35.6	.65
near debris removal	35-46.5	.30

Oil sheen/ Debris:
None

Wildlife observations: Gulls on tape; baitfish + small predatory fish

Samples Collected for Laboratory Analysis – Sample IDs: NA
TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes:
① Fell to background ~1250 while dredge was inactive

Sampling Crew: Matt Fitzpatrick Annie Murphy
Chief Scientist Signature: Matthew A Gfeller

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Cove Area
Dredging Description	Debris Removal in AM, active dredging
Survey Vessel	Gale Force / Aluminum Skiff
Chief Scientist	Matt Fitzpatrick
Sampling Technician	Annie Murphy
Vessel Captain	Matt Fitzpatrick (inside boundary) Annie Murphy (outside boundary)
Other Personnel	—
Weather conditions	Clear, scattered clouds SW 5-10

Date	9/11/08
Page	1 of 1

Tide information	
High	5:34
Low	11:05
High	17:55
Low	

Station Number	Time	Latitude	Longitude	Water depth (ft)	Sample Depth (ft)	Turbidity (NTU)	Salinity (PSU)	DO (mg/L)	Temp (°C)	Notes	% Sat
S. of dredge	0954	2702143	814563.25	<2.0'	.6	35.6	22.66	7.35	21.0	pH = 8.22	
East of debris removal	1001	2702203	814339.82	<1.5'	.30	46.5-35	22.45	8.09	20.85	8.31	
1000' from SE corner — S. Ref.	1153	270070.0	815236.2	6.5	2.69	3.6 ①	26.21	7.60	22.50	pH = 7.46	% sat = 98.3
S. Ref.	1159	↓	↓	6.5	2.69	2.4	26.26	7.25	22.54	7.79	97.4%
North Mooring	1218	2702757.2	815359.75	4.1	.73	8.7	23.35	8.92	22.56	8.39	121%
↓		↓	↓	4.1	3.38	2.5	27.43	5.41	23.72	7.82	64.5%
500' N of NE corner — 1000'	121	2702937.57	815229.92	2.5	.73	5.1	23.80	8.97	22.99	8.43	119.8%

① Turbidity Reading 2.4-4.0

Battelle Daily Field Summary Sheet for Water Quality Monitoring

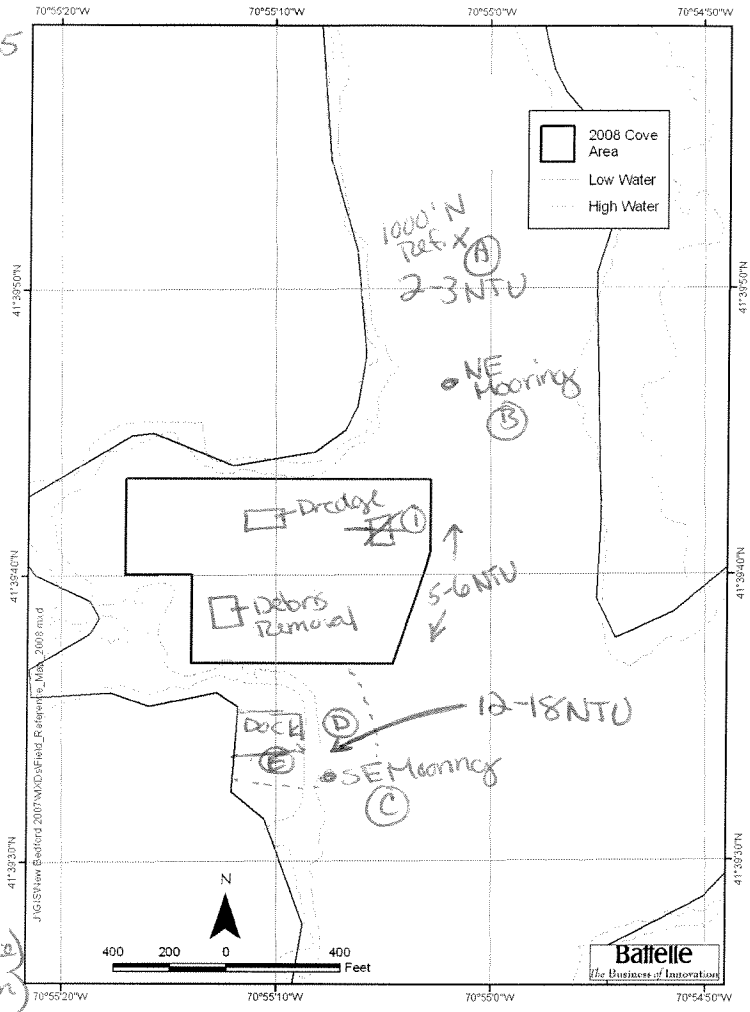
Date: 9/23/08
Weather: Sunny, Brisk, Wind N ~5-15 -NE
Tides:
Low @ 8:34
High @ 15:37
Low @ 22:07

Monitoring Period:
From: 830 **To:** 1130

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris Removal Minimal 830-900
started up ~915

Dredge Active 845-11
(on and off)



① disregard AEM 9/23/08

Turbidity Summary

Location	Turbidity range (NTU)	Sensor/water Depth (ft)
(A) 1000' N. Ref	2.8-3.4	2.3/4.2
(B) NE Mooring	2.2	0.6/4.6
(C) SE Mooring	6.8	1.1/4.0
(D) 40' east dock	13.0	1.0/3.5 (surface)
(D) 40' east dock	16.0	2.5/3.5 (bottom)
(E) S. side dock	18.3	0.8/4.2 (surface)
(E) S. side dock	18.5	3.2/4.2 (bottom)

Oil sheen/ Debris: ~~~~

Wildlife observations: Gulls + Cormorants observed on pipeline, baitfish jumping around southern boundary

Samples Collected for Laboratory Analysis – Sample IDs: NA
TSS (1L) _____ **Turbidity (1 L)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (5 gal) _____ **Metals (500ml)** _____

Notes:
Low water stack for majority of monitoring time
Wind picked up ~930 to ~15 knots

Sampling Crew: Annie Murphy + Matt Fitzpatrick
Chief Scientist Signature: A Murphy

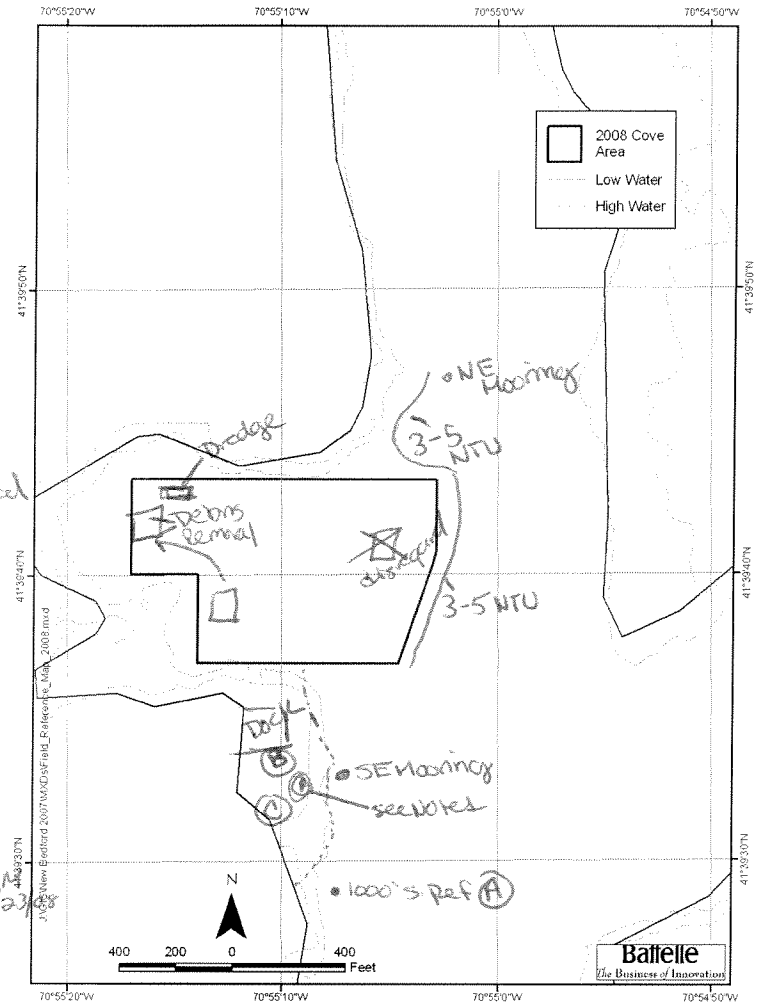
Battelle Daily Field Summary Sheet for Water Quality Monitoring

Date: 9/23/08
Weather: Sunny, Wind NE 5-10 turning East
Tides:
Low @ 8:34
High @ 15:37
Low @ 22:07

Monitoring Period:
From: ~~10:05~~ 12:30 PM **To:** 2:35 PM
1st/b AEM 9/23/08

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
- Debris Removal Moved to NW corner @ 1 PM
active throughout monitoring time period
- Dredge active just north of debris Removal



Turbidity Summary

Location	Turbidity range (NTU)	Sensor/water Depth (ft)
A 1000's Ref.	3.4-3.6	3.5/~~4.5~~ 5/6 9.4
(surface) south side of dock	35-38	0.3/6.5
(mid) "	6.5	3.0/6.5
(bottom) "	5.3	5.5/6.5
C south of dock	15.0	0.6/5.3

AEM 9/23/08

Oil sheen/ Debris: —

Wildlife observations: Gulls on pipeline, baitfish jumping

Samples Collected for Laboratory Analysis – Sample IDs: NA
TSS (1L) _____ **Turbidity (1 L)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (5 gal) _____ **Metals (500ml)** _____

Notes:
① Visible turbidity plume around dock area moving/dissipating south w/wind (NE ~10 knots) for ~15-20 min. brightest on surface (38-40 NTU) 1:45 – 2:15 PM

Sampling Crew: Annie Murphy + Matt Fitzpatrick
Chief Scientist Signature: AMurphy

2

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Pierce Mill Cove Area
Dredging Description	Debris Removal
Survey Vessel	Gale Force
Chief Scientist	Annie Murphy
Sampling Technician	Matt Fitzpatrick
Vessel Captain	Annie Murphy
Other Personnel	—
Weather conditions	Sunny, Brisk

Date	9/23/08
Page	1 of 1

Tide information	
High	3:03
Low	8:34
High	15:37
Low	22:07

Station Name	Time	Latitude	Longitude	Water depth (ft)	Sample Depth (ft)	Turbidity (NTU)	Salinity (PSU)	DO (mg/L)	DO (% sat)	Temp (° C)	ph	Notes
1000' N Ref	8:34	2703471.90	815266.74	4.2	2.3	~~2.88~~ ①	29.27	5.30	68.4%	19.21	7.61	Ebb/LWS
↓	8:39	↓	↓	4.2	2.3	3.4	29.19	5.39	69.4%	19.23	7.64	↓
NE Mooring		2702749.26	815397.60	4.6	0.6	2.2	28.44	5.72	71.6%	18.35	7.59	Ebb/LWS
SE Mooring	9:24	2701363.84	815126.83	4.0	1.1	6.8	28.69	5.41	67.7%	17.89	7.57	
10' East of dock	9:33	2700581.14	815140.97	3.5	1.0	13.0	28.76	5.30	66.6%	18.05	7.57	LWS
↓	9:35	↓	↓	3.5	2.5	16.0	28.77	5.28	66.3%	18.06	7.57	wind has picked up N 5-10
Dock-S	11:14	2701542.04	815052.57	4.2	0.8	18.3	28.95	5.33	67.9%	18.73	7.57	south side of dock
↓	11:16	↓	↓	4.2	3.2	18.5	28.96	5.26	66.9%	18.67	7.56	
1000' S Ref.	12:31	2700748.11	815069.92	4.4	3.5	3.6	29.58	6.23	80.4%	19.25	7.74	Flood
↓	12:34	↓	↓	↓	↓	3.4	29.61	6.25	80.8%	19.27	7.74	↓
Dock-S	1:53	2701537.67	815060.21	6.5	0.38	35-38	29.01	5.3	68.6%	19.48	7.57	
↓	1:55	↓	↓	↓	3.0	6.5	29.68	6.06	78.6%	19.41	7.70	visible plume
② ↓	1:57	↓	↓	↓	5.5	5.3	29.9	6.16	80.2%	19.5	7.73	
incore South of Dock	2:03	2701148.83	815044.65	5.3	0.6	15.0	29.5	6.07	78.6	19.58	7.67	

① s/b 2.8 AEM 9/23/08
② dropped down to <7 ~2:12PM

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Pierce Mill Cove Area
Dredging Description	Active in NW corner in AM
Survey Vessel	Gale Force
Chief Scientist	Annie Murphy
Sampling Technician	Jessica Tenzar
Vessel Captain	Annie Murphy
Other Personnel	—
Weather conditions	overcast wind from S ~5 knots

Date	10/1/08
Page	1 of 1

Tide information	
High	941
Low	1537
High	2159
Low	

Station Number	Time	Latitude	Longitude	Water depth (ft)	Sample Depth (ft)	Turbidity	Salinity	DO	Temp	Notes	
	①	Northing (ft)	Easting (ft)			NTU	psi	mg/lita	°C	pH	% DO
① s/b 8:49 AEM 10/1/08 S. Ref	~~843~~	2700722.29	815149.31	10.3	1.1 ft	4.5	18.96	7.09	18.87	7.43	85.5%
↓	853	↓	↓	↓	1.1	4.5	20.92	6.54	18.99	7.47	79.9
620' SE corner	940	2701919.47	814662.71	6.4	5.1	5.5	24.15	5.55	19.18	7.58	69.7
↓	941	↓	↓	6.4	3.0	7.1	21.85	5.38	19.18	7.47	66.4
↓	942	↓	↓	6.4	1.0	6.9	16.45	6.38	18.92	7.36	75.1
1000' East of SE corner	1030	2702096.74	814319.37	6.0	4.0	5.9	23.38	6.0	19.08	7.59	74.7
↓	1031	↓	↓	6.0	2.5	8.7	21.60	5.79	19.12	7.49	71.1
↓	1022	↓	↓	6.0	1.0	9.8	11.40	7.38	18.99	7.34	85.1
③ ↓ 57 NTU	1123	↓	↓	6.0	1.86	~~52.4~~ ②	17.67	6.01	19.13	7.36	72.7
④ 24 NTU	1150	2702085.16	814349.06	5.8	1.86	19-27 (ave 23)	16.49	5.96	19.28	7.39	74.4
1000' ⑤ N Ref	1215	2703514.83	815210.02	6.3	1.18	3.8	15.25	7.42	19.30	7.23	87.7

inside cove area but no dredge activity

Debris removal inactive after activity for ~30 min 50 ft west of barge

- active debris removal

② samples collected @ range of 50-65 NTU
AEM 10/1/08

③ samples collected (50-65 NTU)
④ " (19-27 NTU)
⑤ " (N. Ref, 3.8 NTU)

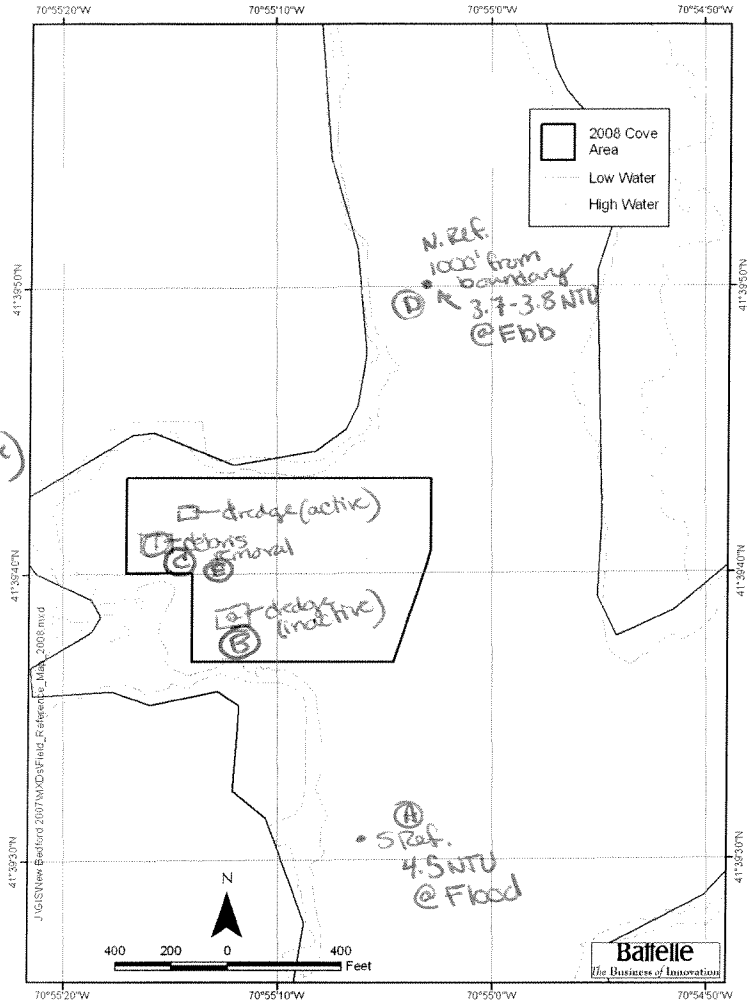
Battelle — Daily Field Summary Sheet for Water Quality Monitoring

Date: 10/1/08
Weather: overcast
Tides:
High @ 941
Low @ 1537
High @ 2159

Monitoring Period:
From: 830 **To:** 1230

Tidal Stage: (HWS) Ebb LWS (Flood)

Dredging Activity:
Dredging in NW corner
Debris Removal in NW corner (S of dredge)
starting ~ 11



Turbidity Summary

Location	Turbidity range (NTU)	Sensor/water Depth (ft)
(A) S. Ref.	4.5	1.1/10.3
(B)	7.1-5.5	10-31/6.4
(C)*	9.8-5.9	1.0-4.0/6.0
(C)*	50-65	1.86/6.0
(D) N. Ref	3.7-3.8	1.18/6.3
(E)	19-27	1.86/5.8

* no debris removal @ this reading; debris removal began and another set of readings taken + sampl

Oil sheen/ Debris:

Wildlife observations: Birds along pipeline, small fish jumping near boundary

Samples Collected for Laboratory Analysis – Sample IDs: WQ-XXX-001-100108 (1)
WQ-XXX-002-100108 (2)
WQ-XXX-003-100108 (3)

TSS (1L) WQ-TSS-XXX-100108 **Turbidity (1 L)** WQ-TUR-XXX-100108
Total PCB (1L) WQ-TPC-XXX-100108 **Dissolved PCB (2x1L)** WQ-DPC-XXX-100108
Toxicity (5 gal) WQ-TOX-XXX-100108 **Metals (500ml)** WQ-MET-XXX-100108

Notes: 3 sets of samples collected @ Ebb tide event.
(1) samples collected @ 50-65 NTU, duplicates collected
(2) samples collected @ 19-~~25~~ 27 NTU KEM 5/6 10/1/08
(3) samples collected @ N. Ref, MS + MSD collected

Sampling Crew: Jessica Tenzar, Annie Murphy
Chief Scientist Signature: A Murphy

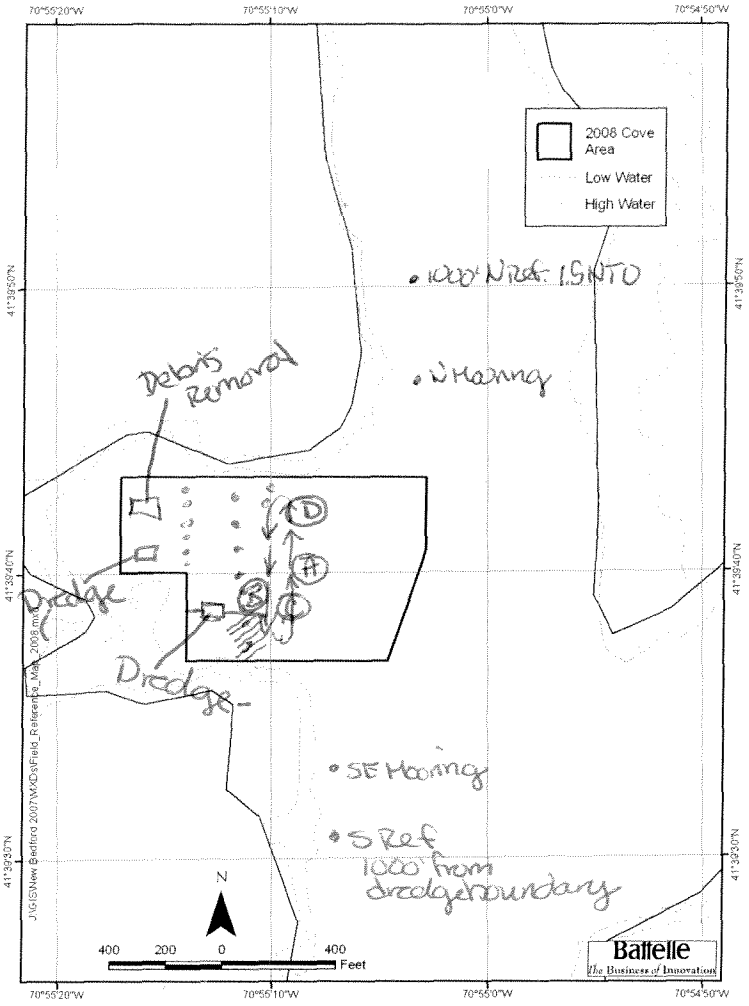
Battelle — Daily Field Summary Sheet for Water Quality Monitoring

Date: 10/8/08
Weather: Clear, sunny, light breeze
Tides:
Low @ 7:58
High @ 15:34
Low @ 21:07

Monitoring Period:
From: 8:00 **To:** 2:15

Tidal Stage: HWS Ebb (LWS) (Flood)

Dredging Activity:
Debris Removal in NW corner for most of the morning and afternoon
Dredge active (on and off) in middle of area; SW, until ~1330
Around 13:45 Dredging began in far west corner, south of debris removal



Turbidity Summary

Location	Turbidity range (NTU)	Sensor/water Depth (ft)
1000' NRef	1.5-1.6	1.1/6.0
(A) outer dredge area	12.4-2.2	2.2-0.4/3.5
(B) 50' E of dredge	13.6-9.5	2.0-0.4/3.2
1000' S Ref	1.4-0.5	3.6-1.0/4.8
(C) 200' NE of dredge	3.0-1.4	3.1-0.9/4.2
(D) 550' N of debris Removal	1.9-1.0	3.1-1.0/3.8

Oil sheen/ Debris: slight oil sheen on east of the dredge (depicted as //// on map above) in morning.

Wildlife observations: birds and some fish outside dredge boundary

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) _____ **Turbidity (1 L)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (5 gal) _____ **Metals (500ml)** _____

Notes: Ran transects along boom due east of dredge area
Due east of active dredging turbidity values peaked 8 - 12 NTU
Turbidity levels remained 3-5 NTU along rest of transect

Sampling Crew: Jessica Fahy, Tenzan
Chief Scientist Signature: _____

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Pierce Mill Cove Area
Dredging Description	Dredge in S. Middle area, Debris Removal NW corner
Survey Vessel	Gale Force
Chief Scientist	Annie Murphy
Sampling Technician	Jessica Farey
Vessel Captain	Annie Murphy
Other Personnel	—
Weather conditions	Clear, sunny, light wind NNE in morning turning SW 4-5 knots

Date	10/5/08
Page	1 of 1

Tide information	
High	3:08
Low	7:58
High	15:34
Low	21:07

Station Name	Time	Latitude	Longitude	Water depth (ft)	Sample Depth (ft)	Turbidity (NTU)	Salinity (PSU)	DO (mg/L)	DO (% sat)	Temp (° C)	ph	Notes
1000' N. Ref.	8:18	2703467.04	815323.27	6.0	1.1	1.6	25.48	5.72	65.9	16.94	7.75	Low slack tide
↓	8:27	↓	↓	↓	1.1	1.5	25.71	5.16	61.9	16.98	7.77	"
(A) outer dredge Area	9:55	2702286.95	815019.43	3.5	2.2	12.4	26.44	4.36	53.2	17.25	7.77	Flood tide
↓	9:57	↓	↓	↓	1.3	2.2	24.23	5.55	64.7	15.88	7.82	↓
↓	9:59	↓	↓	↓	0.4	2.2	22.44	5.79	65.4	14.6	7.79	↓
(B) East Edge of mix boundary (50' from dredge)	11:26	2701996.69	814907.78	3.2	2.0	13.6	25.05	5.20	62.0	16.75	7.74	↓
↓	11:28	↓	↓	↓	1.0	11.5	22.51	5.33	62.6	15.70	7.74	↓
↓	11:29	↓	↓	↓	0.4	9.5	22.30	5.53	63.9	15.94	7.74	↓
S Ref	12:52	2700757.97	815069.67	4.8	3.6	1.4	27.81	6.08	75.7	17.92	7.84	↓
↓	12:53	↓	↓	↓	2.2	1.2	26.74	5.93	73.2	17.75	7.80	↓
↓	12:54	↓	↓	↓	1.0	0.9	25.33	6.16	74.7	17.39	7.78	↓
↓	12:59	↓	↓	↓	1.0	0.5	24.19	5.91	70.8	16.92	7.75	↓
(C) 200' NE of dredge	1:23	2702190.88	814947.98	4.2	3.1	3.0	26.60	4.28	52.8	18.14	7.80	↓
↓	1:24	↓	↓	↓	2.0	1.7	24.98	4.93	59.6	17.25	7.82	↓
↓	1:25	↓	↓	↓	0.9	1.4	24.67	5.18	62.5	17.34	7.83	↓
(D) N 50' Not debris removal	2:00	2702329.31	814974.40	5.8	3.1	1.9	28.25	4.58	57.3	17.87	7.88	↓
↓	2:01	↓	↓	↓	2.0	1.0	27.83	4.29	54.0	17.97	7.87	↓
↓	2:02	↓	↓	↓	1.0	1.8	27.46	3.90	48.9	18.12	7.82	↓

① Letters reference diagram on other sheet
AE 11/5/08

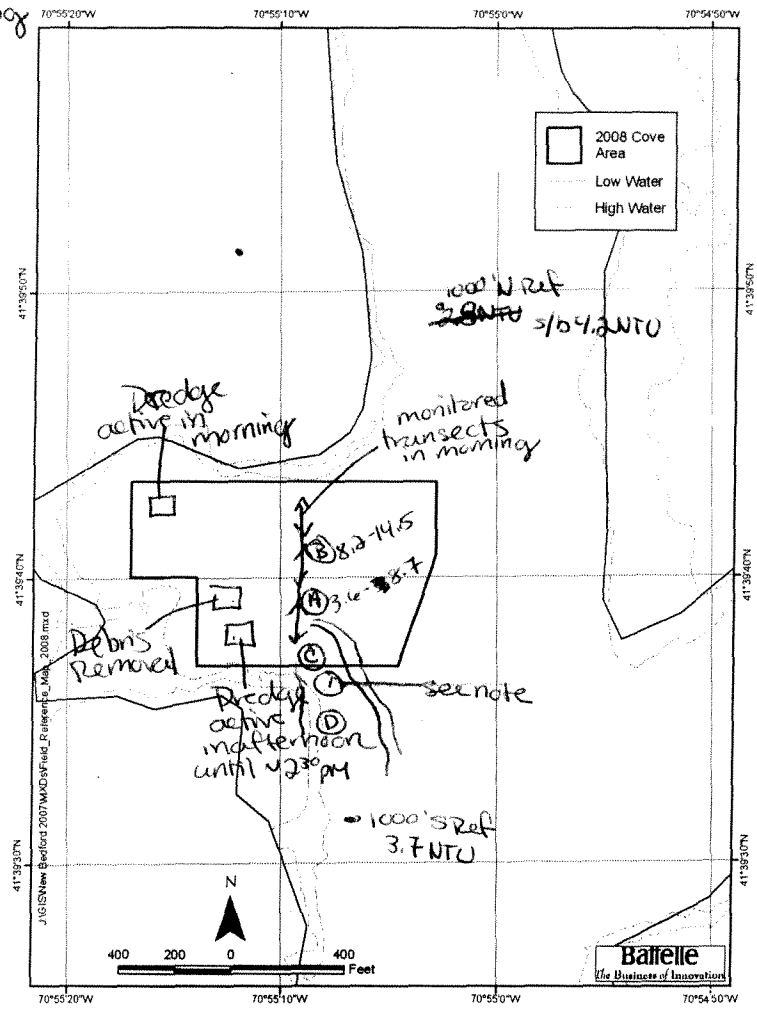
Battelle — Daily Field Summary Sheet for Water Quality Monitoring

Date: 10/15/08
Weather: clear, wind 5-10 NE in morning
Tides:
High @ 839
Low @ 1433
High @ 2101

Monitoring Period:
From: 800 **To:** 1500

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
Debris Removal in morning
Dredging in NW corner in morning
No Debris Removal in afternoon
Dredging in SW corner in afternoon



Turbidity Summary

Location	Turbidity range (NTU)	Sensor/water Depth (ft)
S. Ref	3.7-3.8 NTU	1.0
(A) 150' E of Debris Removal	3.6-8.7 NTU	5.0-1.0
(B) ~200' NE of Debris Removal	8.2-14.5 NTU	1.0-3.25
(C) SW Corner	33.4	1.0
N. Ref	4.2	1.0
(D) 20' E of dock	6.8	1.0

AM monitoring — PM monitoring

Oil sheen/ Debris: some seaweed seen on surface in AM near dredge boundary

Wildlife observations: Birds - Gulls + Cormorants along pipeline

Samples Collected for Laboratory Analysis – Sample IDs: N/A
TSS (1L) — **Turbidity (1 L)** —
Total PCB (1L) — **Dissolved PCB (2x1L)** —
Toxicity (5 gal) — **Metals (500ml)** —

Notes:
① ~1:15 PM when monitoring resumed, a visible plume was detected from dredge south towards dock; readings within ~200' of dredge activity were 60-80 NTU sustained, ② readings directly next to dock (east) were 30 NTU and ~100' south of dock was 12 NTU By 2PM the plume had subsided. Dredge activity was stopped due to low tide ~~and~~ Plume most likely a result of low water.

~~Sampling~~ Crew: Annie Murphy + Jessica Tenzer
Chief Scientist Signature: A Murphy

② CC - 60-80 NTU readings observed in close proximity of dredge, ~50-100 ft from dredge activity, readings decreased w/increasing distance from dredge activity
AEM 10/16/08

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Pierce Mill Cove Area
Dredging Description	Dredge in NW corner, Debris Removal
Survey Vessel	Gale Force
Chief Scientist	Annie Murphy
Sampling Technician	Jessica Tenzar
Vessel Captain	Annie Murphy
Other Personnel	
Weather conditions	Mostly sunny, wind 5-10 knots NE in morning, died down by afternoon

Date	10/15/08
Page	1 of 1

Tide information	
High	839
Low	1433
High	2101
Low	—

Station Name	Time	Latitude	Longitude	Water depth (ft)	Sample Depth (ft)	Turbidity (NTU)	Salinity (PSU)	DO (mg/L)	DO (% sat)	Temp (° C)	ph	Notes
1000' S Ref.	8:57	2700705.64	815103.79	8.2	1.0	3.7	27.32	7.24	88.3%	17.00	7.93	
↓	8:59	↓	↓	8.2	1.0	3.8	26.57	7.21	87.4%	16.95	7.96	
150' E of Debris	10:06	2701930.20	814920.64	6.0	1.0	5.9	29.08	6.44	80.0%	17.34	7.99	during debris Removal
Removal	10:07	↓	↓	↓	3.0	8.7	30.13	6.24	78.1%	17.38	7.97	
↓	10:08	↓	↓	↓	5.0	3.6	30.68	6.47	80.9%	17.35	8.03	
~200' NE of Debris	11:05	2702138.21	814908.20	4.7	3.25	12.7	30.36	6.12	76.8%	17.62	7.98	~500' from dredge
Removal	11:07	↓	↓	↓	2.0	10.8	30.19	6.11	76.9%	17.72	7.97	
↓	11:08	↓	↓	↓	1.0	8.2	30.00	6.15	77.2%	17.72	7.99	
↓	11:21	↓	↓	↓	1.0	14.5	30.14	6.0	75.5%	17.70	7.95	spiked to 18 NTU
SW corner ①	11:47	2701835.1	814934.00	3.9	1.0	33.4	29.96	5.8	72.8%	17.69	7.93	
1000' N Ref	1:19	2703446.17	815211.62	2.8	1.0	4.2	28.35	7.31	92.6%	18.56	8.11	
↓	1:24	↓	↓	↓	1.0	4.2	28.11	7.27	91.3%	18.59	8.02	
20' E dock	2:40	2701544.3	815117.17	3.3	1.0	6.8	28.86	6.33	80.6	18.68	7.97	- after dredging had stopped after high turbidity plume ②

① SW corner of outer dredge area AEM 10/15/08

② see note on Field summary sheet

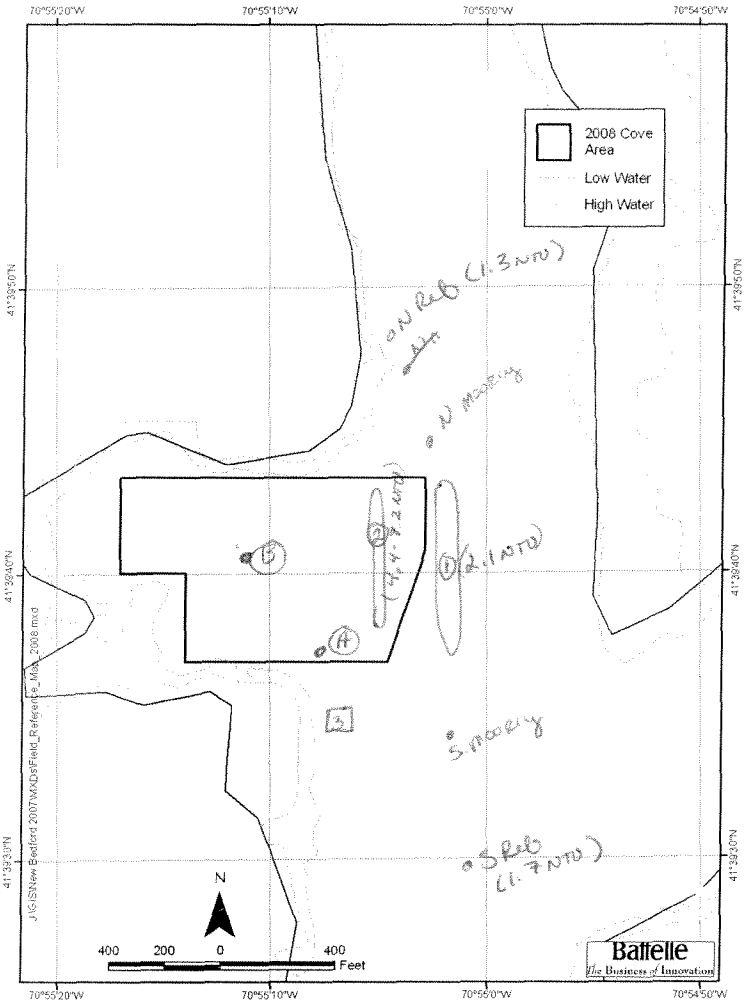
Battelle Daily Field Summary Sheet for Water Quality Monitoring

Date: 10/20/08
Weather: Windy, Sunny ~50°F
Tides:
Low @ 5:54
High @ 13:06
Low @ 19:07

Monitoring Period:
From: 0830 **To:** 0310

Tidal Stage: HWS Ebb (PM) LWS Flood (AM)

Dredging Activity:
(A) Dredging in south area of middle section
(B) Debris removal in North east part of western most section



Turbidity Summary

Location	Turbidity range (NTU)	Sensor/water Depth (ft)
① East edge (AM)	1.3-3.2	1-4 ft
① Dredge area	average 2.1	(~1.0 ft ave)
② East edge (PM)	3.3-8.3	~1.2 ft
Dredge area		
③ Dock (S. side)	9.7	1.1 ft

(outside boundary @ inside boundary

Oil sheen/ Debris: No sheen seen

Wildlife observations: gulls, cormorants, swan near dredge area + on pepelin

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) NA **Turbidity (1 L)** NA
Total PCB (1L) NA **Dissolved PCB (2x1L)** NA
Toxicity (5 gal) NA **Metals (500ml)** NA

Notes:
→ Morning was spent running transects along outer edge of dredge area (East Edge). Turbidity was low; ~2.1 NTU on average

→ afternoon was ebb tide; turbidity plume seen from debris removal south just past mooring. Monitored w/in eastern most portion of dredge area. Highest NTU was 8.3 due east of debris removal

Sampling Crew: Annie Murphy
Chief Scientist Signature: Jessica M Jerga

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Pierce Mill Cove
Dredging Description	Dredge Removal + Debris Removal
Survey Vessel	Gale Force
Chief Scientist	Jessica Tenzar
Sampling Technician	Annie Murphy
Vessel Captain	Annie Murphy
Other Personnel	—
Weather conditions	Windy, Sunny, Cold

Date	10/20/08
Page	1 of 1

Tide information	
High	—
Low	5:59
High	13:06
Low	19:07

Station Name	Time	Latitude	Longitude	Water depth (ft)	Sample Depth (ft)	Turbidity (NTU)	Salinity (PSU)	DO (mg/L)	DO (% sat)	Temp (° C)	ph	Notes
S Ref	0330	2815721.06	270749.49	4.5	1.052	1.8	28.62	8.39	94.2	12.59	8.03	
S Ref	0335	"	"	—	—	1.6	28.83	8.30	93.4	12.60	8.09	
Dock	0941	2701565.04	815075.89	5.45	4.3	2.2	30.12	7.81	89.5	13.03	8.13	Morning Summary
"	0942	"	"	"	2.0	1.8	29.99	7.84	89.4	12.81	8.14	Range of Turbidity
"	0943	"	"	"	2.0	1.8	29.92	7.84	89.2	12.78	8.13	1.4–3.3
"	094	"	"	"	1.0	2.3	29.9	7.83	89.1	12.75	8.13	2.1 average NTU
		~~2702[illegible]~~										
0' south NE corner	1200	2702243.68	815509.52	>11ft	1.209	2.8	30.93	7.90	93.0	14.08	8.21	due east of debris
West edge ①	1336	2701863.72	814970.11	6.8	1.01	5.0	30.07	8.25	95.1	13.37	8.18	②
~150 ft E of Debris	1425	2702161.99	814938.2	6.3	1.4	8.2	29.98	7.49	86.4	13.38	8.15	highest pt w/in plume
N Ref	1450	2703516.64	815273.10	7.7	2.5	1.3	30.14	7.54	87.3	13.53	8.18	
N. Ref	1453	"	"	"	"	1.3	29.99	7.54	87.1	13.50	8.18	
Dock (S. side)	1507	2701539.13	815050.11	7.1	1.1	9.7	30.04	7.31	84.3	13.43	8.16	

① West edge of East Dredge Area ~200 ft from Debris Removal

② Low level Turbidity plume Visible (~4.6 ntu in plume) @ 1336

Belleville, Acushnet River, Buzzards Bay, Massachusetts
Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
Units are feet
Mark level: 0.00

Day/Date and Tidal Stage		Time	Time Zone	Tidal Height (ft)
Thursday	**5/1/2008**			
	High_Tide:	5:00	EDT	3.5
	Low_Tide:	10:30	EDT	0.1
	High_Tide:	17:27	EDT	4.1
	Low_Tide:	23:16	EDT	0.1
Friday	**5/2/2008**			
	High_Tide:	5:51	EDT	3.8
	Low_Tide:	11:25	EDT	-0.2
	High_Tide:	18:16	EDT	4.5
Saturday	**5/3/2008**			
	Low_Tide:	0:13	EDT	-0.3
	High_Tide:	6:41	EDT	4
	Low_Tide:	12:16	EDT	-0.4
	High_Tide:	19:04	EDT	4.9
Sunday	**5/4/2008**			
	Low_Tide:	1:06	EDT	-0.6
	High_Tide:	7:30	EDT	4.1
	Low_Tide:	13:05	EDT	-0.7
	High_Tide:	19:52	EDT	5.2
Monday	**5/5/2008**	**New**	**Moon**	
	Low_Tide:	1:56	EDT	-0.8
	High_Tide:	8:19	EDT	4.2
	Low_Tide:	13:54	EDT	-0.8
	High_Tide:	20:41	EDT	5.4
Tuesday	**5/6/2008**			
	Low_Tide:	2:47	EDT	-0.8
	High_Tide:	9:09	EDT	4.2
	Low_Tide:	14:44	EDT	-0.8
	High_Tide:	21:32	EDT	5.3
Wednesday	**5/7/2008**			
	Low_Tide:	3:37	EDT	-0.8
	High_Tide:	10:01	EDT	4.1
	Low_Tide:	15:34	EDT	-0.6
	High_Tide:	22:24	EDT	5.1
Thursday	**5/8/2008**			
	Low_Tide:	4:30	EDT	-0.6
	High_Tide:	10:55	EDT	4
	Low_Tide:	16:28	EDT	-0.4
	High_Tide:	23:19	EDT	4.8
Friday	**5/9/2008**			
	Low_Tide:	5:25	EDT	-0.3
	High_Tide:	11:52	EDT	3.9
	Low_Tide:	17:26	EDT	-0.1
Saturday	**5/10/2008**			
	High_Tide:	0:17	EDT	4.5
	Low_Tide:	6:23	EDT	0
	High_Tide:	12:52	EDT	3.7
	Low_Tide:	18:31	EDT	0.2
Sunday	**5/11/2008**	**First**	**Quarter**	**Moon**
	High_Tide:	1:17	EDT	4.1
	Low_Tide:	7:28	EDT	0.2
	High_Tide:	13:54	EDT	3.7
	Low_Tide:	19:50	EDT	0.5
Monday	**5/12/2008**			
	High_Tide:	2:20	EDT	3.8
	Low_Tide:	8:38	EDT	0.4
	High_Tide:	14:55	EDT	3.7
	Low_Tide:	21:20	EDT	0.5
Tuesday	**5/13/2008**			
	High_Tide:	3:21	EDT	3.6
	Low_Tide:	9:45	EDT	0.4
	High_Tide:	15:54	EDT	3.8
	Low_Tide:	22:38	EDT	0.5
Wednesday	**5/14/2008**			
	High_Tide:	4:18	EDT	3.5
	Low_Tide:	10:41	EDT	0.4
	High_Tide:	16:47	EDT	4
	Low_Tide:	23:37	EDT	0.4
Thursday	**5/15/2008**			
	High_Tide:	5:11	EDT	3.5
	Low_Tide:	11:25	EDT	0.4
	High_Tide:	17:36	EDT	4.2

Day/Date and Tidal Stage		Time	Time Zone	Tidal Height (ft)
Friday	**5/16/2008**			
	Low_Tide:	0:24	EDT	0.3
	High_Tide:	5:58	EDT	3.5
	Low_Tide:	12:01	EDT	0.3
	High_Tide:	18:21	EDT	4.3
Saturday	**5/17/2008**			
	Low_Tide:	1:02	EDT	0.3
	High_Tide:	6:42	EDT	3.5
	Low_Tide:	12:33	EDT	0.3
	High_Tide:	19:03	EDT	4.4
Sunday	**5/18/2008**			
	Low_Tide:	1:34	EDT	0.2
	High_Tide:	7:24	EDT	3.5
	Low_Tide:	13:04	EDT	0.2
	High_Tide:	19:43	EDT	4.4
Monday	**5/19/2008**	**Full**	**Moon**	
	Low_Tide:	2:02	EDT	0.2
	High_Tide:	8:05	EDT	3.5
	Low_Tide:	13:35	EDT	0.2
	High_Tide:	20:24	EDT	4.4
Tuesday	**5/20/2008**			
	Low_Tide:	2:30	EDT	0.2
	High_Tide:	8:46	EDT	3.5
	Low_Tide:	14:08	EDT	0.2
	High_Tide:	21:03	EDT	4.4
Wednesday	**5/21/2008**			
	Low_Tide:	3:00	EDT	0.2
	High_Tide:	9:27	EDT	3.5
	Low_Tide:	14:43	EDT	0.2
	High_Tide:	21:43	EDT	4.2
Thursday	**5/22/2008**			
	Low_Tide:	3:32	EDT	0.2
	High_Tide:	10:09	EDT	3.4
	Low_Tide:	15:19	EDT	0.3
	High_Tide:	22:24	EDT	4.1
Friday	**5/23/2008**			
	Low_Tide:	4:06	EDT	0.3
	High_Tide:	10:52	EDT	3.3
	Low_Tide:	15:58	EDT	0.4
	High_Tide:	23:06	EDT	3.9
Saturday	**5/24/2008**			
	Low_Tide:	4:42	EDT	0.4
	High_Tide:	11:37	EDT	3.2
	Low_Tide:	16:40	EDT	0.5
	High_Tide:	23:50	EDT	3.7
Sunday	**5/25/2008**			
	Low_Tide:	5:22	EDT	0.4
	High_Tide:	12:25	EDT	3.2
	Low_Tide:	17:27	EDT	0.6
Monday	**5/26/2008**			
	High_Tide:	0:38	EDT	3.5
	Low_Tide:	6:06	EDT	0.5
	High_Tide:	13:17	EDT	3.2
	Low_Tide:	18:21	EDT	0.7
Tuesday	**5/27/2008**	**Last**	**Quarter**	**Moon**
	High_Tide:	1:31	EDT	3.4
	Low_Tide:	6:55	EDT	0.4
	High_Tide:	14:10	EDT	3.4
	Low_Tide:	19:22	EDT	0.7
Wednesday	**5/28/2008**			
	High_Tide:	2:28	EDT	3.3
	Low_Tide:	7:50	EDT	0.4
	High_Tide:	15:06	EDT	3.6
	Low_Tide:	20:29	EDT	0.6
Thursday	**5/29/2008**			
	High_Tide:	3:26	EDT	3.4
	Low_Tide:	8:48	EDT	0.3
	High_Tide:	16:01	EDT	4
	Low_Tide:	21:39	EDT	0.4
Friday	**5/30/2008**			
	High_Tide:	4:23	EDT	3.5
	Low_Tide:	9:48	EDT	0.1
	High_Tide:	16:55	EDT	4.4
	Low_Tide:	22:47	EDT	0.2
Saturday	**5/31/2008**			
	High_Tide:	5:19	EDT	3.7
	Low_Tide:	10:47	EDT	-0.1
	High_Tide:	17:47	EDT	4.8
	Low_Tide:	23:49	EDT	-0.1

Belleville, Acushnet River, Buzzards Bay, Massachusetts
Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
Units are feet
Mark level: 0.00

Day/Date and Tidal Stage		Time	Time Zone	Tidal Height (ft)
Sunday	**6/1/2008**			
	High_Tide:	6:13	EDT	3.8
	Low_Tide:	11:44	EDT	-0.3
	High_Tide:	18:40	EDT	5.1
Monday	**6/2/2008**			
	Low_Tide:	0:47	EDT	-0.4
	High_Tide:	7:07	EDT	4
	Low_Tide:	12:40	EDT	-0.5
	High_Tide:	19:32	EDT	5.4
Tuesday	**6/3/2008**	**New**	**Moon**	
	Low_Tide:	1:42	EDT	-0.5
	High_Tide:	7:59	EDT	4.2
	Low_Tide:	13:35	EDT	-0.6
	High_Tide:	20:24	EDT	5.5
Wednesday	**6/4/2008**			
	Low_Tide:	2:35	EDT	-0.6
	High_Tide:	8:52	EDT	4.3
	Low_Tide:	14:29	EDT	-0.6
	High_Tide:	21:16	EDT	5.4
Thursday	**6/5/2008**			
	Low_Tide:	3:27	EDT	-0.6
	High_Tide:	9:45	EDT	4.3
	Low_Tide:	15:24	EDT	-0.5
	High_Tide:	22:08	EDT	5.2
Friday	**6/6/2008**			
	Low_Tide:	4:19	EDT	-0.5
	High_Tide:	10:39	EDT	4.2
	Low_Tide:	16:20	EDT	-0.3
	High_Tide:	23:02	EDT	4.9
Saturday	**6/7/2008**			
	Low_Tide:	5:11	EDT	-0.3
	High_Tide:	11:34	EDT	4.2
	Low_Tide:	17:18	EDT	0
	High_Tide:	23:57	EDT	4.5
Sunday	**6/8/2008**			
	Low_Tide:	6:03	EDT	0
	High_Tide:	12:30	EDT	4.1
	Low_Tide:	18:20	EDT	0.3
Monday	**6/9/2008**			
	High_Tide:	0:52	EDT	4.2
	Low_Tide:	6:57	EDT	0.2
	High_Tide:	13:27	EDT	4
	Low_Tide:	19:29	EDT	0.5
Tuesday	**6/10/2008**	**First**	**Quarter**	**Moon**
	High_Tide:	1:49	EDT	3.8
	Low_Tide:	7:51	EDT	0.4
	High_Tide:	14:24	EDT	4
	Low_Tide:	20:45	EDT	0.7
Wednesday	**6/11/2008**			
	High_Tide:	2:46	EDT	3.5
	Low_Tide:	8:46	EDT	0.5
	High_Tide:	15:19	EDT	4
	Low_Tide:	22:00	EDT	0.8
Thursday	**6/12/2008**			
	High_Tide:	3:41	EDT	3.3
	Low_Tide:	9:38	EDT	0.6
	High_Tide:	16:13	EDT	4
	Low_Tide:	23:05	EDT	0.8
Friday	**6/13/2008**			
	High_Tide:	4:34	EDT	3.3
	Low_Tide:	10:26	EDT	0.7
	High_Tide:	17:03	EDT	4.1
	Low_Tide:	23:56	EDT	0.7
Saturday	**6/14/2008**			
	High_Tide:	5:24	EDT	3.2
	Low_Tide:	11:09	EDT	0.6
	High_Tide:	17:50	EDT	4.2
Sunday	**6/15/2008**			
	Low_Tide:	0:37	EDT	0.7
	High_Tide:	6:11	EDT	3.3
	Low_Tide:	11:49	EDT	0.6
	High_Tide:	18:34	EDT	4.3

Day/Date and Tidal Stage		Time	Time Zone	Tidal Height (ft)
Monday	**6/16/2008**			
	Low_Tide:	1:11	EDT	0.6
	High_Tide:	6:56	EDT	3.4
	Low_Tide:	12:28	EDT	0.5
	High_Tide:	19:17	EDT	4.4
Tuesday	**6/17/2008**			
	Low_Tide:	1:41	EDT	0.5
	High_Tide:	7:40	EDT	3.4
	Low_Tide:	13:06	EDT	0.4
	High_Tide:	19:59	EDT	4.4
Wednesday	**6/18/2008**	**Full**	**Moon**	
	Low_Tide:	2:11	EDT	0.4
	High_Tide:	8:23	EDT	3.5
	Low_Tide:	13:45	EDT	0.4
	High_Tide:	20:41	EDT	4.4
Thursday	**6/19/2008**			
	Low_Tide:	2:42	EDT	0.3
	High_Tide:	9:06	EDT	3.5
	Low_Tide:	14:23	EDT	0.4
	High_Tide:	21:21	EDT	4.4
Friday	**6/20/2008**			
	Low_Tide:	3:14	EDT	0.3
	High_Tide:	9:48	EDT	3.6
	Low_Tide:	15:02	EDT	0.4
	High_Tide:	22:02	EDT	4.2
Saturday	**6/21/2008**			
	Low_Tide:	3:47	EDT	0.3
	High_Tide:	10:30	EDT	3.6
	Low_Tide:	15:43	EDT	0.4
	High_Tide:	22:43	EDT	4.1
Sunday	**6/22/2008**			
	Low_Tide:	4:22	EDT	0.3
	High_Tide:	11:13	EDT	3.6
	Low_Tide:	16:25	EDT	0.5
	High_Tide:	23:25	EDT	3.9
Monday	**6/23/2008**			
	Low_Tide:	5:00	EDT	0.3
	High_Tide:	11:57	EDT	3.6
	Low_Tide:	17:11	EDT	0.5
Tuesday	**6/24/2008**			
	High_Tide:	0:09	EDT	3.8
	Low_Tide:	5:40	EDT	0.3
	High_Tide:	12:44	EDT	3.7
	Low_Tide:	18:02	EDT	0.6
Wednesday	**6/25/2008**			
	High_Tide:	0:58	EDT	3.6
	Low_Tide:	6:26	EDT	0.2
	High_Tide:	13:36	EDT	3.8
	Low_Tide:	18:58	EDT	0.6
Thursday	**6/26/2008**	**Last**	**Quarter**	**Moon**
	High_Tide:	1:52	EDT	3.5
	Low_Tide:	7:16	EDT	0.2
	High_Tide:	14:31	EDT	4
	Low_Tide:	20:02	EDT	0.6
Friday	**6/27/2008**			
	High_Tide:	2:51	EDT	3.4
	Low_Tide:	8:12	EDT	0.2
	High_Tide:	15:28	EDT	4.3
	Low_Tide:	21:11	EDT	0.5
Saturday	**6/28/2008**			
	High_Tide:	3:52	EDT	3.4
	Low_Tide:	9:13	EDT	0.1
	High_Tide:	16:27	EDT	4.5
	Low_Tide:	22:23	EDT	0.4
Sunday	**6/29/2008**			
	High_Tide:	4:52	EDT	3.6
	Low_Tide:	10:17	EDT	0
	High_Tide:	17:25	EDT	4.8
	Low_Tide:	23:32	EDT	0.1
Monday	**6/30/2008**			
	High_Tide:	5:52	EDT	3.7
	Low_Tide:	11:22	EDT	-0.1
	High_Tide:	18:21	EDT	5.1

Belleville, Acushnet River, Buzzards Bay, Massachusetts
Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
Units are feet
Mark level: 0.00

Day/Date and Tidal Stage		Time	Time Zone	Tidal Height (ft)
Tuesday	**7/1/2008**			
	Low_Tide:	0:35	EDT	-0.1
	High_Tide:	6:48	EDT	4
	Low_Tide:	12:24	EDT	-0.3
	High_Tide:	19:15	EDT	5.3
Wednesday	**7/2/2008**	**New**	**Moon**	
	Low_Tide:	1:32	EDT	-0.3
	High_Tide:	7:43	EDT	4.2
	Low_Tide:	13:24	EDT	-0.4
	High_Tide:	20:08	EDT	5.4
Thursday	**7/3/2008**			
	Low_Tide:	2:25	EDT	-0.4
	High_Tide:	8:36	EDT	4.4
	Low_Tide:	14:21	EDT	-0.4
	High_Tide:	21:00	EDT	5.4
Friday	**7/4/2008**			
	Low_Tide:	3:15	EDT	-0.5
	High_Tide:	9:28	EDT	4.5
	Low_Tide:	15:16	EDT	-0.4
	High_Tide:	21:51	EDT	5.2
Saturday	**7/5/2008**			
	Low_Tide:	4:02	EDT	-0.4
	High_Tide:	10:20	EDT	4.5
	Low_Tide:	16:10	EDT	-0.2
	High_Tide:	22:41	EDT	4.9
Sunday	**7/6/2008**			
	Low_Tide:	4:48	EDT	-0.2
	High_Tide:	11:11	EDT	4.5
	Low_Tide:	17:03	EDT	0
	High_Tide:	23:32	EDT	4.5
Monday	**7/7/2008**			
	Low_Tide:	5:31	EDT	0
	High_Tide:	12:02	EDT	4.4
	Low_Tide:	17:56	EDT	0.3
Tuesday	**7/8/2008**			
	High_Tide:	0:22	EDT	4.1
	Low_Tide:	6:14	EDT	0.2
	High_Tide:	12:54	EDT	4.2
	Low_Tide:	18:50	EDT	0.6
Wednesday	**7/9/2008**			
	High_Tide:	1:13	EDT	3.8
	Low_Tide:	6:56	EDT	0.4
	High_Tide:	13:46	EDT	4.1
	Low_Tide:	19:49	EDT	0.9
Thursday	**7/10/2008**	**Full**	**Moon**	
	High_Tide:	2:05	EDT	3.4
	Low_Tide:	7:39	EDT	0.6
	High_Tide:	14:40	EDT	4
	Low_Tide:	20:58	EDT	1.1
Friday	**7/11/2008**			
	High_Tide:	2:59	EDT	3.2
	Low_Tide:	8:25	EDT	0.8
	High_Tide:	15:34	EDT	3.9
	Low_Tide:	22:15	EDT	1.1
Saturday	**7/12/2008**			
	High_Tide:	3:54	EDT	3.1
	Low_Tide:	9:17	EDT	0.9
	High_Tide:	16:28	EDT	3.9
	Low_Tide:	23:21	EDT	1.1
Sunday	**7/13/2008**			
	High_Tide:	4:49	EDT	3.1
	Low_Tide:	10:13	EDT	0.9
	High_Tide:	17:19	EDT	4
Monday	**7/14/2008**			
	Low_Tide:	0:10	EDT	1
	High_Tide:	5:40	EDT	3.1
	Low_Tide:	11:08	EDT	0.8
	High_Tide:	18:07	EDT	4.1
Tuesday	**7/15/2008**			
	Low_Tide:	0:47	EDT	0.8
	High_Tide:	6:30	EDT	3.3
	Low_Tide:	11:58	EDT	0.7
	High_Tide:	18:52	EDT	4.2

Day/Date and Tidal Stage		Time	Time Zone	Tidal Height (ft)
Wednesday	**7/16/2008**			
	Low_Tide:	1:19	EDT	0.7
	High_Tide:	7:16	EDT	3.5
	Low_Tide:	12:44	EDT	0.6
	High_Tide:	19:35	EDT	4.4
Thursday	**7/17/2008**			
	Low_Tide:	1:49	EDT	0.5
	High_Tide:	8:00	EDT	3.6
	Low_Tide:	13:27	EDT	0.5
	High_Tide:	20:17	EDT	4.4
Friday	**7/18/2008**	**Full**	**Moon**	
	Low_Tide:	2:20	EDT	0.3
	High_Tide:	8:42	EDT	3.8
	Low_Tide:	14:07	EDT	0.4
	High_Tide:	20:58	EDT	4.5
Saturday	**7/19/2008**			
	Low_Tide:	2:51	EDT	0.2
	High_Tide:	9:23	EDT	3.9
	Low_Tide:	14:47	EDT	0.3
	High_Tide:	21:38	EDT	4.4
Sunday	**7/20/2008**			
	Low_Tide:	3:24	EDT	0.1
	High_Tide:	10:04	EDT	4
	Low_Tide:	15:28	EDT	0.2
	High_Tide:	22:18	EDT	4.3
Monday	**7/21/2008**			
	Low_Tide:	3:58	EDT	0.1
	High_Tide:	10:45	EDT	4
	Low_Tide:	16:09	EDT	0.2
	High_Tide:	22:59	EDT	4.2
Tuesday	**7/22/2008**			
	Low_Tide:	4:34	EDT	0
	High_Tide:	11:28	EDT	4.1
	Low_Tide:	16:54	EDT	0.3
	High_Tide:	23:42	EDT	4
Wednesday	**7/23/2008**			
	Low_Tide:	5:13	EDT	0
	High_Tide:	12:14	EDT	4.1
	Low_Tide:	17:43	EDT	0.4
Thursday	**7/24/2008**			
	High_Tide:	0:29	EDT	3.7
	Low_Tide:	5:57	EDT	0.1
	High_Tide:	13:05	EDT	4.2
	Low_Tide:	18:37	EDT	0.5
Friday	**7/25/2008**	**Last**	**Quarter**	**Moon**
	High_Tide:	1:23	EDT	3.5
	Low_Tide:	6:46	EDT	0.1
	High_Tide:	14:02	EDT	4.3
	Low_Tide:	19:39	EDT	0.6
Saturday	**7/26/2008**			
	High_Tide:	2:24	EDT	3.4
	Low_Tide:	7:43	EDT	0.2
	High_Tide:	15:03	EDT	4.4
	Low_Tide:	20:50	EDT	0.6
Sunday	**7/27/2008**			
	High_Tide:	3:29	EDT	3.4
	Low_Tide:	8:47	EDT	0.2
	High_Tide:	16:06	EDT	4.5
	Low_Tide:	22:09	EDT	0.6
Monday	**7/28/2008**			
	High_Tide:	4:34	EDT	3.5
	Low_Tide:	9:59	EDT	0.2
	High_Tide:	17:08	EDT	4.8
	Low_Tide:	23:25	EDT	0.4
Tuesday	**7/29/2008**			
	High_Tide:	5:36	EDT	3.7
	Low_Tide:	11:12	EDT	0.1
	High_Tide:	18:06	EDT	5
Wednesday	**7/30/2008**			
	Low_Tide:	0:29	EDT	0.1
	High_Tide:	6:34	EDT	4
	Low_Tide:	12:20	EDT	-0.1
	High_Tide:	19:01	EDT	5.1
Thursday	**7/31/2008**			
	Low_Tide:	1:24	EDT	-0.1
	High_Tide:	7:28	EDT	4.3
	Low_Tide:	13:21	EDT	-0.3
	High_Tide:	19:53	EDT	5.2

Belleville, Acushnet River, Buzzards Bay, Massachusetts
Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
Units are feet
Mark level: 0.00

Day/Date and Tidal Stage		Time	Time Zone	Tidal Height (ft)
Friday	**8/1/2008**	**New**	**Moon**	
	Low_Tide:	2:12	EDT	-0.3
	High_Tide:	8:19	EDT	4.6
	Low_Tide:	14:16	EDT	-0.4
	High_Tide:	20:43	EDT	5.2
Saturday	**8/2/2008**			
	Low_Tide:	2:56	EDT	-0.4
	High_Tide:	9:08	EDT	4.7
	Low_Tide:	15:06	EDT	-0.3
	High_Tide:	21:30	EDT	5
Sunday	**8/3/2008**			
	Low_Tide:	3:37	EDT	-0.3
	High_Tide:	9:55	EDT	4.8
	Low_Tide:	15:53	EDT	-0.2
	High_Tide:	22:16	EDT	4.8
Monday	**8/4/2008**			
	Low_Tide:	4:15	EDT	-0.2
	High_Tide:	10:42	EDT	4.7
	Low_Tide:	16:38	EDT	0
	High_Tide:	23:02	EDT	4.4
Tuesday	**8/5/2008**			
	Low_Tide:	4:52	EDT	0
	High_Tide:	11:29	EDT	4.5
	Low_Tide:	17:21	EDT	0.3
	High_Tide:	23:47	EDT	4
Wednesday	**8/6/2008**			
	Low_Tide:	5:26	EDT	0.2
	High_Tide:	12:16	EDT	4.3
	Low_Tide:	18:04	EDT	0.7
Thursday	**8/7/2008**			
	High_Tide:	0:33	EDT	3.7
	Low_Tide:	6:01	EDT	0.5
	High_Tide:	13:06	EDT	4.1
	Low_Tide:	18:48	EDT	1
Friday	**8/8/2008**	**First**	**Quarter**	**Moon**
	High_Tide:	1:23	EDT	3.3
	Low_Tide:	6:39	EDT	0.7
	High_Tide:	13:59	EDT	3.9
	Low_Tide:	19:39	EDT	1.2
Saturday	**8/9/2008**			
	High_Tide:	2:17	EDT	3.1
	Low_Tide:	7:23	EDT	0.9
	High_Tide:	14:54	EDT	3.7
	Low_Tide:	20:45	EDT	1.4
Sunday	**8/10/2008**			
	High_Tide:	3:16	EDT	2.9
	Low_Tide:	8:16	EDT	1
	High_Tide:	15:51	EDT	3.7
	Low_Tide:	22:25	EDT	1.3
Monday	**8/11/2008**			
	High_Tide:	4:15	EDT	2.9
	Low_Tide:	9:21	EDT	1.1
	High_Tide:	16:47	EDT	3.8
	Low_Tide:	23:36	EDT	1.2
Tuesday	**8/12/2008**			
	High_Tide:	5:12	EDT	3.1
	Low_Tide:	10:31	EDT	1
	High_Tide:	17:38	EDT	3.9
Wednesday	**8/13/2008**			
	Low_Tide:	0:16	EDT	1
	High_Tide:	6:03	EDT	3.3
	Low_Tide:	11:34	EDT	0.9
	High_Tide:	18:25	EDT	4.1
Thursday	**8/14/2008**			
	Low_Tide:	0:48	EDT	0.7
	High_Tide:	6:50	EDT	3.6
	Low_Tide:	12:24	EDT	0.6
	High_Tide:	19:09	EDT	4.3
Friday	**8/15/2008**			
	Low_Tide:	1:18	EDT	0.5
	High_Tide:	7:33	EDT	3.8
	Low_Tide:	13:08	EDT	0.4
	High_Tide:	19:51	EDT	4.5

Day/Date and Tidal Stage		Time	Time Zone	Tidal Height (ft)
Saturday	**8/16/2008**	**Full**	**Moon**	
	Low_Tide:	1:49	EDT	0.2
	High_Tide:	8:15	EDT	4.1
	Low_Tide:	13:50	EDT	0.2
	High_Tide:	20:32	EDT	4.5
Sunday	**8/17/2008**			
	Low_Tide:	2:21	EDT	0.1
	High_Tide:	8:55	EDT	4.3
	Low_Tide:	14:30	EDT	0.1
	High_Tide:	21:12	EDT	4.5
Monday	**8/18/2008**			
	Low_Tide:	2:54	EDT	-0.1
	High_Tide:	9:35	EDT	4.4
	Low_Tide:	15:10	EDT	0
	High_Tide:	21:52	EDT	4.4
Tuesday	**8/19/2008**			
	Low_Tide:	3:29	EDT	-0.2
	High_Tide:	10:16	EDT	4.5
	Low_Tide:	15:52	EDT	0
	High_Tide:	22:33	EDT	4.3
Wednesday	**8/20/2008**			
	Low_Tide:	4:07	EDT	-0.2
	High_Tide:	10:59	EDT	4.6
	Low_Tide:	16:37	EDT	0
	High_Tide:	23:17	EDT	4
Thursday	**8/21/2008**			
	Low_Tide:	4:47	EDT	-0.1
	High_Tide:	11:46	EDT	4.5
	Low_Tide:	17:25	EDT	0.2
Friday	**8/22/2008**			
	High_Tide:	0:06	EDT	3.8
	Low_Tide:	5:32	EDT	0
	High_Tide:	12:39	EDT	4.5
	Low_Tide:	18:19	EDT	0.4
Saturday	**8/23/2008**	**Last**	**Quarter**	**Moon**
	High_Tide:	1:02	EDT	3.5
	Low_Tide:	6:23	EDT	0.1
	High_Tide:	13:39	EDT	4.4
	Low_Tide:	19:22	EDT	0.6
Sunday	**8/24/2008**			
	High_Tide:	2:06	EDT	3.4
	Low_Tide:	7:22	EDT	0.3
	High_Tide:	14:44	EDT	4.4
	Low_Tide:	20:39	EDT	0.7
Monday	**8/25/2008**			
	High_Tide:	3:14	EDT	3.3
	Low_Tide:	8:34	EDT	0.4
	High_Tide:	15:51	EDT	4.4
	Low_Tide:	22:07	EDT	0.7
Tuesday	**8/26/2008**			
	High_Tide:	4:22	EDT	3.5
	Low_Tide:	9:56	EDT	0.4
	High_Tide:	16:55	EDT	4.6
	Low_Tide:	23:25	EDT	0.5
Wednesday	**8/27/2008**			
	High_Tide:	5:24	EDT	3.8
	Low_Tide:	11:17	EDT	0.2
	High_Tide:	17:53	EDT	4.7
Thursday	**8/28/2008**			
	Low_Tide:	0:23	EDT	0.2
	High_Tide:	6:20	EDT	4.1
	Low_Tide:	12:24	EDT	0
	High_Tide:	18:47	EDT	4.9
Friday	**8/29/2008**			
	Low_Tide:	1:11	EDT	0
	High_Tide:	7:11	EDT	4.5
	Low_Tide:	13:19	EDT	-0.2
	High_Tide:	19:36	EDT	4.9
Saturday	**8/30/2008**	**New**	**Moon**	
	Low_Tide:	1:52	EDT	-0.2
	High_Tide:	7:59	EDT	4.7
	Low_Tide:	14:07	EDT	-0.3
	High_Tide:	20:22	EDT	4.9
Sunday	**8/31/2008**			
	Low_Tide:	2:30	EDT	-0.3
	High_Tide:	8:45	EDT	4.9
	Low_Tide:	14:51	EDT	-0.3
	High_Tide:	21:06	EDT	4.8

Belleville, Acushnet River, Buzzards Bay, Massachusetts
Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
Units are feet
Mark level: 0.00

Day/Date and Tidal Stage		Time	Time Zone	Tidal Height (ft)
Monday	**9/1/2008**			
	Low_Tide:	3:05	EDT	-0.3
	High_Tide:	9:28	EDT	4.9
	Low_Tide:	15:31	EDT	-0.2
	High_Tide:	21:48	EDT	4.5
Tuesday	**9/2/2008**			
	Low_Tide:	3:38	EDT	-0.2
	High_Tide:	10:11	EDT	4.8
	Low_Tide:	16:08	EDT	0.1
	High_Tide:	22:30	EDT	4.2
Wednesday	**9/3/2008**			
	Low_Tide:	4:09	EDT	0
	High_Tide:	10:54	EDT	4.6
	Low_Tide:	16:43	EDT	0.3
	High_Tide:	23:11	EDT	3.9
Thursday	**9/4/2008**			
	Low_Tide:	4:40	EDT	0.2
	High_Tide:	11:38	EDT	4.3
	Low_Tide:	17:18	EDT	0.6
	High_Tide:	23:55	EDT	3.5
Friday	**9/5/2008**			
	Low_Tide:	5:13	EDT	0.4
	High_Tide:	12:25	EDT	4
	Low_Tide:	17:55	EDT	0.9
Saturday	**9/6/2008**			
	High_Tide:	0:43	EDT	3.2
	Low_Tide:	5:50	EDT	0.7
	High_Tide:	13:16	EDT	3.7
	Low_Tide:	18:39	EDT	1.2
Sunday	**9/7/2008**	**First**	**Quarter**	**Moon**
	High_Tide:	1:38	EDT	3
	Low_Tide:	6:33	EDT	0.9
	High_Tide:	14:13	EDT	3.5
	Low_Tide:	19:35	EDT	1.3
Monday	**9/8/2008**			
	High_Tide:	2:39	EDT	2.8
	Low_Tide:	7:28	EDT	1.1
	High_Tide:	15:13	EDT	3.5
	Low_Tide:	20:50	EDT	1.4
Tuesday	**9/9/2008**			
	High_Tide:	3:43	EDT	2.9
	Low_Tide:	8:36	EDT	1.2
	High_Tide:	16:12	EDT	3.6
	Low_Tide:	22:27	EDT	1.2
Wednesday	**9/10/2008**			
	High_Tide:	4:42	EDT	3.1
	Low_Tide:	9:55	EDT	1.1
	High_Tide:	17:06	EDT	3.7
	Low_Tide:	23:24	EDT	1
Thursday	**9/11/2008**			
	High_Tide:	5:34	EDT	3.3
	Low_Tide:	11:05	EDT	0.9
	High_Tide:	17:55	EDT	4
Friday	**9/12/2008**			
	Low_Tide:	0:01	EDT	0.7
	High_Tide:	6:20	EDT	3.7
	Low_Tide:	11:59	EDT	0.6
	High_Tide:	18:39	EDT	4.2
Saturday	**9/13/2008**			
	Low_Tide:	0:36	EDT	0.4
	High_Tide:	7:03	EDT	4
	Low_Tide:	12:44	EDT	0.3
	High_Tide:	19:21	EDT	4.4
Sunday	**9/14/2008**			
	Low_Tide:	1:10	EDT	0.1
	High_Tide:	7:44	EDT	4.4
	Low_Tide:	13:27	EDT	0
	High_Tide:	20:02	EDT	4.5
Monday	**9/15/2008**	**Full**	**Moon**	
	Low_Tide:	1:46	EDT	-0.2
	High_Tide:	8:24	EDT	4.7
	Low_Tide:	14:09	EDT	-0.2
	High_Tide:	20:44	EDT	4.5

Day/Date and Tidal Stage		Time	Time Zone	Tidal Height (ft)
Tuesday	**9/16/2008**			
	Low_Tide:	2:23	EDT	-0.3
	High_Tide:	9:05	EDT	4.9
	Low_Tide:	14:51	EDT	-0.3
	High_Tide:	21:25	EDT	4.4
Wednesday	**9/17/2008**			
	Low_Tide:	3:01	EDT	-0.4
	High_Tide:	9:48	EDT	4.9
	Low_Tide:	15:35	EDT	-0.3
	High_Tide:	22:09	EDT	4.3
Thursday	**9/18/2008**			
	Low_Tide:	3:41	EDT	-0.4
	High_Tide:	10:34	EDT	4.9
	Low_Tide:	16:21	EDT	-0.2
	High_Tide:	22:56	EDT	4
Friday	**9/19/2008**			
	Low_Tide:	4:24	EDT	-0.3
	High_Tide:	11:24	EDT	4.8
	Low_Tide:	17:11	EDT	0
	High_Tide:	23:48	EDT	3.8
Saturday	**9/20/2008**			
	Low_Tide:	5:12	EDT	-0.1
	High_Tide:	12:19	EDT	4.6
	Low_Tide:	18:07	EDT	0.3
Sunday	**9/21/2008**			
	High_Tide:	0:47	EDT	3.5
	Low_Tide:	6:06	EDT	0.2
	High_Tide:	13:21	EDT	4.4
	Low_Tide:	19:13	EDT	0.6
Monday	**9/22/2008**	**New**	**Moon**	
	High_Tide:	1:53	EDT	3.4
	Low_Tide:	7:12	EDT	0.4
	High_Tide:	14:29	EDT	4.3
	Low_Tide:	20:36	EDT	0.7
Tuesday	**9/23/2008**			
	High_Tide:	3:03	EDT	3.4
	Low_Tide:	8:34	EDT	0.6
	High_Tide:	15:37	EDT	4.2
	Low_Tide:	22:07	EDT	0.6
Wednesday	**9/24/2008**			
	High_Tide:	4:10	EDT	3.6
	Low_Tide:	10:08	EDT	0.5
	High_Tide:	16:40	EDT	4.3
	Low_Tide:	23:17	EDT	0.4
Thursday	**9/25/2008**			
	High_Tide:	5:10	EDT	3.9
	Low_Tide:	11:26	EDT	0.3
	High_Tide:	17:37	EDT	4.4
Friday	**9/26/2008**			
	Low_Tide:	0:08	EDT	0.2
	High_Tide:	6:03	EDT	4.3
	Low_Tide:	12:25	EDT	0
	High_Tide:	18:28	EDT	4.5
Saturday	**9/27/2008**			
	Low_Tide:	0:50	EDT	0
	High_Tide:	6:52	EDT	4.6
	Low_Tide:	13:13	EDT	-0.1
	High_Tide:	19:15	EDT	4.5
Sunday	**9/28/2008**			
	Low_Tide:	1:27	EDT	-0.1
	High_Tide:	7:36	EDT	4.8
	Low_Tide:	13:54	EDT	-0.2
	High_Tide:	19:58	EDT	4.5
Monday	**9/29/2008**	**New**	**Moon**	
	Low_Tide:	2:00	EDT	-0.2
	High_Tide:	8:19	EDT	4.9
	Low_Tide:	14:31	EDT	-0.2
	High_Tide:	20:39	EDT	4.4
Tuesday	**9/30/2008**			
	Low_Tide:	2:30	EDT	-0.2
	High_Tide:	9:00	EDT	4.9
	Low_Tide:	15:05	EDT	-0.1
	High_Tide:	21:19	EDT	4.2

Belleville, Acushnet River, Buzzards Bay, Massachusetts
Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
Units are feet
Mark level: 0.00

Day/Date and Tidal Stage		Time	Time Zone	Tidal Height (ft)
Wednesday	**10/1/2008**			
	Low_Tide:	3:00	EDT	-0.1
	High_Tide:	9:41	EDT	4.7
	Low_Tide:	15:37	EDT	0.1
	High_Tide:	21:59	EDT	3.9
Thursday	**10/2/2008**			
	Low_Tide:	3:30	EDT	0
	High_Tide:	10:21	EDT	4.5
	Low_Tide:	16:08	EDT	0.3
	High_Tide:	22:39	EDT	3.7
Friday	**10/3/2008**			
	Low_Tide:	4:01	EDT	0.2
	High_Tide:	11:03	EDT	4.2
	Low_Tide:	16:41	EDT	0.6
	High_Tide:	23:22	EDT	3.4
Saturday	**10/4/2008**			
	Low_Tide:	4:34	EDT	0.4
	High_Tide:	11:48	EDT	3.9
	Low_Tide:	17:16	EDT	0.8
Sunday	**10/5/2008**			
	High_Tide:	0:09	EDT	3.1
	Low_Tide:	5:11	EDT	0.7
	High_Tide:	12:37	EDT	3.6
	Low_Tide:	17:58	EDT	1
Monday	**10/6/2008**			
	High_Tide:	1:03	EDT	2.9
	Low_Tide:	5:56	EDT	0.9
	High_Tide:	13:33	EDT	3.4
	Low_Tide:	18:49	EDT	1.1
Tuesday	**10/7/2008**	**First**	**Quarter**	**Moon**
	High_Tide:	2:05	EDT	2.8
	Low_Tide:	6:50	EDT	1.1
	High_Tide:	14:33	EDT	3.3
	Low_Tide:	19:53	EDT	1.2
Wednesday	**10/8/2008**			
	High_Tide:	3:08	EDT	2.9
	Low_Tide:	7:58	EDT	1.1
	High_Tide:	15:34	EDT	3.4
	Low_Tide:	21:07	EDT	1.1
Thursday	**10/9/2008**			
	High_Tide:	4:07	EDT	3.1
	Low_Tide:	9:16	EDT	1.1
	High_Tide:	16:29	EDT	3.5
	Low_Tide:	22:13	EDT	0.9
Friday	**10/10/2008**			
	High_Tide:	4:58	EDT	3.4
	Low_Tide:	10:28	EDT	0.8
	High_Tide:	17:19	EDT	3.7
	Low_Tide:	23:04	EDT	0.6
Saturday	**10/11/2008**			
	High_Tide:	5:45	EDT	3.8
	Low_Tide:	11:27	EDT	0.5
	High_Tide:	18:05	EDT	4
	Low_Tide:	23:48	EDT	0.2
Sunday	**10/12/2008**			
	High_Tide:	6:29	EDT	4.2
	Low_Tide:	12:16	EDT	0.1
	High_Tide:	18:49	EDT	4.2
Monday	**10/13/2008**			
	Low_Tide:	0:30	EDT	-0.1
	High_Tide:	7:12	EDT	4.6
	Low_Tide:	13:02	EDT	-0.2
	High_Tide:	19:33	EDT	4.3
Tuesday	**10/14/2008**	**Full**	**Moon**	
	Low_Tide:	1:11	EDT	-0.4
	High_Tide:	7:55	EDT	4.9
	Low_Tide:	13:47	EDT	-0.4
	High_Tide:	20:16	EDT	4.4
Wednesday	**10/15/2008**			
	Low_Tide:	1:52	EDT	-0.6
	High_Tide:	8:39	EDT	5.1
	Low_Tide:	14:33	EDT	-0.5
	High_Tide:	21:01	EDT	4.3

Day/Date and Tidal Stage		Time	Time Zone	Tidal Height (ft)
Thursday	**10/16/2008**			
	Low_Tide:	2:35	EDT	-0.6
	High_Tide:	9:25	EDT	5.2
	Low_Tide:	15:20	EDT	-0.5
	High_Tide:	21:48	EDT	4.2
Friday	**10/17/2008**			
	Low_Tide:	3:20	EDT	-0.6
	High_Tide:	10:13	EDT	5.1
	Low_Tide:	16:08	EDT	-0.4
	High_Tide:	22:39	EDT	4
Saturday	**10/18/2008**			
	Low_Tide:	4:08	EDT	-0.4
	High_Tide:	11:06	EDT	4.9
	Low_Tide:	17:01	EDT	-0.1
	High_Tide:	23:34	EDT	3.8
Sunday	**10/19/2008**			
	Low_Tide:	4:59	EDT	-0.2
	High_Tide:	12:03	EDT	4.6
	Low_Tide:	17:59	EDT	0.1
Monday	**10/20/2008**			
	High_Tide:	0:34	EDT	3.6
	Low_Tide:	5:59	EDT	0.1
	High_Tide:	13:06	EDT	4.4
	Low_Tide:	19:07	EDT	0.4
Tuesday	**10/21/2008**	**Last**	**Quarter**	**Moon**
	High_Tide:	1:40	EDT	3.5
	Low_Tide:	7:10	EDT	0.4
	High_Tide:	14:12	EDT	4.1
	Low_Tide:	20:28	EDT	0.5
Wednesday	**10/22/2008**			
	High_Tide:	2:48	EDT	3.6
	Low_Tide:	8:40	EDT	0.5
	High_Tide:	15:18	EDT	4
	Low_Tide:	21:49	EDT	0.5
Thursday	**10/23/2008**			
	High_Tide:	3:52	EDT	3.7
	Low_Tide:	10:13	EDT	0.5
	High_Tide:	16:20	EDT	4
	Low_Tide:	22:53	EDT	0.3
Friday	**10/24/2008**			
	High_Tide:	4:50	EDT	4
	Low_Tide:	11:23	EDT	0.3
	High_Tide:	17:15	EDT	4
	Low_Tide:	23:42	EDT	0.2
Saturday	**10/25/2008**			
	High_Tide:	5:41	EDT	4.3
	Low_Tide:	12:17	EDT	0.1
	High_Tide:	18:05	EDT	4
Sunday	**10/26/2008**			
	Low_Tide:	0:22	EDT	0.1
	High_Tide:	6:28	EDT	4.5
	Low_Tide:	13:01	EDT	0
	High_Tide:	18:50	EDT	4
Monday	**10/27/2008**			
	Low_Tide:	0:56	EDT	0
	High_Tide:	7:12	EDT	4.7
	Low_Tide:	13:38	EDT	-0.1
	High_Tide:	19:32	EDT	4
Tuesday	**10/28/2008**	**New**	**Moon**	
	Low_Tide:	1:27	EDT	-0.1
	High_Tide:	7:53	EDT	4.7
	Low_Tide:	14:11	EDT	0
	High_Tide:	20:12	EDT	4
Wednesday	**10/29/2008**			
	Low_Tide:	1:56	EDT	-0.1
	High_Tide:	8:33	EDT	4.7
	Low_Tide:	14:41	EDT	0
	High_Tide:	20:52	EDT	3.8
Thursday	**10/30/2008**			
	Low_Tide:	2:26	EDT	0
	High_Tide:	9:13	EDT	4.6
	Low_Tide:	15:10	EDT	0.2
	High_Tide:	21:32	EDT	3.7
Friday	**10/31/2008**			
	Low_Tide:	2:57	EDT	0
	High_Tide:	9:53	EDT	4.4
	Low_Tide:	15:40	EDT	0.3
	High_Tide:	22:12	EDT	3.5

Appendix B

Continuous *In Situ* Water Quality Data

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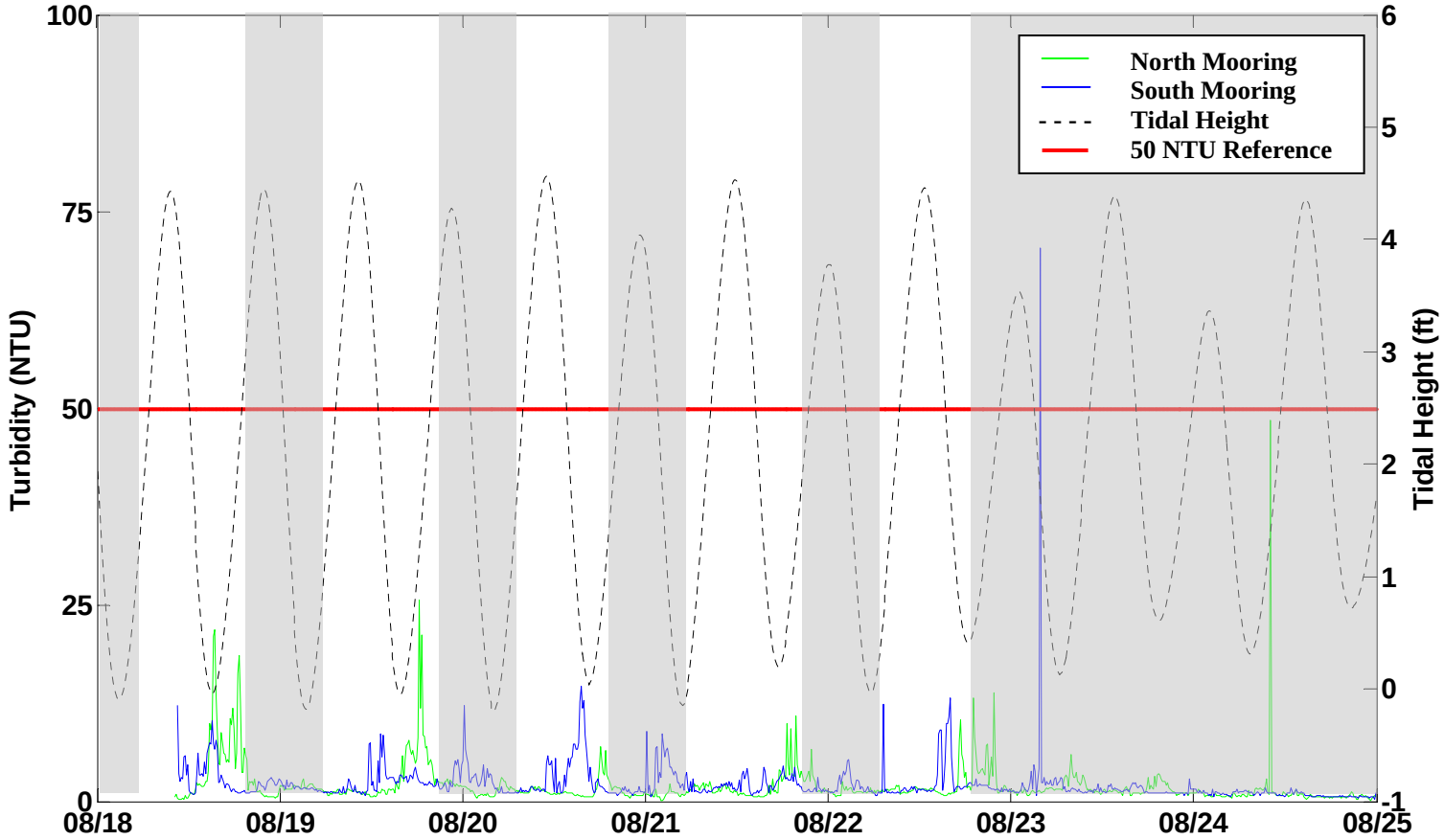
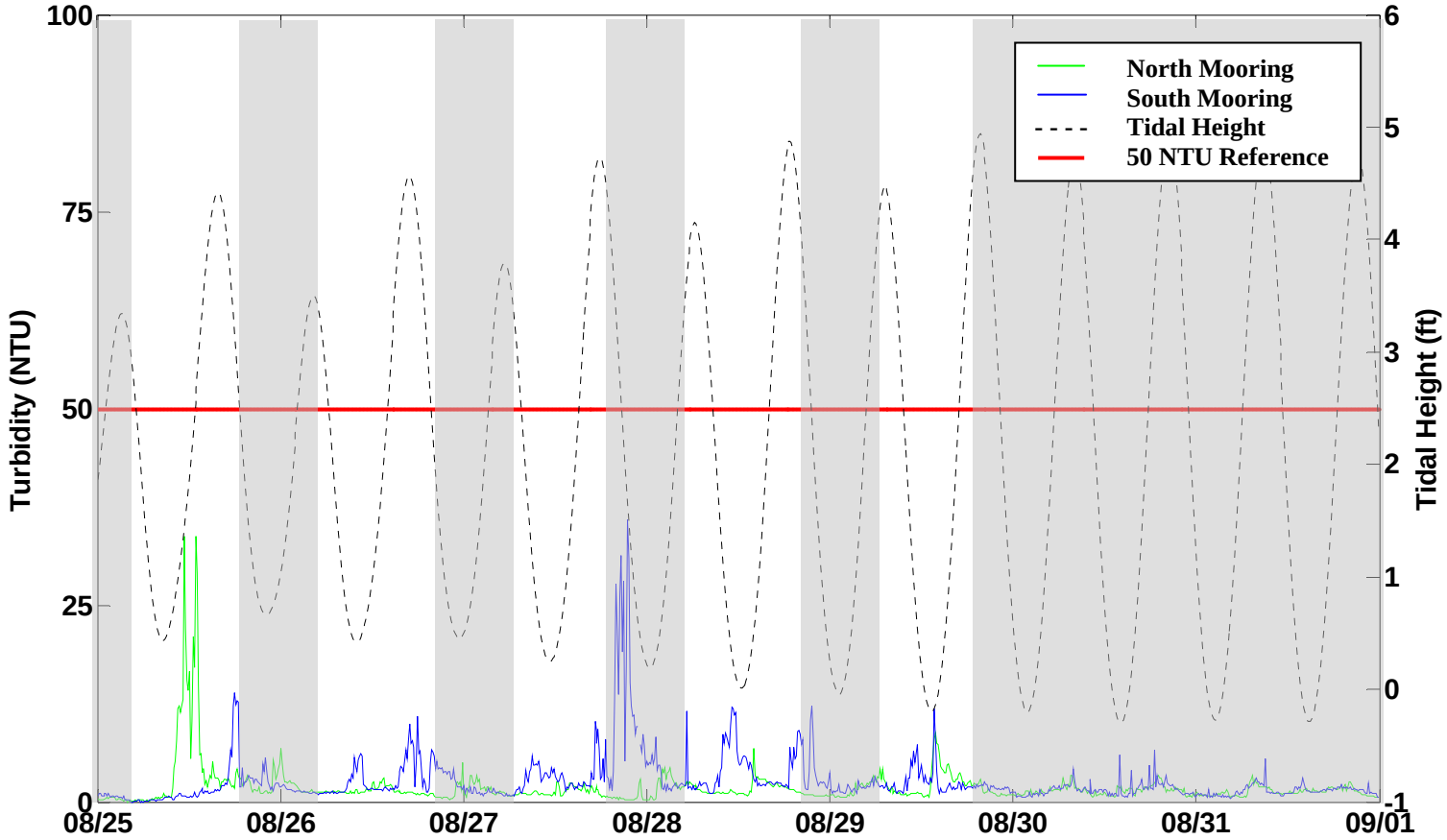


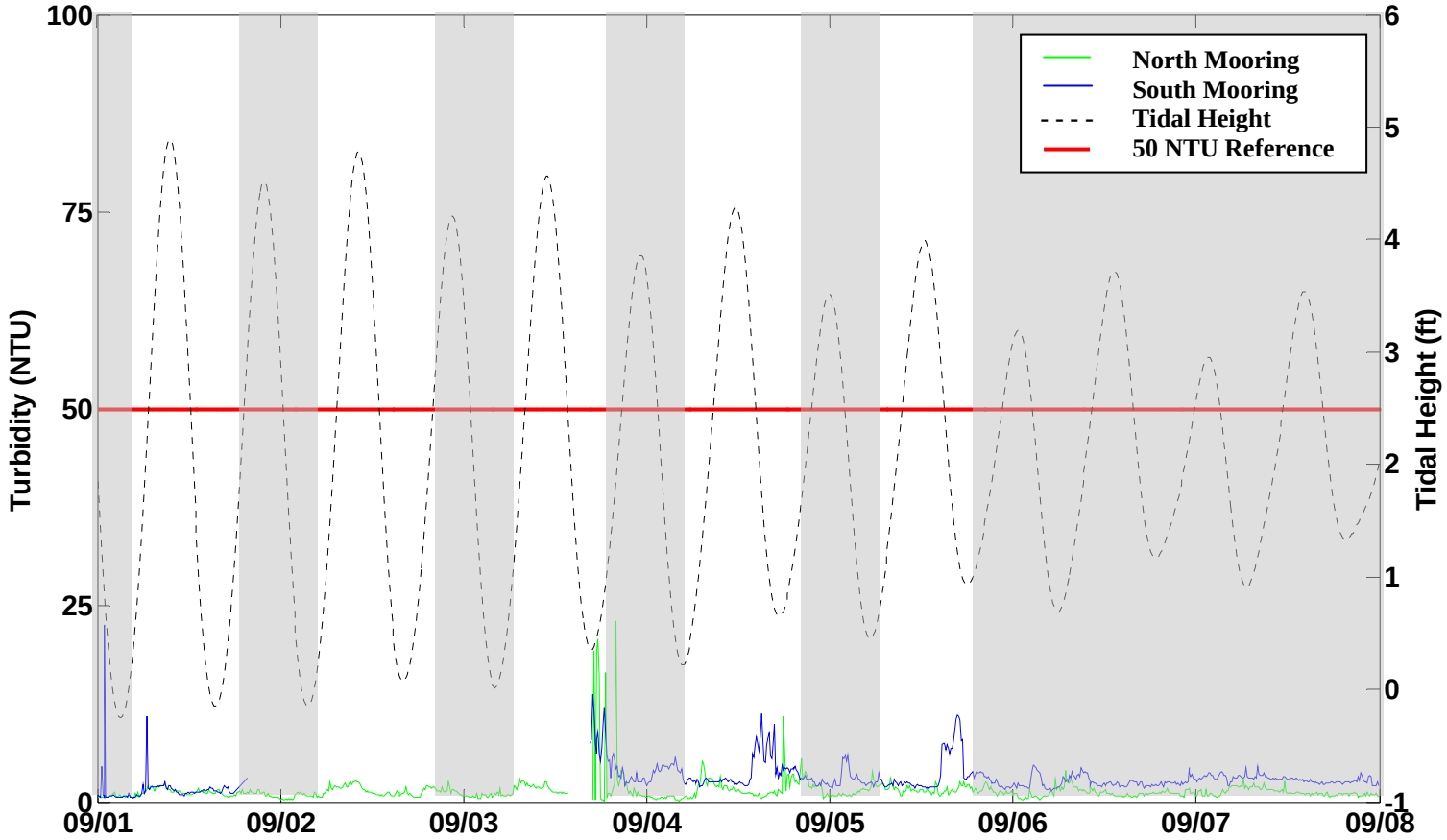
*Shaded areas represent nights and weekends.

Figure B-1. Turbidity Monitoring at New Bedford Harbor Superfund Site 8/18/2008 to 8/25/2008.



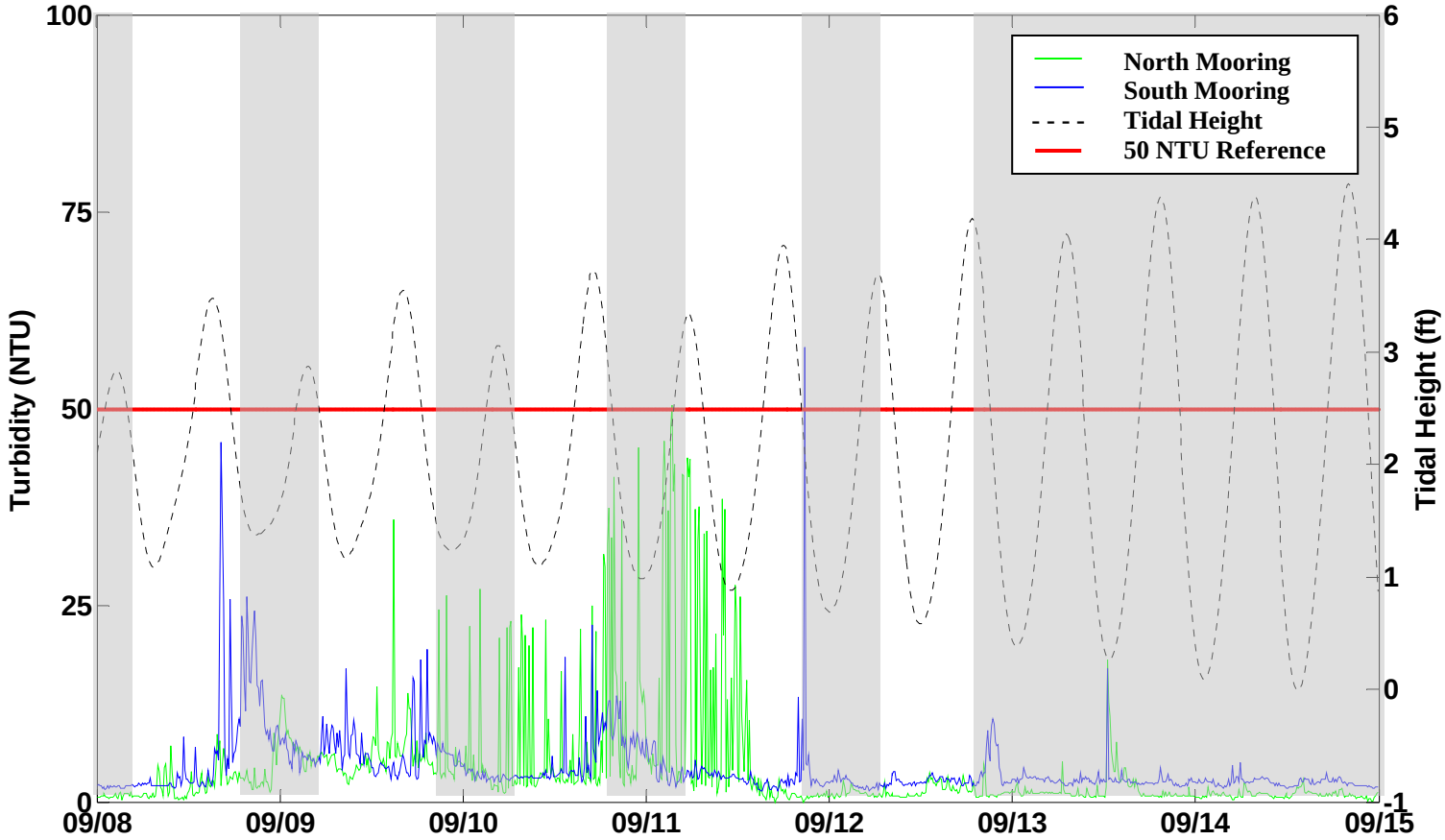
*Shaded areas represent nights and weekends.

Figure B-2. Turbidity Monitoring at New Bedford Harbor Superfund Site 8/25/2008 to 9/1/2008.



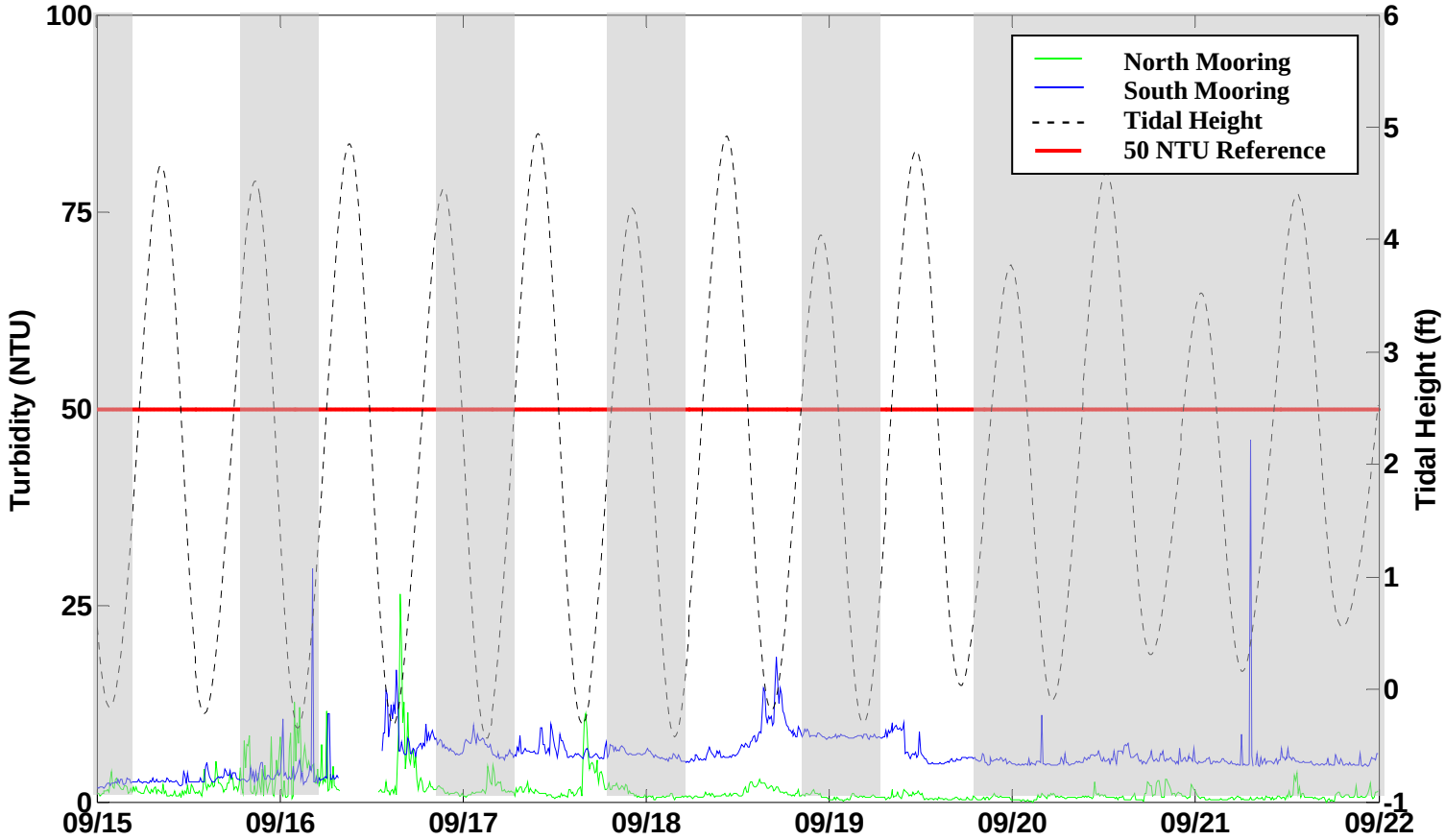
*Shaded areas represent nights and weekends.

Figure B-3. Turbidity Monitoring at New Bedford Harbor Superfund Site 9/1/2008 to 9/8/2008.



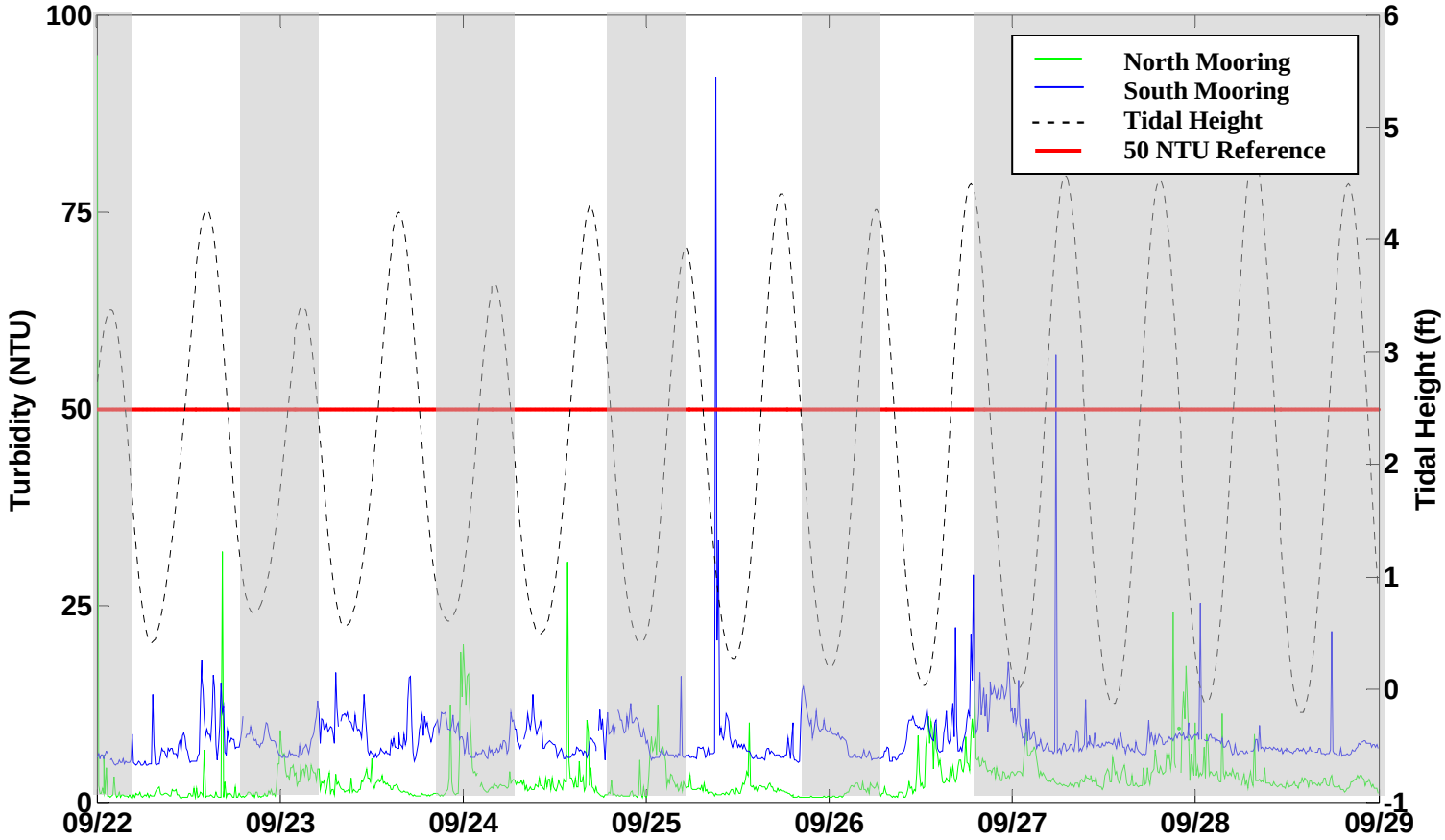
*Shaded areas represent nights and weekends.

Figure B-4. Turbidity Monitoring at New Bedford Harbor Superfund Site 9/8/2008 to 9/15/2008.



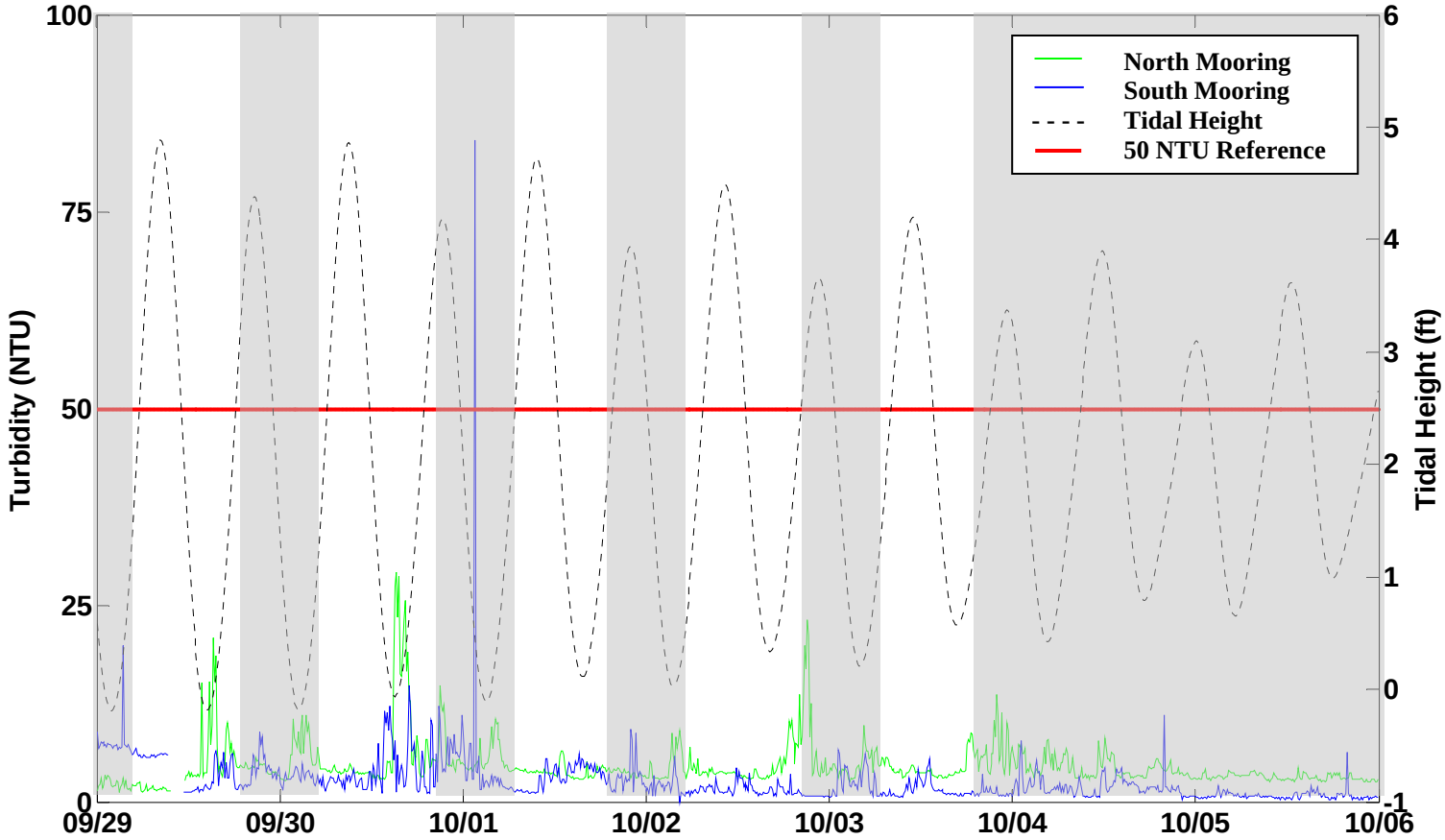
*Shaded areas represent nights and weekends.

Figure B-5. Turbidity Monitoring at New Bedford Harbor Superfund Site 9/15/2008 to 9/22/2008.



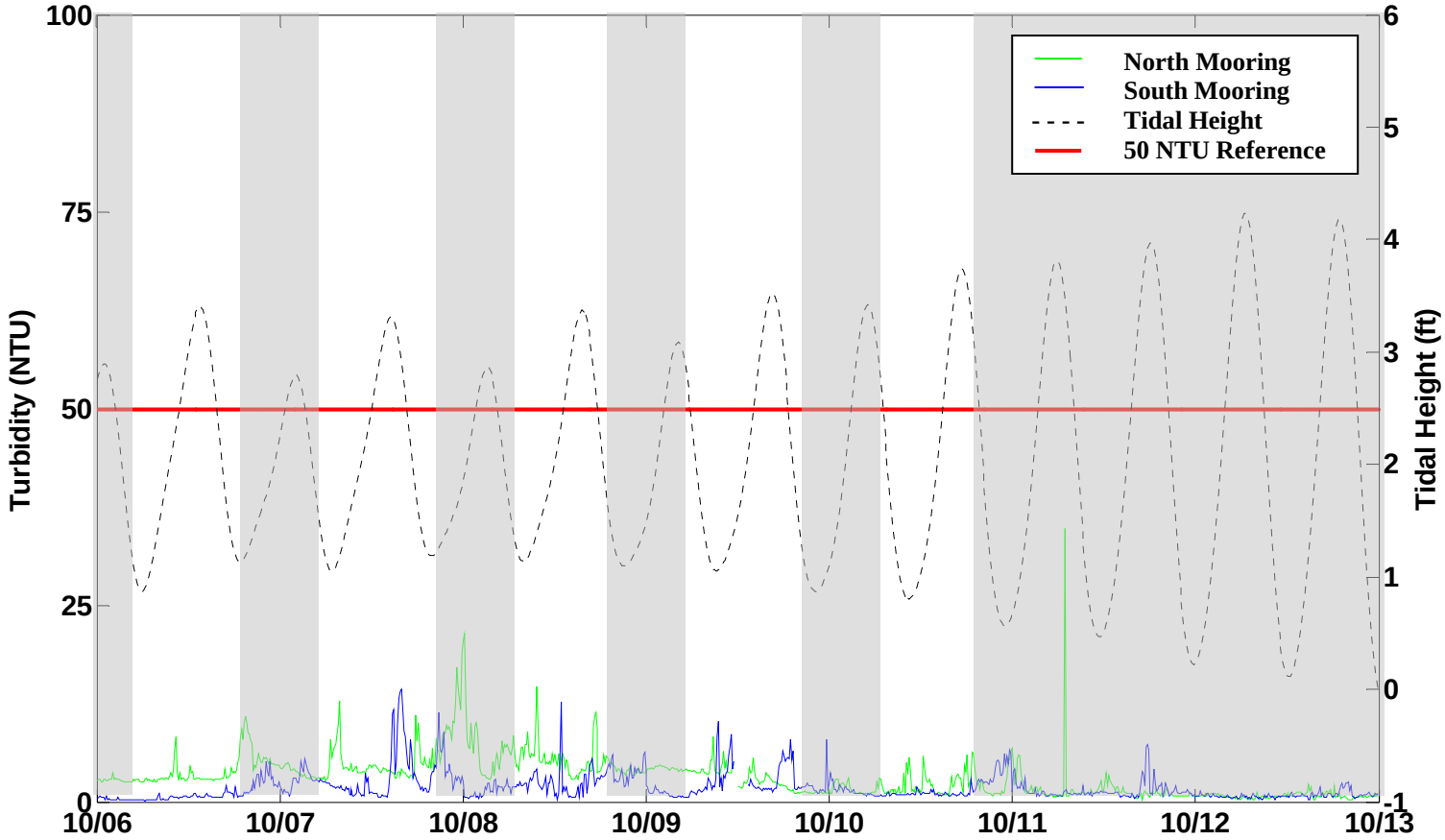
*Shaded areas represent nights and weekends.

Figure B-6. Turbidity Monitoring at New Bedford Harbor Superfund Site 9/22/2008 to 9/29/2008.



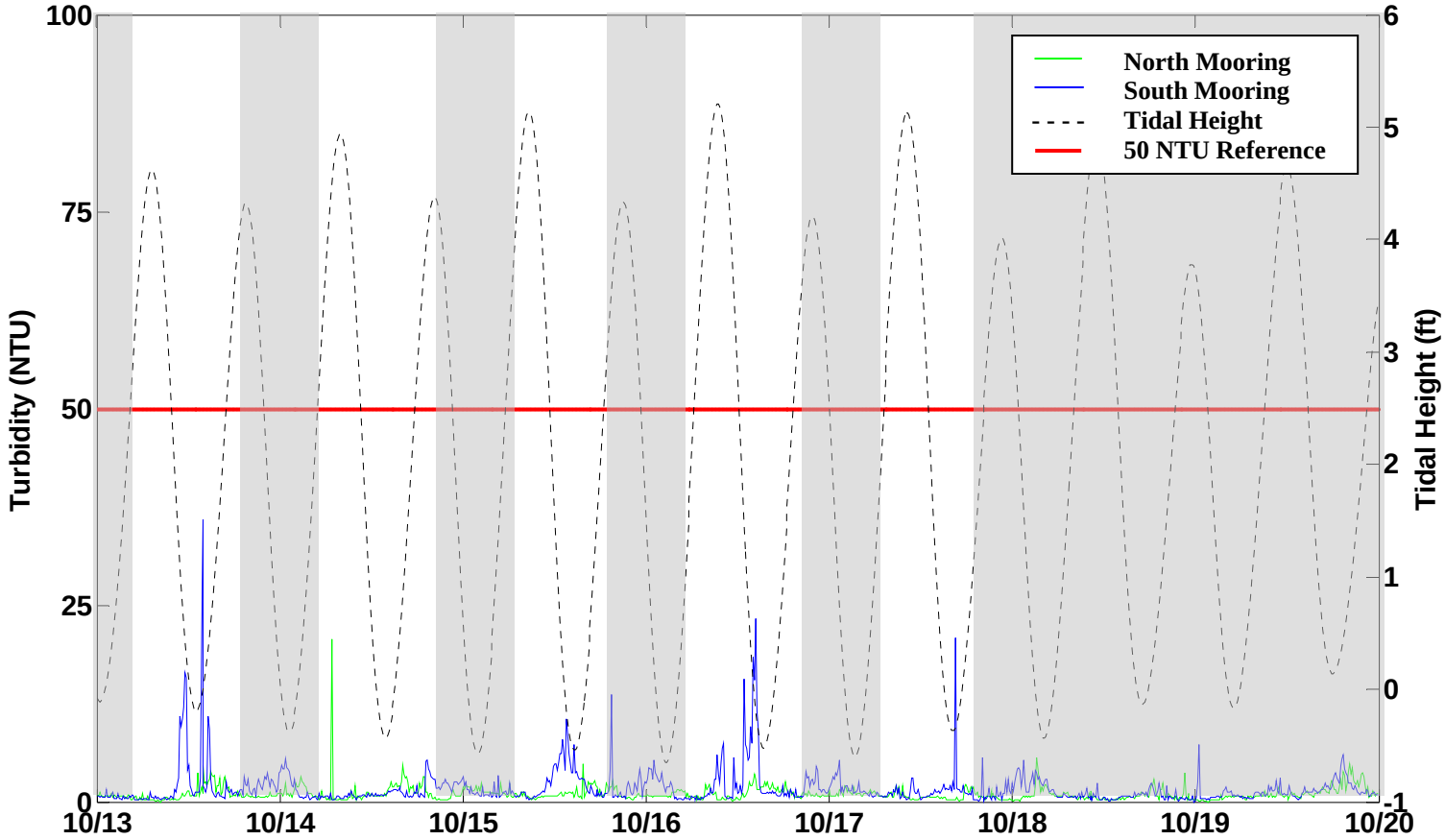
*Shaded areas represent nights and weekends.

Figure B-7. Turbidity Monitoring at New Bedford Harbor Superfund Site 9/29/2008 to 10/6/2008.



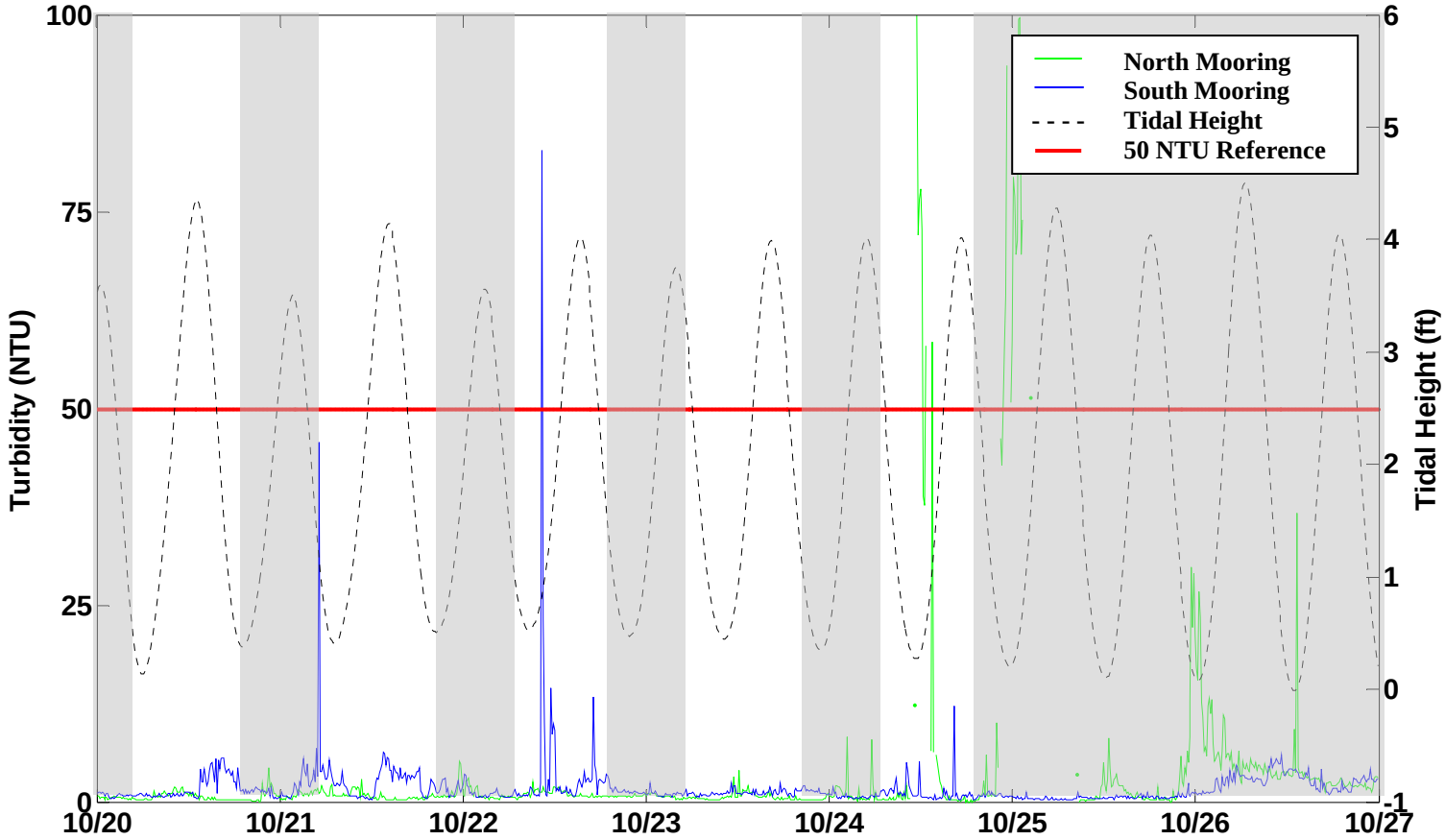
*Shaded areas represent nights and weekends.

Figure B-8. Turbidity Monitoring at New Bedford Harbor Superfund Site 10/6/2008 to 10/13/2008.



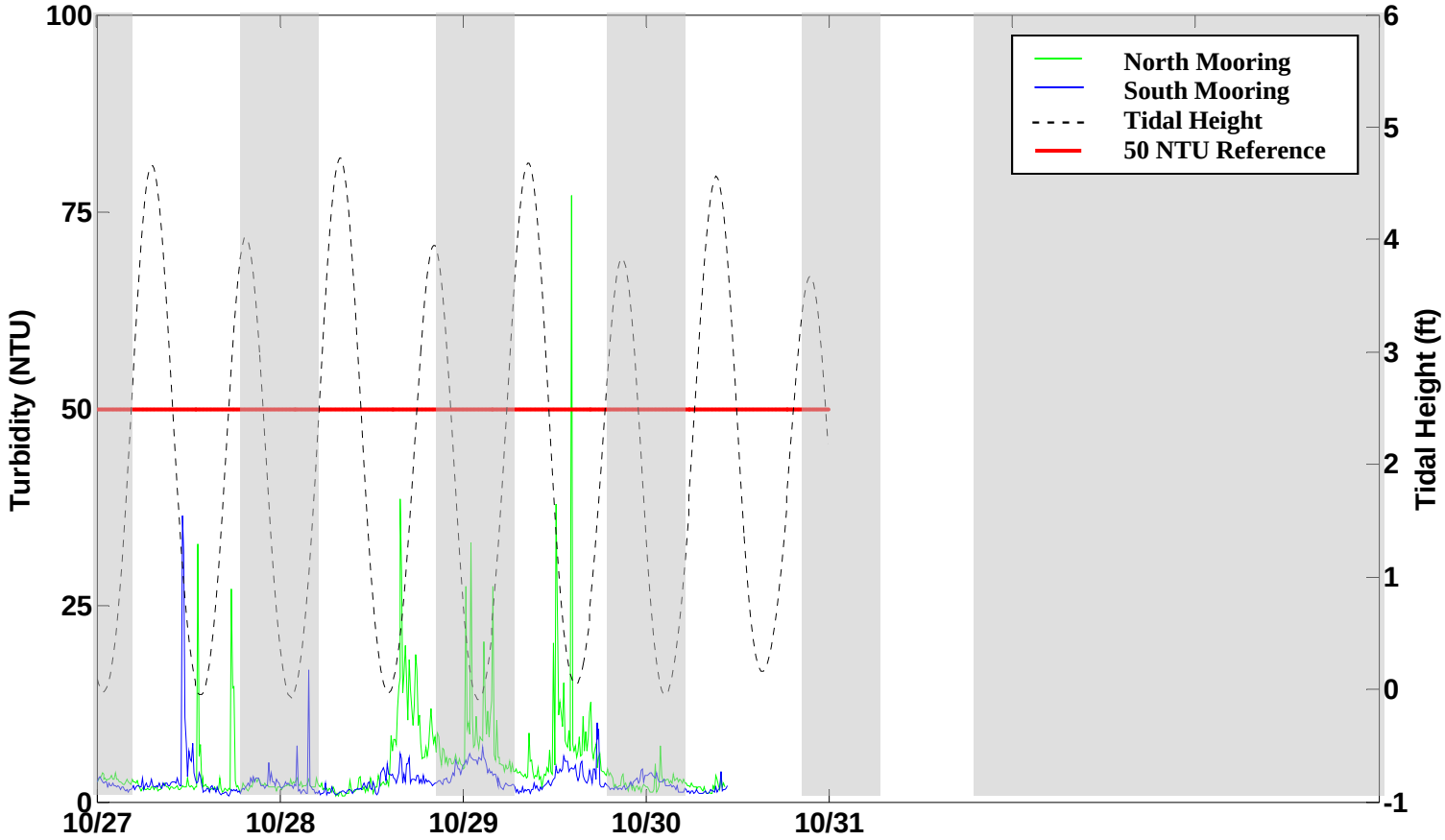
*Shaded areas represent nights and weekends.

Figure B-9. Turbidity Monitoring at New Bedford Harbor Superfund Site 10/13/2008 to 10/20/2008.



*Shaded areas represent nights and weekends.

Figure B-10. Turbidity Monitoring at New Bedford Harbor Superfund Site 10/20/2008 to 10/27/2008.



*Shaded areas represent nights and weekends.

Figure B-11. Turbidity Monitoring at New Bedford Harbor Superfund Site 10/27/2008 to 10/30/2008.

Appendix C

Total Suspended Solids and Turbidity Analytical Data

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ALPHA
WOODS HOLE LABS

ANALYTICAL REPORT

Prepared for:
Battelle
Duxbury Operations
397 Washington Street
Duxbury, MA 02332

Project:	New Bedford Harbor
ETR:	0806024
Report Date:	June 16, 2008

Certifications and Accreditations
Massachusetts M-MA030
Connecticut PH-0141
New Hampshire 2206
Rhode Island LAO00289
New Jersey MA015
Maine MA0030
New York 11627
Louisiana 03090
Florida E87814
Pennsylvania 68-02089
Army Corps of Engineers
Department of the Navy

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CASE NARRATIVE
Alpha Analytical

ETR: 0806024
Project: New Bedford Harbor

All analyses were performed according to Alpha Analytical quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. All soil/sediment results are reported on a dry weight basis unless otherwise noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Alpha Analytical certifies that the test results within meet all of the requirements of NELAC, for all NELAC accredited parameters.

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Analytical makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Analytical. To the best of my knowledge, the information contained in this report is accurate and complete. For any questions regarding this report, please contact the signatory below at 508-822-9300.

Approved by: Nancy a Rose Title: Project Manager Date: 6/16/08
Nancy Rose **Project Manager**

Sample ID Cross Reference

Client: **Battelle**
Project: **New Bedford Harbor**

Lab Code: **MA00030**
ETR: **0806024**

Lab Sample ID	Client Sample ID
0806024-01	WQ-TUR/TSS-001-060508
0806024-02	WQ-TUR/TSS-002-060508
0806024-03	WQ-TUR/TSS-003-060508
0806024-04	WQ-TUR/TSS-004-060508
0806024-05	WQ-TUR/TSS-005-060508
0806024-06	WQ-TUR/TSS-006-060508

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-001-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**

Lab ID: **0806024-01**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**7.30**		1.00	1	06/12/08	mg/L	160.2	NAR
Turbidity - 180.1	**1.62**		0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable

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Duplicate
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-001-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**

Lab ID: **0806024-01 D**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**8.00**		1.00	1	06/12/08	mg/L	160.2	NAR

TSS Duplicate Report not included with lab submission.
Original sample = 7.3 mg/L (pg 4 of 21)
Duplicate = 8.0 mg/L (pg 5 of 21)
RPD = 9.2%
DTDahlen 2/6/09

N/A - Not Applicable

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Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-002-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**

Lab ID: **0806024-02**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**15.4**		1.00	1	06/12/08	mg/L	160.2	NAR
Turbidity - 180.1	**1.92**		0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable

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Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-003-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**

Lab ID: **0806024-03**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**5.10**		1.00	1	06/12/08	mg/L	160.2	NAR
Turbidity - 180.1	**1.68**		0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable

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Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-004-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**

Lab ID: **0806024-04**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**6.10**		1.00	1	06/12/08	mg/L	160.2	NAR
Turbidity - 180.1	**1.45**		0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable

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Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-005-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**

Lab ID: **0806024-05**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**13.5**		1.00	1	06/12/08	mg/L	160.2	NAR
Turbidity - 180.1	**1.60**		0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable

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Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-006-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**

Lab ID: **0806024-06**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**5.60**		1.00	1	06/12/08	mg/L	160.2	NAR
Turbidity - 180.1	**1.52**		0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable

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Duplicate
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-006-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**

Lab ID: **0806024-06 D**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	**1.62**		0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable

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Blank
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**

Lab ID: **WW061208B16**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	0.400	U	0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

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Blank
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **WW061208B18**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	1.00	U	1.00	1	06/12/08	mg/L	160.2	NAR

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

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Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **WW061208L01**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	**19.1**	S	0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable
S - Spike compound.

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Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **WW061208L02**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**425**	S	1.00	1	06/12/08	mg/L	160.2	NAR

N/A - Not Applicable
S - Spike compound.

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Duplicate
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-006-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**

Lab ID: **0806024-06 D**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Sample Result	Duplicate Result	Unit	Percent RPD	RPD Limit
Turbidity - 180.1	**1.52**	**1.62**	NTU	6	20

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

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Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**

Lab ID: **WW061208L01**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
Turbidity - 180.1	19.1	96	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

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Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**

Lab ID: **WW061208L02**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
TSS - Membrane	425	85	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

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Sample Receipt Checklist

Client:	BATDUX	**Receipt Date:**	6/5/08
Project:	New Bedford	**Log-in Date:**	
ETR #:	0806024	**Inspection by:**	**Login by:**

ALL SECTIONS BELOW MUST BE COMPLETED

Were samples shipped? Yes, FedEx / UPS / Other:_____
No, Alpha Analytical Courier pick-up / (Hand delivered)

Is bill of lading retained? Yes, Tracking #:_____
No, Unavailable / (NA)

Number of coolers received for this project delivery: 2

Indicate cooler temperature upon opening (if multiple coolers, record all temps):

Note: If all coolers are 2-6°C, use one checklist, if NOT, use separate checklists and note all samples received *above* 6°C.

Cooler 1:
Temperature(s) taken from: 3° IR Gun, (Circle one) SN 460647143 or 94031
3° Temp. Blank, / NA
Were samples received on ice? (Yes) / No

Chain-of-Custody present? (Yes) / No
Complete? (Yes) / No

Custody seals present on Cooler? Yes / (No)
on Bottles? Yes / (No)
Intact? Yes / No / (NA)
Note: Affix custody seals to back of this page.

Were sample containers intact? (Yes) / No If No, list samples: →

Did VOA/VPH waters contain headspace (>5mm)? Yes / No / (NA) If Yes, list samples: →

Were 5035 VOA soils, or VPH soils, *covered* with MeOH? Yes / No / (NA)
If No, list samples: →

Was a sufficient amount of sample received for each test indicated on the COC?
(Yes) / No If No, list samples: →

If chemical preservation is appropriate -
Were samples field preserved? Yes / No / (NA)
☐C=HCl ☐ M=MeOH ☐ S=H_2SO4
☐H=NaOH ☐ N=HNO_3 ☐ Other:_____ ☐ U= Unknown

Preservation (pH) verified at lab for *EVERY* bottle? (Not: VOA / VPH / Sulfide)
YES: <2 or >12 (CN) or NO (NA)
If No, why?:

Were samples received within hold time? (Yes) / No If No, list samples: →

Discrepancy between samples rec'd & COC ? Yes / (No) If Yes, list samples: →

Was the Project Manager notified of any other problems? Yes / No / NA

Project Manager Acknowledgement: Date:

Comments / Notes

Sample storage refrigerator #: R2

Sample storage freezer #:_____

Cooler 2: 3°/3° Cooler 3:_____

Cooler 4:_____ Cooler 5:_____

Cooler 6:_____ Cooler 7:_____

More:_____

Chemical preservation OK for ALL samples?
Yes / No / (N/A)
If No, list samples below:

Please use back for any additional notes!

Battelle

The Business of Innovation

Chain of Custody

0806024

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
G606422	New Bedford Harbor

SAMPLERS: Signature: Mike Walsh, Matt Fitzpatrick

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

	DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	~~METALS~~ TSS	~~OTHER~~ Turbidity	ACIDIFIED	PRESERVED	Total Number of Containers
1	6/5/08	0933	WQ-TUR-001-060508		Center of Dredge area flood Tide (2.2 NTU)								X			2
2		0957	-002-060508		300' North (.8 NTU)								X			2
3		1007	-003-060508		600' North (1.0 NTU)								X			2
4		1120	-004-060508		Center of Dredge area ebb tide (.3 NTU)								X			2
5		1135	-005-060508		300' South (.9 NTU)								X			2
6		1150	-006-060508		600' South (.9 NTU)								X			2
1		0933	WQ-TSS-001-060508		Center of Dredge area flood Tide (2.2 NTU)							X				2
2		0957	-002-060508		300' North (.8 NTU)							X				2
3		1007	-003-060508		600' North (1.0 NTU)							X				2
4		1120	-004-060508		Center of Dredge area ebb tide (.3 NTU)							X				2
5		1135	-005-060508		300' South (.9 NTU)							X				2
6		1150	-006-060508		600' South (.9 NTU)							X				2

Relinquished by:	Date/Time	Received by:	Date/Time
Mike Walsh	6/5/08 1450		6/5/08 1450
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

Baseline water Quality Samples

ORIGINAL

ANALYTICAL REPORT

Prepared for:
Battelle
Duxbury Operations
397 Washington Street
Duxbury, MA 02332

Project:	New Bedford Harbor
ETR:	0808106
Report Date:	August 26, 2008

Certifications and Accreditations
Massachusetts M-MA030
Connecticut PH-0141
New Hampshire 2206
Rhode Island LAO00289
New Jersey MA015
Maine MA0030
New York 11627
Louisiana 03090
Florida E87814
Pennsylvania 68-02089
Army Corps of Engineers
Department of the Navy

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Sample ID Cross Reference

Client: **Battelle**
Project: **New Bedford Harbor**

Lab Code: **MA00030**
ETR: **0808106**

Lab Sample ID	Client Sample ID
0808106-01	WQ-01-082108
0808106-02	WQ-02-082108
0808106-03	WQ-03-082108

CASE NARRATIVE
Alpha Analytical

ETR: 0808106
Project: New Bedford Harbor Project

All analyses were performed according to Alpha Analytical quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. All soil/sediment results are reported on a dry weight basis unless otherwise noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Alpha Analytical certifies that the test results within meet all of the requirements of NELAC, for all NELAC accredited parameters.

Wet Chemistry:

No problems were encountered during the analysis of TSS and Turbidity

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Analytical makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Analytical. To the best of my knowledge, the information contained in this report is accurate and complete. For any questions regarding this report, please contact the signatory below at 508-822-9300.

Approved by: Peter Henriksen Title: Project Manager Date: 8/26/08

Wet Chemistry

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-01-082108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**

Lab ID: **0808106-01**
Date Collected: **08/21/08**
Date Received: **08/21/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**36.0**		1.00	1	08/25/08	mg/L	160.2	ES
Turbidity - 180.1	**26.5**		0.400	1	08/25/08	NTU	180.1	ES

N/A - Not Applicable

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Duplicate
Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-01-082108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**

Lab ID: **0808106-01 D**
Date Collected: **08/21/08**
Date Received: **08/21/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**35.7**		1.00	1	08/25/08	mg/L	160.2	ES

N/A - Not Applicable

Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-02-082108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**

Lab ID: **0808106-02**
Date Collected: **08/21/08**
Date Received: **08/21/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**29.7**		1.00	1	08/25/08	mg/L	160.2	ES
Turbidity - 180.1	**20.1**		0.400	1	08/25/08	NTU	180.1	ES

N/A - Not Applicable

Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-03-082108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**

Lab ID: **0808106-03**
Date Collected: **08/21/08**
Date Received: **08/21/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**6.50**		1.00	1	08/25/08	mg/L	160.2	ES
Turbidity - 180.1	**2.44**		0.400	1	08/25/08	NTU	180.1	ES

N/A - Not Applicable

Duplicate
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-03-082108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**

Lab ID: **0808106-03 D**
Date Collected: **08/21/08**
Date Received: **08/21/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	**2.35**		0.400	1	08/25/08	NTU	180.1	ES

N/A - Not Applicable

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Blank
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**

Lab ID: **WW082508B16**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	0.400	U	0.400	1	08/25/08	NTU	180.1	ES

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

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Blank
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**

Lab ID: **WW082508B17**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	1.00	U	1.00	1	08/25/08	mg/L	160.2	ES

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

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Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**

Lab ID: **WW082508L07**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	**21.6**	S	0.400	1	08/25/08	NTU	180.1	ES

N/A - Not Applicable
S - Spike compound.

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Laboratory Control Sample
Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**

Lab ID: **WW082508L08**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**469**	S	1.00	1	08/25/08	mg/L	160.2	ES

N/A - Not Applicable
S - Spike compound.

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Duplicate
Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-01-082108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**

Lab ID: **0808106-01 D**
Date Collected: **08/21/08**
Date Received: **08/21/08**

Parameter	Sample Result	Duplicate Result	Unit	Percent RPD	RPD Limit
TSS - Membrane	**36.0**	**35.7**	mg/L	200[a]	20

RPD value incorrect.
Should be 0.84%
DTDahlen 2/6/2009

N/A - Not Applicable
[a] - Value outside of QC Limits.

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

08/26/08 06:43

Duplicate
Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-03-082108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**

Lab ID: **0808106-03 D**
Date Collected: **08/21/08**
Date Received: **08/21/08**

Parameter	Sample Result	Duplicate Result	Unit	Percent RPD	RPD Limit
Turbidity - 180.1	**2.44**	**2.35**	NTU	4	20

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

08/26/08 06:43

Laboratory Control Sample
Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**

Lab ID: **WW082508L07**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
Turbidity - 180.1	21.6	108	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

08/26/08 06:43

Laboratory Control Sample
Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**

Lab ID: **WW082508L08**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
TSS - Membrane	469	94	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

08/26/08 06:43

Chain of Custody Records

0808106

Battelle
. . . Putting Technology To Work

Chain of Custody

Proj. No	Proj. Name
G606422	New Bedford Harbor Water Quality

SAMPLERS: Signature: Matthew Kitzpatrick Amanda Maxemchuk

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

	DATE	TIME	Field ~~BATTELLE~~ ID	Lab ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED 4°C	Total Number of Containers
1	8/21/08	1420	WQ-TSS-01-082108		TSS from 25 to 32 NTU								TSS		X	1
2		1502	WQ-TSS-02-082108		TSS from 14 to 20 NTU								TSS		X	1
3		1520	WQ-TSS-03-082108		TSS From .2 to .3 NTU								TSS		X	1
1		1420	WQ-TUR-01-082108		Turbidity from 25 to 32 NTU								Turbidity		X	1
2		1502	WQ-TUR-02-082108		Turbidity from ~~25 to~~ 14 to 20 NTU								Turbidity		X	1
3		1520	WQ-TUR-03-082108		Turbidity from .2 to .3 NTU								Turbidity		X	1

Relinquished by:	Date/Time		Received by:	Date/Time	
Matthew L Kitzpatrick	8/21/08	1740	[signature]	8/21/08	1740
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

ORIGINAL

Sample Receipt Checklist

Client: BATDUX	**Receipt Date:** 8/21/08		
Project: NBH	**Log-in Date:** 8/22/08		
ETR #: 0808106	**Inspection by:** LF	**Login by:** LF	

ALL SECTIONS BELOW MUST BE COMPLETED

Comments / Notes

Were samples shipped? Yes, FedEx / UPS / Other:_____
No, Alpha Analytical Courier pick-up (Hand delivered)

Is bill of lading retained? Yes, Tracking #:_____
No, Unavailable (NA)

Number of coolers received for this project delivery: 1

Indicate cooler temperature upon opening (if multiple coolers, record all temps):

Note: If all coolers are 2-6°C, use one checklist, if NOT, use separate checklists and note all samples received *above* 6°C.

Cooler 1:
Temperature(s) taken from: 15° IR Gun, (Circle one) SN 460647143 or 94031
_____ Temp. Blank, / NA
Were samples received on ice? Yes / (No)

Chain-of-Custody present? (Yes) / No
Complete? (Yes) / No

Custody seals present on Cooler? Yes / (No)
on Bottles? Yes / (No)
Intact? Yes / No / (NA)
Note: Affix custody seals to back of this page.

Were sample containers intact? (Yes) / No If No, list samples: →

Did VOA/VPH waters contain headspace (>5mm)? Yes / No / (NA) If Yes, list samples: →

Were 5035 VOA soils, or VPH soils, *covered* with MeOH? Yes / No / (NA)
If No, list samples: →

Was a sufficient amount of sample received for each test indicated on the COC?
(Yes) / No If No, list samples: →

If chemical preservation is appropriate -
Were samples field preserved? Yes / No / (NA)
☐ C=HCl ☐ M=MeOH ☐ S=H_2SO4
☐ H=NaOH ☐ N=HNO_3 ☐ Other:_____ ☐ U= Unknown

Chemical preservation OK for ALL samples?
Yes / No / (N/A)
If No, list samples below:

Preservation (pH) verified at lab for *EVERY* bottle? (Not: VOA / VPH / Sulfide)
YES: <2 or >12 (CN) or NO (NA)
If No, why?:

Were samples received within hold time? (Yes) / No If No, list samples: →

Discrepancy between samples rec'd & COC ? Yes / (No) If Yes, list samples: →

Was the Project Manager notified of any other problems? Yes / No / NA

Project Manager Acknowledgement: Date:

Please use back for any additional notes!

Certificate/Approval Program Summary

Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2; Metals: 200.8, 245.1; Organics: 608-PCB, ETPH) *Solid Waste/Soil* (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastwater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, SM2320B, SM2340B, SM2540G, SM4500NH3; Metals: 245.1; Organics: 608-PCB). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608-PCB, 8015-DRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/ SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2; Metals: EPA 245.1; Organics: 608-PCB).

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2; Metals: EPA 245.1; Organics: EPA 608-PCB).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608-PCB).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608-PCB, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 376.2; Metals: 200.8, 245.1; Organics: 608-PCB). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 200.8; [illegible];7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Poratable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy

Certificate/Approval Program Summary

Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2, 365.2; Metals: 200.8, 245.1; Organics: 608, 624, 625, ETPH) *Solid Waste/Soil* (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastwater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, 365.2, SM2320B, SM2340B, SM2540G, SM4500NH3; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608, 624, 625, 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/ SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: 608, 624).

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: EPA 608, 624).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608, 624, 625).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608, 624, 625, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 365.2, 376.2; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 245.1; 6020, 7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Poratable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy

ANALYTICAL REPORT

Prepared for:
Battelle
Duxbury Operations
397 Washington Street
Duxbury, MA 02332

Project:	New Bedford Harbor
ETR:	0810006
Report Date:	October 02, 2008

Certifications and Accreditations
Massachusetts M-MA030
Connecticut PH-0141
New Hampshire 2206
Rhode Island LAO00289
New Jersey MA015
Maine MA0030
New York 11627
Louisiana 03090
Florida E87814
Pennsylvania 68-02089
Army Corps of Engineers
Department of the Navy

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CASE NARRATIVE
Alpha Analytical

ETR: 0810006
Project: New Bedford Harbor

All analyses were performed according to Alpha Analytical quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. All soil/sediment results are reported on a dry weight basis unless otherwise noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Alpha Analytical certifies that the test results within meet all of the requirements of NELAC, for all NELAC accredited parameters.

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Analytical makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Analytical. To the best of my knowledge, the information contained in this report is accurate and complete. For any questions regarding this report, please contact the signatory below at 508-822-9300.

Approved by: Pete Henriksen _____ Title: PROJECT MANAGER _____ Date: 10/2/08

Pete Henriksen **Project Manager**

Sample ID Cross Reference

Client: **Battelle**
Project: **New Bedford Harbor**

Lab Code: **MA00030**
ETR: **0810006**

Lab Sample ID	Client Sample ID
0810006-01	WQ-001-100108
0810006-02	WQ-001-100108-REP
0810006-03	WQ-002-100108
0810006-04	WQ-003-100108

Wet Chemistry

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-001-100108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**

Lab ID: **0810006-01**
Date Collected: **10/01/08**
Date Received: **10/01/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**76.5**		1.00	1	10/01/08	mg/L	160.2	ES
Turbidity - 180.1	**32.5**		0.400	1	10/01/08	NTU	180.1	ES

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Duplicate
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-001-100108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**

Lab ID: **0810006-01 D**
Date Collected: **10/01/08**
Date Received: **10/01/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**71.0**		1.00	1	10/01/08	mg/L	160.2	ES
Turbidity - 180.1	**32.4**		0.400	1	10/01/08	NTU	180.1	ES

N/A - Not Applicable

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Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-001-100108-REP**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**

Lab ID: **0810006-02**
Date Collected: **10/01/08**
Date Received: **10/01/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**61.2**		1.00	1	10/01/08	mg/L	160.2	ES
Turbidity - 180.1	**29.8**		0.400	1	10/01/08	NTU	180.1	ES

N/A - Not Applicable

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Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-002-100108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**

Lab ID: **0810006-03**
Date Collected: **10/01/08**
Date Received: **10/01/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**55.2**		1.00	1	10/01/08	mg/L	160.2	ES
Turbidity - 180.1	**28.1**		0.400	1	10/01/08	NTU	180.1	ES

N/A - Not Applicable

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Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-003-100108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**

Lab ID: **0810006-04**
Date Collected: **10/01/08**
Date Received: **10/01/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**33.4**		1.00	1	10/01/08	mg/L	160.2	ES
Turbidity - 180.1	**2.21**		0.400	1	10/01/08	NTU	180.1	ES

N/A - Not Applicable

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Blank
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**

Lab ID: **WW100108B23**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	1.00	U	1.00	1	10/01/08	mg/L	160.2	ES

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

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Blank
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**
Lab ID: **WW100108B24**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	0.400	U	0.400	1	10/01/08	NTU	180.1	ES

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

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Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**

Lab ID: **WW100108L07**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**546**	S	1.00	1	10/01/08	mg/L	160.2	ES

N/A - Not Applicable
S - Spike compound.

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Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**

Lab ID: **WW100108L08**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	**20.3**	S	0.400	1	10/01/08	NTU	180.1	ES

N/A - Not Applicable
S - Spike compound.

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Duplicate
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-001-100108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**

Lab ID: **0810006-01 D**
Date Collected: **10/01/08**
Date Received: **10/01/08**

Parameter	Sample Result	Duplicate Result	Unit	Percent RPD	RPD Limit
TSS - Membrane	**76.5**	**71.0**	mg/L	7	20
Turbidity - 180.1	**32.5**	**32.4**	NTU	0	20

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

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Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**

Lab ID: **WW100108L07**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
TSS - Membrane	546	109	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**

Lab ID: **WW100108L08**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
Turbidity - 180.1	20.3	101	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

2/02/08 12:04

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Chain of Custody Records

Alpha

0810004

Battelle

The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
G60622	New Bedford Harbor Water Quality

SAMPLERS: Signature: Annie Murphy

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	Field ~~BATTELLE~~ ID	Lab ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	~~METALS~~ Turbidity	~~OTHER~~ TSS	ACIDIFIED	PRESERVED	Total Number of Containers
10/1/08	1123	WQ-TSS-001-100108		50-66 NTU station ID: 57 NTU								✓			1
		WQ-TSS-001-100108-REP										✓			1
		WQ-TUR-001-100108									✓				1
		WQ-TUR-001-100108-REP									✓				1
10/1/08	1150	WQ-TSS-002-100108		19-27 NTU station ID: 24 NTU								✓			1
		WQ-TUR-002-100108									✓				1
	1205	WQ-TSS-003-100108		3.8 NTU station ID: NREF								✓			1
		WQ-TUR-003-100108									✓				1

Relinquished by:	Date/Time	Received by:	Date/Time
Annie Murphy	10/1/08 1556		10/1/08 1556
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

Sample Receipt Checklist

Client: BATTDUX	**Receipt Date:** 10/1/08		
Project: New Bedford Harbor	**Log-in Date:**		
ETR #: 0810006	**Inspection by:**	**Login by:**	

ALL SECTIONS BELOW MUST BE COMPLETED

Were samples shipped? Yes, FedEx / UPS / Other:_____
No, Alpha Analytical Courier pick-up / (Hand delivered)

Is bill of lading retained? Yes, Tracking #:_____
No, Unavailable / (NA)

Number of coolers received for this project delivery: 1

Indicate cooler temperature upon opening (if multiple coolers, record all temps):

Note: If all coolers are 2-6°C, use one checklist, if NOT, use separate checklists and note all samples received *above* 6°C.

Cooler 1:
Temperature(s) taken from: 3 IR Gun, (Circle one) SN 460647143 or (94031)
2.5 Temp. Blank, / NA
Were samples received on ice? (Yes) / No

Chain-of-Custody present? (Yes) / No
Complete? (Yes) / No

Custody seals present on Cooler? Yes / (No)
on Bottles? Yes / (No)
Intact? Yes / No / (NA)
Note: Affix custody seals to back of this page.

Were sample containers intact? (Yes) / No If No, list samples: →

Did VOA/VPH waters contain headspace (>5mm)? Yes / No (NA) If Yes, list samples: →

Were 5035 VOA soils, or VPH soils, *covered* with MeOH? Yes / No / (NA)
If No, list samples: →

Was a ~~sufficient~~ amount of sample received for each test indicated on the COC?
(Yes) / No If No, list samples: →

If chemical preservation is appropriate -
Were samples field preserved? Yes / No / (NA)
☐C=HCl ☐ M=MeOH ☐ S=H_2SO4
☐H=NaOH ☐ N=HNO_3 ☐ Other:_____ ☐ U= Unknown

Preservation (pH) verified at lab for *EVERY* bottle? (Not: VOA / VPH / Sulfide)
YES: <2 or >12 (CN) or NO (NA)
If No, why?:

Were samples received within hold time? (Yes) No If No, list samples: →

Discrepancy between samples rec'd & COC ? Yes (No) If Yes, list samples: →

Was the Project Manager notified of any other problems? Yes / No / NA

Project Manager Acknowledgement: Date:

Comments / Notes

Sample storage refrigerator #: C1

Sample storage freezer #:_____

Cooler 2:_____ Cooler 3:_____

Cooler 4:_____ Cooler 5:_____

Cooler 6:_____ Cooler 7:_____

More:_____

Chemical preservation OK for ALL samples?
Yes / No / (N/A)

If No, list samples below:

Please use back for any additional notes!

Certificate/Approval Program Summary

Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2; Metals: 200.8, 245.1; Organics: 608-PCB, ETPH) *Solid Waste/Soil* (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastwater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, SM2320B, SM2340B, SM2540G, SM4500NH3; Metals: 245.1; Organics: 608-PCB). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608-PCB, 8015-DRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/ SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2; Metals: EPA 245.1; Organics: 608-PCB).

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2; Metals: EPA 245.1; Organics: EPA 608-PCB).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608-PCB).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608-PCB, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 376.2; Metals: 200.8, 245.1; Organics: 608-PCB). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 200.8; 6020; 7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Poratable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy

Appendix D

Total and Dissolved PCB Analytical Data

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APPENDIX D

Individual Congener and Sum of Congeners Results

Station ID	PMCNDock0821			PMCSEDock821			PMCNRef0821			PMCNDock0821			PMCSEDock821		
Collected	8/21/2008			8/21/2008			8/21/2008			8/21/2008			8/21/2008		
Fraction	DISS			DISS			DISS			TOTAL			TOTAL		
QC Code	SA			SA			SA			SA			SA		
Sample ID	WQ-DPC-001-082108			WQ-DPC-002-082108			WQ-DPC-003-082108			WQ-TPC-001-082108			WQ-TPC-002-082108		
Param Name	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q
2,4'-Dicb (PCB 8)	0.035	UG/L		0.034	UG/L		0.056	UG/L		0.069	UG/L		0.067	UG/L	
2,2',5-Tricb (PCB 18)	0.061	UG/L		0.057	UG/L		0.094	UG/L		0.123	UG/L		0.119	UG/L	
2,4,4'-Tricb (PCB 28)	0.044	UG/L		0.038	UG/L		0.068	UG/L		0.149	UG/L		0.133	UG/L	
2,2',3,5'-Tetracb (PCB 44)	0.02	UG/L		0.017	UG/L		0.02	UG/L		0.093	UG/L		0.08	UG/L	
2,2',5,5'-Tetracb (PCB 52)	0.045	UG/L		0.038	UG/L		0.057	UG/L		0.191	UG/L		0.173	UG/L	
2,3',4,4'-Tetracb (PCB 66)	0.0045	UG/L		0.0045	UG/L		0.0044	UG/L		0.036	UG/L		0.031	UG/L	
2,2',4,5,5'-Pentacb (PCB 101)	0.0065	UG/L		0.0054	UG/L		0.0043	UG/L		0.081	UG/L		0.071	UG/L	
2,3,3',4,4'-Pentacb (PCB 105)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.011	UG/L		0.0097	UG/L	
2,3',4,4',5-Pentacb (PCB 118)	0.0038	UG/L		0.0033	UG/L		0.0022	UG/L		0.071	UG/L		0.06	UG/L	
2,2',3,3',4,4'-Hexacb (PCB 128)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0092	UG/L		0.0076	UG/L	
2,2',3,4,4',5'-Hexacb (PCB 138)	0.0016	UG/L		0.0012	UG/L		0.0004	UG/L	J	0.052	UG/L		0.043	UG/L	
2,2',4,4',5,5'-Hexacb (PCB 153)	0.0027	UG/L		0.0021	UG/L		0.001	UG/L	J	0.073	UG/L		0.062	UG/L	
2,2',3,3',4,4',5-Heptacb (PCB 170)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.007	UG/L		0.0058	UG/L	
2,2',3,4,4',5,5'-Heptacb (PCB 180)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0095	UG/L		0.0079	UG/L	
2,2',3,4',5,5',6-Heptacb (PCB 187)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.007	UG/L		0.0058	UG/L	
2,2',3,3',4,4',5,6-Octacb (PCB 195)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0004	UG/L	pJ	0.0002	UG/L	pJ
2,2',3,3',4,4',5,5',6-Nonacb (PCB 206)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0007	UG/L	J	0.0005	UG/L	J
DecaCB (PCB 209)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
Sum of 18 NOAA Congeners (SUM 18 CONG)	0.22	UG/L		0.2	UG/L		0.31	UG/L		0.98	UG/L		0.88	UG/L	

APPENDIX D

Individual Congener and Sum of Congeners Results

Station ID	PMCNRef0821						PMC57NTU1001			PMC57NTU1001			PMC24NTU1001		
Collected	8/21/2008			10/1/2008			10/1/2008			10/1/2008			10/1/2008		
Fraction	TOTAL			TOTAL			DISS			DISS			DISS		
QC Code	SA			SA			REP			SA			SA		
Sample ID	WQ-TPC-003-082108			EB-100108-01			WQ-DPC-001-100108-REP			WQ-DPC-001-100108			WQ-DPC-002-100108		
Param Name	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q
2,4'-Dicb (PCB 8)	0.063	UG/L		0.0012	UG/L	U	0.039	UG/L		0.038	UG/L		0.031	UG/L	
2,2',5-Tricb (PCB 18)	0.111	UG/L		0.0012	UG/L	U	0.063	UG/L		0.07	UG/L		0.056	UG/L	
2,4,4'-Tricb (PCB 28)	0.089	UG/L		0.0012	UG/L	U	0.053	UG/L		0.057	UG/L		0.047	UG/L	
2,2',3,5'-Tetracb (PCB 44)	0.027	UG/L		0.0012	UG/L	U	0.024	UG/L		0.024	UG/L		0.021	UG/L	
2,2',5,5'-Tetracb (PCB 52)	0.087	UG/L		0.0012	UG/L	U	0.043	UG/L		0.047	UG/L		0.038	UG/L	
2,3',4,4'-Tetracb (PCB 66)	0.0073	UG/L		0.0012	UG/L	U	0.0083	UG/L		0.0083	UG/L		0.0078	UG/L	
2,2',4,5,5'-Pentacb (PCB 101)	0.012	UG/L		0.0012	UG/L	U	0.0073	UG/L		0.0072	UG/L		0.0069	UG/L	
2,3,3',4,4'-Pentacb (PCB 105)	0.0005	UG/L	pJ	0.0012	UG/L	U	0.0011	UG/L	pJ	0.001	UG/L	pJ	0.001	UG/L	pJ
2,3',4,4',5-Pentacb (PCB 118)	0.008	UG/L		0.0012	UG/L	U	0.0051	UG/L		0.0051	UG/L		0.0046	UG/L	
2,2',3,3',4,4'-Hexacb (PCB 128)	0.0001	UG/L	pJ	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
2,2',3,4,4',5'-Hexacb (PCB 138)	0.0045	UG/L		0.0012	UG/L	U	0.002	UG/L		0.0017	UG/L		0.0016	UG/L	
2,2',4,4',5,5'-Hexacb (PCB 153)	0.0076	UG/L		0.0012	UG/L	U	0.0031	UG/L		0.0027	UG/L		0.0028	UG/L	
2,2',3,3',4,4',5-Heptacb (PCB 170)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
2,2',3,4,4',5,5'-Heptacb (PCB 180)	0.0001	UG/L	pJ	0.0012	UG/L	U	0.0001	UG/L	pJ	0.0012	UG/L	U	0.0012	UG/L	U
2,2',3,4',5,5',6-Heptacb (PCB 187)	0.0001	UG/L	pJ	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
2,2',3,3',4,4',5,6-Octacb (PCB 195)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
2,2',3,3',4,4',5,5',6-Nonacb (PCB 206)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
DecaCB (PCB 209)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
Sum of 18 NOAA Congeners (SUM 18 CONG)	0.42	UG/L					0.25	UG/L		0.26	UG/L		0.22	UG/L	

APPENDIX D

Individual Congener and Sum of Congeners Results

Station ID	PMCNREF10010			PMC57NTU1001			PMC57NTU1001			PMC24NTU1001			PMCNREF10010		
Collected	10/1/2008			10/1/2008			10/1/2008			10/1/2008			10/1/2008		
Fraction	DISS			TOTAL			TOTAL			TOTAL			TOTAL		
QC Code	SA			REP			SA			SA			SA		
Sample ID	WQ-DPC-003-100108			WQ-TPC-001-100108-REP			WQ-TPC-001-100108			WQ-TPC-002-100108			WQ-TPC-003-100108		
Param Name	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q
2,4'-Dicb (PCB 8)	0.02	UG/L		0.086	UG/L		0.085	UG/L		0.063	UG/L		0.025	UG/L	
2,2',5-Tricb (PCB 18)	0.034	UG/L		0.193	UG/L	D	0.209	UG/L	D	0.128	UG/L		0.045	UG/L	
2,4,4'-Tricb (PCB 28)	0.03	UG/L		0.265	UG/L	D	0.263	UG/L	D	0.163	UG/L	D	0.045	UG/L	
2,2',3,5'-Tetracb (PCB 44)	0.011	UG/L		0.195	UG/L		0.182	UG/L		0.112	UG/L		0.017	UG/L	
2,2',5,5'-Tetracb (PCB 52)	0.028	UG/L		0.303	UG/L	D	0.298	UG/L	D	0.184	UG/L	D	0.047	UG/L	
2,3',4,4'-Tetracb (PCB 66)	0.005	UG/L	p	0.112	UG/L		0.105	UG/L		0.064	UG/L		0.0073	UG/L	
2,2',4,5,5'-Pentacb (PCB 101)	0.004	UG/L		0.125	UG/L	D	0.111	UG/L	D	0.099	UG/L		0.011	UG/L	
2,3,3',4,4'-Pentacb (PCB 105)	0.0004	UG/L	pJ	0.029	UG/L		0.029	UG/L		0.018	UG/L		0.0016	UG/L	p
2,3',4,4',5-Pentacb (PCB 118)	0.0027	UG/L		0.136	UG/L	D	0.128	UG/L	D	0.088	UG/L		0.0089	UG/L	
2,2',3,3',4,4'-Hexacb (PCB 128)	0.0013	UG/L	U	0.019	UG/L		0.018	UG/L		0.01	UG/L		0.0002	UG/L	pJ
2,2',3,4,4',5'-Hexacb (PCB 138)	0.0006	UG/L	J	0.106	UG/L		0.104	UG/L		0.059	UG/L		0.005	UG/L	
2,2',4,4',5,5'-Hexacb (PCB 153)	0.0016	UG/L		0.148	UG/L	p	0.146	UG/L	p	0.083	UG/L		0.0081	UG/L	
2,2',3,3',4,4',5-Heptacb (PCB 170)	0.0013	UG/L	U	0.015	UG/L		0.014	UG/L		0.0074	UG/L		0.0001	UG/L	pJ
2,2',3,4,4',5,5'-Heptacb (PCB 180)	0.0013	UG/L	U	0.022	UG/L		0.021	UG/L		0.012	UG/L		0.0004	UG/L	J
2,2',3,4',5,5',6-Heptacb (PCB 187)	0.0012	UG/L	U	0.016	UG/L		0.016	UG/L		0.0091	UG/L		0.0012	UG/L	U
2,2',3,3',4,4',5,6-Octacb (PCB 195)	0.0013	UG/L	U	0.0012	UG/L	p	0.0012	UG/L	p	0.0003	UG/L	pJ	0.0013	UG/L	U
2,2',3,3',4,4',5,5',6-Nonacb (PCB 206)	0.0013	UG/L	U	0.0017	UG/L		0.0016	UG/L		0.0006	UG/L	J	0.0013	UG/L	U
DecaCB (PCB 209)	0.0013	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0013	UG/L	U
Sum of 18 NOAA Congeners (SUM 18 CONG)	0.14	UG/L		1.8	UG/L		1.7	UG/L		1.1	UG/L		0.22	UG/L	

APPENDIX D

PCB Data Qualifiers

Qualifiers:

D	Dilution run. Initial run outside linear range of instrument
J	Analyte detected below the sample specific reporting limit
p	The relative percent difference (RPD) between the values obtained from the dual columns is >40%.
U	Analyte not detected at 3:1 signal:noise ratio. Reporting limit is reported.

PCB QA/QC Summaries and QC Data

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PCB Congeners – Water QA/QC Summary
Batch 08-0212

PROJECT: USACE-NAE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Water
SAMPLE CUSTODY: Water samples were collected on 8/21/2008 and hand delivered to the Chemistry Department by the Battelle Field Group. No custody issues were noted. The samples were logged into LIMS and received unique Battelle IDs. The samples were stored at 4°C in an access controlled walk-in refrigerator until sample preparation could begin. Prior to sample extraction, water samples that were designated for dissolved PCB analysis were filtered through glass fiber filters with 1 µm pore size.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (ug/L)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	<30% RPD (analytes must be > 5x MDL to be used for data quality assessment)	RL: ~ 0.0012

METHOD: Water samples were extracted for PCB Congeners following modified EPA Method 3510C. Approximately 1 liter of water was spiked with surrogates and extracted three times with dichloromethane using separatory funnel techniques. Combined extract was dried over anhydrous sodium sulfate, concentrated, cleaned up with copper for sulfur removal, and then further cleaned by disposable Florisil columns. The extract was concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Water samples were extracted within 7 days of sample collection. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
08-0212	8/21/2008	8/27/2008	9/8/2008

PCB Congeners – Water QA/QC Summary
Batch 08-0212

LIST OF SAMPLES:

08-0212

Sample ID	**Battelle ID**
WQ-TPC-01-082108	Q3976
WQ-TPC-02-082108	Q3977
WQ-TPC-03-082108	Q3978
WQ-DPC-01-082108	Q3979
WQ-DPC-03-082108	Q3980
WQ-DPC-02-082108	Q3981

BLANK: A procedural blank (PB) was prepared with each analytical batch. Blanks were analyzed to ensure the sample extraction and analysis methods were free of contamination.

08-0212 – No exceedences noted. No target PCBs were detected in the PB.

LABORATORY CONTROL SAMPLE: A laboratory control sample (LCS) was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy.

08-0212 – All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

08-0212 – No exceedence noted**.** All percent recoveries were within the laboratory control limit (40%-120%).

CALIBRATIONS: The GC/ECD was calibrated with a minimum 6 level curve, with a linear correlation coefficient of >0.995. Each batch of samples analyzed is bracketed by continuing calibration verification (CCV) sample, run at a frequency of minimally every 24 hours. The %D between the initial calibration (ICAL) and the continuing calibration samples should be <20% for each compound. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%.

08-0212 – All calibration criteria were met.

Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Procedural Blank	
Battelle ID	BM217PB-P	
Sample Type	PB	
Collection Date	08/27/08	
Extraction Date	08/27/08	
Analysis Date	09/08/08	
Analytical Instrument	ECD	
% Moisture	NA	
% Lipid	NA	
Matrix	WATER	
Sample Size	1.00	
Size Unit-Basis	L_LIQUID	
Units	UG/L_LIQUID	
Cl2(8)	0.0012	U
Cl3(18)	0.0013	U
Cl3(28)	0.0013	U
Cl4(44)	0.0012	U
Cl4(52)	0.0013	U
Cl4(66)	0.0013	U
Cl5(101)	0.0012	U
Cl5(105)	0.0013	U
Cl5(118)	0.0013	U
Cl6(128)	0.0013	U
Cl6(138)	0.0013	U
Cl6(153)	0.0012	U
Cl7(170)	0.0013	U
Cl7(180)	0.0013	U
Cl7(187)	0.0012	U
Cl8(195)	0.0013	U
Cl9(206)	0.0013	U
Cl10(209)	0.0013	U

Surrogate Recoveries (%)

Cl3(34)	75
Cl6(152)	76

Battelle
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Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Laboratory Control Sample			
Battelle ID	BM218LCS-P			
Sample Type	LCS			
Collection Date	08/27/08			
Extraction Date	08/27/08			
Analysis Date	09/08/08			
Analytical Instrument	ECD			
% Moisture	NA			
% Lipid	NA			
Matrix	WATER			
Sample Size	1.00			
Size Unit-Basis	L_LIQUID			
Units	UG/L_LIQUID	Target	% Recovery	Qualifier
Cl2(8)	0.0379	0.05	76	
Cl3(18)	0.0374	0.05	75	
Cl3(28)	0.0362	0.05	72	
Cl4(44)	0.0387	0.05	77	
Cl4(52)	0.038	0.05	76	
Cl4(66)	0.04	0.05	80	
Cl5(101)	0.0397	0.05	79	
Cl5(105)	0.0416	0.05	83	
Cl5(118)	0.0414	0.05	83	
Cl6(128)	0.0407	0.05	81	
Cl6(138)	0.0398	0.05	79	
Cl6(153)	0.0404	0.05	81	
Cl7(170)	0.0415	0.05	83	
Cl7(180)	0.0411	0.05	82	
Cl7(187)	0.0399	0.05	80	
Cl8(195)	0.0406	0.05	81	
Cl9(206)	0.04	0.05	80	
Cl10(209)	0.0405	0.05	81	

Surrogate Recoveries (%)

Cl3(34)	78
Cl6(152)	78

PCB Congeners – Water QA/QC Summary
Batch 08-0274

PROJECT: USACE-NAE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Water
SAMPLE CUSTODY: Water samples were collected on 10/1/2008 and hand delivered to the Chemistry Department by the Battelle Field Group. No custody issues were noted. The samples were logged into LIMS and received unique Battelle IDs. The samples were stored at 4°C in an access controlled walk-in refrigerator until sample preparation could begin. Prior to sample extraction, water samples that were designated for dissolved PCB analysis were filtered through glass fiber filters with 1 µm pore size.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (ug/L)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	<30% RPD (analytes must be > 5x MDL to be used for data quality assessment)	RL: ~ 0.0013

METHOD: Water samples were extracted for PCB Congeners following modified EPA Method 3510C. Approximately 1 liter of water was spiked with surrogates and extracted three times with dichloromethane using separatory funnel techniques. Combined extract was dried over anhydrous sodium sulfate, concentrated, cleaned up with copper for sulfur removal, and then further cleaned by disposable Florisil columns. The extract was concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Water samples were extracted within 7 days of sample collection. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
08-0274	10/1/2008	10/2/2008	10/7/2008 - 10/9/2008

PCB Congeners – Water QA/QC Summary
Batch 08-0274

LIST OF SAMPLES:

08-0274

Sample ID	Battelle ID
WQ-DPC-001-100108	Q4839
WQ-DPC-001-100108REP	Q4840
WQ-TPC-001-100108	Q4841
WQ-TPC-001-100108REP	Q4842
WQ-DPC-002-100108	Q4843
WQ-TPC-002-100108	Q4844
WQ-DPC-003-100108	Q4845
WQ-TPC-003-100108	Q4846
EB-100108-01	Q4847

BLANK: A procedural blank (PB) was prepared with each analytical batch. Blanks were analyzed to ensure the sample extraction and analysis methods were free of contamination.

08-0274 – No exceedences noted. No target PCBs were detected in the PB.

LABORATORY CONTROL SAMPLE: A laboratory control sample (LCS) was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy.

08-0274 – All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

MATRIX SPIKE/MATRIX SPIKE DUPLICATE: Two pairs of matrix spike (MS) and matrix spike duplicate samples (MSD) were prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. The RPD between percent recoveries was calculated to measure the data quality in terms of precision.

08-0274 – All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%). All RRDs met the <30% criteria.

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

08-0274 – No exceedence noted**.** All percent recoveries were within the laboratory control limit (40%-120%).

CALIBRATIONS: The GC/ECD was calibrated with a minimum 6 level curve, with a linear correlation coefficient of >0.995. Each batch of samples analyzed is bracketed by continuing calibration verification (CCV) sample, run at a frequency of minimally every 24 hours. The %D between the initial calibration (ICAL) and the continuing calibration samples should be <20% for each compound. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%.

08-0274 – All calibration criteria were met.

Battelle
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Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Procedural Blank	
Battelle ID	BM433PB-P	
Sample Type	PB	
Collection Date	10/02/08	
Extraction Date	10/02/08	
Analysis Date	10/07/08	
Analytical Instrument	ECD	
% Moisture	NA	
% Lipid	NA	
Matrix	WATER	
Sample Size	1.00	
Size Unit-Basis	L_LIQUID	
Units	UG/L_LIQUID	
Cl2(8)	0.0012	U
Cl3(18)	0.0013	U
Cl3(28)	0.0013	U
Cl4(44)	0.0012	U
Cl4(52)	0.0013	U
Cl4(66)	0.0013	U
Cl5(101)	0.0012	U
Cl5(105)	0.0013	U
Cl5(118)	0.0013	U
Cl6(128)	0.0013	U
Cl6(138)	0.0013	U
Cl6(153)	0.0012	U
Cl7(170)	0.0013	U
Cl7(180)	0.0013	U
Cl7(187)	0.0012	U
Cl8(195)	0.0013	U
Cl9(206)	0.0013	U
Cl10(209)	0.0013	U

Surrogate Recoveries (%)

Cl3(34)	79
Cl6(152)	72

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Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Laboratory Control Sample			
Battelle ID	BM434LCS-P			
Sample Type	LCS			
Collection Date	10/02/08			
Extraction Date	10/02/08			
Analysis Date	10/07/08			
Analytical Instrument	ECD			
% Moisture	NA			
% Lipid	NA			
Matrix	WATER			
Sample Size	1.00			
Size Unit-Basis	L_LIQUID			
Units	UG/L_LIQUID	Target	% Recovery	Qualifier
Cl2(8)	0.04	0.05	80	
Cl3(18)	0.0411	0.05	82	
Cl3(28)	0.0375	0.05	75	
Cl4(44)	0.0441	0.05	88	
Cl4(52)	0.0426	0.05	85	
Cl4(66)	0.0477	0.05	95	
Cl5(101)	0.0452	0.05	90	
Cl5(105)	0.0442	0.05	88	
Cl5(118)	0.0506	0.05	101	
Cl6(128)	0.0447	0.05	89	
Cl6(138)	0.0444	0.05	89	
Cl6(153)	0.0493	0.05	99	
Cl7(170)	0.0482	0.05	96	
Cl7(180)	0.0497	0.05	99	
Cl7(187)	0.0476	0.05	95	
Cl8(195)	0.0473	0.05	94	
Cl9(206)	0.0452	0.05	90	
Cl10(209)	0.0446	0.05	89	

Surrogate Recoveries (%)

Cl3(34)	89
Cl6(152)	93

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Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	WQ-DPC-003-100108		WQ-DPC-003-100108			
Battelle ID	Q4845-P		Q4845MS-P			
Sample Type	SA		MS			
Collection Date	10/01/08		10/1/2008			
Extraction Date	10/02/08		10/2/2008			
Analysis Date	10/08/08		10/8/2008			
Analytical Instrument	ECD		ECD			
% Moisture	NA		NA			
% Lipid	NA		NA			
Matrix	WATER		WATER			
Sample Size	1.00		0.5			
Size Unit-Basis	L_LIQUID		L_LIQUID			
Units	UG/L_LIQUID		UG/L_LIQUID	Target	% Recovery	Qualifier
Cl2(8)	0.0196		0.1064	0.10	87	
Cl3(18)	0.0338		0.1204	0.10	86	
Cl3(28)	0.0302		0.113	0.10	83	
Cl4(44)	0.0106		0.1015	0.10	91	
Cl4(52)	0.0281		0.1215	0.10	93	
Cl4(66)	0.005	p	0.1031	0.10	98	
Cl5(101)	0.004		0.0989	0.10	95	
Cl5(105)	0.0004	pJ	0.0855	0.10	85	
Cl5(118)	0.0027		0.0991	0.10	96	
Cl6(128)	0.0013	U	0.0842	0.10	84	
Cl6(138)	0.0006	J	0.0858	0.10	85	
Cl6(153)	0.0016		0.0941	0.10	92	
Cl7(170)	0.0013	U	0.0927	0.10	92	
Cl7(180)	0.0013	U	0.0981	0.10	98	
Cl7(187)	0.0012	U	0.0956	0.10	95	
Cl8(195)	0.0013	U	0.0902	0.10	90	
Cl9(206)	0.0013	U	0.0916	0.10	91	
Cl10(209)	0.0013	U	0.0899	0.10	90	
Surrogate Recoveries (%)						
Cl3(34)	86		95			
Cl6(152)	87		93			

Battelle
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Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	WQ-DPC-003-100108					
Battelle ID	Q4845MSD-P					
Sample Type	MSD					
Collection Date	10/1/2008					
Extraction Date	10/2/2008					
Analysis Date	10/8/2008					
Analytical Instrument	ECD					
% Moisture	NA					
% Lipid	NA					
Matrix	WATER					
Sample Size	0.5					
Size Unit-Basis	L_LIQUID					
Units	UG/L_LIQUID	Target	% Recovery	Qualifier	RPD (%)	Qualifier
Cl2(8)	0.109	0.10	89		2.3	
Cl3(18)	0.1257	0.10	92		6.7	
Cl3(28)	0.1152	0.10	85		2.4	
Cl4(44)	0.1055	0.10	95		4.3	
Cl4(52)	0.1231	0.10	95		2.1	
Cl4(66)	0.1075	0.10	102		4.0	
Cl5(101)	0.1021	0.10	98		3.1	
Cl5(105)	0.0918	0.10	91		6.8	
Cl5(118)	0.1028	0.10	100		4.1	
Cl6(128)	0.0883	0.10	88		4.7	
Cl6(138)	0.0894	0.10	89		4.6	
Cl6(153)	0.0975	0.10	96		4.3	
Cl7(170)	0.096	0.10	96		4.3	
Cl7(180)	0.1026	0.10	102		4.0	
Cl7(187)	0.1001	0.10	100		5.1	
Cl8(195)	0.0967	0.10	96		6.5	
Cl9(206)	0.094	0.10	94		3.2	
Cl10(209)	0.0944	0.10	94		4.3	

Surrogate Recoveries (%)

Cl3(34)	95
Cl6(152)	94

Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	WQ-TPC-003-100108		WQ-TPC-003-100108			
Battelle ID	Q4846-P		Q4846MS-P			
Sample Type	SA		MS			
Collection Date	10/1/2008		10/1/2008			
Extraction Date	10/2/2008		10/2/2008			
Analysis Date	10/8/2008		10/8/2008			
Analytical Instrument	ECD		ECD			
% Moisture	NA		NA			
% Lipid	NA		NA			
Matrix	WATER		WATER			
Sample Size	1		0.5			
Size Unit-Basis	L_LIQUID		L_LIQUID			
Units	UG/L_LIQUID		UG/L_LIQUID	Target	% Recovery	Qualifier
Cl2(8)	0.0249		0.105	0.10	80	
Cl3(18)	0.0454		0.1265	0.10	81	
Cl3(28)	0.0446		0.1188	0.10	74	
Cl4(44)	0.0168		0.1013	0.10	84	
Cl4(52)	0.0465		0.1281	0.10	82	
Cl4(66)	0.0073		0.0985	0.10	91	
Cl5(101)	0.0109		0.0981	0.10	87	
Cl5(105)	0.0016	p	0.0854	0.10	84	
Cl5(118)	0.0089		0.1025	0.10	94	
Cl6(128)	0.0002	pJ	0.0829	0.10	82	
Cl6(138)	0.005		0.0855	0.10	80	
Cl6(153)	0.0081		0.0983	0.10	90	
Cl7(170)	0.0001	pJ	0.0895	0.10	89	
Cl7(180)	0.0004	J	0.0934	0.10	93	
Cl7(187)	0.0012	U	0.0903	0.10	90	
Cl8(195)	0.0013	U	0.0895	0.10	89	
Cl9(206)	0.0013	U	0.0873	0.10	87	
Cl10(209)	0.0013	U	0.0862	0.10	86	
Surrogate Recoveries (%)						
Cl3(34)	93		85			
Cl6(152)	94		87			

Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	WQ-TPC-003-100108
Battelle ID	Q4846MSD-P
Sample Type	MSD
Collection Date	10/1/2008
Extraction Date	10/2/2008
Analysis Date	10/9/2008
Analytical Instrument	ECD
% Moisture	NA
% Lipid	NA
Matrix	WATER
Sample Size	0.5
Size Unit-Basis	L_LIQUID

Units	UG/L_LIQUID	Target	% Recovery	Qualifier	RPD (%)	Qualifier
Cl2(8)	0.109	0.10	84		4.9	
Cl3(18)	0.1289	0.10	83		2.4	
Cl3(28)	0.1255	0.10	81		9.0	
Cl4(44)	0.1107	0.10	94		11.2	
Cl4(52)	0.1402	0.10	94		13.6	
Cl4(66)	0.1066	0.10	99		8.4	
Cl5(101)	0.1086	0.10	98		11.9	
Cl5(105)	0.1049	0.10	103		20.3	
Cl5(118)	0.1094	0.10	100		6.2	
Cl6(128)	0.091	0.10	90		9.3	
Cl6(138)	0.0944	0.10	89		10.7	
Cl6(153)	0.1052	0.10	97		7.5	
Cl7(170)	0.0997	0.10	99		10.6	
Cl7(180)	0.1034	0.10	103		10.2	
Cl7(187)	0.0999	0.10	100		10.5	
Cl8(195)	0.0969	0.10	97		8.6	
Cl9(206)	0.0976	0.10	97		10.9	
Cl10(209)	0.0964	0.10	96		11.0	

Surrogate Recoveries (%)

Cl3(34)	81
Cl6(152)	90

Chain-of-custody

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ShpNo SHP-080822-03

Battelle Project No:

Sample Receipt Form

Approved: ☐ **Authorized** ☐

Project Number:
Client: NBH WATER QUALITY
Received by: Arsenault, Joanne
Date/Time Received: Friday, August 22, 2008 12:00 AM
No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered
Tracking Number: Not Recorded
COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal Condition	Container Condition	Temp C	Smps
1 of 1	No Container		None	Not Applicable	Not Applicable	Ambient	6

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): Ambient Temperature Blank used ☐ Yes ☑ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: Unknown

Storage Location: Chem South: Refrigerator - R0003 (Upper Cold **BDO IDs Assigned:** Q3976 - Q3981
Samples logged in by: Arsenault, Joanne **Date/Time:** 08/22/2008 12:00 AM
Approved By: **Approved On:**
Authorized By: **Authorized On:**

Battelle
The Business of Innovation

ShpNo SHP-080822-03

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ **Authorized** ☐

Project Number: **Client:** NBH WATER QUALITY

Received by: Arsenault, Joanne **Date/Time Received:** Friday, August 22, 2008 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q3976	WQ-TPC-01-082108	08/21/08 0:00	08/22/08 17:10	1	WATER		NA	NA	NA	R0003 (Upper C			
Q3977	WQ-TPC-02-082108	08/21/08 0:00	08/22/08 17:11	1	WATER		NA	NA	NA	R0003 (Upper C			
Q3978	WQ-TPC-03-082108	08/21/08 0:00	08/22/08 17:11	1	WATER		NA	NA	NA	R0003 (Upper C			
Q3979	WQ-DPC-01-082108	08/21/08 0:00	08/22/08 17:11	1	WATER		NA	NA	NA	R0003 (Upper C			
Q3980	WQ-DPC-03-082108	08/21/08 0:00	08/22/08 17:11	1	WATER		NA	NA	NA	R0003 (Upper C			
Q3981	WQ-DPC-02-082108	08/21/08 0:00	08/22/08 17:12	1	WATER		NA	NA	NA	R0003 (Upper C			

Total Samples: 6

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Chain of Custody

Proj. No	Proj. Name
3606422	New Bedford Harbor Water Quality

SAMPLERS: Signature: [signature] Amanda Maxenchuk

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	Field ~~BATTELLE~~ ID	Lab ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED 4°C	Total Number of Containers
/21/08	1420	WQ-TPC-01-082108	Q3976	Total PCB from 25-32 NTU		Total PCB								x	1
	1502	WQ-TPC-02-082108	Q3977	Total PCB from 14-20 NTU		Total PCB								x	1
	1520	WQ-TPC-03-082108	Q3978	Total PCB from .2-.3 NTU		Total PCB								x	1
	1420	WQ-DPC-01-082108	Q3979	Total PCB from 25-32 NTU		Dissolved PCB								x	1
	1520	WQ-DPC-03-082108	Q3980	Total PCB from .2-.3 NTU		Dissolved PCB								x	1
	1502	WQ-DPC-02-082108	Q3981	Total PCB from 14-20 NTU		Dissolved PCB								x	1

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	8/21/08	2030	Joanne Donovan	8/22/08	1700
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

ORIGINAL

Battelle
The Business of Innovation

ShpNo SHP-081002-01

Battelle Project No:

Sample Receipt Form

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Wednesday, October 01, 2008 12:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered **Tracking Number:** NA

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal Condition	Container Condition	Temp C	Smps
1 of 1	Cooler	NA	None	Not Applicable	Intact	4.0	9

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 4 Temperature Blank used ☐ Yes ☑ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: Unknown

Storage Location: Field Room II: Refrigerator - R0004 (Lower Col **BDO IDs Assigned:** Q4839 - Q4847

Samples logged in by: Seyfert, Jeannine **Date/Time:** 10/01/2008 12:00 AM

Approved By: **Approved On:**

Authorized By: **Authorized On:**

Battelle
The Business of Innovation

ShpNo SHP-081002-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Wednesday, October 01, 2008 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q4839	WQ-DPC-001-100108	10/01/08 11:23	10/02/08 8:45	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4840	WQ-DPC-001-100108-REP	10/01/08 11:23	10/02/08 8:46	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4841	WQ-TPC-001-100108	10/01/08 11:23	10/02/08 8:46	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4842	WQ-TPC-001-100108-REP	10/01/08 11:23	10/02/08 8:47	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4843	WQ-DPC-002-100108	10/01/08 11:50	10/02/08 8:47	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4844	WQ-TPC-002-100108	10/01/08 11:50	10/02/08 8:48	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4845	WQ-DPC-003-100108	10/01/08 12:15	10/02/08 8:48	5	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4846	WQ-TPC-003-100108	10/01/08 12:15	10/02/08 8:48	5	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4847	EB-100108-01	10/01/08 12:05	10/02/08 8:49	4	WATER	4	NA	NA	NA	R0004 (Lower C			

Total Samples: 9

Ship to: Battelle - Duxbury

Battelle
The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
G606422	NBH - Water Quality

SAMPLERS: Signature

Jessica Tenzar + Anna Murphy

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	Field ID ~~BATTELLE ID~~	Lab ID ~~CLIENT ID~~	BPO LIMS ID	SAMPLE DESCRIPTION	~~TEST~~ PCB - TOTAL	PCB - Dissolved	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
10/1/08	1123	WQ-DPC-001-100108		Q4839	50-65 NTU Station ID: 57 NTU		✓									2
		WQ-DPC-001-100108-REP		Q4840			✓									2
		WQ-TPC-001-100108		Q4841		✓										2
		WQ-TPC-001-100108-REP		Q4842		✓										2
	1150	WQ-DPC-002-100108		Q4843	19-27 NTU, Station ID: 24 NTU		✓									2
	↓	WQ-TPC-002-100108		Q4844		✓										2
	1215	WQ-DPC-003-100108		Q4845	3.8 NTU, Station ID: N. Ref ex volume for MS/MSD		✓									5
	↓	WQ-TPC-003-100108		Q4846	↓ ↓	✓										5
↓	1205	EB-100108-01		Q4847	Equipment Blank	✓	✓									4

Relinquished by:	Date/Time	Received by:	Date/Time
Jessica M Tenzar	10/1/08 1612	Jeannine Seyfert	10/1/08 1612

Comments:

ORIGINAL

Appendix E

Toxicity Testing Data

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Biomonitoring of Surface Water Samples
New Bedford Harbor
New Bedford, Massachusetts

Fall 2008

Prepared for

Battelle
397 Washington Street
Duxbury, Massachusetts 02332

Prepared by

EnviroSystems, Incorporated
1 Lafayette Road
Hampton, New Hampshire 03843

August-October 2008
Reference Number: Battele 17629, 17699

Biomonitoring of Surface Water Samples
New Bedford Harbor, New Bedford, Massachusetts

Fall 2008

1.0 INTRODUCTION

This report provides a summarization of data generated from a series of acute and chronic exposure screening assays evaluating surface water samples collected from New Bedford Harbor. Toxicity tests were conducted on grab surface water samples collected from the specified areas in the harbor. Assay design included a laboratory control treatment and one or more surface water samples. Samples were evaluated "As Received" without dilutions. Assays were conducted based on water quality levels in the vicinity of dredging operations. Samples were collected by Battelle personnel from the Duxbury, Massachusetts office. Testing was based on programs and protocols developed by the US EPA (2002) and included the following assays; modified 2 day acute and 7 day chronic assays conducted with the mysid shrimp, *Americamysis bahia*, and the red macro alga, *Champia parvula*, and 60 minute chronic fertilization assays conducted with the purple sea urchin, *Arbacia punctulata*. All mysid and urchin fertilization assays and the acute survival portion of the algal assays were conducted by ESI at its Hampton, New Hampshire facility. Additionally, the algal assays were repeated by the Saskatchewan Research Council, SRC, Saskatoon, Saskatchewan, Canada.

2.0 MATERIALS AND METHODS

2.1 General Methods

Toxicological and analytical protocols used in this program followed procedures primarily designed by the EPA to provide standard approaches for the evaluation of toxicological effects of discharges on aquatic organisms, and for the analysis of water samples.

2.2 Test Species

A. bahia, ≤5 days, were obtained from cultures maintained by Aquatic Research Organisms (ARO), Hampton, New Hampshire. Juvenile shrimp were collected daily, isolated, and placed in a rearing tank for up to 6 days. Holding tanks were maintained in a flow-through culture mode at a temperature of 25±2°C. At the start of the assays the mysids were 7 days old. Juveniles were fed ≤24 hour old brine shrimp on a daily basis. Water temperature, salinity, and pH were monitored on a daily basis. Prior to testing, organisms were siphoned from the rearing tanks to a holding vessel, and then transferred to test chambers using a large bore pipet, minimizing the amount of water added to test solutions.

A. punctulata adults were from cultures maintained by ESI. Original stock was obtained from commercial supply. Male and female urchins are maintained in separate chambers as recommended by protocol (EPA 2002) and ESI. Adult urchins were induced to spawn by the injection of a potassium chloride solution. The viability of gametes obtained was determined prior to their addition to the test solutions. Eggs and/or sperm that would not result in a fertilized egg were rejected from the pool of gametes used in the assay.

C. parvula biomass was obtained from stock cultures maintained by the Saskatchewan Research Council. Original stocks were obtained from the University of Texas algal collection. The male and female plants are maintained in separate culture vessels under sterile conditions. Algal cultures were maintained on an orbital shaker (100 rpm) at 23±2°C under 16 hour light : 8 hours dark at 40 to 75 foot candles light intensity. Cultures are "cropped" and transferred to fresh nutrient solutions on a weekly basis.

2.3 Surface Water Samples and Laboratory Control Water

Grab surface water samples were collected by Battelle staff on three occasions in the Harbor, Table 1. Samples were placed in polyethylene cubitainers for shipment to the laboratory. Two, 2.5 gallon cubitainers were collected for each of the chronic assays. Prior to testing, samples were evaluated to document salinity, conductivity, and total residual chlorine. Total residual chlorine was measured by amperometric titration (MDL

0.05 mg/L). Prior to use in the assays, the salinity of the samples was adjusted, if necessary, to predetermined levels using artificial sea salts for *A. bahia* and *A. punctulata* assays, and GP-2 salts (EPA 2002) for the *C. parvula* assays. The salinity of samples for the *A. bahia* acute and chronic exposure assays were adjusted to 25±2‰ while samples used for the *A. punctulata* and *C. parvula* assays were adjusted to 30±2‰. Samples with "as received" salinity above these levels were not adjusted.

Laboratory control water used for mysid and sea urchin assays was collected from the Hampton/Seabrook Estuary. This water is classified as SA-1 and has been used to culture marine test organisms since 1981. The laboratory control water used in the algal assay, collected from Rye, New Hampshire, is the same water used in culture maintenance. Prior to use, seawater used in the algal assays was filtered through glass fiber filters and sterilized. Dilution water used in the algal assays conducted by SRC was natural seawater collected from the West Coast of Canada. Salinity of the surface water samples was adjusted using commercial sea salts.

2.4 Bioassays

2.4.1 *Americamysis bahia* Modified Acute and Chronic Exposure Bioassays

Modified acute and chronic exposure screening assays were conducted in a static renewal test mode with renewals made at 24-hour intervals. The 7 day assays were conducted at a temperature of 26±1°C with a photoperiod of 16:8 hours light:dark. Mysids were maintained in 250 mL beakers containing 150 mL of test solution. Approximately 100 mL of the test solution were replaced each day. The assay incorporated 8 replicates with 5 organisms/replicate. Survival and dissolved oxygen were measured daily in each replicate prior to test solution renewal. Salinity, temperature and pH were recorded in a composite sample of the "old" test solution and in the "new" test solution prior to being added to the test chamber. Incubator temperatures were also recorded on a daily basis.

During the test, mysids were fed $\leq$24 hour old *Artemia* nauplii. On Day 7 of the assay, surviving mysids were removed from test solutions, rinsed to remove any surface detritus and salts, and transferred to tared foils and dried for 24 hours at 103°C. Foils were weighed to the nearest 0.01 mg. Mean dry weights per individual were obtained by dividing the net dry weight of all surviving organisms by the number of organisms added at the start of the assay.

2.4.2 *Arbacia punctulata* Chronic Exposure Fertilization Assays

Gametes were obtained by potassium chloride injection to induce spawning. Sperm were collected dry, diluted to achieve a concentration of approximately 5.0×10^7 sperm/mL in the surface water treatments. Actual sperm concentrations are provided on laboratory bench sheets in Appendix A. Sperm solutions were added to 5 mL aliquots of each sample being evaluated and allowed to remain in the test solutions for 60 minutes before the addition of unfertilized eggs. Each treatment incorporated a total of four (4) replicates. After 20 minutes exposure, the assay was terminated by the addition of 0.2 mL of preservative. Aliquots of preserved solution were counted to determine numbers of fertilized and unfertilized eggs. Fertilization was accepted based on the presence or absence of a fertilization membrane around the egg.

2.4.3 *Champia parvula* Modified Acute and Chronic Exposure Assays

The 7 day red algae assay was conducted with a 2 day exposure period to the surface waters and laboratory control treatments. Each treatment used four replicates with five female branches and one male branch per replicate. Temperature was maintained at 23±1°C. The light source was cool white and fluorescent bulbs set on a 16:8 hours light:dark cycle, with a light intensity of 40 to 75 foot candles. Light intensity was checked at the start of each assay. Temperatures were monitored on a daily basis. Test chambers were 200 mL borosilicate glass fleakers. After 2 days exposure, female branch tips were transferred to approximately 100 mL of recovery medium with added nutrients and allowed to recover and mature for 5 days. During transfer, plants were examined to determine the physical condition of the individual branches. Branches showing signs of degeneration were noted and used to establish an acute endpoint. After the recovery period, the number of cystocarps (reproductive bodies) on each female branch were counted.

2.5 Data Analysis

Statistical analysis of acute and chronic exposure data was completed using CETIS, Comprehensive Environmental Toxicity Testing System, software. The program computes acute and chronic exposure endpoints based on EPA decision tree guidelines specified in individual test methods. For chronic exposure endpoints statistical significance was accepted at $\propto$ <0.05.

2.6 Quality Control

As part of the laboratory quality control program, standard reference toxicant assays are conducted on a regular basis for each test species. These results, summarized in Table 7, provide relative health and response data while allowing for comparison with historic data sets.

2.7 Protocol Deviations and Unacceptable Assays

Review of data collected from the three sets of assays conducted during the monitoring period documented no protocol deviations.

3.0 RESULTS SUMMARY

Table 2 provides a summary of test acceptability for the three rounds of assays conducted during this monitoring period. Tables 3-5 provide summaries of survival, growth, development and reproduction endpoints and associated statistical analyses. Table 6 provides a summary of basic water quality data associated with the assays. Support data, including laboratory bench sheets, are provided in Appendix A.

4.0 REFERENCES

APHA. 1998. *Standard Methods for the Examination of Water and Wastewater*, 20th edition. Washington D.C.

US EPA. 2002. *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms*. Fourth Edition. EPA-821-R-02-012.

US EPA. 2002. *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*. Fourth Edition. EPA-821-R-02-013.

Table 1. Summary of Sample Collection Data. New Bedford Harbor Surface Water Monitoring Program. Fall 2008.

Sample ID	Turbidity (NTU)	Lab Code	Collected		Received		Temperature °C
WQ-TOX-001-082108	25-32	17629-001	08/21/07	1420	08/21/07	1640	4
WQ-TOX-002-082108	14-20	17629-002	08/21/07	1502	08/21/07	1640	4
WQ-TOX-003-082108	0.2-0.3	17629-003	08/21/07	1520	08/21/07	1640	4
WQ-TOX-001-100108	57	17699-001	10/01/08	1123	10/01/08	1630	4
WQ-TOX-002-100108	24	17699-002	10/01/08	1150	10/01/08	1630	4
WQ-TOX-003-100108	3.8	17699-003	10/01/08	1215	10/01/08	1630	4

Table 2. Summary of Assay Acceptability. New Bedford Harbor Surface Water Monitoring Program. Fall 2008.

	Americamysis bahia		*Arbacia punctulata*	*Champia parvula*	
Lab Code	Acute Exposure	Chronic Exposure	Chronic Exposure	Acute Exposure	Chronic Exposure
17629-001	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
17629-002	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
17629-003	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
17699-001	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
17699-002	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
17699-003	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

Table 3. Endpoint Summary Table - New Bedford Harbor Water Quality Monitoring August 21, 2008 Sampling Event. New Bedford Harbor Surface Water Monitoring Program. Fall 2008.

Sample ID	Reps	Mean	Min	Max	CV	Significant Difference vs			
						p Value	Lab	p Value	Ref
Arbacia punctulata			Portion Fertilized						
Lab Control	4	88.7%	87.7%	90.1%	1.12%	-	-	-	-
WQ-TOX-003 Ref		34.1%	19.7%	44.9%	33.21%		YES	-	-
WQ-TOX-002		36.2%	32.5%	41.3%	10.26%		YES		YES
WQ-TOX-001		56.2%	55.1%	58.0%	2.41%		YES		YES
Americamysis bahia									
			Day 2 Survival						
Lab Control	8	97.5%	80.0%	100.0%	7.25%	-	-	-	-
WQ-TOX-003 Ref		87.5%	80.0%	100.0%	11.83%	0.0203	YES	-	-
WQ-TOX-002		100.0%	100.0%	100.0%	0.00%	1.0000	NO	1.0000	NO
WQ-TOX-001		100.0%	100.0%	100.0%	0.00%	1.0000	NO	1.0000	NO
			Day 7 Survival						
Lab Control	8	95.0%	80.0%	100.0%	9.75%	-	-	-	-
WQ-TOX-003 Ref		85.0%	60.0%	100.0%	16.64%	0.0583	NO	-	-
WQ-TOX-002		92.5%	80.0%	100.0%	11.19%	0.4992	NO	0.8752	NO
WQ-TOX-001		87.5%	60.0%	100.0%	20.94%	0.2538	NO	0.7292	NO
			Day 7 Dry Weight Biomass - mg						
Lab Control	8	0.2170	0.1840	0.2420	9.51%	-	-	-	-
WQ-TOX-003 Ref		0.3215	0.2080	0.5980	45.37%	0.9677	NO	-	-
WQ-TOX-002		0.2630	0.1920	0.3640	22.80%	0.9703	NO	0.1559	NO
WQ-TOX-001		0.3012	0.2120	0.3840	18.79%	0.9993	NO	0.3599	NO
Champia parvula									
			Day 2 Survival						
Lab Control	4	100.0%	100.0%	100.0%	0.00%	-	-	-	-
WQ-TOX-003 Ref		100.0%	100.0%	100.0%	0.00%	0.5000	NO	-	-
WQ-TOX-002		100.0%	100.0%	100.0%	0.00%	0.5000	NO	0.5000	NO
WQ-TOX-001		100.0%	100.0%	100.0%	0.00%	0.5000	NO	0.5000	NO
			Day 7 Mean # Cystocarps						
Lab Control	4	10.53	9.4	11.4	9.74%	-	-	-	-
WQ-TOX-003 Ref		4.90	3.8	6.4	23.68%	0.0006	YES	-	-
WQ-TOX-002		0.10	0.0	0.2	115.50%	0.0016	YES	0.0001	YES
WQ-TOX-001		0.00	0.0	0.0	0.00%	0.0016	YES	0.0001	YES

Table 3. Endpoint Summary Table - New Bedford Harbor Water Quality Monitoring October 01, 2008 Sampling Event. New Bedford Harbor Surface Water Monitoring Program. Fall 2008.

Sample ID	Reps	Mean	Min	Max	CV	Significant Difference vs			
						p Value	Lab	p Value	Ref
Arbacia punctulata				Portion Fertilized					
Lab Control	4	98.8%	97.1%	100.0%	1.24%	-	-	-	-
WQ-TOX-003 Ref		93.3%	91.7%	95.3%	1.64%	0.0010	YES	-	-
WQ-TOX-002		83.9%	80.4%	87.3%	3.93%	0.0000	YES	0.0007	YES
WQ-TOX-001		95.6%	94.4%	97.1%	1.33%	0.0060	YES	0.9659	NO
Americamysis bahia									
				Day 2 Survival					
Lab Control	8	97.5%	80.0%	100.0%	7.25%	-	-	-	-
WQ-TOX-003 Ref		100.0%	100.0%	100.0%	0.00%	0.6395	NO	-	-
WQ-TOX-002		97.5%	80.0%	100.0%	7.25%	0.4796	NO	0.3605	NO
WQ-TOX-001		92.5%	60.0%	100.0%	16.09%	0.3227	NO	0.2209	NO
				Day 7 Survival					
Lab Control	8	97.5%	80.0%	100.0%	7.25%	-	-	-	-
WQ-TOX-003 Ref		97.5%	80.0%	100.0%	7.25%	0.4796	NO	-	-
WQ-TOX-002		97.5%	80.0%	100.0%	7.25%	0.4796	NO	0.4796	NO
WQ-TOX-001		87.5%	40.0%	100.0%	24.24%	0.1911	NO	0.1911	NO
				Day 7 Dry Weight Biomass - mg					
Lab Control	8	No data available - see note 1 below				-	-	-	-
WQ-TOX-003 Ref						-	-	-	-
WQ-TOX-002						-	-	-	-
WQ-TOX-001						-	-	-	-
Champia parvula									
				Day 2 Survival					
Lab Control	4	100.0%	100.0%	100.0%	0.00%	-	-	-	-
WQ-TOX-003 Ref		100.0%	100.0%	100.0%	0.00%	0.5000	NO	-	-
WQ-TOX-002		100.0%	100.0%	100.0%	0.00%	0.5000	NO	0.5000	NO
WQ-TOX-001		100.0%	100.0%	100.0%	0.00%	0.5000	NO	0.5000	NO
				Day 7 Mean # Cystocarps					
Lab Control	4	33.10	27.4	39.4	18.10%	-	-	-	-
WQ-TOX-003 Ref		17.10	6.4	24.6	46.87%	0.0186	YES	-	-
WQ-TOX-002		6.15	1.8	8.8	53.35%	0.0001	YES	0.0024	YES
WQ-TOX-001		2.70	1.0	4.6	59.72%	0.0000	YES	0.0062	YES

Note 1. No data available, weight boats with dry organisms dropped by technician prior to obtaining dry weights. Not able to recover dry organisms for weighing.

Table 4. Summary of "As Received" Sample Physical and Chemical Characteristics. New Bedford Harbor Surface Water Monitoring Program. Fall 2008.

Sample ID	Lab Code	Ammonia (mg/L)	pH (SU)	Salinity (‰)	Total Residual Chlorine (mg/L)
WQ-TOX-001-082108	17629-001	<0.1	7.49	29	<0.05
WQ-TOX-002-082108	17629-002	0.22	7.42	29	<0.05
WQ-TOX-003-082108	17629-003	<0.1	7.43	28	<0.05
WQ-TOX-001-100108	17699-001	<0.1	7.58	25	<0.05
WQ-TOX-002-100108	17699-002	<0.1	7.68	25	<0.05
WQ-TOX-003-100108	17699-003	<0.1	7.78	24	<0.05

Table 5. Reference Toxicant Summary. New Bedford Harbor Surface Water Monitoring Program. Fall 2008.

Date	Endpoint		Value	Historic Mean/ Central Tendency	Acceptable Range	Reference Toxicant
A. bahia						
08/28/08	Survival	LC-50	20.2	20.9	15.6 - 26.2	SDS (mg/L)
09/10/08	Survival	LC-50	19.1	21.1	15.8 - 26.4	SDS (mg/L)
10/09/08	Survival	LC-50	20.7	20.7	16.1 - 25.3	SDS (mg/L)
07/22/08	Survival	C-NOEC	5.0	5.0	2.5 - 10.0	SDS (mg/L)
07/22/08	Growth	C-NOEC	5.0	5.0	2.5 - 10.0	SDS (mg/L)
10/07/08	Survival	C-NOEC	5.0	5.0	2.5 - 10.0	SDS (mg/L)
10/07/08	Growth	C-NOEC	5.0	5.0	2.5 - 10.0	SDS (mg/L)
A. Punctulata						
08/28/08	Fertilization	C-NOEC	1.0	10.0	5.0 - 20.0	Copper (µg/L)
09/25/08	Fertilization	C-NOEC	1.0	10.0	5.0 - 20.0	Copper (µg/L)
10/16/08	Fertilization	C-NOEC	1.0	10.0	5.0 - 20.0	Copper (µg/L)
08/28/08	Fertilization	IC-25	3.8	29.7	0.0 - 74.8	Copper (µg/L)
09/25/08	Fertilization	IC-25	8.3	28.9	0.0 - 76.2	Copper (µg/L)
10/16/08	Fertilization	IC-25	9.5	26.8	0.0 - 74.9	Copper (µg/L)
Champia parvula						
10/10/08	Reproduction	IC-50	1.05	1.25	1.05 - 1.48	SDS (mg/L)

Mean and Acceptable Ranges based on most recent 20 reference toxicant assays (NELAP standard)

APPENDIX A
SUPPORT DATA

Contents	# Pages
Methods Summary	1
Study 17629: Sample Date 08/21/08	
A. bahia Bench Sheets & Statistical Analysis Report	27
A. punctulata Bench Sheets and Statistical Analysis Report	8
C. parvula Bench Sheets and Statistical Analysis Report	9
Water Quality Bench Sheets and Dilution Prep Sheets	5
Study 17699: Sample Date 10/01/08	
A. bahia Bench Sheets & Statistical Analysis Report	34
A. punctulata Bench Sheets and Statistical Analysis Report	8
C. parvula Bench Sheets and Statistical Analysis Report	11
Water Quality Bench Sheets and Dilution Prep Sheets	5
Sample Receipt Records	2
Chain of Custody	2
Total Appendix Pages	112

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METHODS USED IN NPDES PERMIT BIOMONITORING TESTING

Parameter	Method
Acute Exposure Bioassays:	
Ceriodaphnia dubia, Daphnia pulex	EPA-821-R-02-012
Pimephales promelas	EPA-821-R-02-012
Americamysis bahia	EPA-821-R-02-012
Menidia beryllina, Cyprinodon variegatus	EPA-821-R-02-012
Chronic Exposure Bioassays:	
Ceriodaphnia dubia	EPA-821-R-02-013 1002.0
Pimephales promelas	EPA-821-R-02-013 1000.0
Cyprinodon variegatus	EPA-821-R-02-014 1004.0
Menidia beryllina	EPA-821-R-02-014 1006.0
Arbacia punctulata	EPA-821-R-02-014 1008.0
Champia parvula	EPA-821-R-02-014 1009.0
Trace Metals:	
Trace Metals	EPA 200.7/SW 6010 and EPA 200.8/SW 6020
Hardness	Standard Methods 20th Edition - Method 2340 B
Wet Chemistries:	
Alkalinity	EPA 310.2
Chlorine, Residual	Standard Methods 20th Edition - Method 4500CLD
Total Organic Carbon	Standard Methods 20th Edition - Method 5310C
Specific Conductance	Standard Methods 20th Edition - Method 2510B
Nitrogen - Ammonia	Standard Methods 20th Edition - Method 4500NH3G
pH	Standard Methods 20th Edition - Method 4500H+B
Solids, Total (TS)	Standard Methods 20th Edition - Method 2540 B
Solids, Total Suspended (TSS)	Standard Methods 20th Edition - Method 2540 D
Solids, Total Dissolved (TDS)	Standard Methods 20th Edition - Method 2540 C
Dissolved Oxygen	Standard Methods 20th Edition - Method 4500-O G

Americamysis bahia 7 DAY CHRONIC ASSAY
SURVIVAL & OLD WATER QUALITIES

STUDY:	CLIENT:	LOCATION:	LAB CONTROL:	ORGANISM
17629	Battelle	NEW BEDFORD	HAMPTON ESTUARY	BATCH/LOT#

		NUMBER OF SURVIVORS								OLD DISSOLVED OXYGEN (mg/L)						
SAMPLE	Rep	0	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Lab Control	A	5	5	5	5	5	~~4~~ 5	5	5	5.7	5.9	5.5	5.0	6.1	5.4	5.7
	B	5	5	5	5	5	5	5	5	5.7	6.1	5.5	4.8	6.1	5.2	5.5
	C	5	5	5	5	5	5	5	4	5.2	6.3	5.5	4.9	6.0	5.3	5.4
	D	5	5	5	5	5	5	5	5	5.1	6.3	5.5	5.0	5.9	5.4	5.4
	E	5	5	5	5	5	5	5	5	4.6	6.2	5.5	5.2	5.9	5.5	5.4
	F	5	5	5	5	5	5	5	5	4.7	6.0	5.4	5.1	5.7	5.5	5.4
	G	5	5	5	5	5	5	5	5	4.6	6.1	5.2	5.2	5.7	5.5	5.3
	H	5	4	4	4	4	4	4	4	4.6	6.1	5.1	5.4	5.8	5.6	5.4
-001	A	5	5	5	5	5	5	5	5	4.4	6.0	5.1	4.5	6.1	5.7	5.5
	B	5	5	5	4	4	4	3	3	4.4	5.9	5.2	4.9	5.8	5.5	5.3
	C	5	5	5	5	5	5	5	5	4.4	5.9	5.2	4.9	5.8	5.5	5.2
	D	5	5	5	5	5	5	4	4	4.5	6.0	5.2	5.0	5.7	5.5	5.2
	E	5	5	5	4	4	3	3	3	4.4	5.6	5.2	4.8	5.9	5.7	5.3
	F	5	5	5	5	5	5	5	5	4.4	5.8	5.3	5.0	5.8	5.5	5.1
	G	5	5	5	5	5	5	5	5	4.5	5.8	5.2	5.0	5.7	5.3	5.1
	H	5	5	5	5	5	5	5	5	4.4	5.8	5.3	5.2	5.8	5.5	5.1
-002	A	5	5	5	5	5	5	5	5	4.9	6.0	5.5	5.5	6.0	5.7	5.0
	B	5	5	5	5	5	5	5	5	4.8	6.0	5.3	5.3	6.0	5.6	5.3
	C	5	5	5	5	5	5	5	5	4.5	5.8	5.2	4.8	5.9	5.6	5.3
	D	5	5	5	5	5	5	5	4	4.6	5.8	5.1	5.1	5.8	5.6	5.2
	E	5	5	5	5	5	5	5	5	4.9	6.0	5.2	4.3	5.7	5.7	5.4
	F	5	5	5	5	5	5	5	5	4.8	6.1	5.1	4.4	5.5	5.6	5.4
	G	5	5	5	5	5	5	5	4	4.6	6.2	5.0	4.7	5.5	5.6	5.1
	H	5	5	5	4	4	4	4	4	5.0	6.1	5.1	5.1	5.5	5.6	5.2
INC TEMP:		25	25	25	25	25	25	25	25							
DATE:		8/24/08	8/23	8/24	8/25	8/26	8/27	8/28	8/29							
TIME:		1305	1530	1055	1550	0930	1215	1200	1555							
INITIALS:		SJ	CM	LB	SJ	APL	SJ	APL	LB							

Americamysis bahia 7 DAY CHRONIC ASSAY
SURVIVAL & OLD WATER QUALITIES

STUDY: 11629	CLIENT: Battelle	LOCATION: NEW BEDFORD	LAB CONTROL: HAMPTON ESTUARY	ORGANISM BATCH/LOT#

		NUMBER OF SURVIVORS								OLD DISSOLVED OXYGEN (mg/L)						
SAMPLE	Rep	0	1	2	3	4	5	6	7	1	2	3	4	5	6	7
-003	A	5	5	4	4	4	4	4 (B) 3 3 4		5.8	6.1	5.1	4.4	5.6	5.7	5.3
	B	5	5	5	5	5	5	5	5	5.8	6.0	5.0	4.3	5.6	5.7	5.2
	C	5	4	4	4	4	4	4	4	4.6	6.0	5.0	4.3	5.8	5.8	5.2
	D	5	5	4	4	4	4	4	4	4.6	6.1	4.9	4.6	5.7	5.9	4.9
	E	5	5	4	4	4	4	4	4	5.6	6.1	5.1	5.0	5.8	5.9	5.1
	F	5	5	4	4	4	4	4	4	4.9	6.0	5.2	5.1	5.7	6.0	5.3
	G	5	5	5	5	5	5	5	5	4.9	5.9	5.1	4.1	5.6	5.8	5.3
	H	5	5	5	5	5	5	5	5	5.1	5.8	4.8	4.4	5.5	5.9	5.2
	A															
	B															
	C															
	D															
	E															
	F															
	G															
	H															
INC TEMP:		25	25	25	25	25	25	25	25							
DATE:		8/22/08	8-23	8/24	8-25	8-26	8/27	8-28	8/29							
TIME:		1305	1530	1655	0930	0930	1215	1200	1555							
INITIALS:		SJ	DM	LB	APL	APL	SJ	APL	LB							

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample No	Sample Date	Receive Date	Sample Age	Client Name	Project
17629-000	01-6030-3695	22 Aug-08 14:00	22 Aug-08 14:00	N/A	Battelle Labs	Ecological Risk Assessme
17629-003	05-4158-6637	21 Aug-08 15:20	21 Aug-08 18:40	22h		
17629-002	08-5309-8454	21 Aug-08 15:02	21 Aug-08 18:40	22h		
17629-001	09-2317-4687	21 Aug-08 14:20	21 Aug-08 18:40	23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
17629-000	Marine Monitoring Samp	New Bedford Harbor Dredge Moni	Laboratory Water Control		
17629-003	Marine Monitoring Samp	New Bedford Harbor Dredge Moni	WQ-TOX-003		
17629-002	Marine Monitoring Samp	New Bedford Harbor Dredge Moni	WQ-TOX-002		
17629-001	Marine Monitoring Samp	New Bedford Harbor Dredge Moni	WQ-TOX-001		

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Test Acceptability

Analysis No	Endpoint	Attribute	Test Stat	Acceptabilty Limits	Overlap	Decision
01-1164-5507	7d Proportion Survived	Control Resp	0.95	0.8 - NL	Yes	Passes acceptability criteria
12-8117-9100	7d Proportion Survived	Control Resp	0.95	0.8 - NL	Yes	Passes acceptability criteria
20-9815-6064	7d Proportion Survived	Control Resp	0.95	0.8 - NL	Yes	Passes acceptability criteria
06-0667-4011	Mean Dry Biomass-mg	Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
12-1684-2765	Mean Dry Biomass-mg	Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
12-3514-5195	Mean Dry Biomass-mg	Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
01-0309-5887	Mean Dry Biomass-mg	PMSD	0.3055	0.11 - 0.37	Yes	Passes acceptability criteria
01-1989-7363	Mean Dry Biomass-mg	PMSD	0.3031	0.11 - 0.37	Yes	Passes acceptability criteria
06-0667-4011	Mean Dry Biomass-mg	PMSD	0.182	0.11 - 0.37	Yes	Passes acceptability criteria
12-1684-2765	Mean Dry Biomass-mg	PMSD	0.1729	0.11 - 0.37	Yes	Passes acceptability criteria
12-3514-5195	Mean Dry Biomass-mg	PMSD	0.4228	0.11 - 0.37	Yes	Fails acceptability criteria

2d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.975	0.9486	1	0.8	1	0.01291	0.07071	7.25%	0.0%
17629-003	8	0.875	0.8363	0.9137	0.8	1	0.0189	0.1035	11.83%	10.26%
17629-002	8	1	1	1	1	1	0	0	0.0%	-2.56%
17629-001	8	1	1	1	1	1	0	0	0.0%	-2.56%

7d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.95	0.9154	0.9846	0.8	1	0.0169	0.09258	9.75%	0.0%
17629-003	8	0.85	0.7972	0.9028	0.6	1	0.02582	0.1414	16.64%	10.53%
17629-002	8	0.925	0.8863	0.9637	0.8	1	0.0189	0.1035	11.19%	2.63%
17629-001	8	0.875	0.8066	0.9434	0.6	1	0.03345	0.1832	20.94%	7.9%

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.217	0.2093	0.2247	0.184	0.242	0.003769	0.02065	9.51%	0.0%
17629-003	8	0.3215	0.267	0.376	0.208	0.598	0.02663	0.1459	45.37%	-48.16%
17629-002	8	0.263	0.2406	0.2854	0.192	0.364	0.01095	0.05997	22.8%	-21.2%
17629-001	8	0.3012	0.2801	0.3224	0.212	0.384	0.01033	0.0566	18.79%	-38.82%

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.2299	0.2194	0.2404	0.194	0.2875	0.00513	0.0281	12.22%	0.0%
17629-003	8	0.3744	0.3232	0.4257	0.212	0.598	0.02507	0.1373	36.67%	-62.84%
17629-002	8	0.2844	0.2637	0.3051	0.21	0.364	0.01013	0.05548	19.51%	-23.68%
17629-001	8	0.3524	0.3262	0.3786	0.254	0.4525	0.01279	0.07008	19.89%	-53.26%

2d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	1	1	1	1	1	1	1	0.8
17629-003	0.8	1	0.8	0.8	0.8	0.8	1	1
17629-002	1	1	1	1	1	1	1	1
17629-001	1	1	1	1	1	1	1	1

7d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	1	1	0.8	1	1	1	1	0.8
17629-003	0.6	1	0.8	0.8	0.8	0.8	1	1
17629-002	1	1	1	0.8	1	1	0.8	0.8
17629-001	1	0.6	1	0.8	0.6	1	1	1

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	0.224	0.194	0.23	0.216	0.242	0.238	0.208	0.184
17629-003	0.21	0.212	0.268	0.208	0.222	0.436	0.598	0.418
17629-002	0.238	0.364	0.288	0.192	0.21	0.32	0.214	0.278
17629-001	0.318	0.266	0.254	0.362	0.212	0.384	0.314	0.3

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	0.224	0.194	0.2875	0.216	0.242	0.238	0.208	0.23
17629-003	0.35	0.212	0.335	0.26	0.2775	0.545	0.598	0.418
17629-002	0.238	0.364	0.288	0.24	0.21	0.32	0.2675	0.3475
17629-001	0.318	0.4433	0.254	0.4525	0.3533	0.384	0.314	0.3

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	03-0969-9106	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:16	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					25.64%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-001	0.4044	1.761	0.096	0.3460	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0019435	0.0019435	1	0.1635	0.6920	Non-Significant Effect
Error	0.1663766	0.0118840	14			
Total	0.1683201	0.0138275	15			

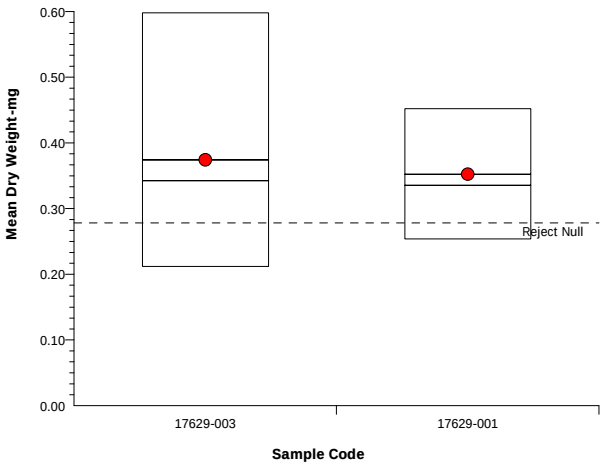
ANOVA Assumptions

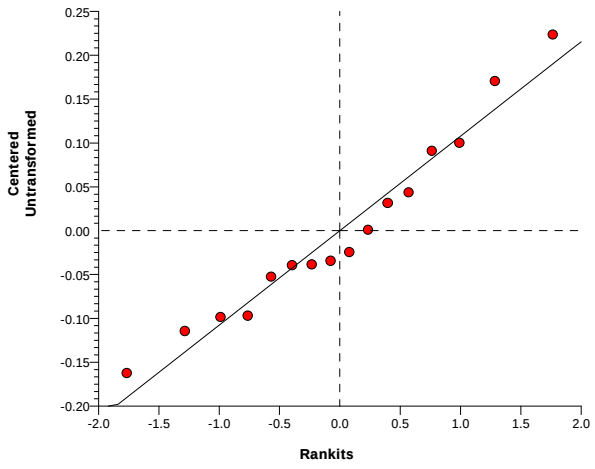
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	3.84	8.885	0.0967	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9567		0.6031	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.3744	0.3222	0.4267	0.212	0.598	0.0255	0.1373	36.67%	0.0%
17629-001	8	0.3524	0.3257	0.3791	0.254	0.4525	0.01301	0.07008	19.89%	5.89%

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	05-9215-7737	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:16	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					24.63%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-002	1.72	1.761	0.09223	0.0537	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.032445	0.032445	1	2.958	0.1075	Non-Significant Effect
Error	0.1535449	0.0109675	14			
Total	0.1859899	0.0434125	15			

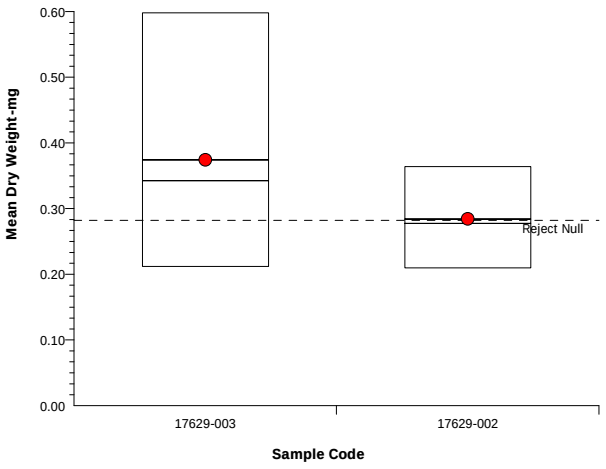
ANOVA Assumptions

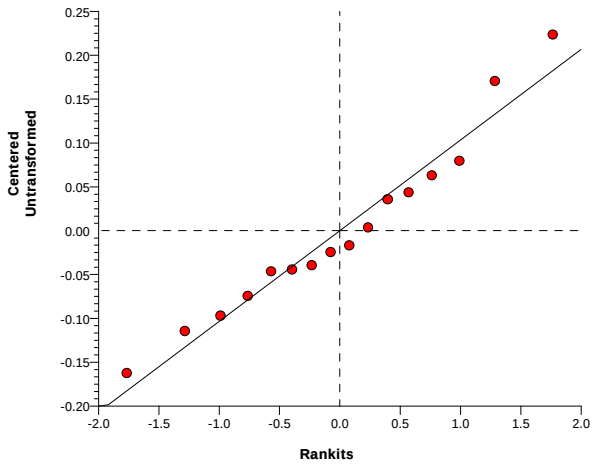
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	6.127	8.885	0.0289	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9598		0.6584	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.3744	0.3222	0.4267	0.212	0.598	0.0255	0.1373	36.67%	0.0%
17629-002	8	0.2844	0.2633	0.3055	0.21	0.364	0.0103	0.05548	19.51%	24.05%

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	15-7062-5725	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:15	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					20.45%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-001	-4.588	1.761	0.04701	0.9998	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.059984	0.059984	1	21.05	0.0004	Significant Effect
Error	0.0399006	0.0028500	14			
Total	0.0998846	0.0628340	15			

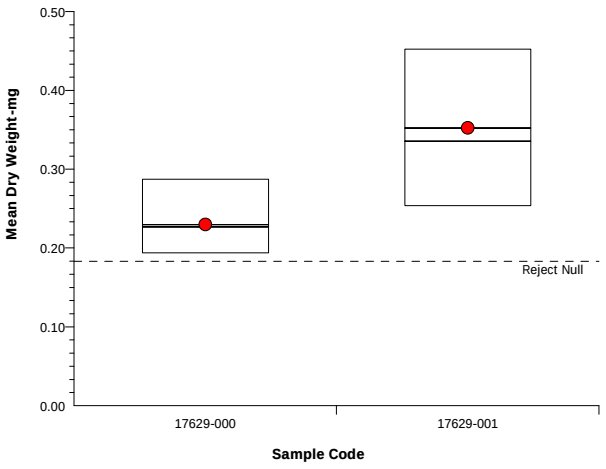
ANOVA Assumptions

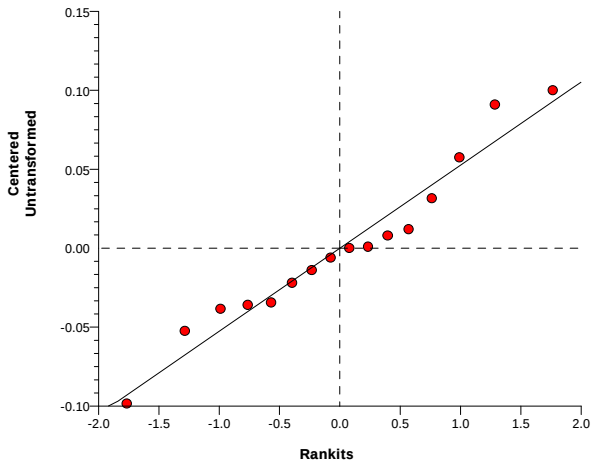
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	6.22	8.885	0.0277	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9584		0.6332	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.2299	0.2192	0.2406	0.194	0.2875	0.005217	0.0281	12.22%	0.0%
17629-001	8	0.3524	0.3257	0.3791	0.254	0.4525	0.01301	0.07008	19.89%	-53.26%

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	08-6048-2432	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:15	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					16.84%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-002	-2.476	1.761	0.03872	0.9867	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0118541	0.0118541	1	6.131	0.0267	Significant Effect
Error	0.0270689	0.0019335	14			
Total	0.038923	0.0137876	15			

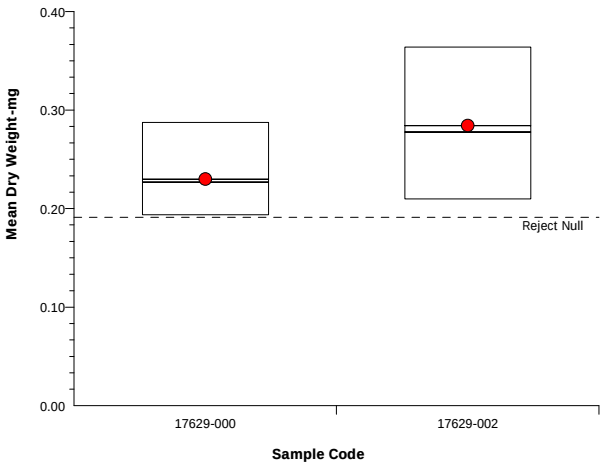
ANOVA Assumptions

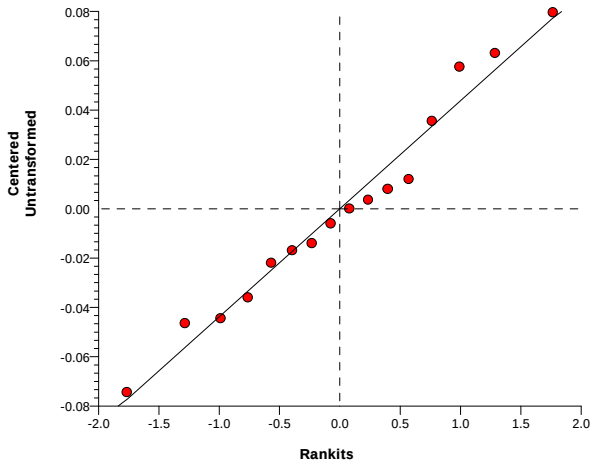
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	3.898	8.885	0.0933	Equal Variances
Distribution	Shapiro-Wilk Normality	0.97		0.8379	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.2299	0.2192	0.2406	0.194	0.2875	0.005217	0.0281	12.22%	0.0%
17629-002	8	0.2844	0.2633	0.3055	0.21	0.364	0.0103	0.05548	19.51%	-23.68%

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	20-6063-8926	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:15	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					37.96%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	-2.916	1.761	0.08728	0.9944	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0835218	0.0835218	1	8.502	0.0113	Significant Effect
Error	0.1375281	0.0098234	14			
Total	0.2210499	0.0933452	15			

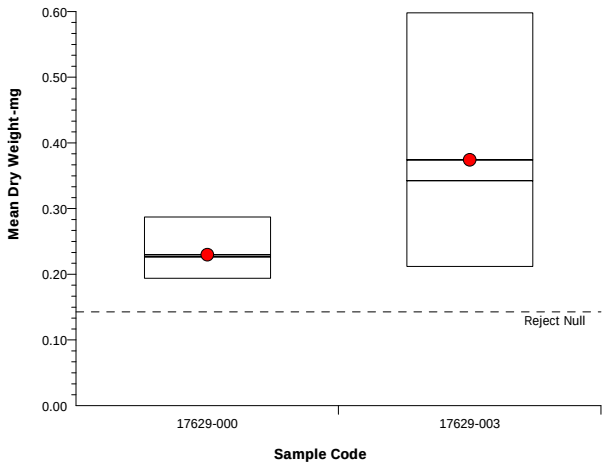
ANOVA Assumptions

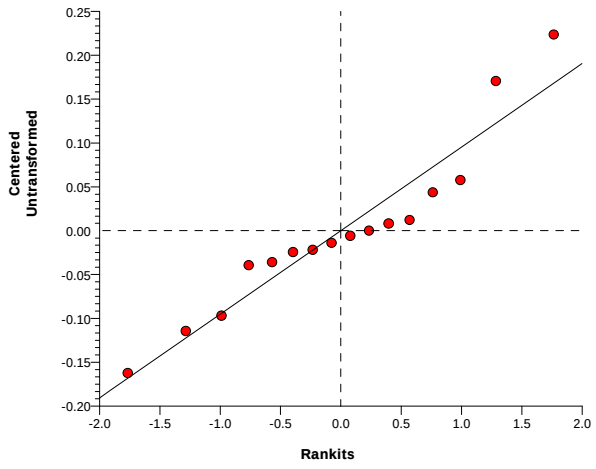
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	23.89	8.885	0.0004	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.9199		0.1679	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.2299	0.2192	0.2406	0.194	0.2875	0.005217	0.0281	12.22%	0.0%
17629-003	8	0.3744	0.3222	0.4267	0.212	0.598	0.0255	0.1373	36.67%	-62.84%

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	01-1989-7363	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:13	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					30.31%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-001	0.3661	1.761	0.09743	0.3599	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	Acceptability Limits	Overlap	Decision
PMSD	0.3031	0.11 - 0.37	Yes	Passes acceptability criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0016404	0.0016404	1	0.134	0.7198	Non-Significant Effect
Error	0.1713662	0.0122404	14			
Total	0.1730065	0.0138808	15			

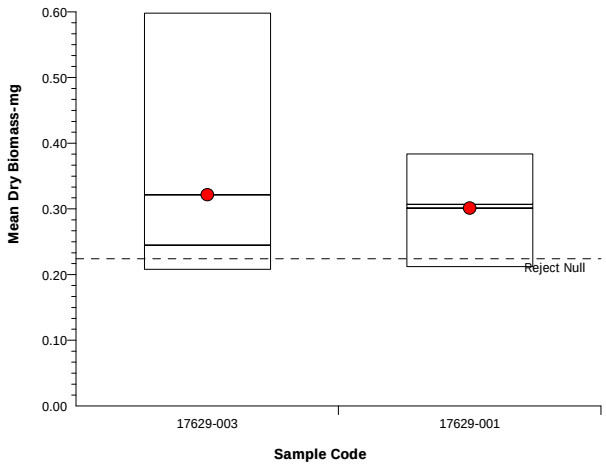
ANOVA Assumptions

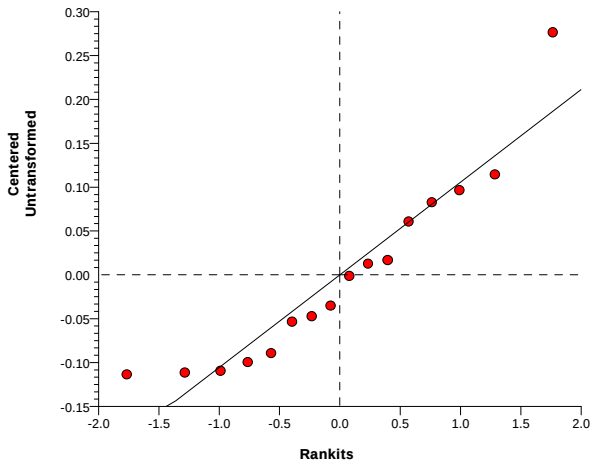
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	6.642	8.885	0.0231	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8958		0.0688	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.3215	0.266	0.377	0.208	0.598	0.02709	0.1459	45.37%	0.0%
17629-001	8	0.3012	0.2797	0.3228	0.212	0.384	0.01051	0.0566	18.79%	6.3%

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	01-0309-5887	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:13	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					30.55%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-002	1.049	1.761	0.09821	0.1559	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	Acceptability Limits	Overlap	Decision
PMSD	0.3055	0.11 - 0.37	Yes	Passes acceptability criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.013689	0.013689	1	1.101	0.3119	Non-Significant Effect
Error	0.1741183	0.0124370	14			
Total	0.1878072	0.026126	15			

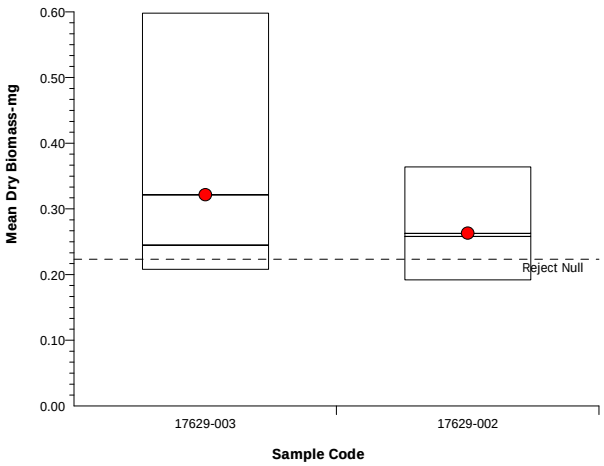
ANOVA Assumptions

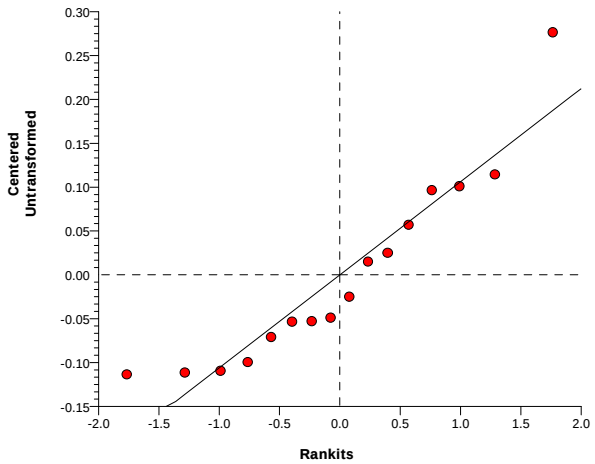
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	5.916	8.885	0.0318	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8894		0.0545	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.3215	0.266	0.377	0.208	0.598	0.02709	0.1459	45.37%	0.0%
17629-002	8	0.263	0.2402	0.2858	0.192	0.364	0.01114	0.05997	22.8%	18.2%

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	12-1684-2765	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:12	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					17.29%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-001	-3.955	1.761	0.03752	0.9993	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	Acceptability Limits	Overlap	Decision
Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
PMSD	0.1729	0.11 - 0.37	Yes	Passes acceptability criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0283922	0.0283922	1	15.64	0.0014	Significant Effect
Error	0.0254070	0.0018148	14			
Total	0.0537992	0.030207	15			

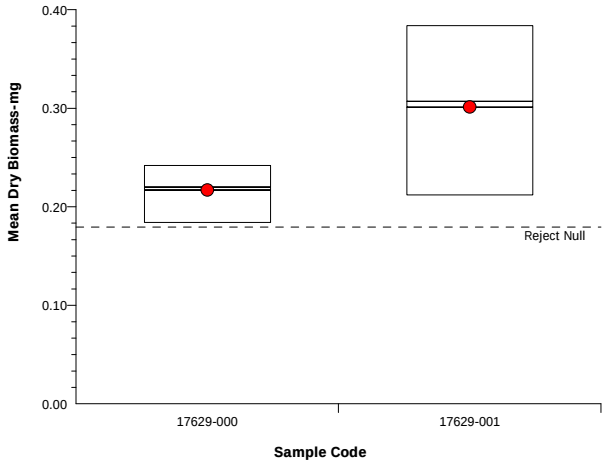
ANOVA Assumptions

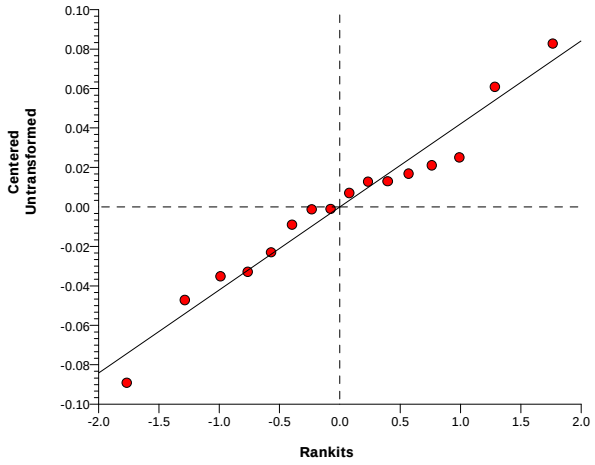
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	7.515	8.885	0.0163	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9717		0.8646	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.217	0.2091	0.2249	0.184	0.242	0.003834	0.02065	9.51%	0.0%
17629-001	8	0.3012	0.2797	0.3228	0.212	0.384	0.01051	0.0566	18.79%	-38.82%

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	06-0667-4011	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:12	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					18.2%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-002	-2.051	1.761	0.0395	0.9703	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	Acceptability Limits	Overlap	Decision
Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
PMSD	0.182	0.11 - 0.37	Yes	Passes acceptability criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0084642	0.0084642	1	4.208	0.0594	Non-Significant Effect
Error	0.0281591	0.0020114	14			
Total	0.0366234	0.0104756	15			

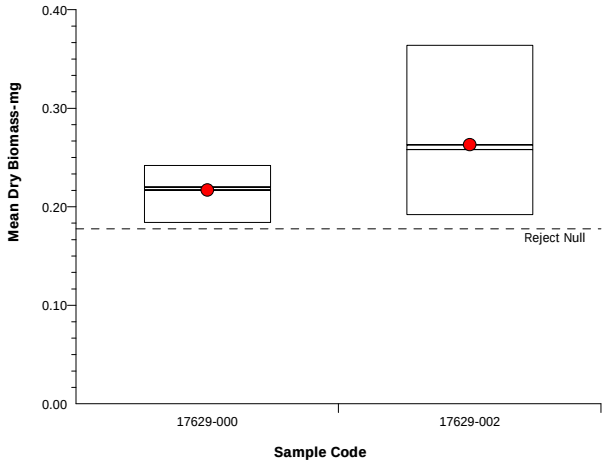
ANOVA Assumptions

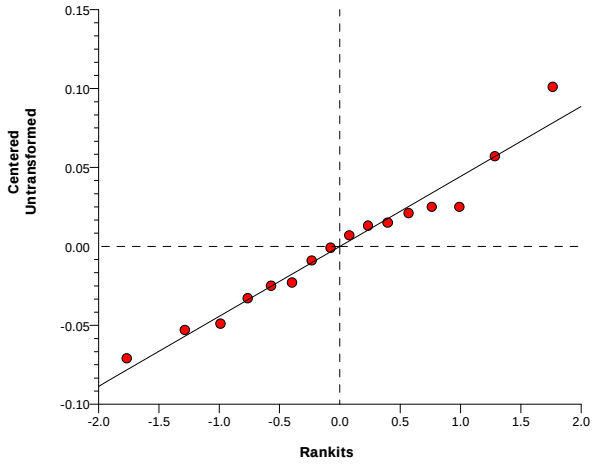
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	8.438	8.885	0.0116	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9669		0.7855	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.217	0.2091	0.2249	0.184	0.242	0.003834	0.02065	9.51%	0.0%
17629-002	8	0.263	0.2402	0.2858	0.192	0.364	0.01114	0.05997	22.8%	-21.2%

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	12-3514-5195	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:12	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					42.28%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	-2.006	1.761	0.09174	0.9677	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	Acceptability Limits	Overlap	Decision
Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
PMSD	0.4228	0.11 - 0.37	Yes	Fails acceptability criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0436815	0.0436815	1	4.025	0.0645	Non-Significant Effect
Error	0.1519266	0.0108519	14			
Total	0.1956081	0.0545334	15			

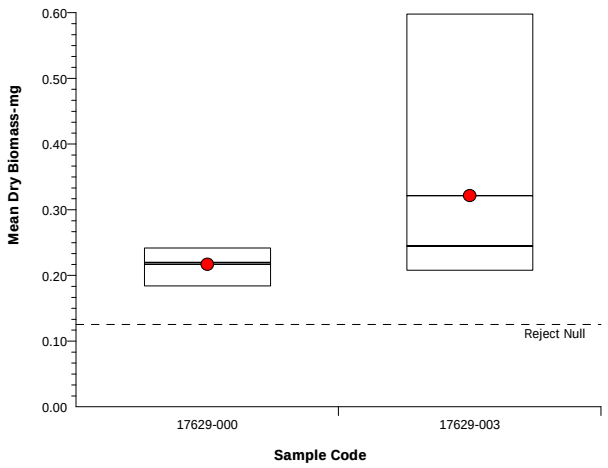
ANOVA Assumptions

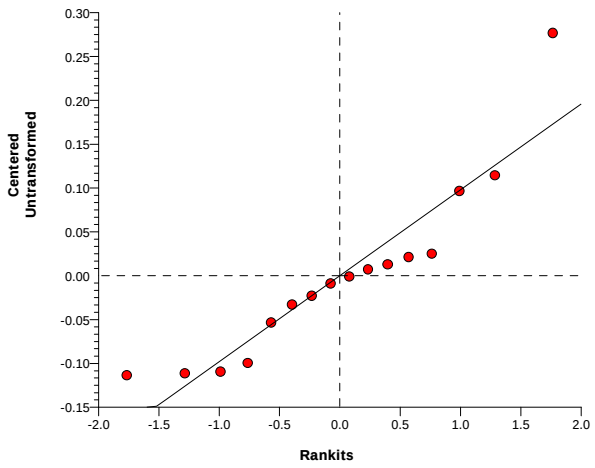
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	49.92	8.885	0.0000	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.8766		0.0343	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.217	0.2091	0.2249	0.184	0.242	0.003834	0.02065	9.51%	0.0%
17629-003	8	0.3215	0.266	0.377	0.208	0.598	0.02709	0.1459	45.37%	-48.16%

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	14-9000-0868	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					16.44%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-003		17629-001	72.5		3	0.7292	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0040703	0.0040703	1	0.114	0.7406	Non-Significant Effect
Error	0.4998225	0.0357016	14			
Total	0.5038928	0.0397719	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.651	8.885	0.5244	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8161		0.0045	Non-normal Distribution

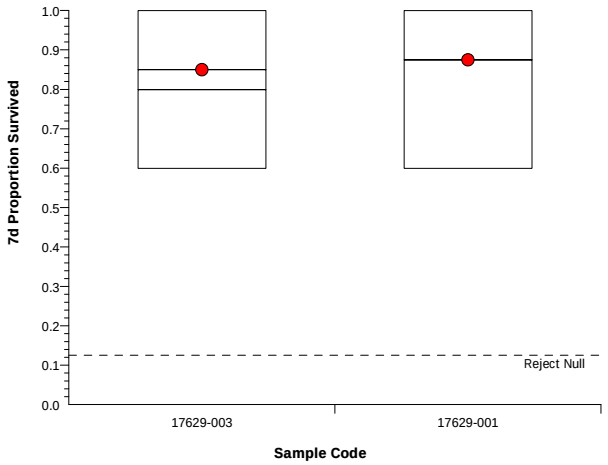
7d Proportion Survived Summary

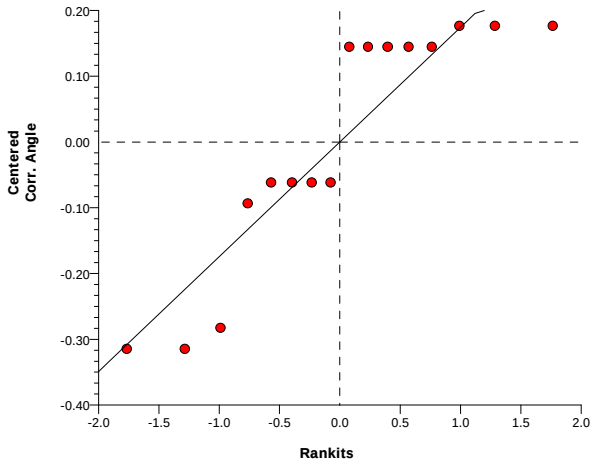
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.85	0.7962	0.9038	0.6	1	0.02626	0.1414	16.64%	0.0%
17629-001	8	0.875	0.8053	0.9447	0.6	1	0.03402	0.1832	20.94%	-2.94%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	1.169	1.106	1.231	0.8861	1.345	0.03048	0.1641	14.04%	0.0%
17629-001	8	1.201	1.121	1.281	0.8861	1.345	0.03916	0.2109	17.56%	-2.73%

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	18-1670-2733	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					12.4%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-002	-1.201	1.761	0.1278	0.8752	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0303927	0.0303927	1	1.443	0.2496	Non-Significant Effect
Error	0.2949017	0.0210644	14			
Total	0.3252944	0.0514571	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.774	8.885	0.4674	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9039		0.0929	Normal Distribution

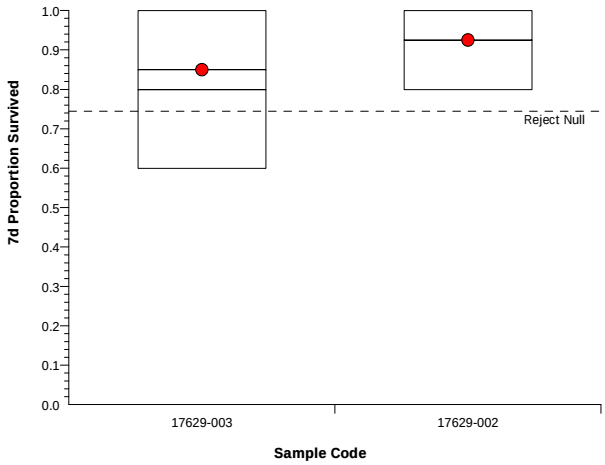
7d Proportion Survived Summary

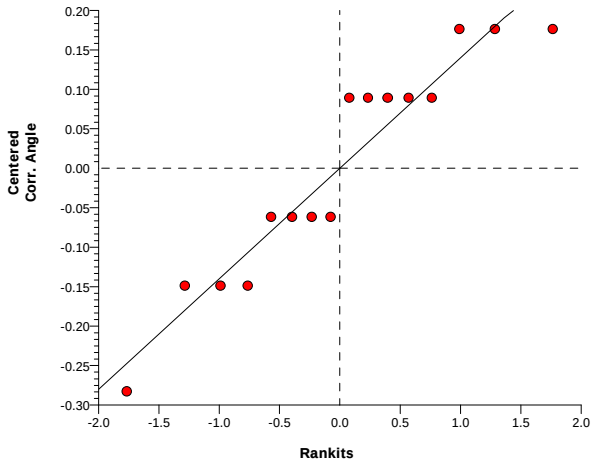
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.85	0.7962	0.9038	0.6	1	0.02626	0.1414	16.64%	0.0%
17629-002	8	0.925	0.8856	0.9644	0.8	1	0.01922	0.1035	11.19%	-8.82%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	1.169	1.106	1.231	0.8861	1.345	0.03048	0.1641	14.04%	0.0%
17629-002	8	1.256	1.209	1.303	1.107	1.345	0.02289	0.1232	9.81%	-7.46%

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	20-9815-6064	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					13.29%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-000		17629-001	62		2	0.2538	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	Acceptability Limits	Overlap	Decision
Control Resp	0.95	0.8 - NL	Yes	Passes acceptability criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0289236	0.0289236	1	1.022	0.3293	Non-Significant Effect
Error	0.3963099	0.0283079	14			
Total	0.4252335	0.0572314	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	3.659	8.885	0.1085	Equal Variances
Distribution	Shapiro-Wilk Normality	0.7966		0.0025	Non-normal Distribution

7d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.95	0.9148	0.9852	0.8	1	0.01719	0.09258	9.75%	0.0%
17629-001	8	0.875	0.8053	0.9447	0.6	1	0.03402	0.1832	20.94%	7.9%

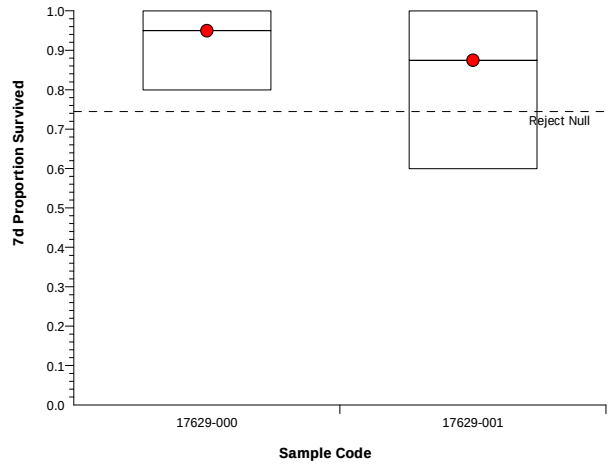
Angular (Corrected) Transformed Summary

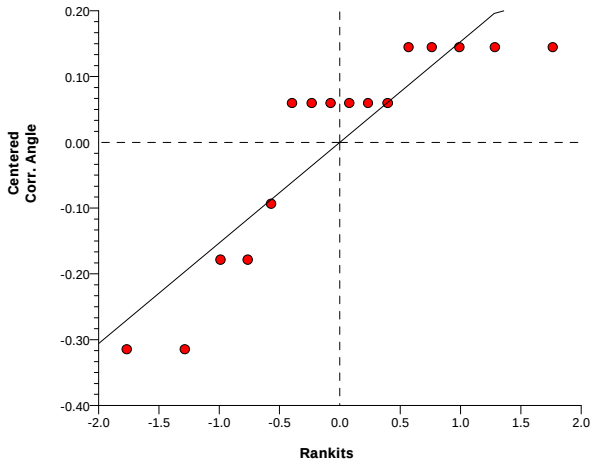
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.286	1.244	1.328	1.107	1.345	0.02047	0.1102	8.57%	0.0%
17629-001	8	1.201	1.121	1.281	0.8861	1.345	0.03916	0.2109	17.56%	6.61%

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	20-9815-6064	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	01-1164-5507	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					9.8%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-000		17629-002	64		2	0.4992	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	Acceptability	Limits	Overlap	Decision
Control Resp	0.95	0.8 - NL		Yes	Passes acceptability criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0035442	0.0035442	1	0.2593	0.6186	Non-Significant Effect
Error	0.1913892	0.0136707	14			
Total	0.1949334	0.0172149	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.25	8.885	0.7760	Equal Variances
Distribution	Shapiro-Wilk Normality	0.6932		0.0001	Non-normal Distribution

7d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.95	0.9148	0.9852	0.8	1	0.01719	0.09258	9.75%	0.0%
17629-002	8	0.925	0.8856	0.9644	0.8	1	0.01922	0.1035	11.19%	2.63%

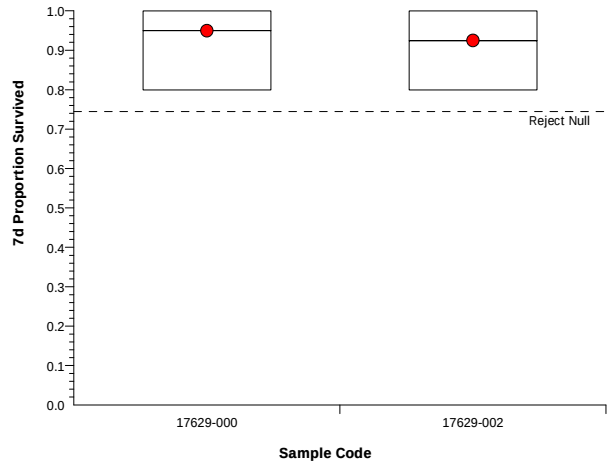
Angular (Corrected) Transformed Summary

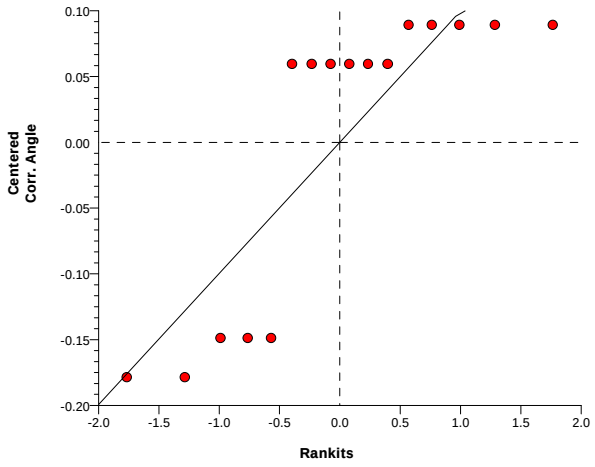
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.286	1.244	1.328	1.107	1.345	0.02047	0.1102	8.57%	0.0%
17629-002	8	1.256	1.209	1.303	1.107	1.345	0.02289	0.1232	9.81%	2.32%

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	01-1164-5507	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	12-8117-9100	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					11.32%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	1.673	1.761	0.1231	0.0583	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	Acceptability Limits	Overlap	Decision
Control Resp	0.95	0.8 - NL	Yes	Passes acceptability criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0546945	0.0546945	1	2.798	0.1166	Non-Significant Effect
Error	0.2736363	0.0195455	14			
Total	0.3283308	0.07424	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	2.217	8.885	0.3154	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9095		0.1144	Normal Distribution

7d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.95	0.9148	0.9852	0.8	1	0.01719	0.09258	9.75%	0.0%
17629-003	8	0.85	0.7962	0.9038	0.6	1	0.02626	0.1414	16.64%	10.53%

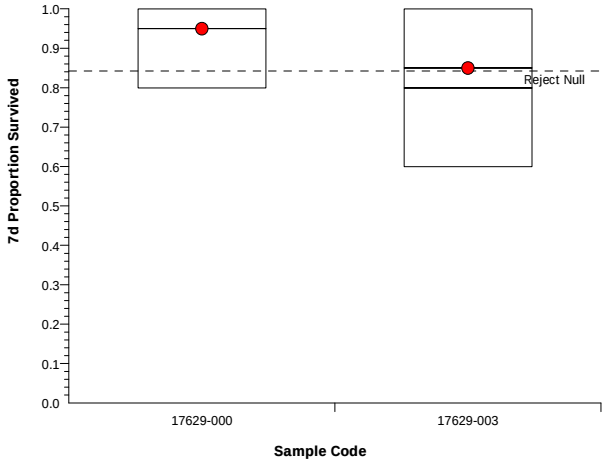
Angular (Corrected) Transformed Summary

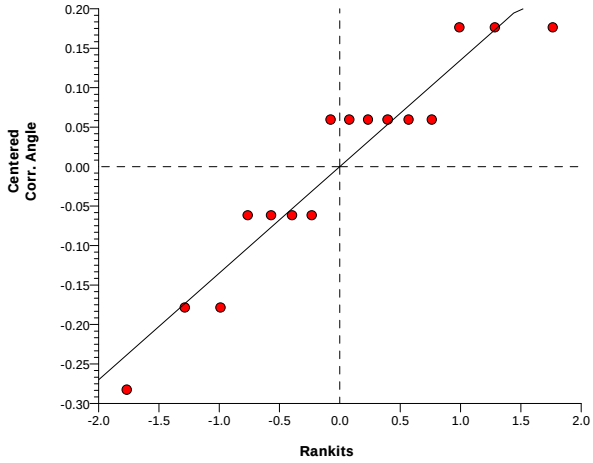
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.286	1.244	1.328	1.107	1.345	0.02047	0.1102	8.57%	0.0%
17629-003	8	1.169	1.106	1.231	0.8861	1.345	0.03048	0.1641	14.04%	9.09%

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	12-8117-9100	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	00-2491-7286	**Endpoint:**	2d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					7.43%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-003		17629-001	88		1	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0886061	0.0886061	1	11.67	0.0042	Significant Effect
Error	0.1063273	0.0075948	14			
Total	0.1949334	0.0962009	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	4.2	8.862	0.0597	Equal Variances
Distribution	Shapiro-Wilk Normality	0.7854		0.0018	Non-normal Distribution

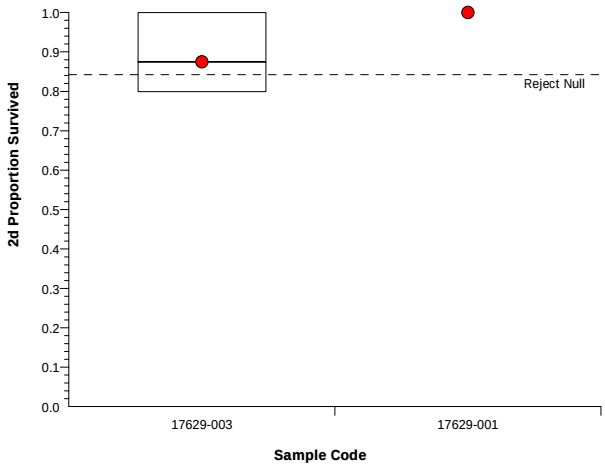
2d Proportion Survived Summary

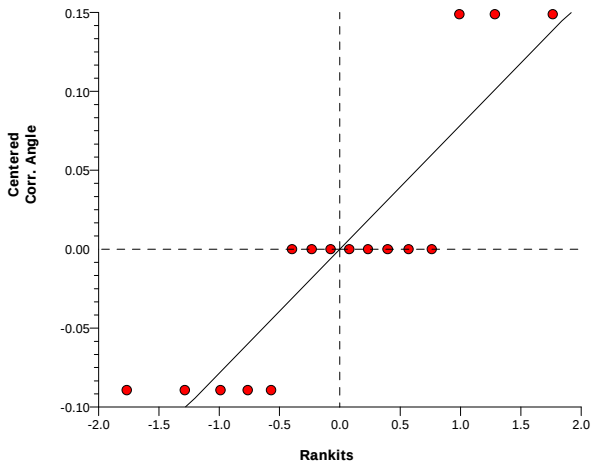
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.875	0.8356	0.9144	0.8	1	0.01922	0.1035	11.83%	0.0%
17629-001	8	1	1	1	1	1	0	0	0.0%	-14.29%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	1.196	1.15	1.243	1.107	1.345	0.02289	0.1232	10.3%	0.0%
17629-001	8	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	-12.44%

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	02-1154-2686	**Endpoint:**	2d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					7.43%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-003		17629-002	88		1	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0886061	0.0886061	1	11.67	0.0042	Significant Effect
Error	0.1063273	0.0075948	14			
Total	0.1949334	0.0962009	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	4.2	8.862	0.0597	Equal Variances
Distribution	Shapiro-Wilk Normality	0.7854		0.0018	Non-normal Distribution

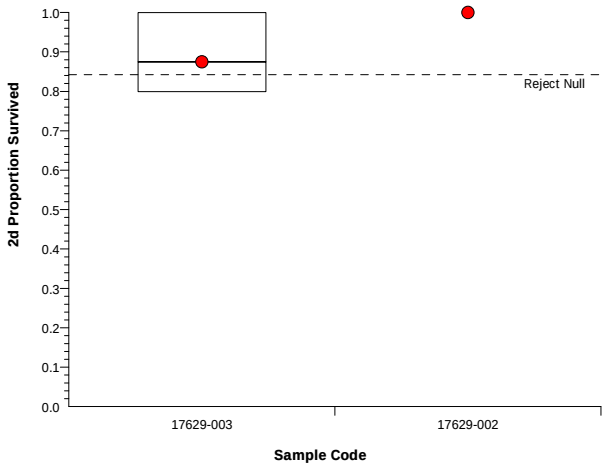
2d Proportion Survived Summary

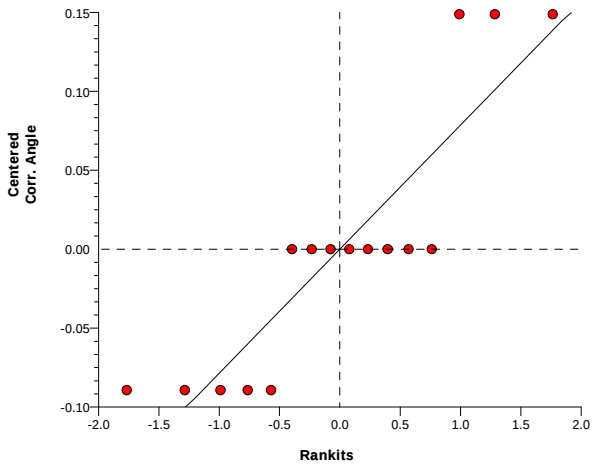
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.875	0.8356	0.9144	0.8	1	0.01922	0.1035	11.83%	0.0%
17629-002	8	1	1	1	1	1	0	0	0.0%	-14.29%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	1.196	1.15	1.243	1.107	1.345	0.02289	0.1232	10.3%	0.0%
17629-002	8	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	-12.44%

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	09-5397-8859	**Endpoint:**	2d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:26	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					6.84%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-000		17629-001	72		1	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0035442	0.0035442	1	1	0.3343	Non-Significant Effect
Error	0.0496194	0.0035442	14			
Total	0.0531637	0.0070885	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	1	8.862	0.3343	Equal Variances
Distribution	Shapiro-Wilk Normality	0.4689		0.0000	Non-normal Distribution

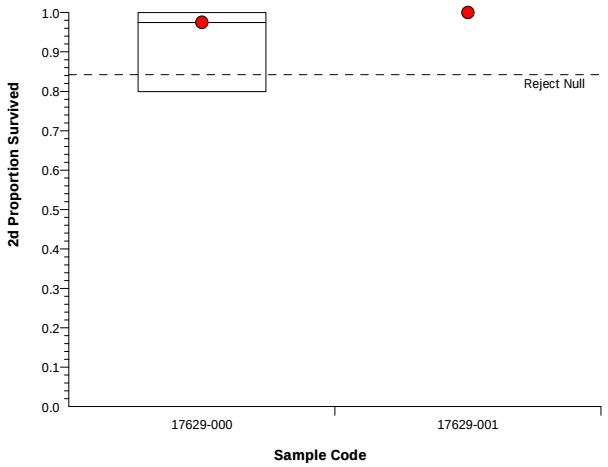
2d Proportion Survived Summary

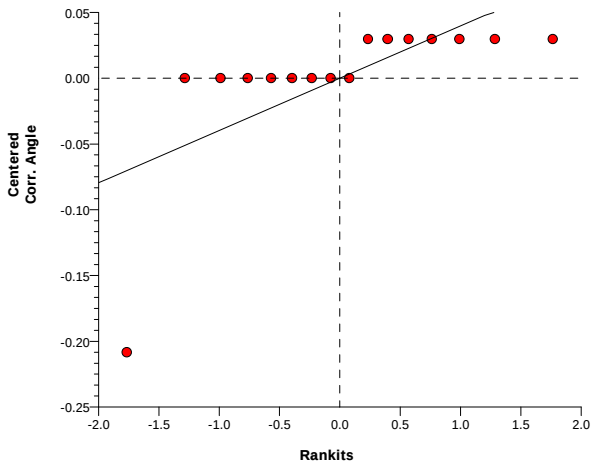
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.975	0.9481	1	0.8	1	0.01313	0.07071	7.25%	0.0%
17629-001	8	1	1	1	1	1	0	0	0.0%	-2.56%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.316	1.283	1.348	1.107	1.345	0.01563	0.08419	6.4%	0.0%
17629-001	8	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	-2.26%

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	18-2611-3572	**Endpoint:**	2d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:26	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					6.84%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-000		17629-002	72		1	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0035442	0.0035442	1	1	0.3343	Non-Significant Effect
Error	0.0496194	0.0035442	14			
Total	0.0531637	0.0070885	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	1	8.862	0.3343	Equal Variances
Distribution	Shapiro-Wilk Normality	0.4689		0.0000	Non-normal Distribution

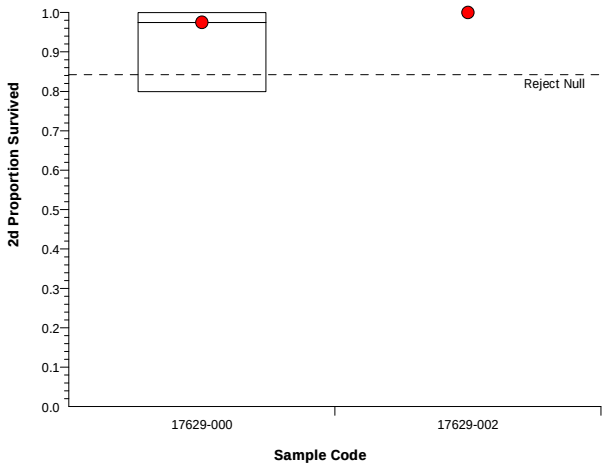
2d Proportion Survived Summary

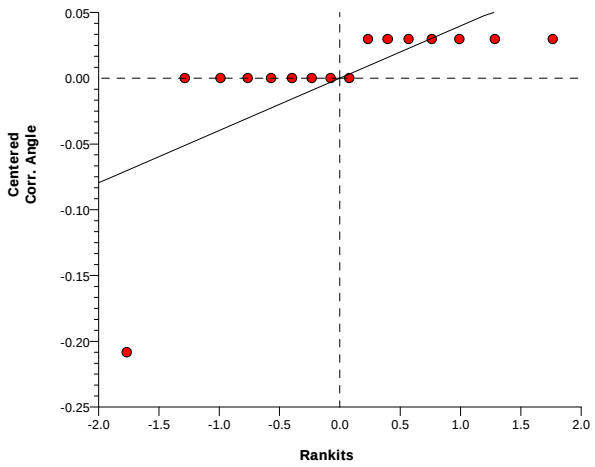
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.975	0.9481	1	0.8	1	0.01313	0.07071	7.25%	0.0%
17629-002	8	1	1	1	1	1	0	0	0.0%	-2.56%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.316	1.283	1.348	1.107	1.345	0.01563	0.08419	6.4%	0.0%
17629-002	8	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	-2.26%

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	20-8833-8706	**Endpoint:**	2d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:26	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					9.38%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	2.256	1.761	0.09295	0.0203	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0567079	0.0567079	1	5.091	0.0406	Significant Effect
Error	0.1559467	0.0111391	14			
Total	0.2126546	0.067847	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	2.143	8.885	0.3361	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8838		0.0445	Normal Distribution

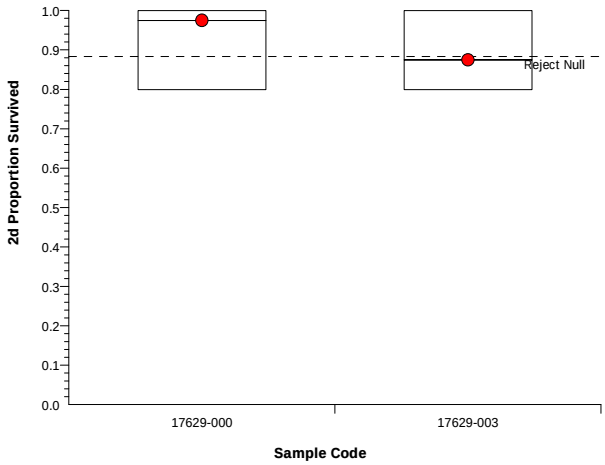
2d Proportion Survived Summary

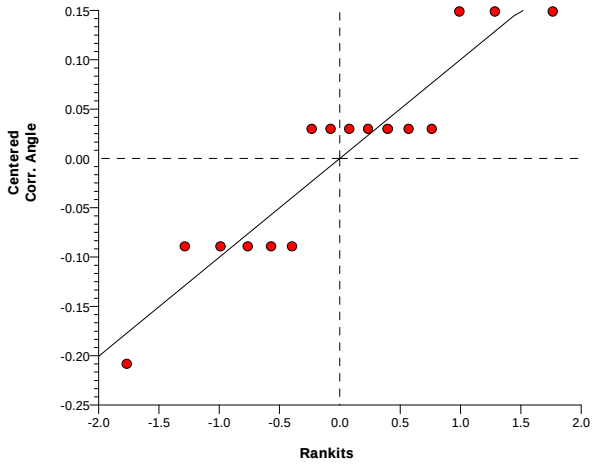
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.975	0.9481	1	0.8	1	0.01313	0.07071	7.25%	0.0%
17629-003	8	0.875	0.8356	0.9144	0.8	1	0.01922	0.1035	11.83%	10.26%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.316	1.283	1.348	1.107	1.345	0.01563	0.08419	6.4%	0.0%
17629-003	8	1.196	1.15	1.243	1.107	1.345	0.02289	0.1232	10.3%	9.05%

Graphics





Arbacia punctulata Chronic Fertilization Assay
Water Quality and Gamete Preparation Data

STUDY: 17629	CLIENT: BATTELLE	LOCATION: New Bedford	DATE: 8/22/08 INITIALS: SJ

SALINITY ADJUSTMENT RECORD: 200 mL -001 + 0 g SALT

SALINITY ADJUSTMENT RECORD: 200 mL -002 + 0 g SALT

SALINITY ADJUSTMENT RECORD: 200 mL -003 + 0 g SALT

SALINITY ADJUSTED SAMPLE	D.O. (mg/L)	pH (SU)	SPEC COND (µmhos)	TEMP (°C)	SALINITY (ppt)
Lab Control	7.4	7.94	43100	20	29
-001	6.2	7.49	43570	20	29
-002	6.3	7.42	43950	20	29
-003	6.6	7.43	43710	20	28

METERS USED

DO meter # 20 DO probe # 23 pH meter # 470 pH probe # 83 S/C meter # YS130C S/C probe # YS130C

SALINITY meter # YS130C

DATE & INITIALS FOR GAMETE PREPARATION: 8/22/08 UB

SPERM DILUTIONS:

HEMACYTOMETER COUNT, E: 114 X 10^4 = SPM SOLUTION E = 1.14×10^6

SPERM CONCENTRATIONS:
SOLUTION E X 40 = SOLUTION A = _____ SPM
SOLUTION E X 20 = SOLUTION B = _____ SPM
SOLUTION E X 5 = SOLUTION C = _____ SPM

FINAL COUNTS:

FINAL SPERM COUNT: _____
FINAL EGG COUNT: 2200

TEST TIMES:

SPERM COLLECTED: 1430
EGGS COLLECTED: 1545
SPERM ADDED: 1500
EGGS ADDED: 1600
FIXATIVE ADDED: 1620

See ESI SOP #1412 for additional information

Arbacia punctulata Chronic Fertilization Assay

SAMPLE USE RECORD

STUDY: 17629	CLIENT: Battelle - New Bedford	
SPECIES: *A. punctulata*		
	Day: 0	
SAMPLE	Volume Used (mL)	ESI Cube ID
Lab Control		
-001		
-002		
-003		
INITIALS:		
TIME:		
DATE:		

FERTILIZATION COUNTS

STUDY	**CLIENT** BATTELLE	**LOCATION** New Bedford	**DATE** 8/22/08 **INITIALS** CK

1800

	REPLICATE VIAL			
	1	2	3	4
SAMPLE	FERT/TOTAL	FERT/TOTAL	FERT/TOTAL	FERT/TOTAL
Lab Control	100/113	100/111	100/114	100/113
-001	64/116	65/118	71/126	69/119
-002	57/138	39/112	41/126	52/144
-003	31/101	48/117	57/127	24/122

CETIS Summary Report

Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Test Run No:	21-0223-1936	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	22 Aug-08 15:00	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	22 Aug-08 16:20	**Species:**	Arbacia punctulata	**Brine:**	Not Applicable
Duration:	80m	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample No	Sample Date	Receive Date	Sample Age	Client Name	Project
17629-000	01-6030-3695	22 Aug-08 14:00	22 Aug-08 14:00	60m	Battelle Labs	Ecological Risk Assessm
17629-003	05-4158-6637	21 Aug-08 15:20	21 Aug-08 18:40	24h		
17629-002	08-5309-8454	21 Aug-08 15:02	21 Aug-08 18:40	24h		
17629-001	09-2317-4687	21 Aug-08 14:20	21 Aug-08 18:40	25h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
17629-000	Marine Monitoring Samp	New Bedford Harbor Dredge Mon	Laboratory Water Control		
17629-003	Marine Monitoring Samp	New Bedford Harbor Dredge Mon	WQ-TOX-003		
17629-002	Marine Monitoring Samp	New Bedford Harbor Dredge Mon	WQ-TOX-002		
17629-001	Marine Monitoring Samp	New Bedford Harbor Dredge Mon	WQ-TOX-001		

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Proportion Fertilized Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	4	0.887	0.8833	0.8907	0.8772	0.9009	0.001819	0.009962	1.12%	0.0%
17629-003	4	0.3407	0.2984	0.3829	0.1967	0.4488	0.02066	0.1131	33.21%	61.59%
17629-002	4	0.3619	0.3481	0.3758	0.3254	0.413	0.006779	0.03713	10.26%	59.19%
17629-001	4	0.5615	0.5564	0.5665	0.5508	0.5798	0.00247	0.01353	2.41%	36.7%

Proportion Fertilized Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17629-000	0.885	0.9009	0.8772	0.885
17629-003	0.3069	0.4103	0.4488	0.1967
17629-002	0.413	0.3482	0.3254	0.3611
17629-001	0.5517	0.5508	0.5635	0.5798

Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Analysis No:	03-6359-0486	**Endpoint:**	Proportion Fertilized	**CETIS Version:**	CETISv1.6.4
Analyzed:	24 Aug-08 21:54	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					9.77%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	9.812	1.943	0.1206	0.0000	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.742249	0.742249	1	96.27	0.0001	Significant Effect
Error	0.046259	0.00771	6			
Total	0.788508	0.749959	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	59.72	47.47	0.0071	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.9256		0.4766	Normal Distribution

Proportion Fertilized Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	4	0.887	0.8832	0.8908	0.8772	0.9009	0.00185	0.009962	1.12%	0.0%
17629-003	4	0.3407	0.2976	0.3837	0.1967	0.4488	0.02101	0.1131	33.21%	61.59%

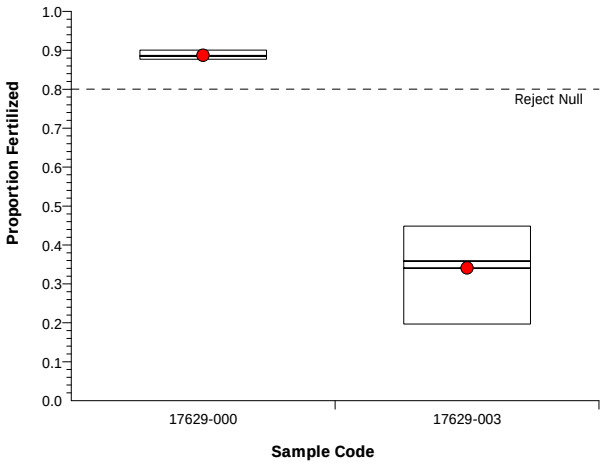
Angular (Corrected) Transformed Summary

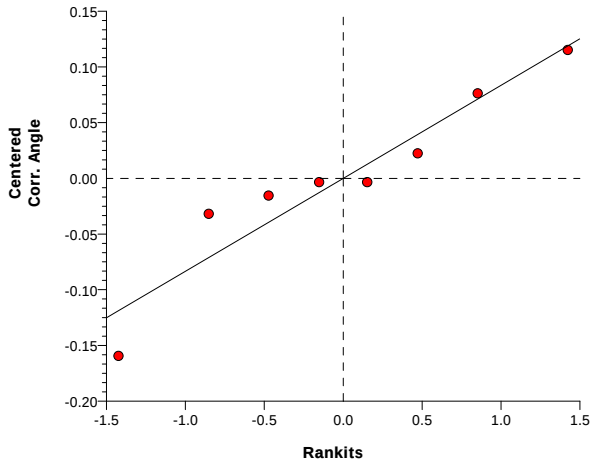
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	4	1.228	1.222	1.234	1.213	1.251	0.002959	0.01594	1.3%	0.0%
17629-003	4	0.619	0.5722	0.6658	0.4595	0.7341	0.02287	0.1231	19.89%	49.6%

Proportion Fertilized Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17629-000	0.9009	0.885	0.885	0.8772
17629-003	0.4488	0.4103	0.3069	0.1967

Graphics





Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Analysis No:	15-9648-4212	**Endpoint:**	Proportion Fertilized	**CETIS Version:**	CETISv1.6.4
Analyzed:	24 Aug-08 21:54	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					3.01%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-002	28	1.943	0.04046	0.0000	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.679741	0.679741	1	783.9	0.0000	Significant Effect
Error	0.005203	0.000867	6			
Total	0.684943	0.680608	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	5.829	47.47	0.1817	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9244		0.4669	Normal Distribution

Proportion Fertilized Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	4	0.887	0.8832	0.8908	0.8772	0.9009	0.00185	0.009962	1.12%	0.0%
17629-002	4	0.3619	0.3478	0.3761	0.3254	0.413	0.006895	0.03713	10.26%	59.19%

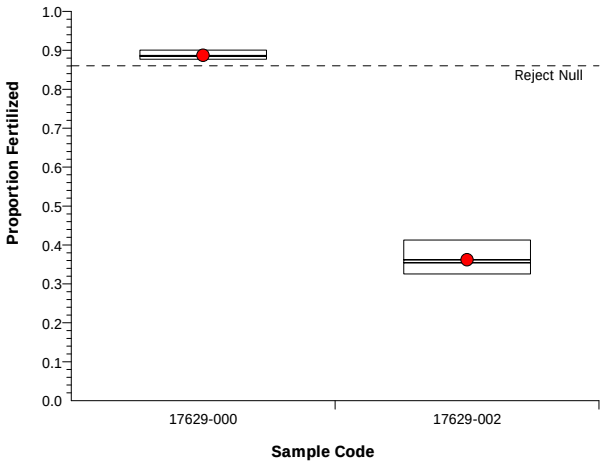
Angular (Corrected) Transformed Summary

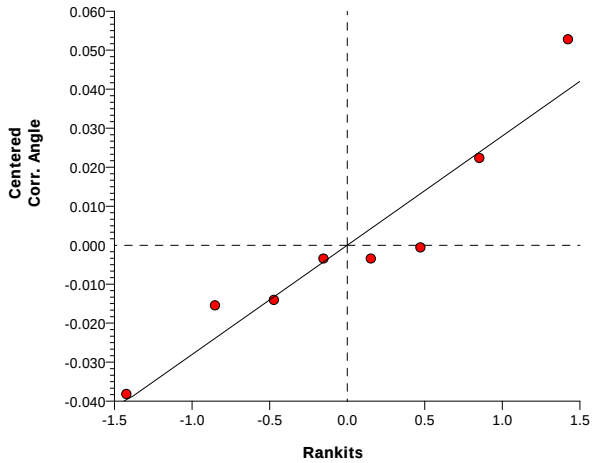
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	4	1.228	1.222	1.234	1.213	1.251	0.002959	0.01594	1.3%	0.0%
17629-002	4	0.6452	0.6306	0.6599	0.607	0.698	0.007145	0.03847	5.96%	47.47%

Proportion Fertilized Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17629-000	0.9009	0.885	0.885	0.8772
17629-002	0.413	0.3611	0.3482	0.3254

Graphics





Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Analysis No:	12-2981-5646	**Endpoint:**	Proportion Fertilized	**CETIS Version:**	CETISv1.6.4
Analyzed:	24 Aug-08 21:54	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					1.47%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-001	36.33	1.943	0.02038	0.0000	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.290559	0.290559	1	1320	0.0000	Significant Effect
Error	0.001321	0.000220	6			
Total	0.29188	0.290779	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.364	47.47	0.8050	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8852		0.2111	Normal Distribution

Proportion Fertilized Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	4	0.887	0.8832	0.8908	0.8772	0.9009	0.00185	0.009962	1.12%	0.0%
17629-001	4	0.5615	0.5563	0.5666	0.5508	0.5798	0.002512	0.01353	2.41%	36.7%

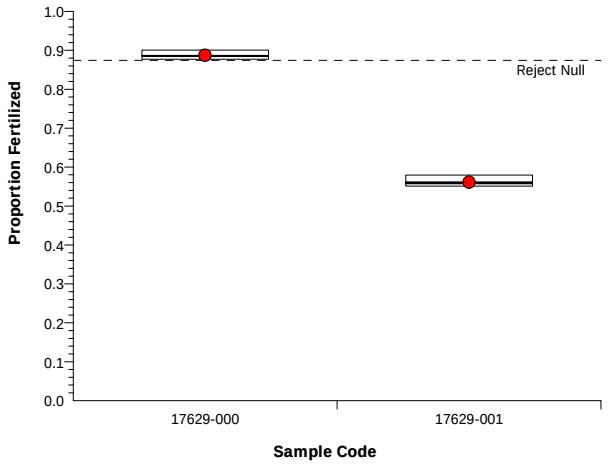
Angular (Corrected) Transformed Summary

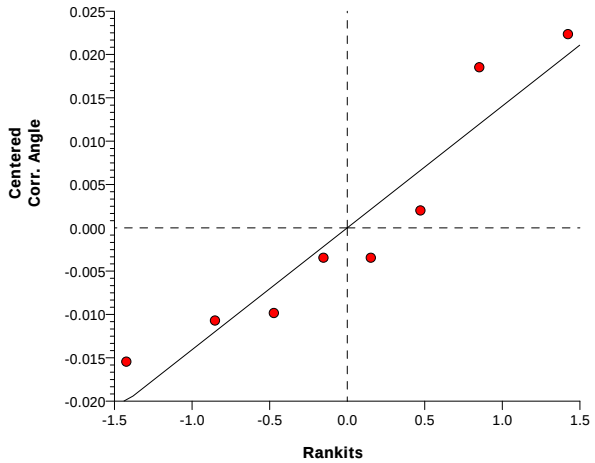
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	4	1.228	1.222	1.234	1.213	1.251	0.002959	0.01594	1.3%	0.0%
17629-001	4	0.847	0.8419	0.8522	0.8363	0.8656	0.002534	0.01365	1.61%	31.03%

Proportion Fertilized Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17629-000	0.9009	0.885	0.885	0.8772
17629-001	0.5798	0.5635	0.5517	0.5508

Graphics





Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Analysis No:	13-9467-0508	**Endpoint:**	Proportion Fertilized	**CETIS Version:**	CETISv1.6.4
Analyzed:	24 Aug-08 21:54	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					34.1%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-002	-0.4064	1.943	0.1254	0.6507	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.001375	0.001375	1	0.1652	0.6986	Non-Significant Effect
Error	0.049938	0.008323	6			
Total	0.051312	0.009697	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	10.24	47.47	0.0876	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9507		0.7182	Normal Distribution

Proportion Fertilized Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	4	0.3407	0.2976	0.3837	0.1967	0.4488	0.02101	0.1131	33.21%	0.0%
17629-002	4	0.3619	0.3478	0.3761	0.3254	0.413	0.006895	0.03713	10.26%	-6.24%

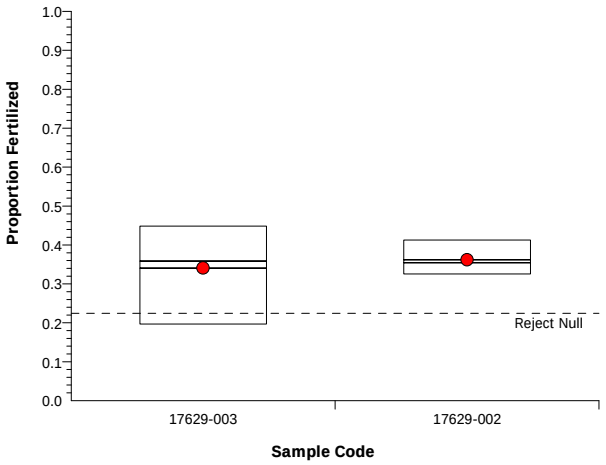
Angular (Corrected) Transformed Summary

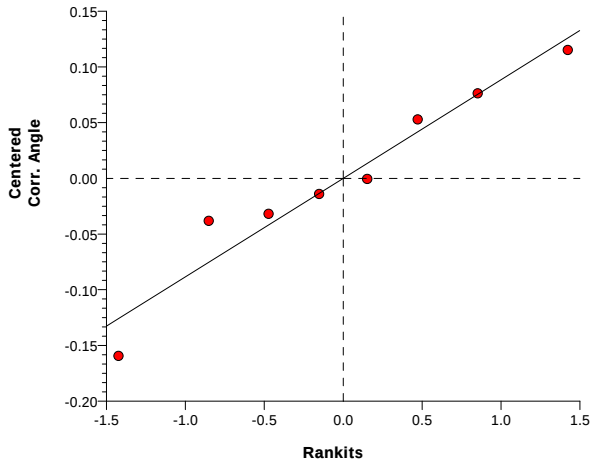
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	4	0.619	0.5722	0.6658	0.4595	0.7341	0.02287	0.1231	19.89%	0.0%
17629-002	4	0.6452	0.6306	0.6599	0.607	0.698	0.007145	0.03847	5.96%	-4.24%

Proportion Fertilized Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17629-003	0.4488	0.4103	0.3069	0.1967
17629-002	0.413	0.3611	0.3482	0.3254

Graphics





Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Analysis No:	11-9401-6946	**Endpoint:**	Proportion Fertilized	**CETIS Version:**	CETISv1.6.4
Analyzed:	24 Aug-08 21:54	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					32.87%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-001	-3.681	1.943	0.1204	0.9948	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.104009	0.104009	1	13.55	0.0103	Significant Effect
Error	0.046056	0.007676	6			
Total	0.150064	0.111684	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	81.43	47.47	0.0045	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.9222		0.4481	Normal Distribution

Proportion Fertilized Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	4	0.3407	0.2976	0.3837	0.1967	0.4488	0.02101	0.1131	33.21%	0.0%
17629-001	4	0.5615	0.5563	0.5666	0.5508	0.5798	0.002512	0.01353	2.41%	-64.81%

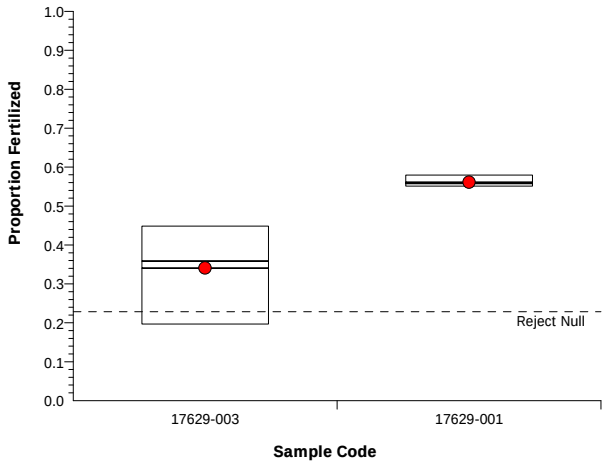
Angular (Corrected) Transformed Summary

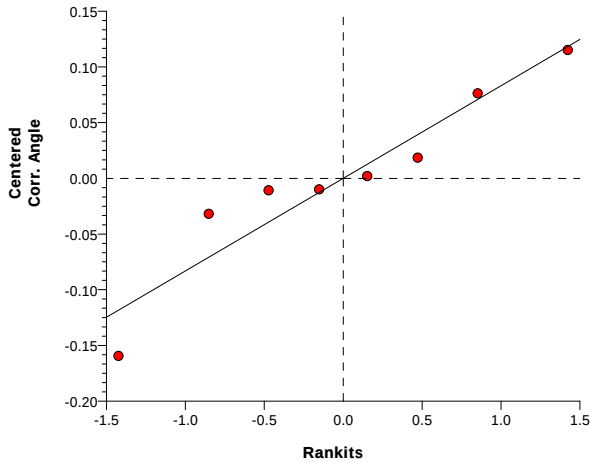
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	4	0.619	0.5722	0.6658	0.4595	0.7341	0.02287	0.1231	19.89%	0.0%
17629-001	4	0.847	0.8419	0.8522	0.8363	0.8656	0.002534	0.01365	1.61%	-36.84%

Proportion Fertilized Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17629-003	0.4488	0.4103	0.3069	0.1967
17629-001	0.5798	0.5635	0.5517	0.5508

Graphics





Saskatchewan Research Council
15 Innovation Boulevard, Saskatoon, SK S7N 2X8
Phone: 306-933-5469

Test Data Summary

SAMPLE			SRC#	598, 599, 600
Identification/Name	001, 002, 003 (also labeled Batelle)			
Date Shipped	Aug 22/08			
Date/Time Received	Aug 25/08 4 pm	Test Initiation Date		Aug 25/08
Temperature Upon Receipt (°C)	21	Test Completion Date		Sept 2/08

ORGANISM INFORMATION			
Species	*Champia parvula*	Appearance/Health of Champia	excellent
Source	sexually mature male and female branches, obtained from USEPA, Hatfield Marine Science Center, Newport, Oregon in 1995		
Females, Presence of Trichognes	yes	Males, Presence of Sori with Spermatia	yes

TEST CONDITIONS			
Test Method	EPA 821-R-02-014, Method 1009.0 Third edition, October 2002	Dilution water	Natural seawater from Pacific Environmental Science Centre, North Vancouver B.C. as described on page 1
Test Type	static, non-renewal; two day effluent exposure followed by five to seven day recovery period in control medium for cystocarp development		
Test Vessels (Exposure & Recovery)	270 mL transparent polystyrene cups, transparent polystyrene lids		
Exposure Vessel Volume / Depth	100 mL / 4.5 cm	Recovery Vessel Volume /Depth	200 mL / 7.3 cm
Replicates/Conc.	3	No. of organisms (female/male)	5/2
Number and Concentrations of Test Solutions (%v/v)		Controls: (two) natural sea water, salt Tests: all samples tested at 100%	
Chemicals added to control/dilution water	Test Nutrients as described in method cited at 10 mL/L, analytical grade		

SAMPLE TREATMENT					
D.O. on sample without salinity adjustment (mg/L)	See pg 3	D.O. after salinity adjustment (mg/L)			Page 3
Aeration (duration/rate)	none	Filtration	none	pH Adjustments	none
Salinity Adjustment*	Not required				
Dry Salt for Salinity Adjustment*					
** as per EC guidance document on salinity adjustment, Dec 2001*					

EXPOSURE PERIOD (48 h) and RECOVERY PERIOD (5-7 days)			
Temperature, pH, D.O. and Salinity of test solutions and controls on following page			
Photoperiod (L:D h)	16:8	Agitation of tests and controls during exposure	gentle rotary shaking
Recovery Medium: natural sea water containing 10 mL/L Culture Nutrients (section 16.10.1.3 of cited method), prepared from analytical grade chemicals			
Aeration during recovery: gentle aeration supplied			

Date/Initial Aug 7/18

Saskatchewan Research Council
15 Innovation Boulevard, Saskatoon, SK S7N 2X8
Phone: 306-933-5469

Water Quality Data

Sample Identification/Name	001, 002, 003 (also labeled Batelle)	598, 599, 600

INITIAL WATER QUALITY	SAMPLE at test start, without salinity adjustment			TEST MEDIUM	RECOVERY MEDIUM
Sample #	598	599	600		
Temperature (°C)	22	22	22	22	22
Dissolved Oxygen (mg/L)	7.6	7.6	7.6	7.8	7.8
pH	7.56	7.56	7.52	8.52	8.55
Salinity (ppt)	30	30	30	30	30
Sample Description	Clear liquid	Clear liquid	Clear liquid	Length of Recovery Period (days)	5

Water Quality Data during Exposure Period (0, 24, 48 hr)

Concentration % (v/v)	Temperature (°C) exposure			Dissolved Oxygen (mg/L) exposure			pH exposure			Salinity (ppt) exposure		
	0	24	48	0	24	48	0	24	48	0	24	48
Control NSW[1]	23	23	23	7.8	8.3	7.9	8.52	8.98	8.84	30	30	30
598	23	23	23	7.6	8.1	7.7	7.56	8.55	8.41	30	30	30
599	22	23	23	7.6	8.1	7.7	7.56	8.58	8.41	30	30	30
600	22	23	23	7.6	8.2	7.7	7.52	8.65	8.80	29	30	30

Recovery Period – Temperature Monitoring (initial daily entries)

Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
23	23	23	23	23	23	-	-

Champia (female) Mortality at end of Recovery Period

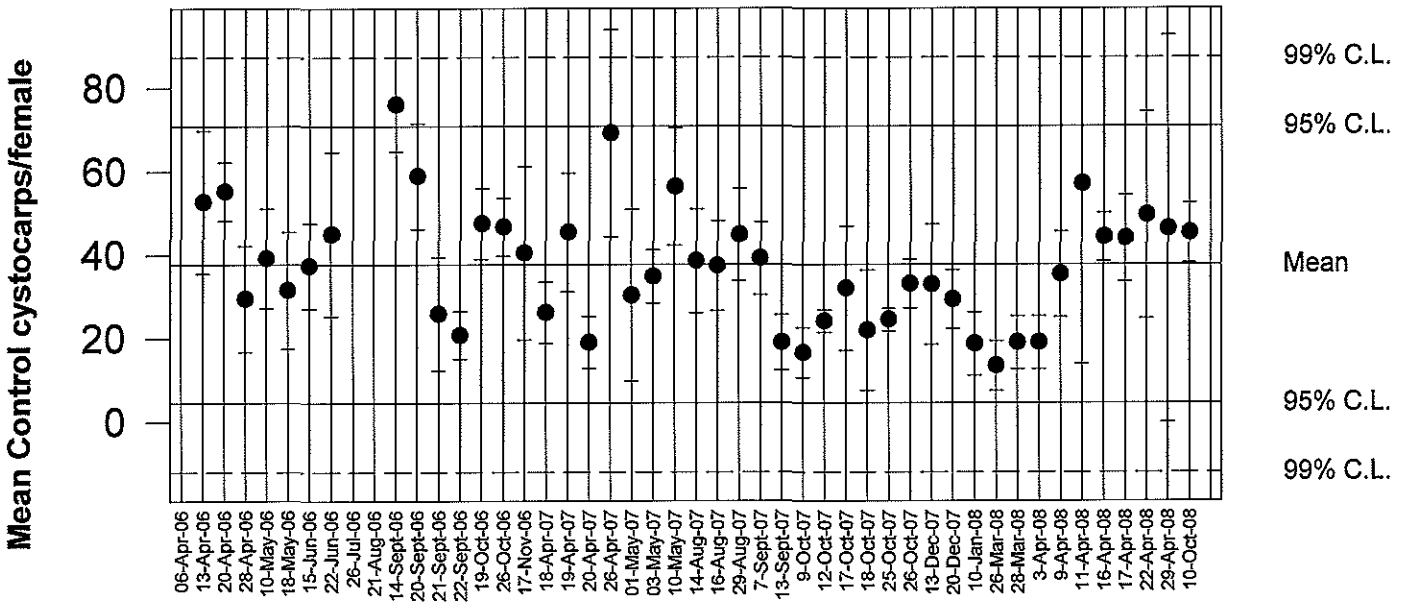
Concentration %v/v	control NSW[1]	598 100%	599 100%	600 100%
# Females dead[2]	0	0	0	0
% Mortality[2]	0	0	0	0
Description	Normal red	Green with red tips	Green with red tips	Normal red

1 NSW natural sea wate
2 same for all test units at each concentration

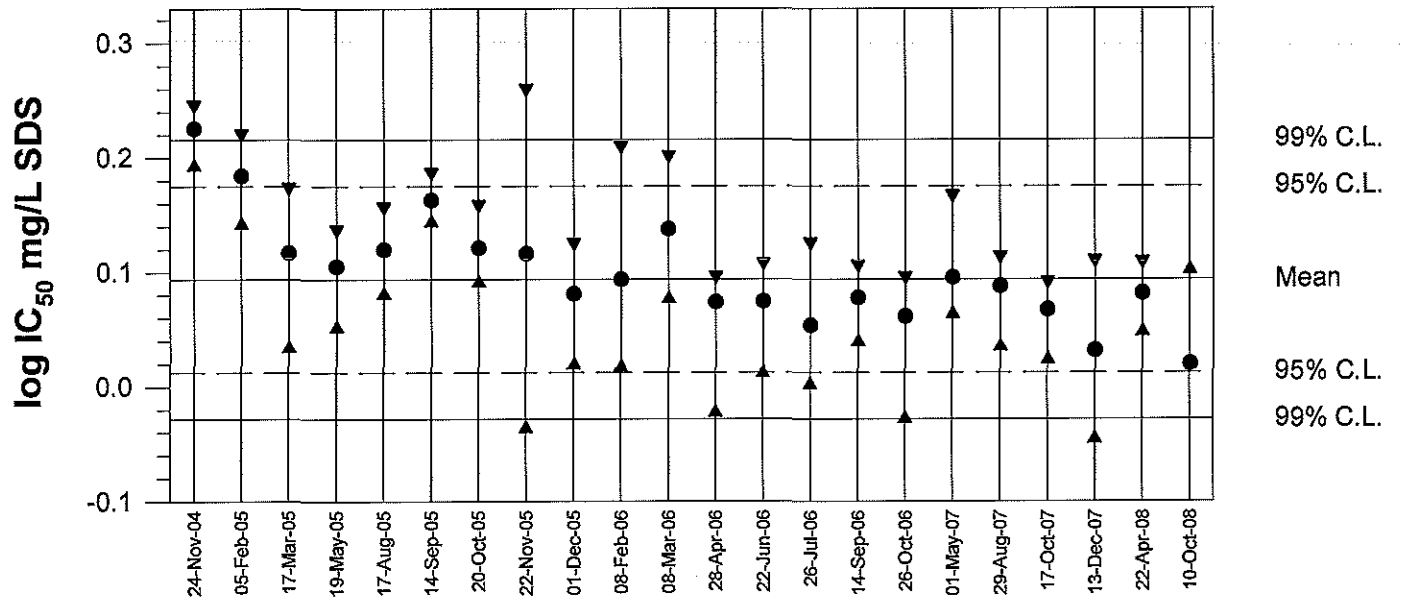
Date/Initial Nov 7/08

Saskatchewan Research Council

Champia parvula Reproduction Test Control Charts



Control cystocarp count per female *Champia parvula* for tests from Apr 2006 to Oct 2008. Mean and 95% control limits for each test and cumulative mean, 95% and 99% control limits for all tests.
Cumulative mean: 37.7 (95% CL: 4-71)



Reference Toxicant Tests using Sodium dodecyl sulfate mg/L
Historical value (previous 20 tests) and 95% confidence limits 1.25 (1.05 - 1.48) mg/L
Data for most recent test
Oct 10/08: mean and 95% confidence limits 1.05 (0.83 - 1.26) mg/L

CETIS Summary Report

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test Run No:	06-5260-4165	**Test Type:**	Champia	**Analyst:**	
Start Date:	26 Aug-08 12:00	**Protocol:**	EPA/600/4-91/003 (1994)	**Diluent:**	Not Applicable
Ending Date:	01 Sep-08 12:00	**Species:**	Champia parvula	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample No	Sample Date	Receive Date	Sample Age	Client Name	Project
17629-000	01-6030-3695	22 Aug-08 14:00	22 Aug-08 14:00	94h	Battelle Labs	Ecological Risk Assessme
17629-003	05-4158-6637	21 Aug-08 15:20	21 Aug-08 18:40	4d 21h		
17629-002	08-5309-8454	21 Aug-08 15:02	21 Aug-08 18:40	4d 21h		
17629-001	09-2317-4687	21 Aug-08 14:20	21 Aug-08 18:40	4d 22h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
17629-000	Marine Monitoring Samp	New Bedford Harbor Dredge Moni	Laboratory Water Control		
17629-003	Marine Monitoring Samp	New Bedford Harbor Dredge Moni	WQ-TOX-003		
17629-002	Marine Monitoring Samp	New Bedford Harbor Dredge Moni	WQ-TOX-002		
17629-001	Marine Monitoring Samp	New Bedford Harbor Dredge Moni	WQ-TOX-001		

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Mean Cystocarps Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	3	10.53	10.15	10.92	9.4	11.4	0.1874	1.026	9.74%	0.0%
17629-003	4	4.9	4.467	5.333	3.8	6.4	0.2119	1.16	23.68%	53.48%
17629-002	4	0.1	0.05688	0.1431	0	0.2	0.02108	0.1155	115.5%	99.05%
17629-001	4	0	0	0	0	0	0	0		100.0%

Mean Cystocarps Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17629-000	11.4	9.4	10.8	
17629-003	4.2	6.4	5.2	3.8
17629-002	0.2	0.2	0	0
17629-001	0	0	0	0

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Analysis No:	20-5412-1382	**Endpoint:**	Mean Cystocarps	**CETIS Version:**	CETISv1.6.4
Analyzed:	04 Sep-08 14:36	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	06-5260-4165	**Test Type:**	Champia	**Analyst:**	
Start Date:	26 Aug-08 12:00	**Protocol:**	EPA/600/4-91/003 (1994)	**Diluent:**	Not Applicable
Ending Date:	01 Sep-08 12:00	**Species:**	Champia parvula	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					23.01%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-001	8.445	1.943	1.127	0.0001	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	48.02	48.02	1	71.32	0.0002	Significant Effect
Error	4.04	0.6733333	6			
Total	52.06	48.69333	7			

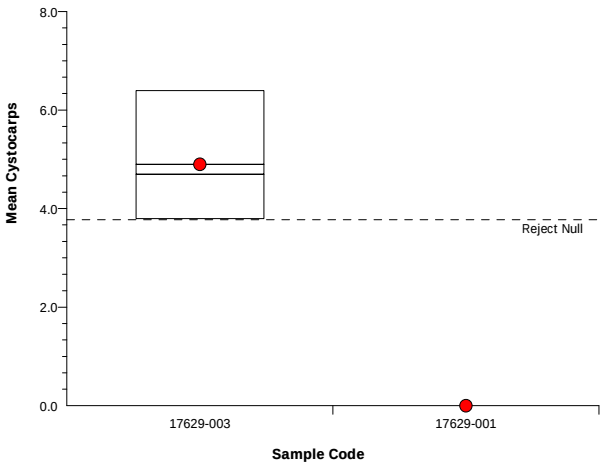
ANOVA Assumptions

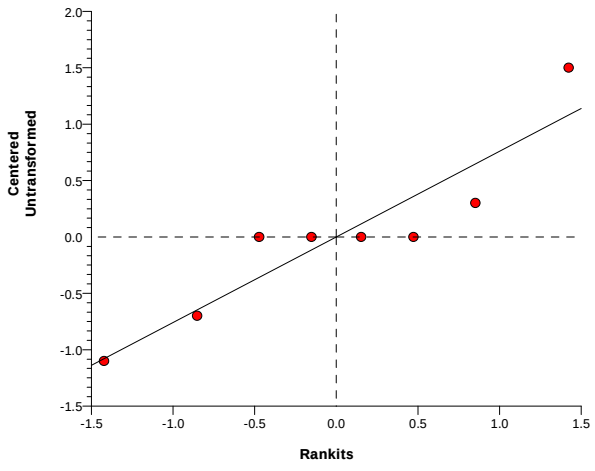
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	10.13	13.75	0.0190	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8837		0.2041	Normal Distribution

Mean Cystocarps Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	4	4.9	4.459	5.341	3.8	6.4	0.2155	1.16	23.68%	0.0%
17629-001	4	0	0	0	0	0	0	0		100.0%

Graphics





Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Analysis No:	17-5336-3770	**Endpoint:**	Mean Cystocarps	**CETIS Version:**	CETISv1.6.4
Analyzed:	04 Sep-08 14:36	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	06-5260-4165	**Test Type:**	Champia	**Analyst:**	
Start Date:	26 Aug-08 12:00	**Protocol:**	EPA/600/4-91/003 (1994)	**Diluent:**	Not Applicable
Ending Date:	01 Sep-08 12:00	**Species:**	Champia parvula	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					23.12%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-002	8.232	1.943	1.133	0.0001	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	46.08	46.08	1	67.76	0.0002	Significant Effect
Error	4.08	0.68	6			
Total	50.16	46.76	7			

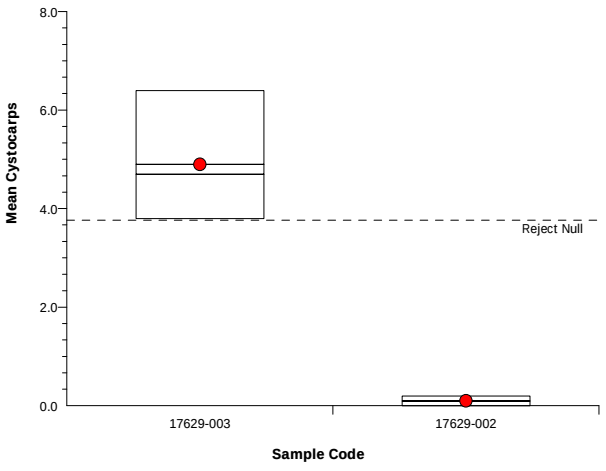
ANOVA Assumptions

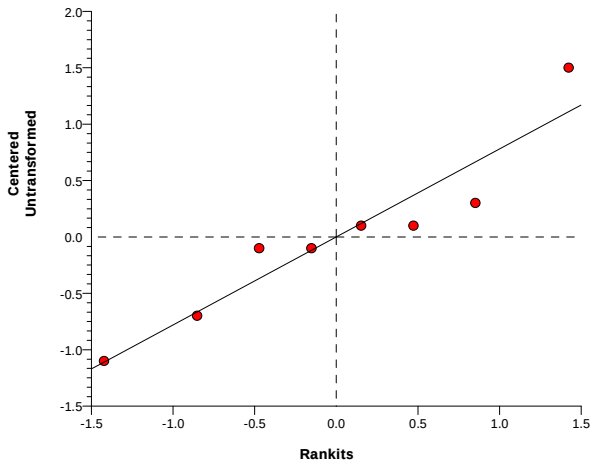
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	101	47.47	0.0033	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.9184		0.4174	Normal Distribution

Mean Cystocarps Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	4	4.9	4.459	5.341	3.8	6.4	0.2155	1.16	23.68%	0.0%
17629-002	4	0.1	0.05608	0.1439	0	0.2	0.02144	0.1155	115.5%	97.96%

Graphics





Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Analysis No:	06-4939-5819	**Endpoint:**	Mean Cystocarps	**CETIS Version:**	CETISv1.6.4
Analyzed:	04 Sep-08 14:36	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	06-5260-4165	**Test Type:**	Champia	**Analyst:**	
Start Date:	26 Aug-08 12:00	**Protocol:**	EPA/600/4-91/003 (1994)	**Diluent:**	Not Applicable
Ending Date:	01 Sep-08 12:00	**Species:**	Champia parvula	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					16.43%

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-001	17.78	2.92	1.73	0.0016	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	190.2019	190.2019	1	451.4	0.0000	Significant Effect
Error	2.106667	0.4213333	5			
Total	192.3086	190.6232	6			

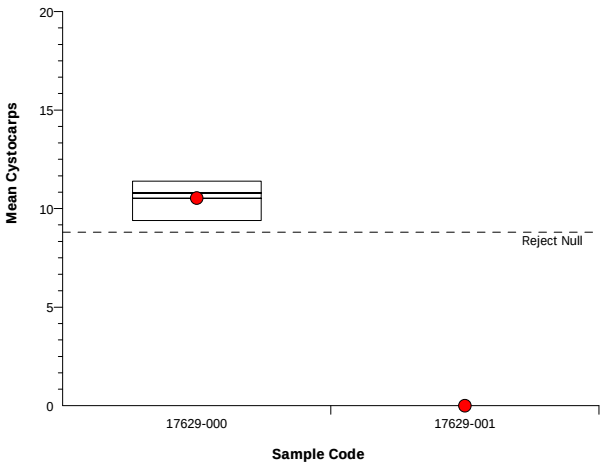
ANOVA Assumptions

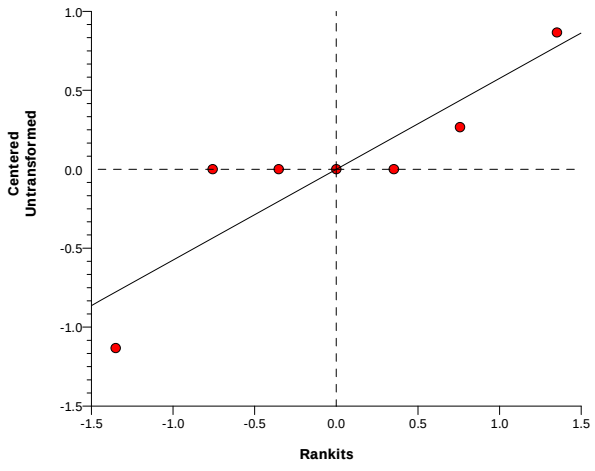
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	22.32	16.26	0.0052	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.8359		0.0910	Normal Distribution

Mean Cystocarps Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	3	10.53	10.14	10.92	9.4	11.4	0.1906	1.026	9.74%	0.0%
17629-001	4	0	0	0	0	0	0	0		100.0%

Graphics





Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Analysis No:	09-1907-8467	**Endpoint:**	Mean Cystocarps	**CETIS Version:**	CETISv1.6.4
Analyzed:	04 Sep-08 14:36	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	06-5260-4165	**Test Type:**	Champia	**Analyst:**	
Start Date:	26 Aug-08 12:00	**Protocol:**	EPA/600/4-91/003 (1994)	**Diluent:**	Not Applicable
Ending Date:	01 Sep-08 12:00	**Species:**	Champia parvula	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					16.5%

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-002	17.52	2.92	1.738	0.0016	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	186.6076	186.6076	1	434.6	0.0000	Significant Effect
Error	2.146667	0.4293333	5			
Total	188.7543	187.037	6			

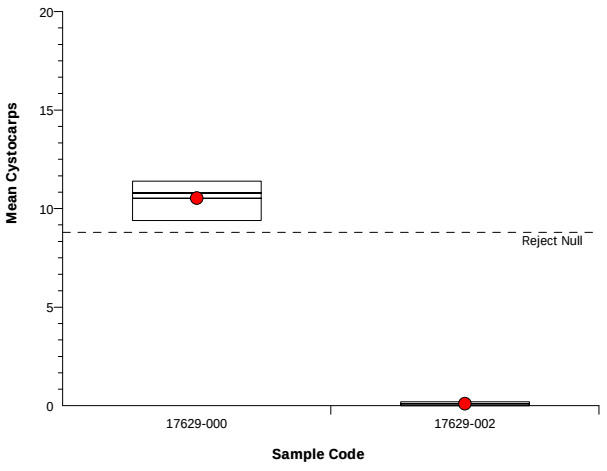
ANOVA Assumptions

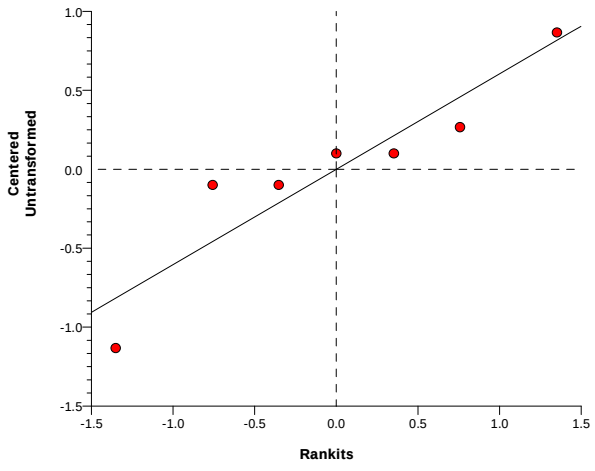
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	79	49.8	0.0051	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.8943		0.2978	Normal Distribution

Mean Cystocarps Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	3	10.53	10.14	10.92	9.4	11.4	0.1906	1.026	9.74%	0.0%
17629-002	4	0.1	0.05608	0.1439	0	0.2	0.02144	0.1155	115.5%	99.05%

Graphics





Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Analysis No:	12-0365-3524	**Endpoint:**	Mean Cystocarps	**CETIS Version:**	CETISv1.6.4
Analyzed:	04 Sep-08 14:36	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	06-5260-4165	**Test Type:**	Champia	**Analyst:**	
Start Date:	26 Aug-08 12:00	**Protocol:**	EPA/600/4-91/003 (1994)	**Diluent:**	Not Applicable
Ending Date:	01 Sep-08 12:00	**Species:**	Champia parvula	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					16.2%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	6.652	2.015	1.706	0.0006	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	54.40191	54.40191	1	44.25	0.0012	Significant Effect
Error	6.146667	1.229333	5			
Total	60.54857	55.63124	6			

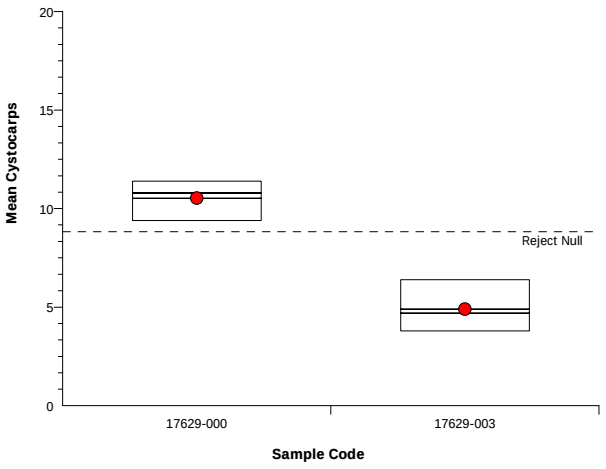
ANOVA Assumptions

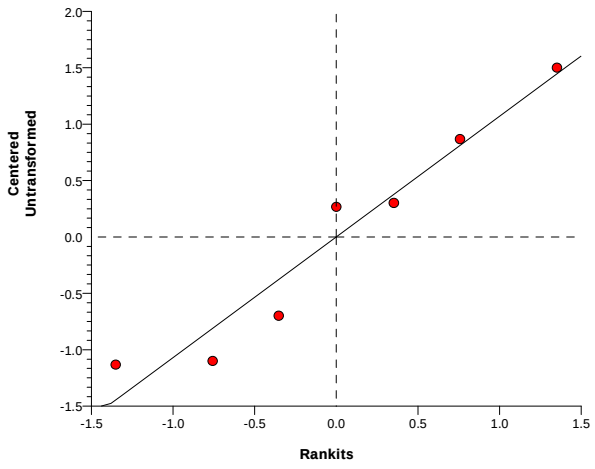
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.278	199.2	0.9343	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9199		0.4688	Normal Distribution

Mean Cystocarps Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	3	10.53	10.14	10.92	9.4	11.4	0.1906	1.026	9.74%	0.0%
17629-003	4	4.9	4.459	5.341	3.8	6.4	0.2155	1.16	23.68%	53.48%

Graphics





Americamysis bahia 7 DAY CHRONIC ASSAY
SAMPLE USE RECORD

STUDY: 17629 **CLIENT:** BATTELLE - New Bedford

SPECIES: *A. bahia* **TEST:** chronic renewal

Sample	Day: 0		Day: 1		Day: 2		Day	Date	Time	Init
	Volume Used (mL)	ESI Cube ID	Volume Used (mL)	ESI Cube ID	Volume Used (mL)	ESI Cube ID				
Lab Control	1600	n/a	1200	n/a	1200	n/a	0	9/22/08	1150	SJ
-001	↓	~~1600~~-001	↓	-001	↓	-001	1	8/23	1530	DM
-002	↓	-002	↓	-002	↓	-002	2	8/24	1700	LB
-003	↓	-003	↓	-003	↓	-003	3	8/25	1600	SJ
							4	8/26	1000	APC
							5	8/27	1250	SJ
							6	8-28	1215	APC

Sample	Day: 3		Day: 4		Day: 5	
	Volume Used (mL)	ESI Cube ID	Volume Used (mL)	ESI Cube ID	Volume Used (mL)	ESI Cube ID
Lab Control	1200	n/a	1200	n/a	1200	n/a
-001	↓	-001	↓	-001	↓	-001
-002	↓	-002	↓	-002	↓	-002
-003	↓	-003	↓	-003	↓	-003

Sample	Day: 6	
	Volume Used (mL)	ESI Cube ID
Lab Control	1200	n/a
-001	↓	-001
-002	↓	-002
-003	↓	-003

Americamysis bahia 7 DAY CHRONIC ASSAY
NEW WATER QUALITIES

STUDY:	CLIENT:	LOCATION:	LAB CONTROL:
17629	BATTELLE	NEW BEDFORD	HAMPTON ESTUARY

		NEW DISSOLVED OXYGEN (mg/L)							NEW SALINITY (ppt)						
CONC	REP	0	1	2	3	4	5	6	0	1	2	3	4	5	6
LAB	A	7.4	6.6	7.3	6.8	7.1	7.0	7.2	29	28	28	29	30	29	29
-001	A	6.2	6.6	7.4	6.8	7.0	7.1	7.3	29	29	29	29	29	29	29
-002	A	6.3	6.0	7.5	6.9	7.1	6.8	7.3	29	29	29	29	29	29	29
-003	A	6.6	6.3	7.6	6.9	7.0	6.9	7.6	28	28	28	28	28	29	28

		NEW pH (SU)							NEW TEMPERATURE (°C)						
CONC	REP	0	1	2	3	4	5	6	0	1	2	3	4	5	6
LAB	A	7.94	8.10	8.22	8.25	7.91	7.86	7.86	24	24	24	24	24	24	24
-001	A	7.49	7.64	7.78	7.62	7.39	7.37	7.42	24	24	24	24	24	24	24
-002	A	7.42	7.62	7.76	7.69	7.42	7.46	7.68	24	25	24	24	24	24	24
-003	A	7.43	7.66	7.75	7.73	7.44	7.48	7.70	24	25	24	24	24	24	24
INC TEMP:		25	25	25	25	25	25	25							
DATE:		8/22/08	8/23	8/24	8/25	8-26	8/27	8-28							
TIME:		1200	1600	1710	1605	1015	1300	1230							
INIT:		SJ	DM	UB	SJ	APC	SJ	APC							

WATER QUALITY METERS USED NEW WATER QUALITIES								
	0	1	2	3	4	5	6	7
Water Quality Station #		1	1	1	2	2	1	
Initials		DM	UB	SJ	APC	SJ	APC	
Date	8/22/08	8/23	8/24	8/25	8-26	8/27	8-28	

Americamysis bahia 7 DAY CHRONIC ASSAY
OLD WATER QUALITIES

STUDY: 17629	CLIENT: BATTELLE	LOCATION: NEW BEDFORD	LAB CONTROL: HAMPTON ESTUARY

OLD SALINITY (ppt)

Conc	Rep	1	2	3	4	5	6	7
Control	A	28	28	28	28	31	29	29
-001	A	30	29	30	29	30	30	30
-002	A	30	30	30	30	30	30	30
-003	A	29	29	30	29	29	29	29

OLD pH (SU)

Conc	Rep	1	2	3	4	5	6	7
Control	A	8.01	8.03	7.79	7.71	7.93	7.93	7.79
-001	A	7.67	7.88	7.69	7.53	7.76	7.77	7.77
-002	A	7.76	7.93	7.67	7.65	7.70	7.81	7.81
-003	A	7.90	7.93	7.68	7.55	7.73	7.86	7.80

OLD TEMPERATURE (°C)

Conc	Rep	1	2	3	4	5	6	7
Control	A	25	24	24	24	24	24	24
-001	A	25	24	24	24	24	24	24
-002	A	25	24	24	24	24	24	24
-003	A	25	24	24	24	24	24	24

	1	2	3	4	5	6	7
INC TEMP:	25	25	25	25	25	25	25
DATE:	8/23/08	8/24	8/25	8-26	8/27	8-28	8/29
TIME:	1530	1045	1515	0920	1200	1145	1540
INITIALS:	DM	UB	SJ	APC	SJ	APC	UB

GENERAL NOTES - for additional information refer to SOP #1411 or EPA manual 600/4-91/003

- Test vessels will be 250 mL glass beakers containing a minimum of 150 mL of solution
- 8 replicates per site with 5 organisms each

- Test Temperature: 26±1°C
- Salinity: 25 ±2ppt
- Dissolved Oxygen: >4.3 mg/L

- Photoperiod will be 16 hours light and 8 hours dark.
- Passing criteria require ≥80% survival and average dry weight of ≥0.20 mg/organism in the control vessels.

WATER QUALITY METERS USED
OLD WATER QUALITIES

	0	1	2	3	4	5	6	7
Water Quality Station #		1	1	2	2	1	1	1
Initials		DM	UB	SJ	APC	SJ	APC	UB
Date	8/22/08	8-23-08	8/24	8/25	8-26	8/27	8-28	8/29

SALTWATER ASSAYS

A. bahia, A. punctulata, C. parvula

STUDY: 17629	LOCATION: New Bedford Harbor				
CHEMISTRY	Lab Salt Control	-001	-002	-003	
AMMONIA	17594-001	-004	-005	-006	
AS RECEIVED WATER QUALITIES	Lab Salt Control	-001	-002	-003	
SALINITY (ppt)	29	28.6	29.2	28.2	
pH (SU)	7.94	7.42	7.45	7.55	
TRC (mg/L)	<0.02	<0.02	<0.02	<0.02	
DO (mg/L)	7.4	6.2	6.1	6.6	
S/C (µmhos/cm)	43100	43570	43950	43710	
WQ STATION USED	2	2	2	2	
INITIALS	SJ	SJ	SJ	SJ	
A. bahia SALINITY ADJUSTMENT RECORD	Lab Salt Control	-001	-002	-003	
SAMPLE (mLs)					
SEA SALT (g)					
DATE:	8/22/08	8/22/08	8/22/08	8/22/08	
TIME:	1030	1030	1030	1030	
INITIALS:	SJ	SJ	SJ	SJ	

Sample ID	ESI Cube ID
17629-001	17629-001
17629-002	17629-002
17629-003	17629-003

Aquatic Research Organisms

DATA SHEET

I. Organism History

Species Americamysis bahia

Source: Lab reared ✓ Hatchery reared _____ Field collected _____

Hatch date 08/15/08 Receipt date _____

Lot number 081508MS Strain ARO

Brood origination FC

II. Water Quality

Temperature 25 °C Salinity 28 ppt D.O. SAT ppm

pH 8.3 su Hardness — ppm Alkalinity — ppm

III. Culture Conditions

Freshwater _____ Saltwater X Other _____

Recirculating _____ Flow through X Static _____

DIET: Flake food _____ Phytoplankton _____ Trout chow _____

Artemia X Rotifers _____ YCT _____ Other _____

Prophylactic treatments: _____

Comments: 7 DAYS

_____

IV. Shipping Information

Client: ESI # of Organisms 300

Carrier: PICK UP Date shipped 8/22/08

Biologist: Stan Lipinski

PO BOX 1271 HAMPTON NH 03843-1271 (603) 926-1650 AROFISH@AOL.COM

Americamysis bahia 7 DAY CHRONIC ASSAY
SURVIVAL & OLD WATER QUALITIES

STUDY:	CLIENT:	LOCATION:	LAB CONTROL:	ORGANISM BATCH/LOT#
17699	Battelle	NEW BEDFORD	HAMPTON ESTUARY	

		NUMBER OF SURVIVORS								OLD DISSOLVED OXYGEN (mg/L)						
SAMPLE	Rep	0	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Lab Control	A	5	5	5	5	5	5	5	5	6.7	5.2	6.0	6.2	6.5	6.4	6.3
	B	5	5	5	5	5	5	5	5	6.6	5.6	5.9	6.2	6.3	6.3	6.2
	C	5	5	4	4	4	4	4	4	6.6	5.8	5.9	6.1	6.3	6.3	6.1
	D	5	5	5	5	5	5	5	5	6.6	5.8	5.8	6.0	6.2	6.3	6.2
	E	5	5	5	5	5	5	5	5	6.6	5.6	5.9	6.2	6.0	6.3	6.3
	F	5	5	5	5	5	5	5	5	6.6	5.6	5.9	6.1	6.1	6.2	6.0
	G	5	5	5	5	5	5	5	5	6.6	5.4	5.8	6.2	6.2	6.2	5.8
	H	5	5	5	5	5	5	5	5	6.6	5.7	5.6	6.0	6.3	6.2	5.8
-001	A	5	5	5	4	4	4	4	4	6.6	6.1	6.2	6.1	5.7	6.3	5.9
	B	5	5	5	5	5	5	5	5	6.6	6.0	6.1	6.1	5.8	6.2	5.9
	C	5	5	5	5	5	5	5	5	6.6	6.0	6.1	6.2	5.9	6.2	5.9
	D	5	5	5	5	5	5	5	5	6.5	6.0	6.0	6.1	5.9	6.2	5.8
	E	5	5	4	4	4 (5)	4	4	4	6.5	6.1	6.0	6.1	5.9	6.1	5.7
	F	5	5	3	3	4 (3)	3	3	2	6.6	5.9	5.9	6.0	5.8	6.1	5.7
	G	5	5	5	5	5	5	5	5	6.5	6.0	5.9	6.1	5.4	6.0	5.7
	H	5	5	5	5	5	5	5	5	6.5	6.0	5.9	6.1	5.5	6.1	5.7
-002	A	5	5	5	5	5	5	5	5	6.3	5.9	5.9	6.0	5.7	6.2	5.8
	B	5	5	5	5	5	5	5	5	6.4	5.8	5.9	5.9	5.6	6.0	5.8
	C	5	5	5	5	5	5	5	5	6.5	5.8	5.9	5.9	5.7	6.0	5.8
	D	5	5	5	5	5	5	5	5	6.5	5.8	6.0	6.0	5.7	6.0	5.9
	E	5	5	4	4	4	4	4	4	6.5	6.1	6.0	6.0	5.9	6.1	5.9
	F	5	5	5	5	5	5	5	5	6.6	5.9	6.0	6.1	5.9	6.1	5.8
	G	5	5	5	5	5	5	5	5	6.4	5.8	6.0	6.1	5.9	6.1	5.7
	H	5	5	5	5	5	5	5	5	6.5	5.9	6.0	6.1	5.9	6.1	5.6
INC TEMP:		25	25	25	25	25	25	25	25							
DATE:		10/2/08	10/3	10/4	10-5	10/6	10.7	10.8	10.9							
TIME:		1415	1030	0930	1045	1040	0930	1005	0900							
INITIALS:		WM	SJ	DM	DM	SJB (5)	APC	APC	APC							

Americamysis bahia 7 DAY CHRONIC ASSAY
SURVIVAL & OLD WATER QUALITIES

STUDY:	CLIENT:	LOCATION:	LAB CONTROL:	ORGANISM BATCH/LOT#
17699	Battelle	NEW BEDFORD	HAMPTON ESTUARY	

		NUMBER OF SURVIVORS								OLD DISSOLVED OXYGEN (mg/L)						
SAMPLE	Rep	0	1	2	3	4	5	6	7	1	2	3	4	5	6	7
-003	A	5	5	5	5	5	5	5	5	6.4	5.8	6.0	6.1	6.1	6.1	5.6
	B	5	5	5	5	5	5	5	5	6.4	5.7	6.0	6.0	6.1	6.0	6.7
	C	5	5	5	5	5	5	5	5	6.4	5.9	6.1	6.1	6.0	6.1	5.9
	D	5	5	5	5	5	5	5	5	6.4	6.0	6.1	6.1	6.1	6.1	5.9
	E	5	5	5	5	5	*3	3	3	6.5	6.1	6.1	5.8	6.0	6.1	5.9
	F	5	5	5	5	5	5	5	5	6.4	5.8	5.9	5.6	6.0	6.1	5.8
	G	5	5	5	5	5	5	5	5	6.4	5.9	5.8	5.4	5.9	6.0	5.9
	H	5	5	5	5	5	5	4	4	6.4	5.9	5.9	5.8	5.9	6.1	6.0
-004	A															
	B															
	C															
	D															
	E															
	F	5														
	G															
	H															
INC TEMP:		25	25	25	25	25	25	25	25							
DATE:		10/2/08	10/3	10/4	10-5	10/6	10-7	10-8	10-9							
TIME:		1915	1030	1010	1045	1040	0930	1005	0900							
INITIALS:		CM	SJ	DM	JM	UB	APL	APL	APL							

10/6/08

CAR 144 - spilled beaker lost 2 organisms

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample No	Sample Date	Receive Date	Sample Age	Client Name	Project
17629-000	01-6030-3695	22 Aug-08 14:00	22 Aug-08 14:00	N/A	Battelle Labs	Ecological Risk Assessme
17629-003	05-4158-6637	21 Aug-08 15:20	21 Aug-08 18:40	22h		
17629-002	08-5309-8454	21 Aug-08 15:02	21 Aug-08 18:40	22h		
17629-001	09-2317-4687	21 Aug-08 14:20	21 Aug-08 18:40	23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
17629-000	Marine Monitoring Samp	New Bedford Harbor Dredge Moni	Laboratory Water Control		
17629-003	Marine Monitoring Samp	New Bedford Harbor Dredge Moni	WQ-TOX-003		
17629-002	Marine Monitoring Samp	New Bedford Harbor Dredge Moni	WQ-TOX-002		
17629-001	Marine Monitoring Samp	New Bedford Harbor Dredge Moni	WQ-TOX-001		

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Test Acceptability

Analysis No	Endpoint	Attribute	Test Stat	Acceptabilty Limits	Overlap	Decision
01-1164-5507	7d Proportion Survived	Control Resp	0.95	0.8 - NL	Yes	Passes acceptability criteria
12-8117-9100	7d Proportion Survived	Control Resp	0.95	0.8 - NL	Yes	Passes acceptability criteria
20-9815-6064	7d Proportion Survived	Control Resp	0.95	0.8 - NL	Yes	Passes acceptability criteria
06-0667-4011	Mean Dry Biomass-mg	Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
12-1684-2765	Mean Dry Biomass-mg	Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
12-3514-5195	Mean Dry Biomass-mg	Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
01-0309-5887	Mean Dry Biomass-mg	PMSD	0.3055	0.11 - 0.37	Yes	Passes acceptability criteria
01-1989-7363	Mean Dry Biomass-mg	PMSD	0.3031	0.11 - 0.37	Yes	Passes acceptability criteria
06-0667-4011	Mean Dry Biomass-mg	PMSD	0.182	0.11 - 0.37	Yes	Passes acceptability criteria
12-1684-2765	Mean Dry Biomass-mg	PMSD	0.1729	0.11 - 0.37	Yes	Passes acceptability criteria
12-3514-5195	Mean Dry Biomass-mg	PMSD	0.4228	0.11 - 0.37	Yes	Fails acceptability criteria

2d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.975	0.9486	1	0.8	1	0.01291	0.07071	7.25%	0.0%
17629-003	8	0.875	0.8363	0.9137	0.8	1	0.0189	0.1035	11.83%	10.26%
17629-002	8	1	1	1	1	1	0	0	0.0%	-2.56%
17629-001	8	1	1	1	1	1	0	0	0.0%	-2.56%

7d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.95	0.9154	0.9846	0.8	1	0.0169	0.09258	9.75%	0.0%
17629-003	8	0.85	0.7972	0.9028	0.6	1	0.02582	0.1414	16.64%	10.53%
17629-002	8	0.925	0.8863	0.9637	0.8	1	0.0189	0.1035	11.19%	2.63%
17629-001	8	0.875	0.8066	0.9434	0.6	1	0.03345	0.1832	20.94%	7.9%

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.217	0.2093	0.2247	0.184	0.242	0.003769	0.02065	9.51%	0.0%
17629-003	8	0.3215	0.267	0.376	0.208	0.598	0.02663	0.1459	45.37%	-48.16%
17629-002	8	0.263	0.2406	0.2854	0.192	0.364	0.01095	0.05997	22.8%	-21.2%
17629-001	8	0.3012	0.2801	0.3224	0.212	0.384	0.01033	0.0566	18.79%	-38.82%

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.2299	0.2194	0.2404	0.194	0.2875	0.00513	0.0281	12.22%	0.0%
17629-003	8	0.3744	0.3232	0.4257	0.212	0.598	0.02507	0.1373	36.67%	-62.84%
17629-002	8	0.2844	0.2637	0.3051	0.21	0.364	0.01013	0.05548	19.51%	-23.68%
17629-001	8	0.3524	0.3262	0.3786	0.254	0.4525	0.01279	0.07008	19.89%	-53.26%

2d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	1	1	1	1	1	1	1	0.8
17629-003	0.8	1	0.8	0.8	0.8	0.8	1	1
17629-002	1	1	1	1	1	1	1	1
17629-001	1	1	1	1	1	1	1	1

7d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	1	1	0.8	1	1	1	1	0.8
17629-003	0.6	1	0.8	0.8	0.8	0.8	1	1
17629-002	1	1	1	0.8	1	1	0.8	0.8
17629-001	1	0.6	1	0.8	0.6	1	1	1

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	0.224	0.194	0.23	0.216	0.242	0.238	0.208	0.184
17629-003	0.21	0.212	0.268	0.208	0.222	0.436	0.598	0.418
17629-002	0.238	0.364	0.288	0.192	0.21	0.32	0.214	0.278
17629-001	0.318	0.266	0.254	0.362	0.212	0.384	0.314	0.3

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	0.224	0.194	0.2875	0.216	0.242	0.238	0.208	0.23
17629-003	0.35	0.212	0.335	0.26	0.2775	0.545	0.598	0.418
17629-002	0.238	0.364	0.288	0.24	0.21	0.32	0.2675	0.3475
17629-001	0.318	0.4433	0.254	0.4525	0.3533	0.384	0.314	0.3

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	03-0969-9106	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:16	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					25.64%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-001	0.4044	1.761	0.096	0.3460	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0019435	0.0019435	1	0.1635	0.6920	Non-Significant Effect
Error	0.1663766	0.0118840	14			
Total	0.1683201	0.0138275	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	3.84	8.885	0.0967	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9567		0.6031	Normal Distribution

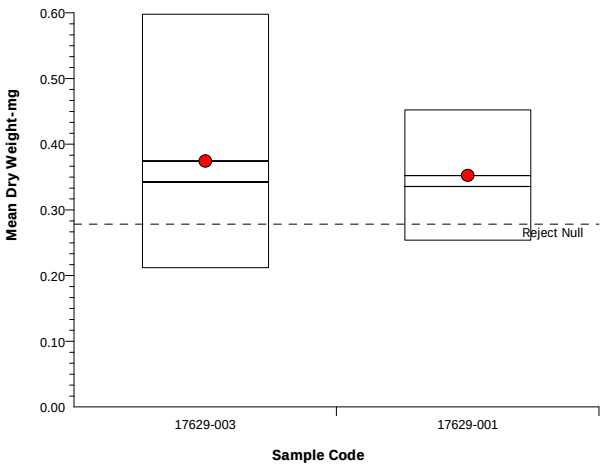
Mean Dry Weight-mg Summary

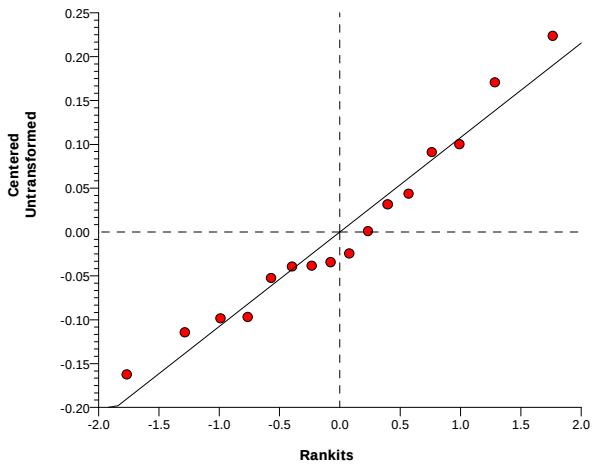
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.3744	0.3222	0.4267	0.212	0.598	0.0255	0.1373	36.67%	0.0%
17629-001	8	0.3524	0.3257	0.3791	0.254	0.4525	0.01301	0.07008	19.89%	5.89%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-003	0.598	0.545	0.418	0.35	0.335	0.2775	0.26	0.212
17629-001	0.4525	0.4433	0.384	0.3533	0.318	0.314	0.3	0.254

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	05-9215-7737	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:16	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					24.63%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-002	1.72	1.761	0.09223	0.0537	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.032445	0.032445	1	2.958	0.1075	Non-Significant Effect
Error	0.1535449	0.0109675	14			
Total	0.1859899	0.0434125	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	6.127	8.885	0.0289	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9598		0.6584	Normal Distribution

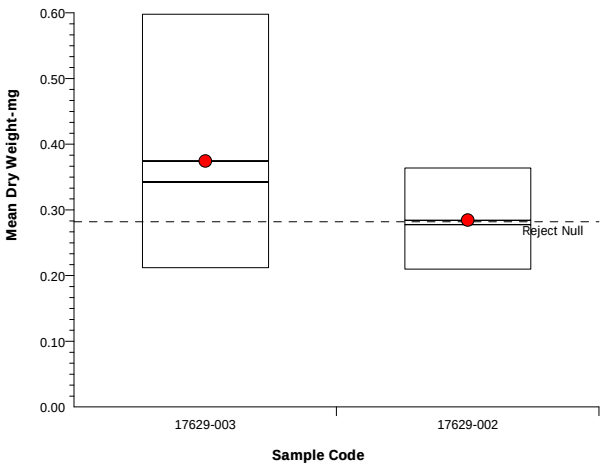
Mean Dry Weight-mg Summary

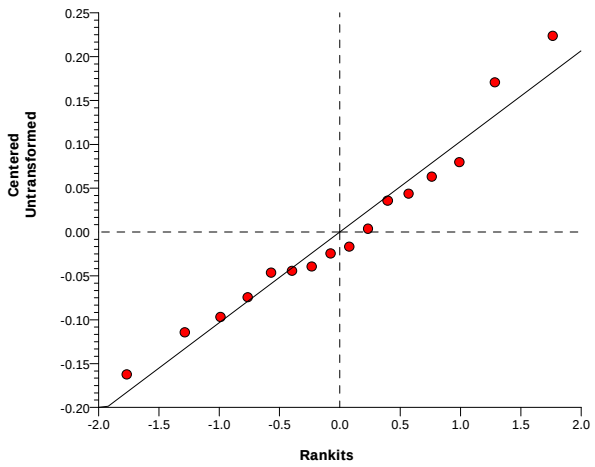
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.3744	0.3222	0.4267	0.212	0.598	0.0255	0.1373	36.67%	0.0%
17629-002	8	0.2844	0.2633	0.3055	0.21	0.364	0.0103	0.05548	19.51%	24.05%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-003	0.598	0.545	0.418	0.35	0.335	0.2775	0.26	0.212
17629-002	0.364	0.3475	0.32	0.288	0.2675	0.24	0.238	0.21

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	15-7062-5725	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:15	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					20.45%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-001	-4.588	1.761	0.04701	0.9998	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.059984	0.059984	1	21.05	0.0004	Significant Effect
Error	0.0399006	0.0028500	14			
Total	0.0998846	0.0628340	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	6.22	8.885	0.0277	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9584		0.6332	Normal Distribution

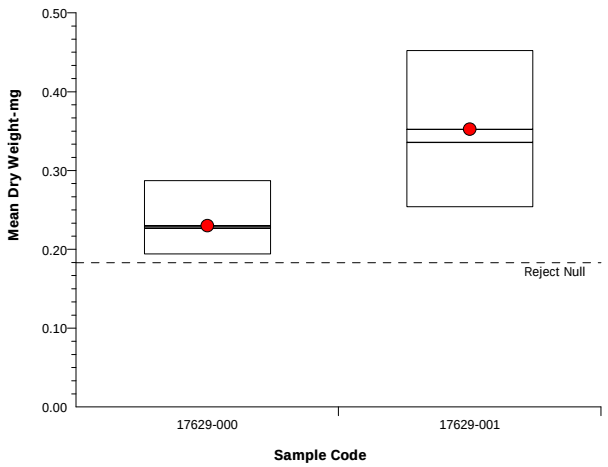
Mean Dry Weight-mg Summary

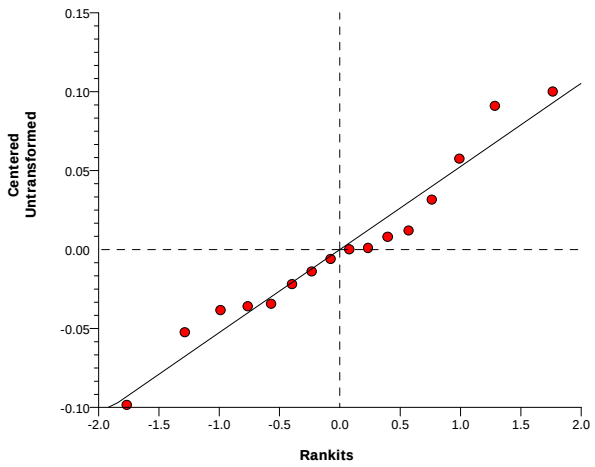
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.2299	0.2192	0.2406	0.194	0.2875	0.005217	0.0281	12.22%	0.0%
17629-001	8	0.3524	0.3257	0.3791	0.254	0.4525	0.01301	0.07008	19.89%	-53.26%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	0.2875	0.242	0.238	0.23	0.224	0.216	0.208	0.194
17629-001	0.4525	0.4433	0.384	0.3533	0.318	0.314	0.3	0.254

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	08-6048-2432	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:15	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					16.84%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-002	-2.476	1.761	0.03872	0.9867	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0118541	0.0118541	1	6.131	0.0267	Significant Effect
Error	0.0270689	0.0019335	14			
Total	0.038923	0.0137876	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	3.898	8.885	0.0933	Equal Variances
Distribution	Shapiro-Wilk Normality	0.97		0.8379	Normal Distribution

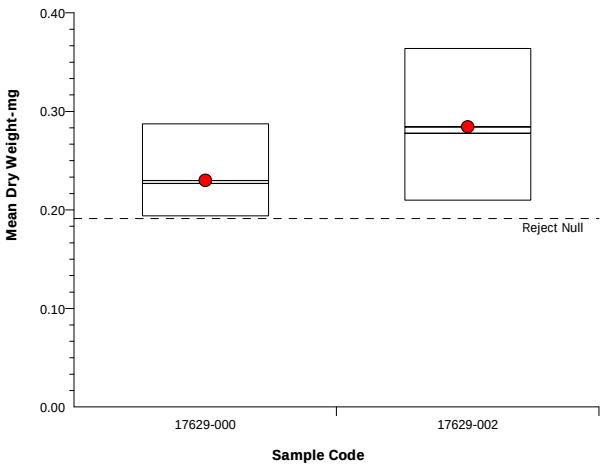
Mean Dry Weight-mg Summary

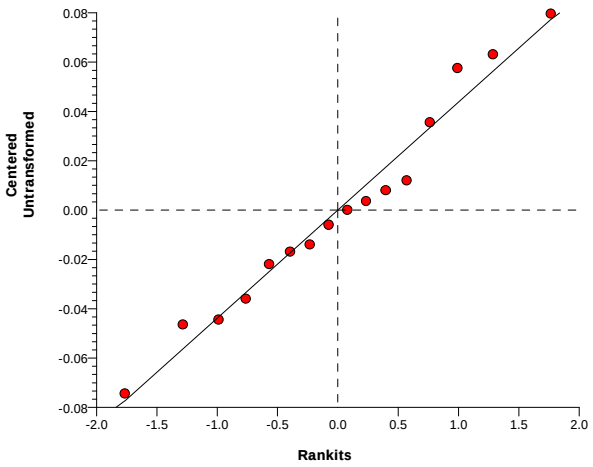
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.2299	0.2192	0.2406	0.194	0.2875	0.005217	0.0281	12.22%	0.0%
17629-002	8	0.2844	0.2633	0.3055	0.21	0.364	0.0103	0.05548	19.51%	-23.68%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	0.2875	0.242	0.238	0.23	0.224	0.216	0.208	0.194
17629-002	0.364	0.3475	0.32	0.288	0.2675	0.24	0.238	0.21

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	20-6063-8926	**Endpoint:**	Mean Dry Weight-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:15	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					37.96%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	-2.916	1.761	0.08728	0.9944	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0835218	0.0835218	1	8.502	0.0113	Significant Effect
Error	0.1375281	0.0098234	14			
Total	0.2210499	0.0933452	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	23.89	8.885	0.0004	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.9199		0.1679	Normal Distribution

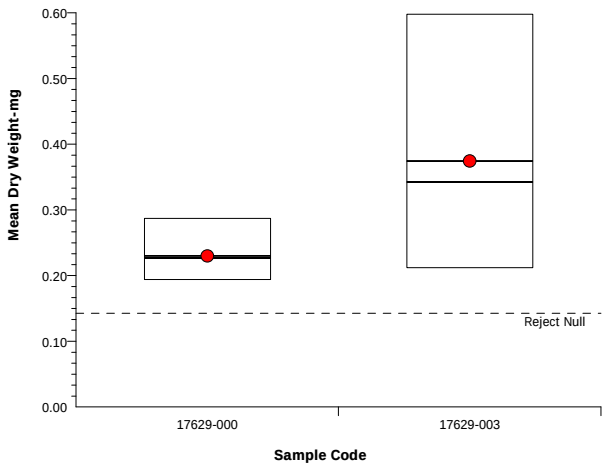
Mean Dry Weight-mg Summary

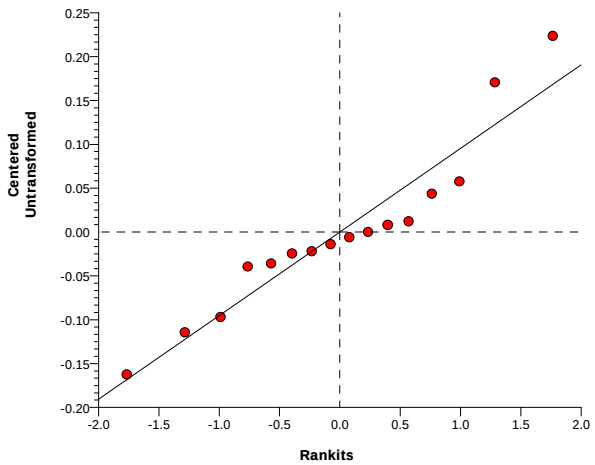
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.2299	0.2192	0.2406	0.194	0.2875	0.005217	0.0281	12.22%	0.0%
17629-003	8	0.3744	0.3222	0.4267	0.212	0.598	0.0255	0.1373	36.67%	-62.84%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	0.2875	0.242	0.238	0.23	0.224	0.216	0.208	0.194
17629-003	0.598	0.545	0.418	0.35	0.335	0.2775	0.26	0.212

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	01-1989-7363	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:13	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					30.31%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-001	0.3661	1.761	0.09743	0.3599	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0016404	0.0016404	1	0.134	0.7198	Non-Significant Effect
Error	0.1713662	0.0122404	14			
Total	0.1730065	0.0138808	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	6.642	8.885	0.0231	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8958		0.0688	Normal Distribution

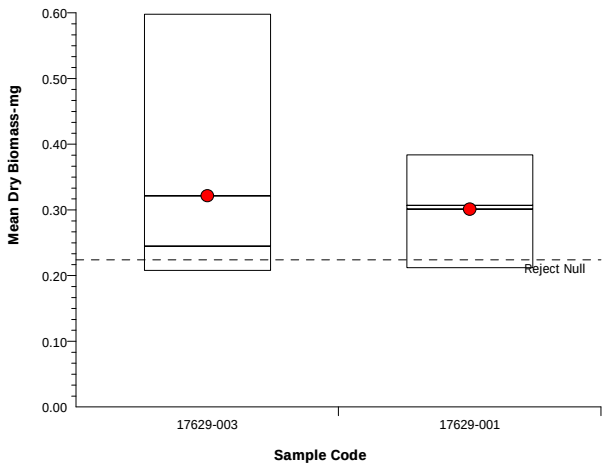
Mean Dry Biomass-mg Summary

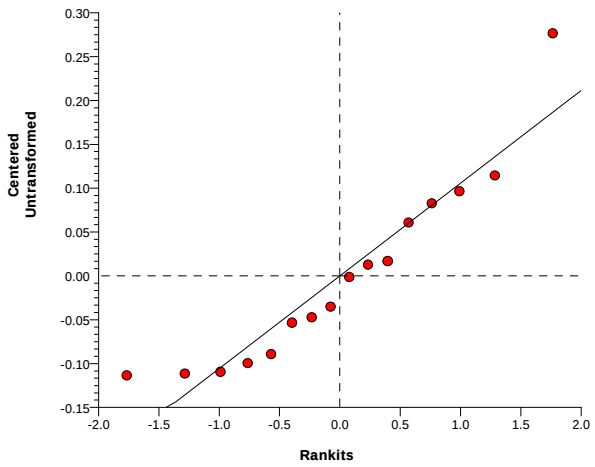
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.3215	0.266	0.377	0.208	0.598	0.02709	0.1459	45.37%	0.0%
17629-001	8	0.3012	0.2797	0.3228	0.212	0.384	0.01051	0.0566	18.79%	6.3%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-003	0.598	0.436	0.418	0.268	0.222	0.212	0.21	0.208
17629-001	0.384	0.362	0.318	0.314	0.3	0.266	0.254	0.212

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	01-0309-5887	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:13	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					30.55%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-002	1.049	1.761	0.09821	0.1559	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.013689	0.013689	1	1.101	0.3119	Non-Significant Effect
Error	0.1741183	0.0124370	14			
Total	0.1878072	0.026126	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	5.916	8.885	0.0318	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8894		0.0545	Normal Distribution

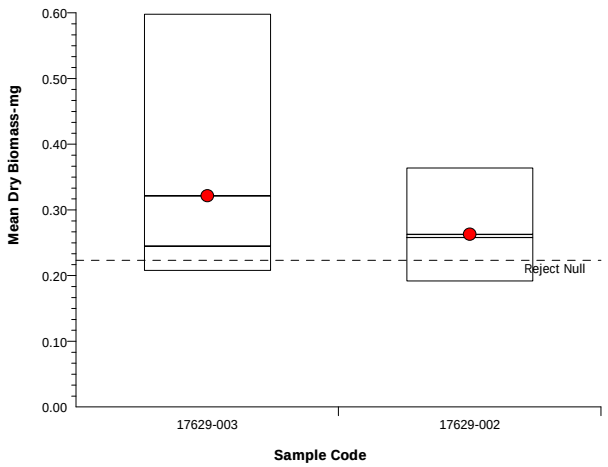
Mean Dry Biomass-mg Summary

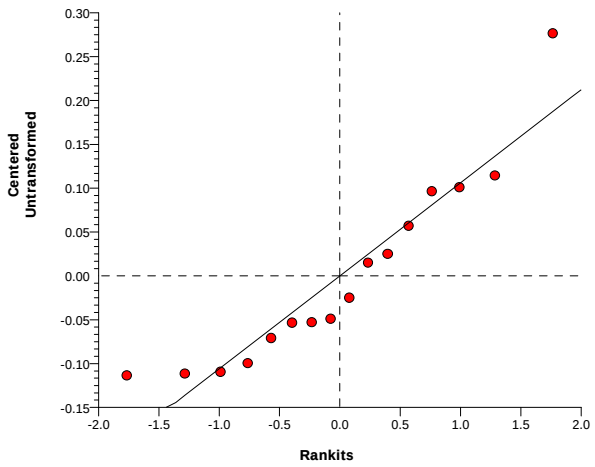
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.3215	0.266	0.377	0.208	0.598	0.02709	0.1459	45.37%	0.0%
17629-002	8	0.263	0.2402	0.2858	0.192	0.364	0.01114	0.05997	22.8%	18.2%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-003	0.598	0.436	0.418	0.268	0.222	0.212	0.21	0.208
17629-002	0.364	0.32	0.288	0.278	0.238	0.214	0.21	0.192

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	12-1684-2765	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:12	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					17.29%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-001	-3.955	1.761	0.03752	0.9993	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0283922	0.0283922	1	15.64	0.0014	Significant Effect
Error	0.0254070	0.0018148	14			
Total	0.0537992	0.030207	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	7.515	8.885	0.0163	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9717		0.8646	Normal Distribution

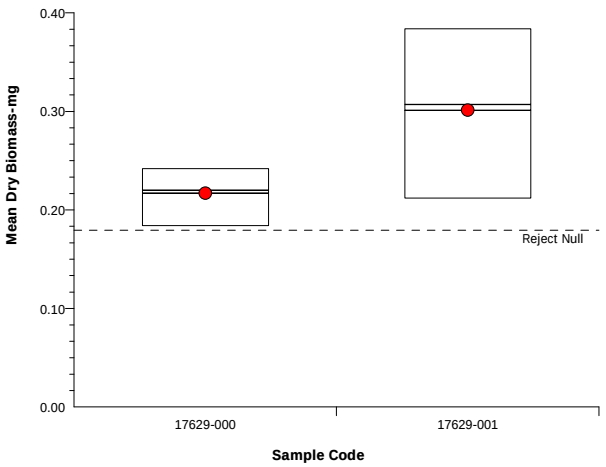
Mean Dry Biomass-mg Summary

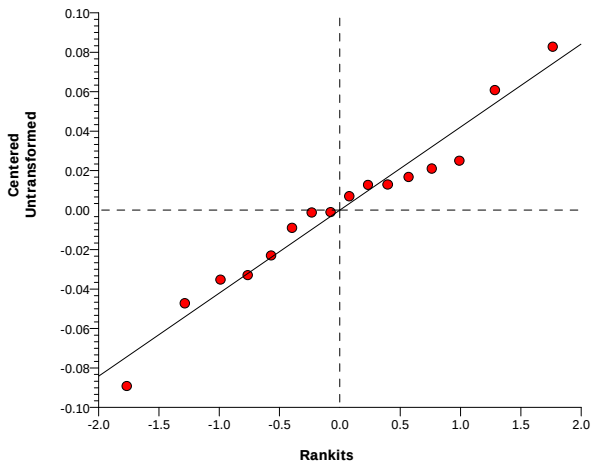
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.217	0.2091	0.2249	0.184	0.242	0.003834	0.02065	9.51%	0.0%
17629-001	8	0.3012	0.2797	0.3228	0.212	0.384	0.01051	0.0566	18.79%	-38.82%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	0.242	0.238	0.23	0.224	0.216	0.208	0.194	0.184
17629-001	0.384	0.362	0.318	0.314	0.3	0.266	0.254	0.212

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	06-0667-4011	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:12	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					18.2%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-002	-2.051	1.761	0.0395	0.9703	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0084642	0.0084642	1	4.208	0.0594	Non-Significant Effect
Error	0.0281591	0.0020114	14			
Total	0.0366234	0.0104756	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	8.438	8.885	0.0116	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9669		0.7855	Normal Distribution

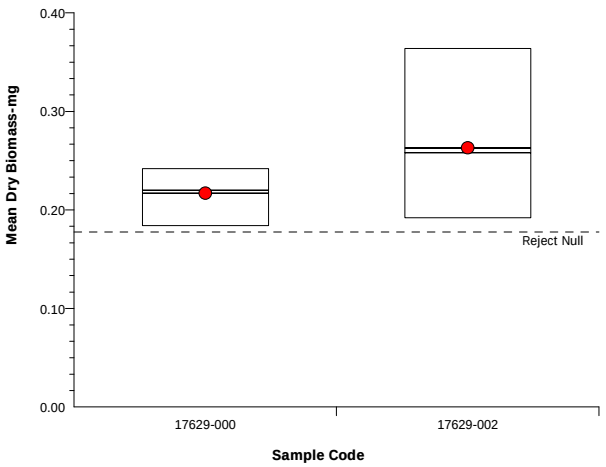
Mean Dry Biomass-mg Summary

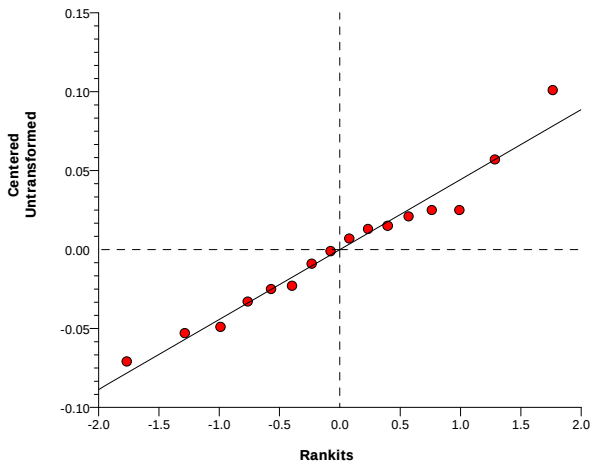
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.217	0.2091	0.2249	0.184	0.242	0.003834	0.02065	9.51%	0.0%
17629-002	8	0.263	0.2402	0.2858	0.192	0.364	0.01114	0.05997	22.8%	-21.2%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	0.242	0.238	0.23	0.224	0.216	0.208	0.194	0.184
17629-002	0.364	0.32	0.288	0.278	0.238	0.214	0.21	0.192

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	12-3514-5195	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.6.4
Analyzed:	02 Sep-08 11:12	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					42.28%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	-2.006	1.761	0.09174	0.9677	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0436815	0.0436815	1	4.025	0.0645	Non-Significant Effect
Error	0.1519266	0.0108519	14			
Total	0.1956081	0.0545334	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	49.92	8.885	0.0000	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.8766		0.0343	Normal Distribution

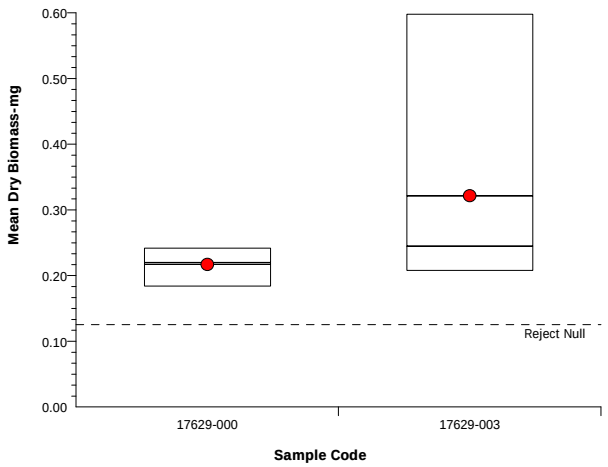
Mean Dry Biomass-mg Summary

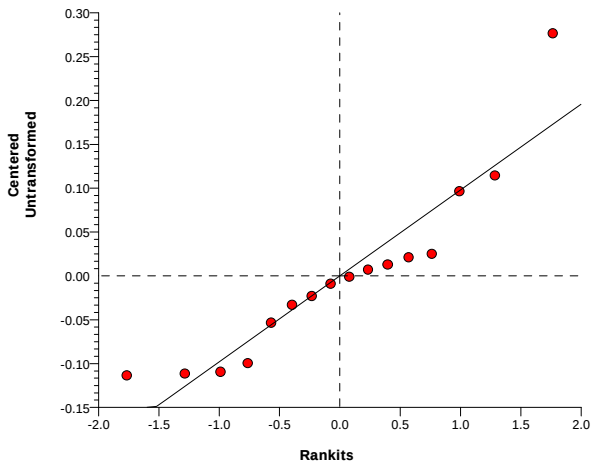
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.217	0.2091	0.2249	0.184	0.242	0.003834	0.02065	9.51%	0.0%
17629-003	8	0.3215	0.266	0.377	0.208	0.598	0.02709	0.1459	45.37%	-48.16%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	0.242	0.238	0.23	0.224	0.216	0.208	0.194	0.184
17629-003	0.598	0.436	0.418	0.268	0.222	0.212	0.21	0.208

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	14-9000-0868	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					16.44%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-003		17629-001	72.5		3	0.7292	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0040703	0.0040703	1	0.114	0.7406	Non-Significant Effect
Error	0.4998225	0.0357016	14			
Total	0.5038928	0.0397719	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.651	8.885	0.5244	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8161		0.0045	Non-normal Distribution

7d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.85	0.7962	0.9038	0.6	1	0.02626	0.1414	16.64%	0.0%
17629-001	8	0.875	0.8053	0.9447	0.6	1	0.03402	0.1832	20.94%	-2.94%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	1.169	1.106	1.231	0.8861	1.345	0.03048	0.1641	14.04%	0.0%
17629-001	8	1.201	1.121	1.281	0.8861	1.345	0.03916	0.2109	17.56%	-2.73%

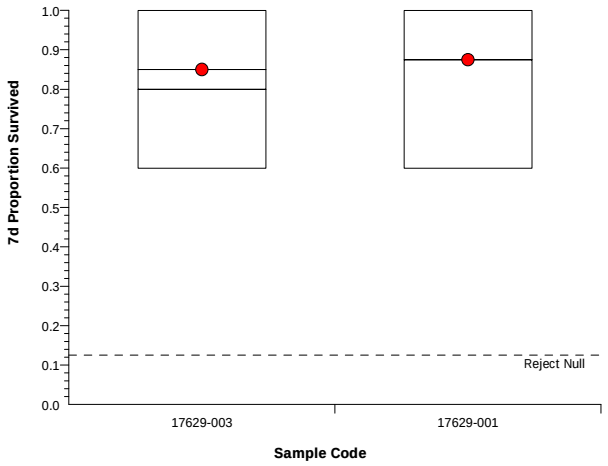
Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

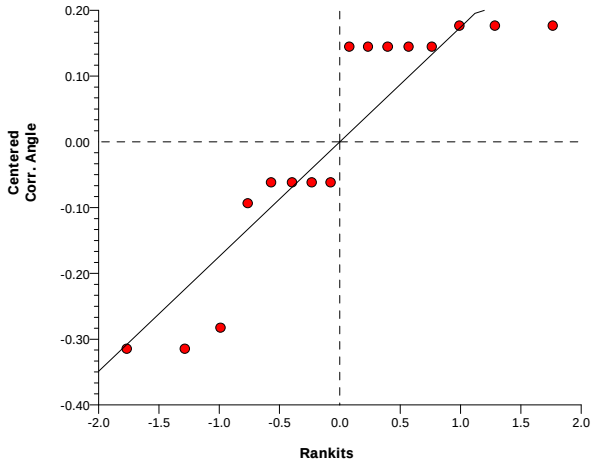
Analysis No:	14-9000-0868	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

7d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-003	1	1	1	0.8	0.8	0.8	0.8	0.6
17629-001	1	1	1	1	1	0.8	0.6	0.6

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	18-1670-2733	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					12.4%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-002	-1.201	1.761	0.1278	0.8752	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0303927	0.0303927	1	1.443	0.2496	Non-Significant Effect
Error	0.2949017	0.0210644	14			
Total	0.3252944	0.0514571	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.774	8.885	0.4674	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9039		0.0929	Normal Distribution

7d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.85	0.7962	0.9038	0.6	1	0.02626	0.1414	16.64%	0.0%
17629-002	8	0.925	0.8856	0.9644	0.8	1	0.01922	0.1035	11.19%	-8.82%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	1.169	1.106	1.231	0.8861	1.345	0.03048	0.1641	14.04%	0.0%
17629-002	8	1.256	1.209	1.303	1.107	1.345	0.02289	0.1232	9.81%	-7.46%

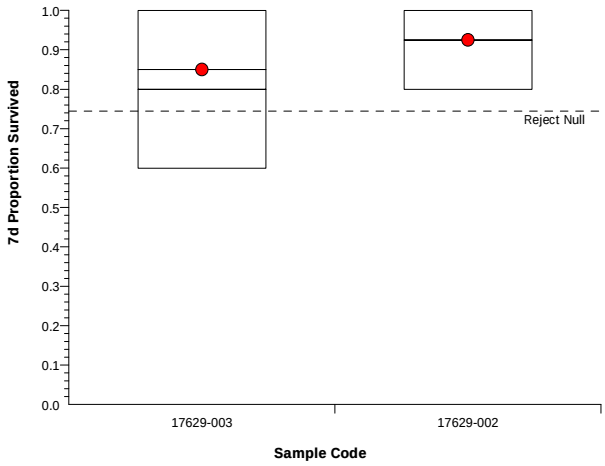
Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

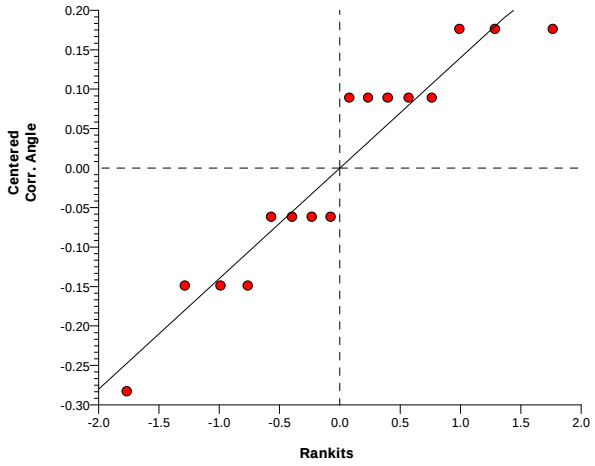
Analysis No:	18-1670-2733	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

7d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-003	1	1	1	0.8	0.8	0.8	0.8	0.6
17629-002	1	1	1	1	1	0.8	0.8	0.8

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	20-9815-6064	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					13.29%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-000		17629-001	62		2	0.2538	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0289236	0.0289236	1	1.022	0.3293	Non-Significant Effect
Error	0.3963099	0.0283079	14			
Total	0.4252335	0.0572314	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	3.659	8.885	0.1085	Equal Variances
Distribution	Shapiro-Wilk Normality	0.7966		0.0025	Non-normal Distribution

7d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.95	0.9148	0.9852	0.8	1	0.01719	0.09258	9.75%	0.0%
17629-001	8	0.875	0.8053	0.9447	0.6	1	0.03402	0.1832	20.94%	7.9%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.286	1.244	1.328	1.107	1.345	0.02047	0.1102	8.57%	0.0%
17629-001	8	1.201	1.121	1.281	0.8861	1.345	0.03916	0.2109	17.56%	6.61%

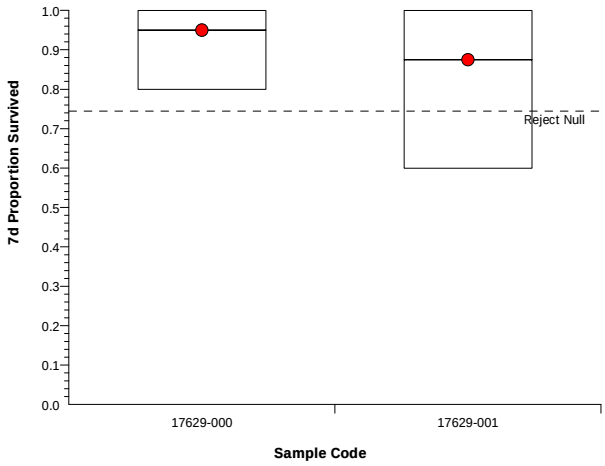
Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

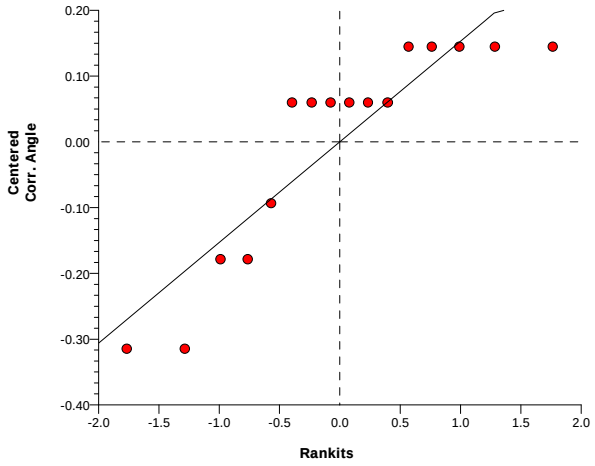
Analysis No:	20-9815-6064	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

7d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	1	1	1	1	1	1	0.8	0.8
17629-001	1	1	1	1	1	0.8	0.6	0.6

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	01-1164-5507	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					9.8%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-000		17629-002	64		2	0.4992	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0035442	0.0035442	1	0.2593	0.6186	Non-Significant Effect
Error	0.1913892	0.0136707	14			
Total	0.1949334	0.0172149	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.25	8.885	0.7760	Equal Variances
Distribution	Shapiro-Wilk Normality	0.6932		0.0001	Non-normal Distribution

7d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.95	0.9148	0.9852	0.8	1	0.01719	0.09258	9.75%	0.0%
17629-002	8	0.925	0.8856	0.9644	0.8	1	0.01922	0.1035	11.19%	2.63%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.286	1.244	1.328	1.107	1.345	0.02047	0.1102	8.57%	0.0%
17629-002	8	1.256	1.209	1.303	1.107	1.345	0.02289	0.1232	9.81%	2.32%

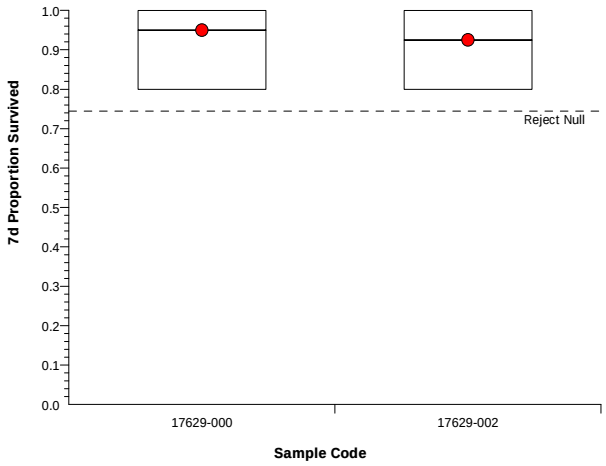
Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

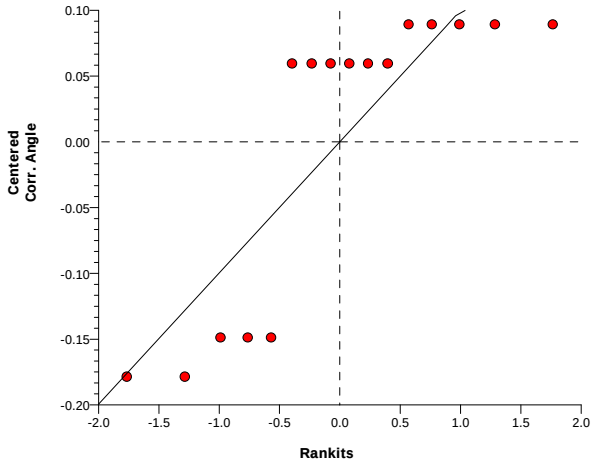
Analysis No:	01-1164-5507	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

7d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	1	1	1	1	1	1	0.8	0.8
17629-002	1	1	1	1	1	0.8	0.8	0.8

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	12-8117-9100	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					11.32%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	1.673	1.761	0.1231	0.0583	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0546945	0.0546945	1	2.798	0.1166	Non-Significant Effect
Error	0.2736363	0.0195455	14			
Total	0.3283308	0.07424	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	2.217	8.885	0.3154	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9095		0.1144	Normal Distribution

7d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.95	0.9148	0.9852	0.8	1	0.01719	0.09258	9.75%	0.0%
17629-003	8	0.85	0.7962	0.9038	0.6	1	0.02626	0.1414	16.64%	10.53%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.286	1.244	1.328	1.107	1.345	0.02047	0.1102	8.57%	0.0%
17629-003	8	1.169	1.106	1.231	0.8861	1.345	0.03048	0.1641	14.04%	9.09%

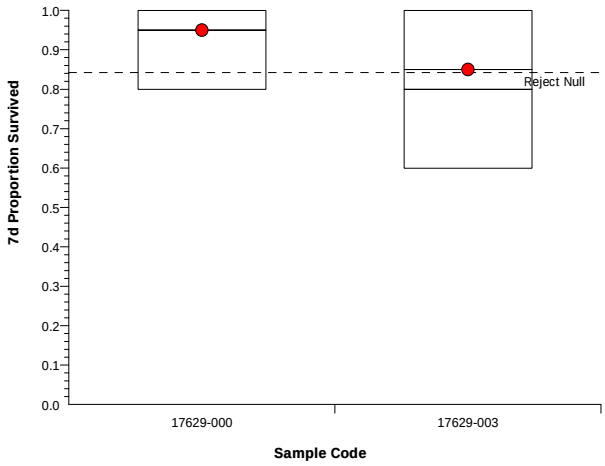
Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

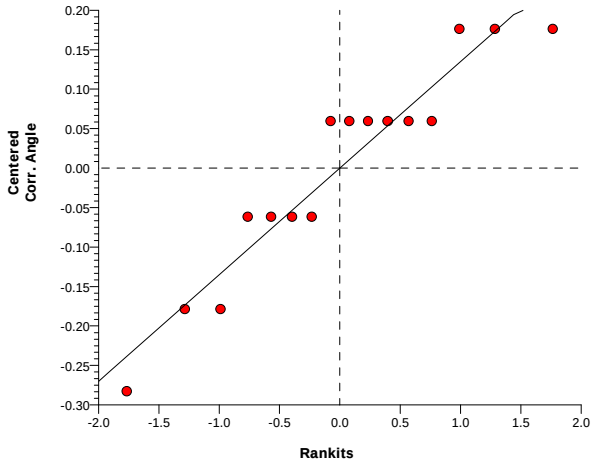
Analysis No:	12-8117-9100	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

7d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	1	1	1	1	1	1	0.8	0.8
17629-003	1	1	1	0.8	0.8	0.8	0.8	0.6

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	00-2491-7286	**Endpoint:**	2d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					7.43%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-003		17629-001	88		1	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0886061	0.0886061	1	11.67	0.0042	Significant Effect
Error	0.1063273	0.0075948	14			
Total	0.1949334	0.0962009	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	4.2	8.862	0.0597	Equal Variances
Distribution	Shapiro-Wilk Normality	0.7854		0.0018	Non-normal Distribution

2d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.875	0.8356	0.9144	0.8	1	0.01922	0.1035	11.83%	0.0%
17629-001	8	1	1	1	1	1	0	0	0.0%	-14.29%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	1.196	1.15	1.243	1.107	1.345	0.02289	0.1232	10.3%	0.0%
17629-001	8	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	-12.44%

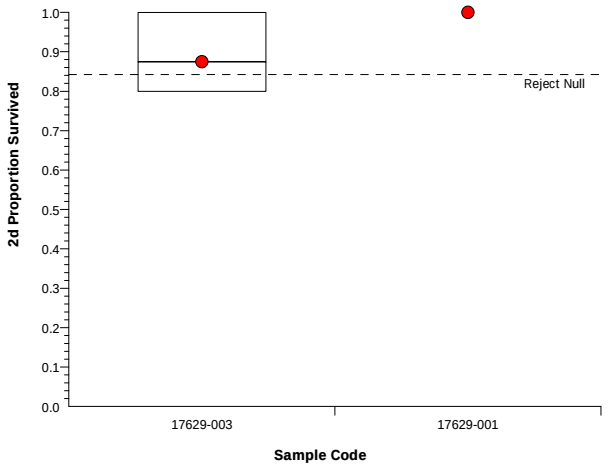
Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

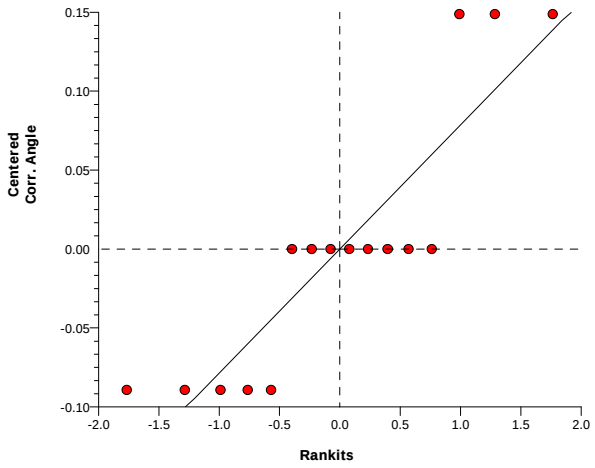
Analysis No:	00-2491-7286	**Endpoint:**	2d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

2d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-003	1	1	1	0.8	0.8	0.8	0.8	0.8
17629-001	1	1	1	1	1	1	1	1

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	02-1154-2686	**Endpoint:**	2d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					7.43%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-003		17629-002	88		1	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0886061	0.0886061	1	11.67	0.0042	Significant Effect
Error	0.1063273	0.0075948	14			
Total	0.1949334	0.0962009	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	4.2	8.862	0.0597	Equal Variances
Distribution	Shapiro-Wilk Normality	0.7854		0.0018	Non-normal Distribution

2d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.875	0.8356	0.9144	0.8	1	0.01922	0.1035	11.83%	0.0%
17629-002	8	1	1	1	1	1	0	0	0.0%	-14.29%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	1.196	1.15	1.243	1.107	1.345	0.02289	0.1232	10.3%	0.0%
17629-002	8	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	-12.44%

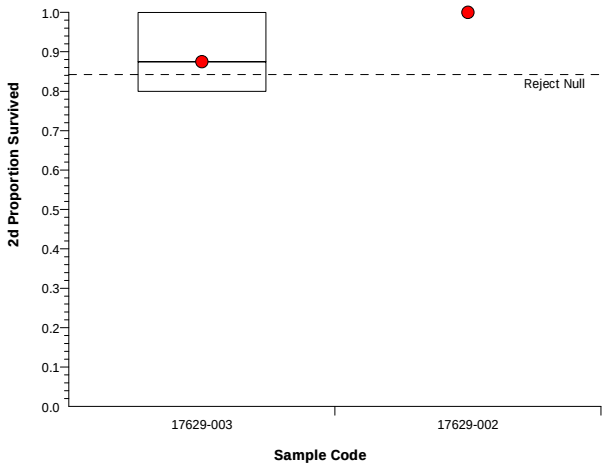
Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

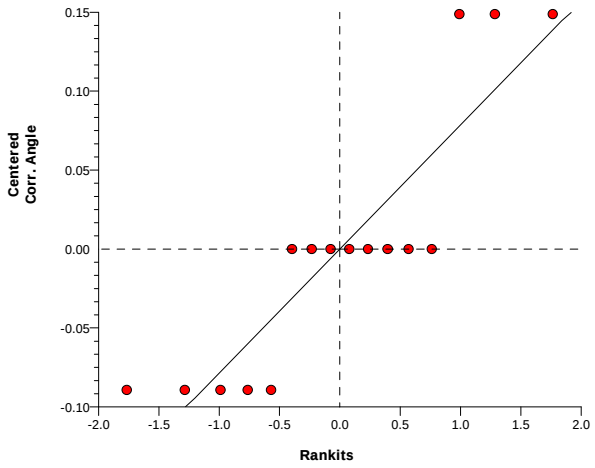
Analysis No:	02-1154-2686	**Endpoint:**	2d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:27	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

2d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-003	1	1	1	0.8	0.8	0.8	0.8	0.8
17629-002	1	1	1	1	1	1	1	1

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	09-5397-8859	**Endpoint:**	2d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:26	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					6.84%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-000		17629-001	72		1	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0035442	0.0035442	1	1	0.3343	Non-Significant Effect
Error	0.0496194	0.0035442	14			
Total	0.0531637	0.0070885	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	1	8.862	0.3343	Equal Variances
Distribution	Shapiro-Wilk Normality	0.4689		0.0000	Non-normal Distribution

2d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.975	0.9481	1	0.8	1	0.01313	0.07071	7.25%	0.0%
17629-001	8	1	1	1	1	1	0	0	0.0%	-2.56%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.316	1.283	1.348	1.107	1.345	0.01563	0.08419	6.4%	0.0%
17629-001	8	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	-2.26%

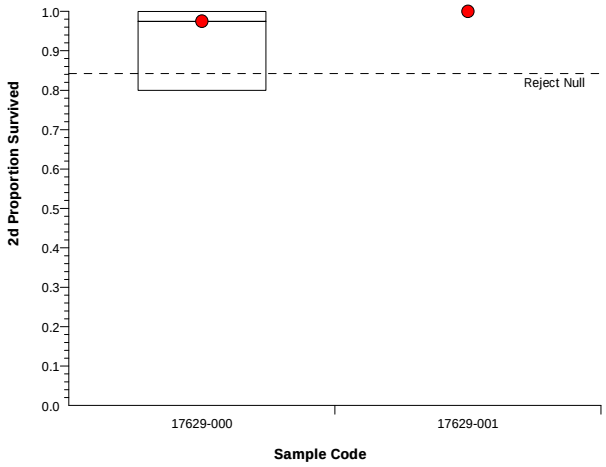
Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

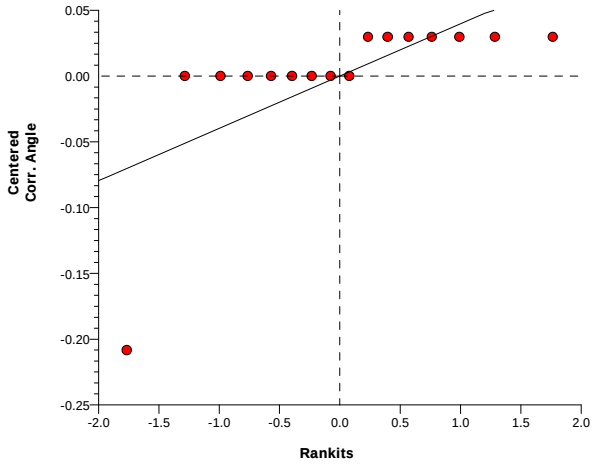
Analysis No:	09-5397-8859	**Endpoint:**	2d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:26	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

2d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	1	1	1	1	1	1	1	0.8
17629-001	1	1	1	1	1	1	1	1

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	18-2611-3572	**Endpoint:**	2d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:26	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					6.84%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-000		17629-002	72		1	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0035442	0.0035442	1	1	0.3343	Non-Significant Effect
Error	0.0496194	0.0035442	14			
Total	0.0531637	0.0070885	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	1	8.862	0.3343	Equal Variances
Distribution	Shapiro-Wilk Normality	0.4689		0.0000	Non-normal Distribution

2d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.975	0.9481	1	0.8	1	0.01313	0.07071	7.25%	0.0%
17629-002	8	1	1	1	1	1	0	0	0.0%	-2.56%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.316	1.283	1.348	1.107	1.345	0.01563	0.08419	6.4%	0.0%
17629-002	8	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	-2.26%

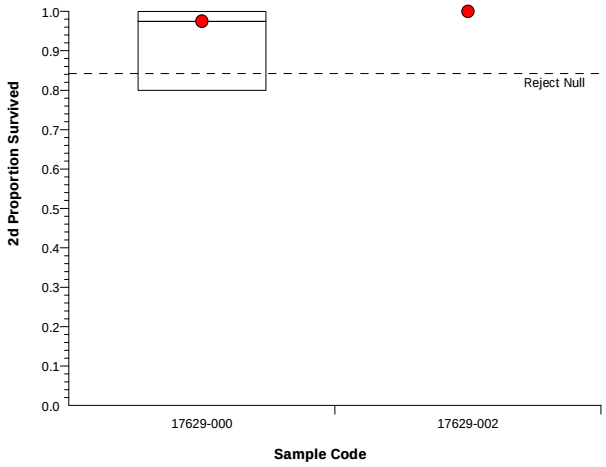
Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

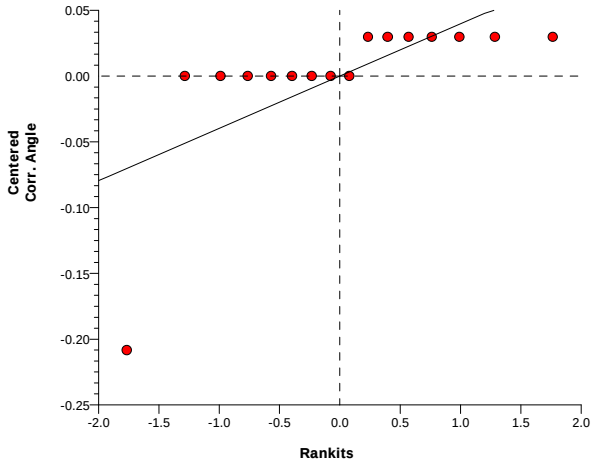
Analysis No:	18-2611-3572	**Endpoint:**	2d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:26	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

2d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	1	1	1	1	1	1	1	0.8
17629-002	1	1	1	1	1	1	1	1

Graphics





Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Analysis No:	20-8833-8706	**Endpoint:**	2d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:26	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	05-6477-7504	**Test Type:**	Growth-Survival-Fec (7d)	**Analyst:**	
Start Date:	22 Aug-08 13:05	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	29 Aug-08 15:55	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	7d 3h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					9.38%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	2.256	1.761	0.09295	0.0203	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0567079	0.0567079	1	5.091	0.0406	Significant Effect
Error	0.1559467	0.0111391	14			
Total	0.2126546	0.067847	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	2.143	8.885	0.3361	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8838		0.0445	Normal Distribution

2d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.975	0.9481	1	0.8	1	0.01313	0.07071	7.25%	0.0%
17629-003	8	0.875	0.8356	0.9144	0.8	1	0.01922	0.1035	11.83%	10.26%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.316	1.283	1.348	1.107	1.345	0.01563	0.08419	6.4%	0.0%
17629-003	8	1.196	1.15	1.243	1.107	1.345	0.02289	0.1232	10.3%	9.05%

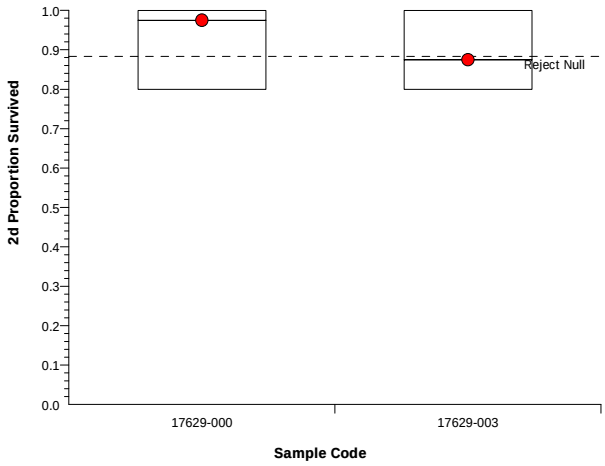
Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

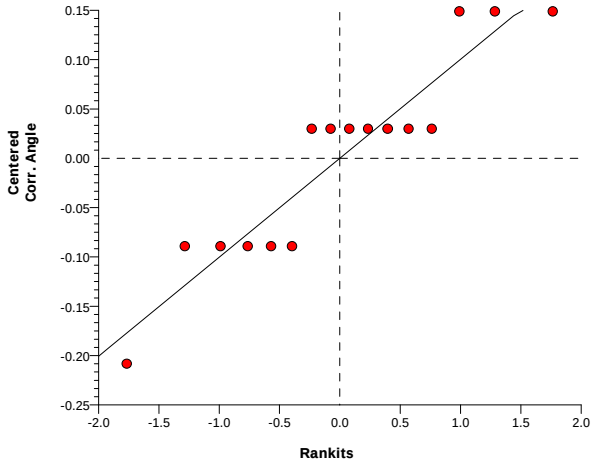
Analysis No:	20-8833-8706	**Endpoint:**	2d Proportion Survived	**CETIS Version:**	CETISv1.6.4
Analyzed:	29 Aug-08 17:26	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

2d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	1	1	1	1	1	1	1	0.8
17629-003	1	1	1	0.8	0.8	0.8	0.8	0.8

Graphics





Arbacia punctulata Chronic Fertilization Assay
Water Quality and Gamete Preparation Data

STUDY: 17699	CLIENT: BATTELLE	LOCATION: New Bedford	DATE: 10/2/08 INITIALS: LB

SALINITY ADJUSTMENT RECORD: 1000 mL -001 + 11 g SALT

SALINITY ADJUSTMENT RECORD: 1000 mL -002 + 11 g SALT

SALINITY ADJUSTMENT RECORD: 1000 mL -003 + 24 g SALT

~~SALINITY ADJUSTMENT RECORD: ____ mL -004 + ____ g SALT~~

SALINITY ADJUSTED SAMPLE	D.O. (mg/L)	pH (SU)	SPEC COND (µmhos)	TEMP (°C)	SALINITY (ppt)
Lab Control	~~@ 25~~ 7.2 7.1	~~7.92~~ 8.19	~~39200~~ 43800	~~@ 4~~ 21 24	~~25~~ 28
-001	~~9.2~~ 7.2	~~7.13~~ 7.84	~~32400~~ 44370	~~4~~ 21	~~20.7~~ 29
-002	7.7 7.1	7.47 7.91	31550 45140	4 21	20.4 29
-003	~~9.4~~ 7.2	~~6.80~~ 7.95	~~14930~~ 44410	4 21	~~9.0~~ 29
~~-004~~					

METERS USED

DO meter # 3 DO probe # 82 pH meter # 1097 pH probe # 83 S/C meter # ~~YSI 30C~~ S/C probe # ~~YSI 30C~~

SALINITY meter # ~~YSI 30C~~

DATE & INITIALS FOR GAMETE PREPARATION: ~~@ 737~~ 10/2/08 LB

SPERM DILUTIONS:

HEMACYTOMETER COUNT, E: ~~1.37~~ 137 X 10^4 = SPM SOLUTION E = 1.37×10^6

SPERM CONCENTRATIONS:
SOLUTION E X 40 = SOLUTION A = 5.48×10^7 SPM
SOLUTION E X 20 = SOLUTION B = 2.74×10^7 SPM
SOLUTION E X 5 = SOLUTION C = 0.85×10^6 SPM

FINAL COUNTS:

FINAL SPERM COUNT: 1.37×10^6
FINAL EGG COUNT: 2000

TEST TIMES:

SPERM COLLECTED: 1515
EGGS COLLECTED: 1600
SPERM ADDED: 1525
EGGS ADDED: 1625
FIXATIVE ADDED: 1645

See ESI SOP #1412 for additional information

Arbacia punctulata Chronic Fertilization Assay

SAMPLE USE RECORD

STUDY: 17699	CLIENT: Battelle - New Bedford
SPECIES: *A. punctulata*	

	Day: 0	
SAMPLE	Volume Used (mL)	ESI Cube ID
Lab Control	100	~~00~~ 17778
-001	100	001
-002	100	002
-003	100	003
~~-004~~ (E3)		
INITIALS: 10/4/08	LB	
TIME:	1450	
DATE:	10/2/08	

FERTILIZATION COUNTS

STUDY	CLIENT: BATTELLE	LOCATION: New Bedford	DATE: 10/3/08 INITIALS: SJ

	REPLICATE VIAL			
	1	2	3	4
SAMPLE	FERT/TOTAL	FERT/TOTAL	FERT/TOTAL	FERT/TOTAL
Lab Control	100 / 101	100 / 103	100 / 100	101 / 102
-001	101 / 106	104 / 111	100 / 108	100 / 109
-002	90 / 112	96 / 110	92 / 107	90 / 110
-003	105 / 111	102 / 108	100 / 103	100 / 104
~~-004~~ (E3)				

CETIS Summary Report

Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Test Run No:	19-1583-5511	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	02 Oct-08 15:25	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	02 Oct-08 16:45	**Species:**	Arbacia punctulata	**Brine:**	Not Applicable
Duration:	80m	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample No	Sample Date	Receive Date	Sample Age	Client Name	Project
17699-000	17-1203-2644	02 Oct-08 16:00	02 Oct-08 16:00	N/A	Battelle Labs	Ecological Risk Assessme
17699-003 Ref	01-0238-7777	01 Oct-08 12:15	01 Oct-08 16:30	27h		
17699-002	01-5675-2759	01 Oct-08 11:50	01 Oct-08 16:30	28h		
17699-001	01-3219-1912	01 Oct-08 11:23	01 Oct-08 16:30	28h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
17699-000	Surface Water	New Bedford Harbor Dredge Moni	WQ-TOX-Lab Control		
17699-003 Ref	Surface Water	New Bedford Harbor Dredge Moni	WQ-TOX-003		
17699-002	Surface Water	New Bedford Harbor Dredge Moni	WQ-TOX-002		
17699-001	Surface Water	New Bedford Harbor Dredge Moni	WQ-TOX-001		

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Test Acceptability

Analysis No	Endpoint	Attribute	Test Stat	Acceptabilty Limits	Overlap	Decision
09-8209-7467	Proportion Fertilized	Control Resp	0.9878	0.7 - 1	Yes	Passes acceptability criteria
13-8798-2870	Proportion Fertilized	Control Resp	0.9878	0.7 - 1	Yes	Passes acceptability criteria
17-2081-3871	Proportion Fertilized	Control Resp	0.9878	0.7 - 1	Yes	Passes acceptability criteria
08-6652-4166	Proportion Fertilized	PMSD	0.03026	NL - 0.25	No	Passes acceptability criteria
09-8209-7467	Proportion Fertilized	PMSD	0.01413	NL - 0.25	No	Passes acceptability criteria
13-8798-2870	Proportion Fertilized	PMSD	0.01419	NL - 0.25	No	Passes acceptability criteria
17-2081-3871	Proportion Fertilized	PMSD	0.01677	NL - 0.25	No	Passes acceptability criteria
18-9923-5252	Proportion Fertilized	PMSD	0.02414	NL - 0.25	No	Passes acceptability criteria

Proportion Fertilized Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	0.9878	0.9832	0.9923	0.9709	1	0.002227	0.0122	1.24%	0.0%
17699-003 Ref	4	0.9333	0.9276	0.939	0.9174	0.9528	0.002791	0.01528	1.64%	5.52%
17699-002	4	0.8386	0.8263	0.8509	0.8036	0.8727	0.006017	0.03296	3.93%	15.11%
17699-001	4	0.9557	0.9509	0.9605	0.9444	0.9709	0.002324	0.01273	1.33%	3.25%

Proportion Fertilized Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17699-000	0.9901	0.9709	1	0.9902
17699-003 Ref	0.9528	0.9369	0.9259	0.9174
17699-002	0.8036	0.8727	0.8598	0.8182
17699-001	0.9459	0.9444	0.9709	0.9615

CETIS Analytical Report

Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Analysis No:	18-9923-5252	**Endpoint:**	Proportion Fertilized	**CETIS Version:**	CETISv1.6.4
Analyzed:	03 Oct-08 13:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	19-1583-5511	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	02 Oct-08 15:25	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	02 Oct-08 16:45	**Species:**	Arbacia punctulata	**Brine:**	Not Applicable
Duration:	80m	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					2.41%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-003 Ref		17699-001	-2.22	1.943	0.0434	0.9659	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0049197	0.0049197	1	4.93	0.0682	Non-Significant Effect
Error	0.0059871	0.0009978	6			
Total	0.0109068	0.0059176	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.023	47.47	0.9852	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8816		0.1950	Normal Distribution

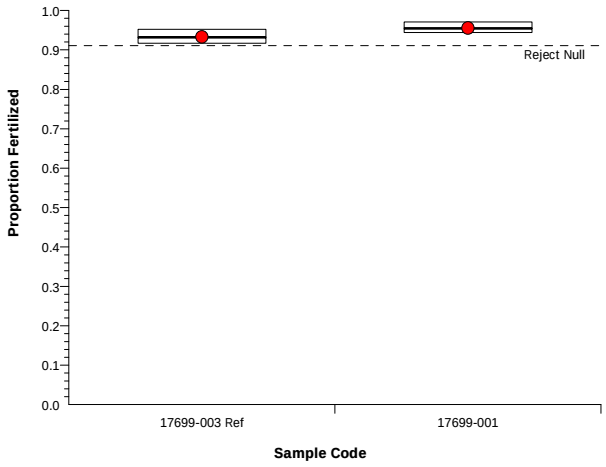
Proportion Fertilized Summary

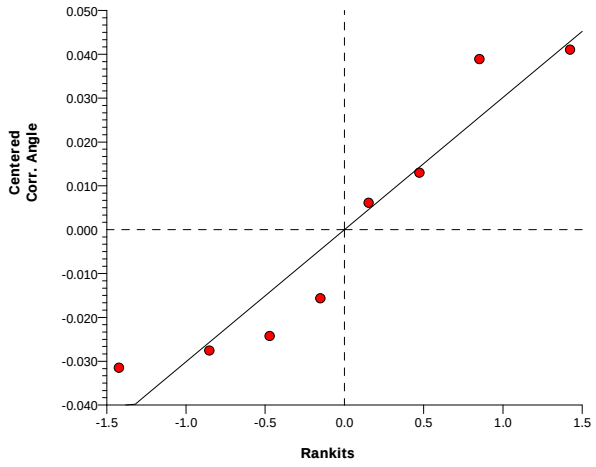
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-003 Ref	4	0.9333	0.9275	0.9391	0.9174	0.9528	0.002838	0.01528	1.64%	0.0%
17699-001	4	0.9557	0.9509	0.9605	0.9444	0.9709	0.002364	0.01273	1.33%	-2.4%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-003 Ref	4	1.311	1.299	1.323	1.279	1.352	0.005832	0.03141	2.4%	0.0%
17699-001	4	1.36	1.348	1.373	1.333	1.399	0.0059	0.03177	2.34%	-3.78%

Graphics





Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Analysis No:	08-6652-4166	**Endpoint:**	Proportion Fertilized	**CETIS Version:**	CETISv1.6.4
Analyzed:	03 Oct-08 13:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	19-1583-5511	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	02 Oct-08 15:25	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	02 Oct-08 16:45	**Species:**	Arbacia punctulata	**Brine:**	Not Applicable
Duration:	80m	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					3.03%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-003 Ref		17699-002	5.547	1.943	0.05328	0.0007	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0462633	0.0462633	1	30.77	0.0015	Significant Effect
Error	0.0090225	0.0015037	6			
Total	0.0552858	0.0477670	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	2.049	47.47	0.5707	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9221		0.4473	Normal Distribution

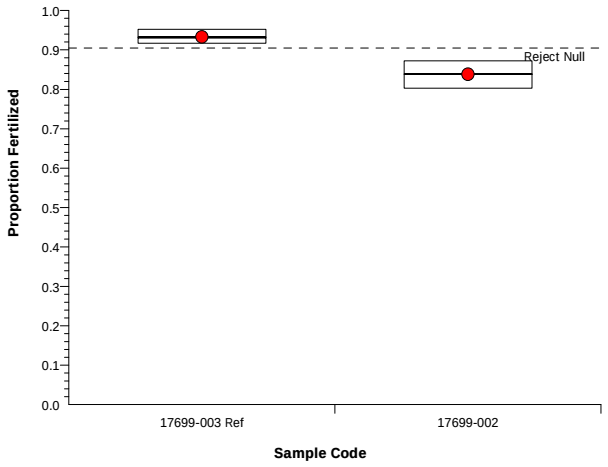
Proportion Fertilized Summary

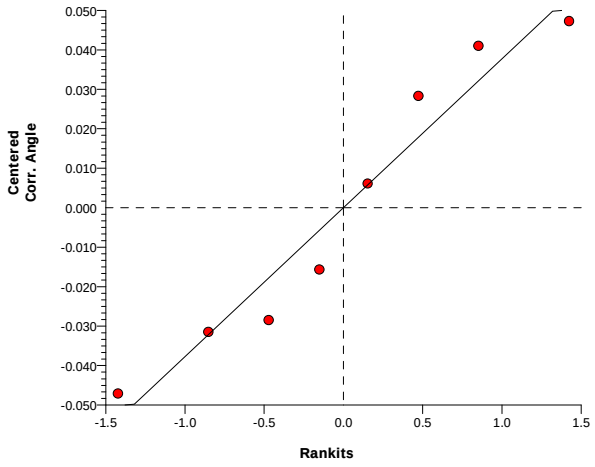
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-003 Ref	4	0.9333	0.9275	0.9391	0.9174	0.9528	0.002838	0.01528	1.64%	0.0%
17699-002	4	0.8386	0.826	0.8511	0.8036	0.8727	0.00612	0.03296	3.93%	10.15%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-003 Ref	4	1.311	1.299	1.323	1.279	1.352	0.005832	0.03141	2.4%	0.0%
17699-002	4	1.159	1.142	1.176	1.112	1.206	0.008348	0.04496	3.88%	11.6%

Graphics





Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Analysis No:	13-8798-2870	**Endpoint:**	Proportion Fertilized	**CETIS Version:**	CETISv1.6.4
Analyzed:	03 Oct-08 13:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	19-1583-5511	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	02 Oct-08 15:25	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	02 Oct-08 16:45	**Species:**	Arbacia punctulata	**Brine:**	Not Applicable
Duration:	80m	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					1.42%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-000		17699-001	3.553	1.943	0.05758	0.0060	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.022167	0.022167	1	12.62	0.0120	Significant Effect
Error	0.010536	0.001756	6			
Total	0.032703	0.023923	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	2.479	47.47	0.4755	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9695		0.8943	Normal Distribution

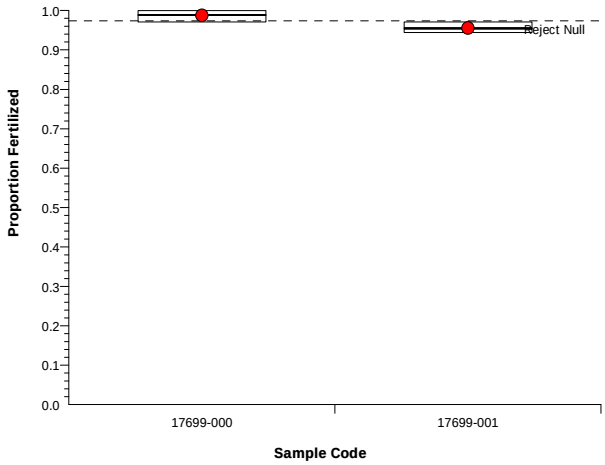
Proportion Fertilized Summary

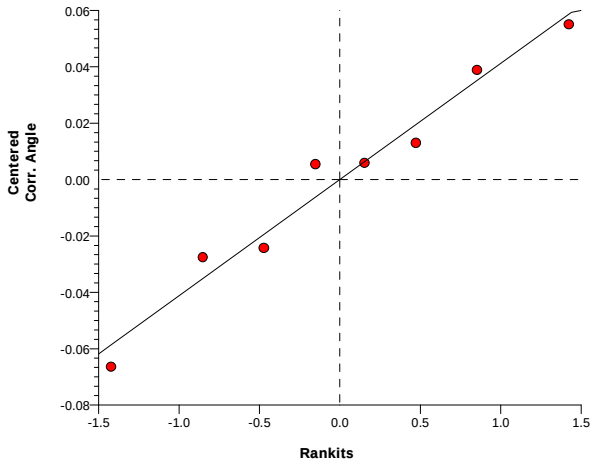
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	0.9878	0.9832	0.9924	0.9709	1	0.002265	0.0122	1.24%	0.0%
17699-001	4	0.9557	0.9509	0.9605	0.9444	0.9709	0.002364	0.01273	1.33%	3.25%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	1.466	1.447	1.485	1.399	1.521	0.009289	0.05003	3.41%	0.0%
17699-001	4	1.36	1.348	1.373	1.333	1.399	0.0059	0.03177	2.34%	7.18%

Graphics





Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Analysis No:	17-2081-3871	**Endpoint:**	Proportion Fertilized	**CETIS Version:**	CETISv1.6.4
Analyzed:	03 Oct-08 13:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	19-1583-5511	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	02 Oct-08 15:25	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	02 Oct-08 16:45	**Species:**	Arbacia punctulata	**Brine:**	Not Applicable
Duration:	80m	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					1.68%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-000		17699-002	9.128	1.943	0.06535	0.0000	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.1884564	0.1884564	1	83.32	0.0001	Significant Effect
Error	0.0135714	0.0022619	6			
Total	0.2020278	0.1907183	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.238	47.47	0.8648	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9462		0.6732	Normal Distribution

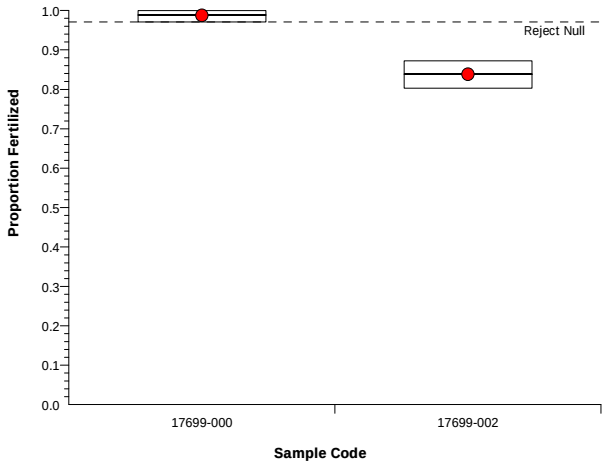
Proportion Fertilized Summary

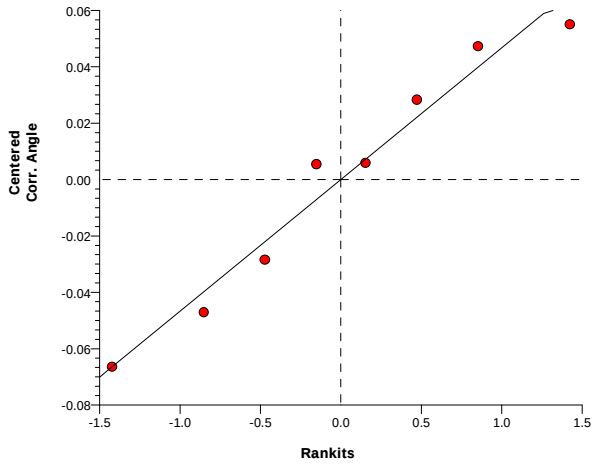
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	0.9878	0.9832	0.9924	0.9709	1	0.002265	0.0122	1.24%	0.0%
17699-002	4	0.8386	0.826	0.8511	0.8036	0.8727	0.00612	0.03296	3.93%	15.11%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	1.466	1.447	1.485	1.399	1.521	0.009289	0.05003	3.41%	0.0%
17699-002	4	1.159	1.142	1.176	1.112	1.206	0.008348	0.04496	3.88%	20.94%

Graphics





Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Analysis No:	09-8209-7467	**Endpoint:**	Proportion Fertilized	**CETIS Version:**	CETISv1.6.4
Analyzed:	03 Oct-08 13:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	19-1583-5511	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	02 Oct-08 15:25	**Protocol:**	EPA/821/R-02-014 (2002)	**Diluent:**	Not Applicable
Ending Date:	02 Oct-08 16:45	**Species:**	Arbacia punctulata	**Brine:**	Not Applicable
Duration:	80m	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					1.41%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-000		17699-003 Ref	5.244	1.943	0.05739	0.0010	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0479727	0.0479727	1	27.5	0.0019	Significant Effect
Error	0.0104666	0.0017444	6			
Total	0.0584392	0.0497171	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	2.537	47.47	0.4646	Equal Variances
Distribution	Shapiro-Wilk Normality	0.961		0.8193	Normal Distribution

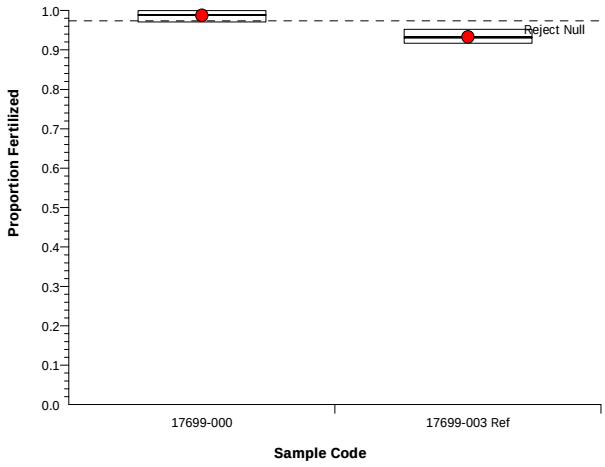
Proportion Fertilized Summary

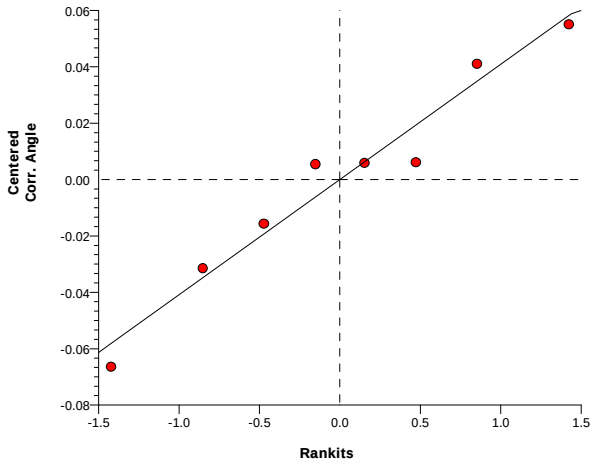
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	0.9878	0.9832	0.9924	0.9709	1	0.002265	0.0122	1.24%	0.0%
17699-003 Ref	4	0.9333	0.9275	0.9391	0.9174	0.9528	0.002838	0.01528	1.64%	5.52%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	1.466	1.447	1.485	1.399	1.521	0.009289	0.05003	3.41%	0.0%
17699-003 Ref	4	1.311	1.299	1.323	1.279	1.352	0.005832	0.03141	2.4%	10.57%

Graphics





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Champia parvula Sexual Reproduction Test Quality Assurance Summary

Client	ESI Ltd		
SRC Publication No.	11020-14C08	Test Initiation Date	Oct 2/08
Analyst	M. Moody, D. Bolin	Test Completion Date	Oct 9/08
Sample Identification/Name	WQ-TOX-001, WQ-TOX-002, WQ-TOX-003		

This report is based on the Environment Canada Guidance Document: Report Assessment Checklist for the Pulp and Paper and Metal Mining EEM Programs, April 2005.

Test Organisms, Method and Conditions - Species: *Champia parvula,* sexually mature male and female branches, in good health, males having sori with spermatia, females having trichogynes. Method: EPA 821-R-02-014, Method 1009.0 (Third edition, October 2002), static, non-renewal; 2-day effluent exposure followed by 5 to 7 day recovery period in control medium for cystocarp development. Exposure/Dilution Medium: natural seawater collected at Pacific Environmental Science Centre, Environment Canada, North Vancouver, B.C., filtered to 1 µm and autoclaved before use, adjusted as necessary to salinity 30 ppt. with brine* at 90 ppt prepared from commercial see salts (Instant Ocean). Natural seawater is enriched with 10 ml/L Test Nutrient Solution. Recovery Medium: natural seawater as above, enriched with 10 ml/L Culture Nutrient Solution (method section 16.10.1.3).

Reference Toxicant Test - Method: EPA/600/4-91/003, Method 1009.0, static, non-renewal; 2-day toxicant exposure followed by 5 to 7 day recovery period in control medium for cystocarp development. Test conditions: performed under same experimental conditions as effluent sample. Compound: sodium dodecyl sulphate mg/L

Date of test: Oct 10/08		Historic value, warning limits ±2SD
IC_{50} (95 % CL) mg/L	1.05 (0.83 – 1.26)	1.25 (1.05 – 1.48)

Quality Control Data - There was no unusual appearance or treatment of test organisms before their use in the test. There was nothing unusual about the test, no deviation from the test method or problems encountered. No control mortality was observed in any control solution during observation periods. The mean number of cystocarps per plant counted in this test must be >10 to be acceptable. Data for this test is as follows.

Natural seawater controls	46.6
Dry salt controls	33.1
Pooled control cystocarp count*	39.9

* as in EC guidance document on salinity adjustment, Dec 2001

Toxicity Test Results: Cystocarps per female branch as mean (standard deviation)

WQ-TOX-001	2.7 (2.8)
WQ-TOX-002	6.2 (6.3)
WQ-TOX-003	17.1 (8.7)
Signature M Moody	Date Nov 7/08

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Test Data Summary

SAMPLE			
Identification/Name	WQ-TOX-001, WQ-TOX-002, WQ-TOX-003		
Date Sampled	Oct 1/08		
Date/Time Received	Oct 2/08 4 pm	Test Initiation Date	Oct 2/08
Temperature Upon Receipt (°C)	7	Test Completion Date	Oct 9/08

ORGANISM INFORMATION			
Species	*Champia parvula*	Appearance/Health of Champia	excellent
Source	sexually mature male and female branches, obtained from USEPA, Hatfield Marine Science Center, Newport, Oregon in 1995		
Females, Presence of Trichognes	yes	Males, Presence of Sori with Spermatia	yes

TEST CONDITIONS			
Test Method	EPA 821-R-02-014, Method 1009.0 Third edition, October 2002	Dilution water	Natural seawater from Pacific Environmental Science Centre, North Vancouver B.C. as described on page 1
Test Type	static, non-renewal; two day effluent exposure followed by five to seven day recovery period in control medium for cystocarp development		
Test Vessels (Exposure & Recovery)	270 mL transparent polystyrene cups, transparent polystyrene lids		
Exposure Vessel Volume / Depth	100 mL / 4.5 cm	Recovery Vessel Volume /Depth	200 mL / 7.3 cm
Replicates/Conc.	3	No. of organisms (female/male)	5/2
Number and Concentrations of Test Solutions (%v/v)		Controls: (two) natural sea water, salt Tests: all samples tested at 100%	
Chemicals added to control/dilution water	Test Nutrients as described in method cited at 10 mL/L, analytical grade		

SAMPLE TREATMENT					
D.O. on sample without salinity adjustment (mg/L)	See pg 3	D.O. after salinity adjustment (mg/L)			Page 3
Aeration (duration/rate)	none	Filtration	none	pH Adjustments	none
Salinity Adjustment*	Not required				
Dry Salt for Salinity Adjustment*					
** as per EC guidance document on salinity adjustment, Dec 2001*					

EXPOSURE PERIOD (48 h) and RECOVERY PERIOD (5-7 days)			
Temperature, pH, D.O. and Salinity of test solutions and controls on following page			
Photoperiod (L:D h)	16:8	Agitation of tests and controls during exposure	gentle rotary shaking
Recovery Medium: natural sea water containing 10 mL/L Culture Nutrients (section 16.10.1.3 of cited method), prepared from analytical grade chemicals			
Aeration during recovery: gentle aeration supplied			

Date/Initial Nov 7/08 AN

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Water Quality Data

Sample Identification/Name	WQ-TOX-001, WQ-TOX-002, WQ-TOX-003	

INITIAL WATER QUALITY	SAMPLE at test start, without salinity adjustment			TEST MEDIUM	RECOVERY MEDIUM
Sample #	001	002	003		
Temperature (°C)	24	25	25	22	23
Dissolved Oxygen (mg/L)	9.2	9.1	9.6	7.8	7.7
pH	7.06	6.91	6.84	8.35	8.40
Salinity (ppt)	21	20	8	30	30
Sample Description	Sl. cloudy pale yellow liquid			Length of Recovery Period (days)	5

Water Quality Data during Exposure Period (0, 24, 48 hr)

Concentration % (v/v)	Temperature (°C) exposure			Dissolved Oxygen (mg/L) exposure			pH exposure			Salinity (ppt) exposure		
	0	24	48	0	24	48	0	24	48	0	24	48
Control NSW[1]	22	23	23	7.3	8.0	8.3	8.48	8.53	8.43	30	30	30
Control IO	24	23	23	7.9	8.0	8.3	8.45	8.23	8.62	30	30	30
WQ-TOX-001	24	23	23	7.6	8.1	8.1	7.50	8.28	8.72	29	29	29
WQ-TOX-002	23	23	23	7.8	8.0	8.2	7.41	8.29	8.37	29	29	29
WQ-TOX-003	24	23	23	7.6	8.0	8.2	7.73	8.32	8.45	30	30	30

Recovery Period – Temperature Monitoring (initial daily entries)

Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
23	23	23	23	23	23	-	-

Champia (female) Mortality at end of Recovery Period

Concentration %v/v	control NSW[1]	001 100%	002 100%	003 100%
# Females dead[2]	0	0	0	0
% Mortality[2]	0	0	0	0
Description	Normal red	Fragile, some green areas	Red, slightly fragile, limp	Red, good condition

1 NSW natural sea wate, IO: Instant Ocean dry salts
2 same for all test units at each concentration

Date/Initial Nov 7/08 YP

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Test Data

Sample Identification/Name	WQ-TOX-001, WQ-TOX-002, WQ-TOX-003	

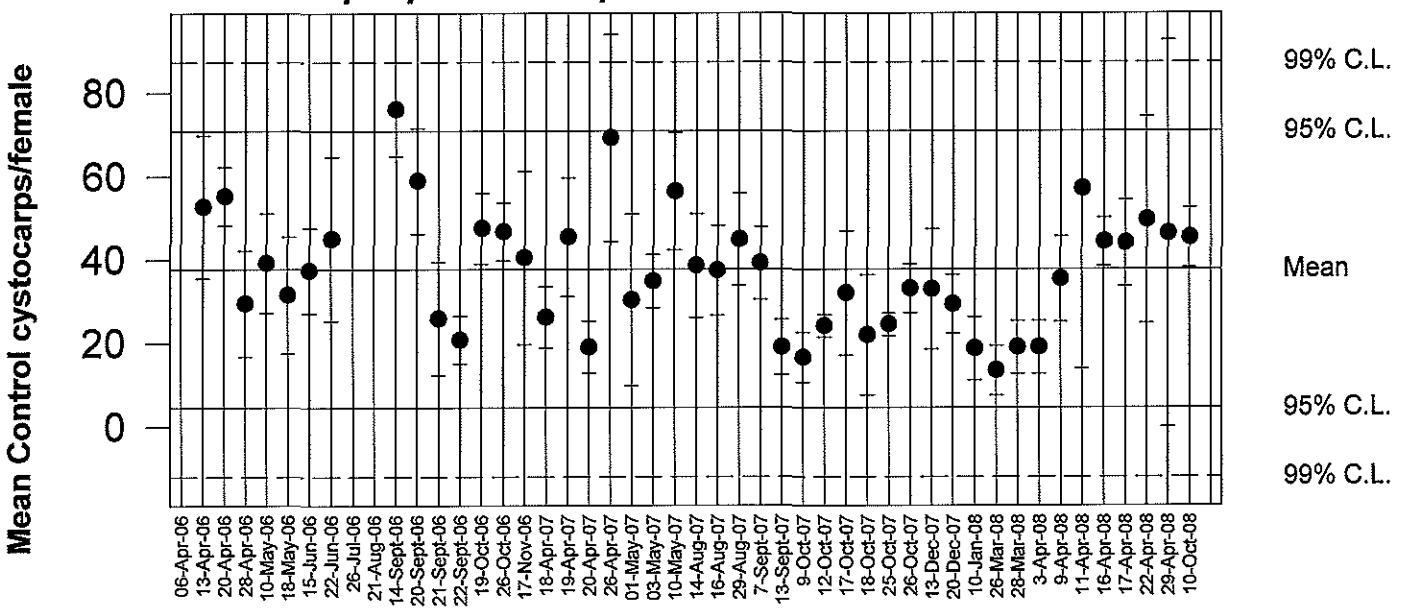
date of sampling: Oct 1/08 date received: Oct 2/08	Champia Cystocarp Counts					replicate mean	SD	group mean, SD	Comments
Control	57	47	46	55	41	**49.2**	**6.6**	**46.6**	**healthy red color**
Natural Seawater	23	34	32	37	42	**33.6**	**7.0**	**13.1**	**normal growth**
	62	37	40	71	44	**50.8**	**14.9**		
	60	50	32	51	71	**52.8**	**14.4**		
Control	16	49	35	18	19	**27.4**	**14.3**	**33.1**	**healthy red color**
Instant Ocean	22	25	30	32	34	**28.6**	**5.0**	**11.5**	**normal growth**
	33	31	54	42	25	**37**	**11.3**		
	21	45	35	52	44	**39.4**	**11.9**		
WQ-TOX-001	0	0	0	5	0	**1**	**2.2**	**2.7**	**branches**
	4	6	5	2	0	**3.4**	**2.4**	**2.8**	**fragmented**
	0	6	0	2	1	**1.8**	**2.5**		
	2	6	7	8	0	**4.6**	**3.4**		
WQ-TOX-002	1	0	6	2	0	**1.8**	**2.5**	**6.2**	**branches**
	23	7	1	2	10	**8.6**	**8.8**	**6.3**	**fragmented**
	2	0	14	4	7	**5.4**	**5.5**		
	5	4	12	17	6	**8.8**	**5.5**		
WQ-TOX-003	30	17	16	26	34	**24.6**	**7.9**	**17.1**	**healthy red color**
	18	25	26	12	27	**21.6**	**6.4**	**8.7**	**normal growth**
	19	17	12	17	14	**15.8**	**2.8**		
	3	6	10	9	4	**6.4**	**3.0**		

SD: Standard Deviation

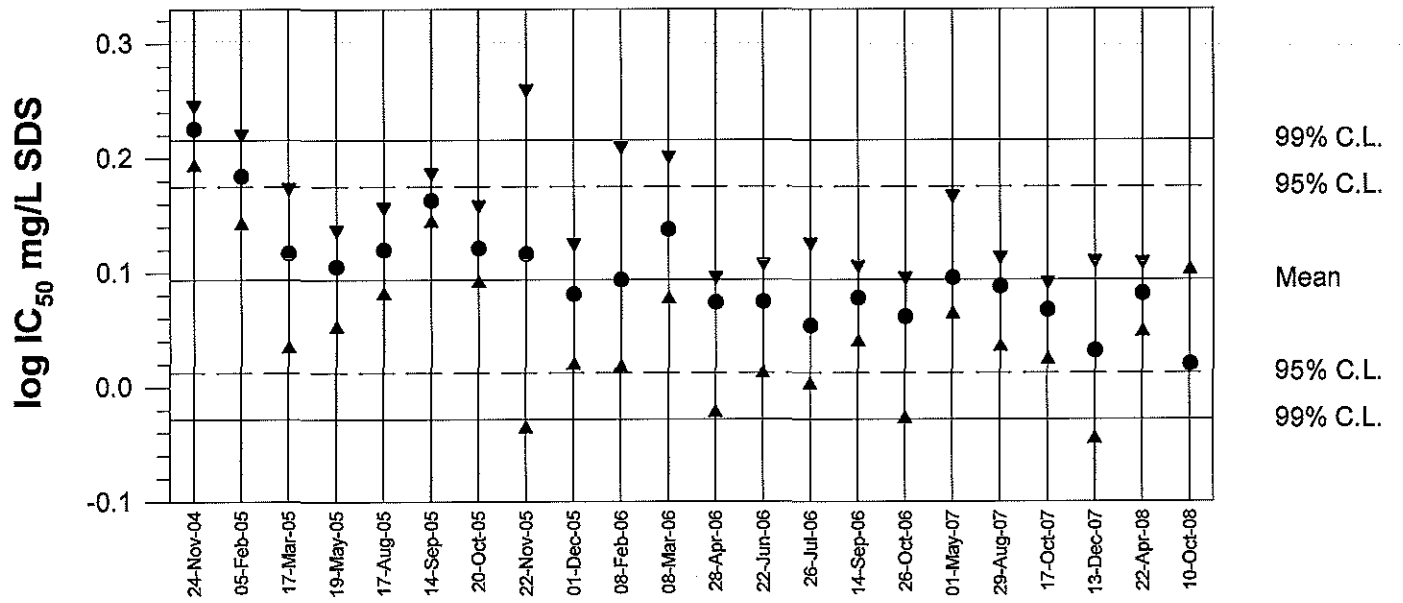
Date/Initial _____

Saskatchewan Research Council

Champia parvula Reproduction Test Control Charts



Control cystocarp count per female *Champia parvula* for tests from Apr 2006 to Oct 2008. Mean and 95% control limits for each test and cumulative mean, 95% and 99% control limits for all tests.
Cumulative mean: 37.7 (95% CL: 4-71)



Reference Toxicant Tests using Sodium dodecyl sulfate mg/L
Historical value (previous 20 tests) and 95% confidence limits 1.25 (1.05 - 1.48) mg/L
Data for most recent test
Oct 10/08: mean and 95% confidence limits 1.05 (0.83 - 1.26) mg/L

CETIS Summary Report

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test Run No:	00-9672-4144	**Test Type:**	Champia	**Analyst:**	
Start Date:	02 Oct-08 12:00	**Protocol:**	EPA/600/4-91/003 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	09 Oct-08 12:00	**Species:**	Champia parvula	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample No	Sample Date	Receive Date	Sample Age	Client Name	Project
17699-000	17-1203-2644	02 Oct-08 16:00	02 Oct-08 16:00	N/A	Battelle Labs	Ecological Risk Assessme
17699-003 Ref	01-0238-7777	01 Oct-08 12:15	01 Oct-08 16:30	24h		
17699-002	01-5675-2759	01 Oct-08 11:50	01 Oct-08 16:30	24h		
17699-001	01-3219-1912	01 Oct-08 11:23	01 Oct-08 16:30	25h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
17699-000	Surface Water	New Bedford Harbor Dredge Moni	WQ-TOX-Lab Control		
17699-003 Ref	Surface Water	New Bedford Harbor Dredge Moni	WQ-TOX-003		
17699-002	Surface Water	New Bedford Harbor Dredge Moni	WQ-TOX-002		
17699-001	Surface Water	New Bedford Harbor Dredge Moni	WQ-TOX-001		

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Mean Cystocarps Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	33.1	30.86	35.34	27.4	39.4	1.094	5.99	18.1%	0.0%
17699-003 Ref	4	17.1	14.11	20.09	6.4	24.6	1.463	8.014	46.87%	48.34%
17699-002	4	6.15	4.921	7.379	1.8	8.8	0.601	3.292	53.53%	81.42%
17699-001	4	2.7	2.098	3.302	1	4.6	0.2944	1.612	59.72%	91.84%

Mean Cystocarps Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17699-000	27.4	28.6	37	39.4
17699-003 Ref	24.6	21.6	15.8	6.4
17699-002	1.8	8.6	5.4	8.8
17699-001	1	3.4	1.8	4.6

CETIS Analytical Report

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Analysis No:	02-2859-6096	**Endpoint:**	Mean Cystocarps	**CETIS Version:**	CETISv1.6.4
Analyzed:	10 Nov-08 7:59	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	00-9672-4144	**Test Type:**	Champia	**Analyst:**	
Start Date:	02 Oct-08 12:00	**Protocol:**	EPA/600/4-91/003 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	09 Oct-08 12:00	**Species:**	Champia parvula	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					46.45%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-003 Ref		17699-001	3.523	1.943	7.943	0.0062	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	414.72	414.72	1	12.41	0.0125	Significant Effect
Error	200.48	33.41333	6			
Total	615.2	448.1333	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	24.7	47.47	0.0258	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9258		0.4789	Normal Distribution

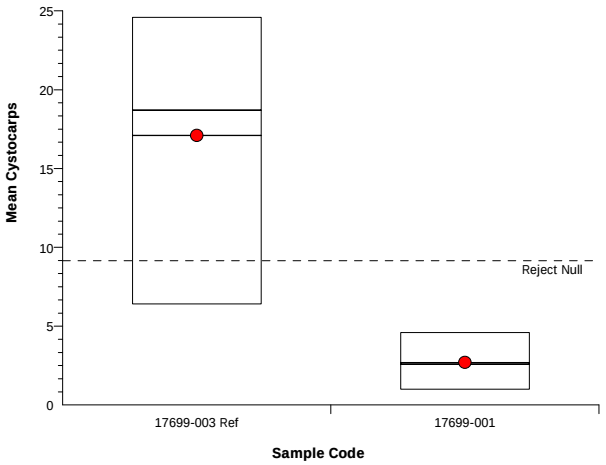
Mean Cystocarps Summary

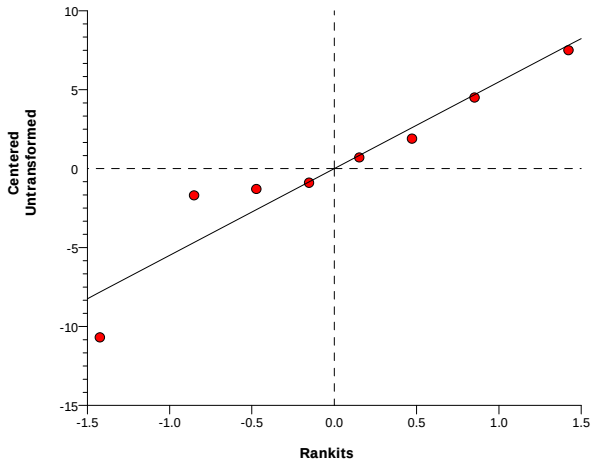
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-003 Ref	4	17.1	14.05	20.15	6.4	24.6	1.488	8.014	46.87%	0.0%
17699-001	4	2.7	2.087	3.313	1	4.6	0.2994	1.612	59.72%	84.21%

Mean Cystocarps Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17699-003 Ref	24.6	21.6	15.8	6.4
17699-001	4.6	3.4	1.8	1

Graphics





Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Analysis No:	19-9725-2564	**Endpoint:**	Mean Cystocarps	**CETIS Version:**	CETISv1.6.4
Analyzed:	10 Nov-08 7:59	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	00-9672-4144	**Test Type:**	Champia	**Analyst:**	
Start Date:	02 Oct-08 12:00	**Protocol:**	EPA/600/4-91/003 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	09 Oct-08 12:00	**Species:**	Champia parvula	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					49.23%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-003 Ref		17699-002	2.528	1.943	8.418	0.0224	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	239.805	239.805	1	6.389	0.0448	Significant Effect
Error	225.19	37.53167	6			
Total	464.995	277.3367	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	5.927	47.47	0.1780	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9575		0.7858	Normal Distribution

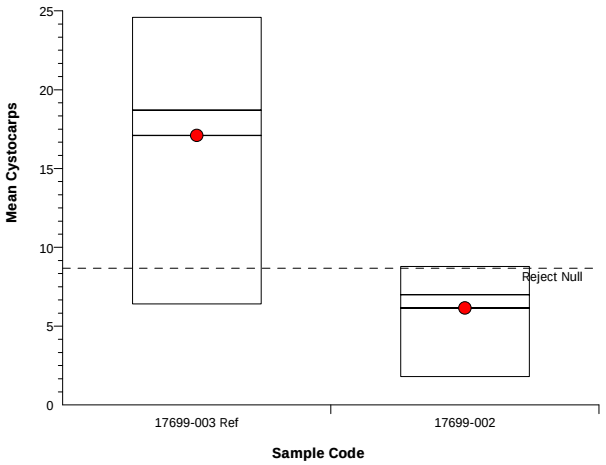
Mean Cystocarps Summary

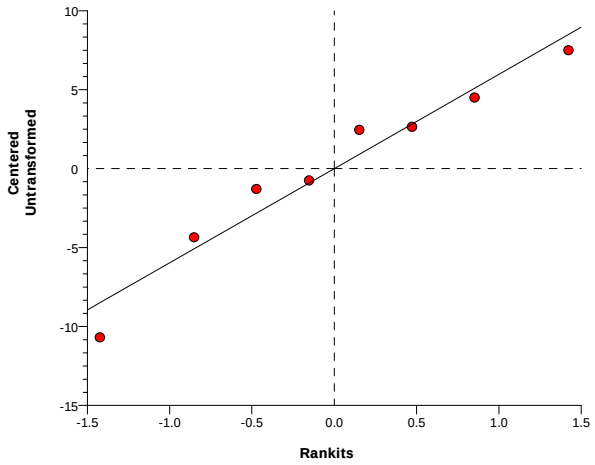
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-003 Ref	4	17.1	14.05	20.15	6.4	24.6	1.488	8.014	46.87%	0.0%
17699-002	4	6.15	4.898	7.402	1.8	8.8	0.6113	3.292	53.53%	64.04%

Mean Cystocarps Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17699-003 Ref	24.6	21.6	15.8	6.4
17699-002	8.8	8.6	5.4	1.8

Graphics





Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Analysis No:	04-8620-3807	**Endpoint:**	Mean Cystocarps	**CETIS Version:**	CETISv1.6.4
Analyzed:	10 Nov-08 7:59	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	00-9672-4144	**Test Type:**	Champia	**Analyst:**	
Start Date:	02 Oct-08 12:00	**Protocol:**	EPA/600/4-91/003 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	09 Oct-08 12:00	**Species:**	Champia parvula	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					18.21%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-000		17699-001	9.801	1.943	6.027	0.0000	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	1848.32	1848.32	1	96.07	0.0001	Significant Effect
Error	115.44	19.24	6			
Total	1963.76	1867.56	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	13.8	47.47	0.0584	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9804		0.9648	Normal Distribution

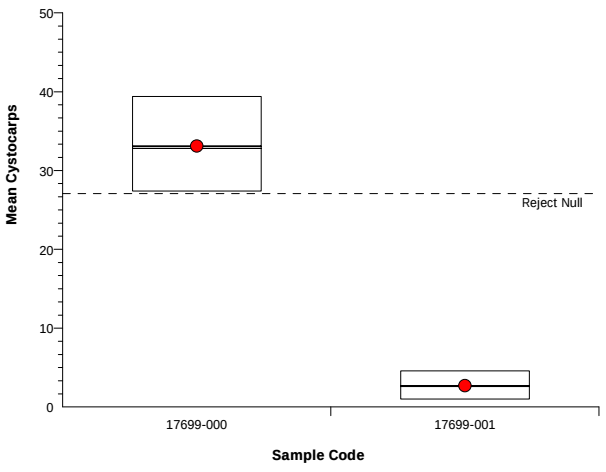
Mean Cystocarps Summary

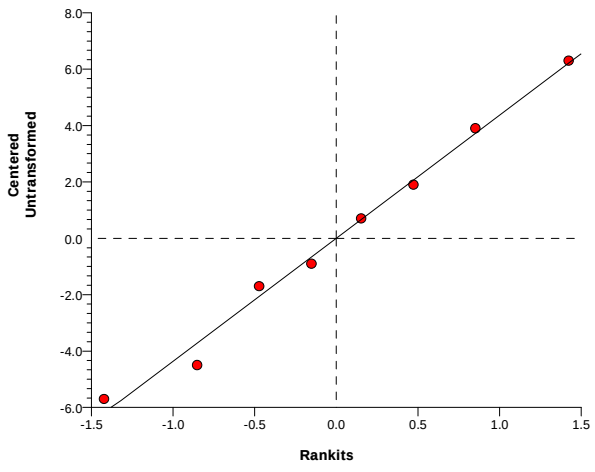
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	33.1	30.82	35.38	27.4	39.4	1.112	5.99	18.1%	0.0%
17699-001	4	2.7	2.087	3.313	1	4.6	0.2994	1.612	59.72%	91.84%

Mean Cystocarps Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17699-000	39.4	37	28.6	27.4
17699-001	4.6	3.4	1.8	1

Graphics





Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Analysis No:	08-4995-6877	**Endpoint:**	Mean Cystocarps	**CETIS Version:**	CETISv1.6.4
Analyzed:	10 Nov-08 7:59	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	00-9672-4144	**Test Type:**	Champia	**Analyst:**	
Start Date:	02 Oct-08 12:00	**Protocol:**	EPA/600/4-91/003 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	09 Oct-08 12:00	**Species:**	Champia parvula	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					20.06%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-000		17699-002	7.886	1.943	6.641	0.0001	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	1452.605	1452.605	1	62.19	0.0002	Significant Effect
Error	140.15	23.35833	6			
Total	1592.755	1475.963	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	3.311	47.47	0.3517	Equal Variances
Distribution	Shapiro-Wilk Normality	0.915		0.3906	Normal Distribution

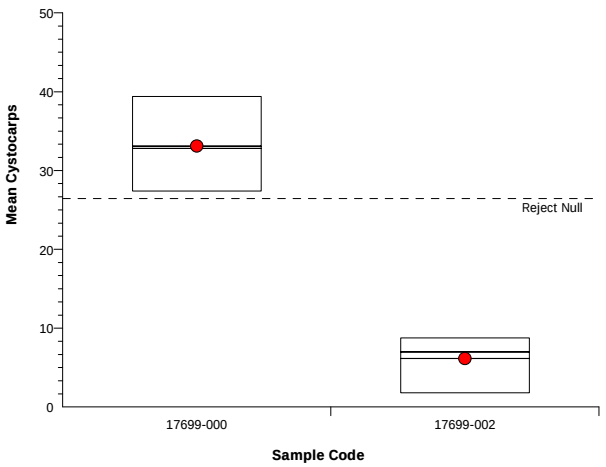
Mean Cystocarps Summary

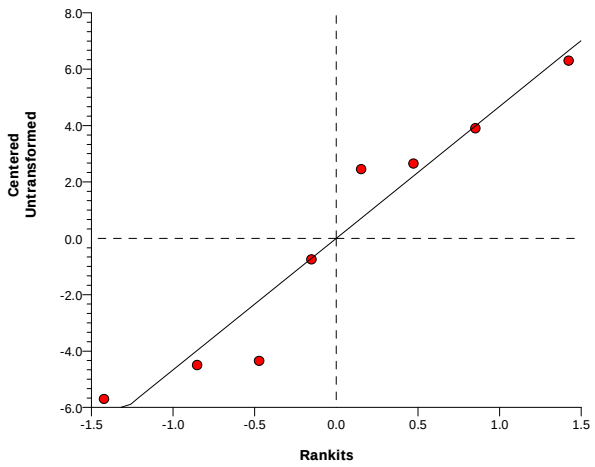
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	33.1	30.82	35.38	27.4	39.4	1.112	5.99	18.1%	0.0%
17699-002	4	6.15	4.898	7.402	1.8	8.8	0.6113	3.292	53.53%	81.42%

Mean Cystocarps Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17699-000	39.4	37	28.6	27.4
17699-002	8.8	8.6	5.4	1.8

Graphics





Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Analysis No:	19-5691-1601	**Endpoint:**	Mean Cystocarps	**CETIS Version:**	CETISv1.6.4
Analyzed:	10 Nov-08 7:59	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Test Run No:	00-9672-4144	**Test Type:**	Champia	**Analyst:**	
Start Date:	02 Oct-08 12:00	**Protocol:**	EPA/600/4-91/003 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	09 Oct-08 12:00	**Species:**	Champia parvula	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	In-House Culture	**Age:**	

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					29.37%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-000		17699-003 Ref	3.198	1.943	9.721	0.0093	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	512	512	1	10.23	0.0186	Significant Effect
Error	300.32	50.05333	6			
Total	812.32	562.0533	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.79	47.47	0.6443	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9261		0.4816	Normal Distribution

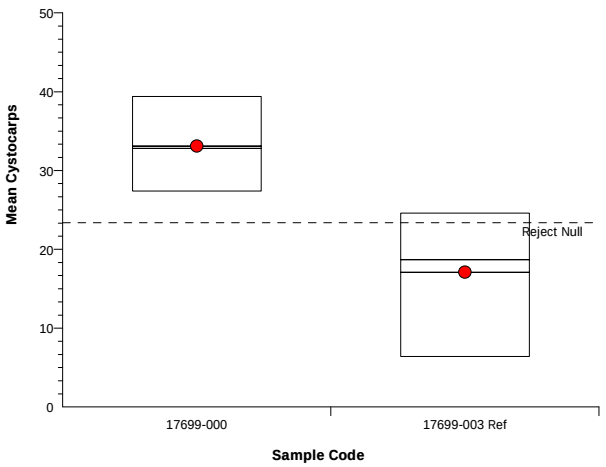
Mean Cystocarps Summary

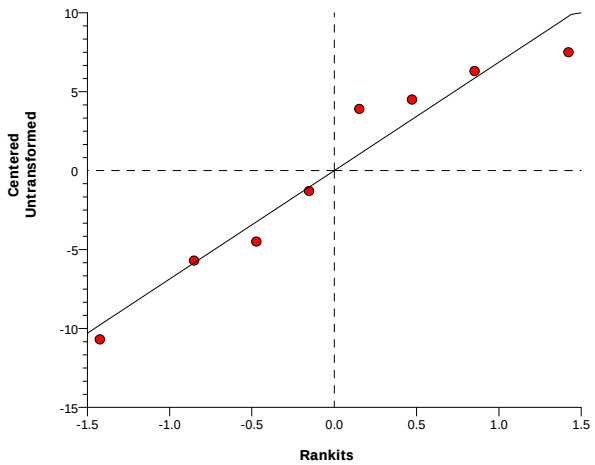
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	33.1	30.82	35.38	27.4	39.4	1.112	5.99	18.1%	0.0%
17699-003 Ref	4	17.1	14.05	20.15	6.4	24.6	1.488	8.014	46.87%	48.34%

Mean Cystocarps Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17699-000	39.4	37	28.6	27.4
17699-003 Ref	24.6	21.6	15.8	6.4

Graphics





SALTWATER ASSAYS

A. bahia, A. punctulata, C. parvula

STUDY: 17699	LOCATION: New Bedford Harbor				
CHEMISTRY	Lab Salt Control	-001	-002	-003	-004
AMMONIA	17724-015	004	005	006	
AS RECEIVED WATER QUALITIES	Lab Salt Control	-001	-002	-003	-004
SALINITY (ppt)	25.0	20.7	20.4	9.0	
pH (SU)	7.92	7.13	7.47	6.80	
TRC (mg/L)	<0.02	<0.02	<0.02	<0.02	
DO (mg/L)	7.1	9.2	7.7	9.4	
S/C (µmhos/cm)	39200	32460	31550	14930	
WQ STATION USED	1	1	1	1	
INITIALS	APL	APL	APL	APL	
A. bahia SALINITY ADJUSTMENT RECORD	Lab Salt Control	-001	-002	-003	-004
SAMPLE (mLs)	—	12000	16000	16000	
SEA SALT (g)	—	59	84	294	
DATE:	10-2-08	10-2-08	10-2-08	10-2-08	
TIME:	0900	0910	1000	1010	
INITIALS:	APL	APL	APL	APL	

Sample ID	ESI Cube ID
-001	-001
-002	-002
-003	-003
-004	-004

Americamysis bahia 7 DAY CHRONIC ASSAY
NEW WATER QUALITIES

STUDY: 17699	CLIENT: BATTELLE	LOCATION: NEW BEDFORD	LAB CONTROL: HAMPTON ESTUARY

NEW DISSOLVED OXYGEN (mg/L)

CONC	REP	0	1	2	3	4	5	6
LAB	A	7.8	6.8	6.9	7.1	7.1	7.1	7.4
-001	A	8.2	7.6	8.0	6.9	8.2	6.7	8.1
-002	A	7.7	7.4	7.6	6.8	7.7	6.6	8.1
-003	A	7.7	6.9	7.5	6.8	7.3	6.4	8.1
~~-004~~	~~A~~							

SS 10/3/08

NEW SALINITY (ppt)

CONC	REP	0	1	2	3	4	5	6
LAB	A	25	25	26	26	28	25	25
-001	A	25	25	25	25	25	25	25
-002	A	25	25	25	25	25	25	25
-003	A	24	24	25	25	25	25	25
~~-004~~	~~A~~							

NEW pH (SU)

CONC	REP	0	1	2	3	4	5	6
LAB	A	8.18	8.12	8.07	8.08	8.18	7.88	7.96
-001	A	7.58	7.76	7.61	7.55	7.61	7.59	7.66
-002	A	7.68	7.71	7.66	7.64	7.66	7.64	7.63
-003	A	7.78	7.76	7.77	7.70	7.76	7.72	7.70
~~-004~~	~~A~~							
INC TEMP:		25	25	25	25	25	25	25
DATE:		10/2/08	10/3	10/4	10/5	10/6	10/7	10/8
TIME:		1350	1100	1015	1150	1150	1005	1030
INIT:		WM	ST	DM	UB	UB	APC	APC

NEW TEMPERATURE (°C)

CONC	REP	0	1	2	3	4	5	6
LAB	A	25	25	25	25	24	24	25
-001	A	25	25	25	25	24	24	25
-002	A	25	25	25	25	24	24	25
-003	A	25	25	25	25	24	24	25
~~-004~~	~~A~~							

WATER QUALITY METERS USED
NEW WATER QUALITIES

	0	1	2	3	4	5	6	7
Water Quality Station #		1	1	1	1	1	2	
Initials		WM SJ	DM	DM	UB	APC	APC	
Date	10/2/08	10/3/08	10-4-08	10-5-08	10/6	10-7	10-8	

Americamysis bahia 7 DAY CHRONIC ASSAY
OLD WATER QUALITIES

STUDY: 17699	CLIENT: BATTELLE	LOCATION: NEW BEDFORD	LAB CONTROL: HAMPTON ESTUARY

OLD SALINITY (ppt)

Conc	Rep	1	2	3	4	5	6	7
Control	A	25	26	26	27	27	25	25
-001	A	26	25	25	25	25	25	25
-002	A	26	26	26	26	26	26	26
-003	A	25	25	25	25	25	25	25
~~-004~~	A							

OLD pH (SU)

1	2	3	4	5	6	7
8.03	7.83	7.87	8.02	8.11	7.93	7.95
7.91	7.93	7.82	7.90	7.87	7.85	7.84
7.88	7.80	7.81	7.88	7.85	7.88	7.84
7.94	7.88	7.86	7.95	7.92	7.96	7.90

10/3/08 SJ

OLD TEMPERATURE (°C)

Conc	Rep	1	2	3	4	5	6	7
Control	A	25	24	24	25	25	25	25
-001	A	25	24	24	25	25	25	25
-002	A	25	24	24	25	25	25	26
-003	A	25	24	24	25	25	25	25
~~-004~~	A							
INC TEMP:		25	25	25	25	25	25	25
DATE:		10/3/08	10-4	10-5	10/6	10-7	10-8	10-9
TIME:		1015	0950	1040	0935	0900	0950	0915
INITIALS:		SJ	DM	DM	SJ	APC	APC	APC

GENERAL NOTES - for additional information refer to SOP #1411 or EPA manual 600/4-91/003

- Test vessels will be 250 mL glass beakers containing a minimum of 150 mL of solution
- 8 replicates per site with 5 organisms each

- Test Temperature: 26±1°C
- Salinity: 25 ±2ppt
- Dissolved Oxygen: >4.3 mg/L

- Photoperiod will be 16 hours light and 8 hours dark.
- Passing criteria require ≥80% survival and average dry weight of ≥0.20 mg/organism in the control vessels.

WATER QUALITY METERS USED
OLD WATER QUALITIES

	0	1	2	3	4	5	6	7
Water Quality Station #		1	1	1	1	1	1	1
Initials		SJ	DM	DM	SJ	APC	APC	APC
Date		10/3/08	10-4-08	10-5-08	10/6	10-7	10-8	10-9

Americamysis bahia 7 DAY CHRONIC ASSAY
SAMPLE USE RECORD

STUDY: 17699 **CLIENT:** BATTELLE - New Bedford

SPECIES: *A. bahia* **TEST:** chronic renewal

Sample	Day: 0		Day: 1		Day: 2		Day	Date	Time	Init
	Volume Used (mL)	ESI Cube ID	Volume Used (mL)	ESI Cube ID	Volume Used (mL)	ESI Cube ID				
Lab Control	1600	n/a	1200	n/a	1200	n/a	0	10/2/08	1340	WM
-001	1600	-001	↓	-001	↓	-001	1	10/3	1045	SJ
-002	1600	-002	↓	-002	↓	-002	2	10/4	1010	DM
-003	1600	-003	↓	-003	↓	-003	3	10/5	1050	DM
-004	—	—	—	—	—	—	4	10/6	1105	LB
							5	10.7	1000	APL
							6	10.8	1020	APL

Sample	Day: 3		Day: 4		Day: 5	
	Volume Used (mL)	ESI Cube ID	Volume Used (mL)	ESI Cube ID	Volume Used (mL)	ESI Cube ID
Lab Control	1200	n/a	1200	n/a	1200	n/a
-001	↓	-001	↓	001	↓	001
-002	↓	-002	↓	002	↓	003
-003	↓	-003	↓	003	↓	003
-004	—	—	—	—	—	—

Sample	Day: 6	
	Volume Used (mL)	ESI Cube ID
Lab Control	1200	n/a
-001	↓	001
-002	↓	002
-003	↓	003
-004	—	—

Aquatic Research Organisms

DATA SHEET

Rec 10/1

I. Organism History

Species Americamysis bahia

Source: Lab reared ✓ Hatchery reared _____ Field collected _____

Hatch date 9-24-08 Receipt date _____

Lot number 092408MS Strain _____

Brood origination Florida

II. Water Quality

Temperature 25 °C Salinity ~30 ppt D.O. — ppm

pH 7.8 su Hardness — ppm Alkalinity ✓ ppm

III. Culture Conditions

Freshwater _____ Saltwater ✓ Other _____

Recirculating ✓ Flow through _____ Static _____

DIET: Flake food ✓ Phytoplankton _____ Trout chow ✓

Artemia ✓ Rotifers _____ YCT _____ Other Encap. Shrimp Diet

Prophylactic treatments: _____

Comments: _____

_____

IV. Shipping Information

Client: ESI # of Organisms 300+

Carrier: _____ Date shipped 10-1-08

Biologist: Mark Rosenquist

PO BOX 1271 HAMPTON NH 03843-1271 (603) 926-1650 AROFISH@AOL.COM

ESI

EnviroSystems, Inc.
One Lafayette Road
P.O. Box 778
Hampton, NH 03843-0778
Telephone: 603-926-3345

SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 17629 **CLIENT:** Battelle

SAMPLE RECEIPT:
DATE: 8/21/08 TIME: 1640 BY: KS

DELIVERED VIA: ☐ FEDEX ☐ CLIENT ☒ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 8/22/08 TIME: 1100 BY: SJ

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☒ YES		☐ NO
CHAIN OF CUSTODY SIGNED:	☒ YES		☐ NO
CHAIN OF CUSTODY COMPLETE:	☒ YES		☐ NO
SAMPLE DATE:	☒ YES		☐ NO
SAMPLE TIME RECORDED:	☒ YES		☐ NO
SAMPLE TYPE IDENTIFIED:	☒ YES		☐ NO
CUSTODY SEAL IN PLACE:	☐ YES	☒ NA	☐ NO
SHIPPING CONTAINER INTACT:	☒ YES		☐ NO
SAMPLE TEMPERATURE (AT ARRIVAL): 4 °C			
DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?	☐ YES		☒ NO
SAMPLE ARRIVED ON ICE:	☒ YES		☐ NO

COMMENTS: See COC

17629

Battelle
. . . Putting Technology To Work

Chain of Custody

Proj. No	Proj. Name
6606422	New Bedford Harbor Water Quality

SAMPLERS: Signature

Matthew R [illegible] Amanda Maxcanchuk

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	Field ~~BATTELLE~~ ID	Lab ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	~~OTHER~~ Toxicity	ACIDIFIED	PRESERVED 4°C	Total Number of Containers
8/21/08	1420	WQ-TOX-01-082108	-001	Tox Sample from 25 to 32 NTU								X		X	1
↓	1502	WQ-TOX-02-082108	-002	Tox Sample from 14 to 20 NTU								X		X	1
	1520	WQ-TOX-03-082108	-003	Tox Sample from .2 to .3 NTU								X		X	1
8/22/08	1100	WQ-TOX-001	-004	NH_3											
↓	↓	WQ TOX-002	-005	↓											
		WQ TOX-003	-006												

Relinquished by:	Date/Time		Received by:	Date/Time	
Matthew R [illegible]	8/21/08	1640	[illegible]	8/21/08	1640
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

ORIGINAL

ESI

EnviroSystems, Inc.
One Lafayette Road
P.O. Box 778
Hampton, NH 03843-0778
Telephone: 603-926-3345

SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 17699 **CLIENT:** Battelle

SAMPLE RECEIPT:
DATE: 10/1/08 TIME: 1630 BY: SJ

DELIVERED VIA: ☐ FEDEX ☒ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/1/08 TIME: 1630 BY: SJ

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☒ YES		☐ NO
CHAIN OF CUSTODY SIGNED:	☒ YES		☐ NO
CHAIN OF CUSTODY COMPLETE:	☒ YES		☐ NO
SAMPLE DATE:	☒ YES		☐ NO
SAMPLE TIME RECORDED:	☒ YES		☐ NO
SAMPLE TYPE IDENTIFIED:	☒ YES		☐ NO
CUSTODY SEAL IN PLACE:	☐ YES	☒ NA	☐ NO
SHIPPING CONTAINER INTACT:	☒ YES		☐ NO

SAMPLE TEMPERATURE (AT ARRIVAL): 4 °C

DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?
☐ YES ☒ NO

SAMPLE ARRIVED ON ICE: ☒ YES ☐ NO

COMMENTS:

ESI 11697

Battelle
The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
G06422	New Bedford Harbor Water Quality

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	Field ~~BATTELLE~~ ID	Lab ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	~~OTHER~~ Toxicity	ACIDIFIED	PRESERVED	Total Number of Containers
10/1/08	1123	WQ-TOX-001-100108		50-65 NTU station: 57 NTU								✓			1
↓	1150	WQ-TOX-002-100108		19-26 NTU station: 24 NTU								✓			1
	1205	WQ-TOX-003-100108		3.8 NTU station: NREF								✓			1
		~~EB~~ ①													

Relinquished by:	Date/Time	Received by:	Date/Time
	10/1/08 1423	PATRICK CURRAN	10/1/08 1423
Relinquished by: PATRICK CURRAN	Date/Time 10/1/08 ~~1630~~ 1630	Received by:	Date/Time 10.1.08 1630

Comments:
① disregard AEM 10/1/08

ORIGINAL

US ARMY CORPS
OF ENGINEERS
New England District

Contract No. DACW33-03-D-0004

Delivery Order No. 22

June 2009

Final

Sawyer Street 2008 Semi-annual Groundwater Monitoring Technical Memorandum

Environmental Monitoring, Sampling, and Analysis

New Bedford Harbor Superfund Site

New Bedford Harbor, MA

Final Technical Memorandum

Date: June 2009

To: Robert Leitch, USACE North Atlantic Division New England District

From: Deirdre Dahlen, Battelle

Subject: Sawyer Street 2008 Semi-annual Groundwater Monitoring Results

This Technical Memorandum presents a summary of the groundwater monitoring activities conducted at the Sawyer Street Confined Disposal Facility (CDF) in New Bedford, Massachusetts during the 2008 semi-annual monitoring period. The 2008 monitoring study is a continuation of a multi-year groundwater sampling program to sample six groundwater wells located at the perimeter of the CDF. Results from previous programs are presented in ENSR (2006) and Battelle (2008a).

Results from the monitoring study are used to assess potential trends in concentrations of polychlorinated biphenyls (PCBs) as Aroclor and selected metals (cadmium, chromium, copper, and lead) and to evaluate the integrity of the CDF. At the request of the U.S. EPA, groundwater sampled in 2008 was also analyzed for volatile organic compounds (VOCs).

Field Activity Summary

Sampling was conducted in the spring and fall of 2008, on May 19-20, 2008 and November 6-7, 2008. During both events, *in-situ* water quality measurements (temperature, specific conductivity, dissolved oxygen [DO], pH, Oxidative Redox Potential [ORP], turbidity), groundwater levels, and samples of groundwater were collected at six wells located at the perimeter of the CDF, identified as MW-1, MW-3, MW-4A, MW-5, MW-6, and MW-7A (Figure 1). All field measurements and groundwater collection were conducted according to the Field Sampling Plan (FSP) developed for this investigation (Battelle, 2008b). Field activities are summarized briefly below.

Groundwater sampling was performed according to the procedures for Low-Flow (Low-Stress) Purging and Sampling based on EPA Region I Low Stress (flow) Purging and Sampling Groundwater Procedure for the Collection of Groundwater Samples from Monitoring Wells, Rev. 2, July 30, 1996 (EPA, 1996). A bladder pump (equipped with dedicated Teflon bladders) was used during both sampling events. Dedicated sample tubing was used to collect groundwater samples to minimize the risk of sample contamination and cross contamination between wells. Upon arrival for sample collection, the water level was measured with a cleaned water level tape and the well volume was calculated. The water level tape was cleaned between wells following decontamination procedures described in the FSP (Battelle, 2008b). The pump was then affixed to the dedicated tubing which was placed into the well. The water depth was measured again before purging the well to account for any water displacement from the pump. Groundwater samples were collected for PCBs (as Aroclor), metals, and VOC analysis once the well was purged and all diagnostic parameters (i.e., pH, DO, specific conductivity, turbidity, temperature, and ORP) achieved a steady state. The flow rate was verified using a graduated cylinder and timepiece and then recorded on the field log sheets.

Quality control (QC) samples were also collected to assess data quality in terms of precision and potential contamination. Field-based QC samples included one field duplicate sample and one equipment blank per sampling event. Additional groundwater was also collected for the preparation of laboratory-based QC samples (i.e., matrix spike and matrix spike duplicate).

Field measurements were recorded on detailed field logs sheets provided in Appendix A. The integrity of the groundwater samples was maintained by using cleaned, dedicated sampling tubing for each well, by not introducing contaminants into the samples during collection (e.g., wells were sampled from lowest contamination to highest contamination to reduce potential cross-contamination issues; the stainless steel bladder pump was cleaned in between wells), by collecting the samples in clean bottles provided by the analytical laboratories, by keeping the samples cold on ice during transport to the analytical laboratories, and by analyzing the samples within the required holding time.

In-situ Water Quality Summary

Water quality parameters were measured during the initial pumping of groundwater from the wells before the actual groundwater sample collection. *In-situ* measurements were made using an YSI® (Yellow Springs Instruments) multi-meter sonde and a flow-thru cell. The flow-thru cell was disconnected from the discharge line during the actual sample collection. The YSI® sonde was calibrated and used according to the manufacturer's specifications. Calibration records are documented on the field logs (Appendix A). Once the diagnostic parameters had stabilized, sample collection was initiated. *In-situ* measurements are summarized in Table 1.

Chemistry Water Quality Summary

Groundwater samples were analyzed for PCBs (as Aroclor), metals, and VOCs. PCB Aroclor analysis was performed by TestAmerica in Burlington, Vermont; metals analysis was performed by Battelle Marine Science Laboratory in Sequim, Washington; and VOC analysis was performed by Alpha Analytical in Mansfield, Massachusetts. Sample results are summarized in Table 2, and are compared to the Massachusetts Contingency Plan (MCP), Method 1 category GW-3 criteria for groundwater that has a potential to discharge to a surface water body (MADEP, 2008). Complete test results are provided in Appendix B.

Consistent with results from previous monitoring years (ENSR, 2006 and Battelle, 2008a), PCB and metals concentrations in all the groundwater samples collected during the May and November 2008 events were below the MCP GW-3 criteria (Table 2). Individual PCB Aroclors were undetected in all the groundwater samples except Aroclor 1242 at MW-4A (0.043 µg/L) during the May sampling event and Aroclor 1254 at MW-5 (0.032 µg/L) during the November sampling event (Appendix B). The target metals cadmium, chromium, copper, and lead were detected in all of the groundwater samples, albeit at low concentrations often comparable to low-level equipment blank contamination (see Quality Control section). Groundwater sampled at MW-7A, located along the southern boundary of the CDF, contained the highest concentrations of cadmium and copper (Table 2). The highest lead concentrations were measured in groundwater in well MW-1 (Table 2), located along the western boundary of the CDF. Chromium concentrations within each sampling event were relatively uniform across most locations; the lowest concentrations were measured at wells MW-5 and MW-6 during the spring event and at well MW-6 during the fall event.

With the exception of acetone, target VOCs were undetected in all the groundwater samples collected during the May and November 2008 events (Appendix B). While measured concentrations of acetone were comparable to low-level background contamination (see Quality Control section), sample concentrations were at least three orders of magnitude lower than the MCP GW-3 criteria (Table 2).

Quality Control

Analytical data received third party validation and the data were qualified according to Region 1 Data Validation guidelines. Qualifiers reported with the data represent the final qualifier assigned by the data validator. Results from the field QC samples were also evaluated to assess data quality in terms of precision (field replicate) and potential contamination (equipment blank) that may contribute to contaminant concentrations measured in the field samples. Results from the field replicate samples are summarized in Table 3 and results for the equipment blanks are presented with the sample data in Table 2.

Overall, PCB, metals, and VOCs results were comparable between the original and the replicate samples (Table 3), indicating that the sample collection methods were reproducible and that representative groundwater samples were collected.

Low-level contamination was measured in the equipment blanks: PCB Aroclor 1242 was detected at 0.095 µg/L in the fall 2008 blank; target metals were detected in equipment blanks during both sampling events; and acetone and methylene chloride were detected in the spring 2008 blank (Table 2). Potential impacts to data quality are:

- PCBs – The low-level PCB contamination does not appear to impact data quality because Aroclor 1242 was undetected in the associated field samples.
- Metals – Sample concentrations measured at levels less than five times the equipment blank values have been qualified by the data validator. While low-level contamination may have contributed to sample concentrations, all metals concentrations in all of the groundwater samples were well below the MCP GW-3 criteria (Table 2).
- VOCs – Sample concentrations of acetone measured at levels less than ten times the equipment blank value have been qualified by the data validator. While the low-level acetone contamination may have contributed to sample concentrations, acetone concentrations in all of the groundwater samples were at least three orders of magnitude below the MCP GW-3 criteria. The low-level methylene chloride contamination does not appear to impact data quality because methylene chloride was undetected in the associated field samples.

Summary

Semi-annual monitoring was performed in 2008 at the Sawyer Street CDF as part of the ongoing groundwater monitoring program. Groundwater levels, water quality parameters, organic contaminants, and metals were monitored in all six wells at the facility. Analysis of groundwater samples indicates that although low-level detections of PCB Aroclor, metals, and VOCs were observed, concentrations were all well below MCP GW-3 criteria. Overall, the groundwater data collected during the 2008 semi-annual monitoring suggest that the integrity of the CDF is currently maintained.

Literature Cited

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Massachusetts Department of Environmental Protection (MADEP), 2008. MCP Method 1 Groundwater Standards. 310 CMR 40.0974(2). http://www.mass.gov/dep/cleanup/laws/0974_2.htm

Figure 1: Sawyer Street CDF Monitoring Well Locations

Table 1: Summary of *In-situ* Groundwater Data Collected Immediately Prior to Sampling

Event	Well ID	Sample Date/ Time	Depth to Water (ft)	pH	Specific Cond. (µS/cm)	Temp-erature (°C)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (L)	Flow Rate (mL/ min)	Color/ Odor	Draw-down[(a)] (ft)
May 2008	MW-7A	5/19/2008 12:23	10.89	6.63	860	11.56	0.93	12	242.7	8.586	102	clear	-0.38
	MW-6	5/19/2008 15:18	13.78	7.19	604	12.69	0.3	5.7	4.5	7.705	75	clear/no odor	-0.59
	MW-1	5/19/2008 17:33	17.03	6.91	932	12.26	0.84	7.1	5.8	3.62	45		-2.48
	MW-5	5/20/2008 10:05	10.09	7.45	3263	11.32	0.19	4.1	-51.4	2.95	74	clear/no odor	-1.79
	MW-4A	5/20/2008 12:08	11.5	6.81	5074	13.01	0	4.8	-275.5	3.525	65	clear/sulfide	-2.29
	MW-3	5/20/2008 14:22	15.52	7.02	3872	12.12	0.48	5.3	-77	4.4	75	yellow color	-1.82
November 2008	MW-7A	11/6/2008 8:28	11.11	6.66	877	15.29	0.9	0.1	204.8	2.35	55	clear	-0.15
	MW-6	11/6/2008 10:03	13.78	7.3	520	14.93	0.5	1.5	111	5.69	60		-0.86
	MW-1	11/6/2008 12:14	16.76	6.8	911	15.05	0.77	0.5	3.8	3.64	35	clear	-1.91
	MW-5	11/6/2008 13:01	9.61	7.85	1878	14.71	1.85	2.2	-154.7	2.6	60	sulfur odor	-1.61
	MW-4A	11/7/2008 8:55	12	7.06	4370	14.52	0.52	2.7	-352.2	4.51	65		-2.12
	MW-3	11/7/2008 9:16	15.82	7.41	4401	14.24	0.28	9.8	-212.7	3.01	55	light orange & no odor	-1.39

[(a)] Drawdown is the distance in feet the water level changed during the sampling process.

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Table 2: PCB, Metal and VOC Groundwater Results, May and November 2008 Sampling Events

Well ID	Sample Date	Result (µg/L)					
		Total PCB[a]	Cadmium	Chromium	Copper	Lead	Acetone
MW-1	5/19/2008	— U[b]	0.249	5.35	0.984 U[c]	0.739	2.79 EB
	11/6/2008	— U[b]	0.435	1.78 U[c]	1.46 U[c]	0.894 U[c]	10.3
MW-3	5/20/2008	— UJ[b]	0.124	6.36	1.95	0.085 U[c]	8.4 EB
	11/7/2008	— U[b]	0.03	5.63	0.855 U[c]	0.063 U[c]	5.36
MW-4A	5/20/2008	0.043 J	0.028 U[c]	6.57	1.46	0.071 U[c]	3.05 EB
	11/7/2008	— UD[b]	0.027	5.62	2.27	0.175 U[c]	5.32
MW-5	5/20/2008	— U[b]	0.046 U[c]	1.89 U[c]	1.12 U[c]	0.061 U[c]	16 EB
	11/6/2008	0.032 J	0.052	4.04	2.10	0.274 U[c]	5 U
MW-6	5/19/2008	— U[b]	0.044 U[c]	2.45 U[c]	0.453 U[c]	0.057 U[c]	1.26 EB
	11/6/2008	— UJ[b]	0.052	0.346 U[c]	0.666 U[c]	0.183 U[c]	23.3
MW-7A	5/19/2008	— U[b]	0.711	5.28	4.99	0.071 U[c]	5 U
	11/6/2008	— U[b]	0.648	1.01 U[c]	4.99	0.023 U[c]	5 U
MCP GW-3 Criteria[d]		**10**	**4**	**300**	**NA**	**10**	**50000**
Equipment Blank	5/20/2008	— UJ[b]	0.011 J	0.843	0.269	0.077	7.19
	11/5/2008	0.095	0.005 U	0.608	0.354	0.078	5

[a] Total PCB calculated as the sum of Aroclors 1016, 1221, 1232, 1242, 1248, 1254 and 1260; a value of zero (0) used in summation for non-detects. For example, total PCB was calculated as follows for sample MW-4A collected on 05/20/2008:

Parameter	Result (µg/L)	Final Qual	Result (µg/L)	Comment
Aroclor 1016	0.047	U	0	zero substituted for non-detect
Aroclor 1221	0.047	U	0	
Aroclor 1232	0.047	U	0	
Aroclor 1242	0.043	J	0.043	J
Aroclor 1248	0.047	U	0	zero substituted for non-detect
Aroclor 1254	0.047	U	0	
Aroclor 1260	0.047	U	0	
			0.043 J	**Total PCB**

[b] PCB Aroclors undetected in the study samples at concentrations above the laboratory reporting limit (see Appendix B).
[c] Chemical detected at concentration <5X equipment blank values.
[d] MCP: Massachusetts Contingency Plan, Method 1 MCP GW-3 standard from 310 CMR 40.0974(2).

Key:
EB: Chemical not detected at concentration above 10X equipment blank values.
U: Chemical not detected at concentration above the laboratory reporting limit.
J: Estimated value.
NA: Not applicable.

Table 3: Field Replicate Results, May and November 2008 Sampling Events

Sampling Event/Well	Parameter	Result (µg/L)		RPD
		Sample	Replicate	
May 2008/ Well MW-5	Total PCB[a]	— U[b]	— U[b]	NA
	Cadmium	0.046 U[c]	0.043 U[c]	7%
	Chromium	1.89 U[c]	1.98 U[c]	5%
	Copper	1.12 U[c]	1.05 U[c]	6%
	Lead	0.061 U[c]	0.056 U[c]	9%
	Acetone	16 EB	16 EB	0%
November 2008/ Well MW-3	Cadmium	0.03	0.031	3%
	Chromium	5.63	5.92	5%
	Copper	0.855 U[c]	0.944 U[c]	10%
	Lead	0.063 U[c]	0.069 U[c]	9%
November 2008/Aerovox Well MW-6A[d]	Aroclor 1254	2.30 D	1.90 J	19%
	Tetrachloroethene	5.27	5.07	4%
	Cis-1,2-dichloroethene	14.3	14.4	1%
	Trichloroethene	113	113	0%

[a] Total PCB calculated as the sum of Aroclors 1016, 1221, 1232, 1242, 1248, 1254 and 1260; a value of zero (0) used in summation for non-detects.
[b] PCB Aroclors undetected in the study samples at concentrations above the laboratory reporting limit (see Appendix B).
[c] Chemical detected at concentration <5X equipment blank values.
[d] Groundwater monitoring at the Sawyer Street CDF and Aerovox site was performed in November 2008 as a single event. As a result, a shared field replicate was collected, for common test parameters (PCB and VOC), to satisfy the field QC requirements.

Key:
EB: Chemical not detected at concentration above 10X equipment blank values.
U: Chemical not detected at concentration above the laboratory reporting limit.
J: Estimated value.
D: Concentration from analysis of the sample at a secondary dilution.
NA: Not applicable
RPD: relative percent difference.

APPENDIX A

Groundwater Monitoring Field Logs

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Spring 2008 Sampling Event

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YSI Calibration Form
Daily 2007 GW Monitoring for New Bedford Harbor – G606422

Instrument Model # YSI 6600 V2 S/N# 05H1397 AC

Date: 5/19/08 / 1000	Initials: MW/MRF
DO membrane changed? Y (N) NA	Turbidity Wiper Changed? Y (N)
Battery Voltage: 12.3	Turbidly wiper parks 180° from optics? (Y) N

Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm) 1.021	~~.974~~	1.000	Cell constant (4.55 – 5.45)
Depth ~~(ft)~~ meters	-.174	0.00	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	-1.9	0.0	Turbidity Offset:
Turbidity (NTU) 123	121.4	123.0	
D.O. (% Sat)	~~80.6~~	100.5	D.O. Gain (0.7 - 1.4)
pH 4	3.89	4.00	
pH 7	6.86	7.00	
ORP	236.7	244.0	
Comments:			

Date: 5/19/08 / 1836	Initials: MW
DO membrane changed? Y (N) NA	Turbidity Wiper Changed? ~~Y~~ (N)
Battery Voltage: 12.8	Turbidly wiper parks 180° from optics? (Y) N

① End of Day

Parameter	① ~~Initial~~ Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	0.964		Cell constant (4.55 – 5.45)
Depth ~~(ft)~~ m	0.013		Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	1.2		Turbidity Offset:
Turbidity (NTU) 123	124.3		
D.O. (% Sat)	101.9		D.O. Gain (0.7 - 1.4)
pH 4	4.00		
pH 7	6.99		
ORP	241.7		
Comments:			

YSI Calibration Form
Daily 2007 GW Monitoring for New Bedford Harbor – G606422

Instrument Model # YSI 6600V2 S/N# 05H1397 MC

Date: 5/20/08	Initials: MCF	
DO membrane changed? Y (N) NA	Turbidity Wiper Changed? Y (N)	
Battery Voltage: 13.2	Turbidly wiper parks 180° from optics? (Y) N	
Parameter	**Initial Reading**	**Calibrated Reading**	**Calibration Data (acceptable range)**
Conductivity (mS/cm)	.972	1.00	Cell constant (4.55 – 5.45)
Depth ~~(ft)~~ m	.088	0.00	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	0.0	0.0	Turbidity Offset:
Turbidity (NTU) 123	125.2	123	
D.O. (% Sat)	99.3	98.5	D.O. Gain (0.7 - 1.4)
pH 4	3.93	4.00	
pH 7	6.99	7.00	
ORP	247.4	244	
Comments:			

Date: 5/20/08 / 1507	Initials: MW	
DO membrane changed? Y (N) NA	Turbidity Wiper Changed? Y (N)	
Battery Voltage: 12.6	Turbidly wiper parks 180° from optics? (Y) N	
Parameter	**Initial Reading** (1)	**Calibrated Reading**	**Calibration Data (acceptable range)**
Conductivity (mS/cm)	1.007		Cell constant (4.55 – 5.45)
Depth ~~(ft)~~ m	-0.0057		Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	0.5		Turbidity Offset:
Turbidity (NTU) 123	122.3		
D.O. (% Sat)	97.7		D.O. Gain (0.7 - 1.4)
pH 4	4.08		
pH 7	7.05		
ORP	241.3		
Comments:			

(1) End of Day

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Well ID: MW-7A

Groundwater Sample Collection Record

Client: ACOE Date: 5/19/08 Time: 11 am Start 11 am am/pm
Project No: NBH Finish 1320 am/pm
Site Location: Sawyer Street
Weather Conditions: Collectors: JMF / MRF / MW

1. WATER LEVEL / WELL DATA

① Measured Well Depth: ~~8.02~~ ② 15.03 ft Height of Water Column: ⊗ 4.55 ft 0.16 GAL/FT (2 IN) 0.65 GAL/FT (4 IN) = 1.5 GAL/FT (6 IN) Gallons (Volume)

Depth to Water (initial): ① 10.48 ft Purged Volume: 8.586 + .600 = 9.186

Depth to Water (pump in well): ② ~~13.0~~ 10.51 ft Pump Depth: 13.0 ft ↑ from top of well casing

② S/B JMF 5/19/08 ③ Please ignore JMF 5/19/08

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
Solinst Water level Meter			
YSI 6600 V2 multi parameter water quality Sonde			~~08~~ ③ 0581397 AC
MP10 QED Controller	Micro Purge Basics		MP10-1628

Probes w/ Optical DO, Turb., pH, Spec. Cond., ORP, Temp

Time (24 hr)	±3% Temp (°C)	±3% Spec Cond. (µS/cm)	±10% DO (mg/L)	±0.1 pH	±10 ORP (mV)	±10% <1 Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
1132	13.16	+0.786	4.37	6.27	+277.9	14.7	—	153	10.75	-0.24	clear
1135	12.45	+0.778	4.08	6.45	+270.7	12.1	.459	154	10.82	-0.31	clear
1138	11.92	+0.769	3.66	6.57	+266.9	11.8	.921	101	10.82	-0.31	clear
1141	12.11	0.768	3.38	6.61	+265.1	11.0	1.845	101	10.82	-0.31	
1144	12.09	0.772	3.05	6.63	+263.7	10.5	2.769	101	10.83	-0.32	
1147	12.13	0.777	2.79	6.63	+262.7	10.4	3.693		10.84	-0.33	
1150	12.13	0.787	2.48	6.63	261.2	10.3	4.617	101	10.84	-0.33	
1153	11.98	0.798	2.24	6.63	260.2	10.3	4.920		10.85	-0.34	
1156	11.95	0.807	2.03	6.63	259.0	10.3	5.223				
1159	11.78	0.821	1.84	6.62	256.8	10.2	5.526	102			
1202	11.77	0.828	1.70	6.63	253.5	11.3	5.832		10.86	-0.35	
1205	11.80	.833	1.54	6.62	250.5	11.6	6.444	102	10.88	~~-0.37~~ ② 0.37	
1208	11.65	.842	1.36	6.63	248.4	11.7	6.75		10.89	-0.38	
1211	11.70	.844	1.28	6.63	247.3	11.6	7.056		10.87	-0.36	clear
1214	11.69	.849	1.20	6.63	246.0	11.7	7.362		10.88	-0.37	
1217	11.56	.854	1.08	6.63	244.7	11.9	7.668		10.88	-0.37	

- reduced discharge Rate 1137

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-07A-051908	3 sets	40ml vial	HCl	VOA (MS/MSD)	1225
MW-07A-051908	4	Amber 1L	4°C	PCB (MS/MSD)	1241
MW-07A-051908	1	500ml	HNO_3	Metals (MS/MSD)	1315

NOTES: ① @ start of day 0904 from top of well casing JMF/MRF 5/19/08

② S/B MS/CM JMF 2/12/09

Signature: [signature] Date: 5/19/08

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Well ID: MW-7A

Groundwater Sample Collection Record

Client: NBH - ACOE Date: 5/19/08 Time: 11 Start am/pm
Project No: S. NBH 1320 Finish am/pm
Site Location: Sawyer Sr
Weather Conditions: Partly Sunny Collectors: JMF/MRF/MW

1. WATER LEVEL / WELL DATA

Measured Well Depth:	Height of Water Column:	0.16 GAL/FT (2 IN) 0.65 GAL/FT (4 IN) = 1.5 GAL/FT (6 IN)	Gallons (Volume)

Depth to Water (initial): _____ Purged Volume: _____ see page 1

Depth to Water (pump in well): _____

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number

see page 1

Time (24 hr)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
1220	11.61	.857	1.03	6.64	243.7	12.0	8.58		10.88	-0.37	clear
1223	11.56	.860	0.93	6.63	242.7	12.0	8.586		10.89	-0.38	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time

see page 1

NOTES:

Signature: _____ Date: 5/19/08

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Well ID: MW-6

Groundwater Sample Collection Record

Client: ACOE Date: 5/19/08 Time: 1325 Start am/pm
Project No: NBH ~~1458~~ 1558 Finish am/pm
Site Location: Sawyer Street
Weather Conditions: Partly Cloudy + Windy Collectors: JMF/MRF/MW

1. WATER LEVEL / WELL DATA

Measured Well Depth: 19.48 ft (1) Height of Water Column: 7.02 ft
0.16 GAL/FT (2 IN)
0.65 GAL/FT (4 IN) =
1.5 GAL/FT (6 IN)
Gallons (Volume)

(1) Depth to Water (initial): 12.46 ft Purged Volume: 7.705 + .6 (2) = 8.305

Depth to Water (pump in well): ~~17.48 @ 18~~ 13.19 ft

Pump Depth 17.48 ft ↑ from top of well casing

(2) Please ignore JMF 5/19/09

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
Solinst H_2O Lvl meter			101-200-P2 DC
MP10 Controller			MP10-1586
YSI	6600 V2	Turbo Turb, DO, pH, ORP, temp	05B1397 AC
CO_2 cylinder			

I.4 x ±.02 ✓ x ✓ ✓

Time (24 hr)	±3% Temp (°C)	±3% Spec Cond (µS/cm) (3)	±10% DO (mg/L)	±0.1 pH	±10 ORP (mV)	±10% Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet) (4)	Color/Odor
1325	14.11	0.564	2.84	7.30	256.2	21.2	—	100	13.8	~~-0.7~~ -0.061	clear/No odor
1330	12.90	0.558	2.25	7.15	249.3	12.6	.5	49	14.05	-0.86 ✓	
1335	13.42	0.558	2.07	7.12	255.3	10.2	.745		13.8	~~-0.7~~ -0.061	
1340	14.47	0.557	1.83	7.13	246.6	8.7	.99	45	13.7	-0.651	
1345	14.81	0.561	1.68	7.13	238.1	6.6	1.215	45	13.65	-0.46	
1350	15.08	0.562	1.51	7.12	227.7	6.4	1.44	~~45~~ 44	13.65	-0.46 ✓	
1355	15.17	0.564	1.39	7.11	218.1	5.8	1.660	44	13.63	-0.44 ✓	
1400	15.32	0.564	1.31	7.11	212.3	5.6	1.88	~~55~~ 50	13.58	-0.39 ✓	Δ discharge rate @ 1401
1405	14.31	0.568	1.20	7.09	198.3	5.4	2.159	80	13.68	-0.49	
1410	13.34	0.566	1.16	7.10	178.5	6.7	2.555		13.80	-0.61	Δ discharge @ 1411 ✓
1415	13.13	0.564	1.17	7.08	165.3	7.0	2.955	60	13.85	-0.66	
1420	12.87	0.564	1.12	7.07	143.5	6.9	3.255	~~65~~ 65	13.96	-0.77	Δ discharge @ 1422
1425	13.05	0.570	0.93	7.11	114.7	5.7	3.58	~~50~~ 75	13.95	-0.76	
1430	13.22	0.578	0.79	7.11	108.6	5.4	3.955	~~50~~ 75	13.88	-0.69	
1435	13.08	0.586	0.62	7.14	86.8	5.2	4.33		13.85	-0.66	
1440	12.89	0.592	0.48	7.15	66.8	5.3	4.705	75	13.85	-0.66	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-06-051908 ~~MW-07A-051708~~	1 set	40ml vial	HCl	VOC	1519
MS	2	1L Amber	4°C	PCB	1522
↓	1	500ml Teflon	HNO_3	Metals	1546

NOTES: (1) taken 5/19/08 0916 JMF/MRF (top of well casing)

(2) - H_2O in flow thru cell

(2) s/b mSlcm JMF 5/6/09 (4) s/b JMF 5/12/09

Signature: [signature] Date: 5/19/08

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Well ID: MW-6

Groundwater Sample Collection Record

Client: ACOE Date: 5/19/08 Time: _____ Start 1325 am/pm
Project No: NRH Finish 1556 am/pm
Site Location: Sawyer St
Weather Conditions: Partly Cloudy + Windy Collectors: SMF | MCF | MW

1. WATER LEVEL / WELL DATA

Measured Well Depth: _____ Height of Water Column: _____

0.16 GAL/FT (2 IN)
0.65 GAL/FT (4 IN) = _____ Gallons (Volume)
1.5 GAL/FT (6 IN)

Depth to Water (initial): _____ Purged Volume: _____ see page 1

Depth to Water (pump in well): _____

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number

see page 1

Time (24 hr)	±3% Temp (°C)	±3% Spec Cond (µS/cm)	±10% DO (mg/L)	±0.1 pH	±10 ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
1445	13.05	0.595	.43	7.16	*54.5	5.2	5.08	~~80~~ 75	13.8	0.61	
1450	13.19	0.597	.38	7.15	*40.9	5.2	5.455		"		
1455	12.83	0.600	.35	7.11	*34.5	5.4	5.83	~~80~~ 75	13.8	0.61	
1500	12.68	0.601	.32	7.17	*25.5	5.4	6.205	75	13.8	0.61	
1505	12.51	0.602	.31	7.18	*19.1	5.7	6.58		13.78	-0.59	
1510	12.61	0.602	.30	7.18	12.8	5.6	6.955	75	13.78	-0.59	
1514	12.66	0.603	.31	7.21	6.7	5.7	7.33			-0.59	
1518	12.69	0.604	0.30	7.19	4.5	5.7	7.705		13.78	-0.59	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time

see page 1

NOTES:

Signature: _____ Date: 5/19/08

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Well ID: MW-1

Groundwater Sample Collection Record

Client: ACOE
Project No: NRH
Site Location: Sawyer Street
Weather Conditions: Partly Sunny + Windy
Date: 5/19/08 Time: ~~1402~~ Start ~~1405~~ 1602 am/pm
Finish ~~1635~~ 1830 am/pm
Collectors: JMF / MRF / MW

1. WATER LEVEL / WELL DATA

(1) Measured Well Depth: 24.39 ft
Height of Water Column: 9.09 ft
(1) Depth to Water (initial): 15.3 ft
Depth to Water (pump in well): 14.55 ft
Purged Volume: 3.62 * .6000 (2) = 4.22 Gallons (Volume)

0.16 GAL/FT (2 IN)
0.65 GAL/FT (4 IN) =
1.5 GAL/FT (6 IN)

Pump Depth : 22.0 ft
↑ from top of well casing

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
Solinst H_2O level Meter			A1016A
MP10 Controller	QED	MP10 1586	
YSI 6600 V2	Probes	DO, Turb, Temp, pH, Cond	05813974C

✓ ✓ ✓

Time (24 hr)	±3 Temp (°C)	±3 Spec Cond. (µS/cm) (3)	±10 DO (mg/L)	±0.1 pH	±10 ORP (mV)	±10% Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
1616	13.35	.918	2.83	7.09	209.8	29.5	—	50	15.65	-1.1	
1621	13.46	.918	2.48	7.10	213.0	21.5	.25	50	16.10	~~-.35~~ -1.45	
1628	13.49	.924	2.27	7.13	214.1	17.1	.60	15	16.22	-1.67	
1634	13.35	.926	2.05	7.07	214.7	15.7	.69	(60)	16.38	-1.83	
1639	13.07	.927	1.87	7.07	118.2	13.3	.99	50	16.68	-2.13	
1644	12.81	0.925	1.71	7.06	79.4	10.8	1.24	45	16.90	-2.35	
1649	12.66	0.925	1.64	7.07	61.7	10.3	1.49	45	17.05	-2.5	
1654	12.80	0.925	1.55	7.06	53.6	9.4	1.74		17.11	-2.56	
1659	12.79	0.927	1.48	7.05	43.4	8.2	1.99	45	17.16	-2.61	
1704	12.74	0.928	1.39	7.02	34.9	7.6	2.24	45	17.16	-2.61	
1709	12.62	0.929	1.29	7.00	26.5	6.8	2.49	45	17.16	-2.61	
1714	12.51	0.931	1.19	6.97	23.1	6.8	2.74				
1720	12.47	0.930	1.05	7.00	13.6	6.6	3.01	45	17.06	-2.51	
1725	12.35	0.931	.95	6.96	8.2	6.6	3.26	45	17.1	-2.55	
1729	12.29	0.932	.88	6.96	7.0	6.9	3.44	45	17.07	-2.52	
1733	12.26	0.932	.84	6.91	~~5.8~~ 7.8	7.1	3.62	45	17.03	-2.48	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-001-051908	1 set	40ml Vial	HCL	VOC	1735
MW-001-051908	2	1L Amber	4°C	PCB	1742
↓	1	500ml Teflon	HNO_3	METALS	1820

NOTES: (1) TAKEN 5/19/08 0911 AM JMF/MRF (to top of well casing)

(2) H_2O left in flow thru cell

(3) s/b msl cm JMF 6/10/09

Signature: Michael Walsh Date: 5/19/08

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Well ID: MW-5

Groundwater Sample Collection Record

Client: ACOE Date: 5/20/08 Time: _____ Start 0900 am/pm
Project No: NBH Finish 1050 am/pm
Site Location: Sawyer Street
Weather Conditions: Collectors: JMF/MF/MW

1. WATER LEVEL / WELL DATA

① Measured Well Depth: 19.25 ft Height of Water Column: 11.24 ft

0.16 GAL/FT (2 IN)
0.65 GAL/FT (4 IN) = Gallons (Volume)
1.5 GAL/FT (6 IN)

① Depth to Water (initial): 8.01 ft Purged Volume: 2.95 + .600 ② = 3.55

Depth to Water (pump in well): 8.3 ft

Pump Depth: 17.0
↑ from top of well casing

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
YSI 6600 V2			0581397 AC
MP10 Controller			MP10-1628
Solinst Water Level Meter			

Time (24 hr)	Temp (°C)	Spec Cond. ~~(µS/cm)~~ ③	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
0924	11.34	3.274	2.16	7.46	186.8	7.7	—	75	9.1	~~7~~ -0.8	clear / no odor
0930	11.14	3.275	0.96	7.46	94.5	5.2	.45		9.55	-1.25	
0935	11.07	3.270	0.65	7.46	46.9	4.9	.825	79	9.70	-1.40	
0940	11.02	3.266	0.48	7.46	3.2	4.0	1.22	68	9.98	-1.68	
0945	11.22	3.263	0.37	7.46	-16.5	3.9	1.56		10.00	-1.7	
0950	11.29	3.264	0.30	7.46	-31.0	4.1	1.9		10.02	-1.72	
0955	11.30	3.263	0.26	7.46	-41.4	3.9	2.24		10.06	-1.76	
1000	11.37	3.261	0.23	7.46	-47.0	3.9	2.58	74	10.08	-1.78	
1005	11.32	3.263	0.19	7.45	-51.4	4.1	2.95		10.09	-1.79	

Δ ↓ discharge rate @ 0941

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-005-052008	2 sets REP	40ml	HZC	VOC+(REP)	1007
MW-005-052008	~~2~~ 3	1L Amber	4°C	PCB	1015 - Replicate (1 of jar)
↓	2	500ml Teflon	HNO_3	Metals	1050 - Rep

NOTES: ① taken on 5/19/08 @ 0928 JMF/MRF (top of well casing) ② H_2O in flow thru cell

③ mS/cm SLB JMF 5/12/09

Signature: [signature] Date: 5/20/08

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Well ID: MW-4A

Groundwater Sample Collection Record

Client: ACOE
Project No: NBH
Site Location: Sawyer Street
Weather Conditions: Overcast Windy SW 15-20
Date: 5/20/08 Time: _____ Start 1058 am/pm Finish 1325 am/pm
Collectors: JMF/MF/MW

1. WATER LEVEL / WELL DATA

(1) Measured Well Depth: 24.63 ft
Height of Water Column: 15.42 ft
(1) Depth to Water (initial): 9.21 ft
Purged Volume: 3.525 + .600 (2) = 4.125
Depth to Water (pump in well): ~~8.95~~ 9.21 ft
Pump Depth - 22.0 ft ↑ ft down from top well casing

0.16 GAL/FT (2 IN)
0.65 GAL/FT (4 IN) =
1.5 GAL/FT (6 IN)
Gallons (Volume)

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
YSI 6600 V2			05813977 AC
MP10 Controller			MP10 - 1628
Solnist water level meter			

Time (24 hr)	Temp (°C)	Spec Cond (µS/cm) (3)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
1105	15.45	7.366	1.16	6.9	-222.6	18.0	—	45	9.75	-.54	clear/sulfide
1110	14.89	7.409	.35	6.77	-269.6	14.7	.255	45	10.02	-.81	
1115	14.32	7.315	.14	6.73	-280.1	12.1	.510	55	10.21	-1.00	
1120	14.07	7.045	.06	6.72	-281.9	10.1	.785	55	10.42	-1.21	
1125	14.04	6.722	.02	6.72	-284.1	9.0	1.06	55	10.60	-1.39	
1130	13.86	6.337	0	6.74	-284.2	8.4	1.335	55	10.79	-1.58	
1136	13.24	5.926	0	6.76	-281.7	9.4	1.6065	55	10.96	-1.75	
1143	13.09	5.641	0	6.80	-282.2	11.1	2.05	55	11.10	-1.89	
1148	13.23	5.531	0	6.81	-281.4	14.0	2.325	55	11.18	-1.97	
1153	12.9	5.536	0	6.80	-277	14.4	2.6	55	11.32	-2.11	
1158	13.03	5.180	0	6.80	-274.7	17.3*	2.875	65	11.42	-2.21	- cleaned optics*
1203	13.11	5.112	0	6.81	-275.8	4.9	3.2	wl	~~11.50~~		
1208	13.01	5.074	0	6.81	-275.5	4.8	3.525		11.50	-2.29	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time	
MW-04A-052008	6	40 ml	HCl	VOC	1217	- 3 for QA
	4	1 Liter	4°C	Org.	1227	- 2 for QA
↓	2	Teflon	HNO_3	metals	1301	- 1 for QA

NOTES: (1) taken @ 0931 on 5/19/08 JMF/MRF (to top of well casing
(2) water from flow thru cell
(3) 516 mS/cm dilution JMF

Signature: Matthew R Fyrbick Date: 5/20/08

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Well ID: MW-3

Groundwater Sample Collection Record

Client: ACOF Date: 5/20/08 Time: 1330 Start am/pm
Project No: NRH Finish 1500 ② am/pm
Site Location: Sawyer Street
Weather Conditions: overcast windy SW 15-20 Collectors: MRF, JF, MW

1. WATER LEVEL / WELL DATA

① Measured Well Depth: 24.10 ft Height of Water Column: 9.21 ft

0.16 GAL/FT (2 IN)
0.65 GAL/FT (4 IN) = Gallons (Volume)
1.5 GAL/FT (6 IN)

① Depth to Water (initial): 14.89 ft Purged Volume: 4.4 + .6 ③ = 5.0 L

Depth to Water (pump in well): 13.7 ft

Pump Depth: 22.0 ft
↑ from top of PVC

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
YSI 6600 V2			0581397AC
MP10 Controller			MP10-1628
Solnist Water level meter			

Time (24 hr)	Temp (°C)	Spec Cond. ~~(µS/cm)~~ mS/cm	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
1325	13.90	4.78	2.16	6.84	-93.0	33.5	—	45	14.38	-.68	Yellow
1330	13.95	4.772	1.48	6.82	-84.8	29.5	.225	90	14.68	-.98	
1335	13.60	4.813	1.45	6.82	-78.6	27.2	.675	95	15.10	-1.4	
1340	12.58	4.792	1.09	6.83	-73.9	20.5	1.150		15.42	-1.72	
1345	12.38	4.724	.89	6.82	-64.7	16.1	1.625	75	15.55	-1.85	
1350	12.35	4.635	.85	6.83	-59.7	13.8	2.000	75	15.55	-1.85	
1354	12.27	4.527	.79	6.85	-58.3	11.4	2.3	75	15.55	-1.85	
1358	12.26	4.406	.63	6.89	-60.4	10.1	2.6	75	15.55	-1.85	
1402	12.27	4.294	.60	6.92	-62.2	8.6	2.9	75	15.52	-1.82	
1406	12.22	4.198	.55	6.94	-64.1	7.7	3.2	75	15.54	-1.84	
1410	12.27	4.055	.51	6.98	-68.9	6.2	3.5	75	15.54	-1.84	
1414	12.28	3.985	.52	6.99	-71.3	5.8	3.8	75	15.54	-1.84	
1418	12.23	3.936	.5	7.01	-73.4	5.4	4.1	75	15.52	-1.82	
1422	12.12	3.872	.48	7.02	-77	5.3	4.4	75	15.52	-1.82	

- increased discharge rate
Δ↓ discharge rate 1343

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-003-052008	3	40 ml glass	HCl	VOC	1430
	2	1 liter	4°C	Org	1432
	1	Teflon	HNO_3	Metals	1453

NOTES: ① taken on 5/14/08 JMF/MRF 0920 (top of PVC @ Notch)
② s/b JMF 5/21/08
③ H_2O in flow thru cell
④ s/b ~~mter~~ mS/cm JMF 2/12/09
equipment blank take @ 1600

Signature: [signature] Date: 5/20/08

Fall 2008 Sampling Event

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YSI Calibration Form for Groundwater Surveys

Project No. G606422	**Date:** 11/06/08	**Recorded By:** Patrick Curran
Data File Name: N/A		**Instrument Model / SN:** 6820/03E0613AD

CALIBRATION and MAINTENANCE

DO membrane changed? Y (N)	Turbidity Wiper Changed? Y (N)
Battery Voltage:	Turbidly wiper parks 180° from optics? (Y) N

Parameter	Initial Reading	Calibrated Reading	End of Day Reading	Calibration Data (acceptable range)
Conductivity (~~mS~~ uS① /cm)	1012	1000	998	Cell constant (4.55 – 5.45)
ORP	201.4	201.4	201.8	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	-0.2	0.0	.2	Turbidity Offset:
Turbidity (NTU) 123	123.6	123.0	121.8	
D.O. (% Sat)	101.9	100.2	99.4	D.O. Gain (0.7 - 1.4)
pH 4	3.90	4.00	4.06	
pH 7	6.95	7.00	6.86	
pH 10	10.15	10.03	10.01	

Comments:

Project No. G606422	**Date:** 11/06/08	**Recorded By:** Patrick Curran
Data File Name:		**Instrument Model / SN:** 6820/97K1095AE

CALIBRATION and MAINTENANCE

DO membrane changed? Y (N)	Turbidity Wiper Changed? Y (N)
Battery Voltage:	Turbidly wiper parks 180° from optics? (Y) N

Parameter	Initial Reading	Calibrated Reading	End of Day Reading	Calibration Data (acceptable range)
Conductivity (~~mS~~ uS① /cm)	1019	1000	1001	Cell constant (4.55 – 5.45)
ORP	201.4	201.4	202.8	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	0.9	0.0	-.6	Turbidity Offset:
Turbidity (NTU) 123	122.1	123.0	122.0	
D.O. (% Sat)	101.2	101.0	100.3	D.O. Gain (0.7 - 1.4)
pH 4	3.99	4.00	3.98	
pH 7	6.96	7.00	6.92	
pH 10 PC 0648	~~10.15~~	~~10.03~~	10.01	
Comments: 11/06/08	10.08	10.02		

① S/B uS/cm JM 2/12/09

YSI Calibration Form for Groundwater Surveys

Project No. G606422	Date: 11/7/08	Recorded By: Matt Kirkpatrick
Data File Name: NA	Instrument Model / SN: 6820 03E0613	AD

CALIBRATION and MAINTENANCE

DO membrane changed? Y (N)	Turbidity Wiper Changed? Y (N)
Battery Voltage:	Turbidly wiper parks 180° from optics? (Y) N

Parameter	Initial Reading	Calibrated Reading	End of Day Reading	Calibration Data (acceptable range)
Conductivity (~~mS~~/cm)	981	1000	995	Cell constant (4.55 – 5.45)
ORP	203.1	201.4	200.6	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	.3	0.0	-0.3	Turbidity Offset:
Turbidity (NTU) 123	122.3	123	123.9	
D.O. (% Sat)	102.2	100.0	103.1	D.O. Gain (0.7 - 1.4)
pH 4	4.01	4.00	4.18	
pH 7	6.93	7.00	6.96	
pH 10	10.13	10.02	10.04	

Comments:

Project No. G606422	Date: 11/7/08	Recorded By: Matt Kirkpatrick
Data File Name: NA	Instrument Model / SN: 6820 97K1095	AE

CALIBRATION and MAINTENANCE

DO membrane changed? Y (N)	Turbidity Wiper Changed? Y (N)
Battery Voltage:	Turbidly wiper parks 180° from optics? (Y) N

Parameter	Initial Reading	Calibrated Reading	End of Day Reading	Calibration Data (acceptable range)
Conductivity (~~mS~~/cm)	984	1001	998	Cell constant (4.55 – 5.45)
ORP	204.3	201.4	201.1	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	-.1	0.0	-0.7	Turbidity Offset:
Turbidity (NTU) 123	124.5	123.1	121.1	
D.O. (% Sat)	103.4	100.5	103.2	D.O. Gain (0.7 - 1.4)
pH 4	3.93	4.00	4.12	
pH 7	6.95	7.00	6.95	
pH 10	10.17	10.03	10.01	

Comments:

(1) SLB us/cm JMT 2/11/09

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Well ID: MW-7A

Groundwater Sample Collection Record

Client: NBH
Project No: 660642 2
Site Location: Sawyer STREET
Weather Conditions: Cloudy
Date: 11/6/08
Time: 0730 Start (am/pm)
0930 Finish (am/pm)
Collectors: MF

1. WATER LEVEL / WELL DATA

Measured Well Depth: 14.85 ft
Height of Water Column: 3.77 ft
0.16 GAL/FT (2 IN)
0.65 GAL/FT (4 IN) =
1.5 GAL/FT (6 IN)
Gallons (Volume)

Depth to Water (initial): 11.08 ft
Purged Volume: 2.35 + 0.6 ② = 2.95 L

Depth to Water (pump in well): 10.96 ft

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
Controler	MicroPurge	MP10	2249
Water Level meter	Solonist	101	31389
Sonde	YSI	6820	97K1095 AE

Stabilization Criteria:	± 3% .47	± 3% 26	± 10%	± 0.1 units	± 10 mV	± 10%					
Time (24 hr)	Temp (°C)	Spec Cond. (µS/cm) ③	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
0747	15.99	783	2.77	6.36	285.5	.5	—	75	11.14	-.18	clear ①
0753	15.75	859	1.80	6.54	238.3	.1	0.45	50	11.11	-.15	
0758	15.69	874	1.62	6.58	225.8	.1	0.7	55	11.11	-.15	
0803	15.56	876	1.55	6.57	224.0	.1	0.975	55	11.11	-.15	
0808	15.44	875	1.37	6.60	220.0	.1	1.25	55	11.12	-.16	
0813	15.35	874	1.18	6.63	217.2	.1	1.525	55	11.12	-.16	
0818	15.30	874	1.06	6.64	213.8	.1	1.8	55	11.12	-.16	
0823	15.28	875	.96	6.65	209.7	.2	2.075	55	11.12	-.16	
0828	15.29	877	.90	6.66	204.8	.1	2.35	55	11.11	-.15	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-07A-110608	3	40 ml glass	HCl/4°C	VOA	0831
↓	2	1L glass	4°C	PCB	0835
	1	1L Teflon	HNO_3/4°C	Metals	0912

NOTES:
① reduce flow rate to 50ml/min @ 0749
② Volume in flow-thru cell
③ s/B uS/cm 2/12/09 JMT

Signature: [signature]
Date: 11/13/08

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Well ID: MW-6 ①

Groundwater Sample Collection Record

Client:	NBH	Date: 11/6/08	Time: 0810	Start	am/pm
Project No:	G606422		1050	Finish	am/pm
Site Location:	Sawyer ST				
Weather Conditions:	Cloudy / Drizzle	Collectors:	JT / PC		

1. WATER LEVEL / WELL DATA

Measured Well Depth: 19.19 ft
Height of Water Column: 5.87 ft
Depth to Water (initial): 13.32 ft
Purged Volume: 5.69 + 0.6 ① = 6.29 L
Depth to Water (pump in well): 12.92 ft

0.16 GAL/FT (2 IN)
0.65 GAL/FT (4 IN) = Gallons (Volume)
1.5 GAL/FT (6 IN)

① ~~well label as marked on pavement at the aerovox site. It appears that MW-6 + MW-6A are marked incorrectly (ie backwards) See the Discussion in the tech memo for more details~~ JMT 2/4/09 Please ignore

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
Compressor	QED	3020	17723
Controller	Micro Purge	MP10	2253
YSI	YSI	6820	03E0613 AD
Solinist	Water Level Meter	101	45547

Stabilization Criteria:	± 3%	± 3%	± 10%	± 0.1 units	± 10 mV	± 10%					
Time (24 hr)	Temp (°C)	Spec Cond. ~~(µS/cm)~~ ②	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
0830	15.19	514	5.20	7.03	340.6	23.6	—	75	13.62	③ ~~-30~~ -0.70	NA
0835	15.17	517	4.04	7.09	316.6	23.0	0.45	*	13.73	-0.81	
0840	15.18	519	3.21	7.13	296.2	20.4	0.69	8	13.75	③ ~~-49~~ 0.83	
0845	15.15	521	2.62	7.15	277.6	17.5	0.99	60	13.75	-083	
0850	15.16	523	1.96	7.17	263.4	14.6	1.29	—	13.75	-0.83	
0855	15.19	523	1.55	7.19	249.0	11.0	1.59	62	13.76	-0.84	
0900	15.19	525	1.27	7.18	120.6	9.2	1.9		13.78	-0.86	
0905	15.18	526	1.04	7.20	99.3	6.7	2.21	60	13.78	-0.86	
0910	15.18	528	0.86	7.20	39.4	6.4	2.51		13.79	-0.87	
0915	15.21	528	0.76	7.21	5.2	4.7	2.81	60	13.79	-0.87	
0920	15.23	529	0.70	7.22	-4.5	4.5	3.11		13.78	-0.86	
0925	15.27	529	0.63	7.23	-37.6	3.6	3.41	60	13.78		
0930	15.27	529	0.59	7.24	-45.1	3.0	3.71		13.78		
0935	15.30	529	0.56	7.24	-70.4	2.6	4.01	60	13.78		
0940	15.28	528	0.55	7.25	-79.7	2.3	4.31		13.78		
0945	15.23	526	0.54	7.27	-98.1	6.9	4.61		13.78	-0.86	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-006-110608	3	40ml vial	HCl	Voa	1005
↓	2	1L Amber	4°C	PCB	1007
	1	1L Teflon	HNO_3	Metals	1037

NOTES:
* water level dooped fast / before flow thru cell filled 13.6
* discharge lowered @ 0836 to 60ml/min

③ s/B JMT 2/12/09

① Volume in flow thru cell
② s/B µS/cm JMT 2/12/09

Signature: Jessie M Jenzer Date: 11/13/08

1 of 2

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Well ID: MW-6

Groundwater Sample Collection Record

Client: NBH Date: _____ Time: _____ Start am/pm
Project No: _____ Finish am/pm
Site Location: _____
Weather Conditions: Collectors:

1. WATER LEVEL / WELL DATA

Measured Well Depth: Height of Water Column: 0.16 GAL/FT (2 IN)
0.65 GAL/FT (4 IN) = Gallons (Volume)
1.5 GAL/FT (6 IN)

Depth to Water (initial): _____ Purged Volume: _____

Depth to Water (pump in well): _____

see page 1

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number

see page 1

Stabilization Criteria:	± 3%	± 3%	± 10%	± 0.1 units	± 10 mV	± 10%					
Time (24 hr)	Temp (°C)	~~(mS/cm)~~ Spec Cond. ~~(µS/cm)~~ ②	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
0950	15.14	524	0.53	7.28	-106.4	1.7	4.91	60	13.78	-0.86	
0955	15.03	522	0.51	7.29	-112.3	1.3	5.21		13.78	-0.86	
1003	14.93	520	0.50	7.30	111.0	1.5	5.69	60	13.78	-0.86	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
				[illegible]	1005
				[illegible]	1007
				Metals	1017

see page 1

NOTES: ② SIB µS/cm
2/12/09 JMF

Signature: Jesse M Jonza Date: 11/13/08

pg 2 of 2

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Well ID: MW-1

Groundwater Sample Collection Record

Client: USACE
Project No: 6606427
Site Location: Sawyer St
Weather Conditions: Rain NE wind ~10

Date: 11/6/08 Time: 1040 Start am/pm
1350 Finish am/pm

Collectors: MRF / PC / JMT

1. WATER LEVEL / WELL DATA

Measured Well Depth: 24.2 ft
Height of Water Column: 8.59 ft
Depth to Water (initial): 15.61 ft
Depth to Water (pump in well): 14.85 ft
Purged Volume: 3.64 + 0.6 ③ = 4.24 L

0.16 GAL/FT (2 IN)
0.65 GAL/FT (4 IN) =
1.5 GAL/FT (6 IN)
Gallons (Volume)

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
Controler	MicroPurge	MP10	2249
Water Level Meter	Solonist	101	31389
Sonde	YSI	6820	97K1095 AE

Stabilization Criteria:	± 3%	± 3%	± 10%	± 0.1 units	± 10 mV	± 10%						
Time (24 hr)	Temp (°C)	~~(mS/cm)~~ Spec Cond. (µS/cm) ④	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor	
1059	16.07	861	4.04	6.90	203.3	1.8	—	105	16.31	-1.46	Clear	①
1107	15.88	864	4.05	6.89	207.3	2.7	0.84	50	16.87	-2.02		
1121	15.67	867	2.44	6.87	207.9	1.7	1.54	50	16.60	-1.75		
1126	15.39	868	2.24	6.87	207.1	1.9	1.79	45	16.62	-1.77		
1131	15.21	885	1.92	6.84	120.0	2.0	2.015	45	16.75	-1.9		
1137	15.19	894	1.61	6.83	83.7	1.9	2.285	45	16.79	-2.04		②
1143	15.14	900	1.43	6.82	54.2	1.3	2.555	35	16.76	-1.91		
1149	15.02	907	1.13	6.81	30.5	1.0	2.765	35	16.76	-1.91		
1154	15.00	908	1.07	6.81	25.1	.6	2.94	35	16.76	-1.91		
1159	15.07	909	.95	6.81	15.9	.9	3.115	35	16.76	-1.91		
1204	15.05	910	.84	6.80	11.0	.6	3.29	35	16.76	-1.91		
1209	15.06	910	.77	6.80	4.8	.7	3.465	35	16.76	-1.91		
1214	15.05	911	.77	6.80	3.8	.5	3.64	35	16.76	-1.91		

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-001-110608	3	40 ml glass	4°C / HCl	VOA	1217
↓	2	1L glass	4°C	PCB	1222
	1	1L teflon	4°C / HNO_3	Metals	1345

NOTES: ① reduced flow to 50 ml/min @ 11:01
② reduced flow to 35 ml/min @ 11:40
- increased fow to 50 ml/min during VOC collection to fill bottle in 1 discharge

③ Volume in flow thru JMT 11/13/08

④ S/B uS/cm JMT 2/12/09

Signature: [signature] Date: 11/6/08

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Well ID: MW-5

Groundwater Sample Collection Record

Client: NRH
Project No: G606422
Site Location: Sawyer Street
Weather Conditions: Cloudy, Rainy
Date: 11/6/08 Time: 1205 Start am/pm
1230 Finish am/pm
Collectors: JT/MF/RC

1. WATER LEVEL / WELL DATA

Measured Well Depth: 19.03 ft
Height of Water Column: 10.47 ft
0.16 GAL/FT (2 IN)
0.65 GAL/FT (4 IN) =
1.5 GAL/FT (6 IN)
Gallons (Volume)
Depth to Water (initial): 8.56 ft
Purged Volume: 2.6 + .6 (4) = 3.2
Depth to Water (pump in well): 8.0 ft

2. SAMPLE COLLECTION

Method:
Field Equipment Used:

Equipment	Make	Model	Serial Number
Compressor	QED	3020	17723
Controller	Micro Purge	MP10	2253
YSI		6820	03E0613AD
Water Level Meter	Solinst	101	45547

Stabilization Criteria:	± 3%	± 3%	± 10%	± 0.1 units	± 10 mV	± 10%					
Time (24 hr)	Temp (°C)	~~mS/cm~~ Spec Cond. (µS/cm) (5)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
1226	14.76	641	~~3.89~~	7.86	-120.3	4.7	—	60	9.5	-1.5	Sulfur
1231	14.79	1824	2.76	7.84	-149.2	10.0	1.02	(3)	9.2	-1.3	
1236	14.78	1888	2.29	7.85	-160.0	3.8	1.2	50 (3)	9.4	-1.4	
1241	14.76	1880	2.06	7.85	-160.4	~~3.8~~	1.45		9.54	-1.5	
1246	14.76	1866	1.96	7.85	-156.3	2.8	1.7	60 (2)	9.7	-1.7	
1251	14.73	1856	1.78	7.85	-158.4	2.8	2		9.74	-1.74	
1256	14.72	1865	1.81	7.85	-158.1	2.7	2.3		9.71	-1.71	
1301	14.71	1878	1.85	7.85	-154.7	2.2	2.6		9.61	-1.61	↓

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-005-110608	3	40ml vial	HCl	VOA	1303
↓	2	1L Amber	4°C	PCB	1305
	1	1L Teflon	HNO_3	Metals	1352

NOTES: dropped quickly 8 - 8.6 before flow thru cell filled (1) 3.6 - cleaned probe
(3) Reduced flow rate @ 1227 45 (2) turned down pressure
(5) s/b uS/cm 2/12/09 JMT
(4) Volume of Flow-thru cell

Signature: Jessica M Jungen Date: 11/13/08

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Well ID: MW-4A

Groundwater Sample Collection Record

Client: NBH - ACOE Date: 11/7/08 Time: 0735 Start (am/pm)
Project No: 60064-22 0945 Finish (am/pm)
Site Location: Sawyer St
Weather Conditions: Cloudy, Foggy, Misty Collectors: JT

1. WATER LEVEL / WELL DATA

Measured Well Depth: 24.46 ft Height of Water Column: 14.65 ft

0.16 GAL/FT (2 IN)
0.65 GAL/FT (4 IN) =
1.5 GAL/FT (6 IN)
Gallons (Volume)

Depth to Water (initial): 9.81 ft Purged Volume: 4.505 + 0.6 (2) = 5.105 L

Depth to Water (pump in well): 9.88 ft

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
Water Level Meter	Solinst	101	45547
YSI 6820			97K1095
Controller	MicroPurge	MP10	0249
Compressor	QED	3020	17723

Stabilization Criteria:	± 3%	± 3%	± 10%	± 0.1 units	± 10 mV	± 10%					
Time (24 hr)	Temp (°C) ±.4	Spec Cond ±130 (3)	DO (mg/L) ±.1	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
0748	14.20	5999	2.54	7.00	-268.9	13.3	—	80	10.85	-.97	
0755	14.22	5885	0.98	7.01	-315.2	9.5	0.56	80	10.98	-1.1	
0800	14.25	5666	1.59	7.02	-328.0	6.3	0.80	650 (1)	11.10	-1.22	
0805	14.30	5453	1.31	7.02	-336.4	5.8	1.255		11.23	-1.35	
0810	14.23	5388	1.25	7.03	-341.5	6.0	1.58	65	11.28	-1.90	
0815	14.30	5154	1.02	7.04	-344.7	6.0	1.905		11.40	-1.52	
0820	14.34	5000	0.88	7.04	-348.6	5.5	2.23	65	11.53	-1.65	
0825	14.36	4856	0.80	7.05	-350.3	5.3	2.555		11.58	-1.7	
0830	14.36	4728	0.70	7.05	-349.9	4.5	2.88	65	11.68	-1.8	
0835	14.41	4596	0.63	7.06	-351.7	3.9	3.205		11.78	-1.9	
0840	14.47	4517	0.59	7.06	-353.2	3.4	3.53	65	11.86	-1.98	
0845	14.51	4471	0.57	7.06	-353.6	3.0	3.855		11.90	-2.02	
0850	14.52	4417	0.55	7.06	-354.5	2.8	4.18	65	11.97	-2.09	
0855	14.52	4370	0.52	7.06	-352.2	2.7	4.505		12.00	-2.12	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-04A-110708	3	40ml vial	HCl	VOA	0817
	2	1L Amber Bottle	4°C	PCB	0959
	1	1L Teflon Bottle	HNO_3	Metals	0929
MW-04A-110708-QA (1)	↓	↓	↓	↓	↓

NOTES: Water level dropped to 10.3 before flow thru cell was filled

(1) replaced @ 0758

(2) Volume of Flow-thru cell

(3) ±18 uS/cm JMT 11/9/09

Signature: Jesse M Juzzo Date: 11/13/08

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Well ID: MW-3

Groundwater Sample Collection Record

Client: USACE
Date: 11/7/08 Time: 0730 Start am/pm
Project No: 6606422 1030 Finish am/pm
Site Location: Sawyer St
Weather Conditions: Misty lite NE wind Collectors: Matt Fitzpatrick

1. WATER LEVEL / WELL DATA

Measured Well Depth: 23.94 ft Height of Water Column: 8.96 ft

0.16 GAL/FT (2 IN)
0.65 GAL/FT (4 IN) = Gallons (Volume)
1.5 GAL/FT (6 IN)

Depth to Water (initial): 14.98 ft Purged Volume: 3.01 + 0.6 (2) = 3.61 L

Depth to Water (pump in well): 14.43 ft

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
Controler	Micro Purge	MP10	2253
Water Level Meter	Solonist	101	31389
Sonde	YSI	6820	03E0613 AD

Stabilization Criteria:	± 3%	± 3%	± 10%	± 0.1 units	± 10 mV	± 10%						
Time (24 hr)	Temp (°C)	Spec Cond. ~~µS~~/cm (4)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor	
0801	13.94	4567	2.24	6.95	-156.0	86.1	0.—	55	15.82	-1.39	lt. orange	(1)
0806	13.92	4566	1.70	7.06	-155.0	86.2	0.11	40	15.87	-1.44	no odor	
0811	13.93	4492	1.33	7.11	-155.7	80.0	0.23	40	15.87	-1.44		
0816	13.95	4414	1.08	7.14	-155.0	69.5	0.43	40	15.85	-1.42		
0821	13.97	4387	.95	7.16	-160.2	59.7	0.63	40	15.87	-1.44		
0826	14.00	4379	.82	7.19	-166.8	51.4	0.83	40	15.82	-1.39		
0831	14.03	4386	.73	7.21	-171.7	43.1	1.03	40	15.85	-1.42		
0836	14.05	4395	.62	7.25	-176.9	35.5	1.23	40	15.85	-1.42		
0841	14.09	4412	.55	7.28	-186.6	30.1	1.43	40	15.85	-1.42		
0846	14.13	4423	.49	7.31	-193.7	24.6	1.63	40	15.82	-1.39		
0851	14.19	4434	.44	7.33	-194.8	19.5	1.83	40	15.82	-1.39		
0856	14.22	4437	.40	7.35	-200.0	17.3	2.03	40	15.82	-1.39		
0901	14.24	4435	.37	7.37	-200.8	14.5	2.23	40	15.77	-1.34		
0906	14.24	4429	.33	7.39	-204.8	11.9	2.35	55	15.77	-1.34		(2)
0911	14.24	4409	.30	7.41	-210.2	9.6	2.735	55	15.82	-1.39		
0916	1424	4401	.28	7.41	-212.7	9.8	3.01	55	15.82	-1.39		

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-003-110708	3	40 ml glass	HCl/4°C	VOA	0920
↓	2	1L glass	4°C	PCB	0923
	1	1L teflon	HNO_3/4°C	Metals	1001
MW-003-110708-REP	1	1L teflon	HNO_3/4°C	metals	1001

NOTES:
(1) Reduce flow rate to 40 ml/min @ 0803
(2) increased flow rate back to 55 ml/min @ 0904
(3) Volume of flow thru cell
(4) S/B µS/cm JMT 2/12/09

Signature: Matthew R Fitzpatrick Date: 11/7/08

APPENDIX B

2008 Sawyer Street CDF Groundwater Monitoring Chemistry Data

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Summary Data Tables

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Attachment B
Sawyer Street CDF 2008 Groundwater Monitoring Chemistry Data

		Station Id	FIELDQC			MW-1			MW-3		
		Northing				2701441.			2701536.		
		Easting				814357.			814758.		
		Depth Top				24.39			24.1		
		Depth Unit				FT			FT		
		Start Date	05/20/2008			05/19/2008			05/20/2008		
		Samp Id	EB-052008			MW-001-051908			MW-003-052008		
		Matrix	GW			GW			GW		
		Field Qc Code	EB			SA			SA		
		Lab Qc Code	EB			SA			SA		
		Fraction	TOTAL			TOTAL			TOTAL		
Class	**Param Code**	**Description**	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**
AR	12674-11-2	Aroclor 1016	0.047	UJ	UG/L	0.047	U	UG/L	0.047	UJ	UG/L
AR	11104-28-2	Aroclor 1221	0.047	UJ	UG/L	0.047	U	UG/L	0.047	UJ	UG/L
AR	11141-16-5	Aroclor 1232	0.047	UJ	UG/L	0.047	U	UG/L	0.047	UJ	UG/L
AR	53469-21-9	Aroclor 1242	0.047	UJ	UG/L	0.047	U	UG/L	0.047	UJ	UG/L
AR	12672-29-6	Aroclor 1248	0.047	UJ	UG/L	0.047	U	UG/L	0.047	UJ	UG/L
AR	11097-69-1	Aroclor 1254	0.047	UJ	UG/L	0.047	U	UG/L	0.047	UJ	UG/L
AR	11096-82-5	Aroclor 1260	0.047	UJ	UG/L	0.047	U	UG/L	0.047	UJ	UG/L
ARSURR	AS-2051-24-3	DecaCB - Aroclor Surrogate	93.		PCT_REC	82.		PCT_REC	109.		PCT_REC
ARSURR	AS-877-09-8	Tetrachloro-meta-xylene - Aroclor Surrogate	58.		PCT_REC	64.		PCT_REC	58.		PCT_REC
MET	7440-43-9	Cadmium	0.0114	J	UG/L	0.249		UG/L	0.124		UG/L
MET	7440-47-3	Chromium	0.843		UG/L	5.35		UG/L	6.36		UG/L
MET	7440-50-8	Copper	0.269		UG/L	0.984	U	UG/L	1.95		UG/L
MET	7439-92-1	Lead	0.0769		UG/L	0.739		UG/L	0.0849	U	UG/L
SVOC	109-99-9	Tetrahydrofuran	5.	U	UG/L	5.	U	UG/L	5.	U	UG/L
TSS	TSS	Total suspended solids									
VOC	67-64-1	Acetone	7.19		UG/L	2.79	EB	UG/L	8.4	EB	UG/L
VOC	71-43-2	Benzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-86-1	Bromobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-97-5	Bromochloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-27-4	Bromodichloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-25-2	Bromoform	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-83-9	Bromomethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-15-0	Carbon Disulfide	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	56-23-5	Carbon Tetrachloride	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-90-7	Chlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-00-3	Chloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	67-66-3	Chloroform	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-87-3	Chloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	156-59-2	Cis-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	124-48-1	Dibromochloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-95-3	Dibromomethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-71-8	Dichlorodifluoromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	60-29-7	Diethyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-20-3	Di-Isopropyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	637-92-3	Ethyl Tertiary-Butyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	100-41-4	Ethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-87-68-3	Hexachlorobutadiene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	98-82-8	Isopropylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-09-2	Methylene Chloride	1.21	j	UG/L	5.	U	UG/L	5.	U	UG/L
VOC	1634-04-4	Methyl-Tert-Butyl-Ether (Mtbe)	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-91-20-3	Naphthalene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	104-51-8	N-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	103-65-1	N-Propylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	99-87-6	P-Isopropyltoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	135-98-8	Sec-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	100-42-5	Styrene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	98-06-6	Tert-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	994-05-8	Tertiary-Amyl Methyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	127-18-4	Tetrachloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-88-3	Toluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	156-60-5	Trans-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-01-6	Trichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-69-4	Trichlorofluoromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-01-4	Vinyl Chloride	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-34-3	1,1-Dichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-35-4	1,1-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	563-58-6	1,1-Dichloropropene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	71-55-6	1,1,1-Trichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	630-20-6	1,1,1,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-00-5	1,1,2-Trichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-34-5	1,1,2,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	106-93-4	1,2-Dibromoethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	96-12-8	1,2-Dibromo-3-Chloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-95-50-1	1,2-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	107-06-2	1,2-Dichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	17060-07-0	1,2-Dichloroethane-D4	111.		PCT_REC	102.		PCT_REC	111.		PCT_REC
VOC	78-87-5	1,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	87-61-6	1,2,3-Trichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	96-18-4	1,2,3-Trichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-120-82-1	1,2,4-Trichlorobenezene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	95-63-6	1,2,4-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-541-73-1	1,3-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	142-28-9	1,3-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-67-8	1,3,5-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-106-46-7	1,4-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	123-91-1	1,4-Dioxane (P-Dioxane)	100.	U	UG/L	100.	U	UG/L	100.	U	UG/L
VOC	78-93-3	2-Butanone	5.	U	UG/L	5.	U	UG/L	5.	U	UG/L
VOC	95-49-8	2-Chlorotoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	591-78-6	2-Hexanone	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	594-20-7	2,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	106-43-4	4-Chlorotoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-10-1	4-Methyl-2-Pentanone	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	542-75-6	Total 1,3-Dichloropropene	4.	U	UG/L	4.	U	UG/L	4.	U	UG/L
VOC	1330-20-7	Xylene (Total)	6.	U	UG/L	6.	U	UG/L	6.	U	UG/L
VOCSURR	1868-53-7	Dibromofluoromethane	106.		PCT_REC	101.		PCT_REC	105.		PCT_REC
VOCSURR	2037-26-5	Toluene-D8	99.		PCT_REC	99.		PCT_REC	99.		PCT_REC
VOCSURR	460-00-4	4-Bromofluorobenzene	97.		PCT_REC	97.		PCT_REC	98.		PCT_REC

Attachment B
Sawyer Street CDF 2008 Groundwater Monitoring Chemistry Data

		Station Id	MW-4A			MW-5			MW-5		
		Northing	2701422.			2701437.			2701437.		
		Easting	814875.			814876.			814876.		
		Depth Top	24.63			19.25			19.25		
		Depth Unit	FT			FT			FT		
		Start Date	05/20/2008			05/20/2008			05/20/2008		
		Samp Id	MW-04A-052008			MW-005-052008			MW-005-052008-REP		
		Matrix	GW			GW			GW		
		Field Qc Code	SA			SA			REP		
		Lab Qc Code	SA			SA			REP		
		Fraction	TOTAL			TOTAL			TOTAL		
Class	**Param Code**	**Description**	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**
AR	12674-11-2	Aroclor 1016	0.047	U	UG/L	0.047	U	UG/L	0.047	U	UG/L
AR	11104-28-2	Aroclor 1221	0.047	U	UG/L	0.047	U	UG/L	0.047	U	UG/L
AR	11141-16-5	Aroclor 1232	0.047	U	UG/L	0.047	U	UG/L	0.047	U	UG/L
AR	53469-21-9	Aroclor 1242	0.043	J	UG/L	0.047	U	UG/L	0.047	U	UG/L
AR	12672-29-6	Aroclor 1248	0.047	U	UG/L	0.047	U	UG/L	0.047	U	UG/L
AR	11097-69-1	Aroclor 1254	0.047	U	UG/L	0.047	U	UG/L	0.047	U	UG/L
AR	11096-82-5	Aroclor 1260	0.047	U	UG/L	0.047	U	UG/L	0.047	U	UG/L
ARSURR	AS-2051-24-3	DecaCB - Aroclor Surrogate	159.		PCT_REC	90.		PCT_REC	132.	P	PCT_REC
ARSURR	AS-877-09-8	Tetrachloro-meta-xylene - Aroclor Surrogate	85.		PCT_REC	66.		PCT_REC	64.		PCT_REC
MET	7440-43-9	Cadmium	0.0277	U	UG/L	0.046	U	UG/L	0.0434	U	UG/L
MET	7440-47-3	Chromium	6.57		UG/L	1.89	U	UG/L	1.98	U	UG/L
MET	7440-50-8	Copper	1.46		UG/L	1.12	U	UG/L	1.05	U	UG/L
MET	7439-92-1	Lead	0.071	U	UG/L	0.0609	U	UG/L	0.0557	U	UG/L
SVOC	109-99-9	Tetrahydrofuran	5.	U	UG/L	5.	U	UG/L	5.	U	UG/L
TSS	TSS	Total suspended solids									
VOC	67-64-1	Acetone	3.05	EB	UG/L	16.	EB	UG/L	16.	EB	UG/L
VOC	71-43-2	Benzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-86-1	Bromobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-97-5	Bromochloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-27-4	Bromodichloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-25-2	Bromoform	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-83-9	Bromomethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-15-0	Carbon Disulfide	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	56-23-5	Carbon Tetrachloride	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-90-7	Chlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-00-3	Chloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	67-66-3	Chloroform	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-87-3	Chloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	156-59-2	Cis-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	124-48-1	Dibromochloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-95-3	Dibromomethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-71-8	Dichlorodifluoromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	60-29-7	Diethyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-20-3	Di-Isopropyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	637-92-3	Ethyl Tertiary-Butyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	100-41-4	Ethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-87-68-3	Hexachlorobutadiene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	98-82-8	Isopropylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-09-2	Methylene Chloride	5.	U	UG/L	5.	U	UG/L	5.	U	UG/L
VOC	1634-04-4	Methyl-Tert-Butyl-Ether (Mtbe)	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-91-20-3	Naphthalene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	104-51-8	N-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	103-65-1	N-Propylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	99-87-6	P-Isopropyltoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	135-98-8	Sec-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	100-42-5	Styrene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	98-06-6	Tert-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	994-05-8	Tertiary-Amyl Methyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	127-18-4	Tetrachloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-88-3	Toluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	156-60-5	Trans-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-01-6	Trichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-69-4	Trichlorofluoromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-01-4	Vinyl Chloride	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-34-3	1,1-Dichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-35-4	1,1-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	563-58-6	1,1-Dichloropropene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	71-55-6	1,1,1-Trichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	630-20-6	1,1,1,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-00-5	1,1,2-Trichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-34-5	1,1,2,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	106-93-4	1,2-Dibromoethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	96-12-8	1,2-Dibromo-3-Chloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-95-50-1	1,2-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	107-06-2	1,2-Dichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	17060-07-0	1,2-Dichloroethane-D4	108.		PCT_REC	108.		PCT_REC	109.		PCT_REC
VOC	78-87-5	1,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	87-61-6	1,2,3-Trichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	96-18-4	1,2,3-Trichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-120-82-1	1,2,4-Trichlorobenezene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	95-63-6	1,2,4-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-541-73-1	1,3-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	142-28-9	1,3-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-67-8	1,3,5-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-106-46-7	1,4-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	123-91-1	1,4-Dioxane (P-Dioxane)	100.	U	UG/L	100.	U	UG/L	100.	U	UG/L
VOC	78-93-3	2-Butanone	5.	U	UG/L	5.	U	UG/L	5.	U	UG/L
VOC	95-49-8	2-Chlorotoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	591-78-6	2-Hexanone	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	594-20-7	2,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	106-43-4	4-Chlorotoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-10-1	4-Methyl-2-Pentanone	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	542-75-6	Total 1,3-Dichloropropene	4.	U	UG/L	4.	U	UG/L	4.	U	UG/L
VOC	1330-20-7	Xylene (Total)	6.	U	UG/L	6.	U	UG/L	6.	U	UG/L
VOCSURR	1868-53-7	Dibromofluoromethane	105.		PCT_REC	104.		PCT_REC	104.		PCT_REC
VOCSURR	2037-26-5	Toluene-D8	100.		PCT_REC	99.		PCT_REC	98.		PCT_REC
VOCSURR	460-00-4	4-Bromofluorobenzene	98.		PCT_REC	97.		PCT_REC	96.		PCT_REC

Attachment B
Sawyer Street CDF 2008 Groundwater Monitoring Chemistry Data

		Station Id	MW-6			MW-7A			FIELDQC		
		Northing	2701648.			2701234.					
		Easting	814558.			814575.					
		Depth Top	19.48			15.03					
		Depth Unit	FT			FT			NA		
		Start Date	05/19/2008			05/19/2008			11/05/2008		
		Samp Id	MW-006-051908			MW-07A-051908			EB-110508		
		Matrix	GW			GW			BLK		
		Field Qc Code	SA			SA			EB		
		Lab Qc Code	SA			SA			EB		
		Fraction	TOTAL			TOTAL			TOTAL		
Class	**Param Code**	**Description**	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**
AR	12674-11-2	Aroclor 1016	0.048	U	UG/L	0.048	U	UG/L	0.047	U	UG/L
AR	11104-28-2	Aroclor 1221	0.048	U	UG/L	0.048	U	UG/L	0.047	U	UG/L
AR	11141-16-5	Aroclor 1232	0.048	U	UG/L	0.048	U	UG/L	0.047	U	UG/L
AR	53469-21-9	Aroclor 1242	0.048	U	UG/L	0.048	U	UG/L	0.095		UG/L
AR	12672-29-6	Aroclor 1248	0.048	U	UG/L	0.048	U	UG/L	0.047	U	UG/L
AR	11097-69-1	Aroclor 1254	0.048	U	UG/L	0.048	U	UG/L	0.047	U	UG/L
AR	11096-82-5	Aroclor 1260	0.048	U	UG/L	0.048	U	UG/L	0.047	U	UG/L
ARSURR	AS-2051-24-3	DecaCB - Aroclor Surrogate	107.		PCT_REC	88.		PCT_REC	114.		PCT_REC
ARSURR	AS-877-09-8	Tetrachloro-meta-xylene - Aroclor Surrogate	62.		PCT_REC	70.		PCT_REC	101.		PCT_REC
MET	7440-43-9	Cadmium	0.0444	U	UG/L	0.711		UG/L	0.005	U	UG/L
MET	7440-47-3	Chromium	2.45	U	UG/L	5.28		UG/L	0.6077		UG/L
MET	7440-50-8	Copper	0.453	U	UG/L	4.99		UG/L	0.3543		UG/L
MET	7439-92-1	Lead	0.0571	U	UG/L	0.0705	U	UG/L	0.07816		UG/L
SVOC	109-99-9	Tetrahydrofuran	5.	U	UG/L	5.	U	UG/L	2.	U	UG/L
TSS	TSS	Total suspended solids							1.	U	MG/L
VOC	67-64-1	Acetone	1.26	EB	UG/L	5.	U	UG/L	5.	U	UG/L
VOC	71-43-2	Benzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-86-1	Bromobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-97-5	Bromochloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-27-4	Bromodichloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-25-2	Bromoform	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-83-9	Bromomethane	2.	U	UG/L	2.	UJ	UG/L	2.	U	UG/L
VOC	75-15-0	Carbon Disulfide	2.	U	UG/L	2.	UJ	UG/L	2.	U	UG/L
VOC	56-23-5	Carbon Tetrachloride	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-90-7	Chlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-00-3	Chloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	67-66-3	Chloroform	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-87-3	Chloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	156-59-2	Cis-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	124-48-1	Dibromochloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-95-3	Dibromomethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-71-8	Dichlorodifluoromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	60-29-7	Diethyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-20-3	Di-Isopropyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	637-92-3	Ethyl Tertiary-Butyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	100-41-4	Ethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-87-68-3	Hexachlorobutadiene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	98-82-8	Isopropylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-09-2	Methylene Chloride	5.	U	UG/L	5.	U	UG/L	2.	U	UG/L
VOC	1634-04-4	Methyl-Tert-Butyl-Ether (Mtbe)	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-91-20-3	Naphthalene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	104-51-8	N-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	103-65-1	N-Propylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	99-87-6	P-Isopropyltoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	135-98-8	Sec-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	100-42-5	Styrene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	98-06-6	Tert-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	994-05-8	Tertiary-Amyl Methyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	127-18-4	Tetrachloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-88-3	Toluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	156-60-5	Trans-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-01-6	Trichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-69-4	Trichlorofluoromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-01-4	Vinyl Chloride	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-34-3	1,1-Dichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-35-4	1,1-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	563-58-6	1,1-Dichloropropene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	71-55-6	1,1,1-Trichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	630-20-6	1,1,1,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-00-5	1,1,2-Trichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-34-5	1,1,2,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	106-93-4	1,2-Dibromoethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	96-12-8	1,2-Dibromo-3-Chloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-95-50-1	1,2-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	107-06-2	1,2-Dichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	17060-07-0	1,2-Dichloroethane-D4	101.		PCT_REC	100.		PCT_REC	106.		PCT_REC
VOC	78-87-5	1,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	87-61-6	1,2,3-Trichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	96-18-4	1,2,3-Trichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-120-82-1	1,2,4-Trichlorobenezene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	95-63-6	1,2,4-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-541-73-1	1,3-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	142-28-9	1,3-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-67-8	1,3,5-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-106-46-7	1,4-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	123-91-1	1,4-Dioxane (P-Dioxane)	100.	U	UG/L	100.	U	UG/L	100.	U	UG/L
VOC	78-93-3	2-Butanone	5.	U	UG/L	5.	U	UG/L	2.	U	UG/L
VOC	95-49-8	2-Chlorotoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	591-78-6	2-Hexanone	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	594-20-7	2,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	106-43-4	4-Chlorotoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-10-1	4-Methyl-2-Pentanone	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	542-75-6	Total 1,3-Dichloropropene	4.	U	UG/L	4.	U	UG/L	4.	U	UG/L
VOC	1330-20-7	Xylene (Total)	6.	U	UG/L	6.	U	UG/L	6.	U	UG/L
VOCSURR	1868-53-7	Dibromofluoromethane	101.		PCT_REC	100.		PCT_REC	104.		PCT_REC
VOCSURR	2037-26-5	Toluene-D8	99.		PCT_REC	100.		PCT_REC	100.		PCT_REC
VOCSURR	460-00-4	4-Bromofluorobenzene	95.		PCT_REC	95.		PCT_REC	101.		PCT_REC

Attachment B
Sawyer Street CDF 2008 Groundwater Monitoring Chemistry Data

		Station Id	MW-1			MW-3			MW-3		
		Northing	2701441.			2701536.			2701536.		
		Easting	814357.			814758.			814758.		
		Depth Top	24.2			23.94			23.94		
		Depth Unit	FT			FT			FT		
		Start Date	11/06/2008			11/07/2008			11/07/2008		
		Samp Id	MW-001-110608			MW-003-110708			MW-003-110708-REP		
		Matrix	GW			GW			GW		
		Field Qc Code	SA			SA			REP		
		Lab Qc Code	SA			SA			REP		
		Fraction	TOTAL			TOTAL			TOTAL		
Class	**Param Code**	**Description**	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**
AR	12674-11-2	Aroclor 1016	0.048	U	UG/L	0.048	U	UG/L			
AR	11104-28-2	Aroclor 1221	0.048	U	UG/L	0.048	U	UG/L			
AR	11141-16-5	Aroclor 1232	0.048	U	UG/L	0.048	U	UG/L			
AR	53469-21-9	Aroclor 1242	0.048	U	UG/L	0.048	U	UG/L			
AR	12672-29-6	Aroclor 1248	0.048	U	UG/L	0.048	U	UG/L			
AR	11097-69-1	Aroclor 1254	0.048	U	UG/L	0.048	U	UG/L			
AR	11096-82-5	Aroclor 1260	0.048	U	UG/L	0.048	U	UG/L			
ARSURR	AS-2051-24-3	DecaCB - Aroclor Surrogate	73.		PCT_REC	94.		PCT_REC			
ARSURR	AS-877-09-8	Tetrachloro-meta-xylene - Aroclor Surrogate	91.		PCT_REC	94.		PCT_REC			
MET	7440-43-9	Cadmium	0.4345		UG/L	0.02989		UG/L	0.03063		UG/L
MET	7440-47-3	Chromium	1.775	U	UG/L	5.63		UG/L	5.92		UG/L
MET	7440-50-8	Copper	1.458	U	UG/L	0.855	U	UG/L	0.944	U	UG/L
MET	7439-92-1	Lead	0.8941	U	UG/L	0.06295	U	UG/L	0.0685	U	UG/L
SVOC	109-99-9	Tetrahydrofuran	2.	U	UG/L	2.	U	UG/L			
TSS	TSS	Total suspended solids									
VOC	67-64-1	Acetone	10.3		UG/L	5.36		UG/L			
VOC	71-43-2	Benzene	2.	U	UG/L	2.	U	UG/L			
VOC	108-86-1	Bromobenzene	2.	U	UG/L	2.	U	UG/L			
VOC	74-97-5	Bromochloromethane	2.	U	UG/L	2.	U	UG/L			
VOC	75-27-4	Bromodichloromethane	2.	U	UG/L	2.	U	UG/L			
VOC	75-25-2	Bromoform	2.	U	UG/L	2.	U	UG/L			
VOC	74-83-9	Bromomethane	2.	U	UG/L	2.	U	UG/L			
VOC	75-15-0	Carbon Disulfide	2.	U	UG/L	2.	U	UG/L			
VOC	56-23-5	Carbon Tetrachloride	2.	U	UG/L	2.	U	UG/L			
VOC	108-90-7	Chlorobenzene	2.	U	UG/L	2.	U	UG/L			
VOC	75-00-3	Chloroethane	2.	U	UG/L	2.	U	UG/L			
VOC	67-66-3	Chloroform	2.	U	UG/L	2.	U	UG/L			
VOC	74-87-3	Chloromethane	2.	U	UG/L	2.	U	UG/L			
VOC	156-59-2	Cis-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L			
VOC	124-48-1	Dibromochloromethane	2.	U	UG/L	2.	U	UG/L			
VOC	74-95-3	Dibromomethane	2.	U	UG/L	2.	U	UG/L			
VOC	75-71-8	Dichlorodifluoromethane	2.	U	UG/L	2.	U	UG/L			
VOC	60-29-7	Diethyl Ether	2.	U	UG/L	2.	U	UG/L			
VOC	108-20-3	Di-Isopropyl Ether	2.	U	UG/L	2.	U	UG/L			
VOC	637-92-3	Ethyl Tertiary-Butyl Ether	2.	U	UG/L	2.	U	UG/L			
VOC	100-41-4	Ethylbenzene	2.	U	UG/L	2.	U	UG/L			
VOC	V-87-68-3	Hexachlorobutadiene	2.	U	UG/L	2.	U	UG/L			
VOC	98-82-8	Isopropylbenzene	2.	U	UG/L	2.	U	UG/L			
VOC	75-09-2	Methylene Chloride	2.	U	UG/L	2.	U	UG/L			
VOC	1634-04-4	Methyl-Tert-Butyl-Ether (Mtbe)	2.	U	UG/L	2.	U	UG/L			
VOC	V-91-20-3	Naphthalene	2.	U	UG/L	2.	U	UG/L			
VOC	104-51-8	N-Butylbenzene	2.	U	UG/L	2.	U	UG/L			
VOC	103-65-1	N-Propylbenzene	2.	U	UG/L	2.	U	UG/L			
VOC	99-87-6	P-Isopropyltoluene	2.	U	UG/L	2.	U	UG/L			
VOC	135-98-8	Sec-Butylbenzene	2.	U	UG/L	2.	U	UG/L			
VOC	100-42-5	Styrene	2.	U	UG/L	2.	U	UG/L			
VOC	98-06-6	Tert-Butylbenzene	2.	U	UG/L	2.	U	UG/L			
VOC	994-05-8	Tertiary-Amyl Methyl Ether	2.	U	UG/L	2.	U	UG/L			
VOC	127-18-4	Tetrachloroethene	2.	U	UG/L	2.	U	UG/L			
VOC	108-88-3	Toluene	2.	U	UG/L	2.	U	UG/L			
VOC	156-60-5	Trans-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L			
VOC	79-01-6	Trichloroethene	2.	U	UG/L	2.	U	UG/L			
VOC	75-69-4	Trichlorofluoromethane	2.	U	UG/L	2.	U	UG/L			
VOC	75-01-4	Vinyl Chloride	2.	U	UG/L	2.	U	UG/L			
VOC	75-34-3	1,1-Dichloroethane	2.	U	UG/L	2.	U	UG/L			
VOC	75-35-4	1,1-Dichloroethene	2.	U	UG/L	2.	U	UG/L			
VOC	563-58-6	1,1-Dichloropropene	2.	U	UG/L	2.	U	UG/L			
VOC	71-55-6	1,1,1-Trichloroethane	2.	U	UG/L	2.	U	UG/L			
VOC	630-20-6	1,1,1,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L			
VOC	79-00-5	1,1,2-Trichloroethane	2.	U	UG/L	2.	U	UG/L			
VOC	79-34-5	1,1,2,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L			
VOC	106-93-4	1,2-Dibromoethane	2.	U	UG/L	2.	U	UG/L			
VOC	96-12-8	1,2-Dibromo-3-Chloropropane	2.	U	UG/L	2.	U	UG/L			
VOC	V-95-50-1	1,2-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L			
VOC	107-06-2	1,2-Dichloroethane	2.	U	UG/L	2.	U	UG/L			
VOC	17060-07-0	1,2-Dichloroethane-D4	108.		PCT_REC	106.		PCT_REC			
VOC	78-87-5	1,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L			
VOC	87-61-6	1,2,3-Trichlorobenzene	2.	U	UG/L	2.	U	UG/L			
VOC	96-18-4	1,2,3-Trichloropropane	2.	U	UG/L	2.	U	UG/L			
VOC	V-120-82-1	1,2,4-Trichlorobenezene	2.	U	UG/L	2.	U	UG/L			
VOC	95-63-6	1,2,4-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L			
VOC	V-541-73-1	1,3-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L			
VOC	142-28-9	1,3-Dichloropropane	2.	U	UG/L	2.	U	UG/L			
VOC	108-67-8	1,3,5-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L			
VOC	V-106-46-7	1,4-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L			
VOC	123-91-1	1,4-Dioxane (P-Dioxane)	100.	U	UG/L	100.	U	UG/L			
VOC	78-93-3	2-Butanone	2.	U	UG/L	2.	U	UG/L			
VOC	95-49-8	2-Chlorotoluene	2.	U	UG/L	2.	U	UG/L			
VOC	591-78-6	2-Hexanone	2.	U	UG/L	2.	U	UG/L			
VOC	594-20-7	2,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L			
VOC	106-43-4	4-Chlorotoluene	2.	U	UG/L	2.	U	UG/L			
VOC	108-10-1	4-Methyl-2-Pentanone	2.	U	UG/L	2.	U	UG/L			
VOC	542-75-6	Total 1,3-Dichloropropene	4.	U	UG/L	4.	U	UG/L			
VOC	1330-20-7	Xylene (Total)	6.	U	UG/L	6.	U	UG/L			
VOCSURR	1868-53-7	Dibromofluoromethane	101.		PCT_REC	104.		PCT_REC			
VOCSURR	2037-26-5	Toluene-D8	91.		PCT_REC	102.		PCT_REC			
VOCSURR	460-00-4	4-Bromofluorobenzene	98.		PCT_REC	101.		PCT_REC			

Attachment B
Sawyer Street CDF 2008 Groundwater Monitoring Chemistry Data

		Station Id	MW-4A			MW-4A			MW-5		
		Northing	2701422.			2701422.			2701437.		
		Easting	814875.			814875.			814876.		
		Depth Top	24.46			24.46			19.03		
		Depth Unit	FT			FT			FT		
		Start Date	11/07/2008			11/07/2008			11/06/2008		
		Samp Id	MW-04A-110708			MW-04A-110708			MW-005-110608		
		Matrix	GW			GW			GW		
		Field Qc Code	SA			SA			SA		
		Lab Qc Code	SA			SADL1			SA		
		Fraction	TOTAL			TOTAL			TOTAL		
Class	**Param Code**	**Description**	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**
AR	12674-11-2	Aroclor 1016				1.4	UD	UG/L	0.049	UJ	UG/L
AR	11104-28-2	Aroclor 1221				1.4	UD	UG/L	0.049	UJ	UG/L
AR	11141-16-5	Aroclor 1232				1.4	UD	UG/L	0.049	UJ	UG/L
AR	53469-21-9	Aroclor 1242				1.4	UD	UG/L	0.049	UJ	UG/L
AR	12672-29-6	Aroclor 1248				1.4	UD	UG/L	0.049	UJ	UG/L
AR	11097-69-1	Aroclor 1254				1.4	UD	UG/L	0.032	J	UG/L
AR	11096-82-5	Aroclor 1260				1.4	UD	UG/L	0.049	UJ	UG/L
ARSURR	AS-2051-24-3	DecaCB - Aroclor Surrogate				60.		PCT_REC	72.		PCT_REC
ARSURR	AS-877-09-8	Tetrachloro-meta-xylene - Aroclor Surrogate				1,508.		PCT_REC	82.		PCT_REC
MET	7440-43-9	Cadmium	0.02744		UG/L				0.05179		UG/L
MET	7440-47-3	Chromium	5.618		UG/L				4.04		UG/L
MET	7440-50-8	Copper	2.27		UG/L				2.102		UG/L
MET	7439-92-1	Lead	0.1748	U	UG/L				0.274	U	UG/L
SVOC	109-99-9	Tetrahydrofuran	2.	U	UG/L				2.	U	UG/L
TSS	TSS	Total suspended solids									
VOC	67-64-1	Acetone	5.32		UG/L				5.	U	UG/L
VOC	71-43-2	Benzene	2.	U	UG/L				2.	U	UG/L
VOC	108-86-1	Bromobenzene	2.	U	UG/L				2.	U	UG/L
VOC	74-97-5	Bromochloromethane	2.	U	UG/L				2.	U	UG/L
VOC	75-27-4	Bromodichloromethane	2.	U	UG/L				2.	U	UG/L
VOC	75-25-2	Bromoform	2.	U	UG/L				2.	U	UG/L
VOC	74-83-9	Bromomethane	2.	U	UG/L				2.	U	UG/L
VOC	75-15-0	Carbon Disulfide	2.	U	UG/L				2.	U	UG/L
VOC	56-23-5	Carbon Tetrachloride	2.	U	UG/L				2.	U	UG/L
VOC	108-90-7	Chlorobenzene	2.	U	UG/L				2.	U	UG/L
VOC	75-00-3	Chloroethane	2.	U	UG/L				2.	U	UG/L
VOC	67-66-3	Chloroform	2.	U	UG/L				2.	U	UG/L
VOC	74-87-3	Chloromethane	2.	U	UG/L				2.	U	UG/L
VOC	156-59-2	Cis-1,2-Dichloroethene	2.	U	UG/L				2.	U	UG/L
VOC	124-48-1	Dibromochloromethane	2.	U	UG/L				2.	U	UG/L
VOC	74-95-3	Dibromomethane	2.	U	UG/L				2.	U	UG/L
VOC	75-71-8	Dichlorodifluoromethane	2.	U	UG/L				2.	U	UG/L
VOC	60-29-7	Diethyl Ether	2.	U	UG/L				2.	U	UG/L
VOC	108-20-3	Di-Isopropyl Ether	2.	U	UG/L				2.	U	UG/L
VOC	637-92-3	Ethyl Tertiary-Butyl Ether	2.	U	UG/L				2.	U	UG/L
VOC	100-41-4	Ethylbenzene	2.	U	UG/L				2.	U	UG/L
VOC	V-87-68-3	Hexachlorobutadiene	2.	U	UG/L				2.	U	UG/L
VOC	98-82-8	Isopropylbenzene	2.	U	UG/L				2.	U	UG/L
VOC	75-09-2	Methylene Chloride	2.	U	UG/L				2.	U	UG/L
VOC	1634-04-4	Methyl-Tert-Butyl-Ether (Mtbe)	2.	U	UG/L				2.	U	UG/L
VOC	V-91-20-3	Naphthalene	2.	U	UG/L				2.	U	UG/L
VOC	104-51-8	N-Butylbenzene	2.	U	UG/L				2.	U	UG/L
VOC	103-65-1	N-Propylbenzene	2.	U	UG/L				2.	U	UG/L
VOC	99-87-6	P-Isopropyltoluene	2.	U	UG/L				2.	U	UG/L
VOC	135-98-8	Sec-Butylbenzene	2.	U	UG/L				2.	U	UG/L
VOC	100-42-5	Styrene	2.	U	UG/L				2.	U	UG/L
VOC	98-06-6	Tert-Butylbenzene	2.	U	UG/L				2.	U	UG/L
VOC	994-05-8	Tertiary-Amyl Methyl Ether	2.	U	UG/L				2.	U	UG/L
VOC	127-18-4	Tetrachloroethene	2.	U	UG/L				2.	U	UG/L
VOC	108-88-3	Toluene	2.	U	UG/L				2.	U	UG/L
VOC	156-60-5	Trans-1,2-Dichloroethene	2.	U	UG/L				2.	U	UG/L
VOC	79-01-6	Trichloroethene	2.	U	UG/L				2.	U	UG/L
VOC	75-69-4	Trichlorofluoromethane	2.	U	UG/L				2.	U	UG/L
VOC	75-01-4	Vinyl Chloride	2.	U	UG/L				2.	U	UG/L
VOC	75-34-3	1,1-Dichloroethane	2.	U	UG/L				2.	U	UG/L
VOC	75-35-4	1,1-Dichloroethene	2.	U	UG/L				2.	U	UG/L
VOC	563-58-6	1,1-Dichloropropene	2.	U	UG/L				2.	U	UG/L
VOC	71-55-6	1,1,1-Trichloroethane	2.	U	UG/L				2.	U	UG/L
VOC	630-20-6	1,1,1,2-Tetrachloroethane	2.	U	UG/L				2.	U	UG/L
VOC	79-00-5	1,1,2-Trichloroethane	2.	U	UG/L				2.	U	UG/L
VOC	79-34-5	1,1,2,2-Tetrachloroethane	2.	U	UG/L				2.	U	UG/L
VOC	106-93-4	1,2-Dibromoethane	2.	U	UG/L				2.	U	UG/L
VOC	96-12-8	1,2-Dibromo-3-Chloropropane	2.	U	UG/L				2.	U	UG/L
VOC	V-95-50-1	1,2-Dichlorobenzene	2.	U	UG/L				2.	U	UG/L
VOC	107-06-2	1,2-Dichloroethane	2.	U	UG/L				2.	U	UG/L
VOC	17060-07-0	1,2-Dichloroethane-D4	106.		PCT_REC				105.		PCT_REC
VOC	78-87-5	1,2-Dichloropropane	2.	U	UG/L				2.	U	UG/L
VOC	87-61-6	1,2,3-Trichlorobenzene	2.	U	UG/L				2.	U	UG/L
VOC	96-18-4	1,2,3-Trichloropropane	2.	U	UG/L				2.	U	UG/L
VOC	V-120-82-1	1,2,4-Trichlorobenezene	2.	U	UG/L				2.	U	UG/L
VOC	95-63-6	1,2,4-Trimethylbenzene	2.	U	UG/L				2.	U	UG/L
VOC	V-541-73-1	1,3-Dichlorobenzene	2.	U	UG/L				2.	U	UG/L
VOC	142-28-9	1,3-Dichloropropane	2.	U	UG/L				2.	U	UG/L
VOC	108-67-8	1,3,5-Trimethylbenzene	2.	U	UG/L				2.	U	UG/L
VOC	V-106-46-7	1,4-Dichlorobenzene	2.	U	UG/L				2.	U	UG/L
VOC	123-91-1	1,4-Dioxane (P-Dioxane)	100.	U	UG/L				100.	U	UG/L
VOC	78-93-3	2-Butanone	2.	U	UG/L				2.	U	UG/L
VOC	95-49-8	2-Chlorotoluene	2.	U	UG/L				2.	U	UG/L
VOC	591-78-6	2-Hexanone	2.	U	UG/L				2.	U	UG/L
VOC	594-20-7	2,2-Dichloropropane	2.	U	UG/L				2.	U	UG/L
VOC	106-43-4	4-Chlorotoluene	2.	U	UG/L				2.	U	UG/L
VOC	108-10-1	4-Methyl-2-Pentanone	2.	U	UG/L				2.	U	UG/L
VOC	542-75-6	Total 1,3-Dichloropropene	4.	U	UG/L				4.	U	UG/L
VOC	1330-20-7	Xylene (Total)	6.	U	UG/L				6.	U	UG/L
VOCSURR	1868-53-7	Dibromofluoromethane	104.		PCT_REC				104.		PCT_REC
VOCSURR	2037-26-5	Toluene-D8	100.		PCT_REC				101.		PCT_REC
VOCSURR	460-00-4	4-Bromofluorobenzene	101.		PCT_REC				99.		PCT_REC

Attachment B
Sawyer Street CDF 2008 Groundwater Monitoring Chemistry Data

		Station Id	MW-6			MW-7A		
		Northing	2701648.			2701234.		
		Easting	814558.			814575.		
		Depth Top	19.19			14.85		
		Depth Unit	FT			FT		
		Start Date	11/06/2008			11/06/2008		
		Samp Id	MW-006-110608			MW-07A-110608		
		Matrix	GW			GW		
		Field Qc Code	SA			SA		
		Lab Qc Code	SA			SA		
		Fraction	TOTAL			TOTAL		
Class	**Param Code**	**Description**	**Result**	**Final Qual**	**Unit**	**Result**	**Final Qual**	**Unit**
AR	12674-11-2	Aroclor 1016	0.047	UJ	UG/L	0.048	U	UG/L
AR	11104-28-2	Aroclor 1221	0.047	UJ	UG/L	0.048	U	UG/L
AR	11141-16-5	Aroclor 1232	0.047	UJ	UG/L	0.048	U	UG/L
AR	53469-21-9	Aroclor 1242	0.047	UJ	UG/L	0.048	U	UG/L
AR	12672-29-6	Aroclor 1248	0.047	UJ	UG/L	0.048	U	UG/L
AR	11097-69-1	Aroclor 1254	0.047	UJ	UG/L	0.048	U	UG/L
AR	11096-82-5	Aroclor 1260	0.047	UJ	UG/L	0.048	U	UG/L
ARSURR	AS-2051-24-3	DecaCB - Aroclor Surrogate	50.		PCT_REC	87.		PCT_REC
ARSURR	AS-877-09-8	Tetrachloro-meta-xylene - Aroclor Surrogate	87.		PCT_REC	110.		PCT_REC
MET	7440-43-9	Cadmium	0.0516		UG/L	0.6483		UG/L
MET	7440-47-3	Chromium	0.3464	U	UG/L	1.011	U	UG/L
MET	7440-50-8	Copper	0.6662	U	UG/L	4.991		UG/L
MET	7439-92-1	Lead	0.1827	U	UG/L	0.02256	U	UG/L
SVOC	109-99-9	Tetrahydrofuran	2.	U	UG/L	2.	U	UG/L
TSS	TSS	Total suspended solids						
VOC	67-64-1	Acetone	23.3		UG/L	5.	U	UG/L
VOC	71-43-2	Benzene	2.	U	UG/L	2.	U	UG/L
VOC	108-86-1	Bromobenzene	2.	U	UG/L	2.	U	UG/L
VOC	74-97-5	Bromochloromethane	2.	U	UG/L	2.	U	UG/L
VOC	75-27-4	Bromodichloromethane	2.	U	UG/L	2.	U	UG/L
VOC	75-25-2	Bromoform	2.	U	UG/L	2.	U	UG/L
VOC	74-83-9	Bromomethane	2.	U	UG/L	2.	U	UG/L
VOC	75-15-0	Carbon Disulfide	2.	U	UG/L	2.	U	UG/L
VOC	56-23-5	Carbon Tetrachloride	2.	U	UG/L	2.	U	UG/L
VOC	108-90-7	Chlorobenzene	2.	U	UG/L	2.	U	UG/L
VOC	75-00-3	Chloroethane	2.	U	UG/L	2.	U	UG/L
VOC	67-66-3	Chloroform	2.	U	UG/L	2.	U	UG/L
VOC	74-87-3	Chloromethane	2.	U	UG/L	2.	U	UG/L
VOC	156-59-2	Cis-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L
VOC	124-48-1	Dibromochloromethane	2.	U	UG/L	2.	U	UG/L
VOC	74-95-3	Dibromomethane	2.	U	UG/L	2.	U	UG/L
VOC	75-71-8	Dichlorodifluoromethane	2.	U	UG/L	2.	U	UG/L
VOC	60-29-7	Diethyl Ether	2.	U	UG/L	2.	U	UG/L
VOC	108-20-3	Di-Isopropyl Ether	2.	U	UG/L	2.	U	UG/L
VOC	637-92-3	Ethyl Tertiary-Butyl Ether	2.	U	UG/L	2.	U	UG/L
VOC	100-41-4	Ethylbenzene	2.	U	UG/L	2.	U	UG/L
VOC	V-87-68-3	Hexachlorobutadiene	2.	U	UG/L	2.	U	UG/L
VOC	98-82-8	Isopropylbenzene	2.	U	UG/L	2.	U	UG/L
VOC	75-09-2	Methylene Chloride	2.	U	UG/L	2.	U	UG/L
VOC	1634-04-4	Methyl-Tert-Butyl-Ether (Mtbe)	2.	U	UG/L	2.	U	UG/L
VOC	V-91-20-3	Naphthalene	2.	U	UG/L	2.	U	UG/L
VOC	104-51-8	N-Butylbenzene	2.	U	UG/L	2.	U	UG/L
VOC	103-65-1	N-Propylbenzene	2.	U	UG/L	2.	U	UG/L
VOC	99-87-6	P-Isopropyltoluene	2.	U	UG/L	2.	U	UG/L
VOC	135-98-8	Sec-Butylbenzene	2.	U	UG/L	2.	U	UG/L
VOC	100-42-5	Styrene	2.	U	UG/L	2.	U	UG/L
VOC	98-06-6	Tert-Butylbenzene	2.	U	UG/L	2.	U	UG/L
VOC	994-05-8	Tertiary-Amyl Methyl Ether	2.	U	UG/L	2.	U	UG/L
VOC	127-18-4	Tetrachloroethene	2.	U	UG/L	2.	U	UG/L
VOC	108-88-3	Toluene	2.	U	UG/L	2.	U	UG/L
VOC	156-60-5	Trans-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L
VOC	79-01-6	Trichloroethene	2.	U	UG/L	2.	U	UG/L
VOC	75-69-4	Trichlorofluoromethane	2.	U	UG/L	2.	U	UG/L
VOC	75-01-4	Vinyl Chloride	2.	U	UG/L	2.	U	UG/L
VOC	75-34-3	1,1-Dichloroethane	2.	U	UG/L	2.	U	UG/L
VOC	75-35-4	1,1-Dichloroethene	2.	U	UG/L	2.	U	UG/L
VOC	563-58-6	1,1-Dichloropropene	2.	U	UG/L	2.	U	UG/L
VOC	71-55-6	1,1,1-Trichloroethane	2.	U	UG/L	2.	U	UG/L
VOC	630-20-6	1,1,1,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L
VOC	79-00-5	1,1,2-Trichloroethane	2.	U	UG/L	2.	U	UG/L
VOC	79-34-5	1,1,2,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L
VOC	106-93-4	1,2-Dibromoethane	2.	U	UG/L	2.	U	UG/L
VOC	96-12-8	1,2-Dibromo-3-Chloropropane	2.	U	UG/L	2.	U	UG/L
VOC	V-95-50-1	1,2-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L
VOC	107-06-2	1,2-Dichloroethane	2.	U	UG/L	2.	U	UG/L
VOC	17060-07-0	1,2-Dichloroethane-D4	106.		PCT_REC	103.		PCT_REC
VOC	78-87-5	1,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L
VOC	87-61-6	1,2,3-Trichlorobenzene	2.	U	UG/L	2.	U	UG/L
VOC	96-18-4	1,2,3-Trichloropropane	2.	U	UG/L	2.	U	UG/L
VOC	V-120-82-1	1,2,4-Trichlorobenezene	2.	U	UG/L	2.	U	UG/L
VOC	95-63-6	1,2,4-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L
VOC	V-541-73-1	1,3-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L
VOC	142-28-9	1,3-Dichloropropane	2.	U	UG/L	2.	U	UG/L
VOC	108-67-8	1,3,5-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L
VOC	V-106-46-7	1,4-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L
VOC	123-91-1	1,4-Dioxane (P-Dioxane)	100.	U	UG/L	100.	U	UG/L
VOC	78-93-3	2-Butanone	2.	U	UG/L	2.	U	UG/L
VOC	95-49-8	2-Chlorotoluene	2.	U	UG/L	2.	U	UG/L
VOC	591-78-6	2-Hexanone	2.	U	UG/L	2.	U	UG/L
VOC	594-20-7	2,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L
VOC	106-43-4	4-Chlorotoluene	2.	U	UG/L	2.	U	UG/L
VOC	108-10-1	4-Methyl-2-Pentanone	2.	U	UG/L	2.	U	UG/L
VOC	542-75-6	Total 1,3-Dichloropropene	4.	U	UG/L	4.	U	UG/L
VOC	1330-20-7	Xylene (Total)	6.	U	UG/L	6.	U	UG/L
VOCSURR	1868-53-7	Dibromofluoromethane	99.		PCT_REC	103.		PCT_REC
VOCSURR	2037-26-5	Toluene-D8	91.		PCT_REC	100.		PCT_REC
VOCSURR	460-00-4	4-Bromofluorobenzene	99.		PCT_REC	99.		PCT_REC

TestAmerica Burlington Data Qualifier Definitions

Organic

U: Compound analyzed but not detected at a concentration above the reporting limit.

J: Estimated value.

N: Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds (TICs) where the identification of a compound is based on a mass spectral library search.

P: SW-846: The relative percent difference for detected concentrations between two GC columns is greater than 40%. Unless otherwise specified the higher of the two values is reported on the Form I.

CLP SOW: Greater than 25% difference for detected concentrations between two GC columns. Unless otherwise specified the lower of the two values is reported on the Form I.

C: Pesticide result whose identification has been confirmed by GC/MS.

B: Analyte is found in the sample and the associated method blank. The flag is used for tentatively identified compounds as well as positively identified compounds.

E: Compounds whose concentrations exceed the upper limit of the calibration range of the instrument for that specific analysis.

D: Concentrations identified from analysis of the sample at a secondary dilution.

A: Tentatively identified compound is a suspected aldol condensation product.

X,Y,Z: Laboratory defined flags that may be used alone or combined, as needed. If used, the description of the flag is defined in the project narrative.

Inorganic/Metals

E: Reported value is estimated due to the presence of interference.

N: Matrix spike sample recovery is not within control limits.

* Duplicate sample analysis is not within control limits.

B: The result reported is less than the reporting limit but greater than the instrument detection limit.

U: Analyte was analyzed for but not detected above the reporting limit.

Method Codes:

P	ICP-AES
MS	ICP-MS
CV	Cold Vapor AA
AS	Semi-Automated Spectrophotometric

Attachment B
Code List - Validation Qualifiers

NBHPROD_CODE_LIST		
FIELD_NAME	**CODE**	**DESCR**
VALID_QUAL	D	Result is reported at a secondary dilution factor. Spike and surrogate recoveries may have been diluted below quantifiable levels.
VALID_QUAL	EB	Indicate that sampling error has potentially affected the sample results. Detected in Equipment Blank
VALID_QUAL	J	For organics analysis, indicates an estimated value. The result is less than the reporting limit, but greater than 1/2 reporting limit.
VALID_QUAL	M	EMPC value is associated with this result.
VALID_QUAL	R	For organics analysis, rejected Value. The R qualifier will be assigned by the data validation team.
VALID_QUAL	U	For organics analysis, indicates the compound was analyzed for, but not detected above the reporting limit. ND MAY NOT be used in place of U.
VALID_QUAL	ZZZ	Results were qualified as unused

Laboratory Report – PCB Data

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TestAmerica
South Burlington, VT

Sample Data Summary Package

SDG: 125617

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

June 16, 2008

TestAmerica Laboratories, Inc.

Ms. Yixian Zhang
Battele
397 Washington Street
Duxbury, MA 02332

Re: Laboratory Project No. 28000
Case: 28000; SDG: 125617

Dear Ms. Zhang:

Enclosed are the analytical results for the samples that were received by TestAmerica Burlington on May 22nd, 2008. Laboratory identification numbers were assigned, and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 05/22/08 ETR No: 125617		
752926	MW-07A-051908	05/19/08	WATER
752926MS	MW-07A-051908MS	05/19/08	WATER
752926MD	MW-07A-051908MSD	05/19/08	WATER
752927	MW-006-051908	05/19/08	WATER
752928	MW-001-051908	05/19/08	WATER
752929	MW-005-052008	05/20/08	WATER
752930	MW-005-052008-REP	05/20/08	WATER
752931	MW-04A-052008	05/20/08	WATER
752932	MW-003-052008	05/20/08	WATER
752933	EB-052008	05/20/08	WATER

Documentation of the condition of the samples at the time of their receipt and any exception to the laboratory's Sample Acceptance Policy is documented in the Sample Handling section of this subrnittal.

SW846 8082 – PCB Aroclors:
Due to inherent software limitations, the sample identifications for MW-07A-051908, MW-07A-051908MS, MW-07A-051908MSD, MW-006-051908, MW-001-051908, MW-005-052008, MW-005-052008-REP, MW-04A-052008 and MW-003-052008 were truncated.

The analysis of the method blank, MBLK052508A, exhibited a percent recovery (58%) for the surrogate compound Tetrachloro-m-xylene that was marginally below quality control criteria (60-115%) at 58% on the RTX-5 analytical column only.

The matrix spike duplicate analysis of sample MW-07A-051908 yielded a percent recovery of the surrogate compound Decachlorobiphenyl that exceeded the advisory control limits (60-115%) at 138% on the RTX-5 analytical column only.

30 Community Drive Suite 11 South Burlington, VT 05403 **tel** 802.660.1990 **fax** 802.660.1919 **www.testamericainc.com**

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

The analysis of sample MW-006-051908 yielded a percent recovery of the surrogate compound Tetrachloro-m-xylene that was flagged as an outage on the RTX-35 analytical column because the percent recovery (60%) is at the advisory quality control lower limit (60-115%).

The analyses of samples MW-005-052008-REP (132%) and MW-04A-052008 (159%) exhibited percent recoveries of the surrogate compound Decachlorobiphenyl that exceeded the advisory control limits (60-115%) on the RTX-5 column only.

The analyses of samples MW-003-052008 and EB-052008 exhibited percent recoveries of the surrogate compound Tetrachloro-m-0xylene that exceeded the advisory control limits (60-115%) on both analytical columns.

There are select Aroclor 1260 peaks flagged as outages in the Continuing Calibration Verification (CCVs) standards on the RTX-5 analytical column. The averages of the five quantitation peaks in each of these is below 15.0% difference criteria, therefore all the CCVs are within the control criteria.

Manual integration of quantitation peaks was performed where necessary. Documentation of each manual integration was provided in the supportive documentation. Secondary review was performed by the laboratory on all of the manual integrations within this submittal.

For dual column analyses, the laboratory reported the higher of the two confirmed results for each analyte.

Any reference within this report to Severn Trent Laboratories, Inc. or STL, should be understood to refer to TestAmerica Laboratories, Inc. (formerly known as Severn Trent Laboratories, Inc.) The analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the NELAC standard. Release of the data in this test report and any associated electronic deliverables is authorized by the Laboratory Director's designee as verified by the following signature.

If there are any questions regarding this submittal, please contact me at 802 660-1990.

Sincerely,

Ron Pentkowski
Project Manager

Enclosure

TestAmerica Burlington Data Qualifier Definitions

Organic

U: Compound analyzed but not detected at a concentration above the reporting limit.

J: Estimated value.

N: Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds (TICs) where the identification of a compound is based on a mass spectral library search.

P: SW-846: The relative percent difference for detected concentrations between two GC columns is greater than 40%. Unless otherwise specified the higher of the two values is reported on the Form I.

CLP SOW: Greater than 25% difference for detected concentrations between two GC columns. Unless otherwise specified the lower of the two values is reported on the Form I.

C: Pesticide result whose identification has been confirmed by GC/MS.

B: Analyte is found in the sample and the associated method blank. The flag is used for tentatively identified compounds as well as positively identified compounds.

E: Compounds whose concentrations exceed the upper limit of the calibration range of the instrument for that specific analysis.

D: Concentrations identified from analysis of the sample at a secondary dilution.

A: Tentatively identified compound is a suspected aldol conden sation product.

X,Y,Z: Laboratory defined flags that may be used alone or combined, as needed. If used, the description of the flag is defined in the project narrative.

Inorganic/Metals

E: Reported value is estimated due to the presence of interference.

N: Matrix spike sample recovery is not within control limits.

* Duplicate sample analysis is not within control limits.

B: The result reported is less than the reporting limit but greater than the instrument detection limit.

U: Analyte was analyzed for but not detected above the reporting limit.

Method Codes:

P	ICP-AES
MS	ICP-MS
CV	Cold Vapor AA
AS	Semi-Automated Spectrophotometric

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403 Tel: 802 660 1990

CHAIN OF CUSTODY RECORD

Report to:
Company: Battelle
Address: 397 Washington St
Duxbury, MA 02332
Contact: Yixian Zhang
Phone: 781-952-5298
Fax:
Contract/ Quote:

Invoice to:
Company: Same
Address:
Contact:
Phone:
Fax:

Sampler's Name: Jessica Fahey
Sampler's Signature: Jessi m Fahey

Proj. No.: G006442
Project Name: NewBedford Harbor - Sawyer St GW

ANALYSIS REQUESTED: PCB Aroclors

Lab Use Only
Due Date:
Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5
Custody Seal N / Y
Intact N / Y
Screened For Radioactivity ☐

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No/Type of Containers[2] VOA	A/G 1 Lt.	250 ml	P/O	Lab/Sample ID (Lab Use Only)
W	5/19/08	1241		✓	MW-07A-051908 (Reissue for MS/MSD) ✓		4			✓
W	5/19/08	1522		✓	MW-006-051908 ✓		2			✓
W	5/19/08	1742		✓	MW-001-051908 ✓		2			✓
W	5/20/08	1015		✓	MW-005-052008 ~~REP~~ ✓		~~2~~ 3			✓
W	5/20/08	1015		✓	MW-005-052008-REP ✓		1			✓
W	5/20/08	1227		✓	MW-04A-052008 ✓		2			✓
W	5/20/08	1432		✓	MW-003-052008 ✓		2			✓
W	5/20/08	1605		✓	EB-052008 ✓		2			✓

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Jessica m Fahey	5/20/08	1800		05-21-08	0945
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Remarks: ① Reissue JMF 5/20/08

Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule.

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
[2]Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919

TAL-8234(1007)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sample Data Summary – 8082 PCBS

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

005052008REP

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752930

Sample wt/vol: 1060 (g/mL) ML Lab File ID: 09JUN080949-R101

% Moisture: _____ decanted: (Y/N)___ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 06/09/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

07A051908

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752926

Sample wt/vol: 1040 (g/mL) ML Lab File ID: 09JUN080949-R041

% Moisture: _____ decanted: (Y/N)___ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 06/09/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

EB-052008

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752933

Sample wt/vol: 1060 (g/mL) ML Lab File ID: 09JUN080949-R141

% Moisture: _____ decanted: (Y/N)___ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 06/09/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW001051908

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752928

Sample wt/vol: 1060 (g/mL) ML Lab File ID: 09JUN080949-R081

% Moisture: _____ decanted: (Y/N)___ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 06/09/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW003052008

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752932

Sample wt/vol: 1060 (g/mL) ML Lab File ID: 09JUN080949-R131

% Moisture: _____ decanted: (Y/N)___ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 06/09/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW005052008

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752929

Sample wt/vol: 1060 (g/mL) ML Lab File ID: 09JUN080949-R091

% Moisture: _____ decanted: (Y/N)___ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 06/09/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW006051908

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752927

Sample wt/vol: 1040 (g/mL) ML Lab File ID: 09JUN080949-R071

% Moisture: _____ decanted: (Y/N)___ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 06/09/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW04A052008

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752931

Sample wt/vol: 1060 (g/mL) ML Lab File ID: 09JUN080949-R121

% Moisture: _____ decanted: (Y/N)___ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 06/09/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.043	J
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MBLK052508A

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: MBLK052508A

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 09JUN080949-R011

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 06/09/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PBLK_SCU

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: PBLK_SCU

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 09JUN080949-R031

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 06/09/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

07A051908MS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752926MS

Sample wt/vol: 1050 (g/mL) ML Lab File ID: 09JUN080949-R051

% Moisture: _____ decanted: (Y/N)___ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 06/09/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.41	
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.42	

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

07A051908MSD

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752926MD

Sample wt/vol: 1040 (g/mL) ML Lab File ID: 09JUN080949-R061

% Moisture: _____ decanted: (Y/N)___ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 06/09/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.42	
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.43	

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

A052508LCS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: A052508LCS

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 09JUN080949-R021

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 06/09/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.38	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.42	

FORM 2
WATER OTHER SURROGATE RECOVERY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

GC Column(1): RTX-5 ID: 0.25 (mm) GC Column(2): RTX-35 ID: 0.25 (mm)

	CLIENT SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	MBLK052508A	58*	62	92	95			1
02	A052508LCS	62	65	88	100			0
03	PBLK_SCU	105	100	90	105			0
04	07A051908	68	70	88	86			0
05	07A051908MS	66	66	84	92			0
06	07A051908MSD	68	68	138*	91			1
07	MW006051908	62	60*	107	78			1
08	MW001051908	61	64	82	82			0
09	MW005052008	66	66	82	90			0
10	005052008REP	61	64	132*	87			1
11	MW04A052008	80	85	159*	111			1
12	MW003052008	58*	56*	109	77			2
13	EB-052008	58*	58*	85	93			2
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								

ADVISORY
QC LIMITS

S1 (TCX) = Tetrachloro-m-xylene (60-115)
S2 (DCB) = Decachlorobiphenyl (65-115)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

FORM 3
WATER OTHER MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix Spike - BATTEL Sample No.: 07A051908

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Aroclor-1016	0.48	0.0	0.41	85	65-120
Aroclor-1260	0.48	0.0	0.42	88	55-120

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Aroclor-1016	0.48	0.42	88	3	30	65-120
Aroclor-1260	0.48	0.43	90	2	30	55-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 2 outside limits
Spike Recovery: 0 out of 4 outside limits

COMMENTS: _____

FORM 3
WATER OTHER LAB CONTROL SAMPLE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix Spike - Sample No.: A052508LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Aroclor-1016	0.50		0.38	76	65-120
Aroclor-1260	0.50		0.42	84	55-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____

FORM 4
OTHER METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

MBLK052508A

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Lab Sample ID: MBLK052508A Lab File ID: 09JUN080949-R011

Matrix (soil/water) WATER Extraction:(SepF/Cont/Sonc) SEPF

Sulfur Cleanup (Y/N) N Date Extracted: 05/25/08

Date Analyzed (1): 06/09/08 Date Analyzed (2): 06/09/08

Time Analyzed (1): 1619 Time Analyzed (2): 1619

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column (1): RTX-5 ID: 0.25(mm) GC Column (2): RTX-35 ID: 0.25(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	A052508LCS	A052508LCS	06/09/08	06/09/08
02	07A051908	752926	06/09/08	06/09/08
03	07A051908MS	752926MS	06/09/08	06/09/08
04	07A051908MSD	752926MD	06/09/08	06/09/08
05	MW006051908	752927	06/09/08	06/09/08
06	MW001051908	752928	06/09/08	06/09/08
07	MW005052008	752929	06/09/08	06/09/08
08	005052008REP	752930	06/09/08	06/09/08
09	MW04A052008	752931*	06/09/08	06/09/08
10	MW003052008	752932	06/09/08	06/09/08
11	EB-052008	752933	06/09/08	06/09/08
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

COMMENTS: *-Extract received sulfur cleanup. The associated cleanup blank is PBLK_SCU.

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Instrument ID: 7227_1 Calibration Date(s): 06/09/08 06/09/08

Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1041 1507

LAB FILE ID: RF50: 09JUN080925-RF100: 09JUN080925RF200: 09JUN080925
RF400: 09JUN080925RF800: 09JUN080925

COMPOUND	RF50	RF100	RF200	RF400	RF800
Aroclor-1016	30.120	27.870	26.940	24.055	22.635
(2)	39.280	36.060	34.145	32.098	30.310
(3)	74.100	68.810	67.535	64.378	64.262
(4)	45.480	43.140	40.840	38.062	36.096
(5)	31.780	30.590	29.420	28.058	26.632
Aroclor-1221			15.945		
(2)			11.230		
(3)			34.740		
(4)			6.340		
(5)			4.360		
Aroclor-1232			29.355		
(2)			16.925		
(3)			17.400		
(4)			31.755		
(5)			20.410		
Aroclor-1242			22.675		
(2)			28.915		
(3)			55.160		
(4)			33.360		
(5)			23.870		
Aroclor-1248			17.185		
(2)			13.600		
(3)			33.860		
(4)			17.860		
(5)			18.915		
Aroclor-1254			22.000		
(2)			19.195		
(3)			38.025		
(4)			13.990		
(5)			49.490		
Aroclor-1260	46.820	43.810	39.845	38.105	37.228
(2)	54.180	50.380	47.690	46.170	45.621
(3)	143.120	135.280	133.425	131.015	138.495
(4)	75.840	70.900	68.855	65.740	68.072
(5)	47.180	43.690	41.505	40.215	38.926
Tetrachloro-m-xylene	1439.000	1338.100	1366.600	1355.325	1385.212
Decachlorobiphenyl	1679.000	1608.300	1570.050	1539.350	1558.975

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Instrument ID: 7227_1 Calibration Date(s): 06/09/08 06/09/08

Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1041 1507

COMPOUND	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2	
Aroclor-1016	AVRG	26.3240000	11.386	20.000	
(2)	AVRG	34.3785000	10.146	20.000	
(3)	AVRG	67.8170000	5.944	20.000	
(4)	AVRG	40.7237500	9.267	20.000	
(5)	AVRG	29.2960000	6.930	20.000	
Aroclor-1221	AVRG	15.9450000	0.000	20.000	<-
(2)	AVRG	11.2300000	0.000	20.000	<-
(3)	AVRG	34.7400000	0.000	20.000	<-
(4)	AVRG	6.34000000	0.000	20.000	<-
(5)	AVRG	4.36000000	0.000	20.000	<-
Aroclor-1232	AVRG	29.3550000	0.000	20.000	<-
(2)	AVRG	16.9250000	0.000	20.000	<-
(3)	AVRG	17.4000000	0.000	20.000	<-
(4)	AVRG	31.7550000	0.000	20.000	<-
(5)	AVRG	20.4100000	0.000	20.000	<-
Aroclor-1242	AVRG	22.6750000	0.000	20.000	<-
(2)	AVRG	28.9150000	0.000	20.000	<-
(3)	AVRG	55.1600000	0.000	20.000	<-
(4)	AVRG	33.3600000	0.000	20.000	<-
(5)	AVRG	23.8700000	0.000	20.000	<-
Aroclor-1248	AVRG	17.1850000	0.000	20.000	<-
(2)	AVRG	13.6000000	0.000	20.000	<-
(3)	AVRG	33.8600000	0.000	20.000	<-
(4)	AVRG	17.8600000	0.000	20.000	<-
(5)	AVRG	18.9150000	0.000	20.000	<-
Aroclor-1254	AVRG	22.0000000	0.000	20.000	<-
(2)	AVRG	19.1950000	0.000	20.000	<-
(3)	AVRG	38.0250000	0.000	20.000	<-
(4)	AVRG	13.9900000	0.000	20.000	<-
(5)	AVRG	49.4900000	0.000	20.000	<-
Aroclor-1260	AVRG	41.1615000	9.837	20.000	
(2)	AVRG	48.8082500	7.222	20.000	
(3)	AVRG	136.267000	3.453	20.000	
(4)	AVRG	69.8815000	5.450	20.000	
(5)	AVRG	42.3032500	7.670	20.000	
Tetrachloro-m-xylene	AVRG	1376.84750	2.814	20.000	
Decachlorobiphenyl	AVRG	1591.13500	3.467	20.000	

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Instrument ID: 7227_2 Calibration Date(s): 06/09/08 06/09/08

Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1041 1507

LAB FILE ID: RF50: 09JUN080925-RF100: 09JUN080925RF200: 09JUN080925
RF400: 09JUN080925RF800: 09JUN080925

COMPOUND	RF50	RF100	RF200	RF400	RF800
Aroclor-1016	81.440	75.000	71.460	66.640	63.371
(2)	119.140	109.840	105.690	98.550	94.909
(3)	181.300	170.760	168.895	164.502	165.105
(4)	98.460	91.250	87.600	83.650	81.604
(5)	78.420	74.240	71.500	69.265	67.998
Aroclor-1221			46.390		
(2)			30.415		
(3)			91.635		
(4)			14.585		
(5)			18.565		
Aroclor-1232			77.900		
(2)			53.740		
(3)			75.980		
(4)			41.935		
(5)			35.640		
Aroclor-1242			89.160		
(2)			43.550		
(3)			138.135		
(4)			73.595		
(5)			59.965		
Aroclor-1248			47.250		
(2)			80.030		
(3)			37.210		
(4)			30.750		
(5)			35.165		
Aroclor-1254			52.100		
(2)			39.380		
(3)			47.205		
(4)			33.770		
(5)			149.410		
Aroclor-1260	199.360	191.010	180.705	174.160	173.921
(2)	552.420	551.500	561.645	537.118	582.142
(3)	192.400	182.220	179.105	175.598	180.006
(4)	70.280	70.120	67.060	63.205	62.308
(5)	172.760	162.830	161.770	158.062	160.979
Tetrachloro-m-xylene	4249.600	4171.200	4510.800	4385.725	4379.050
Decachlorobiphenyl	4013.600	3928.400	4061.450	4054.550	4011.112

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Instrument ID: 7227_2 Calibration Date(s): 06/09/08 06/09/08

Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1041 1507

COMPOUND	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2	
Aroclor-1016	AVRG	71.5822500	9.896	20.000	
(2)	AVRG	105.625750	9.048	20.000	
(3)	AVRG	170.112500	3.983	20.000	
(4)	AVRG	88.5127500	7.550	20.000	
(5)	AVRG	72.2845000	5.770	20.000	
Aroclor-1221	AVRG	46.3900000	0.000	20.000	<-
(2)	AVRG	30.4150000	0.000	20.000	<-
(3)	AVRG	91.6350000	0.000	20.000	<-
(4)	AVRG	14.5850000	0.000	20.000	<-
(5)	AVRG	18.5650000	0.000	20.000	<-
Aroclor-1232	AVRG	77.9000000	0.000	20.000	<-
(2)	AVRG	53.7400000	0.000	20.000	<-
(3)	AVRG	75.9800000	0.000	20.000	<-
(4)	AVRG	41.9350000	0.000	20.000	<-
(5)	AVRG	35.6400000	0.000	20.000	<-
Aroclor-1242	AVRG	89.1600000	0.000	20.000	<-
(2)	AVRG	43.5500000	0.000	20.000	<-
(3)	AVRG	138.135000	0.000	20.000	<-
(4)	AVRG	73.5950000	0.000	20.000	<-
(5)	AVRG	59.9650000	0.000	20.000	<-
Aroclor-1248	AVRG	47.2500000	0.000	20.000	<-
(2)	AVRG	80.0300000	0.000	20.000	<-
(3)	AVRG	37.2100000	0.000	20.000	<-
(4)	AVRG	30.7500000	0.000	20.000	<-
(5)	AVRG	35.1650000	0.000	20.000	<-
Aroclor-1254	AVRG	52.1000000	0.000	20.000	<-
(2)	AVRG	39.3800000	0.000	20.000	<-
(3)	AVRG	47.2050000	0.000	20.000	<-
(4)	AVRG	33.7700000	0.000	20.000	<-
(5)	AVRG	149.410000	0.000	20.000	<-
Aroclor-1260	AVRG	183.831250	6.046	20.000	
(2)	AVRG	556.965000	2.978	20.000	
(3)	AVRG	181.865750	3.493	20.000	
(4)	AVRG	66.5945000	5.623	20.000	
(5)	AVRG	163.280250	3.422	20.000	
Tetrachloro-m-xylene	AVRG	4339.27500	3.037	20.000	
Decachlorobiphenyl	AVRG	4013.82250	1.320	20.000	

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Instrument ID: 7227_1 Calibration Date: 06/09/08 Time: 2022

Lab File ID: 09JUN080949-R1 Init. Calib. Date(s): 06/09/08 06/09/08

Init. Calib. Times: 1330 1507

GC Column: RTX-5 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D	
Aroclor-1016	26.324	27.410		4.1	15.0	
(2)	34.379	36.020		4.8	15.0	
(3)	67.817	70.250		3.6	15.0	
(4)	40.724	41.275		1.4	15.0	
(5)	29.296	30.160		2.9	15.0	
Aroclor-1260	41.162	40.790		0.9	15.0	
(2)	48.808	48.525		0.6	15.0	
(3)	136.267	135.350		0.7	15.0	
(4)	69.881	86.530		23.8	15.0	<-
(5)	42.303	48.290		14.2	15.0	
Tetrachloro-m-xylene	1376.847	1362.300		1.0	15.0	
Decachlorobiphenyl	1591.135	1554.850		2.3	15.0	

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Instrument ID: 7227_1 Calibration Date: 06/09/08 Time: 2159

Lab File ID: 09JUN080949-R1 Init. Calib. Date(s): 06/09/08 06/09/08

Init. Calib. Times: 1330 1507

GC Column: RTX-5 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D	
Aroclor-1016	26.324	28.050		6.6	15.0	
(2)	34.379	35.980		4.6	15.0	
(3)	67.817	74.000		9.1	15.0	
(4)	40.724	43.550		6.9	15.0	
(5)	29.296	30.895		5.4	15.0	
Aroclor-1260	41.162	40.990		0.4	15.0	
(2)	48.808	46.805		4.1	15.0	
(3)	136.267	137.055		0.6	15.0	
(4)	69.881	81.215		16.2	15.0	<-
(5)	42.303	48.020		13.5	15.0	
Tetrachloro-m-xylene	1376.847	1457.850		5.9	15.0	
Decachlorobiphenyl	1591.135	1491.050		6.3	15.0	

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Instrument ID: 7227_2 Calibration Date: 06/09/08 Time: 2022

Lab File ID: 09JUN080949-R1 Init. Calib. Date(s): 06/09/08 06/09/08

Init. Calib. Times: 1330 1507

GC Column: RTX-35 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	71.582	74.615		4.2	15.0
(2)	105.626	108.660		2.9	15.0
(3)	170.112	174.725		2.7	15.0
(4)	88.513	89.975		1.6	15.0
(5)	72.285	73.995		2.4	15.0
Aroclor-1260	183.831	191.860		4.4	15.0
(2)	556.965	599.460		7.6	15.0
(3)	181.866	189.900		4.4	15.0
(4)	66.595	71.720		7.7	15.0
(5)	163.280	166.575		2.0	15.0
Tetrachloro-m-xylene	4339.275	4340.450		0.0	15.0
Decachlorobiphenyl	4013.822	4201.700		4.7	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Instrument ID: 7227_2 Calibration Date: 06/09/08 Time: 2159

Lab File ID: 09JUN080949-R1 Init. Calib. Date(s): 06/09/08 06/09/08

Init. Calib. Times: 1330 1507

GC Column: RTX-35 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	71.582	73.310		2.4	15.0
(2)	105.626	108.640		2.8	15.0
(3)	170.112	175.845		3.4	15.0
(4)	88.513	90.140		1.8	15.0
(5)	72.285	75.060		3.8	15.0
Aroclor-1260	183.831	187.530		2.0	15.0
(2)	556.965	570.615		2.4	15.0
(3)	181.866	187.430		3.0	15.0
(4)	66.595	70.345		5.6	15.0
(5)	163.280	166.845		2.2	15.0
Tetrachloro-m-xylene	4339.275	4419.250		1.8	15.0
Decachlorobiphenyl	4013.822	4253.850		6.0	15.0

FORM 8
OTHER ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

GC Column: RTX-5 ID: 0.25 (mm) Init. Calib. Date(s): 06/09/08 06/09/08

Instrument ID: 7227_1

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 3.79 DCB: 14.13

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	AR1221 200PP	AR1221 200PP	06/09/08	1041	3.80	14.14
02	AR1232 200PP	AR1232 200PP	06/09/08	1105	3.80	14.14
03	AR1242 200PP	AR1242 200PP	06/09/08	1129	3.80	14.14
04	AR1248 200PP	AR1248 200PP	06/09/08	1153	3.81	14.15
05	AR1254 200PP	AR1254 200PP	06/09/08	1218	3.81	14.14
06	AR1262 200PP	AR1262 200PP	06/09/08	1242	3.81	14.14
07	AR1268 200PP	AR1268 200PP	06/09/08	1306	3.81	14.14
08	AR1660 50PPB	AR1660 50PPB	06/09/08	1330	3.79	14.13
09	AR1660 100PP	AR1660 100PP	06/09/08	1354	3.79	14.13
10	AR1660 200PP	AR1660 200PP	06/09/08	1419	3.79	14.13
11	AR1660 400PP	AR1660 400PP	06/09/08	1443	3.79	14.13
12	AR1660 800PP	AR1660 800PP	06/09/08	1507	3.80	14.14
13	AR1660 ICV	AR1660 ICV	06/09/08	1555	3.80	14.14
14	MBLK052508A	MBLK052508A	06/09/08	1619	3.80	14.14
15	A052508LCS	A052508LCS	06/09/08	1644	3.80	14.14
16	PBLK_SCU	PBLK_SCU	06/09/08	1708	3.80	14.14
17	07A051908	752926	06/09/08	1732	3.80	14.14
18	07A051908MS	752926MS	06/09/08	1756	3.81	14.14
19	07A051908MSD	752926MD	06/09/08	1821	3.81	14.14
20	MW006051908	752927	06/09/08	1845	3.81	14.14
21	MW001051908	752928	06/09/08	1909	3.79	14.13
22	MW005052008	752929	06/09/08	1933	3.79	14.13
23	005052008REP	752930	06/09/08	1957	3.79	14.13
24	AR1660 200PP	AR1660 200PP	06/09/08	2022	3.79	14.13
25	MW04A052008	752931	06/09/08	2046	3.79	14.13
26	MW003052008	752932	06/09/08	2110	3.79	14.13
27	EB-052008	752933	06/09/08	2135	3.79	14.13
28	AR1660 200PP	AR1660 200PP	06/09/08	2159	3.80	14.14
29						
30						
31						
32						

QC LIMITS
TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)
DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
OTHER ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

GC Column: RTX-35 ID: 0.25 (mm) Init. Calib. Date(s): 06/09/08 06/09/08

Instrument ID: 7227_2

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 4.42 DCB: 15.27

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	AR1221 200PP	AR1221 200PP	06/09/08	1041	4.42	15.30
02	AR1232 200PP	AR1232 200PP	06/09/08	1105	4.41	15.29
03	AR1242 200PP	AR1242 200PP	06/09/08	1129	4.42	15.29
04	AR1248 200PP	AR1248 200PP	06/09/08	1153	4.42	15.30
05	AR1254 200PP	AR1254 200PP	06/09/08	1218	4.41	15.29
06	AR1262 200PP	AR1262 200PP	06/09/08	1242	4.42	15.29
07	AR1268 200PP	AR1268 200PP	06/09/08	1306	4.42	15.25
08	AR1660 50PPB	AR1660 50PPB	06/09/08	1330	4.40	15.28
09	AR1660 100PP	AR1660 100PP	06/09/08	1354	4.41	15.28
10	AR1660 200PP	AR1660 200PP	06/09/08	1419	4.40	15.28
11	AR1660 400PP	AR1660 400PP	06/09/08	1443	4.41	15.29
12	AR1660 800PP	AR1660 800PP	06/09/08	1507	4.41	15.29
13	AR1660 ICV	AR1660 ICV	06/09/08	1555	4.42	15.29
14	MBLK052508A	MBLK052508A	06/09/08	1619	4.41	15.29
15	A052508LCS	A052508LCS	06/09/08	1644	4.41	15.29
16	PBLK_SCU	PBLK_SCU	06/09/08	1708	4.41	15.29
17	07A051908	752926	06/09/08	1732	4.41	15.29
18	07A051908MS	752926MS	06/09/08	1756	4.42	15.30
19	07A051908MSD	752926MD	06/09/08	1821	4.42	15.29
20	MW006051908	752927	06/09/08	1845	4.42	15.29
21	MW001051908	752928	06/09/08	1909	4.40	15.27
22	MW005052008	752929	06/09/08	1933	4.41	15.28
23	005052008REP	752930	06/09/08	1957	4.40	15.28
24	AR1660 200PP	AR1660 200PP	06/09/08	2022	4.41	15.28
25	MW04A052008	752931	06/09/08	2046	4.40	15.28
26	MW003052008	752932	06/09/08	2110	4.41	15.28
27	EB-052008	752933	06/09/08	2135	4.40	15.28
28	AR1660 200PP	AR1660 200PP	06/09/08	2159	4.41	15.29
29						
30						
31						
32						

QC LIMITS
TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)
DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

MW04A052008

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Lab Sample ID: 752931 Date(s) Analyzed: 06/09/08 06/09/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	4.22	4.18	4.28	0.040		
Aroclor-1242	2	5.36	5.33	5.43	0.041		
	3	5.52	5.47	5.57	0.028		
COLUMN 1	4	5.63	5.59	5.69	0.034		
	5					0.036	
	1	6.02	5.98	6.08	0.075		
	2	6.52	6.49	6.59	0.043		
	3	6.81	6.78	6.88	0.040		
COLUMN 2	4	7.11	7.07	7.17	0.021		
	5	7.37	7.34	7.44	0.034	0.043	18
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

07A051908MS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Lab Sample ID: 752926MS Date(s) Analyzed: 06/09/08 06/09/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	4.23	4.17	4.27	0.39		
Aroclor-1016	2	4.99	4.93	5.03	0.40		
	3	5.38	5.31	5.41	0.41		
COLUMN 1	4	5.52	5.46	5.56	0.41		
	5	5.64	5.58	5.68	0.41	0.40	
	1	5.31	5.23	5.33	0.40		
	2	6.04	5.97	6.07	0.42		
	3	6.84	6.76	6.86	0.38		
COLUMN 2	4	7.13	7.06	7.16	0.41		
	5	7.39	7.32	7.42	0.43	0.41	2.5
	1	10.69	10.62	10.72	0.37		
Aroclor-1260	2	11.29	11.23	11.33	0.39		
	3	11.89	11.83	11.93	0.40		
COLUMN 1	4	12.41	12.35	12.45	0.47		
	5	12.63	12.57	12.67	0.44	0.42	
	1	12.60	12.53	12.63	0.44		
	2	13.38	13.31	13.41	0.44		
	3	13.87	13.80	13.90	0.43		
COLUMN 2	4	14.45	14.38	14.48	0.42		
	5	14.54	14.47	14.57	0.40	0.42	0.0
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

07A051908MSD

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Lab Sample ID: 752926MD Date(s) Analyzed: 06/09/08 06/09/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	4.23	4.17	4.27	0.39		
Aroclor-1016	2	4.99	4.93	5.03	0.38		
	3	5.38	5.31	5.41	0.37		
COLUMN 1	4	5.52	5.46	5.56	0.36		
	5	5.64	5.58	5.68	0.36	0.37	
	1	5.30	5.23	5.33	0.40		
	2	6.04	5.97	6.07	0.45		
	3	6.83	6.76	6.86	0.42		
COLUMN 2	4	7.13	7.06	7.16	0.41		
	5	7.39	7.32	7.42	0.41	0.42	13
	1	10.68	10.62	10.72	0.37		
Aroclor-1260	2	11.29	11.23	11.33	0.38		
	3	11.89	11.83	11.93	0.43		
COLUMN 1	4	12.41	12.35	12.45	0.49		
	5	12.63	12.57	12.67	0.45	0.42	
	1	12.59	12.53	12.63	0.45		
	2	13.37	13.31	13.41	0.44		
	3	13.87	13.80	13.90	0.43		
COLUMN 2	4	14.44	14.38	14.48	0.42		
	5	14.54	14.47	14.57	0.43	0.43	2.4
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

CLIENT SAMPLE NO.

A052508LCS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Lab Sample ID: A052508LCS Date(s) Analyzed: 06/09/08 06/09/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	4.22	4.17	4.27	0.35		
Aroclor-1016	2	4.99	4.93	5.03	0.35		
	3	5.37	5.31	5.41	0.37		
COLUMN 1	4	5.52	5.46	5.56	0.37		
	5	5.64	5.58	5.68	0.38	0.36	
	1	5.29	5.23	5.33	0.36		
	2	6.03	5.97	6.07	0.40		
	3	6.82	6.76	6.86	0.38		
COLUMN 2	4	7.12	7.06	7.16	0.37		
	5	7.38	7.32	7.42	0.38	0.38	5.4
	1	10.68	10.62	10.72	0.37		
Aroclor-1260	2	11.29	11.23	11.33	0.37		
	3	11.89	11.83	11.93	0.41		
COLUMN 1	4	12.41	12.35	12.45	0.45		
	5	12.63	12.57	12.67	0.43	0.41	
	1	12.59	12.53	12.63	0.42		
	2	13.37	13.31	13.41	0.44		
	3	13.86	13.80	13.90	0.41		
COLUMN 2	4	14.43	14.38	14.48	0.40		
	5	14.53	14.47	14.57	0.41	0.42	2.4
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

TestAmerica
South Burlington, VT

Sample Data Summary Package

SDG: 128692

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

December 29, 2008

TestAmerica Laboratories, Inc.

Ms. Yixian Zhang
Battele
397 Washington Street
Duxbury, MA 02332

Re: Laboratory Project No. 28000
Case: NBH; SDG: 128692

Dear Ms. Zhang:

Enclosed are the analytical results for the samples that were received by TestAmerica Burlington on November 7th, 2008. Laboratory identification numbers were assigned, and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 11/07/08 ETR No: 128692		
774872	MW-07A-110608	11/06/08	WATER
774873	EB-110508	11/05/08	WATER
774874	MW-006-110608	11/06/08	WATER
774875	MW-04B-110508	11/05/08	WATER
774876	MW-04A-110508	11/05/08	WATER
774877	MW-007-110508	11/05/08	WATER
774878	MW-006-110508	11/05/08	WATER
774879	MW-006-110508-REP	11/05/08	WATER

Documentation of the condition of the samples at the time of their receipt and any exception to the laboratory's Sample Acceptance Policy is documented in the Sample Handling section of this submittal.

SW846 Method 8082 – PCB Aroclors:
Due to inherent software limitations, the sample identifications for MW-07A-110608, EB-110508, MW-006-110608, MW-04B-110508, MW-04A-110508, MW-007-110508, MW-006-110508 and MW-006-110508-REP were truncated.

Surrogate percent recoveries were below the advisory control limits in sample MW-007-110508. Re-extraction was performed outside of the method holding time yielding results that were within the control limits and both sets of data were formally presented.

The original analyses of samples MW-006-110508 and MW-006-110508-REP were accomplished at a dilution to get the response of the analyte with the highest concentration within the initial calibration range. The original analysis of sample MW-006-110508-REP exhibited percent recoveries of the surrogate Decachlorobiphenyl (DCB) that were below the advisory control limits. This sample was re-extracted outside the method holding time. The

30 Community Drive Suite 11 South Burlington, VT 05403 **tel** 802.660.1990 **fax** 802.660.1919 **www.testamericainc.com**

DCB recoveries improved, but still did not pass the advisory limits. Both sets of data were formally presented. The analysis of sample MW-006-110508 yielded percent recoveries for the surrogate compound Tetrachloro-m-xylene (TCX) that were high in the more concentrated analysis due to matrix related interference. All surrogate recoveries in the dilution analysis for this sample were within the advisory control limits.

The analysis of sample MW-04B-110508 yielded a percent recovery for the surrogate compound Tetrachloro-m-xylene (TCX) that was above the advisory control limits on the RTX-5 column and is attributed to matrix interference.

The analyses of samples EB-110508, MW-04B-110508 and MW-007-110508 appear to have PCB Aroclor peaks in the early (Aroclor1242) region of the chromatogram. The pattern does not match any of the laboratory calibration standards. The laboratory identified the peaks as a "weathered" pattern of Aroclor1242.

The analyses of samples MW-006-110508 and MW-006-110508-REP appear to have PCB peaks in the Aroclor 1254 region of the chromatogram. Peaks in the early region of Aroclor 1254 are relatively large. The overall pattern is not a good match to the laboratory's calibration standard, although the later eluting portion of the Aroclor 1254 pattern does match the calibration standard.

The analysis of the Continuing Calibration Verification (CCV) standard performed on 12/12/08 at 1517 hours (closing CCV for the re-extracts) exhibited a percent difference for the surrogate Decachlorobiphenyl that was marginally outside the control limits (15%) at 15.8% on the RTX-5 analytical column.

Manual integration of quantitation peaks was performed where necessary. Documentation of each manual integration was provided in the supportive documentation. Secondary review was performed by the laboratory on all of the manual integrations within this submittal. For dual column analyses, the laboratory reported the higher of the two confirmed results for each analyte. Quantitation was performed using peak heights.

Any reference within this report to Severn Trent Laboratories, Inc. or STL, should be understood to refer to TestAmerica Laboratories, Inc. (formerly known as Severn Trent Laboratories, Inc.) The analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the NELAC standard. Release of the data in this test report and any associated electronic deliverables is authorized by the Laboratory Director's designee as verified by the following signature.

If there are any questions regarding this submittal, please contact me at 802 660-1990.

Sincerely,

Ron Pentkowski
Project Manager

Enclosure

TestAmerica Burlington Data Qualifier Definitions

Organic

U: Compound analyzed but not detected at a concentration above the reporting limit.

J: Estimated value.

N: Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds (TICs) where the identification of a compound is based on a mass spectral library search.

P: SW-846: The relative percent difference for detected concentrations between two GC columns is greater than 40%. Unless otherwise specified the higher of the two values is reported on the Form I.

CLP SOW: Greater than 25% difference for detected concentrations between two GC columns. Unless otherwise specified the lower of the two values is reported on the Form I.

C: Pesticide result whose identification has been confirmed by GC/MS.

B: Analyte is found in the sample and the associated method blank. The flag is used for tentatively identified compounds as well as positively identified compounds.

E: Compounds whose concentrations exceed the upper limit of the calibration range of the instrument for that specific analysis.

D: Concentrations identified from analysis of the sample at a secondary dilution.

A: Tentatively identified compound is a suspected aldol condensation product.

X,Y,Z: Laboratory defined flags that may be used alone or combined, as needed. If used, the description of the flag is defined in the project narrative.

Inorganic/Metals

E: Reported value is estimated due to the presence of interference.

N: Matrix spike sample recovery is not within control limits.

* Duplicate sample analysis is not within control limits.

B: The result reported is less than the reporting limit but greater than the instrument detection limit.

U: Analyte was analyzed for but not detected above the reporting limit.

Method Codes:

P	ICP-AES
MS	ICP-MS
CV	Cold Vapor AA
AS	Semi-Automated Spectrophotometric

Battelle
The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
606422	New Bedford Harbor Groundwater

SAMPLERS: ~~Signature~~
Jessica Tenzar

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	Lab ~~BATTELLE~~ ID	Field ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB – Aroclors	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
6/08	0835		MW-07A-110608			✓									2
5/08	1330		① ~~MW-04A~~ EB-110508			✓									2
6/08	1007		MW-006-110608			✓									2

Relinquished by:	Date/Time	Received by:	Date/Time
	11/6/08 ~~0830~~ 1130 ②		11/6/08 1130
	11/6/08 130 PM		11/7/08 1030

Comments:
① please disregard - AEM 11/6/08
② SLB 1130

ORIGINAL

Battelle
The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
60064 22	New Bedford Harbor

SAMPLERS: Signature: Jessica Tenzar

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	Lab ID ~~BATTELLE ID~~	Field ID ~~CLIENT ID~~	SAMPLE DESCRIPTION	PEST	PCB - Aroclors	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
5/08	934		MW-04B-110508			✓									2
5/08	906		MW-04A-110508	Well Dry, use only as needed (half bottle)		✓									2
5/08	1237		MW-007-110508			✓									2
5/08	1244		MW-006-110508			✓									2
5/08	1244		MW-006-110508-REP	Field Duplicate		✓									2

Relinquished by:	Date/Time	Received by:	Date/Time
	11/6/08 0830		11/6/08 1130
	11/6/08 1330		11/7/08 1030

Comments:

ORIGINAL

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sample Data Summary – 8082 PCBS

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

07110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: 774877

Sample wt/vol: 1045 (g/mL) ML Lab File ID: 17DEC080948-R031

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/07/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/17/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.25	
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

07110508RE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: 774877R1

Sample wt/vol: 1050 (g/mL) ML Lab File ID: 11DEC081813-R271

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/07/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/19/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.24	U
11104-28-2	Aroclor-1221	0.24	U
11141-16-5	Aroclor-1232	0.24	U
53469-21-9	Aroclor-1242	18	E
12672-29-6	Aroclor-1248	0.24	U
11097-69-1	Aroclor-1254	0.24	U
11096-82-5	Aroclor-1260	0.24	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

07110508REDL

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: 774877R1D1

Sample wt/vol: 1050 (g/mL) ML Lab File ID: 11DEC081813-R281

% Moisture: _____ decanted: (Y/N) __ Date Received: 11/07/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/19/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 50.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	2.4	U
11104-28-2	Aroclor-1221	2.4	U
11141-16-5	Aroclor-1232	2.4	U
53469-21-9	Aroclor-1242	15	D
12672-29-6	Aroclor-1248	2.4	U
11097-69-1	Aroclor-1254	2.4	U
11096-82-5	Aroclor-1260	2.4	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

10508REP

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: 774879

Sample wt/vol: 1045 (g/mL) ML Lab File ID: 16DEC081437-R081

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/07/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/16/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	1.3	E
11096-82-5	Aroclor-1260	0.048	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

10508REPDL

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: 774879D1

Sample wt/vol: 1045 (g/mL) ML Lab File ID: 16DEC081437-R091

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/07/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/16/08

Injection Volume: 1.0(uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.24	U
11104-28-2	Aroclor-1221	0.24	U
11141-16-5	Aroclor-1232	0.24	U
53469-21-9	Aroclor-1242	0.24	U
12672-29-6	Aroclor-1248	0.24	U
11097-69-1	Aroclor-1254	1.5	D
11096-82-5	Aroclor-1260	0.24	U

FORM 1 BATTEL SAMPLE NO.

OTHER ORGANICS ANALYSIS DATA SHEET

10508REPRE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: 774879R1

Sample wt/vol: 1060 (g/mL) ML Lab File ID: 11DEC081813-R291

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/07/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/19/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	1.7	E
11096-82-5	Aroclor-1260	0.047	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

10508REPREDL

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: 774879R1D1

Sample wt/vol: 1060 (g/mL) ML Lab File ID: 11DEC081813-R301

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/07/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/19/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.24	U
11104-28-2	Aroclor-1221	0.24	U
11141-16-5	Aroclor-1232	0.24	U
53469-21-9	Aroclor-1242	0.24	U
12672-29-6	Aroclor-1248	0.24	U
11097-69-1	Aroclor-1254	1.9	D
11096-82-5	Aroclor-1260	0.24	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

EB-110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: 774873

Sample wt/vol: 1060 (g/mL) ML Lab File ID: 11DEC081813-R131

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/07/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.095	
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW006-110608

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: 774874

Sample wt/vol: 1060 (g/mL) ML Lab File ID: 17DEC080948-R061

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/07/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/17/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW04A-110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: 774876

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 11DEC081813-R161

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/07/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.42	
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.62	
11096-82-5	Aroclor-1260	0.050	

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW04B-110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: 774875

Sample wt/vol: 1020 (g/mL) ML Lab File ID: 11DEC081813-R151

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/07/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.049	U
11104-28-2	Aroclor-1221	0.049	U
11141-16-5	Aroclor-1232	0.049	U
53469-21-9	Aroclor-1242	0.74	
12672-29-6	Aroclor-1248	0.049	U
11097-69-1	Aroclor-1254	0.15	
11096-82-5	Aroclor-1260	0.049	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW07A-110608

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: 774872

Sample wt/vol: 1050 (g/mL) ML Lab File ID: 11DEC081813-R121

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/07/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

W006110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: 774878

Sample wt/vol: 1045 (g/mL) ML Lab File ID: 16DEC081437-R051

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/07/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/16/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	2.6	E
11096-82-5	Aroclor-1260	0.048	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

W006110508DL

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: 774878D1

Sample wt/vol: 1045 (g/mL) ML Lab File ID: 11DEC081813-R171

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/07/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.19	U
11104-28-2	Aroclor-1221	0.19	U
11141-16-5	Aroclor-1232	0.19	U
53469-21-9	Aroclor-1242	0.19	U
12672-29-6	Aroclor-1248	0.19	U
11097-69-1	Aroclor-1254	2.3	D
11096-82-5	Aroclor-1260	0.19	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MBLK111108E

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: MBLK111108E

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 11DEC081813-R091

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MBLK111908E

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: MBLK111908E

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 11DEC081813-R251

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/19/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PBLK_SCU

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: PBLK_SCU

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 11DEC081813-R241

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

E111108LCS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: E111108LCS

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 11DEC081813-R101

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.42	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.48	

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

E111908LCS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: E111908LCS

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 11DEC081813-R261

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/19/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.40	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.47	

FORM 2
WATER OTHER SURROGATE RECOVERY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

GC Column(1): RTX-5 ID: 0.25 (mm) GC Column(2): RTX-35 ID: 0.25 (mm)

	CLIENT SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	MBLK111108E	95	95	105	115			0
02	E111108LCS	92	90	108	115			0
03	MW07A-110608	110	102	81	87			0
04	EB-110508	101	101	103	114			0
05	MW04B-110508	133*	107	82	84			1
06	MW04A-110508	112	112	68	72			0
07	W006110508DL	102	102	70	84			0
08	PBLK_SCU	105	105	105	120*			1
09	MBLK111908E	85	85	90	102			0
10	E111908LCS	82	82	95	110			0
11	07110508RE	60	87	76	94			0
12	07110508REDL	0D	0D	0D	0D			0
13	10508REPRE	87	82	40*	48*			2
14	10508REPREDL	87	85	40D	50D			0
15	W006110508	123*	118*	78	89			2
16	10508REP	70	65	22*	26*			2
17	10508REPDL	68	68	24D	31D			0
18	07110508	18*	1*	2*	2*			4
19	MW006-110608	85	87	42*	50*			2
20								
21								
22								
23								
24								
25								
26								
27								
28								

ADVISORY
QC LIMITS

S1 (TCX) = Tetrachloro-m-xylene (60-115)
S2 (DCB) = Decachlorobiphenyl (65-115)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

FORM 3
WATER OTHER LAB CONTROL SAMPLE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix Spike - Sample No.: E111108LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Aroclor-1016	0.50		0.42	84	65-120
Aroclor-1260	0.50		0.48	96	55-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____

FORM 3
WATER OTHER LAB CONTROL SAMPLE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix Spike - Sample No.: E111908LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Aroclor-1016	0.50		0.40	80	65-120
Aroclor-1260	0.50		0.47	94	55-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____

FORM 4
OTHER METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

MBLK111108E

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: MBLK111108E Lab File ID: 11DEC081813-R091

Matrix (soil/water) WATER Extraction:(SepF/Cont/Sonc) SEPF

Sulfur Cleanup (Y/N) N Date Extracted: 11/11/08

Date Analyzed (1): 12/12/08 Date Analyzed (2): 12/12/08

Time Analyzed (1): 0419 Time Analyzed (2): 0419

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column (1): RTX-5 ID: 0.25(mm) GC Column (2): RTX-35 ID: 0.25(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	E111108LCS	E111108LCS	12/12/08	12/12/08
02	MW07A-110608	774872	12/12/08	12/12/08
03	EB-110508	774873	12/12/08	12/12/08
04	MW04B-110508	774875	12/12/08	12/12/08
05	MW04A-110508	774876	12/12/08	12/12/08
06	W006110508DL	774878D1	12/12/08	12/12/08
07	W006110508	774878	12/16/08	12/16/08
08	10508REP	774879	12/16/08	12/16/08
09	10508REPDL	774879D1	12/16/08	12/16/08
10	07110508	774877	12/17/08	12/17/08
11	MW006-110608	774874	12/17/08	12/17/08
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

COMMENTS:

FORM 4
OTHER METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

MBLK111908E

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: MBLK111908E Lab File ID: 11DEC081813-R251

Matrix (soil/water) WATER Extraction:(SepF/Cont/Sonc) SEPF

Sulfur Cleanup (Y/N) N Date Extracted: 11/19/08

Date Analyzed (1): 12/12/08 Date Analyzed (2): 12/12/08

Time Analyzed (1): 1203 Time Analyzed (2): 1203

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column (1): RTX-5 ID: 0.25(mm) GC Column (2): RTX-35 ID: 0.25(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	E111908LCS	E111908LCS	12/12/08	12/12/08
02	07110508RE	774877R1	12/12/08	12/12/08
03	07110508REDL	774877R1D1	12/12/08	12/12/08
04	10508REPRE	774879R1	12/12/08	12/12/08
05	10508REPREDL	774879R1D1	12/12/08	12/12/08
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

COMMENTS: _____

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_1 Calibration Date(s): 12/11/08 12/11/08

Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1926 2352

LAB FILE ID: RF50: 11DEC081808-RF100: 11DEC081808RF200: 11DEC081808
RF400: 11DEC081808RF800: 11DEC081808

COMPOUND	RF50	RF100	RF200	RF400	RF800
Aroclor-1016	68.400	60.980	60.195	53.800	54.086
(2)	91.100	84.620	84.935	77.690	78.871
(3)	168.240	161.030	164.450	161.600	170.071
(4)	98.100	91.490	91.190	85.378	88.218
(5)	65.360	61.650	61.530	58.530	60.472
Aroclor-1221			31.290		
(2)			23.210		
(3)			73.485		
(4)			15.090		
(5)			10.325		
Aroclor-1232			62.850		
(2)			35.790		
(3)			35.800		
(4)			68.215		
(5)			38.365		
Aroclor-1242			46.235		
(2)			63.865		
(3)			127.345		
(4)			68.945		
(5)			46.840		
Aroclor-1248			35.610		
(2)			28.955		
(3)			75.455		
(4)			34.615		
(5)			27.700		
Aroclor-1254			20.670		
(2)			17.225		
(3)			33.905		
(4)			11.705		
(5)			46.015		
Aroclor-1260	56.460	51.350	52.730	46.085	48.255
(2)	62.240	56.690	58.820	54.048	55.618
(3)	144.740	139.280	148.855	139.948	151.529
(4)	82.880	77.860	79.535	74.770	78.899
(5)	60.260	55.100	56.060	50.162	52.846
Aroclor-1262			32.505		
(2)			70.175		
(3)			31.555		
(4)			169.030		
(5)			60.645		
Aroclor-1268			277.510		
(2)			278.855		
(3)			328.090		
(4)			81.420		

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_1 Calibration Date(s): 12/11/08 12/11/08

Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1926 2352

LAB FILE ID: RF50: 11DEC081808-RF100: 11DEC081808RF200: 11DEC081808
RF400: 11DEC081808RF800: 11DEC081808

COMPOUND	RF50	RF100	RF200	RF400	RF800
(5)			1683.300		
Tetrachloro-m-xylene	2551.800	2446.800	2708.400	2543.300	2830.562
Decachlorobiphenyl	4341.400	4249.800	4400.100	4419.375	4392.650

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_1 Calibration Date(s): 12/11/08 12/11/08

Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1926 2352

COMPOUND	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2	
Aroclor-1016	AVRG	59.4922500	10.074	20.000	
(2)	AVRG	83.4432500	6.460	20.000	
(3)	AVRG	165.078250	2.419	20.000	
(4)	AVRG	90.8750000	5.219	20.000	
(5)	AVRG	61.5085000	4.048	20.000	
Aroclor-1221	AVRG	31.2900000	0.000	20.000	<-
(2)	AVRG	23.2100000	0.000	20.000	<-
(3)	AVRG	73.4850000	0.000	20.000	<-
(4)	AVRG	15.0900000	0.000	20.000	<-
(5)	AVRG	10.3250000	0.000	20.000	<-
Aroclor-1232	AVRG	62.8500000	0.000	20.000	<-
(2)	AVRG	35.7900000	0.000	20.000	<-
(3)	AVRG	35.8000000	0.000	20.000	<-
(4)	AVRG	68.2150000	0.000	20.000	<-
(5)	AVRG	38.3650000	0.000	20.000	<-
Aroclor-1242	AVRG	46.2350000	0.000	20.000	<-
(2)	AVRG	63.8650000	0.000	20.000	<-
(3)	AVRG	127.345000	0.000	20.000	<-
(4)	AVRG	68.9450000	0.000	20.000	<-
(5)	AVRG	46.8400000	0.000	20.000	<-
Aroclor-1248	AVRG	35.6100000	0.000	20.000	<-
(2)	AVRG	28.9550000	0.000	20.000	<-
(3)	AVRG	75.4550000	0.000	20.000	<-
(4)	AVRG	34.6150000	0.000	20.000	<-
(5)	AVRG	27.7000000	0.000	20.000	<-
Aroclor-1254	AVRG	20.6700000	0.000	20.000	<-
(2)	AVRG	17.2250000	0.000	20.000	<-
(3)	AVRG	33.9050000	0.000	20.000	<-
(4)	AVRG	11.7050000	0.000	20.000	<-
(5)	AVRG	46.0150000	0.000	20.000	<-
Aroclor-1260	AVRG	50.9760000	7.884	20.000	
(2)	AVRG	57.4830000	5.524	20.000	
(3)	AVRG	144.870250	3.713	20.000	
(4)	AVRG	78.7887500	3.718	20.000	
(5)	AVRG	54.8857500	6.864	20.000	
Aroclor-1262	AVRG	32.5050000	0.000	20.000	<-
(2)	AVRG	70.1750000	0.000	20.000	<-
(3)	AVRG	31.5550000	0.000	20.000	<-
(4)	AVRG	169.030000	0.000	20.000	<-
(5)	AVRG	60.6450000	0.000	20.000	<-
Aroclor-1268	AVRG	277.510000	0.000	20.000	<-
(2)	AVRG	278.855000	0.000	20.000	<-
(3)	AVRG	328.090000	0.000	20.000	<-
(4)	AVRG	81.4200000	0.000	20.000	<-

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_1 Calibration Date(s): 12/11/08 12/11/08

Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1926 2352

COMPOUND	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2	
(5)	AVRG	1683.30000	0.000	20.000	<-
Tetrachloro-m-xylene	AVRG	2616.17250	5.816	20.000	
Decachlorobiphenyl	AVRG	4360.66500	1.567	20.000	

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_2 Calibration Date(s): 12/11/08 12/11/08

Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1926 2352

LAB FILE ID: RF50: 11DEC081808-RF100: 11DEC081808RF200: 11DEC081808
RF400: 11DEC081808RF800: 11DEC081808

COMPOUND	RF50	RF100	RF200	RF400	RF800
Aroclor-1016	83.680	75.830	72.380	66.235	64.379
(2)	127.960	118.480	112.805	104.752	102.760
(3)	179.160	169.450	171.465	163.000	164.269
(4)	90.700	84.900	84.755	77.358	75.249
(5)	70.880	67.560	67.630	61.342	61.668
Aroclor-1221			40.815		
(2)			29.250		
(3)			88.905		
(4)			14.465		
(5)			18.475		
Aroclor-1232			77.850		
(2)			53.195		
(3)			71.370		
(4)			36.220		
(5)			28.235		
Aroclor-1242			90.300		
(2)			32.155		
(3)			131.865		
(4)			64.605		
(5)			51.355		
Aroclor-1248			45.250		
(2)			79.285		
(3)			32.250		
(4)			26.320		
(5)			30.675		
Aroclor-1254			46.950		
(2)			34.555		
(3)			40.700		
(4)			27.945		
(5)			113.875		
Aroclor-1260	152.100	134.900	138.640	123.288	125.928
(2)	470.080	448.410	482.650	465.010	478.490
(3)	169.340	158.890	160.410	150.000	146.695
(4)	70.500	66.250	65.030	61.880	59.216
(5)	174.300	159.850	160.275	151.798	155.745
Aroclor-1262			109.770		
(2)			54.585		
(3)			75.740		
(4)			85.195		
(5)			502.860		
Aroclor-1268			653.160		
(2)			559.630		
(3)			539.310		
(4)			140.155		

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_2 Calibration Date(s): 12/11/08 12/11/08

Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1926 2352

LAB FILE ID: RF50: 11DEC081808-RF100: 11DEC081808RF200: 11DEC081808
RF400: 11DEC081808RF800: 11DEC081808

COMPOUND	RF50	RF100	RF200	RF400	RF800
(5)			2155.890		
Tetrachloro-m-xylene	3718.800	3451.600	3605.500	3491.100	3695.388
Decachlorobiphenyl	5976.000	5713.900	5665.550	5371.975	5713.012

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_2 Calibration Date(s): 12/11/08 12/11/08

Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1926 2352

COMPOUND	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2	
Aroclor-1016	AVRG	72.5007500	10.713	20.000	
(2)	AVRG	113.351500	9.106	20.000	
(3)	AVRG	169.468750	3.810	20.000	
(4)	AVRG	82.5922500	7.587	20.000	
(5)	AVRG	65.8160000	6.320	20.000	
Aroclor-1221	AVRG	40.8150000	0.000	20.000	<-
(2)	AVRG	29.2500000	0.000	20.000	<-
(3)	AVRG	88.9050000	0.000	20.000	<-
(4)	AVRG	14.4650000	0.000	20.000	<-
(5)	AVRG	18.4750000	0.000	20.000	<-
Aroclor-1232	AVRG	77.8500000	0.000	20.000	<-
(2)	AVRG	53.1950000	0.000	20.000	<-
(3)	AVRG	71.3700000	0.000	20.000	<-
(4)	AVRG	36.2200000	0.000	20.000	<-
(5)	AVRG	28.2350000	0.000	20.000	<-
Aroclor-1242	AVRG	90.3000000	0.000	20.000	<-
(2)	AVRG	32.1550000	0.000	20.000	<-
(3)	AVRG	131.865000	0.000	20.000	<-
(4)	AVRG	64.6050000	0.000	20.000	<-
(5)	AVRG	51.3550000	0.000	20.000	<-
Aroclor-1248	AVRG	45.2500000	0.000	20.000	<-
(2)	AVRG	79.2850000	0.000	20.000	<-
(3)	AVRG	32.2500000	0.000	20.000	<-
(4)	AVRG	26.3200000	0.000	20.000	<-
(5)	AVRG	30.6750000	0.000	20.000	<-
Aroclor-1254	AVRG	46.9500000	0.000	20.000	<-
(2)	AVRG	34.5550000	0.000	20.000	<-
(3)	AVRG	40.7000000	0.000	20.000	<-
(4)	AVRG	27.9450000	0.000	20.000	<-
(5)	AVRG	113.875000	0.000	20.000	<-
Aroclor-1260	AVRG	134.971000	8.489	20.000	
(2)	AVRG	468.928000	2.856	20.000	
(3)	AVRG	157.067000	5.718	20.000	
(4)	AVRG	64.5752500	6.665	20.000	
(5)	AVRG	160.393500	5.301	20.000	
Aroclor-1262	AVRG	109.770000	0.000	20.000	<-
(2)	AVRG	54.5850000	0.000	20.000	<-
(3)	AVRG	75.7400000	0.000	20.000	<-
(4)	AVRG	85.1950000	0.000	20.000	<-
(5)	AVRG	502.860000	0.000	20.000	<-
Aroclor-1268	AVRG	653.160000	0.000	20.000	<-
(2)	AVRG	559.630000	0.000	20.000	<-
(3)	AVRG	539.310000	0.000	20.000	<-
(4)	AVRG	140.155000	0.000	20.000	<-

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_2 Calibration Date(s): 12/11/08 12/11/08

Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1926 2352

COMPOUND	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2	
(5)	AVRG	2155.89000	0.000	20.000	<-
Tetrachloro-m-xylene	AVRG	3592.47750	3.318	20.000	
Decachlorobiphenyl	AVRG	5688.08750	3.777	20.000	

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_1 Calibration Date: 12/12/08 Time: 0507

Lab File ID: 11DEC081813-R1 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-5 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	59.492	59.660		0.3	15.0
(2)	83.443	85.165		2.1	15.0
(3)	165.078	168.200		1.9	15.0
(4)	90.875	92.325		1.6	15.0
(5)	61.508	63.335		3.0	15.0
Aroclor-1260	50.976	50.050		1.8	15.0
(2)	57.483	55.225		3.9	15.0
(3)	144.870	141.415		2.4	15.0
(4)	78.789	78.455		0.4	15.0
(5)	54.886	54.535		0.6	15.0
Tetrachloro-m-xylene	2616.172	2673.300		2.2	15.0
Decachlorobiphenyl	4360.665	4289.400		1.6	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_1 Calibration Date: 12/12/08 Time: 1051

Lab File ID: 11DEC081813-R2 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-5 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	59.492	56.480		5.1	15.0
(2)	83.443	81.020		2.9	15.0
(3)	165.078	167.335		1.4	15.0
(4)	90.875	88.535		2.6	15.0
(5)	61.508	62.470		1.6	15.0
Aroclor-1260	50.976	50.120		1.7	15.0
(2)	57.483	55.695		3.1	15.0
(3)	144.870	141.365		2.4	15.0
(4)	78.789	77.445		1.7	15.0
(5)	54.886	52.735		3.9	15.0
Tetrachloro-m-xylene	2616.172	2462.800		5.9	15.0
Decachlorobiphenyl	4360.665	4388.650		0.6	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_1 Calibration Date: 12/12/08 Time: 1517

Lab File ID: 11DEC081813-R3 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-5 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D	
Aroclor-1016	59.492	60.895		2.4	15.0	
(2)	83.443	85.860		2.9	15.0	
(3)	165.078	171.720		4.0	15.0	
(4)	90.875	95.590		5.2	15.0	
(5)	61.508	65.450		6.4	15.0	
Aroclor-1260	50.976	54.360		6.6	15.0	
(2)	57.483	58.830		2.3	15.0	
(3)	144.870	153.650		6.1	15.0	
(4)	78.789	80.135		1.7	15.0	
(5)	54.886	55.265		0.7	15.0	
Tetrachloro-m-xylene	2616.172	2746.900		5.0	15.0	
Decachlorobiphenyl	4360.665	3670.000		15.8	15.0	<-

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_1 Calibration Date: 12/16/08 Time: 1326

Lab File ID: 16DEC081234-R0 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-5 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	59.492	56.335		5.3	15.0
(2)	83.443	78.975		5.4	15.0
(3)	165.078	156.080		5.4	15.0
(4)	90.875	87.700		3.5	15.0
(5)	61.508	59.875		2.6	15.0
Aroclor-1260	50.976	49.790		2.3	15.0
(2)	57.483	54.905		4.5	15.0
(3)	144.870	138.240		4.6	15.0
(4)	78.789	76.550		2.8	15.0
(5)	54.886	52.745		3.9	15.0
Tetrachloro-m-xylene	2616.172	2597.100		0.7	15.0
Decachlorobiphenyl	4360.665	3990.850		8.5	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_1 Calibration Date: 12/16/08 Time: 1841

Lab File ID: 16DEC081437-R1 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-5 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	59.492	55.205		7.2	15.0
(2)	83.443	77.790		6.8	15.0
(3)	165.078	158.635		3.9	15.0
(4)	90.875	84.910		6.6	15.0
(5)	61.508	58.560		4.8	15.0
Aroclor-1260	50.976	47.700		6.4	15.0
(2)	57.483	54.770		4.7	15.0
(3)	144.870	138.030		4.7	15.0
(4)	78.789	75.010		4.8	15.0
(5)	54.886	52.685		4.0	15.0
Tetrachloro-m-xylene	2616.172	2397.950		8.3	15.0
Decachlorobiphenyl	4360.665	4150.850		4.8	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_1 Calibration Date: 12/17/08 Time: 1015

Lab File ID: 17DEC080948-R0 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-5 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	59.492	60.895		2.4	15.0
(2)	83.443	84.375		1.1	15.0
(3)	165.078	167.135		1.2	15.0
(4)	90.875	93.775		3.2	15.0
(5)	61.508	64.550		4.9	15.0
Aroclor-1260	50.976	51.535		1.1	15.0
(2)	57.483	57.870		0.7	15.0
(3)	144.870	145.875		0.7	15.0
(4)	78.789	77.945		1.1	15.0
(5)	54.886	54.180		1.3	15.0
Tetrachloro-m-xylene	2616.172	2752.900		5.2	15.0
Decachlorobiphenyl	4360.665	4321.050		0.9	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_1 Calibration Date: 12/17/08 Time: 1217

Lab File ID: 17DEC080948-R0 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-5 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	59.492	60.850		2.3	15.0
(2)	83.443	83.455		0.0	15.0
(3)	165.078	167.315		1.4	15.0
(4)	90.875	92.810		2.1	15.0
(5)	61.508	63.835		3.8	15.0
Aroclor-1260	50.976	51.180		0.4	15.0
(2)	57.483	57.400		0.1	15.0
(3)	144.870	148.900		2.8	15.0
(4)	78.789	76.415		3.0	15.0
(5)	54.886	55.410		1.0	15.0
Tetrachloro-m-xylene	2616.172	2710.850		3.6	15.0
Decachlorobiphenyl	4360.665	4238.300		2.8	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_2 Calibration Date: 12/12/08 Time: 0507

Lab File ID: 11DEC081813-R1 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-35 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	72.501	72.980		0.7	15.0
(2)	113.351	113.265		0.1	15.0
(3)	169.469	172.700		1.9	15.0
(4)	82.592	85.305		3.3	15.0
(5)	65.816	68.465		4.0	15.0
Aroclor-1260	134.971	139.595		3.4	15.0
(2)	468.928	519.625		10.8	15.0
(3)	157.067	168.365		7.2	15.0
(4)	64.575	70.325		8.9	15.0
(5)	160.394	177.765		10.8	15.0
Tetrachloro-m-xylene	3592.478	3650.150		1.6	15.0
Decachlorobiphenyl	5688.087	6337.500		11.4	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_2 Calibration Date: 12/12/08 Time: 1051

Lab File ID: 11DEC081813-R2 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-35 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	72.501	69.865		3.6	15.0
(2)	113.351	112.620		0.6	15.0
(3)	169.469	174.240		2.8	15.0
(4)	82.592	84.440		2.2	15.0
(5)	65.816	66.745		1.4	15.0
Aroclor-1260	134.971	140.875		4.4	15.0
(2)	468.928	530.305		13.1	15.0
(3)	157.067	167.825		6.8	15.0
(4)	64.575	70.800		9.6	15.0
(5)	160.394	178.330		11.2	15.0
Tetrachloro-m-xylene	3592.478	3460.550		3.7	15.0
Decachlorobiphenyl	5688.087	6355.900		11.7	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_2 Calibration Date: 12/12/08 Time: 1517

Lab File ID: 11DEC081813-R3 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-35 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	72.501	75.585		4.2	15.0
(2)	113.351	115.505		1.9	15.0
(3)	169.469	177.420		4.7	15.0
(4)	82.592	87.655		6.1	15.0
(5)	65.816	69.610		5.8	15.0
Aroclor-1260	134.971	153.145		13.5	15.0
(2)	468.928	532.065		13.5	15.0
(3)	157.067	164.260		4.6	15.0
(4)	64.575	63.315		2.0	15.0
(5)	160.394	155.755		2.9	15.0
Tetrachloro-m-xylene	3592.478	3798.200		5.7	15.0
Decachlorobiphenyl	5688.087	5391.200		5.2	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_2 Calibration Date: 12/16/08 Time: 1326

Lab File ID: 16DEC081234-R0 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-35 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	72.501	67.770		6.5	15.0
(2)	113.351	106.695		5.9	15.0
(3)	169.469	162.995		3.8	15.0
(4)	82.592	79.265		4.0	15.0
(5)	65.816	63.810		3.0	15.0
Aroclor-1260	134.971	133.030		1.4	15.0
(2)	468.928	517.730		10.4	15.0
(3)	157.067	170.405		8.5	15.0
(4)	64.575	72.285		11.9	15.0
(5)	160.394	174.660		8.9	15.0
Tetrachloro-m-xylene	3592.478	3552.450		1.1	15.0
Decachlorobiphenyl	5688.087	6165.050		8.4	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_2 Calibration Date: 12/16/08 Time: 1841

Lab File ID: 16DEC081437-R1 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-35 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	72.501	66.695		8.0	15.0
(2)	113.351	108.775		4.0	15.0
(3)	169.469	164.600		2.9	15.0
(4)	82.592	81.140		1.8	15.0
(5)	65.816	64.685		1.7	15.0
Aroclor-1260	134.971	135.035		0.0	15.0
(2)	468.928	503.160		7.3	15.0
(3)	157.067	170.730		8.7	15.0
(4)	64.575	71.385		10.5	15.0
(5)	160.394	172.940		7.8	15.0
Tetrachloro-m-xylene	3592.478	3443.550		4.1	15.0
Decachlorobiphenyl	5688.087	6159.450		8.3	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_2 Calibration Date: 12/17/08 Time: 1015

Lab File ID: 17DEC080948-R0 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-35 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D	
Aroclor-1016	72.501	72.760		0.4	15.0	
(2)	113.351	113.800		0.4	15.0	
(3)	169.469	175.615		3.6	15.0	
(4)	82.592	85.170		3.1	15.0	
(5)	65.816	69.395		5.4	15.0	
Aroclor-1260	134.971	141.265		4.7	15.0	
(2)	468.928	535.350		14.2	15.0	
(3)	157.067	182.860		16.4	15.0	<-
(4)	64.575	75.300		16.6	15.0	<-
(5)	160.394	182.405		13.7	15.0	
Tetrachloro-m-xylene	3592.478	3857.250		7.4	15.0	
Decachlorobiphenyl	5688.087	6449.600		13.4	15.0	

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Instrument ID: 7227_2 Calibration Date: 12/17/08 Time: 1217

Lab File ID: 17DEC080948-R0 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-35 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D	
Aroclor-1016	72.501	72.895		0.5	15.0	
(2)	113.351	114.465		1.0	15.0	
(3)	169.469	174.015		2.7	15.0	
(4)	82.592	85.090		3.0	15.0	
(5)	65.816	68.075		3.4	15.0	
Aroclor-1260	134.971	145.960		8.1	15.0	
(2)	468.928	532.535		13.6	15.0	
(3)	157.067	184.135		17.2	15.0	<-
(4)	64.575	75.255		16.5	15.0	<-
(5)	160.394	184.520		15.0	15.0	<-
Tetrachloro-m-xylene	3592.478	3792.050		5.6	15.0	
Decachlorobiphenyl	5688.087	6487.400		14.0	15.0	

FORM 8
OTHER ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

GC Column: RTX-5 ID: 0.25 (mm) Init. Calib. Date(s): 12/11/08 12/11/08

Instrument ID: 7227_1

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

					MEAN SURROGATE RT FROM INITIAL CALIBRATION TCX: 3.23 DCB: 13.34	
	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	AR1221 200PP	AR1221 200PP	12/11/08	1926	3.24	13.34
02	AR1232 200PP	AR1232 200PP	12/11/08	1950	3.24	13.34
03	AR1242 200PP	AR1242 200PP	12/11/08	2014	3.24	13.35
04	AR1248 200PP	AR1248 200PP	12/11/08	2039	3.23	13.34
05	AR1254 200PP	AR1254 200PP	12/11/08	2103	3.23	13.33
06	AR1262 200PP	AR1262 200PP	12/11/08	2127	3.23	13.34
07	AR1268 200PP	AR1268 200PP	12/11/08	2151	3.23	13.33
08	AR1660 50PPB	AR1660 50PPB	12/11/08	2215	3.23	13.33
09	AR1660 100PP	AR1660 100PP	12/11/08	2240	3.23	13.33
10	AR1660 200PP	AR1660 200PP	12/11/08	2304	3.23	13.34
11	AR1660 400PP	AR1660 400PP	12/11/08	2328	3.23	13.34
12	AR1660 800PP	AR1660 800PP	12/11/08	2352	3.23	13.34
13	AR1660 ICV	AR1660 ICV	12/12/08	0041	3.23	13.34
14	MBLK111108E	MBLK111108E	12/12/08	0419	3.23	13.34
15	E111108LCS	E111108LCS	12/12/08	0443	3.23	13.33
16	AR1660 200PP	AR1660 200PP	12/12/08	0507	3.23	13.33
17	MW07A-110608	774872	12/12/08	0648	3.24	13.35
18	EB-110508	774873	12/12/08	0713	3.23	13.34
19	MW04B-110508	774875	12/12/08	0801	3.23	13.34
20	MW04A-110508	774876	12/12/08	0825	3.23	13.34
21	W006110508DL	774878D1	12/12/08	0849	3.24	13.34
22	AR1660 200PP	AR1660 200PP	12/12/08	1051	3.23	13.33
23	PBLK_SCU	PBLK_SCU	12/12/08	1139	3.23	13.34
24	MBLK111908E	MBLK111908E	12/12/08	1203	3.23	13.34
25	E111908LCS	E111908LCS	12/12/08	1227	3.23	13.34
26	07110508RE	774877R1	12/12/08	1252	3.26	13.34
27	07110508REDL	774877R1D1	12/12/08	1316		
28	10508REPRE	774879R1	12/12/08	1340	3.23	13.34
29	10508REPREDL	774879R1D1	12/12/08	1404	3.23	13.34
30	AR1660 200PP	AR1660 200PP	12/12/08	1517	3.24	13.34
31	AR1660 200PP	AR1660 200PP	12/16/08	1326	3.24	13.34
32	W006110508	774878	12/16/08	1616	3.23	13.33

QC LIMITS

TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)
DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
OTHER ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

GC Column: RTX-5 ID: 0.25 (mm) Init. Calib. Date(s): 12/11/08 12/11/08

Instrument ID: 7227_1

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 3.23 DCB: 13.34

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	10508REP	774879	12/16/08	1728	3.23	13.33
02	10508REPDL	774879D1	12/16/08	1752	3.23	13.33
03	AR1660 200PP	AR1660 200PP	12/16/08	1841	3.23	13.34
04	AR1660 200PP	AR1660 200PP	12/17/08	1015	3.23	13.33
05	07110508	774877	12/17/08	1040	3.23	13.34
06	MW006-110608	774874	12/17/08	1152	3.21	13.32
07	AR1660 200PP	AR1660 200PP	12/17/08	1217	3.23	13.33
08						
09						
10						
11						
12						
13						
14						
15						
16						
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21						
22						
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26						
27						
28						
29						
30						
31						
32						

QC LIMITS

TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)
DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
OTHER ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

GC Column: RTX-35 ID: 0.25 (mm) Init. Calib. Date(s): 12/11/08 12/11/08

Instrument ID: 7227_2

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 3.86 DCB: 14.57

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	AR1221 200PP	AR1221 200PP	12/11/08	1926	3.87	14.58
02	AR1232 200PP	AR1232 200PP	12/11/08	1950	3.87	14.57
03	AR1242 200PP	AR1242 200PP	12/11/08	2014	3.87	14.57
04	AR1248 200PP	AR1248 200PP	12/11/08	2039	3.85	14.56
05	AR1254 200PP	AR1254 200PP	12/11/08	2103	3.85	14.56
06	AR1262 200PP	AR1262 200PP	12/11/08	2127	3.86	14.57
07	AR1268 200PP	AR1268 200PP	12/11/08	2151	3.85	14.56
08	AR1660 50PPB	AR1660 50PPB	12/11/08	2215	3.86	14.57
09	AR1660 100PP	AR1660 100PP	12/11/08	2240	3.86	14.56
10	AR1660 200PP	AR1660 200PP	12/11/08	2304	3.86	14.57
11	AR1660 400PP	AR1660 400PP	12/11/08	2328	3.86	14.57
12	AR1660 800PP	AR1660 800PP	12/11/08	2352	3.86	14.56
13	AR1660 ICV	AR1660 ICV	12/12/08	0041	3.87	14.57
14	MBLK111108E	MBLK111108E	12/12/08	0419	3.85	14.56
15	E111108LCS	E111108LCS	12/12/08	0443	3.85	14.55
16	AR1660 200PP	AR1660 200PP	12/12/08	0507	3.85	14.56
17	MW07A-110608	774872	12/12/08	0648	3.85	14.57
18	EB-110508	774873	12/12/08	0713	3.86	14.57
19	MW04B-110508	774875	12/12/08	0801	3.86	14.57
20	MW04A-110508	774876	12/12/08	0825	3.86	14.57
21	W006110508DL	774878D1	12/12/08	0849	3.86	14.56
22	AR1660 200PP	AR1660 200PP	12/12/08	1051	3.86	14.56
23	PBLK_SCU	PBLK_SCU	12/12/08	1139	3.86	14.57
24	MBLK111908E	MBLK111908E	12/12/08	1203	3.85	14.56
25	E111908LCS	E111908LCS	12/12/08	1227	3.86	14.56
26	07110508RE	774877R1	12/12/08	1252	3.86	14.56
27	07110508REDL	774877R1D1	12/12/08	1316		
28	10508REPRE	774879R1	12/12/08	1340	3.85	14.56
29	10508REPREDL	774879R1D1	12/12/08	1404	3.86	14.57
30	AR1660 200PP	AR1660 200PP	12/12/08	1517	3.86	14.57
31	AR1660 200PP	AR1660 200PP	12/16/08	1326	3.86	14.57
32	W006110508	774878	12/16/08	1616	3.85	14.55

QC LIMITS

TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)
DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
OTHER ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

GC Column: RTX-35 ID: 0.25 (mm) Init. Calib. Date(s): 12/11/08 12/11/08

Instrument ID: 7227_2

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

					MEAN SURROGATE RT FROM INITIAL CALIBRATION TCX: 3.86 DCB: 14.57	
	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	10508REP	774879	12/16/08	1728	3.85	14.56
02	10508REPDL	774879D1	12/16/08	1752	3.86	14.56
03	AR1660 200PP	AR1660 200PP	12/16/08	1841	3.86	14.56
04	AR1660 200PP	AR1660 200PP	12/17/08	1015	3.85	14.55
05	07110508	774877	12/17/08	1040	3.87	14.57
06	MW006-110608	774874	12/17/08	1152	3.84	14.55
07	AR1660 200PP	AR1660 200PP	12/17/08	1217	3.85	14.55
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

QC LIMITS

TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)
DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

07110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774877 Date(s) Analyzed: 12/17/08 12/17/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	4.59	4.54	4.64	0.21		
Aroclor-1242	2	4.71	4.66	4.76	0.26		
	3	4.80	4.76	4.86	0.29		
COLUMN 1	4						
	5					0.25	
	1	5.88	5.84	5.94	0.21		
	2	6.13	6.09	6.19	0.24		
	3	6.36	6.31	6.41	0.28		
COLUMN 2	4						
	5					0.24	4.1
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

07110508RE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774877R1 Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	4.09	4.03	4.13	27		
Aroclor-1242	2	4.58	4.54	4.64	13		
	3	4.70	4.66	4.76	15		
COLUMN 1	4	4.80	4.76	4.86	17		
	5					18	
	1	5.87	5.84	5.94	13		
	2	6.13	6.09	6.19	13		
	3	6.35	6.31	6.41	16		
COLUMN 2	4						
	5					14	25
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

07110508REDL

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774877R1D1 Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	4.58	4.54	4.64	13		
Aroclor-1242	2	4.71	4.66	4.76	16		
	3	4.80	4.76	4.86	17		
COLUMN 1	4						
	5					15	
	1	5.87	5.84	5.94	13		
	2	6.12	6.09	6.19	15		
	3	6.35	6.31	6.41	17		
COLUMN 2	4						
	5					15	0.0
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

10508REP

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774879 Date(s) Analyzed: 12/16/08 12/16/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	6.48	6.43	6.53	0.95		
Aroclor-1254	2	6.78	6.73	6.83	0.99		
	3	6.88	6.83	6.93	0.99		
COLUMN 1	4	6.96	6.91	7.01	1.1		
	5	7.60	7.55	7.65	0.65	0.93	
	1	8.69	8.64	8.74	1.9		
	2	9.02	8.98	9.08	1.3		
	3	9.33	9.29	9.39	1.4		
COLUMN 2	4	9.93	9.88	9.98	0.76		
	5					1.3	33
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

10508REPDL

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774879D1 Date(s) Analyzed: 12/16/08 12/16/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	6.48	6.43	6.53	1.2		
Aroclor-1254	2	6.78	6.73	6.83	1.3		
	3	6.88	6.83	6.93	1.1		
COLUMN 1	4	6.96	6.91	7.01	1.4		
	5	7.60	7.55	7.65	0.71	1.1	
	1	8.69	8.64	8.74	2.1		
	2	9.03	8.98	9.08	1.5		
	3	9.34	9.29	9.39	1.5		
COLUMN 2	4	9.93	9.88	9.98	0.78		
	5					1.5	31
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

10508REPRE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774879R1 Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	6.48	6.43	6.53	1.2		
Aroclor-1254	2	6.79	6.73	6.83	1.3		
	3	6.88	6.83	6.93	1.4		
COLUMN 1	4	6.96	6.91	7.01	1.4		
	5	7.61	7.55	7.65	0.88	1.2	
	1	8.69	8.64	8.74	2.4		
	2	9.34	9.29	9.39	1.8		
	3	9.94	9.88	9.98	0.95		
COLUMN 2	4						
	5					1.7	34
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

10508REPREDL

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774879R1D1 Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	6.49	6.43	6.53	1.5		
Aroclor-1254	2	6.79	6.73	6.83	1.6		
	3	6.89	6.83	6.93	1.5		
COLUMN 1	4	6.97	6.91	7.01	1.7		
	5	7.61	7.55	7.65	0.93	1.4	
	1	8.70	8.64	8.74	2.7		
	2	9.35	9.29	9.39	1.9		
	3	9.94	9.88	9.98	1.00		
COLUMN 2	4						
	5					1.9	30
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

EB-110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774873 Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	3.65	3.60	3.70	0.12		
Aroclor-1242	2	4.08	4.03	4.13	0.12		
	3	4.59	4.54	4.64	0.061		
COLUMN 1	4	4.71	4.66	4.76	0.072		
	5	4.80	4.76	4.86	0.079	0.091	
	1	5.22	5.17	5.27	0.12		
	2	5.54	5.50	5.60	0.15		
	3	5.88	5.84	5.94	0.062		
COLUMN 2	4	6.13	6.09	6.19	0.069		
	5	6.35	6.31	6.41	0.078	0.095	4.3
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

MW04A-110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774876 Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	3.65	3.60	3.70	0.12		
Aroclor-1242	2	4.08	4.03	4.13	0.41		
	3	4.59	4.54	4.64	0.48		
COLUMN 1	4	4.71	4.66	4.76	0.22		
	5	4.80	4.76	4.86	0.36	0.32	
	1	5.21	5.17	5.27	0.44		
	2	5.88	5.84	5.94	0.47		
	3	6.35	6.31	6.41	0.35		
COLUMN 2	4						
	5					0.42	27
	1	6.49	6.43	6.53	0.49		
Aroclor-1254	2	6.79	6.73	6.83	0.50		
	3	6.89	6.83	6.93	0.51		
COLUMN 1	4	6.97	6.91	7.01	0.54		
	5	7.61	7.55	7.65	0.44	0.50	
	1	8.45	8.38	8.48	0.70		
	2	8.70	8.64	8.74	0.65		
	3	9.04	8.98	9.08	0.61		
COLUMN 2	4	9.35	9.29	9.39	0.63		
	5	9.94	9.88	9.98	0.48	0.62	21
	1	9.15	9.10	9.20	0.045		
Aroclor-1260	2	9.72	9.67	9.77	0.058		
	3	10.44	10.39	10.49	0.045		
COLUMN 1	4	11.20	11.15	11.25	0.077		
	5	11.52	11.47	11.57	0.024	0.050	
	1	11.60	11.55	11.65	0.049		
	2	12.56	12.51	12.61	0.057		
	3	13.11	13.06	13.16	0.042		
COLUMN 2	4	13.73	13.68	13.78	0.025		
	5	13.85	13.80	13.90	0.025	0.039	25

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

MW04B-110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774875 Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	4.58	4.54	4.64	0.85		
Aroclor-1242	2	4.71	4.66	4.76	0.53		
	3	4.80	4.76	4.86	0.84		
COLUMN 1	4						
	5					0.74	
	1	5.88	5.84	5.94	0.81		
	2	6.13	6.09	6.19	0.45		
	3	6.36	6.31	6.41	0.77		
COLUMN 2	4						
	5					0.68	8.5
	1	6.48	6.43	6.53	0.19		
Aroclor-1254	2	6.78	6.73	6.83	0.12		
	3	6.88	6.83	6.93	0.071		
COLUMN 1	4	6.96	6.91	7.01	0.094		
	5	7.61	7.55	7.65	0.13	0.12	
	1	8.44	8.38	8.48	0.21		
	2	8.70	8.64	8.74	0.15		
	3	9.04	8.98	9.08	0.15		
COLUMN 2	4	9.35	9.29	9.39	0.096		
	5	9.94	9.88	9.98	0.14	0.15	22
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

W006110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774878 Date(s) Analyzed: 12/16/08 12/16/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	6.47	6.43	6.53	1.7		
Aroclor-1254	2	6.77	6.73	6.83	1.8		
	3	6.87	6.83	6.93	1.9		
COLUMN 1	4	6.95	6.91	7.01	2.0		
	5	7.60	7.55	7.65	1.3	1.8	
	1	8.68	8.64	8.74	3.7		
	2	9.02	8.98	9.08	2.6		
	3	9.33	9.29	9.39	2.7		
COLUMN 2	4	9.92	9.88	9.98	1.5		
	5					2.6	36
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

W006110508DL

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774878D1 Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	6.49	6.43	6.53	1.8		
Aroclor-1254	2	6.79	6.73	6.83	1.8		
	3	6.89	6.83	6.93	1.7		
COLUMN 1	4	6.97	6.91	7.01	2.0		
	5	7.61	7.55	7.65	1.1	1.7	
	1	8.70	8.64	8.74	3.3		
	2	9.04	8.98	9.08	2.3		
	3	9.35	9.29	9.39	2.4		
COLUMN 2	4	9.94	9.88	9.98	1.2		
	5					2.3	30
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

CLIENT SAMPLE NO.

E111108LCS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: E111108LCS Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	3.64	3.59	3.69	0.41		
Aroclor-1016	2	4.27	4.23	4.33	0.41		
	3	4.58	4.54	4.64	0.44		
COLUMN 1	4	4.70	4.66	4.76	0.42		
	5	4.79	4.75	4.85	0.44	0.42	
	1	4.58	4.55	4.65	0.41		
	2	5.20	5.16	5.26	0.41		
	3	5.87	5.83	5.93	0.42		
COLUMN 2	4	6.12	6.08	6.18	0.42		
	5	6.34	6.30	6.40	0.43	0.42	0.0
	1	9.14	9.10	9.20	0.43		
Aroclor-1260	2	9.71	9.67	9.77	0.45		
	3	10.43	10.39	10.49	0.47		
COLUMN 1	4	11.19	11.15	11.25	0.46		
	5	11.51	11.47	11.57	0.44	0.45	
	1	11.58	11.55	11.65	0.45		
	2	12.54	12.51	12.61	0.51		
	3	13.10	13.06	13.16	0.49		
COLUMN 2	4	13.71	13.68	13.78	0.47		
	5	13.83	13.80	13.90	0.49	0.48	6.5
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

CLIENT SAMPLE NO.

E111908LCS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: E111908LCS Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	3.64	3.59	3.69	0.38		
Aroclor-1016	2	4.27	4.23	4.33	0.33		
	3	4.58	4.54	4.64	0.39		
COLUMN 1	4	4.70	4.66	4.76	0.40		
	5	4.80	4.75	4.85	0.42	0.38	
	1	4.59	4.55	4.65	0.35		
	2	5.20	5.16	5.26	0.40		
	3	5.87	5.83	5.93	0.43		
COLUMN 2	4	6.13	6.08	6.18	0.42		
	5	6.35	6.30	6.40	0.43	0.40	5.1
	1	9.14	9.10	9.20	0.41		
Aroclor-1260	2	9.71	9.67	9.77	0.41		
	3	10.44	10.39	10.49	0.44		
COLUMN 1	4	11.19	11.15	11.25	0.43		
	5	11.52	11.47	11.57	0.39	0.41	
	1	11.59	11.55	11.65	0.44		
	2	12.55	12.51	12.61	0.51		
	3	13.11	13.06	13.16	0.46		
COLUMN 2	4	13.72	13.68	13.78	0.45		
	5	13.84	13.80	13.90	0.46	0.47	14
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

TestAmerica
South Burlington, VT

Sample Data Summary Package

SDG: 128717

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

December 31, 2008

TestAmerica Laboratories, Inc.

Ms. Yixian Zhang
Battele
Duxbury Operations
397 Washington Street
Duxbury, MA 02332

Re: Laboratory Project No. NBH
Case: NBH; SDG: 128717

Dear Ms. Zhang:

Enclosed are the analytical results for the samples that were received by TestAmerica Burlington on November 8th, 2008. Laboratory identification numbers were assigned, and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 11/08/08 ETR No: 128717		
775142	MW-001-110608	11/06/08	WATER
775143	MW-005-110608	11/06/08	WATER
775144	MW-04A-110708	11/07/08	WATER
775145	MW-003-110708	11/07/08	WATER

Documentation of the condition of the samples at the time of their receipt and any exception to the laboratory's Sample Acceptance Policy is documented in the Sample Handling section of this submittal.

SW846 Method 8082 – PCB Aroclors:
Due to inherent software limitations, the sample identifications for MW-001-110608, MW-005-110608, MW-04A-110708 and MW-003-110708 were truncated.

Sample MW-04A-110708 exhibited a significant amount of matrix interference in the early region of the chromatogram. The interference exceeded the detector capacity in the 3-fold dilution analysis. A further, 30.3-fold dilution was performed to minimize the matrix effect of the interference in this sample. There were no identifiable Aroclor patterns in this region.

The recoveries of the surrogate compound Tetrachloro-m-xylene (TCX) were outside the advisory control limits (60-115%) in the analysis of the sample MW-04A-110708. The analysis of sample MW-005-110608 yielded a percent recovery of the surrogate compound Decachlorobiphenyl (DCB) on the RTX-5 analytical column that was marginally below the advisory control limits (65-115%) at 64%. However, the DCB percent recovery was within the control limits on the RTX-35 column. The TCX percent recoveries were within the advisory control limits on both columns for sample MW-005-110608. The laboratory attributes these anomalies to matrix interference.

30 Community Drive Suite 11 South Burlington, VT 05403 **tel** 802.660.1990 **fax** 802.660.1919 **www.testamericainc.com**

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

The analysis of the Continuing Calibration Verification (CCV) standard performed on 12/12/08 at 1517 hours exhibited a percent difference for the surrogate Decachlorobiphenyl that was marginally outside the control limits (15%) at 15.8% on the RTX-5 analytical column.

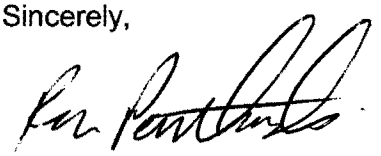
Manual integration of quantitation peaks was performed where necessary. Documentation of each manual integration was provided in the supportive documentation. Secondary review was performed by the laboratory on all of the manual integrations within this submittal.

For dual column analyses, the laboratory reported the higher of the two confirmed results for each analyte.

Any reference within this report to Severn Trent Laboratories, Inc. or STL, should be understood to refer to TestAmerica Laboratories, Inc. (formerly known as Severn Trent Laboratories, Inc.) The analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the NELAC standard. Release of the data in this test report and any associated electronic deliverables is authorized by the Laboratory Director's designee as verified by the following signature.

If there are any questions regarding this submittal, please contact me at 802 660-1990.

Sincerely,



Ron Pentkowski
Project Manager

Enclosure

TestAmerica Burlington Data Qualifier Definitions

Organic

U: Compound analyzed but not detected at a concentration above the reporting limit.

J: Estimated value.

N: Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds (TICs) where the identification of a compound is based on a mass spectral library search.

P: SW-846: The relative percent difference for detected concentrations between two GC columns is greater than 40%. Unless otherwise specified the higher of the two values is reported on the Form I.

CLP SOW: Greater than 25% difference for detected concentrations between two GC columns. Unless otherwise specified the lower of the two values is reported on the Form I.

C: Pesticide result whose identification has been confirmed by GC/MS.

B: Analyte is found in the sample and the associated method blank. The flag is used for tentatively identified compounds as well as positively identified compounds.

E: Compounds whose concentrations exceed the upper limit of the calibration range of the instrument for that specific analysis.

D: Concentrations identified from analysis of the sample at a secondary dilution.

A: Tentatively identified compound is a suspected aldol condensation product.

X,Y,Z: Laboratory defined flags that may be used alone or combined, as needed. If used, the description of the flag is defined in the project narrative.

Inorganic/Metals

E: Reported value is estimated due to the presence of interference.

N: Matrix spike sample recovery is not within control limits.

* Duplicate sample analysis is not within control limits.

B: The result reported is less than the reporting limit but greater than the instrument detection limit.

U: Analyte was analyzed for but not detected above the reporting limit.

Method Codes:

P	ICP-AES
MS	ICP-MS
CV	Cold Vapor AA
AS	Semi-Automated Spectrophotometric

Ship to: Test America - Burlington

Battelle
The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
66066422	NBH - Groundwater

SAMPLERS: Signature
J. Tenzan, M. Fitzpatrick, P. Curran

DATE	TIME	Lab ID ~~BATTELLE ID~~	Field ID ~~CLIENT ID~~	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED 4°C	Total Number of Containers
				ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"											
11/6/08	1222		MW-001-110608	Groundwater Location Sawyer St		✓								✓	2
↓	1305		MW-005-110608			✓								✓	2
11/7/08	0859		MW-04A-110708			✓								✓	2
11/7/08	~~1007~~ 0923		MW-003-110708			✓								✓	2
	0923		~~MW-003-110708-PCB~~ REP②			✓									2 ③

Relinquished by:	Date/Time	Received by:	Date/Time
J. Tenzan	11/7/08 1330	Lab TA Burlington	11/08/08 0940
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:
② S/B 0923 JMT 11/7/08
~~② S/B MW-003-110708-REP~~
③ Please ignore JMT 11/7/08

ORIGINAL

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sample Data Summary – 8082 PCBS

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW001-110608

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Matrix: (soil/water) WATER Lab Sample ID: 775142

Sample wt/vol: 1045 (g/mL) ML Lab File ID: 11DEC081813-R181

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/08/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12674-11-2	Aroclor-1016	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11096-82-5	Aroclor-1260	0.048	U
11097-69-1	Aroclor-1254	0.048	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW003-110708

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Matrix: (soil/water) WATER Lab Sample ID: 775145

Sample wt/vol: 1050 (g/mL) ML Lab File ID: 11DEC081813-R231

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/08/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

W005110608

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Matrix: (soil/water) WATER Lab Sample ID: 775143

Sample wt/vol: 1025 (g/mL) ML Lab File ID: 16DEC081437-R011

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/08/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/16/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.049	U
11104-28-2	Aroclor-1221	0.049	U
11141-16-5	Aroclor-1232	0.049	U
53469-21-9	Aroclor-1242	0.049	U
12672-29-6	Aroclor-1248	0.049	U
11097-69-1	Aroclor-1254	0.032	J
11096-82-5	Aroclor-1260	0.049	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

W04A110708

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Matrix: (soil/water) WATER Lab Sample ID: 775144

Sample wt/vol: 1040 (g/mL) ML Lab File ID: 16DEC081437-R031

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/08/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/16/08

Injection Volume: 1.0(uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.14	U
11104-28-2	Aroclor-1221	0.14	U
11141-16-5	Aroclor-1232	0.14	U
53469-21-9	Aroclor-1242	0.14	U
12672-29-6	Aroclor-1248	0.14	U
11097-69-1	Aroclor-1254	0.14	U
11096-82-5	Aroclor-1260	0.14	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

W04A110708DL

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Matrix: (soil/water) WATER Lab Sample ID: 775144D1

Sample wt/vol: 1040 (g/mL) ML Lab File ID: 16DEC081437-R041

% Moisture: _____ decanted: (Y/N)___ Date Received: 11/08/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/16/08

Injection Volume: 1.0(uL) Dilution Factor: 30.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	1.4	U
11104-28-2	Aroclor-1221	1.4	U
11141-16-5	Aroclor-1232	1.4	U
53469-21-9	Aroclor-1242	1.4	U
12672-29-6	Aroclor-1248	1.4	U
11097-69-1	Aroclor-1254	1.4	U
11096-82-5	Aroclor-1260	1.4	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MBLK111108E

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Matrix: (soil/water) WATER Lab Sample ID: MBLK111108E

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 11DEC081813-R091

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12674-11-2	Aroclor-1016	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11096-82-5	Aroclor-1260	0.050	U
11097-69-1	Aroclor-1254	0.050	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PBLK_SCU

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Matrix: (soil/water) WATER Lab Sample ID: PBLK_SCU

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 16DEC081437-R101

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/16/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

E111108LCS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Matrix: (soil/water) WATER Lab Sample ID: E111108LCS

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 11DEC081813-R101

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/12/08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.42	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.48	

FORM 2
WATER OTHER SURROGATE RECOVERY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

GC Column(1): RTX-5 ID: 0.25 (mm) GC Column(2): RTX-35 ID: 0.25 (mm)

	CLIENT SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	MBLK111108E	95	95	105	115			0
02	E111108LCS	92	90	108	115			0
03	MW001-110608	91	89	68	73			0
04	MW003-110708	94	92	87	94			0
05	W005110608	82	77	64*	72			1
06	W04A110708	0D	109	39D	47D			0
07	W04A110708DL	1508D	23D	47D	60D			0
08	PBLK_SCU	95	95	90	105			0
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								

ADVISORY
QC LIMITS

S1 (TCX) = Tetrachloro-m-xylene (60-115)
S2 (DCB) = Decachlorobiphenyl (65-115)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

FORM 3
WATER OTHER LAB CONTROL SAMPLE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Matrix Spike - Sample No.: E111108LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Aroclor-1016	0.50		0.42	84	65-120
Aroclor-1260	0.50		0.48	96	55-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____

FORM 4
OTHER METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

MBLK111108E

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Lab Sample ID: MBLK111108E Lab File ID: 11DEC081813-R091

Matrix (soil/water) WATER Extraction:(SepF/Cont/Sonc) SEPF

Sulfur Cleanup (Y/N) N Date Extracted: 11/11/08

Date Analyzed (1): 12/12/08 Date Analyzed (2): 12/12/08

Time Analyzed (1): 0419 Time Analyzed (2): 0419

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column (1): RTX-5 ID: 0.25(mm) GC Column (2): RTX-35 ID: 0.25(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	E111108LCS	E111108LCS	12/12/08	12/12/08
02	MW001-110608	775142	12/12/08	12/12/08
03	MW003-110708	775145	12/12/08	12/12/08
04	W005110608	775143*	12/16/08	12/16/08
05	W04A110708	775144	12/16/08	12/16/08
06	W04A110708DL	775144D1	12/16/08	12/16/08
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

COMMENTS: *-Sample extract received sulfur cleanup. The associated cleanup blank is PBLK_SCU.

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_1 Calibration Date(s): 12/11/08 12/11/08

Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1926 2352

LAB FILE ID: RF50: 11DEC081808-RF100: 11DEC081808RF200: 11DEC081808
RF400: 11DEC081808RF800: 11DEC081808

COMPOUND	RF50	RF100	RF200	RF400	RF800
Aroclor-1016	68.400	60.980	60.195	53.800	54.086
(2)	91.100	84.620	84.935	77.690	78.871
(3)	168.240	161.030	164.450	161.600	170.071
(4)	98.100	91.490	91.190	85.378	88.218
(5)	65.360	61.650	61.530	58.530	60.472
Aroclor-1221			31.290		
(2)			23.210		
(3)			73.485		
(4)			15.090		
(5)			10.325		
Aroclor-1232			62.850		
(2)			35.790		
(3)			35.800		
(4)			68.215		
(5)			38.365		
Aroclor-1242			46.235		
(2)			63.865		
(3)			127.345		
(4)			68.945		
(5)			46.840		
Aroclor-1248			35.610		
(2)			28.955		
(3)			75.455		
(4)			34.615		
(5)			27.700		
Aroclor-1254			20.670		
(2)			17.225		
(3)			33.905		
(4)			11.705		
(5)			46.015		
Aroclor-1260	56.460	51.350	52.730	46.085	48.255
(2)	62.240	56.690	58.820	54.048	55.618
(3)	144.740	139.280	148.855	139.948	151.529
(4)	82.880	77.860	79.535	74.770	78.899
(5)	60.260	55.100	56.060	50.162	52.846
Aroclor-1262			32.505		
(2)			70.175		
(3)			31.555		
(4)			169.030		
(5)			60.645		
Aroclor-1268			277.510		
(2)			278.855		
(3)			328.090		
(4)			81.420		

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_1 Calibration Date(s): 12/11/08 12/11/08

Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1926 2352

LAB FILE ID: RF50: 11DEC081808-RF100: 11DEC081808RF200: 11DEC081808
RF400: 11DEC081808RF800: 11DEC081808

COMPOUND	RF50	RF100	RF200	RF400	RF800
(5)			1683.300		
Tetrachloro-m-xylene	2551.800	2446.800	2708.400	2543.300	2830.562
Decachlorobiphenyl	4341.400	4249.800	4400.100	4419.375	4392.650

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_1 Calibration Date(s): 12/11/08 12/11/08

Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1926 2352

COMPOUND	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2	
Aroclor-1016	AVRG	59.4922500	10.074	20.000	
(2)	AVRG	83.4432500	6.460	20.000	
(3)	AVRG	165.078250	2.419	20.000	
(4)	AVRG	90.8750000	5.219	20.000	
(5)	AVRG	61.5085000	4.048	20.000	
Aroclor-1221	AVRG	31.2900000	0.000	20.000	<-
(2)	AVRG	23.2100000	0.000	20.000	<-
(3)	AVRG	73.4850000	0.000	20.000	<-
(4)	AVRG	15.0900000	0.000	20.000	<-
(5)	AVRG	10.3250000	0.000	20.000	<-
Aroclor-1232	AVRG	62.8500000	0.000	20.000	<-
(2)	AVRG	35.7900000	0.000	20.000	<-
(3)	AVRG	35.8000000	0.000	20.000	<-
(4)	AVRG	68.2150000	0.000	20.000	<-
(5)	AVRG	38.3650000	0.000	20.000	<-
Aroclor-1242	AVRG	46.2350000	0.000	20.000	<-
(2)	AVRG	63.8650000	0.000	20.000	<-
(3)	AVRG	127.345000	0.000	20.000	<-
(4)	AVRG	68.9450000	0.000	20.000	<-
(5)	AVRG	46.8400000	0.000	20.000	<-
Aroclor-1248	AVRG	35.6100000	0.000	20.000	<-
(2)	AVRG	28.9550000	0.000	20.000	<-
(3)	AVRG	75.4550000	0.000	20.000	<-
(4)	AVRG	34.6150000	0.000	20.000	<-
(5)	AVRG	27.7000000	0.000	20.000	<-
Aroclor-1254	AVRG	20.6700000	0.000	20.000	<-
(2)	AVRG	17.2250000	0.000	20.000	<-
(3)	AVRG	33.9050000	0.000	20.000	<-
(4)	AVRG	11.7050000	0.000	20.000	<-
(5)	AVRG	46.0150000	0.000	20.000	<-
Aroclor-1260	AVRG	50.9760000	7.884	20.000	
(2)	AVRG	57.4830000	5.524	20.000	
(3)	AVRG	144.870250	3.713	20.000	
(4)	AVRG	78.7887500	3.718	20.000	
(5)	AVRG	54.8857500	6.864	20.000	
Aroclor-1262	AVRG	32.5050000	0.000	20.000	<-
(2)	AVRG	70.1750000	0.000	20.000	<-
(3)	AVRG	31.5550000	0.000	20.000	<-
(4)	AVRG	169.030000	0.000	20.000	<-
(5)	AVRG	60.6450000	0.000	20.000	<-
Aroclor-1268	AVRG	277.510000	0.000	20.000	<-
(2)	AVRG	278.855000	0.000	20.000	<-
(3)	AVRG	328.090000	0.000	20.000	<-
(4)	AVRG	81.4200000	0.000	20.000	<-

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_1 Calibration Date(s): 12/11/08 12/11/08

Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1926 2352

COMPOUND	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2	
(5)	AVRG	1683.30000	0.000	20.000	<-
Tetrachloro-m-xylene	AVRG	2616.17250	5.816	20.000	
Decachlorobiphenyl	AVRG	4360.66500	1.567	20.000	

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_2 Calibration Date(s): 12/11/08 12/11/08

Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1926 2352

LAB FILE ID: RF50: 11DEC081808-RF100: 11DEC081808RF200: 11DEC081808
RF400: 11DEC081808RF800: 11DEC081808

COMPOUND	RF50	RF100	RF200	RF400	RF800
Aroclor-1016	83.680	75.830	72.380	66.235	64.379
(2)	127.960	118.480	112.805	104.752	102.760
(3)	179.160	169.450	171.465	163.000	164.269
(4)	90.700	84.900	84.755	77.358	75.249
(5)	70.880	67.560	67.630	61.342	61.668
Aroclor-1221			40.815		
(2)			29.250		
(3)			88.905		
(4)			14.465		
(5)			18.475		
Aroclor-1232			77.850		
(2)			53.195		
(3)			71.370		
(4)			36.220		
(5)			28.235		
Aroclor-1242			90.300		
(2)			32.155		
(3)			131.865		
(4)			64.605		
(5)			51.355		
Aroclor-1248			45.250		
(2)			79.285		
(3)			32.250		
(4)			26.320		
(5)			30.675		
Aroclor-1254			46.950		
(2)			34.555		
(3)			40.700		
(4)			27.945		
(5)			113.875		
Aroclor-1260	152.100	134.900	138.640	123.288	125.928
(2)	470.080	448.410	482.650	465.010	478.490
(3)	169.340	158.890	160.410	150.000	146.695
(4)	70.500	66.250	65.030	61.880	59.216
(5)	174.300	159.850	160.275	151.798	155.745
Aroclor-1262			109.770		
(2)			54.585		
(3)			75.740		
(4)			85.195		
(5)			502.860		
Aroclor-1268			653.160		
(2)			559.630		
(3)			539.310		
(4)			140.155		

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_2 Calibration Date(s): 12/11/08 12/11/08

Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1926 2352

LAB FILE ID: RF50: 11DEC081808-RF100: 11DEC081808RF200: 11DEC081808
RF400: 11DEC081808RF800: 11DEC081808

COMPOUND	RF50	RF100	RF200	RF400	RF800
(5)			2155.890		
Tetrachloro-m-xylene	3718.800	3451.600	3605.500	3491.100	3695.388
Decachlorobiphenyl	5976.000	5713.900	5665.550	5371.975	5713.012

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_2 Calibration Date(s): 12/11/08 12/11/08

Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1926 2352

COMPOUND	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2	
Aroclor-1016	AVRG	72.5007500	10.713	20.000	
(2)	AVRG	113.351500	9.106	20.000	
(3)	AVRG	169.468750	3.810	20.000	
(4)	AVRG	82.5922500	7.587	20.000	
(5)	AVRG	65.8160000	6.320	20.000	
Aroclor-1221	AVRG	40.8150000	0.000	20.000	<-
(2)	AVRG	29.2500000	0.000	20.000	<-
(3)	AVRG	88.9050000	0.000	20.000	<-
(4)	AVRG	14.4650000	0.000	20.000	<-
(5)	AVRG	18.4750000	0.000	20.000	<-
Aroclor-1232	AVRG	77.8500000	0.000	20.000	<-
(2)	AVRG	53.1950000	0.000	20.000	<-
(3)	AVRG	71.3700000	0.000	20.000	<-
(4)	AVRG	36.2200000	0.000	20.000	<-
(5)	AVRG	28.2350000	0.000	20.000	<-
Aroclor-1242	AVRG	90.3000000	0.000	20.000	<-
(2)	AVRG	32.1550000	0.000	20.000	<-
(3)	AVRG	131.865000	0.000	20.000	<-
(4)	AVRG	64.6050000	0.000	20.000	<-
(5)	AVRG	51.3550000	0.000	20.000	<-
Aroclor-1248	AVRG	45.2500000	0.000	20.000	<-
(2)	AVRG	79.2850000	0.000	20.000	<-
(3)	AVRG	32.2500000	0.000	20.000	<-
(4)	AVRG	26.3200000	0.000	20.000	<-
(5)	AVRG	30.6750000	0.000	20.000	<-
Aroclor-1254	AVRG	46.9500000	0.000	20.000	<-
(2)	AVRG	34.5550000	0.000	20.000	<-
(3)	AVRG	40.7000000	0.000	20.000	<-
(4)	AVRG	27.9450000	0.000	20.000	<-
(5)	AVRG	113.875000	0.000	20.000	<-
Aroclor-1260	AVRG	134.971000	8.489	20.000	
(2)	AVRG	468.928000	2.856	20.000	
(3)	AVRG	157.067000	5.718	20.000	
(4)	AVRG	64.5752500	6.665	20.000	
(5)	AVRG	160.393500	5.301	20.000	
Aroclor-1262	AVRG	109.770000	0.000	20.000	<-
(2)	AVRG	54.5850000	0.000	20.000	<-
(3)	AVRG	75.7400000	0.000	20.000	<-
(4)	AVRG	85.1950000	0.000	20.000	<-
(5)	AVRG	502.860000	0.000	20.000	<-
Aroclor-1268	AVRG	653.160000	0.000	20.000	<-
(2)	AVRG	559.630000	0.000	20.000	<-
(3)	AVRG	539.310000	0.000	20.000	<-
(4)	AVRG	140.155000	0.000	20.000	<-

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_2 Calibration Date(s): 12/11/08 12/11/08

Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1926 2352

COMPOUND	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2	
(5)	AVRG	2155.89000	0.000	20.000	<-
Tetrachloro-m-xylene	AVRG	3592.47750	3.318	20.000	
Decachlorobiphenyl	AVRG	5688.08750	3.777	20.000	

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_1 Calibration Date: 12/12/08 Time: 0507

Lab File ID: 11DEC081813-R1 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-5 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	59.492	59.660		0.3	15.0
(2)	83.443	85.165		2.1	15.0
(3)	165.078	168.200		1.9	15.0
(4)	90.875	92.325		1.6	15.0
(5)	61.508	63.335		3.0	15.0
Aroclor-1260	50.976	50.050		1.8	15.0
(2)	57.483	55.225		3.9	15.0
(3)	144.870	141.415		2.4	15.0
(4)	78.789	78.455		0.4	15.0
(5)	54.886	54.535		0.6	15.0
Tetrachloro-m-xylene	2616.172	2673.300		2.2	15.0
Decachlorobiphenyl	4360.665	4289.400		1.6	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_1 Calibration Date: 12/12/08 Time: 1051

Lab File ID: 11DEC081813-R2 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-5 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	59.492	56.480		5.1	15.0
(2)	83.443	81.020		2.9	15.0
(3)	165.078	167.335		1.4	15.0
(4)	90.875	88.535		2.6	15.0
(5)	61.508	62.470		1.6	15.0
Aroclor-1260	50.976	50.120		1.7	15.0
(2)	57.483	55.695		3.1	15.0
(3)	144.870	141.365		2.4	15.0
(4)	78.789	77.445		1.7	15.0
(5)	54.886	52.735		3.9	15.0
Tetrachloro-m-xylene	2616.172	2462.800		5.9	15.0
Decachlorobiphenyl	4360.665	4388.650		0.6	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_1 Calibration Date: 12/12/08 Time: 1517

Lab File ID: 11DEC081813-R3 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-5 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D	
Aroclor-1016	59.492	60.895		2.4	15.0	
(2)	83.443	85.860		2.9	15.0	
(3)	165.078	171.720		4.0	15.0	
(4)	90.875	95.590		5.2	15.0	
(5)	61.508	65.450		6.4	15.0	
Aroclor-1260	50.976	54.360		6.6	15.0	
(2)	57.483	58.830		2.3	15.0	
(3)	144.870	153.650		6.1	15.0	
(4)	78.789	80.135		1.7	15.0	
(5)	54.886	55.265		0.7	15.0	
Tetrachloro-m-xylene	2616.172	2746.900		5.0	15.0	
Decachlorobiphenyl	4360.665	3670.000		15.8	15.0	<-

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_1 Calibration Date: 12/16/08 Time: 1326

Lab File ID: 16DEC081234-R0 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-5 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	59.492	56.335		5.3	15.0
(2)	83.443	78.975		5.4	15.0
(3)	165.078	156.080		5.4	15.0
(4)	90.875	87.700		3.5	15.0
(5)	61.508	59.875		2.6	15.0
Aroclor-1260	50.976	49.790		2.3	15.0
(2)	57.483	54.905		4.5	15.0
(3)	144.870	138.240		4.6	15.0
(4)	78.789	76.550		2.8	15.0
(5)	54.886	52.745		3.9	15.0
Tetrachloro-m-xylene	2616.172	2597.100		0.7	15.0
Decachlorobiphenyl	4360.665	3990.850		8.5	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_1 Calibration Date: 12/16/08 Time: 1841

Lab File ID: 16DEC081437-R1 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-5 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	59.492	55.205		7.2	15.0
(2)	83.443	77.790		6.8	15.0
(3)	165.078	158.635		3.9	15.0
(4)	90.875	84.910		6.6	15.0
(5)	61.508	58.560		4.8	15.0
Aroclor-1260	50.976	47.700		6.4	15.0
(2)	57.483	54.770		4.7	15.0
(3)	144.870	138.030		4.7	15.0
(4)	78.789	75.010		4.8	15.0
(5)	54.886	52.685		4.0	15.0
Tetrachloro-m-xylene	2616.172	2397.950		8.3	15.0
Decachlorobiphenyl	4360.665	4150.850		4.8	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_2 Calibration Date: 12/12/08 Time: 0507

Lab File ID: 11DEC081813-R1 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-35 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	72.501	72.980		0.7	15.0
(2)	113.351	113.265		0.1	15.0
(3)	169.469	172.700		1.9	15.0
(4)	82.592	85.305		3.3	15.0
(5)	65.816	68.465		4.0	15.0
Aroclor-1260	134.971	139.595		3.4	15.0
(2)	468.928	519.625		10.8	15.0
(3)	157.067	168.365		7.2	15.0
(4)	64.575	70.325		8.9	15.0
(5)	160.394	177.765		10.8	15.0
Tetrachloro-m-xylene	3592.478	3650.150		1.6	15.0
Decachlorobiphenyl	5688.087	6337.500		11.4	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_2 Calibration Date: 12/12/08 Time: 1051

Lab File ID: 11DEC081813-R2 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-35 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	72.501	69.865		3.6	15.0
(2)	113.351	112.620		0.6	15.0
(3)	169.469	174.240		2.8	15.0
(4)	82.592	84.440		2.2	15.0
(5)	65.816	66.745		1.4	15.0
Aroclor-1260	134.971	140.875		4.4	15.0
(2)	468.928	530.305		13.1	15.0
(3)	157.067	167.825		6.8	15.0
(4)	64.575	70.800		9.6	15.0
(5)	160.394	178.330		11.2	15.0
Tetrachloro-m-xylene	3592.478	3460.550		3.7	15.0
Decachlorobiphenyl	5688.087	6355.900		11.7	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_2 Calibration Date: 12/12/08 Time: 1517

Lab File ID: 11DEC081813-R3 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-35 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	72.501	75.585		4.2	15.0
(2)	113.351	115.505		1.9	15.0
(3)	169.469	177.420		4.7	15.0
(4)	82.592	87.655		6.1	15.0
(5)	65.816	69.610		5.8	15.0
Aroclor-1260	134.971	153.145		13.5	15.0
(2)	468.928	532.065		13.5	15.0
(3)	157.067	164.260		4.6	15.0
(4)	64.575	63.315		2.0	15.0
(5)	160.394	155.755		2.9	15.0
Tetrachloro-m-xylene	3592.478	3798.200		5.7	15.0
Decachlorobiphenyl	5688.087	5391.200		5.2	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_2 Calibration Date: 12/16/08 Time: 1326

Lab File ID: 16DEC081234-R0 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-35 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	72.501	67.770		6.5	15.0
(2)	113.351	106.695		5.9	15.0
(3)	169.469	162.995		3.8	15.0
(4)	82.592	79.265		4.0	15.0
(5)	65.816	63.810		3.0	15.0
Aroclor-1260	134.971	133.030		1.4	15.0
(2)	468.928	517.730		10.4	15.0
(3)	157.067	170.405		8.5	15.0
(4)	64.575	72.285		11.9	15.0
(5)	160.394	174.660		8.9	15.0
Tetrachloro-m-xylene	3592.478	3552.450		1.1	15.0
Decachlorobiphenyl	5688.087	6165.050		8.4	15.0

FORM 7
OTHER CALIBRATION VERIFICATION SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Instrument ID: 7227_2 Calibration Date: 12/16/08 Time: 1841

Lab File ID: 16DEC081437-R1 Init. Calib. Date(s): 12/11/08 12/11/08

Init. Calib. Times: 2215 2352

GC Column: RTX-35 ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF200	MIN RRF	%D	MAX %D
Aroclor-1016	72.501	66.695		8.0	15.0
(2)	113.351	108.775		4.0	15.0
(3)	169.469	164.600		2.9	15.0
(4)	82.592	81.140		1.8	15.0
(5)	65.816	64.685		1.7	15.0
Aroclor-1260	134.971	135.035		0.0	15.0
(2)	468.928	503.160		7.3	15.0
(3)	157.067	170.730		8.7	15.0
(4)	64.575	71.385		10.5	15.0
(5)	160.394	172.940		7.8	15.0
Tetrachloro-m-xylene	3592.478	3443.550		4.1	15.0
Decachlorobiphenyl	5688.087	6159.450		8.3	15.0

FORM 8
OTHER ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

GC Column: RTX-5 ID: 0.25 (mm) Init. Calib. Date(s): 12/11/08 12/11/08

Instrument ID: 7227_1

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 3.23 DCB: 13.34

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	AR1221 200PP	AR1221 200PP	12/11/08	1926	3.24	13.34
02	AR1232 200PP	AR1232 200PP	12/11/08	1950	3.24	13.34
03	AR1242 200PP	AR1242 200PP	12/11/08	2014	3.24	13.35
04	AR1248 200PP	AR1248 200PP	12/11/08	2039	3.23	13.34
05	AR1254 200PP	AR1254 200PP	12/11/08	2103	3.23	13.33
06	AR1262 200PP	AR1262 200PP	12/11/08	2127	3.23	13.34
07	AR1268 200PP	AR1268 200PP	12/11/08	2151	3.23	13.33
08	AR1660 50PPB	AR1660 50PPB	12/11/08	2215	3.23	13.33
09	AR1660 100PP	AR1660 100PP	12/11/08	2240	3.23	13.33
10	AR1660 200PP	AR1660 200PP	12/11/08	2304	3.23	13.34
11	AR1660 400PP	AR1660 400PP	12/11/08	2328	3.23	13.34
12	AR1660 800PP	AR1660 800PP	12/11/08	2352	3.23	13.34
13	AR1660 ICV	AR1660 ICV	12/12/08	0041	3.23	13.34
14	MBLK111108E	MBLK111108E	12/12/08	0419	3.23	13.34
15	E111108LCS	E111108LCS	12/12/08	0443	3.23	13.33
16	AR1660 200PP	AR1660 200PP	12/12/08	0507	3.23	13.33
17	MW001-110608	775142	12/12/08	0914	3.24	13.34
18	AR1660 200PP	AR1660 200PP	12/12/08	1051	3.23	13.33
19	MW003-110708	775145	12/12/08	1115	3.23	13.33
20	AR1660 200PP	AR1660 200PP	12/12/08	1517	3.24	13.34
21	AR1660 200PP	AR1660 200PP	12/16/08	1326	3.24	13.34
22	W005110608	775143	12/16/08	1439	3.24	13.33
23	W04A110708	775144	12/16/08	1527		13.32
24	W04A110708DL	775144D1	12/16/08	1551	3.19	13.33
25	PBLK_SCU	PBLK_SCU	12/16/08	1816	3.23	13.34
26	AR1660 200PP	AR1660 200PP	12/16/08	1841	3.23	13.34
27						
28						
29						
30						
31						
32						

QC LIMITS
TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)
DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
OTHER ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

GC Column: RTX-35 ID: 0.25 (mm) Init. Calib. Date(s): 12/11/08 12/11/08

Instrument ID: 7227_2

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION TCX: 3.86 DCB: 14.57					
	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	AR1221 200PP	AR1221 200PP	12/11/08	1926	3.87	14.58
02	AR1232 200PP	AR1232 200PP	12/11/08	1950	3.87	14.57
03	AR1242 200PP	AR1242 200PP	12/11/08	2014	3.87	14.57
04	AR1248 200PP	AR1248 200PP	12/11/08	2039	3.85	14.56
05	AR1254 200PP	AR1254 200PP	12/11/08	2103	3.85	14.56
06	AR1262 200PP	AR1262 200PP	12/11/08	2127	3.86	14.57
07	AR1268 200PP	AR1268 200PP	12/11/08	2151	3.85	14.56
08	AR1660 50PPB	AR1660 50PPB	12/11/08	2215	3.86	14.57
09	AR1660 100PP	AR1660 100PP	12/11/08	2240	3.86	14.56
10	AR1660 200PP	AR1660 200PP	12/11/08	2304	3.86	14.57
11	AR1660 400PP	AR1660 400PP	12/11/08	2328	3.86	14.57
12	AR1660 800PP	AR1660 800PP	12/11/08	2352	3.86	14.56
13	AR1660 ICV	AR1660 ICV	12/12/08	0041	3.87	14.57
14	MBLK111108E	MBLK111108E	12/12/08	0419	3.85	14.56
15	E111108LCS	E111108LCS	12/12/08	0443	3.85	14.55
16	AR1660 200PP	AR1660 200PP	12/12/08	0507	3.85	14.56
17	MW001-110608	775142	12/12/08	0914	3.87	14.58
18	AR1660 200PP	AR1660 200PP	12/12/08	1051	3.86	14.56
19	MW003-110708	775145	12/12/08	1115	3.85	14.56
20	AR1660 200PP	AR1660 200PP	12/12/08	1517	3.86	14.57
21	AR1660 200PP	AR1660 200PP	12/16/08	1326	3.86	14.57
22	W005110608	775143	12/16/08	1439	3.85	14.55
23	W04A110708	775144	12/16/08	1527	3.85	14.55
24	W04A110708DL	775144D1	12/16/08	1551	3.86	14.56
25	PBLK_SCU	PBLK_SCU	12/16/08	1816	3.86	14.56
26	AR1660 200PP	AR1660 200PP	12/16/08	1841	3.86	14.56
27						
28						
29						
30						
31						
32						

QC LIMITS

TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)
DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

W005110608

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Lab Sample ID: 775143 Date(s) Analyzed: 12/16/08 12/16/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	6.50	6.43	6.53	0.047		
Aroclor-1254	2	6.80	6.73	6.83	0.021		
	3	6.89	6.83	6.93	0.0086		
COLUMN 1	4	6.98	6.91	7.01	0.013		
	5	7.62	7.55	7.65	0.033	0.025	
	1	8.42	8.38	8.48	0.057		
	2	8.68	8.64	8.74	0.021		
	3	9.33	9.29	9.39	0.015		
COLUMN 2	4	9.92	9.88	9.98	0.034		
	5					0.032	25
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

CLIENT SAMPLE NO.

E111108LCS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Lab Sample ID: E111108LCS Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	RPD
	1	3.64	3.59	3.69	0.41		
Aroclor-1016	2	4.27	4.23	4.33	0.41		
	3	4.58	4.54	4.64	0.44		
COLUMN 1	4	4.70	4.66	4.76	0.42		
	5	4.79	4.75	4.85	0.44	0.42	
	1	4.58	4.55	4.65	0.41		
	2	5.20	5.16	5.26	0.41		
	3	5.87	5.83	5.93	0.42		
COLUMN 2	4	6.12	6.08	6.18	0.42		
	5	6.34	6.30	6.40	0.43	0.42	0.0
	1	9.14	9.10	9.20	0.43		
Aroclor-1260	2	9.71	9.67	9.77	0.45		
	3	10.43	10.39	10.49	0.47		
COLUMN 1	4	11.19	11.15	11.25	0.46		
	5	11.51	11.47	11.57	0.44	0.45	
	1	11.58	11.55	11.65	0.45		
	2	12.54	12.51	12.61	0.51		
	3	13.10	13.06	13.16	0.49		
COLUMN 2	4	13.71	13.68	13.78	0.47		
	5	13.83	13.80	13.90	0.49	0.48	6.5
	1						
	2						
	3						
COLUMN 1	4						
	5						
	1						
	2						
	3						
COLUMN 2	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

OTHER

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Laboratory Report – Metals Data

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Analytical Chemistry Data Package
Inorganics Analysis

Project: New Bedford Harbor Groundwater, 2008

Analysis of Metals in Groundwater Samples

Battelle Project No. 55280
CF No. 2899

Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, WA 98382
(360) 681-4564

CERTIFICATION STATEMENT AND DATA RELEASE

Battelle Marine Sciences Laboratory is releasing the following data set:

New Bedford Harbor Groundwater Water Chemistry

METALS IN WATER

We certify that the data contained within this data set is authentic:

Brenda Larson for JMB 6/24/08

Jill M. Brandenberger — Date
MSL Metals Chemistry Project Manager

Janet Cloutier for JMC 6/24/08

Janet Cloutier — Date
MSL QA Officer

BATTELLE MARINE SCIENCES LABORATORIES
Jill Brandenberger, Project Manager
1529 West Sequim Bay Road
Sequim, Washington 98382
(360) 681-4564

NEW BEDFORD HARBOR
GROUNDWATER MONITORING JUNE 2008
Metals in Groundwater
(Units: ug/L)

SPONSOR CODE	Site Description	MSL Code	Date Collected	Date Received	Analysis Date	Cd	Cr	Cu	Pb
					Method:	1638mod	1638mod	1638mod	1638mod
					CAS Code:	7440-43-9	7440-47-3	7440-50-8	7439-92-1
					Achieved MDL	**0.005**	**0.1**	**0.03**	**0.003**
					Achieved QL:	0.02	0.2	0.1	0.01
					PROJECT QL:	0.1	0.5	0.5	0.1
MW-006-051908	MW-6	2899-1	05/19/08	05/22/08	06/06/08	0.0444	2.45	0.453	0.0571
MW-001-051908	MW-1	2899-2	05/19/08	05/22/08	06/06/08	0.249	5.35	0.984	0.739
MW-07A-051908	MW-7A	2899-3	05/19/08	05/22/08	06/06/08	0.711	5.28	4.99	0.0705
MW-005-052008	MW-5	2899-4	05/20/08	05/22/08	06/06/08	0.0460	1.89	1.12	0.0609
MW-005-052008-REP	MW-05	2899-5	05/20/08	05/22/08	06/06/08	0.0434	1.98	1.05	0.0557
MW-005-052008-REP	MW-05	2899-5 DUP	05/20/08	05/22/08	06/06/08	0.0463	1.88	1.07	0.0543
MW-04A-052008	MW-4A	2899-6	05/20/08	05/22/08	06/06/08	0.0277	6.57	1.46	0.0710
MW-003-052008	MW-3	2899-7	05/20/08	05/22/08	06/06/08	0.124	6.36	1.95	0.0849
EB-052008	NA	2899-8	05/20/08	05/22/08	06/06/08	0.0114 J	0.843	0.269	0.0769
METHOD BLANK									
MB		TRM Blank R1				0.005 U	0.1 U	0.03 U	0.003 U
LABORATORY CONTROL SAMPLE RESULTS									
LCS		TRM LCS R1				5.35	5.35	5.41	5.04
		Spiking Level				5	5	5	5
		Percent Recovery, LCS				**107%**	**107%**	**108%**	**101%**

BATTELLE MARINE SCIENCES LABORATORIES
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NEW BEDFORD HARBOR
GROUNDWATER MONITORING JUNE 2008
Metals in Groundwater
(Units: ug/L)

SPONSOR CODE	Site Description	MSL Code	Date Collected	Date Received	Analysis Date	Cd	Cr	Cu	Pb
					Method:	1638mod	1638mod	1638mod	1638mod
					CAS Code:	7440-43-9	7440-47-3	7440-50-8	7439-92-1
					Achieved MDL	**0.005**	**0.1**	**0.03**	**0.003**
					Achieved QL:	0.02	0.2	0.1	0.01
					PROJECT QL:	0.1	0.5	0.5	0.1
MATRIX SPIKE RESULTS									
MS		2899-1 MS				5.34	8.04	5.38	5.31
MSD		2899-1 MSD				5.16	7.83	5.22	5.25
MW-006-051908	MW-6	2899-1	05/19/08	05/22/08	06/06/08	0.0444	2.45	0.453	0.0571
		Spiking Level				5	5	5	5.24
		Percent Recovery, MS				**106%**	**112%**	**99%**	**100%**
		Percent Recovery, MSD				**102%**	**108%**	**95%**	**99%**
		RPD				**4%**	**4%**	**3%**	**1%**
LABORATORY DUPLICATES									
MW-005-052008-REP	MW-05	2899-5	05/20/08	05/22/08	06/06/08	0.0434	1.98	1.05	0.0557
MW-005-052008-REP	MW-05	2899-5 DUP	05/20/08	05/22/08	06/06/08	0.0463	1.88	1.07	0.0543
		Mean				0.0448	1.93	1.06	0.0550
		RPD				**7%**	**5%**	**2%**	**3%**
STANDARD REFERENCE MATERIAL RESULTS									
SRM		TRM 1640 R1				24.2	39.6	92.2	27.6
		certified/ref value				22.79	38.60	85.2	27.89
		range				± 1.6	± 0.96	± 1.20	± 0.14
		Percent Difference, SRM				**6%**	**3%**	**8%**	**1%**

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NEW BEDFORD HARBOR
GROUNDWATER MONITORING JUNE 2008
Metals in Groundwater

B	Blank concentration > RL and sample concentration < 5 times the detected blank
E	Concentration exceeds the range of the calibration curve for that particular analyte.
J	Estimated value as it is less than the reporting limit. The analyte was positively identified; the quantitation is an estimation.
U	Undetected at the method detection limit (MDL): The associated data value is the MDL.
N	QC value outside the accuracy or precision criteria goal

QAPP Data Quality Objectives:

MB	< RL
SRM	Percent Difference ≤25% of true values
MS	75-125 %
MS DUP	≤25% RPD
LCS	85-115%
Field DUP	≤30% RPD

QA/QC NARRATIVE

PROJECT: New Bedford Harbor Groundwater June 2008

PARAMETER: Trace Metals: cadmium (Cd), chromium (Cr), copper (Cu), and lead (Pb)

LABORATORY: Battelle Marine Sciences Laboratory (MSL), Sequim, Washington

MATRIX: Groundwater/Freshwater (salinity < 5 parts per thousand)

SAMPLE CUSTODY AND PROCESSING: Eight trace metals samples were received on 05/22/08. All samples were received in good condition (i.e., no sample containers were broken). The samples were preserved in the field to a pH of <2.0 using double distilled nitric acid. Upon arrival at MSL, two samples were randomly checked to confirm the pH was < 2.0. The cooler temperature was measured upon arrival at MSL and was 5.9°C. This is within the general guideline for temperature of 4 ± 2°C. Samples were assigned a Battelle Central File (CF) identification number (2899) and were entered into Battelle's laboratory information management system.

The following lists information on sample receipt and processing activities:

Lab Sample IDs:	2899*1-8
Description:	Groundwater
Sample collection dates	05/19/08 and 05/20/08
Laboratory arrival date	05/22/08
Cooler temp. on arrival	5.9°C
ICP-MS analysis	06/06/08

DATA QUALITY OBJECTIVES:

Analyte	Analytical Method	LCS Recovery	MS Recovery	SRM Accuracy	Relative Precision	MDL[2] µg/L	QL[2] µg/L
Cd	ICP-MS	85-115%	75-125%	≤25% PD	≤25% [1]	0.005	0.02
Cr	ICP-MS	85-115%	75-125%	≤25% PD	≤25% [1]	0.1	0.2
Cu	ICP-MS	85-115%	75-125%	≤25% PD	≤25% [1]	0.03	0.1
Pb	ICP-MS	85-115%	75-125%	≤25% PD	≤25% [1]	0.003	0.01

(1) Evaluated on matrix spike duplicates.
(2) PD = Percent Difference from Certified or Reference Value
(3) Annual method detection limit (MDL) study for total recoverable metals in freshwater. Quantitation limit (QL) defined as 3.18* MDL rounded to the nearest 1, 2, or 5.

METHODS: The samples were analyzed for trace metals by inductively coupled plasma-mass spectrometry (ICP-MS) following Battelle SOP MSL-I-022, Determination of Elements in Aqueous and Digestate Samples by ICP-MS. *S*amples were acid solubilized prior to analysis by ICP-MS in accordance with the total recoverable metals (TRM) method in Battelle SOP MSL-I-022. The analysis guidelines for this procedure are adapted from USEPA Method 1638 Determination of Trace Elements in Ambient Waters by Inductively Coupled Plasma-Mass Spectrometry. The TRM methodology is adapted from USEPA Method 1640 - Determination of Trace Elements in Ambient Waters by On-Line Chelation Preconcentration and Inductively Coupled Plasma-Mass Spectrometry.

Trace metal concentration are reported in units of µg/L. Data were not blank corrected.

QA/QC NARRATIVE

HOLDING TIMES: The recommended holding time for water (calculated from sample collection) is 6 months for trace metals. All samples were analyzed within their respective holding times.

DETECTION LIMITS: The MDLs reported in the tables are freshwater MDLs from the annual freshwater TRM MDL study. Analytical results were reported to the achieved MDL. Data were also flagged to the reporting limit (RL) or quantitation limit (QL) defined as 3.18 times the achieved MDL and rounded to the nearest 1, 2, or 5 based on guidelines from the USEPA.

Data were evaluated and flagged in accordance with the following criteria:

U Undetected at the method detection limit (MDL): The associated data value is the MDL.

J Estimated value as it is less than the reporting limit. The analyte was positively identified; the quantitation is an estimation.

N QC value outside the accuracy or precision criteria goal

B Blank concentration > RL and sample concentration < 5 times the detected blank

METHOD BLANKS: A minimum of one method blank per 20 field samples received was analyzed with each analytical batch. The method blanks were not detected greater than the laboratory MDL.

LABORATORY CONTROL SAMPLE ACCURACY: A minimum of one blank spikes or laboratory control samples (LCS) per 20 field samples received was analyzed with each analytical batch. The LCS sample recoveries were within the QC acceptance criterion of 85-115% recovery for all metals.

MATRIX SPIKE ACCURACY: A minimum of one matrix spike (MS) and matrix spike duplicate (MSD) were analyzed with the samples. The MS/MSD recoveries were within the QC acceptance criterion of 75-125% recovery for all metals.

PRECISION: Precision for this set of samples was assessed by the performance of matrix spikes in duplicate and laboratory duplicates. Precision was expressed as the relative percent difference (RPD) of replicate results. The RPD values were within the QC criterion of ≤25% RPD for all metals.

STANDARD REFERENCE MATERIAL ACCURACY: Standard reference material (SRM) 1640 was analyzed with each analytical batch. SRM accuracy was expressed as the percent difference between the measured and certified or reference values. The percent differences were within the QC acceptance criterion of ≤25% difference for all metals.

Battelle
The Business of Innovation

Chain of Custody

Ship to Battelle - Sequim
397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
G606422	New Bedford Harbor - GW Sampling Sawyer Street

SAMPLERS: Signature: J. Fahey + M. Fitzpatrick

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
5/19/08	1546	MW-006-051908	2899.1	Groundwater use for MS/MSD							✓				1
	1820	MW-001-051908	2								✓				1
	1315	MW-07A-051908	3								✓				1
5/20/08	1050	MW-005-052008	4								✓				1
	1050	MW-005-052008-REP	5	Replicate							✓				1
		~~MW-06~~	—												
	1301	MW-04A-052008	6								✓				1
	1453	MW-003-052008	7								✓				1
	1620	EB-052008	2899.8								✓				1

Relinquished by:	Date/Time	Received by:	Date/Time
Jessica M Fahey	5/20/08 1800	[signature]	05/22-08 1205
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

cc: Project Manager/Central File
Login File 2899

SAMPLE LOGIN

(SOP# MSL-A-001)

Project Manager: Brandenberger
Date Received: 05/22/08
Batch: 1

PROJECT: New Bedford Harbor- GW Sampling Sawyer Street

SPONSOR CODE	Station ID on bottle	BATTELLE CODE	MATRIX	STORAGE LOCATION	PARAMETERS REQUESTED	COLLECTION DATE	INITIALS
MW-006-051908	MW-6	2899-1	ground water	Prep Lab I-1-C	metals, MS/MSD	05/19/08	MLFM
MW-001-051908	MW-1	2899-2	ground water	Prep Lab I-1-C	metals	05/19/08	MLFM
MW-07A-051908	MW-7A	2899-3	ground water	Prep Lab I-1-C	metals	05/19/08	MLFM
MW-005-052008	MW-5	2899-4	ground water	Prep Lab I-1-C	metals	05/20/08	MLFM
MW-005-052008-REP	MW-05	2899-5	ground water	Prep Lab I-1-C	metals, Replicate	05/20/08	MLFM
MW-04A-052008	MW-4A	2899-6	ground water	Prep Lab I-1-C	metals	05/20/08	MLFM
MW-003-052008	MW-3	2899-7	ground water	Prep Lab I-1-C	metals	05/20/08	MLFM
EB-052008	NA	2899-8	ground water	Prep Lab I-1-C	metals	05/20/08	MLFM

VOCs 5/22/08

Central File #: New 2899 Sample No(s): 1-8 Project Manager: JMB

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: water WP# W04822

Yes	No	
	✓	Navy-type Project (requires high-level sample tracking procedures)
	✓	Filter Samples: Amount: Entire sample Half of sample
	✓	Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Lab# 130)
	✓	Special instructions:

Sample Preservation Instructions: A preserved in field

Date To Archive: Date To Dispose:

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes	No	N/A	Indicate in Appropriate Box	
	N/A		Was a custody seal present?	
		N/A	Was the custody seal intact?	
N/A			Was cooler(s) temperature(s) within acceptable range of 4±2°C or frozen? (if multiple coolers, note temp. of each)	5.9 °C °C
		N/A	Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)? Comment/Remedy:	
N/A			Were all chain of custody forms signed and dated?	
	N/A		Were samples filtered at MSL?	

Sample condition(s): Acceptable Other (explain):

Container type: Teflon Poly Glass Spex Other:

Notes:

Completed By: [signature] Date/Time: 05/22/08 1205

SAMPLE PRESERVATION

	Sample(s) were preserved at MSL
N/A	Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)
N/A	Random pH checked for ~10% of samples (use dip paper) Sample IDs: #2 & 6 both O.K.
	Complete pH check required for project (use pH meter and record on pH Record form)

If preservation necessary, record Acid Lot#

Type:			
		0.2% HNO3	Notes:
		0.5% HCl (Hg samples)	Notes:
		Refrigerate/Freeze	Notes:
		Other	Notes:

Completed By: [signature] Date/Time: 05/22/08 1205

Revsed 033006

1-1-C

NBHLabLoad Exceptions Report for MSL052208

Number of Records: 56

Uniqueness Violations

None.

Missing Sample IDs

None.

Zero Not Allowed

None.

Other Missing Data

None.

NBHLabLoad Exceptions Report for MSL052208

Number of Records: 56

Code and CAS List Exceptions

None.

Format Exceptions

None.

Dilutions without 'D' qualifier

None.

Detection Limit Null Violations

None.

NBHLabLoad Exceptions Report for MSL052208

Number of Records: 56

Other Exceptions

None.

Total PCB Violations

None.

Analytical Chemistry Data Package
Inorganics Analysis

Project: New Bedford Harbor Groundwater, 2008

Analysis of Metals in Groundwater Samples

Battelle Project No. 55280
CF No. 2899

Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, WA 98382
(360) 681-4564

CERTIFICATION STATEMENT AND DATA RELEASE

Battelle Marine Sciences Laboratory is releasing the following data set:

New Bedford Harbor Groundwater Water Chemistry

METALS IN WATER

We certify that the data contained within this data set is authentic:

12/5/08

Jill M. Brandenberger
MSL Metals Chemistry Project Manager

Date

12/5/08

Gary Gill
MSL QA Officer

Date

BATTELLE MARINE SCIENCES LABORATORIES
Jill Brandenberger, Project Manager
1529 West Sequim Bay Road
Sequim, Washington 98382
(360) 681-4564

NEW BEDFORD HARBOR
GROUNDWATER MONITORING NOVEMBER 2008
Metals in Groundwater
(Units: ug/L)

SPONSOR CODE	Site Description	MSL Code	Date Collected	Date Received	Analysis Date	Cd	Cr	Cu	Pb
					Method:	1638mod	1638mod	1638mod	1638mod
					CAS Code:	7440-43-9	7440-47-3	7440-50-8	7439-92-1
					Achieved MDL	**0.005**	**0.1**	**0.03**	**0.003**
					Achieved QL:	0.02	0.2	0.1	0.01
					PROJECT QL:	0.1	0.5	0.5	0.1
MW-07A-110608	Sawyer Street	2899-9	11/06/08	11/11/08	11/18/08	0.648	1.01	4.99	0.0226
MW-006-110608	Sawyer Street	2899-10	11/06/08	11/11/08	11/18/08	0.0516	0.346	0.666	0.183
MW-001-110608	Sawyer Street	2899-11	11/06/08	11/11/08	11/18/08	0.435	1.78	1.46	0.894
MW-005-110608	Sawyer Street	2899-12	11/06/08	11/11/08	11/18/08	0.0518	4.04	2.10	0.274
MW-04A-110708	Sawyer Street	2899-13	11/07/08	11/11/08	11/18/08	0.0274	5.62	2.27	0.175
MW-04A-110708	Sawyer Street	2899-13 DUP	11/07/08	11/11/08	11/18/08	0.0265	5.91	2.27	0.183
MW-003-110708	Sawyer Street	2899-14	11/07/08	11/11/08	11/18/08	0.0299	5.63	0.855	0.0630
MW-003-110708-REP	Sawyer Street	2899-15	11/07/08	11/11/08	11/18/08	0.0306	5.92	0.944	0.0685
EB-110508	Equip. Blank	2899-16	11/05/08	11/11/08	11/18/08	0.005 U	0.608	0.354	0.0782
METHOD BLANK									
MB		TRM Blank R1				0.005 U	0.1 U	0.03 U	0.003 U
LABORATORY CONTROL SAMPLE RESULTS									
LCS		TRM LCS				4.98	4.96	5.08	4.97
		Spiking Level				5	5	5	5
		Percent Recovery, LCS				**100%**	**99%**	**102%**	**99%**
MATRIX SPIKE RESULTS									
MS		2899-9 MS				5.63	5.98	9.69	5.26
MSD		2899-9 MSD				5.64	5.87	9.51	5.22
MW-07A-110608	Sawyer Street	2899-9	11/06/08	11/11/08	11/18/08	0.648	1.01	4.99	0.0226
		Spiking Level				5	5	5	5
		Percent Recovery, MS				**100%**	**99%**	**94%**	**105%**
		Percent Recovery, MSD				**100%**	**97%**	**90%**	**104%**
		RPD				**0%**	**2%**	**4%**	**1%**
LABORATORY DUPLICATES									
MW-04A-110708	Sawyer Street	2899-13	11/07/08	11/11/08	11/18/08	0.0274	5.62	2.27	0.175
MW-04A-110708	Sawyer Street	2899-13 DUP	11/07/08	11/11/08	11/18/08	0.0265	5.91	2.27	0.183
		Mean				0.0270	5.76	2.27	0.179
		RPD				**3%**	**5%**	**0%**	**4%**
STANDARD REFERENCE MATERIAL RESULTS									
SRM		TRM 1640				23.4	38.1	88.8	28.7
		certified/ref value				22.79	38.60	85.2	27.89
		range				± 1.6	± 0.96	± 1.20	± 0.14
		Percent Difference, SRM				**3%**	**1%**	**4%**	**3%**

BATTELLE MARINE SCIENCES LABORATORIES
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NEW BEDFORD HARBOR
GROUNDWATER MONITORING NOVEMBER 2008
Metals in Groundwater

B	Blank concentration > RL and sample concentration < 5 times the detected blank
E	Concentration exceeds the range of the calibration curve for that particular analyte.
J	Estimated value as it is less than the reporting limit. The analyte was positively identified; the quantitation is an estimation.
U	Undetected at the method detection limit (MDL): The associated data value is the MDL.
N	QC value outside the accuracy or precision criteria goal

QAPP Data Quality Objectives:

MB	< RL
SRM	Percent Difference ≤25% of true values
MS	75-125 %
MS DUP	≤25% RPD
LCS	85-115%
Field DUP	≤30% RPD

QA/QC NARRATIVE

PROJECT: New Bedford Harbor Groundwater November 2008

PARAMETER: Trace Metals: cadmium (Cd), chromium (Cr), copper (Cu), and lead (Pb)

LABORATORY: Battelle Marine Sciences Laboratory (MSL), Sequim, Washington

MATRIX: Groundwater/Freshwater (salinity < 5 parts per thousand)

SAMPLE CUSTODY AND PROCESSING: Eight trace metals samples were received on 11/11/08. All samples were received in good condition (i.e., no sample containers were broken). The samples were preserved in the field to a pH of <2.0 using double distilled nitric acid. Upon arrival at MSL, two samples were randomly checked to confirm the pH was < 2.0. The cooler temperature was measured upon arrival at MSL and was 2.8°C. This is within the general guideline for temperature of 4 ± 2°C. Samples were assigned a Battelle Central File (CF) identification number (2899) and were entered into Battelle's laboratory information management system.

The following lists information on sample receipt and processing activities:

Lab Sample IDs:	2899*9-16
Description:	Groundwater
Sample collection dates	11/05/08 through 11/07/08
Laboratory arrival date	11/11/08
Cooler temp. on arrival	2.8°C
ICP-MS analysis	11/18/08

DATA QUALITY OBJECTIVES:

Analyte	Analytical Method	LCS Recovery	MS Recovery	SRM Accuracy	Relative Precision	MDL[2] µg/L	QL[2] µg/L
Cd	ICP-MS	85-115%	75-125%	≤25% PD	≤25% [1]	0.005	0.02
Cr	ICP-MS	85-115%	75-125%	≤25% PD	≤25% [1]	0.1	0.2
Cu	ICP-MS	85-115%	75-125%	≤25% PD	≤25% [1]	0.03	0.1
Pb	ICP-MS	85-115%	75-125%	≤25% PD	≤25% [1]	0.003	0.01

(1) Evaluated on matrix spike duplicates.

(2) Annual method detection limit (MDL) study for total recoverable metals in freshwater. Quantitation limit (QL) defined as 3.18* MDL rounded to the nearest 1, 2, or 5 per USEPA guidance.

METHODS: The samples were analyzed for trace metals by inductively coupled plasma-mass spectrometry (ICP-MS) following Battelle SOP MSL-I-022, Determination of Elements in Aqueous and Digestate Samples by ICP-MS. *S*amples were acid solubilized prior to analysis by ICP-MS in accordance with the total recoverable metals (TRM) method in Battelle SOP MSL-I-022. The analysis guidelines for this procedure are adapted from USEPA Method 1638 Determination of Trace Elements in Ambient Waters by Inductively Coupled Plasma-Mass Spectrometry. The TRM methodology is adapted from USEPA Method 1640 - Determination of Trace Elements in Ambient Waters by On-Line Chelation Preconcentration and Inductively Coupled Plasma-Mass Spectrometry.

Trace metal concentrations are reported in units of µg/L. Data were not blank corrected.

QA/QC NARRATIVE

HOLDING TIMES: The recommended holding time for water (calculated from sample collection) is 6 months for trace metals. All samples were analyzed within their respective holding times.

DETECTION LIMITS: The MDLs reported in the tables are freshwater MDLs from the annual freshwater TRM MDL study. Analytical results were reported to the achieved MDL. Data were also flagged to the reporting limit (RL) or quantitation limit (QL) defined as 3.18 times the achieved MDL and rounded to the nearest 1, 2, or 5 based on guidelines from the USEPA.

Data were evaluated and flagged in accordance with the following criteria:

U Undetected at the method detection limit (MDL): The associated data value is the MDL.

J Estimated value as it is less than the reporting limit. The analyte was positively identified; the quantitation is an estimation.

N QC value outside the accuracy or precision criteria goal

B Blank concentration > RL and sample concentration < 5 times the detected blank

METHOD BLANKS: A minimum of one method blank per 20 field samples received was analyzed with each analytical batch. Metal concentrations in the method blank were all less than the laboratory MDL.

LABORATORY CONTROL SAMPLE ACCURACY: A minimum of one blank spikes or laboratory control samples (LCS) per 20 field samples received was analyzed with each analytical batch. The LCS sample recoveries were within the QC acceptance criterion of 85-115% recovery for all metals.

MATRIX SPIKE ACCURACY: A minimum of one matrix spike (MS) and matrix spike duplicate (MSD) were analyzed with the samples. The MS/MSD recoveries were within the QC acceptance criterion of 75-125% recovery for all metals.

PRECISION: Precision for this set of samples was assessed by the performance of matrix spike duplicates and laboratory duplicates. Precision was expressed as the relative percent difference (RPD) of replicate results. The RPD values were within the QC criterion of ≤25% RPD for all metals.

STANDARD REFERENCE MATERIAL ACCURACY: Standard reference material (SRM) 1640 was analyzed with each analytical batch. SRM accuracy was expressed as the percent difference between the measured and certified or reference values. The percent differences were within the QC acceptance criterion of ≤25% difference for all metals.

Ship to Battelle-MSL

Battelle

The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
G606422	NBH - Groundwater

SAMPLERS: Signature

J. Tenzer, M. Fitzpatrick, P. Curran

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	Lab ID ~~BATTELLE ID~~	Field ID ~~CLIENT ID~~	SAMPLE DESCRIPTION (Matrix: Groundwater; Location: Sawyer Street)	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED HNO_3	PRESERVED	Total Number of Containers
11/6/08	0912	2899.9	MW-07A-110608								✓		✓		✓ 1
	1037	10	MW-06-110608								✓		✓		1
	1345	11	MW-01-110608								✓		✓		1
	1352	12	MW-05-110608								✓		✓		1
11/7/08	0929	13	MW-04A-110708								✓		✓		1
	1001	14	MW-03-110708								✓		✓		1
	1001	15	MW-03-110708-REP	(Field Dup)							✓		✓		1
11/5/08	1440	2899.16	EB-110508	Equipment Blank							✓		✓		1

Relinquished by:	Date/Time	Received by:	Date/Time
	11/10/08 1500		11/11/08 1240
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

cc: Project Manager/Central File
Login File 2899

SAMPLE LOGIN

(SOP# MSL-A-001)

Project Manager: Brandenberger
Date Received: 11/11/08
Batch: 2

PROJECT: New Bedford Harbor- GW Sampling Sawyer Street

SPONSOR CODE	Site Description	BATTELLE CODE	MATRIX	STORAGE LOCATION	PARAMETERS REQUESTED	COLLECTION DATE	INITIALS
MW-07A-110608 ✓	Sawyer Street	2899-9	✓ ground water	Prep Lab J-2-A	✓ metals	11/06/08 ✓	MLFM
MW-006-110608 ✓	Sawyer Street	2899-10	ground water	Prep Lab J-2-A	metals	11/06/08	MLFM
MW-001-110608 ✓	Sawyer Street	2899-11	ground water	Prep Lab J-2-A	metals	11/06/08	MLFM
MW-005-110608 ✓	Sawyer Street	2899-12	ground water	Prep Lab J-2-A	metals	11/06/08	MLFM
MW-04A-110708 ✓	Sawyer Street	2899-13	ground water	Prep Lab J-2-A	metals	11/07/08	MLFM
MW-003-110708 ✓	Sawyer Street	2899-14	ground water	Prep Lab J-2-A	metals	11/07/08	MLFM
MW-003-110708-REP ✓	Sawyer Street	2899-15 ✓	ground water	Prep Lab J-2-A	metals	11/07/08 ✓	MLFM
EB-110508 ✓	Equip. Blank	2899-16	Equip. Blank	Prep Lab J-2-A	metals	11/05/08 ✓	MLFM

VTSR 11/12/08

LOG-IN CHECKLIST New Bedford Harbor Reference SOP# MSL-A-001

Central File #: 2899 Sample No(s): 9-16 Project Manager: JMS

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: groundwater WP# W84822

Yes	No	
	X	Navy-type Project (requires high-level sample tracking procedures)
	X	Filter Samples: Amount: Entire sample Half of sample
	X	Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Lab# 130)
	X	Special instructions:

Sample Preservation Instructions: Preserved in field 0.2% Optima HNO_3

Date To Archive: Date To Dispose:

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes	No	N/A	Indicate in Appropriate Box
	X		Was a custody seal present?
		X	Was the custody seal intact?
X			Was cooler(s) temperature(s) within acceptable range of 4±2°C or frozen? (if multiple coolers, note temp. of each) 2.8 °C ___ °C
		X	Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)? Comment/Remedy:
X			Were all chain of custody forms signed and dated?
	X		Were samples filtered at MSL?

Sample condition(s): Acceptable Other (explain):

Container type: Teflon Poly Glass Spex Other:

Notes:

Completed By: [signature] Date/Time: 11/11/08 1245

SAMPLE PRESERVATION

- [ ] Sample(s) were preserved at MSL
- [X] Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)
- [X] Random pH checked for ~10% of samples (use dip paper) Sample IDs: #10 & 14 both OK
- [ ] Complete pH check required for project (use pH meter and record on pH Record form)

If preservation necessary, record Acid Lot#

Type:			
		0.2% HNO3	Notes:
		0.5% HCl (Hg samples)	Notes:
		Refrigerate/Freeze	Notes:
		Other	Notes:

Completed By: [signature] Date/Time: 11/11/08 1245

Revsed 033006

~~J-3-A~~ J-2-A

Laboratory Report – VOC Data

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ALPHA
WOODS HOLE LABS

ANALYTICAL REPORT

Prepared for:
Battelle
Duxbury Operations
397 Washington Street
Duxbury, MA 02332

Project:	New Bedford Harbor
ETR:	0805124
Report Date:	May 30, 2008

Certifications and Accreditations
Massachusetts M-MA030
Connecticut PH-0141
New Hampshire 2206
Rhode Island LAO00289
New Jersey MA015
Maine MA0030
New York 11627
Louisiana 03090
Florida E87814
Pennsylvania 68-02089
Army Corps of Engineers
Department of the Navy

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CASE NARRATIVE
Alpha Analytical

ETR: 0805124
Project: New Bedford Harbor

All analyses were performed according to Alpha Analytical quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. All soil/sediment results are reported on a dry weight basis unless otherwise noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Alpha Analytical certifies that the test results within meet all of the requirements of NELAC, for all NELAC accredited parameters.

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Analytical makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Analytical. To the best of my knowledge, the information contained in this report is accurate and complete. For any questions regarding this report, please contact the signatory below at 508-822-9300.

Approved by: Nancy a Rose **Nancy Rose** Title: Project Manager **Project Manager** Date: 5/30/08

Sample ID Cross Reference

Client: **Battelle**
Project: **New Bedford Harbor**

Lab Code: **MA00030**
ETR: **0805124**

Lab Sample ID	Client Sample ID
0805124-01	MW-07A-051908
0805124-02	MW-006-051908
0805124-03	MW-001-051908
0805124-04	MW-005-052008
0805124-05	MW-005-052008-REP
0805124-06	MW-04A-052008
0805124-07	MW-003-052008
0805124-08	EB-052008
0805124-09	Trip Blank

VOLATILE ORGANICS

Volatile Organics by 8260

ALPHA ANALYTICAL

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-07A-051908**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0805124**
Lab ID: **0805124-01**
Associated Blank: **VW052708B30**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/19/08	05/20/08	05/27/08	5	5	1	ALM

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	5.00	U	1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	5.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	5.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	5.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	100	70-130
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	95	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

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Volatile Organics by 8260

ALPHA ANALYTICAL

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-006-051908**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0805124**
Lab ID: **0805124-02**
Associated Blank: **VW052708B30**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/19/08	05/20/08	05/27/08	5	5	1	ALM

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	**1.26**	J	1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	5.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	5.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	5.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	101	70-130
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	95	70-130

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

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Volatile Organics by 8260

ALPHA ANALYTICAL

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-001-051908**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0805124**
Lab ID: **0805124-03**
Associated Blank: **VW052708B30**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/19/08	05/20/08	05/27/08	5	5	1	ALM

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	**2.79**	J	1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	5.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	5.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	5.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	101	70-130
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

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Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-005-052008**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0805124**
Lab ID: **0805124-04**
Associated Blank: **VW052708B30**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/20/08	05/20/08	05/27/08	5	5	1	ALM

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	**16.0**		1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	5.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	5.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	5.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	104	70-130
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

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Volatile Organics by 8260

ALPHA ANALYTICAL

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-005-052008-REP**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0805124**
Lab ID: **0805124-05**
Associated Blank: **VW052708B30**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/20/08	05/20/08	05/27/08	5	5	1	ALM

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	**16.0**		1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	5.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	5.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	5.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	104	70-130
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	96	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

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Volatile Organics by 8260

ALPHA ANALYTICAL

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-04A-052008**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0805124**
Lab ID: **0805124-06**
Associated Blank: **VW052708B30**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/20/08	05/20/08	05/27/08	5	5	1	ALM

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	**3.05**	J	1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	5.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	5.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	5.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	105	70-130
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	98	70-130

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

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Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-003-052008**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0805124**
Lab ID: **0805124-07**
Associated Blank: **VW052708B30**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/20/08	05/20/08	05/28/08	5	5	1	ALM

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	**8.40**		1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	5.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	5.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	5.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	105	70-130
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	98	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

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Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **EB-052008**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0805124**
Lab ID: **0805124-08**
Associated Blank: **VW052708B30**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/20/08	05/20/08	05/28/08	5	5	1	ALM

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	**7.19**		1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	**1.21**	J	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	5.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	5.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	106	70-130
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

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Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **Trip Blank**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0805124**
Lab ID: **0805124-09**
Associated Blank: **VW052708B30**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/20/08	05/20/08	05/27/08	5	5	1	ALM

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	5.00	U	1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	5.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	5.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	5.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	100	70-130
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	96	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

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Blank
Volatile Organics by 8260

ALPHA ANALYTICAL

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **Blank**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0805124**
Lab ID: **VW052708B30**
Associated Blank: **N/A**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	05/27/08	5	5	1	ALM

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	5.00	U	1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	5.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	5.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	5.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	100	70-130
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	95	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

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Laboratory Control Summary
Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0805124**
Lab ID: **See Below**
Associated Blank: **VW052708B30**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	05/27/08	5	5	1	ALM

Lab ID:		VW052708B30	VW052708LCS06		VW052708LCSD06				
Parameter	**Blank Conc.**		**LCS Conc.**	**% Recovery**	**LCSD Conc.**	**% Recovery**	**% RPD**	**RPD Limit**	**% Recovery Limits**
Dichlorodifluoromethane	2.00	U	23.0	115	23.1	115	0	25	70-130
Chloromethane	2.00	U	14.7	74	15.3	77	4	25	70-130
Vinyl chloride	2.00	U	18.5	93	19.4	97	5	25	70-130
Bromomethane	2.00	U	16.6	83	18.1	90	8	25	70-130
Chloroethane	2.00	U	16.2	81	16.8	84	4	25	70-130
Trichlorofluoromethane	2.00	U	17.4	87	17.7	88	2	25	70-130
Diethyl ether	2.00	U	16.2	81	16.9	84	4	25	70-130
Acetone	5.00	U	18.8	94	18.8	94	0	25	70-130
1,1-Dichloroethene	2.00	U	18.3	92	19.0	95	3	25	70-130
Carbon disulfide	2.00	U	21.5	108	22.3	112	4	25	70-130
Methylene chloride	5.00	U	19.0	95	19.4	97	2	25	70-130
Methyl tert-butyl ether (MTBE)	2.00	U	18.6	93	19.0	95	2	25	70-130
trans-1,2-Dichloroethene	2.00	U	18.5	93	19.2	96	4	25	70-130
Diisopropyl Ether (DIPE)	2.00	U	18.9	95	19.3	96	2	25	70-130
1,1-Dichloroethane	2.00	U	18.2	91	19.1	95	4	25	70-130
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	18.2	91	18.9	94	4	25	70-130
2-Butanone (MEK)	5.00	U	20.0	100	19.7	99	1	25	70-130
cis-1,2-Dichloroethene	2.00	U	18.1	91	17.8	89	2	25	70-130
2,2-Dichloropropane	2.00	U	17.9	90	17.9	89	0	25	70-130
Bromochloromethane	2.00	U	19.9	99	20.1	101	1	25	70-130
Chloroform	2.00	U	19.0	95	19.5	97	3	25	70-130
1,1,1-Trichloroethane	2.00	U	19.3	97	20.1	101	4	25	70-130
1,1-Dichloropropene	2.00	U	18.4	92	19.1	96	4	25	70-130
Carbon tetrachloride	2.00	U	19.0	95	19.3	97	2	25	70-130
Benzene	2.00	U	18.7	94	19.5	97	4	25	70-130
Tertiary Amyl Methyl Ether (TAME)	2.00	U	19.4	97	20.0	100	3	25	70-130
Tetrahydrofuran	5.00	U	19.7	99	20.0	100	1	25	70-130
1,2-Dichloroethane	2.00	U	18.3	91	18.8	94	3	25	70-130
Trichloroethene	2.00	U	19.0	95	20.0	100	6	25	70-130
1,2-Dichloropropane	2.00	U	18.4	92	18.8	94	2	25	70-130
Dibromomethane	2.00	U	19.0	95	19.3	97	2	25	70-130
1,4-Dioxane	100	U	191	95	203	101	6	25	70-130
Bromodichloromethane	2.00	U	18.6	93	19.1	95	2	25	70-130

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Laboratory Control Summary
Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0805124**
Lab ID: **See Below**
Associated Blank: **VW052708B30**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	05/27/08	5	5	1	ALM

Lab ID: VW052708B30 VW052708LCS06 VW052708LCSD06

Parameter	Blank Conc.		LCS Conc.	LCS % Recovery	LCSD Conc.	LCSD % Recovery	% RPD	RPD Limit	% Recovery Limits
Methyl isobutyl ketone (MIBK)	2.00	U	16.2	81	16.7	84	3	25	70-130
1,3-Dichloropropene, Total	4.00	U	36.9	92	37.4	93	1	25	70-130
Toluene	2.00	U	18.6	93	18.9	94	2	25	70-130
1,1,2-Trichloroethane	2.00	U	18.0	90	18.6	93	3	25	70-130
2-Hexanone	2.00	U	18.3	91	18.7	94	2	25	70-130
Tetrachloroethene	2.00	U	19.6	98	19.9	100	2	25	70-130
1,3-Dichloropropane	2.00	U	18.9	94	19.2	96	2	25	70-130
Dibromochloromethane	2.00	U	19.1	96	19.1	96	0	25	70-130
1,2-Dibromoethane	2.00	U	19.3	97	19.7	98	2	25	70-130
Chlorobenzene	2.00	U	18.5	92	18.9	94	2	25	70-130
1,1,1,2-Tetrachloroethane	2.00	U	19.0	95	19.6	98	3	25	70-130
Ethylbenzene	2.00	U	18.2	91	18.5	92	2	25	70-130
Xylenes, Total	6.00	U	55.8	93	56.1	93	1	25	70-130
Styrene	2.00	U	19.0	95	19.2	96	1	25	70-130
Bromoform	2.00	U	18.8	94	19.3	97	3	25	70-130
Isopropylbenzene	2.00	U	18.5	92	19.2	96	4	25	70-130
1,1,2,2-Tetrachloroethane	2.00	U	18.5	93	18.7	93	1	25	70-130
Bromobenzene	2.00	U	18.7	94	19.2	96	3	25	70-130
1,2,3-Trichloropropane	2.00	U	19.8	99	19.6	98	1	25	70-130
n-Propylbenzene	2.00	U	18.4	92	18.9	94	3	25	70-130
2-Chlorotoluene	2.00	U	18.4	92	18.8	94	2	25	70-130
1,3,5-Trimethylbenzene	2.00	U	18.6	93	18.8	94	1	25	70-130
4-Chlorotoluene	2.00	U	18.6	93	19.0	95	2	25	70-130
tert-Butylbenzene	2.00	U	18.8	94	19.0	95	1	25	70-130
1,2,4-Trimethylbenzene	2.00	U	18.1	91	18.6	93	3	25	70-130
sec-Butylbenzene	2.00	U	18.9	94	19.1	95	1	25	70-130
1,3-Dichlorobenzene	2.00	U	18.4	92	18.8	94	2	25	70-130
p-Isopropyltoluene	2.00	U	18.6	93	18.7	94	1	25	70-130
1,4-Dichlorobenzene	2.00	U	18.6	93	19.0	95	2	25	70-130
n-Butylbenzene	2.00	U	18.6	93	18.6	93	0	25	70-130
1,2-Dibromo-3-chloropropane	2.00	U	18.8	94	18.9	94	0	25	70-130
1,2-Dichlorobenzene	2.00	U	18.8	94	18.9	95	1	25	70-130
1,2,4-Trichlorobenzene	2.00	U	19.0	95	19.1	96	1	25	70-130

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Laboratory Control Summary
Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0805124**
Lab ID: **See Below**
Associated Blank: **VW052708B30**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	05/27/08	5	5	1	ALM

Lab ID: VW052708B30 VW052708LCS06 VW052708LCSD06

Parameter	Blank Conc.		LCS Conc.	LCS % Recovery	LCSD Conc.	LCSD % Recovery	% RPD	RPD Limit	% Recovery Limits
Hexachlorobutadiene	2.00	U	20.9	104	20.0	100	4	25	70-130
Naphthalene	2.00	U	19.2	96	19.0	95	1	25	70-130
1,2,3-Trichlorobenzene	2.00	U	18.8	94	18.3	91	3	25	70-130

Surrogate	% Recovery		Acceptance Range (%)
Dibromofluoromethane	99	99	70-130
1,2-Dichloroethane-d4	95	95	70-130
Toluene-d8	98	99	70-130
4-Bromofluorobenzene	98	98	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

06/04/08 11:40

Matrix Spike Duplicate
Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-07A-051908**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0805124**
Lab ID: **See Below**
Associated Blank: **VW052708B30**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/19/08	05/20/08	05/27/08	5	5	1	ALM

Lab ID:		0805124-01	0805124-01	0805124-01				
Parameter	**Sample Conc.**		**Matrix Spike Conc.**	**% Recovery**	**Matrix Spike Dup. Conc.**	**% Recovery**	**% RPD**	**RPD Limit**	**% Recovery Limits**
Dichlorodifluoromethane	2.00	U	50.4	101	51.8	104	3	30	70-130
Chloromethane	2.00	U	37.4	75	36.3	73	3	30	70-130
Vinyl chloride	2.00	U	48.4	97	46.5	93	4	30	70-130
Bromomethane	2.00	U	31.9	64[a]	29.3	59[a]	9	30	70-130
Chloroethane	2.00	U	39.3	79	37.6	75	5	30	70-130
Trichlorofluoromethane	2.00	U	42.5	85	41.5	83	2	30	70-130
Diethyl ether	2.00	U	38.7	77	40.3	81	4	30	70-130
Acetone	5.00	U	43.2	86	47.4	95	9	30	70-130
1,1-Dichloroethene	2.00	U	43.8	88	44.4	89	1	30	70-130
Carbon disulfide	2.00	U	47.4	95	33.9	68[a]	33[a]	30	70-130
Methylene chloride	5.00	U	42.0	84	43.6	87	4	30	70-130
Methyl tert-butyl ether (MTBE)	2.00	U	41.9	84	44.7	89	6	30	70-130
trans-1,2-Dichloroethene	2.00	U	43.5	87	44.6	89	3	30	70-130
Diisopropyl Ether (DIPE)	2.00	U	44.0	88	45.6	91	4	30	70-130
1,1-Dichloroethane	2.00	U	42.4	85	44.1	88	4	30	70-130
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	42.0	84	43.8	88	4	30	70-130
2-Butanone (MEK)	5.00	U	46.4	93	49.4	99	6	30	70-130
cis-1,2-Dichloroethene	2.00	U	42.2	84	43.4	87	3	30	70-130
2,2-Dichloropropane	2.00	U	38.0	76	38.2	76	0	30	70-130
Bromochloromethane	2.00	U	43.4	87	45.8	92	5	30	70-130
Chloroform	2.00	U	43.3	87	44.3	89	2	30	70-130
1,1,1-Trichloroethane	2.00	U	45.1	90	46.2	92	2	30	70-130
1,1-Dichloropropene	2.00	U	42.5	85	43.2	86	2	30	70-130
Carbon tetrachloride	2.00	U	44.0	88	44.4	89	1	30	70-130
Benzene	2.00	U	43.6	87	44.1	88	1	30	70-130
Tertiary Amyl Methyl Ether (TAME)	2.00	U	44.8	90	46.8	94	4	30	70-130
Tetrahydrofuran	5.00	U	45.9	92	48.4	97	5	30	70-130
1,2-Dichloroethane	2.00	U	41.9	84	43.4	87	3	30	70-130
Trichloroethene	2.00	U	43.8	88	45.6	91	4	30	70-130
1,2-Dichloropropane	2.00	U	42.5	85	44.3	89	4	30	70-130
Dibromomethane	2.00	U	42.8	86	44.7	89	4	30	70-130
1,4-Dioxane	100	U	446	89	503	101	12	30	70-130
Bromodichloromethane	2.00	U	43.9	88	45.5	91	4	30	70-130

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Matrix Spike Duplicate
Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-07A-051908**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0805124**
Lab ID: **See Below**
Associated Blank: **VW052708B30**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/19/08	05/20/08	05/27/08	5	5	1	ALM

Lab ID:		0805124-01	0805124-01	0805124-01				
Parameter	**Sample Conc.**	**Matrix Spike Conc.**	**% Recovery**	**Matrix Spike Dup. Conc.**	**% Recovery**	**% RPD**	**RPD Limit**	**% Recovery Limits**
Methyl isobutyl ketone (MIBK)	2.00 U	37.6	75	40.8	82	8	30	70-130
1,3-Dichloropropene, Total	4.00 U	84.0	84	87.5	88	4	30	70-130
Toluene	2.00 U	42.5	85	44.1	88	4	30	70-130
1,1,2-Trichloroethane	2.00 U	42.0	84	43.9	88	4	30	70-130
2-Hexanone	2.00 U	44.6	89	47.8	96	7	30	70-130
Tetrachloroethene	2.00 U	44.8	90	46.5	93	4	30	70-130
1,3-Dichloropropane	2.00 U	43.4	87	45.6	91	5	30	70-130
Dibromochloromethane	2.00 U	44.1	88	46.4	93	5	30	70-130
1,2-Dibromoethane	2.00 U	43.9	88	47.3	95	8	30	70-130
Chlorobenzene	2.00 U	41.4	83	43.1	86	4	30	70-130
1,1,1,2-Tetrachloroethane	2.00 U	42.5	85	43.9	88	3	30	70-130
Ethylbenzene	2.00 U	41.6	83	43.0	86	4	30	70-130
Xylenes, Total	6.00 U	124	83	131	87	5	30	70-130
Styrene	2.00 U	41.8	84	43.5	87	4	30	70-130
Bromoform	2.00 U	43.6	87	45.1	90	3	30	70-130
Isopropylbenzene	2.00 U	42.4	85	43.4	87	2	30	70-130
1,1,2,2-Tetrachloroethane	2.00 U	43.5	87	46.4	93	6	30	70-130
Bromobenzene	2.00 U	41.7	83	44.3	89	6	30	70-130
1,2,3-Trichloropropane	2.00 U	43.4	87	46.3	93	6	30	70-130
n-Propylbenzene	2.00 U	41.3	83	42.8	86	4	30	70-130
2-Chlorotoluene	2.00 U	40.8	82	42.5	85	4	30	70-130
1,3,5-Trimethylbenzene	2.00 U	41.6	83	43.3	87	4	30	70-130
4-Chlorotoluene	2.00 U	40.4	81	42.3	85	5	30	70-130
tert-Butylbenzene	2.00 U	42.2	84	42.8	86	2	30	70-130
1,2,4-Trimethylbenzene	2.00 U	41.2	82	43.1	86	5	30	70-130
sec-Butylbenzene	2.00 U	42.2	84	43.5	87	3	30	70-130
1,3-Dichlorobenzene	2.00 U	41.5	83	43.6	87	5	30	70-130
p-Isopropyltoluene	2.00 U	41.3	83	42.6	85	3	30	70-130
1,4-Dichlorobenzene	2.00 U	41.1	82	44.1	88	7	30	70-130
n-Butylbenzene	2.00 U	41.3	83	42.4	85	3	30	70-130
1,2-Dibromo-3-chloropropane	2.00 U	42.3	85	45.7	91	8	30	70-130
1,2-Dichlorobenzene	2.00 U	41.5	83	43.9	88	6	30	70-130
1,2,4-Trichlorobenzene	2.00 U	39.6	79	42.4	85	7	30	70-130

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Matrix Spike Duplicate
Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-07A-051908**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0805124**
Lab ID: **See Below**
Associated Blank: **VW052708B30**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/19/08	05/20/08	05/27/08	5	5	1	ALM

Lab ID:		0805124-01	0805124-01	0805124-01				
Parameter	**Sample Conc.**	**Matrix Spike Conc.**	**Matrix Spike % Recovery**	**Matrix Spike Dup. Conc.**	**Matrix Spike Dup. % Recovery**	**% RPD**	**RPD Limit**	**% Recovery Limits**
Hexachlorobutadiene	2.00 U	40.7	81	40.3	81	1	30	70-130
Naphthalene	2.00 U	41.6	83	45.4	91	9	30	70-130
1,2,3-Trichlorobenzene	2.00 U	38.7	77	41.7	83	7	30	70-130

Surrogate	% Recovery		Acceptance Range (%)
Dibromofluoromethane	100	99	70-130
1,2-Dichloroethane-d4	98	98	70-130
Toluene-d8	101	101	70-130
4-Bromofluorobenzene	100	99	70-130

N/A - Not Applicable
[a] - Value outside of QC Limits.
U - The analyte was analyzed for but not detected at the sample specific level reported.

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

06/06/08 09:56

Chain of Custody Records

CHAIN OF CUSTODY

PAGE 1 OF ____

ALPHA ANALYTICAL

WESTBORO, MA
TEL: 508-898-9220
FAX: 508-898-9193

MANSFIELD, MA
TEL: 508-822-9300
FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: 0805124

Client Information

Client: Battelle
Address: 397 Washington St
Duxbury, MA 02332
Phone: 781-952-5298
Fax:
Email: fahoyj@battelle.org

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: New Bedford Harbor
Project Location: New Bedford, MA
Project #: 6606422
Project Manager: Deirdre Dahlen
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☐ EMAIL
☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State /Fed Program | Criteria

MA MCP PRESUMPTIVE CERTAINTY --- CT REASONABLE CONFIDENCE PROTOCOLS

☐ Yes ☐ No Are MCP Analytical Methods Required?
☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS VOC	Sample Specific Comments	TOTAL # BOTTLES
1	MW-07A-051908	5/19/08	1225	GW H_2O	JMF	✓	3 set of 3 VOA VIALS ex for MS/MSD	9
2	MW-006-051908	5/19/08	1519			✓	1 set of 3 VIALS	3
3	MW-001 ~~-051908~~ ① 051908	5/19/08	1735			✓	↓	3
4	MW-005-052008	5/20/08	1007			✓	↓	3
5	MW-005-052008-REP	5/20/08	1007			✓	Replicate	3
6	MW-04A-052008	5/20/08	1217			✓	1 set of 3 VIALS	3
7	MW-003-052008	5/20/08	1430			✓	↓	3
8	EB-052008	5/20/08	1600			✓	↓	3

① Please ignore JMF 5/20/08

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP or CT RCP?

Container Type	✓		
Preservative	B		

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	5/20/08 1605	[signature]	5/20/08 1605
[signature]	5/20/08 1704	[signature]	5/20/08 1704

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms. See reverse side.

FORM NO: 01-01 (rev. 30-JUL-07)

Sample Receipt Checklist

Client: BATDOX	**Receipt Date:** 5/20/08		
Project:	**Log-in Date:** 5/24/08		
ETR #: 0805124	**Inspection by:** VF	**Login by:** VF	

ALL SECTIONS BELOW MUST BE COMPLETED

Were samples shipped? Yes, FedEx / UPS / Other:_____
No, Alpha Analytical Courier pick-up / (Hand delivered)

Is bill of lading retained? Yes, Tracking #:_____
No, Unavailable / (NA)

Number of coolers received for this project delivery: 1

Indicate cooler temperature upon opening (if multiple coolers, record all temps):

Note: If all coolers are 2-6°C, use one checklist, if NOT, use separate checklists and note all samples received *above* 6°C.

Cooler 1:
Temperature(s) taken from: 50 IR Gun, (Circle one) SN 460647143 or 94031
_____ Temp. Blank, / NA
Were samples received on ice? (Yes) / No

Chain-of-Custody present? (Yes) / No
Complete? (Yes) / No

Custody seals present on Cooler? Yes / (No)
on Bottles? Yes / (No)
Intact? Yes / No / (NA)
*Note: Affix custody seals to back of **this** page.*

Were sample containers intact? (Yes) / No If No, list samples: →

Did VOA/VPH waters contain headspace (>5mm)? Yes / (No) / NA If Yes, list samples: →

Were 5035 VOA soils, or VPH soils, *covered* with MeOH? Yes / No / (NA)
If No, list samples: →

Was a sufficient amount of sample received for each test indicated on the COC?
(Yes) / No If No, list samples: →

If chemical preservation is appropriate -
Were samples field preserved? (Yes) / No / NA

☒ C=HCl ☐ M=MeOH ☐ S=H_2SO4
☐ H=NaOH ☐ N=HNO_3 ☐ Other:_____ ☐ U= Unknown

Preservation (pH) verified at lab for *EVERY* bottle? (Not: VOA / VPH / Sulfide)
YES: <2 or >12 (CN) or NO NA
If No, why?:

Were samples received within hold time? (Yes) / No If No, list samples: →

Discrepancy between samples rec'd & COC? (Yes) / No If Yes, list samples: →

Was the Project Manager notified of any other problems? Yes / No / NA

Project Manager Acknowledgement: Date:

Comments / Notes

Sample storage refrigerator #: VOA

Sample storage freezer #:_____

Cooler 2:_____ Cooler 3:_____

Cooler 4:_____ Cooler 5:_____

Cooler 6:_____ Cooler 7:_____

More:_____

Chemical preservation OK for ALL samples?

Yes / No / N/A

If No, list samples below:

Trip Blank not on COC

Please use back for any additional notes!

Certificate/Approval Program Summary

Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2, 365.2; Metals: 200.8, 245.1; Organics: 608, 624, 625, ETPH) *Solid Waste/Soil* (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastwater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, 365.2, SM2320B, SM2340B, SM2540G, SM4500NH3; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608, 624, 625, 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/ SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: 608, 624).

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: EPA 608, 624).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608, 624, 625).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608, 624, 625, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 365.2, 376.2; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 245.1; 6020, 7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Poratable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy

ANALYTICAL REPORT

Prepared for:
Battelle
Duxbury Operations
397 Washington Street
Duxbury, MA 02332

Project:	New Bedford Harbor
ETR:	0811052
Report Date:	November 21, 2008

Certifications and Accreditations
Massachusetts M-MA030
Connecticut PH-0141
New Hampshire 2206
Rhode Island LAO00289
New Jersey MA015
Maine MA0030
New York 11627
Louisiana 03090
Florida E87814
Pennsylvania 68-02089
Army Corps of Engineers
Department of the Navy

This report shall not be reproduced except in full, without written approval from the laboratory.

Sample ID Cross Reference

Client: **Battelle**
Project: **New Bedford Harbor**

Lab Code: **MA00030**
ETR: **0811052**

Lab Sample ID	Client Sample ID
0811052-01	MW-04A-110508
0811052-02	MW-04B-110508
0811052-03	MW-007-110508
0811052-04	MW-006-110508
0811052-05	MW-07A-110608
0811052-06	MW-006-110508-REP
0811052-07	MW-006-110608
0811052-08	MW-001-110608
0811052-09	MW-005-110608
0811052-10	MW-04A-110708
0811052-11	MW-003-110708
0811052-12	EB-110508
0811052-13	MW-04A-110508
0811052-14	MW-04B-110508
0811052-15	MW-007-110508
0811052-16	MW-006-110508
0811052-17	MW-006-110508-REP
0811052-18	Trip Blank

Sawyer Street CDF samples

CASE NARRATIVE
Alpha Analytical

ETR: 0811052
Project: New Bedford Harbor

All analyses were performed according to Alpha Analytical quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. All soil/sediment results are reported on a dry weight basis unless otherwise noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Alpha Analytical certifies that the test results within meet all of the requirements of NELAC, for all NELAC accredited parameters.

Volatiles by 8260

The initial calibration analyzed on 11/17/08 had a value for Bromomethane outside of the 15% RSD QC advisory limit at 20.9%. This initial calibration meets the acceptability criteria.

Continuing calibration verification standard, C1111901 has the percent deviation for Bromomethane above the 30%D limit at 31.3%D. This continuing calibration meets the acceptability criteria.

The laboratory control sample duplicate (VW111808LCSD10) has a percent recovery for 1, 4-Dioxane above the upper 130% limit at 137%. This compound was not detected in associated samples therefore no further action taken.

The laboratory control sample (VW111908LCS09) has a percent recovery for 1, 4-Dioxane above the upper 130% limit at 152%. This compound was not detected in associated samples therefore no further action taken.

Sample MW-04A-110508 (0811052-01) was analyzed at a (5X) dilution. An undiluted re-analysis was performed in order to obtain lower reporting limits. Acetone exceeded calibration in the undiluted analysis. Both sets of results reported. The discrepancy in results possible due to differences in sample vials.

Sample MW-04B-110508 (0811052-02) was analyzed on a dilution (10X) due to target compound concentration.

Sample MW-007-110508 (0811052-03) was analyzed on a dilution (100X) due to target compound concentration. This analysis had concentrations of Trichloroethylene detected over the calibration range of the instrument as noted with an "E" qualifier. The sample was re-analyzed on a dilution (200X). Both analyses were reported.

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Analytical makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Analytical. To the best of my knowledge, the information contained in this report is accurate and complete. For any questions regarding this report, please contact the signatory below at 508-822-9300.

Approved by: Pete Henriksen Title: Project Manager Date: 11/21/08

Pete Henriksen

Volatile Organics

By

8260

Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-04A-110508**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **0811052-01**
Associated Blank: **VW111908B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/19/08	5	5	1	BAS

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	**2.24**		1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	**354**	E	1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	2.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	2.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	**17.3**		1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	**2.29**		p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	**16.6**		n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	107	70-130
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	104	70-130

N/A - Not Applicable
E - Estimated value, exceeds the upper limit of calibration.
U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260

ALPHA ANALYTICAL

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-04A-110508**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **0811052-01E**
Associated Blank: **VW111808B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/18/08	5	5	5	BAS

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	10.0	U	1,3-Dichloropropene, Total	20.0	U
Chloromethane	10.0	U	Toluene	10.0	U
Vinyl chloride	10.0	U	1,1,2-Trichloroethane	10.0	U
Bromomethane	10.0	U	2-Hexanone	10.0	U
Chloroethane	10.0	U	Tetrachloroethene	10.0	U
Trichlorofluoromethane	10.0	U	1,3-Dichloropropane	10.0	U
Diethyl ether	10.0	U	Dibromochloromethane	10.0	U
Acetone	**81.6**		1,2-Dibromoethane	10.0	U
1,1-Dichloroethene	10.0	U	Chlorobenzene	10.0	U
Carbon disulfide	10.0	U	1,1,1,2-Tetrachloroethane	10.0	U
Methylene chloride	10.0	U	Ethylbenzene	10.0	U
Methyl tert-butyl ether (MTBE)	10.0	U	Xylenes, Total	30.0	U
trans-1,2-Dichloroethene	10.0	U	Styrene	10.0	U
Diisopropyl Ether (DIPE)	10.0	U	Bromoform	10.0	U
1,1-Dichloroethane	10.0	U	Isopropylbenzene	10.0	U
Ethyl Tertiary Butyl Ether (ETBE)	10.0	U	1,1,2,2-Tetrachloroethane	10.0	U
2-Butanone (MEK)	10.0	U	Bromobenzene	10.0	U
cis-1,2-Dichloroethene	**10.1**		1,2,3-Trichloropropane	10.0	U
2,2-Dichloropropane	10.0	U	n-Propylbenzene	10.0	U
Bromochloromethane	10.0	U	2-Chlorotoluene	10.0	U
Chloroform	10.0	U	1,3,5-Trimethylbenzene	10.0	U
1,1,1-Trichloroethane	10.0	U	4-Chlorotoluene	10.0	U
1,1-Dichloropropene	10.0	U	tert-Butylbenzene	10.0	U
Carbon tetrachloride	10.0	U	1,2,4-Trimethylbenzene	10.0	U
Benzene	10.0	U	sec-Butylbenzene	10.0	U
Tertiary Amyl Methyl Ether (TAME)	10.0	U	1,3-Dichlorobenzene	10.0	U
Tetrahydrofuran	10.0	U	p-Isopropyltoluene	10.0	U
1,2-Dichloroethane	10.0	U	1,4-Dichlorobenzene	10.0	U
Trichloroethene	**10.3**		n-Butylbenzene	10.0	U
1,2-Dichloropropane	10.0	U	1,2-Dibromo-3-chloropropane	10.0	U
Dibromomethane	10.0	U	1,2-Dichlorobenzene	10.0	U
1,4-Dioxane	500	U	1,2,4-Trichlorobenzene	10.0	U
Bromodichloromethane	10.0	U	Hexachlorobutadiene	10.0	U
Methyl isobutyl ketone (MIBK)	10.0	U	Naphthalene	10.0	U
			1,2,3-Trichlorobenzene	10.0	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	101	70-130
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	99	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-04B-110508**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **0811052-02**
Associated Blank: **VW111808B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/18/08	5	5	10	BAS

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	20.0	U	1,3-Dichloropropene, Total	40.0	U
Chloromethane	20.0	U	Toluene	20.0	U
Vinyl chloride	**308**		1,1,2-Trichloroethane	20.0	U
Bromomethane	20.0	U	2-Hexanone	20.0	U
Chloroethane	20.0	U	Tetrachloroethene	20.0	U
Trichlorofluoromethane	20.0	U	1,3-Dichloropropane	20.0	U
Diethyl ether	20.0	U	Dibromochloromethane	20.0	U
Acetone	50.0	U	1,2-Dibromoethane	20.0	U
1,1-Dichloroethene	20.0	U	Chlorobenzene	20.0	U
Carbon disulfide	20.0	U	1,1,1,2-Tetrachloroethane	20.0	U
Methylene chloride	20.0	U	Ethylbenzene	20.0	U
Methyl tert-butyl ether (MTBE)	20.0	U	Xylenes, Total	60.0	U
trans-1,2-Dichloroethene	20.0	U	Styrene	20.0	U
Diisopropyl Ether (DIPE)	20.0	U	Bromoform	20.0	U
1,1-Dichloroethane	20.0	U	Isopropylbenzene	20.0	U
Ethyl Tertiary Butyl Ether (ETBE)	20.0	U	1,1,2,2-Tetrachloroethane	20.0	U
2-Butanone (MEK)	20.0	U	Bromobenzene	20.0	U
cis-1,2-Dichloroethene	**743**		1,2,3-Trichloropropane	20.0	U
2,2-Dichloropropane	20.0	U	n-Propylbenzene	20.0	U
Bromochloromethane	20.0	U	2-Chlorotoluene	20.0	U
Chloroform	20.0	U	1,3,5-Trimethylbenzene	20.0	U
1,1,1-Trichloroethane	20.0	U	4-Chlorotoluene	20.0	U
1,1-Dichloropropene	20.0	U	tert-Butylbenzene	20.0	U
Carbon tetrachloride	20.0	U	1,2,4-Trimethylbenzene	20.0	U
Benzene	20.0	U	sec-Butylbenzene	20.0	U
Tertiary Amyl Methyl Ether (TAME)	20.0	U	1,3-Dichlorobenzene	20.0	U
Tetrahydrofuran	20.0	U	p-Isopropyltoluene	20.0	U
1,2-Dichloroethane	20.0	U	1,4-Dichlorobenzene	20.0	U
Trichloroethene	**1720**		n-Butylbenzene	20.0	U
1,2-Dichloropropane	20.0	U	1,2-Dibromo-3-chloropropane	20.0	U
Dibromomethane	20.0	U	1,2-Dichlorobenzene	20.0	U
1,4-Dioxane	1000	U	1,2,4-Trichlorobenzene	20.0	U
Bromodichloromethane	20.0	U	Hexachlorobutadiene	20.0	U
Methyl isobutyl ketone (MIBK)	20.0	U	Naphthalene	20.0	U
			1,2,3-Trichlorobenzene	20.0	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	102	70-130
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	98	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-007-110508**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **0811052-03**
Associated Blank: **VW111808B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/18/08	5	5	100	BAS

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	200	U	1,3-Dichloropropene, Total	400	U
Chloromethane	200	U	Toluene	200	U
Vinyl chloride	200	U	1,1,2-Trichloroethane	200	U
Bromomethane	200	U	2-Hexanone	200	U
Chloroethane	200	U	Tetrachloroethene	200	U
Trichlorofluoromethane	200	U	1,3-Dichloropropane	200	U
Diethyl ether	200	U	Dibromochloromethane	200	U
Acetone	500	U	1,2-Dibromoethane	200	U
1,1-Dichloroethene	200	U	Chlorobenzene	200	U
Carbon disulfide	200	U	1,1,1,2-Tetrachloroethane	200	U
Methylene chloride	200	U	Ethylbenzene	200	U
Methyl tert-butyl ether (MTBE)	200	U	Xylenes, Total	600	U
trans-1,2-Dichloroethene	200	U	Styrene	200	U
Diisopropyl Ether (DIPE)	200	U	Bromoform	200	U
1,1-Dichloroethane	200	U	Isopropylbenzene	200	U
Ethyl Tertiary Butyl Ether (ETBE)	200	U	1,1,2,2-Tetrachloroethane	200	U
2-Butanone (MEK)	200	U	Bromobenzene	200	U
cis-1,2-Dichloroethene	**1250**		1,2,3-Trichloropropane	200	U
2,2-Dichloropropane	200	U	n-Propylbenzene	200	U
Bromochloromethane	200	U	2-Chlorotoluene	200	U
Chloroform	200	U	1,3,5-Trimethylbenzene	200	U
1,1,1-Trichloroethane	200	U	4-Chlorotoluene	200	U
1,1-Dichloropropene	200	U	tert-Butylbenzene	200	U
Carbon tetrachloride	200	U	1,2,4-Trimethylbenzene	200	U
Benzene	200	U	sec-Butylbenzene	200	U
Tertiary Amyl Methyl Ether (TAME)	200	U	1,3-Dichlorobenzene	200	U
Tetrahydrofuran	200	U	p-Isopropyltoluene	200	U
1,2-Dichloroethane	200	U	1,4-Dichlorobenzene	200	U
Trichloroethene	**22800**	E	n-Butylbenzene	200	U
1,2-Dichloropropane	200	U	1,2-Dibromo-3-chloropropane	200	U
Dibromomethane	200	U	1,2-Dichlorobenzene	200	U
1,4-Dioxane	10000	U	1,2,4-Trichlorobenzene	200	U
Bromodichloromethane	200	U	Hexachlorobutadiene	200	U
Methyl isobutyl ketone (MIBK)	200	U	Naphthalene	200	U
			1,2,3-Trichlorobenzene	200	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	103	70-130
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	98	70-130

N/A - Not Applicable
E - Estimated value, exceeds the upper limit of calibration.
U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-007-110508**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **0811052-03**
Associated Blank: **VW111908B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/19/08	5	5	200	BAS

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	400	U	1,3-Dichloropropene, Total	800	U
Chloromethane	400	U	Toluene	400	U
Vinyl chloride	400	U	1,1,2-Trichloroethane	400	U
Bromomethane	400	U	2-Hexanone	400	U
Chloroethane	400	U	Tetrachloroethene	400	U
Trichlorofluoromethane	400	U	1,3-Dichloropropane	400	U
Diethyl ether	400	U	Dibromochloromethane	400	U
Acetone	1000	U	1,2-Dibromoethane	400	U
1,1-Dichloroethene	400	U	Chlorobenzene	400	U
Carbon disulfide	400	U	1,1,1,2-Tetrachloroethane	400	U
Methylene chloride	400	U	Ethylbenzene	400	U
Methyl tert-butyl ether (MTBE)	400	U	Xylenes, Total	1200	U
trans-1,2-Dichloroethene	400	U	Styrene	400	U
Diisopropyl Ether (DIPE)	400	U	Bromoform	400	U
1,1-Dichloroethane	400	U	Isopropylbenzene	400	U
Ethyl Tertiary Butyl Ether (ETBE)	400	U	1,1,2,2-Tetrachloroethane	400	U
2-Butanone (MEK)	400	U	Bromobenzene	400	U
cis-1,2-Dichloroethene	**1020**		1,2,3-Trichloropropane	400	U
2,2-Dichloropropane	400	U	n-Propylbenzene	400	U
Bromochloromethane	400	U	2-Chlorotoluene	400	U
Chloroform	400	U	1,3,5-Trimethylbenzene	400	U
1,1,1-Trichloroethane	400	U	4-Chlorotoluene	400	U
1,1-Dichloropropene	400	U	tert-Butylbenzene	400	U
Carbon tetrachloride	400	U	1,2,4-Trimethylbenzene	400	U
Benzene	400	U	sec-Butylbenzene	400	U
Tertiary Amyl Methyl Ether (TAME)	400	U	1,3-Dichlorobenzene	400	U
Tetrahydrofuran	400	U	p-Isopropyltoluene	400	U
1,2-Dichloroethane	400	U	1,4-Dichlorobenzene	400	U
Trichloroethene	**18300**		n-Butylbenzene	400	U
1,2-Dichloropropane	400	U	1,2-Dibromo-3-chloropropane	400	U
Dibromomethane	400	U	1,2-Dichlorobenzene	400	U
1,4-Dioxane	20000	U	1,2,4-Trichlorobenzene	400	U
Bromodichloromethane	400	U	Hexachlorobutadiene	400	U
Methyl isobutyl ketone (MIBK)	400	U	Naphthalene	400	U
			1,2,3-Trichlorobenzene	400	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	101	70-130
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	91	70-130
4-Bromofluorobenzene	97	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-006-110508**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **0811052-04**
Associated Blank: **VW111808B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/18/08	5	5	1	BAS

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	**5.27**	
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	5.00	U	1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	2.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	2.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	**14.3**		1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	2.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	**113**		n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	102	70-130
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	98	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-07A-110608**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **0811052-05**
Associated Blank: **VW111808B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/06/08	11/07/08	11/18/08	5	5	1	BAS

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	5.00	U	1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	2.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	2.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	2.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	103	70-130
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	99	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-006-110508-REP**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **0811052-06**
Associated Blank: **VW111808B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/18/08	5	5	1	BAS

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	**5.07**	
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	5.00	U	1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	2.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	2.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	**14.4**		1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	2.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	**113**		n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	103	70-130
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	99	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-006-110608**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **0811052-07**
Associated Blank: **VW111908B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/06/08	11/07/08	11/19/08	5	5	1	BAS

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	**23.3**		1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	2.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	2.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	2.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	99	70-130
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	91	70-130
4-Bromofluorobenzene	99	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-001-110608**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **0811052-08**
Associated Blank: **VW111908B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/06/08	11/07/08	11/19/08	5	5	1	BAS

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	**10.3**		1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	2.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	2.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	2.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	101	70-130
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	91	70-130
4-Bromofluorobenzene	98	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-005-110608**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **0811052-09**
Associated Blank: **VW111808B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/06/08	11/07/08	11/18/08	5	5	1	BAS

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	5.00	U	1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	2.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	2.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	2.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	104	70-130
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	99	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260

ALPHA ANALYTICAL

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-04A-110708**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **0811052-10**
Associated Blank: **VW111808B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/07/08	11/07/08	11/18/08	5	5	1	BAS

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	**5.32**		1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	2.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	2.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	2.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	104	70-130
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	101	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **MW-003-110708**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **0811052-11**
Associated Blank: **VW111808B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/07/08	11/07/08	11/18/08	5	5	1	BAS

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	**5.36**		1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	2.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	2.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	2.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	104	70-130
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	101	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **EB-110508**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **0811052-12**
Associated Blank: **VW111808B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/18/08	5	5	1	BAS

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	5.00	U	1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	2.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	2.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	2.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	104	70-130
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	101	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **Trip Blank**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **0811052-18**
Associated Blank: **VW111808B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/18/08	5	5	1	BAS

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	5.00	U	1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	2.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	2.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	2.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	102	70-130
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	98	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Blank
Volatile Organics by 8260

ALPHA ANALYTICAL

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **Blank**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **VW111808B11**
Associated Blank: **N/A**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/18/08	5	5	1	BAS

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	5.00	U	1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	2.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	2.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	2.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	101	70-130
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	97	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Laboratory Control Summary
Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **See Below**
Associated Blank: **VW111808B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/18/08	5	5	1	BAS

Lab ID:		VW111808B11	VW111808LCS10		VW111808LCSD10				
Parameter	**Blank Conc.**		**LCS Conc.**	**% Recovery**	**LCSD Conc.**	**% Recovery**	**% RPD**	**RPD Limit**	**% Recovery Limits**
Dichlorodifluoromethane	2.00	U	18.5	93	17.5	87	6	25	70-130
Chloromethane	2.00	U	17.5	88	16.5	82	6	25	70-130
Vinyl chloride	2.00	U	23.1	116	21.7	108	7	25	70-130
Bromomethane	2.00	U	19.5	98	18.4	92	6	25	70-130
Chloroethane	2.00	U	19.6	98	18.7	94	5	25	70-130
Trichlorofluoromethane	2.00	U	20.1	101	18.9	95	6	25	70-130
Diethyl ether	2.00	U	20.7	103	21.4	107	4	25	70-130
Acetone	5.00	U	18.6	93	18.3	91	2	25	70-130
1,1-Dichloroethene	2.00	U	20.4	102	19.9	99	2	25	70-130
Carbon disulfide	2.00	U	24.6	123	23.1	116	6	25	70-130
Methylene chloride	2.00	U	19.0	95	19.3	96	1	25	70-130
Methyl tert-butyl ether (MTBE)	2.00	U	19.0	95	18.7	93	2	25	70-130
trans-1,2-Dichloroethene	2.00	U	20.5	103	19.5	98	5	25	70-130
Diisopropyl Ether (DIPE)	2.00	U	20.3	102	20.0	100	1	25	70-130
1,1-Dichloroethane	2.00	U	20.1	101	19.3	97	4	25	70-130
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	19.8	99	19.2	96	3	25	70-130
2-Butanone (MEK)	2.00	U	20.1	100	20.9	105	4	25	70-130
cis-1,2-Dichloroethene	2.00	U	19.1	95	18.9	94	1	25	70-130
2,2-Dichloropropane	2.00	U	20.4	102	19.2	96	6	25	70-130
Bromochloromethane	2.00	U	20.3	101	19.9	99	2	25	70-130
Chloroform	2.00	U	20.2	101	19.4	97	4	25	70-130
1,1,1-Trichloroethane	2.00	U	20.3	101	19.1	96	6	25	70-130
1,1-Dichloropropene	2.00	U	20.1	100	19.1	96	5	25	70-130
Carbon tetrachloride	2.00	U	19.1	95	18.2	91	5	25	70-130
Benzene	2.00	U	20.3	101	19.1	96	6	25	70-130
Tertiary Amyl Methyl Ether (TAME)	2.00	U	20.4	102	20.0	100	2	25	70-130
Tetrahydrofuran	2.00	U	17.2	86	16.9	84	2	25	70-130
1,2-Dichloroethane	2.00	U	19.0	95	18.9	95	0	25	70-130
Trichloroethene	2.00	U	20.3	101	18.8	94	8	25	70-130
1,2-Dichloropropane	2.00	U	20.7	104	19.8	99	5	25	70-130
Dibromomethane	2.00	U	20.2	101	19.8	99	2	25	70-130
1,4-Dioxane	100	U	522	130	548	137[a]	5	25	70-130
Bromodichloromethane	2.00	U	20.6	103	19.7	98	5	25	70-130

Laboratory Control Summary
Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **See Below**
Associated Blank: **VW111808B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/18/08	5	5	1	BAS

Lab ID: VW111808B11 VW111808LCS10 VW111808LCSD10

Parameter	Blank Conc.		LCS Conc.	LCS % Recovery	LCSD Conc.	LCSD % Recovery	% RPD	RPD Limit	% Recovery Limits
Methyl isobutyl ketone (MIBK)	2.00	U	19.7	98	19.3	96	2	25	70-130
1,3-Dichloropropene, Total	4.00	U	41.1	103	39.4	98	4	25	70-130
Toluene	2.00	U	20.6	103	19.4	97	6	25	70-130
1,1,2-Trichloroethane	2.00	U	20.4	102	19.7	98	4	25	70-130
2-Hexanone	2.00	U	20.9	105	20.2	101	4	25	70-130
Tetrachloroethene	2.00	U	15.0	75	14.1	71	6	25	70-130
1,3-Dichloropropane	2.00	U	20.4	102	19.5	98	5	25	70-130
Dibromochloromethane	2.00	U	20.5	103	19.8	99	4	25	70-130
1,2-Dibromoethane	2.00	U	20.6	103	19.5	98	5	25	70-130
Chlorobenzene	2.00	U	19.8	99	18.9	95	5	25	70-130
1,1,1,2-Tetrachloroethane	2.00	U	20.0	100	19.4	97	3	25	70-130
Ethylbenzene	2.00	U	19.7	99	18.9	94	4	25	70-130
Xylenes, Total	6.00	U	59.5	99	57.0	95	4	25	70-130
Styrene	2.00	U	20.0	100	19.2	96	4	25	70-130
Bromoform	2.00	U	19.5	97	19.1	95	2	25	70-130
Isopropylbenzene	2.00	U	20.0	100	19.2	96	4	25	70-130
1,1,2,2-Tetrachloroethane	2.00	U	19.7	98	19.2	96	2	25	70-130
Bromobenzene	2.00	U	19.4	97	19.2	96	1	25	70-130
1,2,3-Trichloropropane	2.00	U	18.2	91	17.9	90	2	25	70-130
n-Propylbenzene	2.00	U	20.0	100	19.0	95	5	25	70-130
2-Chlorotoluene	2.00	U	19.1	96	18.6	93	3	25	70-130
1,3,5-Trimethylbenzene	2.00	U	19.8	99	19.3	97	2	25	70-130
4-Chlorotoluene	2.00	U	19.8	99	19.3	97	3	25	70-130
tert-Butylbenzene	2.00	U	20.0	100	19.1	95	5	25	70-130
1,2,4-Trimethylbenzene	2.00	U	19.9	100	19.2	96	4	25	70-130
sec-Butylbenzene	2.00	U	20.2	101	19.5	97	4	25	70-130
1,3-Dichlorobenzene	2.00	U	19.8	99	19.2	96	3	25	70-130
p-Isopropyltoluene	2.00	U	20.6	103	19.5	98	5	25	70-130
1,4-Dichlorobenzene	2.00	U	19.8	99	19.0	95	4	25	70-130
n-Butylbenzene	2.00	U	20.5	103	19.6	98	5	25	70-130
1,2-Dibromo-3-chloropropane	2.00	U	19.6	98	19.0	95	3	25	70-130
1,2-Dichlorobenzene	2.00	U	19.7	98	19.3	97	2	25	70-130
1,2,4-Trichlorobenzene	2.00	U	19.8	99	19.2	96	3	25	70-130

Laboratory Control Summary
Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **See Below**
Associated Blank: **VW111808B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/18/08	5	5	1	BAS

Lab ID: VW111808B11 VW111808LCS10 VW111808LCSD10

Parameter	Blank Conc.		LCS Conc.	LCS % Recovery	LCSD Conc.	LCSD % Recovery	% RPD	RPD Limit	% Recovery Limits
Hexachlorobutadiene	2.00	U	23.1	116	21.0	105	10	25	70-130
Naphthalene	2.00	U	19.4	97	19.0	95	2	25	70-130
1,2,3-Trichlorobenzene	2.00	U	20.6	103	19.9	99	4	25	70-130

Surrogate	% Recovery		Acceptance Range (%)
Dibromofluoromethane	100	101	70-130
1,2-Dichloroethane-d4	98	98	70-130
Toluene-d8	101	101	70-130
4-Bromofluorobenzene	99	99	70-130

N/A - Not Applicable
[a] - Value outside of QC Limits.
U - The analyte was analyzed for but not detected at the sample specific level reported.

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

11/21/08 08:04

Blank
Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **Blank**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **VW111908B11**
Associated Blank: **N/A**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/19/08	5	5	1	BAS

Parameter	Result		Parameter	Result	
Dichlorodifluoromethane	2.00	U	1,3-Dichloropropene, Total	4.00	U
Chloromethane	2.00	U	Toluene	2.00	U
Vinyl chloride	2.00	U	1,1,2-Trichloroethane	2.00	U
Bromomethane	2.00	U	2-Hexanone	2.00	U
Chloroethane	2.00	U	Tetrachloroethene	2.00	U
Trichlorofluoromethane	2.00	U	1,3-Dichloropropane	2.00	U
Diethyl ether	2.00	U	Dibromochloromethane	2.00	U
Acetone	5.00	U	1,2-Dibromoethane	2.00	U
1,1-Dichloroethene	2.00	U	Chlorobenzene	2.00	U
Carbon disulfide	2.00	U	1,1,1,2-Tetrachloroethane	2.00	U
Methylene chloride	2.00	U	Ethylbenzene	2.00	U
Methyl tert-butyl ether (MTBE)	2.00	U	Xylenes, Total	6.00	U
trans-1,2-Dichloroethene	2.00	U	Styrene	2.00	U
Diisopropyl Ether (DIPE)	2.00	U	Bromoform	2.00	U
1,1-Dichloroethane	2.00	U	Isopropylbenzene	2.00	U
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	1,1,2,2-Tetrachloroethane	2.00	U
2-Butanone (MEK)	2.00	U	Bromobenzene	2.00	U
cis-1,2-Dichloroethene	2.00	U	1,2,3-Trichloropropane	2.00	U
2,2-Dichloropropane	2.00	U	n-Propylbenzene	2.00	U
Bromochloromethane	2.00	U	2-Chlorotoluene	2.00	U
Chloroform	2.00	U	1,3,5-Trimethylbenzene	2.00	U
1,1,1-Trichloroethane	2.00	U	4-Chlorotoluene	2.00	U
1,1-Dichloropropene	2.00	U	tert-Butylbenzene	2.00	U
Carbon tetrachloride	2.00	U	1,2,4-Trimethylbenzene	2.00	U
Benzene	2.00	U	sec-Butylbenzene	2.00	U
Tertiary Amyl Methyl Ether (TAME)	2.00	U	1,3-Dichlorobenzene	2.00	U
Tetrahydrofuran	2.00	U	p-Isopropyltoluene	2.00	U
1,2-Dichloroethane	2.00	U	1,4-Dichlorobenzene	2.00	U
Trichloroethene	2.00	U	n-Butylbenzene	2.00	U
1,2-Dichloropropane	2.00	U	1,2-Dibromo-3-chloropropane	2.00	U
Dibromomethane	2.00	U	1,2-Dichlorobenzene	2.00	U
1,4-Dioxane	100	U	1,2,4-Trichlorobenzene	2.00	U
Bromodichloromethane	2.00	U	Hexachlorobutadiene	2.00	U
Methyl isobutyl ketone (MIBK)	2.00	U	Naphthalene	2.00	U
			1,2,3-Trichlorobenzene	2.00	U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	108	70-130
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	104	70-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Laboratory Control Summary
Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **See Below**
Associated Blank: **VW111908B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/19/08	5	5	1	BAS

Lab ID: VW111908B11 VW111908LCS09 VW111908LCSD09

Parameter	Blank Conc.		LCS Conc.	LCS % Recovery	LCSD Conc.	LCSD % Recovery	% RPD	RPD Limit	% Recovery Limits
Dichlorodifluoromethane	2.00	U	20.3	102	19.4	97	4	25	70-130
Chloromethane	2.00	U	18.8	94	17.7	89	6	25	70-130
Vinyl chloride	2.00	U	24.8	124	22.6	113	9	25	70-130
Bromomethane	2.00	U	18.6	93	18.0	90	3	25	70-130
Chloroethane	2.00	U	21.1	106	19.0	95	11	25	70-130
Trichlorofluoromethane	2.00	U	22.3	112	21.1	105	6	25	70-130
Diethyl ether	2.00	U	22.2	111	21.6	108	3	25	70-130
Acetone	5.00	U	22.0	110	20.0	100	10	25	70-130
1,1-Dichloroethene	2.00	U	21.6	108	20.1	101	7	25	70-130
Carbon disulfide	2.00	U	25.3	127	24.1	120	5	25	70-130
Methylene chloride	2.00	U	20.7	103	21.5	108	4	25	70-130
Methyl tert-butyl ether (MTBE)	2.00	U	21.6	108	21.1	105	2	25	70-130
trans-1,2-Dichloroethene	2.00	U	23.1	115	22.2	111	4	25	70-130
Diisopropyl Ether (DIPE)	2.00	U	23.2	116	23.0	115	1	25	70-130
1,1-Dichloroethane	2.00	U	22.6	113	22.1	111	2	25	70-130
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	22.3	112	21.8	109	2	25	70-130
2-Butanone (MEK)	2.00	U	24.4	122	24.7	124	1	25	70-130
cis-1,2-Dichloroethene	2.00	U	21.7	109	21.1	106	3	25	70-130
2,2-Dichloropropane	2.00	U	22.9	115	21.0	105	9	25	70-130
Bromochloromethane	2.00	U	22.1	110	21.5	107	3	25	70-130
Chloroform	2.00	U	23.1	116	21.9	110	6	25	70-130
1,1,1-Trichloroethane	2.00	U	22.9	115	21.9	109	5	25	70-130
1,1-Dichloropropene	2.00	U	22.8	114	21.1	105	8	25	70-130
Carbon tetrachloride	2.00	U	23.1	115	21.5	108	7	25	70-130
Benzene	2.00	U	22.8	114	21.7	109	5	25	70-130
Tertiary Amyl Methyl Ether (TAME)	2.00	U	23.3	116	22.6	113	3	25	70-130
Tetrahydrofuran	2.00	U	20.1	100	19.2	96	4	25	70-130
1,2-Dichloroethane	2.00	U	22.6	113	22.4	112	1	25	70-130
Trichloroethene	2.00	U	22.4	112	20.5	103	9	25	70-130
1,2-Dichloropropane	2.00	U	22.8	114	21.8	109	5	25	70-130
Dibromomethane	2.00	U	22.5	112	21.6	108	4	25	70-130
1,4-Dioxane	100	U	610	152[a]	514	129	17	25	70-130
Bromodichloromethane	2.00	U	22.9	115	21.9	109	5	25	70-130

Laboratory Control Summary
Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **See Below**
Associated Blank: **VW111908B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/19/08	5	5	1	BAS

Lab ID:		VW111908B11	VW111908LCS09		VW111908LCSD09				
Parameter	**Blank Conc.**		**LCS Conc.**	**% Recovery**	**LCSD Conc.**	**% Recovery**	**% RPD**	**RPD Limit**	**% Recovery Limits**
Methyl isobutyl ketone (MIBK)	2.00	U	22.9	115	21.8	109	5	25	70-130
1,3-Dichloropropene, Total	4.00	U	44.9	112	42.7	107	5	25	70-130
Toluene	2.00	U	22.4	112	21.2	106	6	25	70-130
1,1,2-Trichloroethane	2.00	U	22.0	110	21.5	107	2	25	70-130
2-Hexanone	2.00	U	24.5	122	23.4	117	4	25	70-130
Tetrachloroethene	2.00	U	15.8	79	14.7	74	7	25	70-130
1,3-Dichloropropane	2.00	U	22.6	113	21.4	107	5	25	70-130
Dibromochloromethane	2.00	U	21.9	109	21.1	105	4	25	70-130
1,2-Dibromoethane	2.00	U	22.2	111	21.3	107	4	25	70-130
Chlorobenzene	2.00	U	19.8	99	18.6	93	6	25	70-130
1,1,1,2-Tetrachloroethane	2.00	U	19.8	99	18.7	93	6	25	70-130
Ethylbenzene	2.00	U	19.8	99	18.9	94	5	25	70-130
Xylenes, Total	6.00	U	60.1	100	56.2	94	7	25	70-130
Styrene	2.00	U	20.1	100	19.1	96	5	25	70-130
Bromoform	2.00	U	19.0	95	18.1	91	4	25	70-130
Isopropylbenzene	2.00	U	19.6	98	18.6	93	5	25	70-130
1,1,2,2-Tetrachloroethane	2.00	U	23.0	115	21.7	108	6	25	70-130
Bromobenzene	2.00	U	19.4	97	18.4	92	5	25	70-130
1,2,3-Trichloropropane	2.00	U	19.1	96	18.1	91	5	25	70-130
n-Propylbenzene	2.00	U	19.8	99	18.4	92	7	25	70-130
2-Chlorotoluene	2.00	U	19.3	96	18.3	92	5	25	70-130
1,3,5-Trimethylbenzene	2.00	U	19.7	98	18.7	93	5	25	70-130
4-Chlorotoluene	2.00	U	19.8	99	18.7	94	6	25	70-130
tert-Butylbenzene	2.00	U	19.5	97	18.2	91	7	25	70-130
1,2,4-Trimethylbenzene	2.00	U	19.9	100	18.8	94	6	25	70-130
sec-Butylbenzene	2.00	U	19.3	96	18.0	90	7	25	70-130
1,3-Dichlorobenzene	2.00	U	19.7	99	18.8	94	5	25	70-130
p-Isopropyltoluene	2.00	U	19.3	97	18.2	91	6	25	70-130
1,4-Dichlorobenzene	2.00	U	19.7	99	18.9	94	4	25	70-130
n-Butylbenzene	2.00	U	20.0	100	18.6	93	7	25	70-130
1,2-Dibromo-3-chloropropane	2.00	U	19.8	99	18.7	93	6	25	70-130
1,2-Dichlorobenzene	2.00	U	19.6	98	18.8	94	4	25	70-130
1,2,4-Trichlorobenzene	2.00	U	19.6	98	18.4	92	6	25	70-130

Laboratory Control Summary
Volatile Organics by 8260

Client: **Battelle**
Project: **New Bedford Harbor**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0811052**
Lab ID: **See Below**
Associated Blank: **VW111908B11**
Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/19/08	5	5	1	BAS

Lab ID: VW111908B11 VW111908LCS09 VW111908LCSD09

Parameter	Blank Conc.		LCS Conc.	LCS % Recovery	LCSD Conc.	LCSD % Recovery	% RPD	RPD Limit	% Recovery Limits
Hexachlorobutadiene	2.00	U	19.5	97	17.4	87	11	25	70-130
Naphthalene	2.00	U	20.4	102	19.1	96	7	25	70-130
1,2,3-Trichlorobenzene	2.00	U	20.1	101	18.8	94	7	25	70-130

Surrogate	% Recovery		Acceptance Range (%)
Dibromofluoromethane	107	105	70-130
1,2-Dichloroethane-d4	106	106	70-130
Toluene-d8	106	105	70-130
4-Bromofluorobenzene	104	103	70-130

N/A - Not Applicable
[a] - Value outside of QC Limits.
U - The analyte was analyzed for but not detected at the sample specific level reported.

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

11/21/08 08:05

Chain of Custody Records

Ship to Alpha

0811052

Battelle
The Business of Innovation

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Chain of Custody

Proj. No	Proj. Name
G606422	NBH-Groundwater

SAMPLERS: Signature: [signature], M. Fitzpatrick, Patrick Curran

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

	DATE	TIME	Lab ID ~~BATTELLE ID~~	Field ID ~~CLIENT ID~~	SAMPLE DESCRIPTION (Location)	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	~~OTHER~~ TSS	ACIDIFIED	PRESERVED HCL	Total Number of Containers
1	11/5/08	0903		MW-04A-110508	Aerovox Groundwater					✓					✓	3
2	↓	0925		MW-04B-110508	↓					✓					✓	3
3	↓	1235		MW-007-110508	↓					✓					✓	3
4	↓	1238		MW-006-110508	↓					✓					✓	3
5	11/6/08	~~MW~~ 0831		MW-07A-110608	Sawyer St					✓					✓	3
6	11/5/08	1238		MW-006-1105-08-REP	Aerovox (Field Dup)					✓					✓	3
7	11/6/08	1005		MW-006-110608	Sawyer St					✓					✓	3
8	↓	1217		MW-001-110608	↓					✓					✓	3
9	↓	1303		MW-005-110608	↓					✓					✓	3
10	11/7/08	0857		MW-04A-~~110608~~ ② 110708	↓					✓					✓	3
11	↓	0920		MW-003-110708	↓					✓					✓	3
12	③ 11/5/08			EB-110508	Equipment Blank					✓			✓			~~3~~ 4
13	11/5/08	0918		MW-04A-110508	Aerovox Groundwater								✓			1
14	↓	1040		MW-04B-110508	↓								✓			1
15	↓	1245		MW-007-110508	↓								✓			1
16	↓	1310		MW-006-110508	↓								✓			1
17	↓	1310		MW-006-110508-REP	↓ (Field Dup)								✓			1

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	11/7/08	1130	Patrick Curran	11/7/08	1130
Patrick Curran	11/7/08	1300	[signature]	11/7/08	1300

Comments:
① Please ignore JMT 11/6/08
② S/B MW-04A-110708
③ Equipment Blank for VOA + TSS
↓ 3 vials ↓ 1 Bottle

ORIGINAL

Sample Receipt Checklist

Client: BATDX	**Receipt Date:** 11/7/08		
Project: NB Harbor	**Log-in Date:** 4		
ETR #: 0811052	**Inspection by:** W	**Login by:** W	

ALL SECTIONS BELOW MUST BE COMPLETED

Were samples shipped? Yes, FedEx / UPS / Other:_____
(No,) Alpha Analytical Courier pick-up / Hand delivered

Is bill of lading retained? Yes, Tracking #:_____
No, Unavailable (NA)

Number of coolers received for this project delivery: 1

Indicate cooler temperature upon opening (if multiple coolers, record all temps):

Note: If all coolers are 2-6°C, use one checklist, if NOT, use separate checklists and note all samples received *above* 6°C.

Cooler 1:
Temperature(s) taken from: 6° IR Gun, (Circle one) SN 460647143 or 94031
6° Temp. Blank, / NA
Were samples received on ice? (Yes) / No

Chain-of-Custody present? (Yes) / No
Complete? (Yes) / No

Custody seals present on Cooler? Yes / (No)
on Bottles? Yes / (No)
Intact? Yes / No / (NA)
Note: Affix custody seals to back of this page.

Were sample containers intact? (Yes) / No If No, list samples: →

Did VOA/VPH waters contain headspace (>5mm)? Yes / (No) / NA If Yes, list samples: →

Were 5035 VOA soils, or VPH soils, *covered* with MeOH? Yes / No / (NA)
If No, list samples: →

Was a sufficient amount of sample received for each test indicated on the COC?
(Yes) No If No, list samples: →

If chemical preservation is appropriate -
Were samples field preserved? (Yes) / No / NA
☒ C=HCl ☐ M=MeOH ☐ S=H_2SO4
☐ H=NaOH ☐ N=HNO_3 ☐ Other:_____ ☐ U= Unknown

Preservation (pH) verified at lab for *EVERY* bottle? (Not: VOA / VPH / Sulfide)
YES: <2 or >12 (CN) or NO NA
If No, why?:

Were samples received within hold time? Yes / No If No, list samples: →

Discrepancy between samples rec'd & COC ? (Yes) / No If Yes, list samples: →

Was the Project Manager notified of any other problems? Yes / No / NA

Project Manager Acknowledgement: Date:

Comments / Notes

Sample storage refrigerator #: C3

Sample storage freezer #:_____

Cooler 2:_____ Cooler 3:_____

Cooler 4:_____ Cooler 5:_____

Cooler 6:_____ Cooler 7:_____

More:_____

Chemical preservation OK for ALL samples?
Yes / No / (N/A)

If No, list samples below:

trip blank rec'd - NOT on COC

Please use back for any additional notes!

Certificate/Approval Program Summary

Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2; Metals: 200.8, 245.1; Organics: 608-PCB, ETPH) *Solid Waste/Soil* (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastwater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, SM2320B, SM2340B, SM2540G, SM4500NH3; Metals: 245.1; Organics: 608-PCB). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608-PCB, 8015-DRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/ SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2; Metals: EPA 245.1; Organics: 608-PCB).

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2; Metals: EPA 245.1; Organics: EPA 608-PCB).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608-PCB).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608-PCB, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 376.2; Metals: 200.8, 245.1; Organics: 608-PCB). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 200.8; 6020;7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Poratable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy

US ARMY CORPS
OF ENGINEERS
New England District

Contract No. DACW33-03-D-0004

Delivery Order No. 22

June 2009

Final

Sediment Trap Study Report

Environmental Monitoring, Sampling, and Analysis

New Bedford Harbor Superfund Site

New Bedford Harbor, MA

Final

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Environmental Monitoring, Sampling, and Analysis
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New Bedford Harbor, MA

Submitted to:

Department of the Army
U.S. Army Corps of Engineers
North Atlantic Division
New England District

Contract Number: DACW33-03-D-0004
Delivery Order Number: 22

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June 2009

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TABLE OF CONTENTS

1.0 PROJECT DESCRIPTION AND OBJECTIVES 1
1.1 Purpose 1
1.2 Site Description 1
1.3 Objectives 2
2.0 STUDY DESIGN AND METHODS 3
2.1 Study Area 3
2.2 Study Design 3
2.3 Field Methods 3
2.3.1 Sediment Trap Deployment and Retrieval 4
2.3.2 Surface Sediment Sampling 4
2.4 Laboratory Methods 5
2.4.1 Sample Processing 5
2.4.2 Grain Size Analysis 6
2.4.3 Total Organic Carbon Analysis 6
2.4.4 Polychlorinated Biphenyl (Congener) Analysis 6
2.4.5 Percent Moisture 7
2.4.6 Data Analyses 7
2.5 Quality Assurance/Quality Control 8
2.5.1 Field Program 8
2.5.2 Laboratory Program 8
2.6 Project Deviations 8
3.0 RESULTS 9
3.1 Field Sample Results 9
3.1.1 Sediment Sampling 9
3.1.2 In-situ Water Quality Monitoring 9
3.2 Laboratory Testing 10
3.2.1 Sediment Accumulation 10
3.2.2 Grain Size 10
3.2.3 Total Organic Carbon 11
3.2.4 Polychlorinated Biphenyls (Congener) 11
3.3 Quality Assurance/Quality Control 11
3.3.1 Field Program 11
3.3.1.1 Sediment Accumulation 11
3.3.1.2 Grain Size 12
3.3.1.3 Total Organic Carbon 12
3.3.1.4 Polychlorinated Biphenyls (Congener) 12
3.3.2 Laboratory Program 12
4.0 SUMMARY AND CONCLUSIONS 13
4.1 Physical Characteristics 13
4.2 Polychlorinated Biphenyl Distribution and Flux 14
4.3 Comparison of PCBs in Sediment Trap and Surface Sediments 15
4.4 Potential Sediment Recontamination 15
5.0 REFERENCES 17

LIST OF TABLES

Table 1. Summary of Sediment Trap and Surface Sediment Samples Collected for Physical and Chemical Testing 21
Table 2. Summary of Sediment Mass Collected During Sediment Trap Deployments 24
Table 3. Grain Size and TOC in Sediment Trap and Surface Sediment Samples 27
Table 4. Total PCB in Sediment Trap and Surface Sediment Samples 30
Table 5. Sediment Deposition Rates and Estimated PCB Flux 32

LIST OF FIGURES

Figure 1. Location of the New Bedford Harbor Site in Southeastern, MA 37
Figure 2. Overview of New Bedford Harbor Site. 38
Figure 3. Sediment Trap Study Locations and 2007 and 2008 Remediation Areas. 39
Figure 4. Sediment Trap Study Timeline. 40
Figure 5. Pictures of Sediment Traps before Deployment (Top), During Deployment (Bottom), and Recovery (Bottom). 40
Figure 6. *In situ* Temperature and Salinity Data at ST-03 from October 2007 to October 2008 41
Figure 7. *In situ* Dissolved Oxygen Data at ST-03 from October 2007 to October 2008 41
Figure 8. *In situ* Turbidity Data at ST-03 from October 2007 to October 2008. 41
Figure 9. Grain Size Distributions (Top) and the Correspondence between Percent Fines and TOC (Bottom) in Sediment Trap and Surface Sediment Samples at the North of Wood Street Area, Data from October 2007 to October 2008. 42
Figure 10. Grain Size Distributions in Suspended Sediment Material at Sediment Trap Locations during Non-dredging and Dredging Periods, Data from October 2007 to October 2008. 43
Figure 11. Sediment Deposition Rate at Sediment Trap Stations. 44
Figure 12. Total PCB Concentrations at Sediment Trap Stations. 45
Figure 13. Total PCB Concentrations, Non-normalized (Top) and Normalized to Percent Fines (Bottom), in Sediment Trap Samples Deployed During Non-dredge (grey band) and Dredge (symbols) Periods. 46
Figure 14. PCB Flux at Sediment Trap Stations. 47
Figure 15. Comparison of PCB Distribution Patterns in Surface Sediment and Sediment Trap Samples at Station ST-04 During Post 2007 (top) and Pre 2008 (bottom) Dredge Periods. 48
Figure 16. Total PCB Concentrations (Normalized to Percent Fines) in Surface (0-2 cm) Sediment (dark blue bars) and Sediment Trap (light blue bars) Samples at the North of Wood Street Area, October 2007 to October 2008. 49
Figure 17. Total PCB in Sediment at Station ST-01 from 2003 to 2008. 50
Figure 18. Total PCB in Sediment at Station ST-02 from 2003 to 2008. 50
Figure 19. Total PCB in Sediment at Station ST-03 from 2003 to 2008. 51

APPENDICES

Appendix A: Field Logs
Appendix B: Grain Size and TOC Data
Appendix C: PCB Congener Data

1.0 PROJECT DESCRIPTION AND OBJECTIVES

1.1 Purpose

Battelle has been contracted by U.S. Army Corps of Engineers (USACE) New England District (NAE) to perform environmental monitoring in support of the remedial activities at the New Bedford Harbor Superfund Site. This document presents the results from a sediment trap study designed to monitor resuspended sediments in the northern portion of the harbor that could impact restoration of the North of Wood Street (NWS) area. The data collection activities for the sediment trap study included:

- Deployment and collection of sediment traps at four locations north of dredging area MU-1 including traps north of the Wood Street Bridge (study locations are 'up-current' of dredging area MU-1 during ebb tide and 'down-current' of dredging area MU-1 during flood tide);
- *In-situ* water quality monitoring (e.g., temperature, salinity, and turbidity) at these locations;
- Collection of surface sediments at each sediment trap location; and
- Analysis of sediment trap samples and surface sediments for polychlorinated biphenyls (PCBs) congeners, grain size and total organic carbon (TOC).

1.2 Site Description

The New Bedford Harbor Superfund Site (hereafter referred to as the site), located in Bristol County, Massachusetts (MA), extends from the shallow northern reaches of the Acushnet River estuary south through the commercial harbor of New Bedford and into 17,000 adjacent acres of Buzzards Bay (Figure 1). Industrial and urban development surrounding the harbor has resulted in sediments becoming contaminated with high concentrations of many pollutants, most notably PCBs and heavy metals. Two manufacturers in the area used PCBs while producing electronic devices from the 1940s to the late 1970s, when the use of PCBs was banned by the U.S. Environmental Protection Agency (USEPA). Based on human health concerns and ecological risk assessments, USEPA added New Bedford Harbor to the National Priorities List in 1983 as a designated Superfund site. Through an Interagency Agreement between the USEPA and the USACE NAE, the USACE NAE is responsible for carrying out the design and implementation of the remedial measures at the site. The site has been divided into three areas – the upper, lower and outer harbors – consistent with geographical features of the area and gradients of contamination (Figure 2).

The shoreline Aerovox manufacturing facility located in New Bedford, MA (Figure 2) used PCBs in the manufacture of electrical capacitors from approximately 1940 to 1977. This facility is considered one of the major sources of historic PCB contamination to New Bedford Harbor. The highest concentrations of PCBs were found in sediments in a 5-acre area in the northern portion of the Acushnet River Estuary adjacent to the Aerovox facility. These 'hot spot' sediments, which contained PCBs upwards of 100,000 milligrams per kilogram (mg/kg), were removed between 1994 and 1995 as part of USEPA's 1990 "Hot Spot" Record of Decision

(ROD). Full scale remediation dredging per the 1998 Upper and Lower Harbor ROD was initiated in 2004 and has continued with annual funding every year since. Another known source of PCB contamination in New Bedford Harbor is related to activities at the Cornell-Dubilier mill on the western shore of the outer harbor (Figure 2). In 2005, a 15 acre underwater cap pilot project was implemented near Cornell-Dubilier to cap PCB contaminated sediments.

Located at the far northern end of the Upper Harbor are areas which were prioritized for restoration activities based on their proximity to shoreline residential and recreational land use areas. The NWS area includes in-river sediments and marsh soils on the eastern and western shores of the river. The NWS area ranges from approximately 250-ft south of the Wood Street Bridge to approximately 0.25 miles north of the bridge. Sediments and marsh soils in the NWS area previously had PCB concentrations as high as 46,000 mg/kg. The 1998 ROD established the following clean up criteria: 1 mg/kg for residential shoreline areas, 10 mg/kg for the sub-tidal sediments, 25 mg/kg for the top foot of recreational land use shoreline soils, and 50 mg/kg for shoreline soils deeper than the top foot in residential and recreational land use areas.

In the winter of 2002-2003, approximately 15,000 cubic yards of material was removed from the NWS area. The site was remediated using temporary dams and pumps to divert river water around the site. This allowed excavation activities to be conducted on dry sediments and soils, thus eliminating the potential for sediment resuspension and recontamination. Clean fill was used to restore the river banks, but sub-tidal areas were left at the depth of excavation (i.e., not backfilled). Marsh and upland vegetation was planted above the low water line to stabilize and restore the shoreline. In August of 2004 post-remediation sampling revealed elevated PCB concentrations on the eastern shoreline of the NWS area, and in certain sub-tidal locations. Elevated concentrations were found above the high tide line suggesting that incomplete remediation was a more likely cause than recontamination from in-river sources. Additional remediation and restoration efforts were conducted in December of 2005 to remove the remaining contamination. Samples collected before and after this effort showed an improvement in shoreline PCB concentrations (ENSR 2006). Additional sediment sampling in 2006 (Battelle 2007a) and 2007 (Battelle 2008) showed some variability in PCB concentrations but no substantial recontamination.

1.3 Objectives

The objective of this study was to collect data to assess trends in PCBs at the NWS area and to further evaluate the potential for recontamination of previously remediated areas north of the Wood Street Bridge, and to identify potential sources, if possible. Changes in PCBs observed in sediment stations at the NWS area could be associated with resuspension of dredged material related to remedial dredging activities, naturally occurring movement of resuspended sediments in the area, an upland source, or any combination of these factors. Data collected to support the study objectives included: physical characteristics (grain size and TOC), PCB chemistry on suspended sediment material and surface sediments, and *in-situ* water quality measurements (e.g., turbidity) during sediment trap deployment periods.

2.0 STUDY DESIGN AND METHODS

The study area and design and sampling and analytical methods used to deploy, collect and analyze sediment trap and surface (0-2 cm) sediment samples for physical characteristics and PCBs is summarized in this section and detailed in the project work plan (Battelle 2007b).

2.1 Study Area

The NWS area is a shallow water estuary located at the upstream reach of New Bedford Harbor and the Acushnet River. This area of the upper harbor also includes a narrow channel with steep marsh banks on both sides, with at least two combined sewer overflows that could provide additional inputs to the system. New Bedford Harbor is a highly dynamic system influenced by physical processes including precipitation, winds, severe weather conditions including coastal storms and hurricanes, and tides. Tides are semidiurnal, with two high waters and two low waters occurring each day. The tide, together with variability in freshwater flow, determines the current direction and its influence on the transport of suspended sediments. On ebb tides, "down-current" is always to the south. However, on flood tides flow is often, though not always, to the north. While all of these physical processes can influence resuspension and transport of bottom sediment in the area, tides and storm waves appear to be the dominating processes at the site (Battelle, 1991).

2.2 Study Design

Sediment trap samplers were deployed at four stations in the northern portion of New Bedford Harbor (Figure 3) to characterize sediment resuspension and associated PCBs and physical characteristics at the NWS area before, during, and after dredging. Pre and post-dredging deployments were performed to assess natural movement of sediments in the harbor. The three northernmost deployment locations (ST-01, ST-02, and ST-03) were chosen to correspond to existing sediment sampling stations (033, 048, and 062, Figure 3). The southernmost station (ST-04) was located at the northern boundary of the 2007 and 2008 dredging activities (Areas G and H in 2007 and Aerovox and Pierce Mill Cove in 2008). Sediment traps were recovered once a sufficient quantity of suspended sediment material had accumulated to meet mass requirements for physical and chemical testing. Co-located surface sediments were collected during two events (post 2007 dredging and pre 2008 dredging) to represent an integrated measurement of actual surface sediment concentrations and PCB composition pre and post-dredging.

The sediment trap and surface sediment samples were analyzed for grain size, TOC, and PCB congeners (correlated to total PCBs using a site-specific correlation factor). Continuous *in-situ* water quality monitoring was also performed using moored instruments to collect temperature, salinity, dissolved oxygen (DO), and turbidity data. Other field data including sampling location, sample deployment and collection date, and sample depth were recorded on the field logs.

2.3 Field Methods

The sediment trap study was performed over a 12 month period, and encompassed both active dredging and non-dredging periods. A timeline showing when sediment trap samples and

surface (0-2 cm) sediment samples were collected relative to dredging and non-dredging activities is presented in Figure 4.

2.3.1 Sediment Trap Deployment and Retrieval

The sediment trap study was performed over a 12 month period, with individual deployments occurring during both active dredging and non- dredging periods. A minimum of two traps were deployed at each location to provide information on reproducibility with respect to sediment accumulation rates and to provide additional material for analysis. A third trap was also deployed at ST-01 to allow for sufficient replication to assess the precision of the field and laboratory measurements. All information pertaining to the deployment and retrieval of sediment traps was recorded on the Field Daily Log Forms (Appendix A). During sediment trap deployment, turbidity, temperature, and salinity measurements were obtained at the location of the deployment and recorded on the *In Situ* Log Form (Appendix A). In addition, a moored YSI data sonde was stationed at ST-03 to collect continuous turbidity, temperature, and salinity measurements over the duration of the deployments. A differential Global Positioning System (dGPS) was used to locate the stations. The dGPS was calibrated and the information recorded on the Calibration Form (Appendix A).

Figure 5 shows a picture of a sediment trap before and during deployment and after recovery. Each sediment trap sampler consisted of a 2-liter wide mouth plastic jar with a funnel affixed to the mouth. The inner diameter of the funnel was 8 inches. The jar/funnel assembly was secured inside a weighted 1-gallon bucket. This configuration placed the opening of the trap (mouth of the funnel) approximately 1-ft above the sediment water interface and approximately 3-inches above the rim of the bucket. A line from the bucket was attached to a surface buoy. During deployment clean sediment traps were lowered slowly through the water column and placed gently on the bottom. Every effort was made to minimize resuspension of sediments during deployment of the trap.

Sediment traps were retrieved once a sufficient quantity of material had accumulated (approximately 20 grams wet; based on visual observation of traps) to meet mass requirements for physical and chemical testing. The duration of the deployment period varied over the course of the study, and was dependent on the rate that suspended material accumulated in the traps. If sediment deposition rates were lower than expected, the deployment times were extended. To retrieve the samples, the traps were pulled up slowly and gently by the surface buoy line. Every effort was made to minimize disturbance of sediments within the trap. The traps were brought on board the boat, the funnel was gently removed, and a cap was placed on the 2-liter jar. Samples were kept cold (4°C) and transported under chain of custody to Battelle (Duxbury, MA) for processing (see Section 2.4.1).

2.3.2 Surface Sediment Sampling

Co-located surface sediments were collected at each of the four trap locations to represent an integrated measurement of actual surface sediment concentrations and PCB composition before and after dredging.

Surface sediment was collected using a Kynar coated 0.1-m^2 Van Veen grab sampler. Each grab sample was inspected for acceptability (Battelle, 2007b). The 0-2 cm was collected for physical

and chemical testing using pre-cleaned stainless steel scoops or spoons. Samples were homogenized by stirring in a clean, stainless steel container prior to subsampling into individual containers in the field. Samples were kept cold (4°C) and transported under chain of custody to Battelle (Duxbury, MA) for processing (see Section 2.4.1).

2.4 Laboratory Methods

2.4.1 Sample Processing

Upon receipt at the Battelle Duxbury Laboratory (BDL), sample custody was transferred to the laboratory. Sediment trap samples were allowed to rest undisturbed overnight in a cold room (4° ±2° C). This served two purposes. First, because many of the traps contained invertebrates such as shrimp or crabs, this chilling of the samples reduced movement of the organisms, thus reducing mixing of the sample. Secondly, the overnight storage allowed sediments in the sample to fully settle.

After the chilling and settling period, the sediment and water was transferred to a 500 mL Teflon jar, and centrifuged at approximately 1500 rpm to consolidate the trap samples and remove excess water. Before centrifugation, visible invertebrates in the sediment were removed with solvent-rinsed forceps. The centrifuged material for each sample was weighed using an electronic balance, and the weight recorded. Sediment deposition rates were calculated based on the mass of sediment accumulated in the trap, duration of the trap deployment, and the surface area of the sediment trap as follows:

$$\text{Deposition Rate (DR)} = (W_{ST} / D_{ST})/A_{ST}$$

where,

W_{ST} = mass of sediment trapped, grams dry weight
D_{ST} = duration of the sediment trap deployment, days
A_{ST} = area of the sediment trap, 0.0324 m^2 based on 8 inch diameter of funnel

Sediment material collected from the three trap samplers deployed at station ST-01 were split as follows: one trap sample was archived[1] frozen at the laboratory and two trap samples were used for grain size, TOC, and PCB analysis. Sample material split for grain size, TOC, and PCB analysis was sub-sampled from the same trap. Sediment material collected from the two trap samplers deployed at stations ST-02, ST-03, and ST04 were split as follows: one trap sample was used for grain size and TOC analysis and the second trap sample was used for PCB analysis.

All surface sediments were homogenized at the laboratory and split for grain size, TOC, and PCB analysis.

Sub-samples for grain size and TOC analysis were shipped overnight to Applied Marine Sciences (AMS) in League City, Texas (TX). Sub-samples for PCB analysis were frozen until analysis at BDL.

[1] For deployments #1 and #2, all three sediment trap samples from station ST-01 were analyzed for grain size, TOC, and PCBs.

2.4.2 Grain Size Analysis

The quantitative determination of the distribution of particle sizes in sediments was performed by AMS following ASTM D422 (AMS SOP 2103). The distribution of particle sizes larger than 74 microns (µm No. 200 sieve) was determined by sieving, while the distribution of particle sizes less than 74 µm was determined using a hydrometer. Initial preparation consisted of homogenizing samples thoroughly and removing any foreign debris (sticks, plastic, etc.). An aliquot of wet sediment was weighed and dispersed using a solution of RO/DI (reverse osmosis de-ionized) water and sodium hexameta-phosphate, then wet sieved over a No. 200 mesh sieve. The coarse fraction (>74 µm -gravels and sands) retained on the No. 200 sieve was transferred to a beaker and dried at 105ºC for 12 hours. After drying, the coarse fraction was passed through a series of nested sieves to determine the distribution of gravel and sand. The fine fraction (<74 µm silts and clays) passing the No. 200 sieve was collected in a calibrated 1 liter (L) cylinder. A hydrometer test was performed at predetermined intervals to determine the distribution of silt and clay-sized particles. All results were reported as percent on a dry weight basis.

2.4.3 Total Organic Carbon Analysis

TOC analyses were performed by AMS following EPA SW-846 Method 9060A (AMS SOP 2201). Sample preparation consisted of drying, homogenization, and acidification to remove carbonates and bicarbonates. The samples were combusted in a high-temperature furnace in a stream of oxygen to form CO_2, which was analyzed using a CO_2 Coulometer. Interfering gases, such as halogens, sulfur, nitrogen oxides, and water, were removed by chemical scrubbers prior to CO_2 measurement. All results were reported in percent carbon on a dry weight basis.

2.4.4 Polychlorinated Biphenyl (Congener) Analysis

Sediment (trap and surface) samples for PCB congener analysis were removed from frozen storage and allowed to thaw. Each sample was mixed in the container and a measured aliquot removed for percent moisture determination (Section 2.4.5). A second measured aliquot was removed and placed on a piece of aluminum foil for air drying in a hood overnight. The air-drying process was implemented to ensure percent solids in the samples were >50% to enhance extraction efficiency.

The air-dried sample was spiked with surrogates and extracted using Accelerated Solvent Extraction (ASE) following modified EPA SW846 Method 3545 (Battelle SOP 5-307). The extract was poured through a funnel containing sodium sulfate. The extract volume was then brought to 100 mL and 10 mL was removed for further processing. The 10 mL split was treated with activated copper for sulfur removal, solvent exchanged into hexane, and passed through a Florisil SPE cartridge. The post-Florisil extract was then diluted to 10 mL, out of which 1 mL was fortified with internal standards (IS) and submitted for analysis. The 100-fold pre dilution scheme (described here) was performed to prevent contamination of the analytical instruments that may occur from highly contaminated samples.

All sample extracts were analyzed for a set of 44 PCB congeners using gas chromatography/ mass spectrometry (GC/MS) in the selected ion monitoring mode (SIM) following key components of EPA Method 1668A and 8270D (Battelle SOP 5-315). Sample data were quantified by the method of internal standards, using the IS compounds. Many of the sample

extracts were diluted and re-analyzed because selected PCB congeners responded above the linear range of the instrument calibration. Congener concentrations resolved from post-analytical dilutions were qualified with a "D", while concentrations resolved from the 100-fold pre-analytical dilutions were not qualified with a "D". All results were reported in micrograms per kilogram (µg/kg) dry weight.

2.4.5 Percent Moisture

Percent moisture was determined by each laboratory (BDL and AMS) to determine the amount of water present in the sediment samples (trap and surface). At each laboratory, a well-homogenized aliquot of each sediment sample was dried overnight in an oven and the percent moisture was determined as the percent ratio of wet to dry weight for each analytical aliquot. All results were reported as percent on a wet weight basis.

At BDL, the percent moisture was determined before the samples were air-dried (Section 2.4.4) for PCB analysis. The percent moisture determination step was not repeated on the air-dried sample used for extraction.

2.4.6 Data Analyses

Microsoft® Excel 2003 and JMP (The Statistical Discovery Software, a business unit of SAS Institute, Inc.) were used to characterize the sediment chemistry data. Individual and station mean values were used in the data analyses for the following sediment parameters: sand+gravel, silt, and clay; percent fines, percent total sand, TOC, and total PCB, as follows:

- Percent fines – calculated as the sum of the silt and clay fractions
- Percent total sand – calculated as the sum of the coarse sand, medium sand, and fine sand fractions
- Total PCB – calculated as 2.6 times the sum of the 18 National Status and Trends (NS&T) congeners[2], as is routinely done for the New Bedford Harbor program. A value of zero was used in the summation for non-detects.

Total PCB concentrations used in the comparison of sediment trap and surface (0-2 cm) sediment data were also normalized to percent fines because normalization provides a more conservative means of evaluating the data for trends. Graphical representations of the sediment data were presented as ternary and histogram plots.

PCB flux, a measurement of PCB input to the bottom sediments based on both sediment deposition rate and PCB concentration, was calculated as follows:

$$\text{PCB Flux (mg/m}^2\text{/day)} = (\text{Total PCB}_{ST} \times \text{DR}_{ST})/1000$$

where,

[2] NS&T congeners include PCBs 8, 18, 28, 44, 52, 66, 101, 105, 118, 128, 138, 153, 170, 180, 187, 195, 206, and 209.

Total PCB_{ST} = concentration of total PCB in trapped sediment, mg/kg dry weight
DR_{ST} = deposition rate, $g/m^2/day$

2.5 Quality Assurance/Quality Control

2.5.1 Field Program

Replicate trap samplers were deployed and collected at each of the sediment trap stations (three samplers at station ST-01 and two samplers each at stations ST-02, ST-03, and ST-04) during each deployment to evaluate sampling reproducibility in terms of collected particulate mass. Replicate trap samplers deployed and collected at station ST-01 during each deployment were also used to evaluate sampling and analytical (i.e., grain size, TOC, and PCB) reproducibility. Replicate surface sediments were collected at station ST-01 during each sampling event to evaluate sampling and analytical reproducibility.

2.5.2 Laboratory Program

A routine set of laboratory-based quality control (QC) samples were prepared with each set of study samples to evaluate data quality in terms of accuracy and precision. QC samples for grain size consisted of one laboratory duplicate sample for each batch of 20 or fewer samples. QC samples for TOC consisted of one method blank, one continuing calibration verification, one independent continuing calibration verification, and one laboratory duplicate sample for each batch of 20 or fewer samples. QC samples for PCB analysis included one procedural blank, one laboratory control sample (LCS), one matrix spike (MS), and one matrix spike duplicate (MSD) for each batch of 20 or fewer samples.

2.6 Project Deviations

The project work plan (Battelle 2007b) indicated that a total of 12 sediment trap deployments would be conducted at each of the 4 stations. Upon evaluating the study objectives and consulting with USEPA and USACE NAE, it was determined that data provided by the 10 deployments performed over the 12-month period (beginning in October 2007 and ending in October 2008) were sufficient to meet the study objectives.

The surface sediment samples collected at the inter-tidal locations in July 2007 are not used in this report because these locations were not co-located with the trap locations, and PCB composition at these locations may not be representative of the sediment trap locations as a result.

In accordance with the study objectives, two sampling events were performed over the study period to collect co-located surface (0-2 cm) sediment samples at each of the four sediment trap locations. The co-located surface sediment samples were not collected within the same dredge season. Rather, these samples were collected following completion of dredge activities in 2007 (i.e., post 2007 dredge) and prior to the on-set of dredge activities in 2008 (i.e., pre 2008 dredge). While the surface sediment samples were not collected within the same dredge season, the samples do represent an integrated measurement of actual surface sediment concentrations and PCB composition over the study period.

3.0 RESULTS

This section summarizes results from the sediment trap study, including field and laboratory test results. Complete test results, along with results from the analysis of field- and laboratory-based QC samples, are provided as appendices to the report (Appendix A includes copies of all field logs; Appendix B includes grain size and TOC data; and Appendix C includes PCB data).

3.1 Field Sample Results

3.1.1 Sediment Sampling

Sediment trap and surface samples collected in support of this study are summarized in Table 1. The sediment trap study was performed over a 12-month period, beginning October 2007 and ending October 2008 (see Figure 4 for project timeline). Sediment trap samplers were not deployed between December 11, 2007 and March 13, 2008 due to icing conditions. A total of ten sediment trap deployments were performed at each of the four trap stations, with deployment duration ranging from 21 days to 38 days (Table 1).

Co-located surface (0-2 cm) sediment samples were collected at each of the four trap deployment locations during two events: November 12, 2007 (post 2007 dredge) and April 22, 2008 (pre 2008 dredge).

All sediment trap samples were processed to determine the particulate mass accumulated and sediment deposition rates. All sediment trap and co-located surface sediment samples received laboratory testing as described in Section 3.2.

3.1.2 In-situ Water Quality Monitoring

A moored YSI data sonde was stationed at ST-03 to collect continuous temperature, salinity, DO, and turbidity data over the duration of the sediment trap deployments. Continuous *in-situ* water quality data are not available between December 11, 2007 and March 13, 2008 because sediment traps were not deployed during this period due to icing conditions. Nor are data available between August 26 and September 15, 2008 because of a disruption in the power source (the unit was subsequently replaced).

Temperature and Salinity – Continuous *in-situ* temperature and salinity data collected during the sediment trap deployments are shown in Figure 6. Typical seasonal trends in temperature were observed throughout the study period. The highest recorded water temperatures occurred in July and August and the lowest recorded temperatures occurred in December (Figure 6). Salinity was variable within a narrow range between 20 PSU to 30 PSU throughout the study period, except for rainfall events. Salinity decreased by more than 20 PSU during major rain events (United States Geological Survey, 2009) that occurred in March, May, August, September and October 2008 (Figure 6).

Dissolved Oxygen (DO) – Continuous *in situ* DO data collected during the sediment trap deployments are shown in Figure 7. DO measurements showed patterns that were typical of estuarine environments. High DO levels were observed in the spring and fall, with lower levels

observed throughout the warmer summer months. On average DO levels from May through September 2008 were approximately 5 milligrams per liter (mg/L). However, spikes in the DO, which can be caused by large phytoplankton blooms, were also observed. A substantial increase in DO was recorded in mid July (Figure 7), which coincided with a particularly dry time period when the salinity data showed very little fluctuation (Figure 6).

Turbidity – Continuous *in-situ* turbidity data collected during the sediment trap deployments are shown in Figure 8. The raw turbidity data was variable day to day, but remained fairly consistent throughout the study period with values ranging from 0 NTU to less than 30 NTU. Filtered turbidity data showed that on average values ranged from close to 0 NTU to approximately 10 NTU. No seasonal trends were apparent in the turbidity data. However, several less significant rainfall events did coincide with increases in turbidity. For example, an increase in turbidity was observed in mid to late October 2007 and in late July 2008. Both events coincided with a small decrease in salinity (Figure 6). The larger decreases in salinity observed in mid March, early May, mid August, and late September through early October of 2008 did not appear to coincide with substantial turbidity changes, although turbidity readings did appear to be more variable than other periods.

3.2 Laboratory Testing

3.2.1 Sediment Accumulation

The mass of sediment accumulated in the sediment traps during deployment is summarized in Table 2. The wet mass of sediment accumulated in the traps ranged from 11 grams at station ST-01 during deployment #2 to approximately 190 grams at station ST-02 during deployment #9 (Table 2). The dry mass of sediment (calculated from wet mass using the percent moisture) accumulated in the traps ranged 2.5 grams at ST-04 (during deployment #4 to approximately 52 grams at ST-02 during deployment #9 (Table 2). Inter-location and inter-deployment differences were observed. Sediment mass data were used to evaluate sediment deposition rates and PCB flux (see Section 4.0).

3.2.2 Grain Size

Grain size results for the sediment trap and surface sediment samples are summarized in Table 3. The sediment trap samples from all deployments were dominated by fine-grained particles. Percent fines ranged from 86.5% to 99.8%, with 50 out of the 52 samples having >94% fines. Percent total sand ranged from 0.17% to 13.5%. Gravel was only present in 1 of the 52 samples (ST-03-103107-2) at 0.53%.

The co-located surface sediment samples were also generally fine-grained, with 7 out of 10 samples having >80% fines (Table 3). Surface sediment at station ST-01 had similar grain size composition between sampling events, while grain size composition was more variable between events at stations ST-02, ST03, and ST-04. The variability may reflect small-scale heterogeneity at these locations.

3.2.3 Total Organic Carbon

TOC results for the sediment trap and surface sediment samples are summarized in Table 3. All of the sediment trap samples had high concentrations of organic carbon (frequently >10%), consistent with the fine-grained composition of the sediments.

The co-located surface sediment samples generally had lower concentrations of organic carbon, ranging from 1.84% to 15.5%. Organic carbon content was higher in fine-grained (>90% fines) surface sediments and lower in coarse-grained (>45% total sand) sediments (Table 3). TOC levels in surface sediments were similar between events at stations ST-01 and ST-02 and more variable at stations ST-03 and ST-04.

3.2.4 Polychlorinated Biphenyls (Congener)

PCB results, presented as total PCB (2.6 times the sum of the 18 NS&T congeners), are summarized in Table 4. Concentrations of total PCB in the sediment trap samples ranged from 31.5 mg/kg at station ST-01 during deployment #2 to 345 mg/kg at station ST-04 during deployment #1 (Table 4). Concentrations of total PCB in the surface sediments ranged from 28.5 mg/kg at station ST-01 during the post 2007 dredge event (field duplicate) to 152 mg/kg at station ST-03 during the pre 2008 dredge event. Substantial variability in the total PCB data was observed, especially over time and across stations. The spatial and temporal trends in the PCB data are discussed in Section 4.0.

3.3 Quality Assurance/Quality Control

3.3.1 Field Program

Field replicate samples were collected throughout the study to evaluate sampling and analytical reproducibility with respect to sediment accumulation, grain size, TOC, and PCBs. For sediment accumulation, replicate sediment trap samplers were deployed and collected at each station and during each deployment (triplicate samplers at ST-01 and duplicate samplers at ST-02, ST-03, and ST-04). For grain size, TOC, and PCBs, replicate trap and surface sediment samples were collected at one station during each event (triplicate measurements at ST-01 during trap deployments 1 and 2 and duplicate measurements at ST-01 during trap deployments 3-10 and both surface sediment sampling events). The reproducibility among the replicate measurements is reported in terms of relative standard deviation (RSD), where the number of replicate measurements is three for a given station or relative percent difference (RPD), where the number of replicate measurements is two for a given station. Replicate results are reported with the sample data in Table 2 (sediment accumulation), Table 3 (grain size and TOC), and Table 4 (total PCB).

3.3.1.1 Sediment Accumulation

The precision between field replicates measurements in terms of the wet or dry mass of accumulated sediment was fair, with values ranging from 2% to 130% RSD/RPDs based on wet mass and from 1% to 155% based on dry mass (Table 2). The majority of the replicate samples (30 (wet) or 32 (dry) out of 39) had RSD/RPDs <50% (Table 2).

3.3.1.2 Grain Size

Field replicate measurements agreed well for silt and clay fractions (RSD/RPDs ranged from 0.2% to 9% for percent fines) and were more variable for sand and gravel fractions (RSD/RPDs ranged from 3% to 148% for total sand) (Table 3). The higher variability among replicate samples for the sand and gravel fractions is attributed to the very low percentages (frequently <5%) of these grain size fractions measured in the sediment samples.

3.3.1.3 Total Organic Carbon

Field replicate measurements agreed well for TOC, with values ranging from 0.3% to 27% RSD/RPDs (Table 3).

3.3.1.4 Polychlorinated Biphenyls (Congener)

Field replicate results for total PCB were generally comparable, with 9 out of the 12 replicates having RSD/RPDs <50% (Table 4). Concentrations of total PCB were more variable for 3 of the 12 replicate samples, with RSD/RPDs ranging from 57% to 71% (Table 4). The higher variability may be attributed to natural sample heterogeneity, sampling and/or laboratory analytical variability, or a combination of these factors.

3.3.2 Laboratory Program

Results from the laboratory-based QC samples are reported with the sample data as appendices to this report (Appendix B for grain size and TOC and Appendix C for PCB). Results from the analysis of laboratory-based QC samples for PCBs were evaluated against the project measurement quality objectives to evaluate data quality in terms of accuracy and precision. Results from this evaluation are summarized in the QA/QC narratives provided in Appendix C. Overall, results from the laboratory-based QC samples for all test parameters (grain size, TOC, and PCBs) indicate that the laboratory methods were in control and the data are useable.

4.0 SUMMARY AND CONCLUSIONS

This section describes the physical characteristics of suspended and settling sediment material at the NWS area, discusses trends in PCBs and evaluates if recontamination of the area is likely due to movement of sediment particles in the water column. Results discussed below are summarized in Table 5, and include sediment deposition rate and PCB flux to the bottom sediment based on amount of sediment collected, area of the trap, deployment durations, and PCB concentrations measured in the sediment trap samples.

4.1 Physical Characteristics

Sediment trap sediments were comprised of fine-grained (generally >90% fines), homogenous sediments with variable distributions of silt and clay fractions and high percentages of organic carbon (frequently >10%) (Figure 9). By comparison, surface (0-2 cm) sediments were more heterogeneous, comprised of both coarse-grained, low TOC and fine-grained, high TOC sediments (Figure 9).

Spatial and temporal trends in the physical characteristics and deposition rates of suspended and settling sediment material at the NWS study area were apparent in the study data. The distribution of fine-grained material (silt and clay fractions) at station ST-01 was variable throughout the monitoring period (Figure 10), during both dredging and non-dredging periods. By contrast, the distribution of fine-grained material was spatially more variable at stations ST-02, ST-03, and ST-04 during dredging activities compared to non-dredging periods (Figure 10). Moreover, the limited data showed a preferential increase in clay content during dredging periods at the southernmost stations ST-03 and ST-04 (Figure 10).

Sediment deposition rates were spatially variable at the NWS study area in the summer during remediation activities and were less spatially variable in the fall, winter and early spring during non-dredging periods (Figure 11). Excluding station ST-02, the time-series data suggest that sediment deposition rates appear to be seasonal, increasing from late spring to summer, reaching maximum rates in July/August and decreasing from late fall to winter, reaching minimum rates in March/April (Figure 11). The largest fluxuations in deposition rates were observed at station ST-02 (Figure 11), located immediately north of the Wood Street Bridge. Deposition rates at station ST-02 were also among the highest measured at the NWS study area in the summer of 2008 during the Aerovox and Pierce Mill Cove remediation periods (Figure 11). Interestingly, sedimentation rates at nearby stations (ST-01, ST-03) decreased during the Pierce Mill Cove dredge period (Figure 11), suggesting that the sustained, elevated sedimentation rates at ST-02 (25-30 g/m^2/day) could be associated with factors other than the remediation activity. Moreover, the observed decrease in sedimentation rates at stations ST-01, ST-03, and ST-04 during the Pierce Mill Cove dredging period (Figure 11) suggests that distance from the remediation activity may have influenced the sedimentation rates. That is, sedimentation rates increased during the Aerovox remediation period, located in close proximity (approximately 400 meters) to the study area, and decreased during the Pierce Mill Cove dredge period, located further away (approximately 2,000 meters) from the study area. However, the results for ST-02 (high deposition rate during Pierce Mill Cove dredging) confound the interpretation of the results, suggesting other unknown factors also may be contributors.

4.2 Polychlorinated Biphenyl Distribution and Flux

Spatial and temporal trends were observed in the PCB data from the sediment traps deployed at the NWS area in 2007 and 2008. In general, PCB concentrations were spatially somewhat more variable during non-dredging periods compared to dredging periods[3] (Figure 12). The spatial variability may reflect differences in physical characteristics, such as grain size (variable silt and clay fractions) (see Figure 10), the highly dynamic nature of the system, or a combination of these factors. The study data also suggests that PCB concentrations can change in response to human activities, such as remedial dredging which can result in the resuspension of dredged material. For example, PCB concentrations were among the highest measured in sediment traps deployed at stations ST-02, ST-03 and ST-04 during dredging in 2007 at Areas G and H (Figure 12), located south of the study area (Figure 3). In addition, total PCB concentrations at the NWS area increased above 'non-dredging levels' following the onset of shoreline excavation activities in 2008 at the Aerovox site (Figures 12 and 13), located approximately 400 meters south of the study area (southern boundary, Figure 3). PCB concentrations returned to near or below 'non-dredging levels' approximately two months after the cessation of excavation activities at the Aerovox site. During this period, active dredging was performed at the Pierce Mill Cove area located approximately 2,000 meters south the study area (southern boundary, Figure 3). The decreasing trend in total PCB concentrations during the Pierce Mill Cove dredge period (Figure 12) suggests that relatively 'clean' sediment material may have been transported to the NWS area during this period, and/or that Pierce Mill Cove suspended sediments were not being transported to the NWS area. As shown in Figure 14, PCB flux followed similar temporal and spatial trends as sediment deposition rate (Figure 11) and PCB concentrations (Figure 12), combining the results from both deposition and concentration.

With few exceptions, concentrations of total PCB were among the lowest measured during the study period at station ST-01, located at the northern boundary of the study area (Figure 12). PCB concentrations were generally among the highest measured during the study period at station ST-04 (Figure 12), located at the southern boundary of the study area and in closest proximity (relative to other trap locations) to the remediation activities. While there was some variability in the PCB concentrations across space and time, the detailed congener patterns were generally similar among all the sediment samples (surface and sediment traps) indicating a common source of contamination (congener patterns for representative station ST-04 shown in Figure 15).

Overall, the study data suggest that the physical characteristics of the sediment, natural transport of sediment material in the water column, and proximity to remediation activities can influence PCB concentrations and composition in surface sediments. Moreover, PCBs in the surface sediments in the study area appear to be mostly from downstream sources (i.e., harbor areas to the south of the study area; considered down-current during ebb tide or up-current during flood tide).

[3] PCB data from the first deployment did not fit this generalization possibly because the deployment encompassed both active dredging and non-dredging periods which can confound the data interpretation.

4.3 Comparison of PCBs in Sediment Trap and Surface Sediments

Contamination in surface sediment typically represents long-term accumulation measured in terms of years, whereas contamination measured in sediment traps represents a snap shot in time (e.g., days and weeks) and reflects current deposits to the sediment bottom. While there was some variability in PCBs over space and time at the NWS area, concentrations of total PCB measured in the sediment traps at a given location were comparable to or slightly higher[4] than levels measured in the co-located surface (0-2 cm) sediments (normalized data are shown in Figure 16; non-normalized data are shown in Figures 17-19). Sediment trap samples with PCB concentrations above surface sediment levels coincided with remedial dredging activities at Area H in 2007 and shoreline excavation activities at the Aerovox site in 2008 (Figures 16-19). PCB concentrations in sediment trap samples decreased following the cessation of these remediation activities (see Section 4.2).

Sediment trap and surface sediment data were also comparable in terms of the congener distribution patterns (representative station ST-04 shown in Figure 15), indicating that the PCB-contaminated material depositing in the traps is representative of the material accumulating on the sediment bottom. Overall, the study data indicate that sediment trap and surface sediments at the NWS area are fairly comparable, both in terms of concentration levels and composition.

4.4 Potential Sediment Recontamination

Long-term monitoring of PCBs in surface sediments has been conducted at the NWS area to assess the efficacy of the remediation activities conducted in 2002-2003 and again in December 2005. Three of the long-term monitoring locations correspond to locations sampled under the sediment trap study (i.e., ST-01, ST-02, and ST-03). While the types of sediment sampled varied between the studies[5], the PCB data are informative with respect to assessing potential sediment recontamination at the NWS area. Total PCB concentrations measured in sediment cores, surface sediment, and sediment trap samples at stations ST-01, ST-02, and ST-03 are shown in Figures 17 through 19.

The sediment trap study showed that PCB-contaminated sediment material has deposited at the NWS study area, contributing to short-term changes to the PCB levels in the uppermost sediment material. While the long-term monitoring data did not reveal any substantial recontamination (Battelle, 2007a and 2008), a small increase in PCB concentrations has been observed since 2005 in sediment cores sampled at the co-located trap stations (Figures 17-19). Post-depositional processes such as bioturbation and resuspension continue to mix surface and subsurface sediment which probably explains why the post-remediation PCB increase is relatively small in the sediment cores and more evident in the sediment trap samples.

Overall, the sediment trap study showed that sediment deposition rates and PCB concentrations in the depositing sediment material varied over space and time at the NWS area, likely reflecting

[4] Depending on the location, total PCB concentrations in the sediment traps were as much as 4× higher compared to levels in co-located surface sediments.

[5] The long-term monitoring program sampled sediment cores and analyzed the surface 6 inches or 0-15 cm for PCBs. The sediment trap study sampled surface (0-2 cm) sediment and sediment traps (<1 cm) for PCB testing.

the natural variability of a highly dynamic system and influence from human activities such as remedial dredging activities. Resuspension and transport of sediments to the NWS area from other parts of New Bedford Harbor is a concern because the resuspended sediment material could be a source of PCB contamination to the NWS area. PCB data from the long-term monitoring and sediment trap studies, however, suggest that substantial recontamination has not occurred (in the surface 15 cm) at the NWS area. The small post-remediation increase in PCBs observed at some locations within the greater NWS area suggests that continued monitoring would be valuable to assess site conditions and better understand potential impacts ongoing remediation activities at New Bedford Harbor may have on the NWS area.

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Tables

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Table 1. Summary of Sediment Trap and Surface Sediment Samples Collected for Physical and Chemical Testing

Deployment Period	Deployment Duration (day)	Activity	Sample ID	Station ID	Test Parameter
SEDIMENT TRAP SAMPLES					
Deployment 1					
10/2/07-10/31/07	29	Dredging & debris removal at Area H started 8/6/2007, ended 10/9/2007	ST-01-103107-1	ST-01	PCB, Grain Size, TOC
			ST-01-103107-2		
			ST-01-103107-3		
			ST-02-103107-1	ST-02	PCB
			ST-02-103107-2		Grain Size, TOC
			ST-03-103107-1	ST-03	PCB
			ST-03-103107-2		Grain Size, TOC
			ST-04-103107-1	ST-04	PCB
			ST-04-103107-2		Grain Size, TOC
Deployment 2					
11/7/07-12/10/07	33	No dredging	ST-01-121007-1	ST-01	PCB; Grain Size, TOC
			ST-01-121007-2		
			ST-01-121007-3		
			ST-02-121007-1	ST-02	PCB
			ST-02-121007-2		Grain Size, TOC
			ST-03-121007-1	ST-03	PCB
			ST-03-121007-2		Grain Size, TOC
			ST-04-121007-1	ST-04	PCB
			ST-04-121007-2		Grain Size, TOC
Deployment 3					
3/14/08-4/15/08	32	No dredging	ST-01-041508-A	ST-01	Archive
			ST-01-041508-B		PCB, Grain Size. TOC
			ST-01-041508-C		PCB, Grain Size, TOC
			ST-02-041508-A	ST-02	PCB
			ST-02-041508-B		Grain Size, TOC
			ST-03-041508-A	ST-03	PCB
			ST-03-041508-B		Grain Size, TOC
			ST-04-041508-A	ST-04	PCB
			ST-04-041508-B		Grain Size, TOC
Deployment 4					
4/15/08-5/15/08	30	No dredging	ST-01-051508-A	ST-01	Archive
			ST-01-051508-B		PCB, Grain Size, TOC
			ST-01-051508-C		PCB, Grain Size, TOC
			ST-02-051508-A	ST-02	PCB
			ST-02-051508-B		Grain Size, TOC
			ST-03-051508-A	ST-03	PCB
			ST-03-051508-B		Grain Size, TOC
			ST-04-051508-A	ST-04	PCB
			ST-04-051508-B		Grain Size, TOC
			SS01-042208DUP		PCB, Grain Size, TOC
			SS02-042208	ST-02	PCB, Grain Size, TOC
			SS03-042208	ST-03	PCB, Grain Size, TOC
			SS04-042208	ST-04	PCB, Grain Size, TOC

Table 1. (cont)

Deployment Period	Deployment Duration (day)	Activity	Sample ID	Station ID	Test Parameter
Deployment 5					
5/15/08-6/11/08	27	Aerovox shoreline excavation started 6/2/08, ended 7/23/08	ST-01-061108-A	ST-01	Archive
			ST-01-061108-B		PCB, Grain Size, TOC
			ST-01-061108-C		PCB, Grain Size, TOC
			ST-02-061108-A	ST-02	PCB
			ST-02-061108-B		Grain Size, TOC
			ST-03-061108-A	ST-03	PCB
			ST-03-061108-B		Grain Size, TOC
			ST-04-061108-A	ST-04	PCB
			ST-04-061108-B		Grain Size, TOC
Deployment 6					
6/11/08-7/10/08	29	Aerovox shoreline excavation started 6/2/08, ended 7/23/08	ST-01-071008-A	ST-01	Archive
			ST-01-071008-B		PCB, Grain Size, TOC
			ST-01-071008-C		PCB, Grain Size, TOC
			ST-02-071008-A	ST-02	PCB
			ST-02-071008-B		Grain Size, TOC
			ST-03-071008-A	ST-03	PCB
			ST-03-071008-B		Grain Size, TOC
			ST-04-071008-A	ST-04	PCB
			ST-04-071008-B		Grain Size, TOC
Deployment 7					
7/10/08-7/31/08	21	Aerovox shoreline excavation started 6/2/08, ended 7/23/08	ST-01-073108-A	ST-01	Archive
			ST-01-073108-B		PCB, Grain Size, TOC
			ST-01-073108-C		PCB, Grain Size, TOC
			ST-02-073108-A	ST-02	PCB
			ST-02-073108-B		Grain Size, TOC
			ST-03-073108-A	ST-03	PCB
			ST-03-073108-B		Grain Size, TOC
			ST-04-073108-A	ST-04	PCB
			ST-04-073108-B		Grain Size, TOC
Deployment 8					
7/31/2008-8/25/08	25	Pierce Mill Cove dredging started 8/18/08, ended 10/21/08	ST-01-082508-A	ST-01	Archive
			ST-01-082508-B		PCB, Grain Size, TOC
			ST-01-082508-C		PCB, Grain Size, TOC
			ST-02-082508-A	ST-02	PCB
			ST-02-082508-B		Grain Size, TOC
			ST-03-082508-A	ST-03	PCB
			ST-03-082508-B		Grain Size, TOC
			ST-04-082508-A	ST-04	PCB
			ST-04-082508-B		Grain Size, TOC
Deployment 9					
8/25/08-10/2/08	38	Pierce Mill Cove dredging started	ST-01-100208-A	ST-01	Archive
			ST-01-100208-B		PCB, Grain Size, TOC
			ST-01-100208-C		PCB, Grain Size, TOC
			ST-02-100208-A	ST-02	PCB

Table 1. (cont)

Deployment Period	Deployment Duration (day)	Activity	Sample ID	Station ID	Test Parameter
		8/18/08, ended 10/21/08	ST-02-100208-B		Grain Size, TOC
			ST-03-100208-A	ST-03	PCB
			ST-03-100208-B		Grain Size, TOC
			ST-04-100208-A	ST-04	PCB, Grain Size, TOC
			ST-04-100208-B		Not used; insufficient mass for analysis
Deployment 10					
10/2/08 - 10/30/08	28	Pierce Mill Cove dredging started 8/18/08, ended 10/21/08	ST-01-103008-A	ST-01	Archive
			ST-01-103008-B		PCB, Grain Size, TOC
			ST-01-103008-C		PCB, Grain Size, TOC
			ST-02-103008-A	ST-02	PCB
			ST-02-103008-B		Grain Size, TOC
			ST-03-103008-A	ST-03	PCB
			ST-03-103008-B		Grain Size, TOC
			ST-04-103008-A	ST-04	PCB
			ST-04-103008-B		Grain Size, TOC
SURFACE (0-2 CM) SEDIMENT SAMPLES					
Event 1 (post 2007 dredge)					
11/12/07	NA	No dredging	SS-ST01-111207	ST-01	PCB, Grain Size, TOC
			SS-ST01-111207-DUP		PCB, Grain Size, TOC
			SS-ST02-111207	ST-02	PCB, Grain Size, TOC
			SS-ST03-111207	ST-03	PCB, Grain Size, TOC
			SS-ST04-111207	ST-04	PCB, Grain Size, TOC
Event 2 (pre 2008 dredge)					
4/22/08	NA	No dredging	SS01-042208	ST-01	PCB, Grain Size, TOC
			SS01-042208DUP		PCB, Grain Size, TOC
			SS02-042208	ST-02	PCB, Grain Size, TOC
			SS03-042208	ST-03	PCB, Grain Size, TOC
			SS04-042208	ST-04	PCB, Grain Size, TOC

[1] PCB testing conducted by BDL; Grain size and TOC testing conducted by AMS.

Table 2. Summary of Sediment Mass Collected During Sediment Trap Deployments

Sample ID	Sediment Trap Wet Weight (g)	Replicate Precision RSD/RPD[1] (%)	Percent Moisture[2] (%)	Sediment Trap Dry Weight[3] (g)	Replicate Precision RSD/RPD[4] (%)
Deployment 1 (10/2/07 to 10/31/07)					
ST-01-103107-1	29.55	18	42 (74)	12.5	19
ST-01-103107-2	28.69		44 (75)	11.6	
ST-01-103107-3	20.84		44 (75)	8.5	
ST-02-103107-1	23.6	52	49	11.9	6
ST-02-103107-2	40.04		(72)	11.2	
ST-03-103107-1	33.93	15	53	15.8	43
ST-03-103107-2	39.41		(74)	10.2	
ST-04-103107-1	26.45	79	53	12.3	42
ST-04-103107-2	61.08		(69)	18.9	
Deployment 2 (11/7/07 to 12/10/07)					
ST-01-121007-1	18.2	23	52 (81)	6.1	26
ST-01-121007-2	11.4		65 (73)	3.5	
ST-01-121007-3	15.7		59 (78)	5.0	
ST-02-121007-1	22.2	54	55	9.9	21
ST-02-121007-2	38.5		(79)	8.1	
ST-03-121007-1	38.5	66	58	16.3	97
ST-03-121007-2	19.5		(71)	5.7	
ST-04-121007-1	29.5	22	62	11.3	2
ST-04-121007-2	36.7		(70)	11.0	
Deployment 3 (3/14/08 to 4/15/08)					
ST-01-041508-A	12.83	17	NM	NM	NM
ST-01-041508-B	15.34		75 (76)	3.7	23
ST-01-041508-C	18.22		74 (75)	4.7	
ST-02-041508-A	16.36	11	75	4.1	7
ST-02-041508-B	18.32		(76)	4.4	
ST-03-041508-A	16.09	4	74	4.2	8
ST-03-041508-B	16.81		(73)	4.5	
ST-04-041508-A	21.54	2	76	5.2	6
ST-04-041508-B	21.16		(74)	5.5	
Deployment 4 (4/15/08 to 5/15/08)					
ST-01-051508-A	61.98	29	NM	NM	NM
ST-01-051508-B	38.17		84 (85)	5.9	6
ST-01-051508-C	39.21		84 (84)	6.3	
ST-02-051508-A	21.17	28	76	5.0	44
ST-02-051508-B	16.04		(80)	3.2	
ST-03-051508-A	16.1	26	80	3.2	49
ST-03-051508-B	21.01		(75)	5.3	
ST-04-051508-A	11.74	11	79	2.5	11
ST-04-051508-B	13.14		(79)	2.8	
Deployment 5 (5/15/08 to 6/11/08)					
ST-01-061108-A	48.62	8	NM	NM	NM
ST-01-061108-B	48.08		79 (71)	12.0	18
ST-01-061108-C	41.74		76 (76)	10.0	

Table 2. (cont)

Sample ID	Sediment Trap Wet Weight (g)	Replicate Precision RSD/RPD[1] (%)	Percent Moisture[2] (%)	Sediment Trap Dry Weight[3] (g)	Replicate Precision RSD/RPD[4] (%)
Deployment 5 (5/15/08 to 6/11/08)					
ST-02-061108-A	108.75	72	68	34.9	
ST-02-061108-B	51.38		(68)	16.4	72
ST-03-061108-A	30.49	26	77	7.1	
ST-03-061108-B	23.42		(77)	5.4	28
ST-04-061108-A	21.84	3	73	5.9	
ST-04-061108-B	21.16		(80)	4.2	34
Deployment 6 (6/11/08 to 7/10/08)					
ST-01-071008-A	52.07	27	NM	NM	NM
ST-01-071008-B	30.57		78 (80)	6.3	63
ST-01-071008-C	51.22		76 (76)	12.2	
ST-02-071008-A	43.96	6	73	11.8	14
ST-02-071008-B	41.26		(75)	10.3	
ST-03-071008-A	37.56	32	76	9.0	27
ST-03-071008-B	27.27		(75)	6.8	
ST-04-071008-A	42.95	11	75	10.7	7
ST-04-071008-B	38.34		(74)	10.0	
Deployment 7 (7/10/08 to 7/31/08)					
ST-01-073108-A	26.06	56	NM	NM	NM
ST-01-073108-B	57.05		73 (68)	17.0	104
ST-01-073108-C	21.13		78 (71)	5.4	
ST-02-073108-A	98.85	88	69	30.3	92
ST-02-073108-B	38.51		(71)	11.2	
ST-03-073108-A	41.5	19	74	10.7	19
ST-03-073108-B	50.05		(74)	13.0	
ST-04-073108-A	62.45	18	72	17.8	27
ST-04-073108-B	52.25		(74)	13.6	
Deployment 8 (7/31/08 to 8/25/08)					
ST-01-082508-A	73.14	30	NM	NM	NM
ST-01-082508-B	39.79		70 (70)	11.8	34
ST-01-082508-C	55.56		70 (70)	16.6	
ST-02-082508-A	76.94	8	68	24.4	11
ST-02-082508-B	70.76		(69)	21.9	
ST-03-082508-A	61.57	31	71	17.8	38
ST-03-082508-B	83.93		(69)	26.0	
ST-04-082508-A	15.31	130	80	3.1	155
ST-04-082508-B	71.77		(66)	24.4	
Deployment 9 (8/25/08 to 10/2/08)					
ST-01-100208-A	76.52	27	NM	NM	NM
ST-01-100208-B	59.01		73 (72)	16.2	28
ST-01-100208-C	43.91		73 (72)	12.2	
ST-02-100208-A	189.25	108	73	51.7	117
ST-02-100208-B	56.42		(76)	13.5	

Table 2. (cont)

Sample ID	Sediment Trap Wet Weight (g)	Replicate Precision RSD/RPD[1] (%)	Percent Moisture[2] (%)	Sediment Trap Dry Weight[3] (g)	Replicate Precision RSD/RPD[4] (%)
ST-03-100208-A	94.12	40	71	27.6	44
ST-03-100208-B	62.81		(72)	17.6	
ST-04-100208-A	31.6	NA	75 (69)	8.8	NA
ST-04-100208-B	Limited material collected. No weight measurement performed.				
Deployment 10 (10/2/08 to 10/30/08)					
ST-01-103008-A	30.4	11	NM	NM	1
ST-01-103008-B	26.2		74 (69)	7.5	
ST-01-103008-C	32.8		78 (76)	7.5	
ST-02-103008-A	97.6	23	69	30.6	34
ST-02-103008-B	77.7		(72)	21.8	
ST-03-103008-A	45.7	23	72	12.8	34
ST-03-103008-B	36.3		(75)	9.1	
ST-04-103008-A	28.1	29	75	7.1	24
ST-04-103008-B	37.6		(76)	9.0	

Notes:
NM = not measured; RSD = relative standard deviation; RPD = relative percent difference.
[1]Precision results determined using wet weight data.
[2]Percent Moisture measured by BDL and AMS; results reported as BDL value (AMS value).
[3]Sediment Trap Dry Weight = Sediment Trap Wet Weight*(100 - % Moisture)/100. When % Moisture results from both labs were available, average of the two values was used.
[4]Precision results determined using dry weight data.

Table 3. Grain Size and TOC in Sediment Trap and Surface Sediment Samples

Sample ID	TOC (%)	Gravel (%)	Coarse Sand (%)	Medium Sand (%)	Fine Sand (%)	Silt (%)	Clay (%)	Total Sand[1] (%)	Percent Fines[2] (%)
SEDIMENT TRAP SAMPLES									
Deployment 1 (10/2/07 to 10/31/07)									
ST-01-103107-1	12.41	0.00	0.00	0.12	1.01	40.61	58.26	1.13	98.87
ST-02-103107-2	11.36	0.00	0.00	0.11	0.68	53.38	45.83	0.79	99.21
ST-03-103107-2	10.14	0.53	0.08	0.29	1.14	47.07	50.89	1.51	97.96
ST-04-103107-2	10.10	0.00	0.13	0.29	1.39	60.04	38.15	1.81	98.19
Deployment 2 (11/7/07 to 12/10/07)									
ST-01-121007-1	11.85	0.00	0.00	0.24	1.60	53.17	44.99	1.84	98.16
ST-02-121007-2	10.44	0.00	0.00	0.06	1.34	46.77	51.83	1.40	98.60
ST-03-121007-2	9.72	0.00	0.00	0.02	1.58	48.02	50.38	1.60	98.40
ST-04-121007-2	10.53	0.00	0.00	0.88	2.36	59.23	37.53	3.24	96.76
Deployment 3 (3/14/08 to 4/15/08)									
ST-01-041508-B	13.05	0.00	0.00	0.83	4.37	29.64	65.16	5.20	94.80
ST-02-041508-B	12.61	0.00	0.00	0.75	4.41	47.00	47.84	5.16	94.84
ST-03-041508-B	9.18	0.00	0.00	0.90	2.41	57.96	38.73	3.31	96.69
ST-04-041508-B	10.57	0.00	0.00	0.28	2.02	39.58	58.12	2.30	97.70
Deployment 4 (4/15/08 to 5/15/08)									
ST-01-051508-B	16.36	0.00	0.00	0.00	0.67	39.25	60.08	0.67	99.33
ST-02-051508-B	11.77	0.00	0.00	0.00	0.17	40.20	59.63	0.17	99.83
ST-03-051508-B	11.72	0.00	0.00	0.00	1.35	39.60	59.05	1.35	98.65
ST-04-051508-B	9.89	0.00	0.00	0.00	0.87	39.71	59.42	0.87	99.13
Deployment 5 (5/15/08 to 6/11/08)									
ST-01-061108-B	15.45	0.00	0.00	0.24	0.75	25.56	73.45	0.99	99.01
ST-02-061108-B	11.20	0.00	0.00	0.01	1.01	39.02	59.96	1.02	98.98
ST-03-061108-B	10.79	0.00	0.00	0.20	0.99	35.88	62.93	1.19	98.81
ST-04-061108-B	11.44	0.00	0.00	0.13	0.27	29.62	69.98	0.40	99.60
Deployment 6 (6/11/08 to 7/10/08)									
ST-01-071008-B	12.89	0.00	0.00	0.12	0.32	44.28	55.28	0.44	99.56
ST-02-071008-B	15.01	0.00	0.10	0.36	0.27	36.49	62.78	0.73	99.27
ST-03-071008-B	12.10	0.00	0.00	0.21	0.49	24.93	74.37	0.70	99.30
ST-04-071008-B	10.62	0.00	0.00	0.37	0.77	32.80	66.06	1.14	98.86
Deployment 7 (7/10/08 to 7/31/08)									
ST-01-073108-B	16.25	0.00	0.00	0.12	5.24	18.45	76.19	5.36	94.64
ST-02-073108-B	13.70	0.00	0.00	0.21	0.49	15.14	84.16	0.70	99.30
ST-03-073108-B	11.29	0.00	0.00	0.05	0.50	27.95	71.50	0.55	99.45
ST-04-073108-B	11.71	0.00	0.00	0.06	0.43	23.49	76.02	0.49	99.51
Deployment 8 (7/31/08 to 8/25/08)									
ST-01-082508-B	12.68	0.00	0.00	0.00	2.70	20.45	76.85	2.70	97.30
ST-02-082508-B	13.88	0.00	0.00	0.00	1.84	26.53	71.63	1.84	98.16
ST-03-082508-B	11.83	0.00	0.05	0.36	2.22	32.37	65.00	2.63	97.37
ST-04-082508-B	12.59	0.00	0.00	0.08	1.81	15.46	82.65	1.89	98.11
Deployment 9 (8/25/08 to 10/2/08)									
ST-01-100208-B	15.41	0.00	0.00	0.14	4.99	43.15	51.72	5.13	94.87
ST-02-100208-B	23.83	0.00	0.00	2.07	1.35	57.83	38.75	3.42	96.58
ST-03-100208-B	12.39	0.00	0.00	0.06	2.72	45.59	51.63	2.78	97.22
ST-04-100208-A	13.58	0.00	0.00	0.76	1.65	10.89	86.70	2.41	97.59

Table 3. (cont)

Sample ID	TOC (%)	Gravel (%)	Coarse Sand (%)	Medium Sand (%)	Fine Sand (%)	Silt (%)	Clay (%)	Total Sand[1] (%)	Percent Fines[2] (%)
SEDIMENT TRAP SAMPLES									
Deployment 10 (10/2/08 to 10/30/08)									
ST-01-103008-B	13.38	0.00	5.13	2.69	5.69	35.27	51.22	13.51	86.49
ST-02-103008-B	16.97	0.00	6.08	4.56	2.69	54.36	32.31	13.33	86.67
ST-03-103008-B	13.05	0.00	0.00	0.20	1.35	33.62	64.83	1.55	98.45
ST-04-103008-B	12.21	0.00	0.00	0.25	1.69	30.28	67.78	1.94	98.06
SURFACE (0-2 CM) SEDIMENT SAMPLES									
Event 1 (post 2007 Dredge)									
SS-ST01-111207	15.47	0.00	0.00	0.12	3.58	49.86	46.44	3.70	96.30
SS-ST02-111207	7.91	6.30	1.72	6.06	26.36	36.41	23.15	34.14	59.56
SS-ST03-111207	1.84	5.35	4.30	18.70	36.80	21.95	12.90	59.80	34.85
SS-ST04-111207	7.77	2.45	4.11	6.14	6.02	53.06	28.22	16.27	81.28
Event 2 (pre 2008 Dredge)									
SS01-042208	12.16	0.00	0.00	0.68	6.67	61.27	31.38	7.35	92.65
SS02-042208	9.31	0.00	0.57	2.15	13.91	44.07	39.30	16.63	83.37
SS03-042208	8.07	0.00	0.00	2.09	12.78	56.13	29.00	14.87	85.13
SS04-042208	3.33	19.38	11.40	20.92	12.87	23.92	11.51	45.19	35.43
FIELD REPLICATE DATA									
SEDIMENT TRAP SAMPLES									
Deployment 1 (10/2/07 to 10/31/07)									
ST-01-103107-1	12.41	0.00	0.00	0.12	1.01	40.61	58.26	1.13	98.87
ST-01-103107-2	14.40	0.00	0.00	0.06	0.20	45.16	54.58	0.26	99.74
ST-01-103107-3	13.75	0.00	0.00	0.05	0.43	49.37	50.15	0.48	99.52
RSD	**7.5%**	**NA**	**NA**	**49.4%**	**76.4%**	**9.7%**	**7.5%**	**72.6%**	**0.5%**
Deployment 2 (11/7/07 to 12/10/07)									
ST-01-121007-1	11.85	0.00	0.00	0.24	1.60	53.17	44.99	1.84	98.16
ST-01-121007-2	11.14	0.00	0.00	1.53	1.32	48.27	48.88	2.85	97.15
ST-01-121007-3	12.50	0.00	0.00	2.26	1.52	33.58	62.64	3.78	96.22
RSD	**5.7%**	**NA**	**NA**	**76.1%**	**9.7%**	**22.7%**	**17.8%**	**34.4%**	**1.0%**
Deployment 3 (3/14/08 to 4/15/08)									
ST-01-041508-B	13.05	0.00	0.00	0.83	4.37	29.64	65.16	5.20	94.80
ST-01-041508-C	12.66	0.00	0.00	1.88	4.02	21.73	72.37	5.90	94.10
RPD	**3.0%**	**NA**	**NA**	**77.5%**	**8.3%**	**30.8%**	**10.5%**	**12.6%**	**0.7%**
Deployment 4 (4/15/08 to 5/15/08)									
ST-01-051508-B	16.36	0.00	0.00	0.00	0.67	39.25	60.08	0.67	99.33
ST-01-051508-C	17.19	0.00	0.00	0.00	0.52	54.12	45.36	0.52	99.48
RPD	**4.9%**	**NA**	**NA**	**NA**	**25.2%**	**31.9%**	**27.9%**	**25.2%**	**0.2%**
Deployment 5 (5/15/08 to 6/11/08)									
ST-01-061108-B	15.45	0.00	0.00	0.24	0.75	25.56	73.45	0.99	99.01
ST-01-061108-C	15.54	0.00	0.34	0.16	0.70	20.34	78.46	1.20	98.80
RPD	**0.6%**	**NA**	**200%**	**40.0%**	**6.9%**	**22.7%**	**6.6%**	**19.2%**	**0.2%**

Table 3. (cont)

Sample ID	TOC (%)	Gravel (%)	Coarse Sand (%)	Medium Sand (%)	Fine Sand (%)	Silt (%)	Clay (%)	Total Sand[1] (%)	Percent Fines[2] (%)
Deployment 6 (6/11/08 to 7/10/08)									
ST-01-071008-B	12.89	0.00	0.00	0.12	0.32	44.28	55.28	0.44	99.56
ST-01-071008-C	14.02	0.00	0.00	0.62	2.34	47.10	49.94	2.96	97.04
RPD	**8.4%**	**NA**	**NA**	**135%**	**152%**	**6.2%**	**10.2%**	**148%**	**2.6%**
Deployment 7 (7/10/08 to 7/31/08)									
ST-01-073108-B	16.25	0.00	0.00	0.12	5.24	18.45	76.19	5.36	94.64
ST-01-073108-C	12.40	0.00	0.00	0.60	2.19	25.62	71.59	2.79	97.21
RPD	**26.9%**	**NA**	**NA**	**133%**	**82.1%**	**32.5%**	**6.2%**	**63.1%**	**2.7%**
Deployment 8 (7/31/08 to 8/25/08)									
ST-01-082508-B	12.68	0.00	0.00	0.00	2.70	20.45	76.85	2.70	97.30
ST-01-082508-C	13.06	0.00	0.00	0.04	3.15	31.69	65.12	3.19	96.81
RPD	**3.0%**	**NA**	**NA**	**200%**	**15.4%**	**43.1%**	**16.5%**	**16.6%**	**0.5%**
Deployment 9 (8/25/08 to 10/2/08)									
ST-01-100208-B	15.41	0.00	0.00	0.14	4.99	43.15	51.72	5.13	94.87
ST-01-100208-C	15.37	0.00	0.00	0.40	3.41	31.35	64.84	3.81	96.19
RPD	**0.3%**	**NA**	**NA**	**96.3%**	**37.6%**	**31.7%**	**22.5%**	**29.5%**	**1.4%**
Deployment 10 (10/2/08 to 10/30/08)									
ST-01-103008-B	13.38	0.00	5.13	2.69	5.69	35.27	51.22	13.51	86.49
ST-01-103008-C	13.21	0.00	0.05	1.43	4.18	36.20	58.14	5.66	94.34
RPD	**1.3%**	**NA**	**196%**	**61.2%**	**30.6%**	**2.6%**	**12.7%**	**81.9%**	**8.7%**
SURFACE SEDIMENTS									
Event 1 (post 2007 Dredge)									
SS-ST01-111207	15.47	0.00	0.00	0.12	3.58	49.86	46.44	3.70	96.30
SS-ST01-111207-DUP	12.25	0.00	0.00	0.16	1.64	49.17	49.03	1.80	98.20
RPD	**23.2%**	**NA**	**NA**	**28.6%**	**74.3%**	**1.4%**	**5.4%**	**69.1%**	**2.0%**
Event 2 (pre 2008 Dredge)									
SS01-042208	12.16	0.00	0.00	0.68	6.67	61.27	31.38	7.35	92.65
SS01-042208DUP	12.92	0.00	0.24	1.05	6.30	63.96	28.45	7.59	92.41
RPD	**6.1%**	**NA**	**200%**	**42.8%**	**5.7%**	**4.3%**	**9.8%**	**3.2%**	**0.3%**

Notes:
RSD = relative standard deviation; RPD = relative percent difference.
[1]Total Sand (%) = Coarse Sand (%) + Medium Sand (%) + Fine Sand (%)
[2] Percent Fines (%) = Silt (%) + Clay (%)

Table 4. Total PCB in Sediment Trap and Surface Sediment Samples

Station	Sample ID	Total PCB[1] (mg/kg dry weight)		Precision (RPD/RSD)
		Original Sample	Field Replicate Sample(s)	
SEDIMENT TRAP SAMPLES				
Deployment 1 (10/2/07 to 10/31/07)				
ST-01	ST-01-103107-1	127.95	47.51, 45.17	64%
ST-02	ST-02-103107-1	287.65	—	—
ST-03	ST-03-103107-1	250.45	—	—
ST-04	ST-04-103107-1	344.61	—	—
Deployment 2 (11/7/07 to 12/10/07)				
ST-01	ST-01-121007-1	31.53	70.83, 56.35	38%
ST-02	ST-02-121007-1	215.31	—	—
ST-03	ST-03-121007-1	104.51	—	—
ST-04	ST-04-121007-1	168.38	—	—
Deployment 3 (3/14/08 to 4/15/08)				
ST-01	ST-01-041508-B	56.66	64.58	13%
ST-02	ST-02-041508-A	120.27	—	—
ST-03	ST-03-041508-A	113.48	—	—
ST-04	ST-04-041508-A	207.52	—	—
Deployment 4 (4/15/08 to 5/15/08)				
ST-01	ST-01-051508-B	71.50	77.63	8%
ST-02	ST-02-051508-A	149.17	—	—
ST-03	ST-03-051508-A	113.21	—	—
ST-04	ST-04-051508-A	135.17	—	—
Deployment 5 (5/15/08 to 6/11/08)				
ST-01	ST-01-061108-B	177.12	180.49	2%
ST-02	ST-02-061108-A	203.87	—	—
ST-03	ST-03-061108-A	220.05	—	—
ST-04	ST-04-061108-A	236.82	—	—
Deployment 6 (6/11/08 to 7/10/08)				
ST-01	ST-01-071008-B	223.92	288.96	25%
ST-02	ST-02-071008-A	231.46	—	—
ST-03	ST-03-071008-A	215.26	—	—
ST-04	ST-04-071008-A	286.86	—	—
Deployment 7 (7/10/08 to 7/31/08)				
ST-01	ST-01-073108-B	121.75	121.06	1%
ST-02	ST-02-073108-A	220.58	—	—
ST-03	ST-03-073108-A	208.02	—	—
ST-04	ST-04-073108-A	245.49	—	—
Deployment 8 (7/31/08 to 8/25/08)				
ST-01	ST-01-082508-B	71.93	128.77	57%
ST-02	ST-02-082508-A	70.57	—	—
ST-03	ST-03-082508-A	113.83	—	—
ST-04	ST-04-082508-A	156.08	—	—

Table 4. (cont)

Station	Sample ID	Total PCB[1] (mg/kg dry weight)		Precision (RPD/RSD)
		Original Sample	Field Replicate Sample(s)	
SEDIMENT TRAP SAMPLES				
Deployment 9 (8/25/08 to 10/2/08)				
ST-01	ST01-100208-B	76.02	69.17	9%
ST-02	ST02-100208-A	71.22	—	—
ST-03	ST03-100208-A	73.05	—	—
ST-04	ST04-100208-A	78.88	—	—
Deployment 10 (10/2/08 to 10/30/08)				
ST-01	ST-01-103008-B	92.83	78.99	16%
ST-02	ST-02-103008-A	79.72	—	—
ST-03	ST-03-103008-A	80.24	—	—
ST-04	ST-04-103008-A	83.17	—	—
SURFACE (0-2 CM) SAMPLES				
Event 1 (post 2007 Dredge)				
ST-01	SS-ST01-111207	60.25	28.52	71%
ST-02	SS-ST02-111207	86.78	—	—
ST-03	SS-ST03-111207	33.22	—	—
ST-04	SS-ST04-111207	142.96	—	—
Event 2 (pre 2008 Dredge)				
ST-01	SS01-042208	117.37	131.27	11%
ST-02	SS02-042208	128.95	—	—
ST-03	SS03-042208	151.71	—	—
ST-04	SS04-042208	42.95	—	—

Note:
RSD = relative standard deviation; RPD = relative percent difference.
[1]Total PCB = 2.6 times the sum of the 18 NS&T PCB congener concentrations; a value of zero used in summation for non-detects.

Table 5. Sediment Deposition Rates and Estimated PCB Flux

Deployment Period, Duration, Activity	Sample ID	Sediment Trap Dry Weight (g)	Sediment Deposition Rate[1] ($g/m^2/day$)	Total PCB Congeners (mg/kg)	Total PCB Congener Flux[2] ($mg/m^2/day$)
Deployment 1					
10/2/07-10/31/07, 29 days, Dredging & debris removal in Area H started 8/6/2007, ended 10/9/2007.	ST-01-103107-1	12.5	13.3	127.95	1.70
	ST-01-103107-2	11.6	12.3	47.51	0.58
	ST-01-103107-3	8.5	9.0	45.17	0.41
	ST-02-103107-1	11.9	12.7	287.65	3.66
	ST-02-103107-2	11.2	11.9	—	—
	ST-03-103107-1	15.8	16.8	250.45	4.21
	ST-03-103107-2	10.2	10.9	—	—
	ST-04-103107-1	12.3	13.1	344.61	4.52
	ST-04-103107-2	18.9	20.2	—	—
Deployment 2					
11/7/07-12/10/07, 33 days, No dredging.	ST-01-121007-1	6.1	5.7	31.53	0.18
	ST-01-121007-2	3.5	3.3	70.83	0.23
	ST-01-121007-3	5.0	4.6	56.35	0.26
	ST-02-121007-1	9.9	9.3	215.31	2.00
	ST-02-121007-2	8.1	7.6	—	—
	ST-03-121007-1	16.3	15.3	104.51	1.60
	ST-03-121007-2	5.7	5.3	—	—
	ST-04-121007-1	11.3	10.6	168.38	1.78
	ST-04-121007-2	11.0	10.3	—	—
Deployment 3					
3/14/08-4/15/08, 32 days, No dredging.	ST-01-041508-B	3.7	3.6	56.66	0.20
	ST-01-041508-C	4.7	4.5	64.58	0.29
	ST-02-041508-A	4.1	4.0	120.27	0.48
	ST-02-041508-B	4.4	4.2	—	—
	ST-03-041508-A	4.2	4.0	113.48	0.46
	ST-03-041508-B	4.5	4.4	—	—
	ST-04-041508-A	5.2	5.0	207.52	1.04
	ST-04-041508-B	5.5	5.3	—	—
Deployment 4					
4/15/08-5/15/08, 30 days, No dredging.	ST-01-051508-B	5.9	6.1	71.50	0.44
	ST-01-051508-C	6.3	6.5	77.63	0.51
	ST-02-051508-A	5.0	5.2	149.17	0.77
	ST-02-051508-B	3.2	3.3	—	—
	ST-03-051508-A	3.2	3.3	113.21	0.37
	ST-03-051508-B	5.3	5.4	—	—
	ST-04-051508-A	2.5	2.5	135.17	0.34
	ST-04-051508-B	2.8	2.8	—	—
Deployment 5					
5/15/08-6/11/08, 27 days, Aerovox dredging started 6/2/08, ended 7/23/08.	ST-01-061108-B	12.0	13.7	177.12	2.43
	ST-01-061108-C	10.0	11.5	180.49	2.07
	ST-02-061108-A	34.9	39.9	203.87	8.14
	ST-02-061108-B	16.4	18.8	—	—
	ST-03-061108-A	7.1	8.1	220.05	1.79
	ST-03-061108-B	5.4	6.2	—	—
	ST-04-061108-A	5.9	6.8	236.82	1.61
	ST-04-061108-B	4.2	4.8	—	—

Table 5. (cont)

Deployment Period, Duration, Activity	Sample ID	Sediment Trap Dry Weight (g)	Sediment Deposition Rate[1] ($g/m^2/day$)	Total PCB Congeners (mg/kg)	Total PCB Congener Flux[2] ($mg/m^2/day$)
Deployment 6					
6/11/08-7/10/08, 29 days, Aerovox dredging started 6/2/08, ended 7/23/08	ST-01-071008-B	6.3	6.8	223.92	1.51
	ST-01-071008-C	12.2	13.0	288.96	3.75
	ST-02-071008-A	11.8	12.6	231.46	2.91
	ST-02-071008-B	10.3	11.0	—	—
	ST-03-071008-A	9.0	9.6	215.26	2.06
	ST-03-071008-B	6.8	7.3	—	—
	ST-04-071008-A	10.7	11.3	286.86	3.25
	ST-04-071008-B	10.0	10.6	—	—
Deployment 7					
7/10/08-7/31/08, 21 days, Aerovox dredging started 6/2/08, ended 7/23/08.	ST-01-073108-B	17.0	24.9	121.75	3.03
	ST-01-073108-C	5.4	7.9	121.06	0.96
	ST-02-073108-A	30.3	44.6	220.58	9.84
	ST-02-073108-B	11.2	16.4	—	—
	ST-03-073108-A	10.7	15.8	208.02	3.28
	ST-03-073108-B	13.0	19.1	—	—
	ST-04-073108-A	17.8	26.1	245.49	6.42
	ST-04-073108-B	13.6	20.0	—	—
Deployment 8					
7/31/2008-8/25/08, 25 days, Pierce Mill Cove dredging started 8/18/08, ended 10/21/08.	ST-01-082508-B	11.8	14.6	71.93	1.05
	ST-01-082508-C	16.6	20.5	128.77	2.65
	ST-02-082508-A	24.4	30.1	70.57	2.13
	ST-02-082508-B	21.9	27.1	—	—
	ST-03-082508-A	17.8	21.9	113.83	2.49
	ST-03-082508-B	26.0	32.1	—	—
	ST-04-082508-A	3.1	3.8	156.09	0.59
	ST-04-082508-B	24.4	30.1	—	—
Deployment 9					
8/25/08-10/2/08, 38 days, Pierce Mill Cove dredging started 8/18/08, ended 10/21/08.	ST-01-100208-B	16.2	13.1	76.02	1.00
	ST-01-100208-C	12.2	9.9	69.17	0.68
	ST-02-100208-A	51.7	42.0	71.22	2.99
	ST-02-100208-B	13.5	11.0	—	—
	ST-03-100208-A	27.6	22.4	73.05	1.64
	ST-03-100208-B	17.6	14.3	—	—
	ST-04-100208-A	8.8	7.2	78.88	0.57
Deployment 10					
10/2/08 - 10/30/08, 28 days, Pierce Mill Cove dredging started 8/18/08, ended 10/21/08.	ST-01-103008-B	7.5	8.2	92.83	0.76
	ST-01-103008-C	7.5	8.3	78.99	0.66
	ST-02-103008-A	30.6	33.8	79.72	2.69
	ST-02-103008-B	21.8	24.0	—	—
	ST-03-103008-A	12.8	14.1	80.24	1.13
	ST-03-103008-B	9.1	10.0	—	—
	ST-04-103008-A	7.1	7.8	83.17	0.65
	ST-04-103008-B	9.0	9.9	—	—

Notes:
[1] Sediment Deposition Rate = Sediment Trap Dry Weight / Deployment Duration / Area of Sediment Trap (0.0324 m^2)
[2] Total PCB Flux = (Total PCB × Deposition Rate)/1000

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Figures

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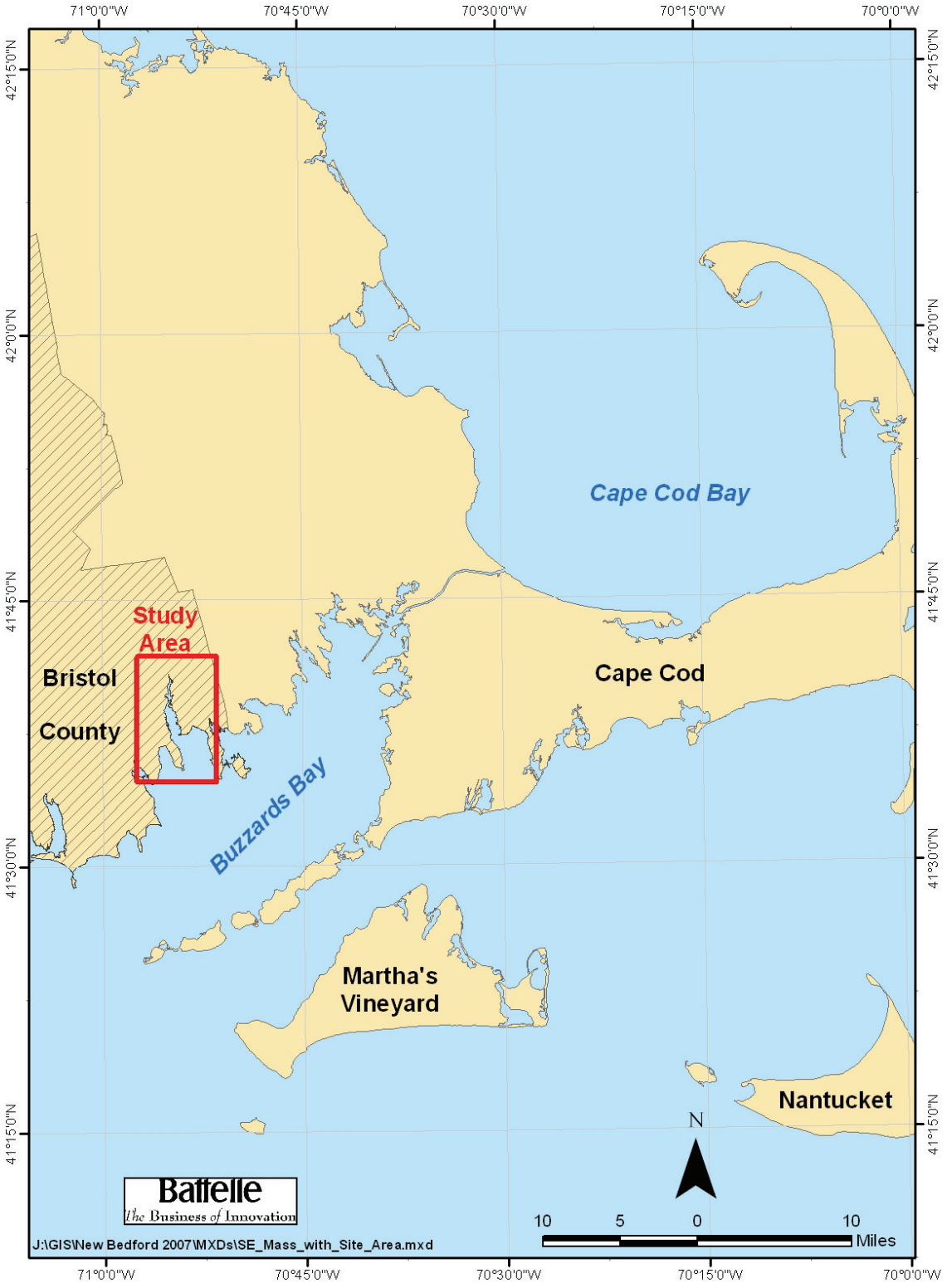

Figure 1. Location of the New Bedford Harbor Site in Southeastern, MA.

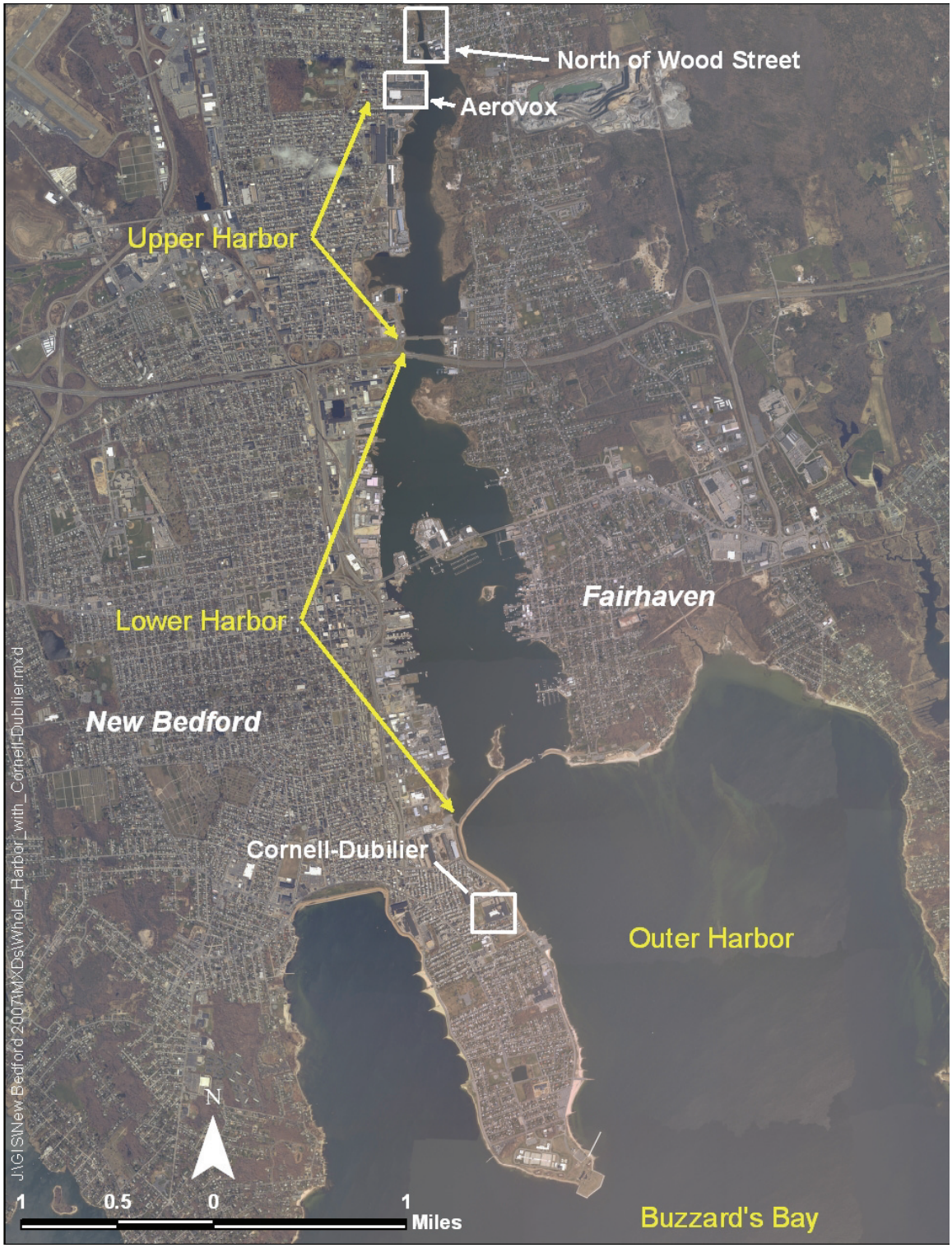

Figure 2. Overview of New Bedford Harbor Site.

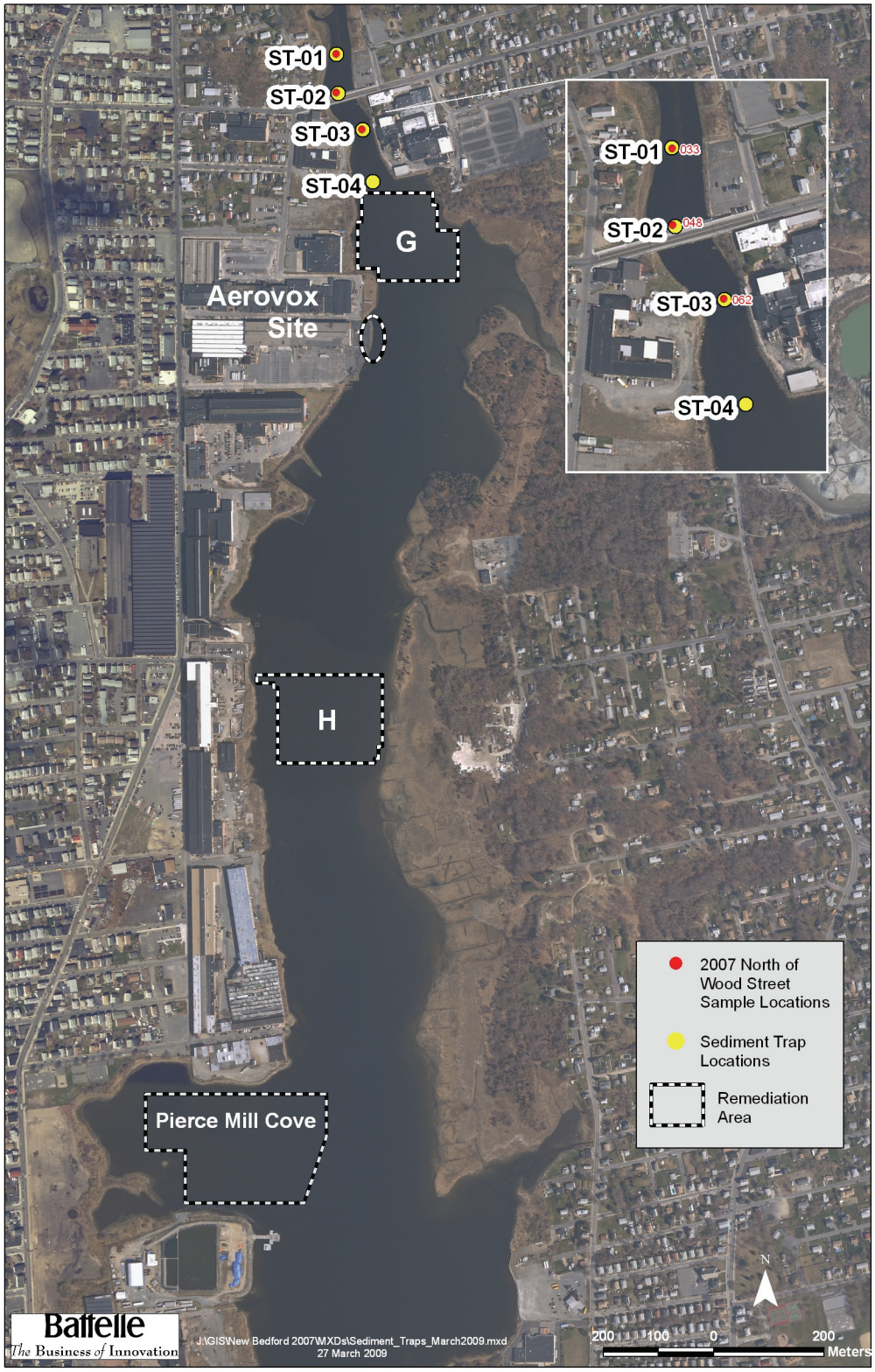

Figure 3. Sediment Trap Study Locations and 2007 and 2008 Remediation Areas.

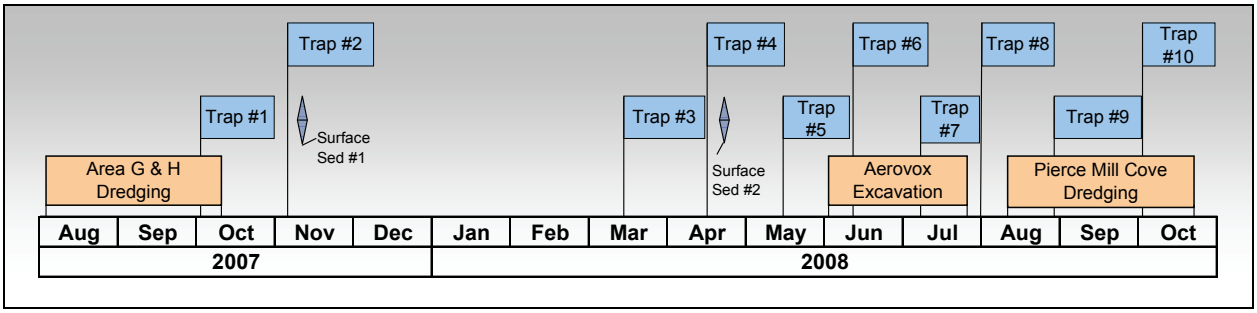

Figure 4. Sediment Trap Study Timeline. See Table 1 for Specific Collection Dates.

Figure 5. Pictures of Sediment Traps before Deployment (Top), During Deployment (Bottom), and Recovery (Bottom).

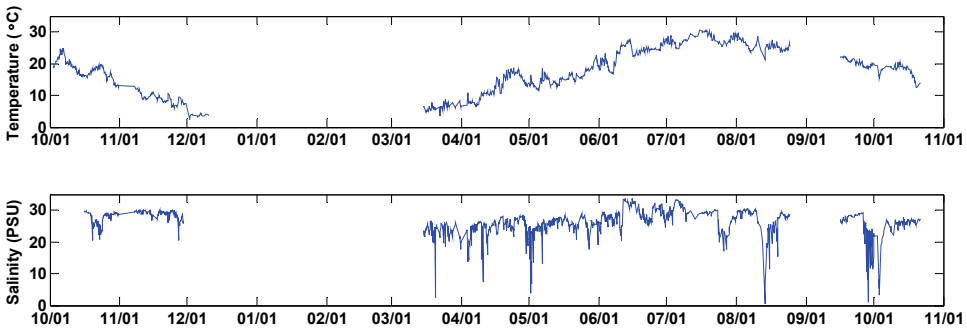

Figure 6. ***In situ*** **Temperature and Salinity Data at ST-03 from October 2007 to October 2008.** (showing all data when sensor depth >1m; mooring not deployed between December 11, 2007 and March 13, 2008 due to icing conditions)

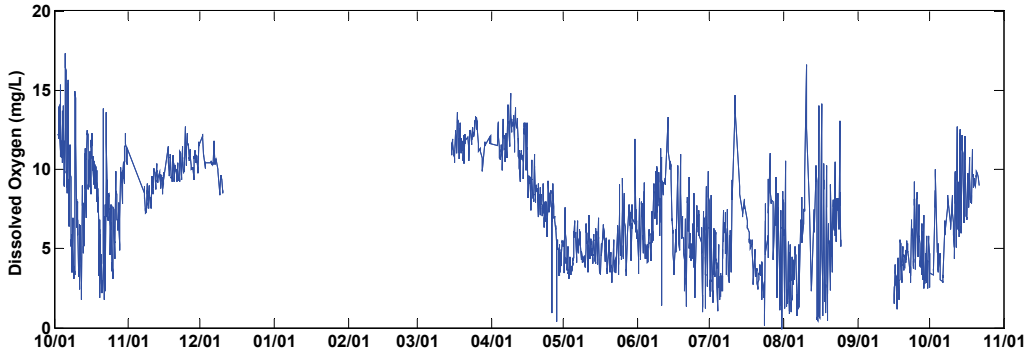

Figure 7. ***In situ*** **Dissolved Oxygen Data at ST-03 from October 2007 to October 2008.** (mooring not deployed between December 11, 2007 and March 13, 2008 due to icing conditions)

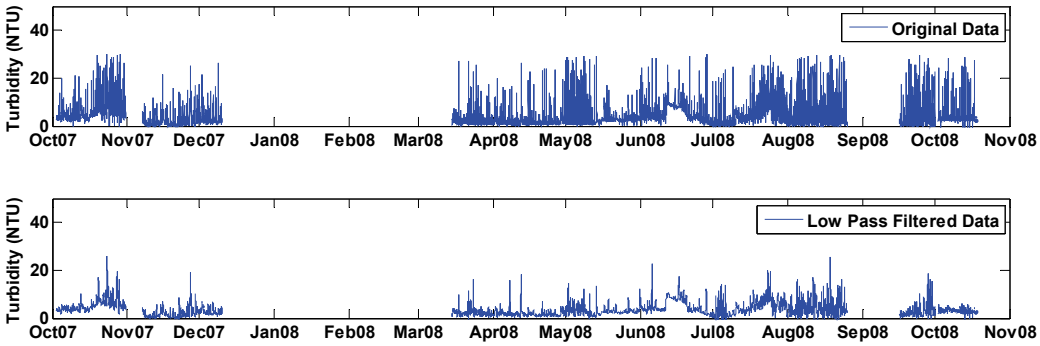

Figure 8. ***In situ*** **Turbidity Data at ST-03 from October 2007 to October 2008.** (mooring not deployed between December 11, 2007 and March 13, 2008 due to icing conditions)

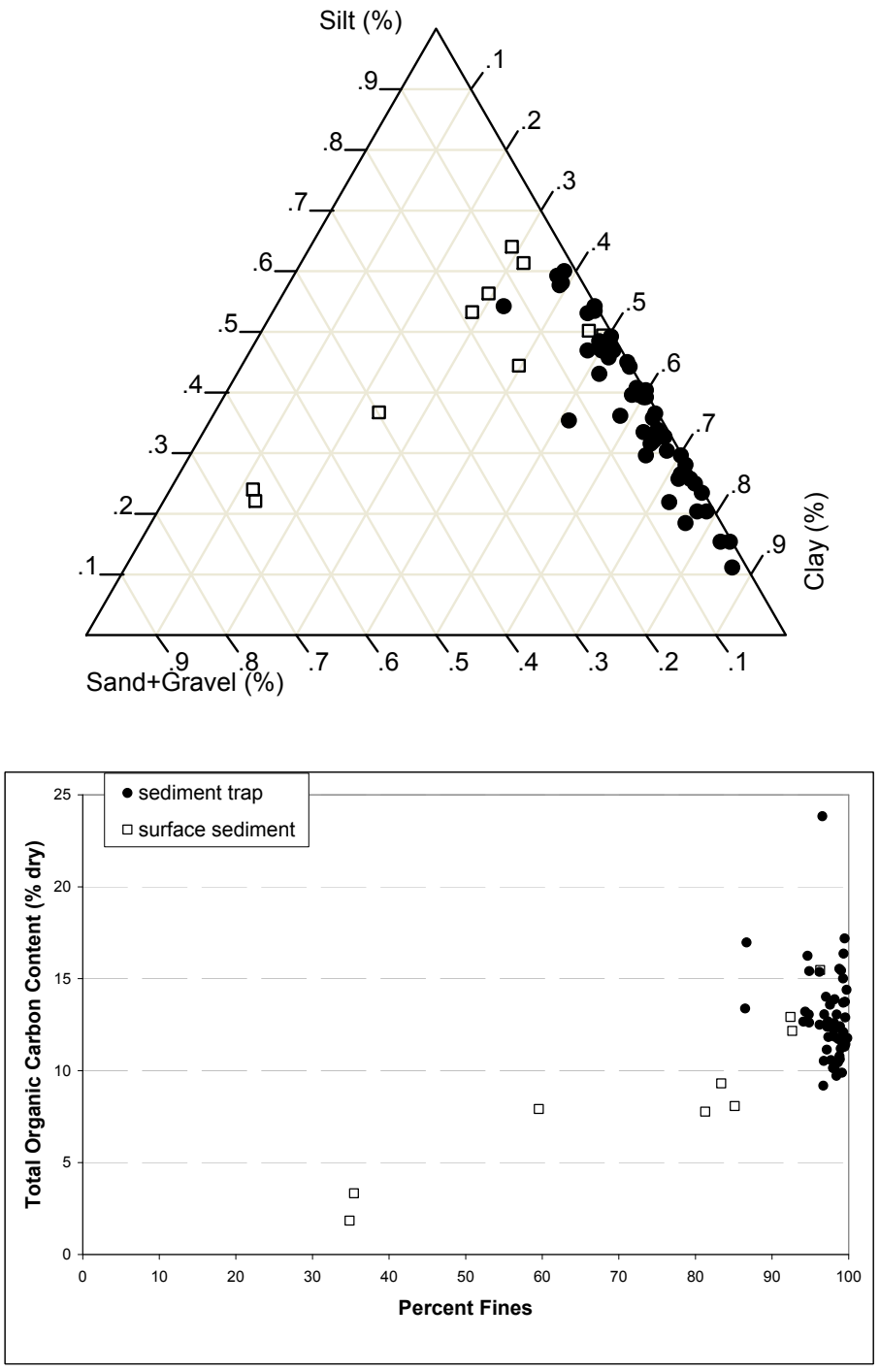

Figure 9. Grain Size Distributions (Top) and the Correspondence between Percent Fines and TOC (Bottom) in Sediment Trap (●) and Surface (□) Sediment Samples at the North of Wood Street Area, Data from October 2007 to October 2008.

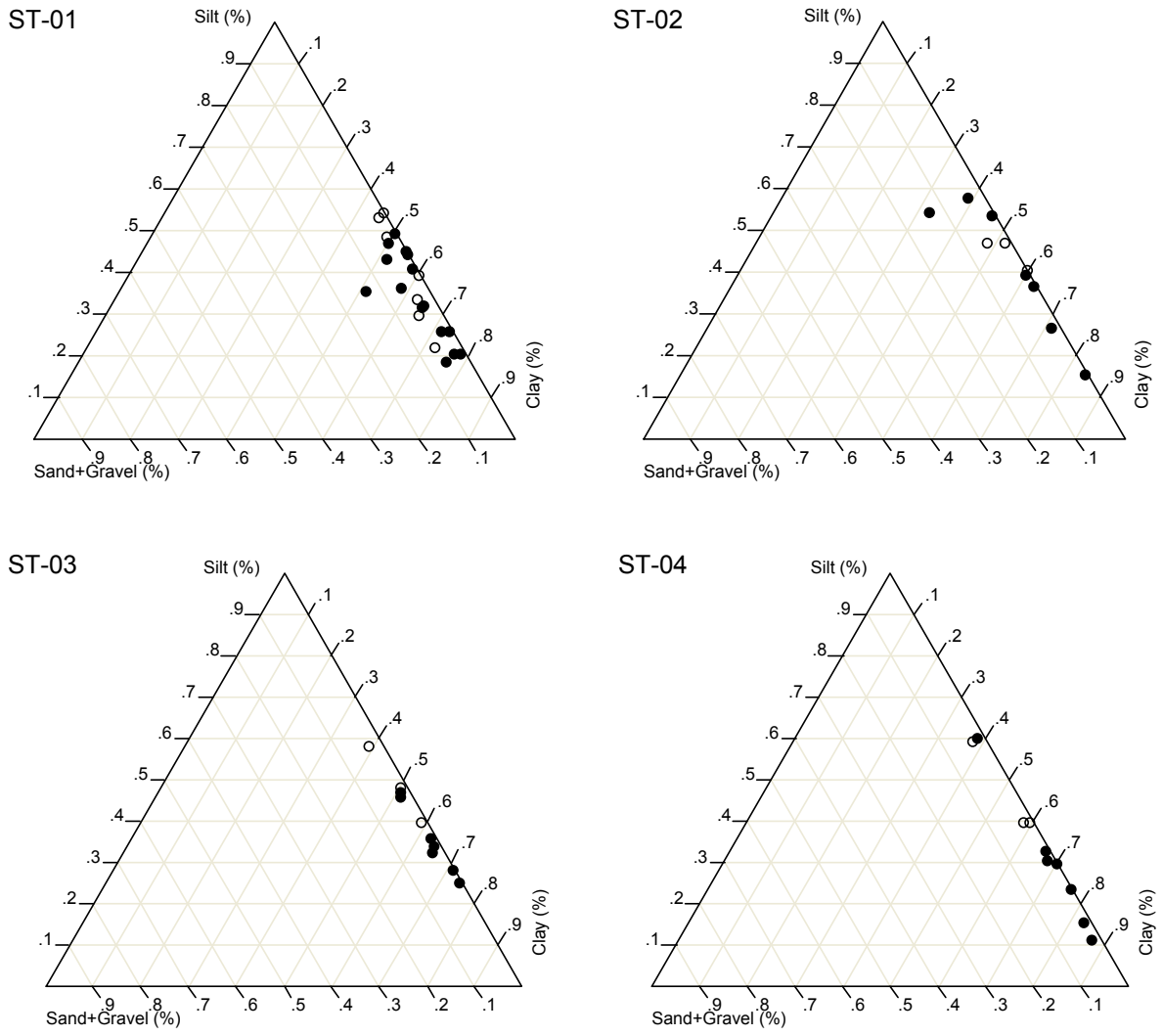

Figure 10. Grain Size Distributions in Suspended Sediment Material at Sediment Trap Locations during Non-dredging (○) and Dredging (●) Periods, Data from October 2007 to October 2008.

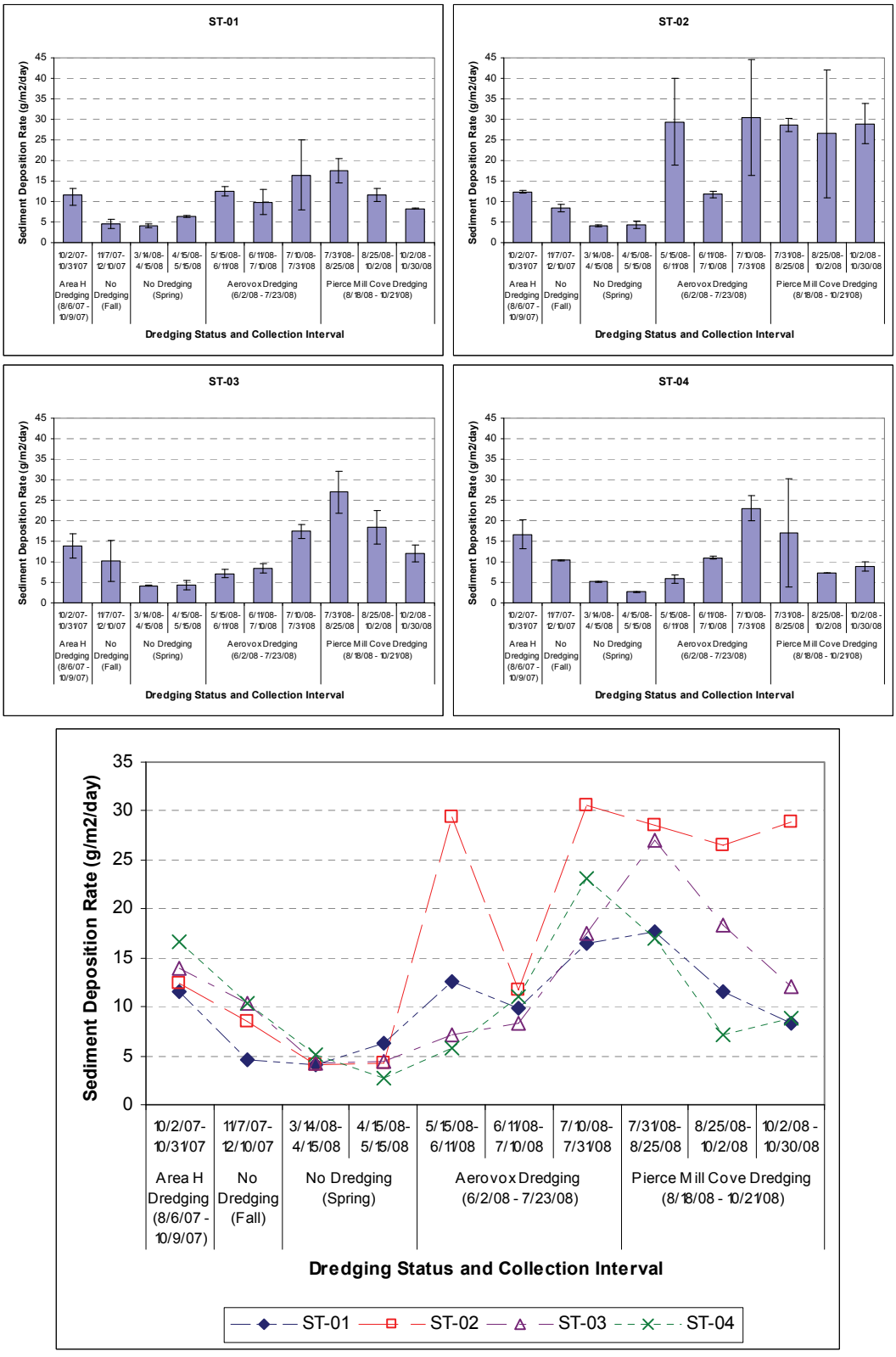

Figure 11. Sediment Deposition Rate at Sediment Trap Stations. Bars and symbols represent average values and vertical bars represent the range of values. (Deployment #1 10/2/07 to 10/31/07 occurred largely during a non-dredging period)

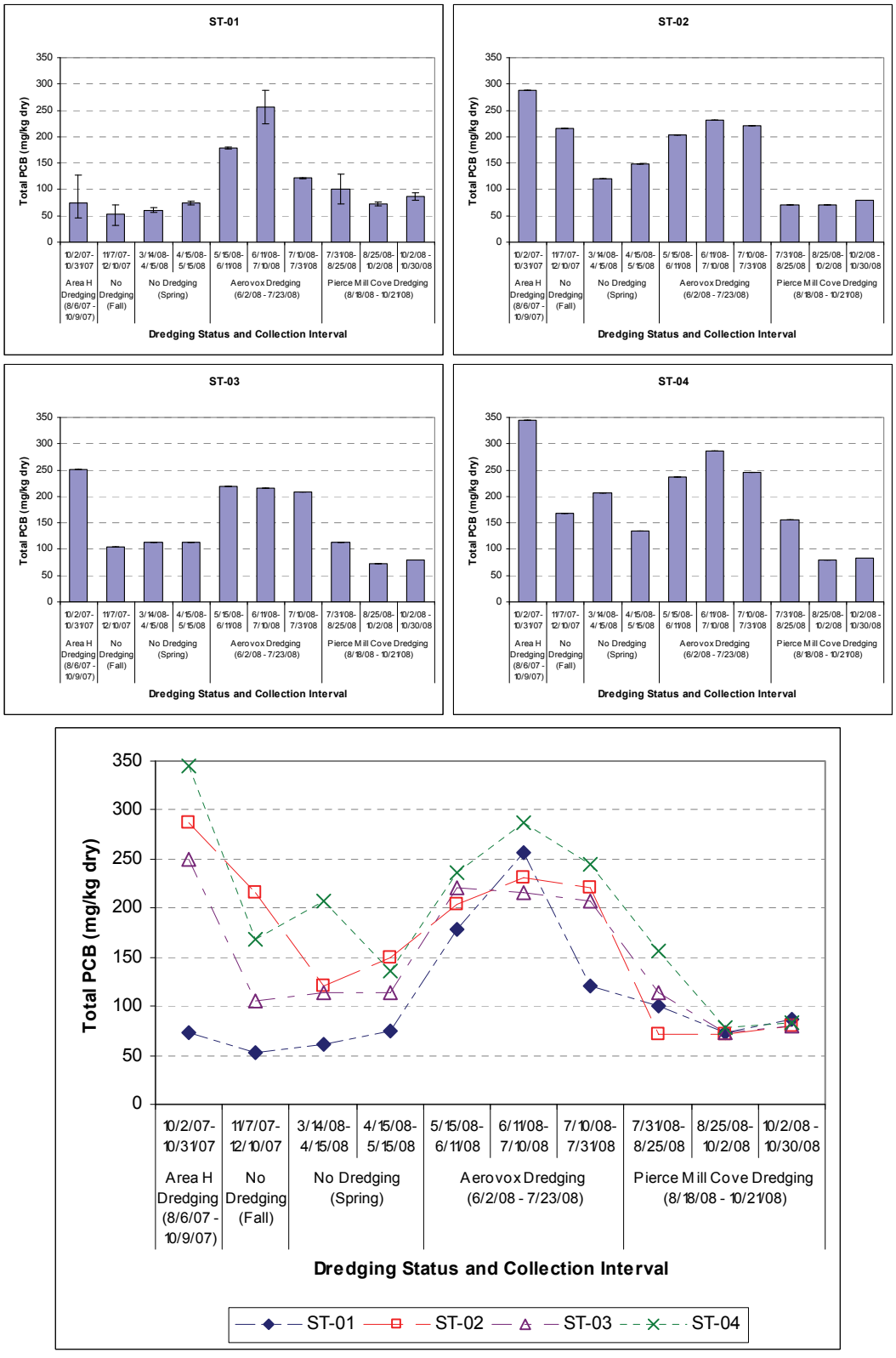

Figure 12. Total PCB Concentrations at Sediment Trap Stations. Bars and symbols represent average values and vertical bars represent the range of values. (Deployment #1 10/2/07 to 10/31/07 occurred largely during a non-dredging period)

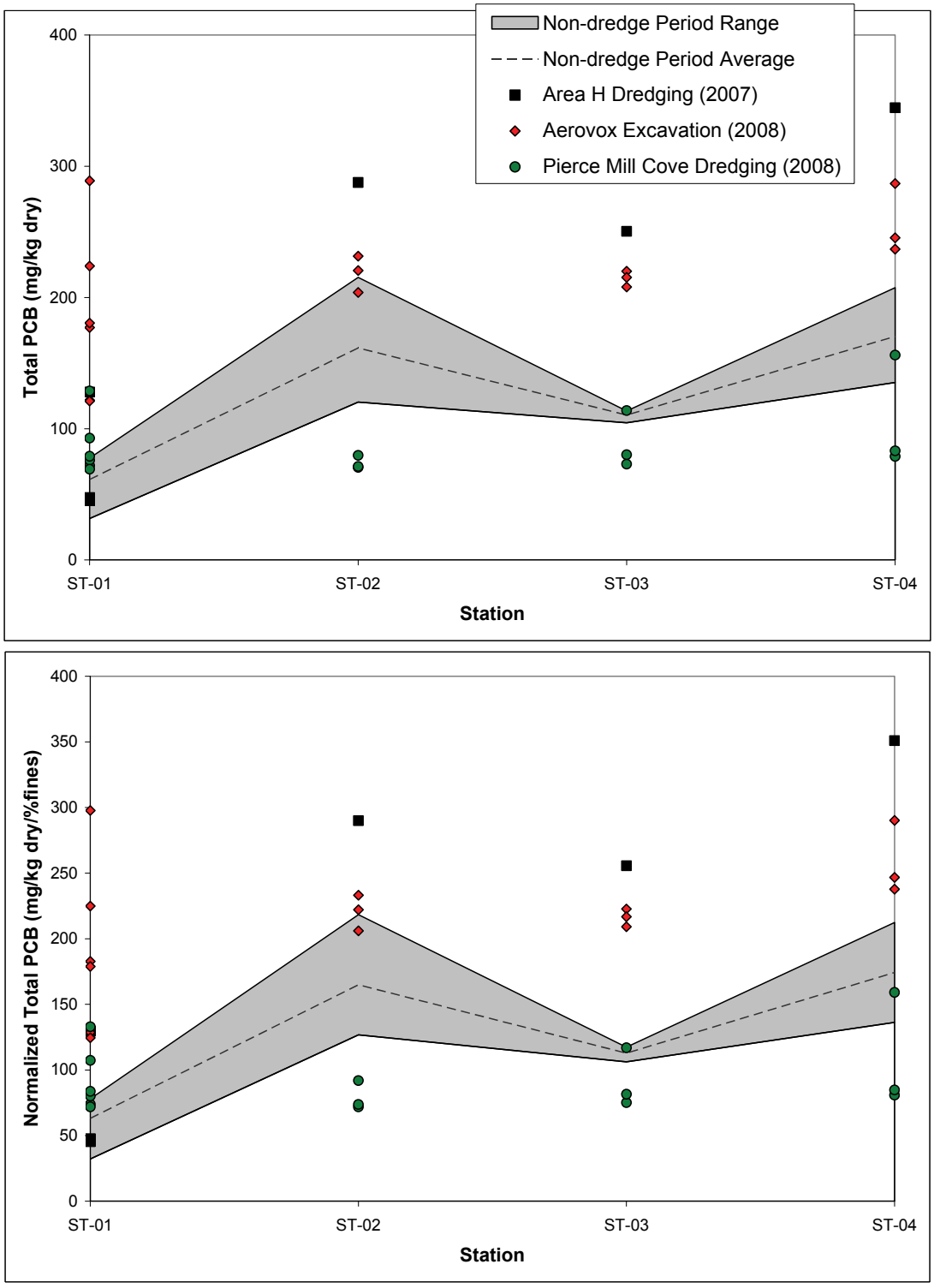

Figure 13. Total PCB Concentrations, Non-normalized (Top) and Normalized to Percent Fines (Bottom), in Sediment Trap Samples Deployed During Non-dredge (grey band) and Dredge (symbols) Periods. The grey band represents the range of values during the non-dredge period and the dashed line represents the average values during the non-dredge period. The symbols represent total PCB concentrations during remediation activities.

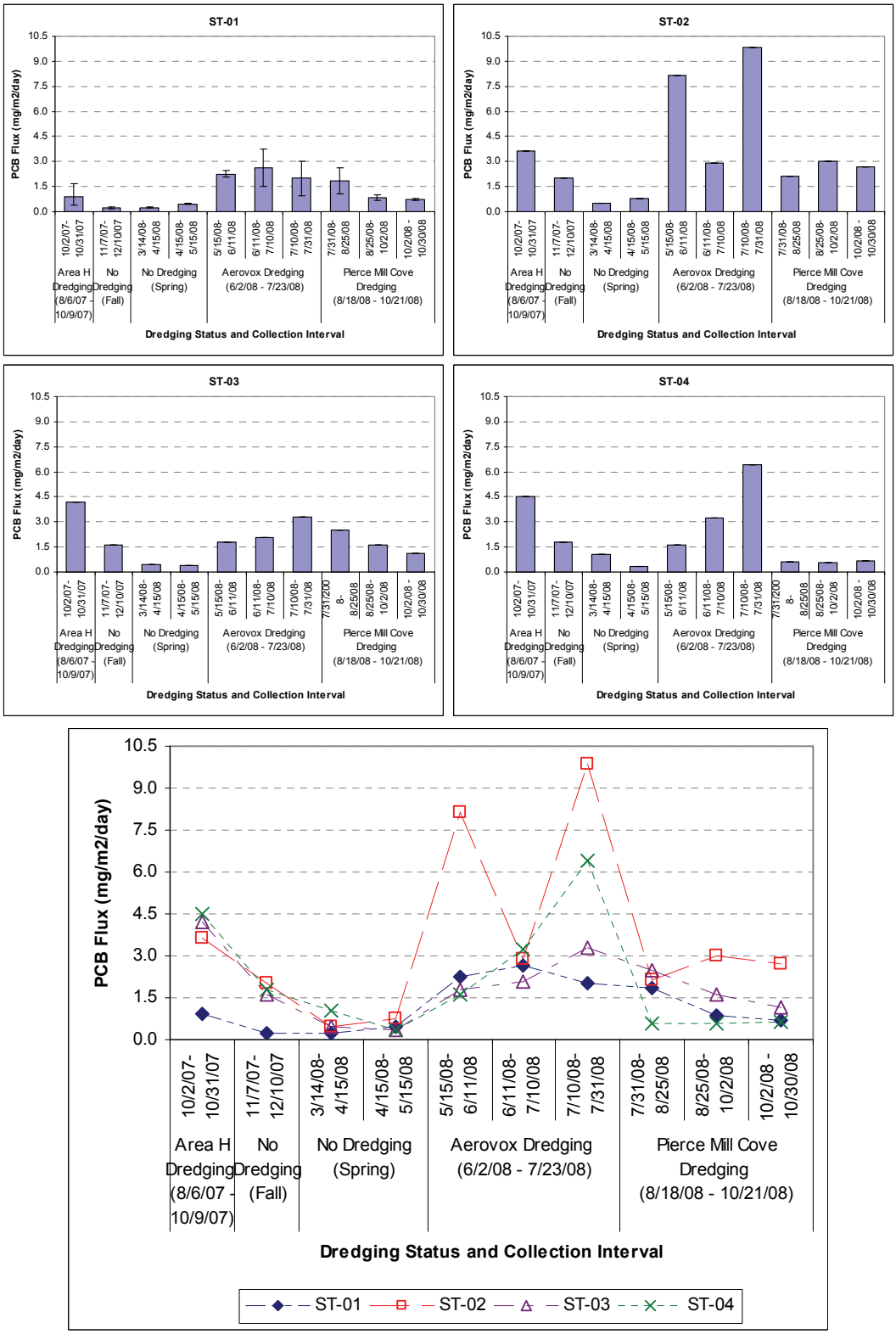

Figure 14. PCB Flux at Sediment Trap Stations. Bars and symbols represent average values and vertical bars represent the range of values. (Deployment #1 10/2/07 to 10/31/07 occurred largely during a non-dredging period)

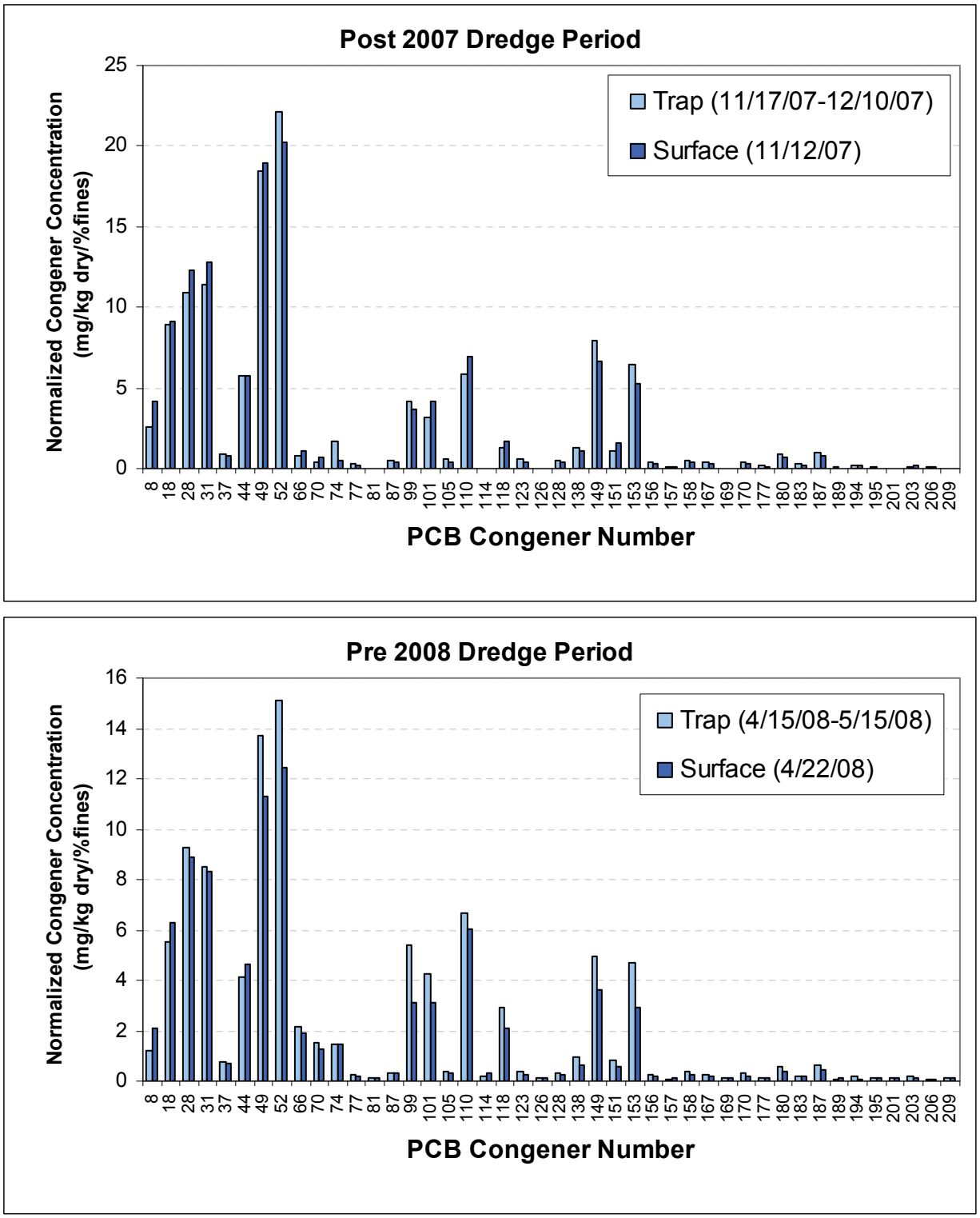

Figure 15. Comparison of PCB Distribution Patterns in Surface Sediment and Sediment Trap Samples at Station ST-04 During Post 2007 (top) and Pre 2008 (bottom) Dredge Periods.

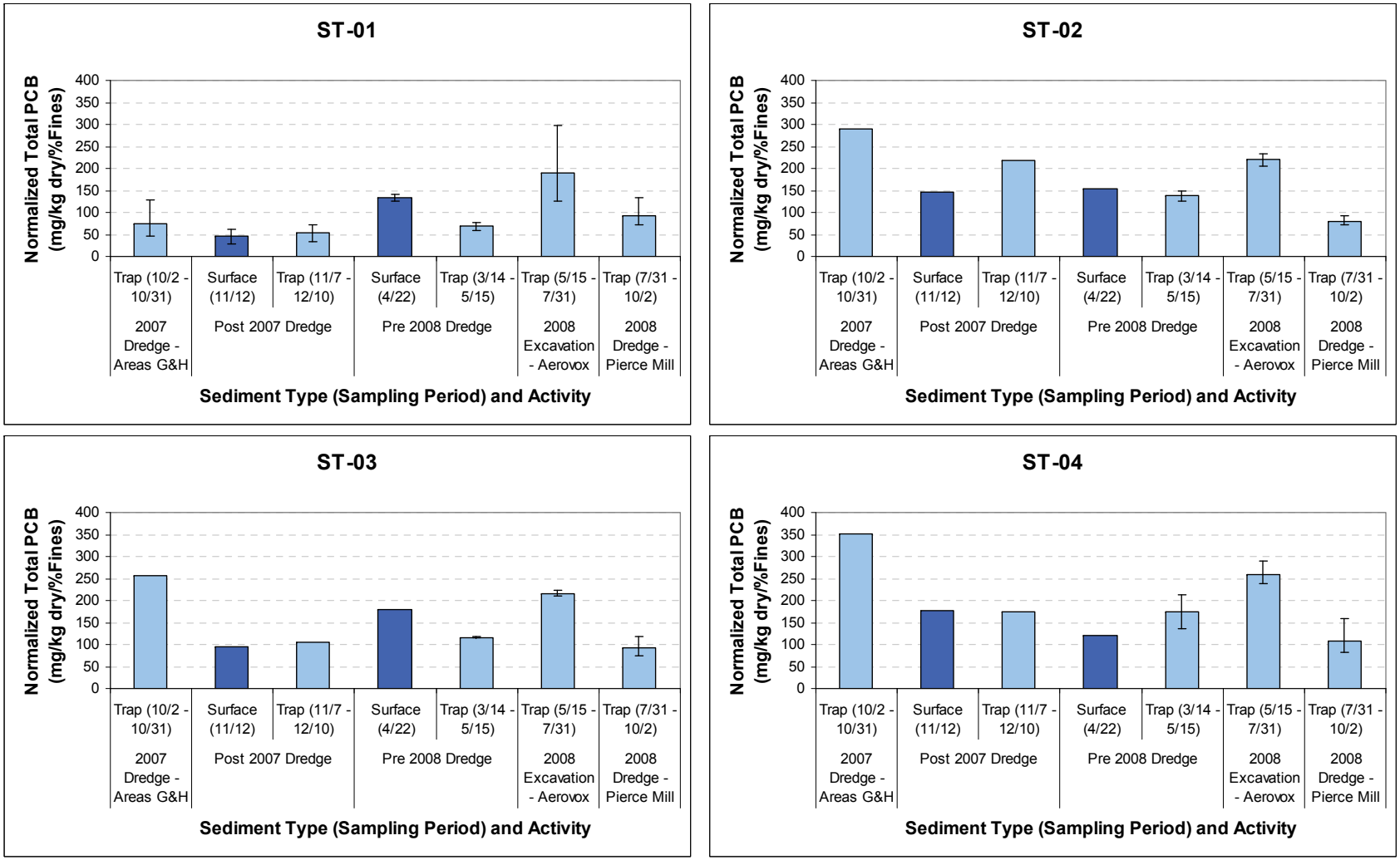

Figure 16. Total PCB Concentrations (Normalized to Percent Fines) in Surface (0-2 cm) Sediment (dark blue bars) and Sediment Trap (light blue bars) Samples at the North of Wood Street Area, October 2007 to October 2008. Bars represent average values and vertical bars represent the range of values during the activity periods.

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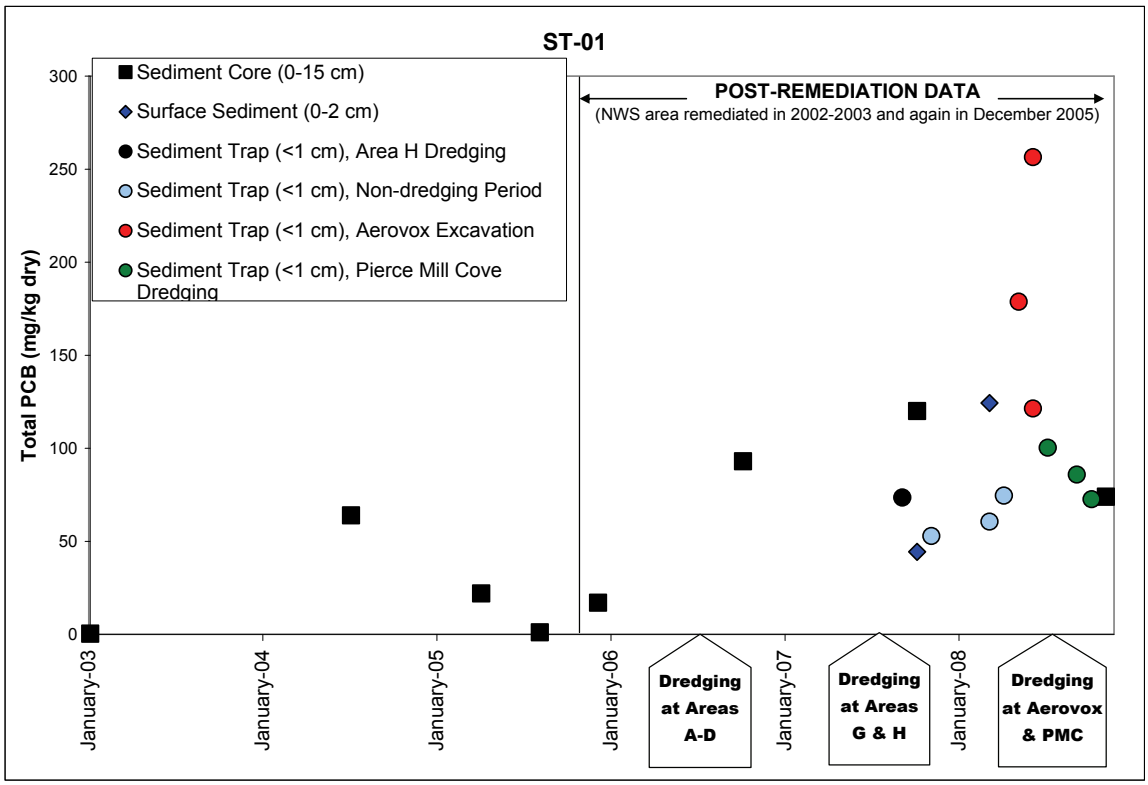

Figure 17. Total PCB in Sediment at Station ST-01 from 2003 to 2008.

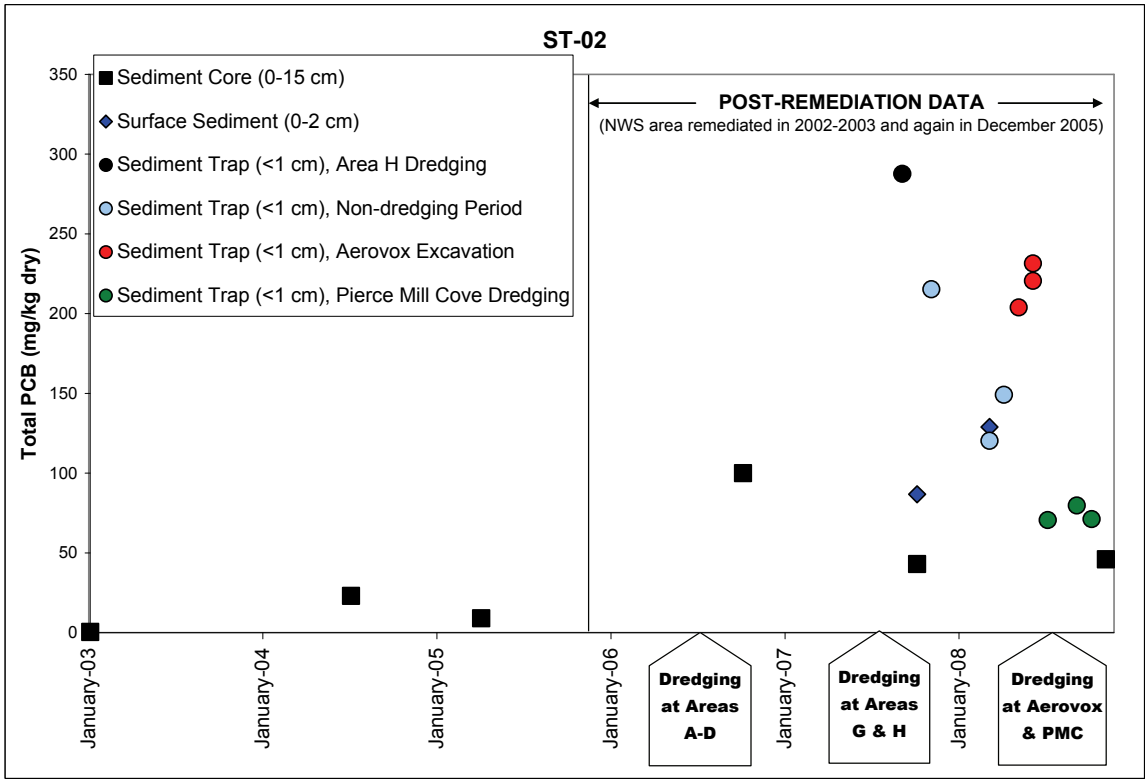

Figure 18. Total PCB in Sediment at Station ST-02 from 2003 to 2008.

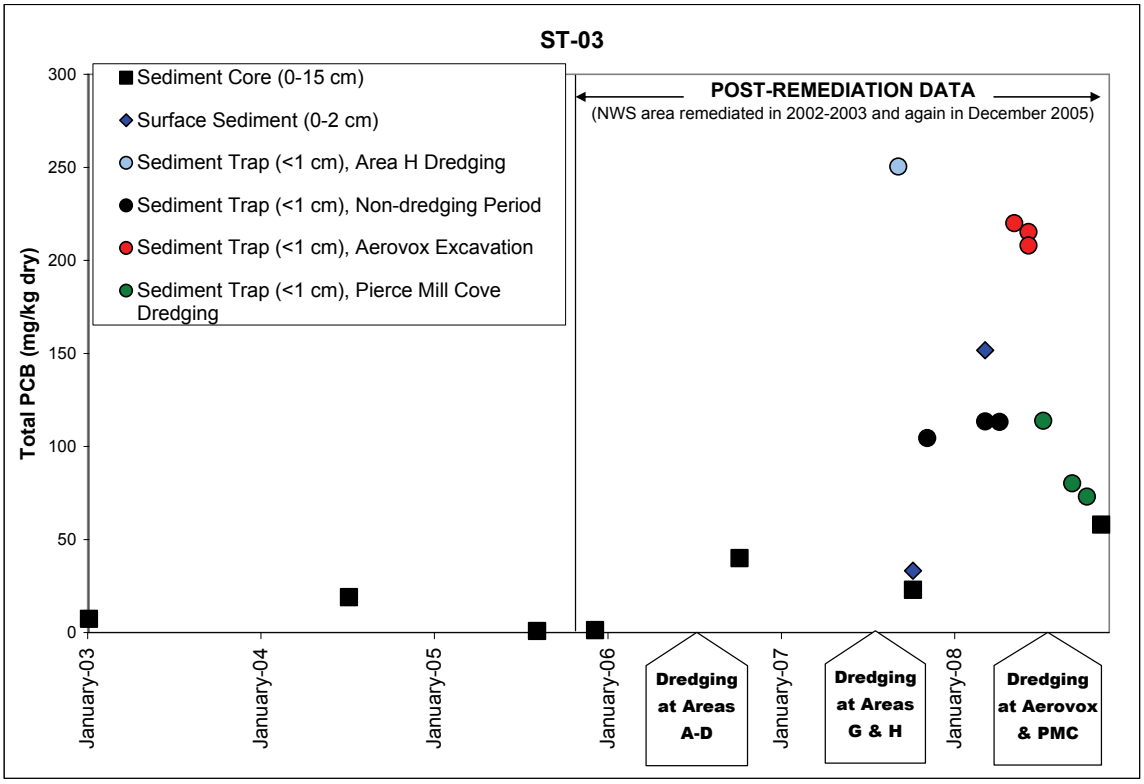

Figure 19. Total PCB in Sediment at Station ST-03 from 2003 to 2008.

APPENDIX A

Field Logs

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Deployment No. 1

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Field Daily Log Form

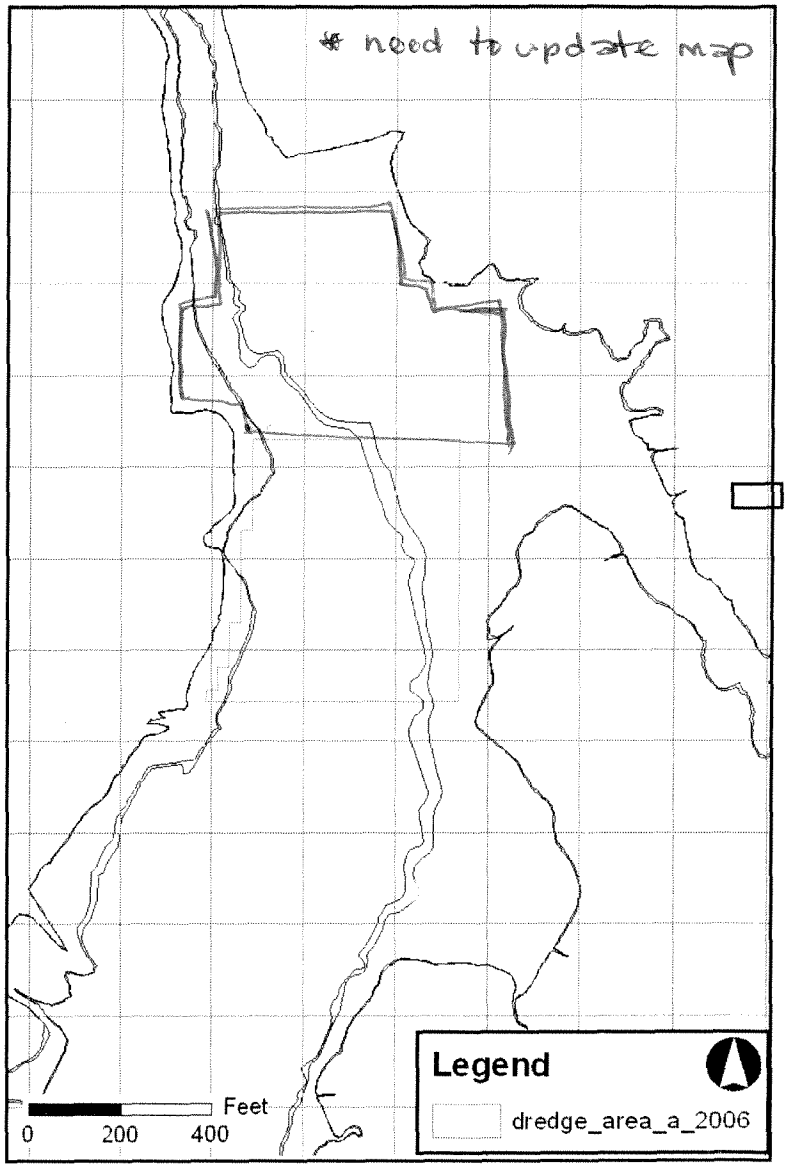
Date: 10/02/07 **Weather:** 65°F / partly cloudy / wind 5 SE

Tides:

0.2 @ 0552
4.2 @ 13:09
0.6 @ 19:19

Monitoring Period:
From: 0900 **To:** 1500
Tidal Stage: HWS Ebb LWS/Flood
Dredging Activity:

dredge & debris removal in area H



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
ST-01	4.2	1
ST-02	4.9	1
ST-03	3.8	1
ST-04	4.2	1

Oil sheen/ Debris:
Samples Collected for Laboratory Analysis
Sample IDs:
PCB (Sediment Trap) NA
PCB (Surface Grab) NA
Turbidity (500ml) NA
Dissolved PCB (2x1L) NA
Notes:

Sampling Crew: Mike McKee / Mike Walsh
Chief Scientist Signature: Mark PZ

* Sediment traps are labelled ST-XXX (Station #, A B or C)
* 2 traps deployed at stations 2, 3, & 4
* 3 traps deployed at station 1
* YSI mooring at Station 03 (~7' depth @ 1345)

Battelle **Sediment Trap Deployment (G606422)**

Mooring Deployment/Retrieval Log and Calibration Form

Project No. G606422-07SED	**Date:** 10/02/07	**Recorded By:** Mike McKee
Station ID: ST-Ø3- TRAP	**On Station:** (local) 1345	**Off Station:** (local) 1405
Northing (NAD83, feet) 248579.186	**Easting** (NAD83, feet) 825452.762	**DGPS Accuracy Estimate** (± m): 1.70
Water depth (ft): ~~7.2 ft~~ 5.7	**Sample Platform:** (Vessel) Wading	**Deployment/Retrieval Time:** (local) 1403 / Retrieved 10/16/07 @ 11:16
Sensor Depth (ft): ~~6 ft~~ 5.9		
Data File Name: ~~ST-Ø3-Ø1~~ ST03_1A ①	**Instrument Model / SN:** 06J1733 AB	

General Water Description-*Option* (from back-up meter)

Temperature (°C): 19.03	**Other:**
Salinity (‰): 30.39	**D.O.** (mg/L) 7.41
Turbidity (NTU): 1.7	**pH** (pH units): 8.03

CALIBRATION and MAINTENANCE

DO membrane changed? (Y) N	Turbidity Wiper Changed? (Y) N	Chlorophyll Wiper Changed? (Y) N
Battery Voltage: 12.6	Turbidly wiper parks 180° from optics? (Y) N	Chlorophyll Wiper Parks 180° from optics? (Y) N

Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	1.012	1000	Cell constant (4.55 – 5.45)
pH 4 ± 1	4.05	4.00	MV (0 ± 50)
pH 7 ± 1	7.02	7.00	MV (+ ~172 ± 7 from 7 buffer)
pH 10 ± 1	NA	NA	
Depth ~~(ft)~~ m	0.2	0.0	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	-0.8	0.0	Turbidity Offset:
Turbidity (NTU) 123	138.7	123.0	
D.O. (% Sat)	100.2	100.0	D.O. Gain (0.7 - 1.4)

Field Activities / Comments / Observations:

Chl	-0.5	0.0	

Data file name is station (ST-xx) and deployment # (-xx)

File Name : ST0301 Station : ST-Ø3

① Renamed data file to correspond w/ series - MPM 12/19/07

Retrieved @ 0920 on 10/9/07
Redeployed @ 0925 on 10/9/07

* YSI was visually inspected to confirm that it's turning on, wipers are working, and membrane is in shape. Redeployed for

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Sediment Trap Deployment (G606422)

In situ Data Field Form

Dredging Location	Area H
Dredging Description	Dredging & debris removal
Survey Vessel	Gale Force
Chief Scientist	Mike McKee
Sampling Technician	
Vessel Captain	Mike Walsh
Other Personnel	
Weather conditions	65°F / partly cloudy / Winds 5 SE

Date	10/02/07
Page	1 of 1

Tide information	
High	
Low	0.2 @ 0552
High	4.2 @ 1309
Low	0.6 @ 1919

PDOP	Station Number	Time	~~Latitude~~ Northing SP MA 2001_m	~~Longitude~~ Easting SP MA 200_m	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
	ST-Ø4	1149	825355.285	248604.666	4.2 ft	0.807 ft	4.2 NTU	30.1	13.6 mg	19.26	
						2.0 ft	3.5 NTU	30.18	10.38	19.22	2 traps
						3.0 ft	2.9	30.36	8.82	19.13	deployed @ 1200
2.13 →	ST-Ø3	1208	825449.835	248585.592	5.0 ft	1 ft	3.8	29.67	14.63	19.57	
						2 ft	3.2	29.89	12.14	19.25	
						3 ft	3.8	30.19	10.45	19.23	2 traps
						4 ft	2.3	30.34	8.17	19.11	deployed @ 1215
near bridge 6.19	ST-Ø2	1223	825516.524	248540.927	6.9 ft	1 ft	4.9	29.09	15.49	19.20	
						2 ft	2.4	29.96	10.28	19.06	
						3 ft	2.2	30.21	9.25	19.10	
						4 ft	1.8	30.32	8.21	19.03	
						5 ft	1.7	30.35	7.45	18.92	2 traps
						6 ft	1.7	30.34	6.94	18.90	deployed @ 1230
2.81	ST-Ø1	1239	825587.814	248537.952	5.2 ft	1 ft	4.2	29.16	14.31	19.42	
						2 ft	3.0	29.94	10.94	18.97	
						3 ft	1.8	30.20	9.04	18.99	
						4 ft	1.7	30.27	8.14	19.05	
						4.5 ft	1.6	30.30	7.53	19.00	3 traps deployed @ 1245

Signature of Data recorder: [signature]

Field Daily Log Form

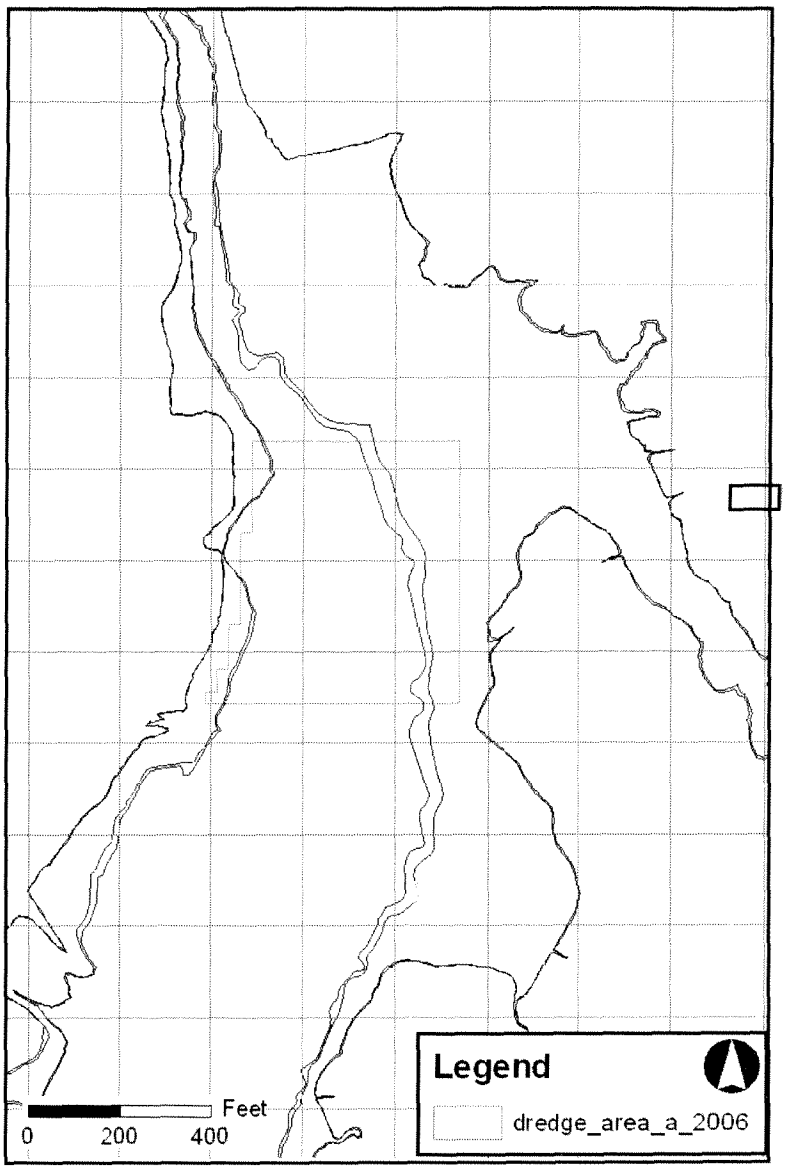
Date: 10/9/07 **Weather:** 60°F ptly cloudy winds NNW 10

Tides:

4.1H	@ 0706
0.2L	@ 1337
4.0H	@ 1926

Monitoring Period:
From: 0800 **To:** 1245
Tidal Stage: HWS Ebb LWS Flood
Dredging Activity:

dredging & debris removal



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
ST-01	6.8	1.09
ST-02	5.9	0.97
ST-03	7.2	1.01
ST-04	4.1	1.02

Oil sheen/
Debris:
Samples Collected for Laboratory Analysis
Sample IDs:
PCB (Sediment Trap)
NA
PCB (Surface Grab)
NA
Turbidity (500ml) NA
Dissolved PCB (2x1L) NA
Notes: Insufficient quantity of material in sediment traps. Redeployed traps for one week.
Sampling Crew: Mike Walsh / Mike McKee
Chief Scientist Signature: Michael P. Thom

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Sediment Trap Deployment (G606422)

In situ Data Field Form

Dredging Location	Area H
Dredging Description	Dredging & debris removal
Survey Vessel	Gale Force
Chief Scientist	Mike McKee
Sampling Technician	
Vessel Captain	Mike Walsh
Other Personnel	
Weather conditions	60° F PHy Cloudy Winds NNW @ 10 kt

Date	10/9/07
Page	1 of 1

Tide information	
High	0706
Low	1337
High	1926
Low	

* sediment traps do not have sufficient material for analysis / redeployed for one week

Station Number	Time	N Latitude SPMA2001-m	E Longitude SPMA2001-m	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
ST-01	0842	825587.814	248537.952	5.2	1.09 ft	6.8	29.94	5.07	20.22	Ph 6.96
					2.04 ft	6.5	30.12	4.85	20.08	Ph 6.93
					3.00 ft	6.5	30.15	4.10	20.03	Ph 6.90
					4.02 ft	5.1	30.17	3.82	19.98	Ph 6.90
ST-02	0856	825516.524	248540.927	7.3	0.97 ft	5.9	29.94	5.15	19.90	Ph 7.01
					2.03 ft	5.7	29.99	4.97	19.90	Ph 7.00
					3.01 ft	4.5	30.20	4.52	19.87	Ph 6.97
					4.01 ft	4.3	30.22	4.37	19.87	Ph 6.96
					5.01 ft	5.0	30.23	4.31	19.86	Ph 6.97
					6.00 ft	5.3	30.24	4.21	19.86	Ph 6.97
ST-03	0907	825449.835	248585.692	4.7	1.01 ft	7.2	29.61	6.92	19.83	Ph 7.09
					2.01 ft	5.2	30.11	5.60	19.85	Ph 7.01
					3.02 ft	4.2	30.26	4.77	19.86	Ph 6.97
					4.00 ft	4.6	30.27	4.46	19.85	Ph 6.97
ST-04	0930	825355.285	248604.666	4.1	1.02 ft	4.1	30.26	8.10	19.71	Ph 7.24
					2.00 ft	3.2	30.42	7.59	19.69	Ph 7.23
					3.00 ft	3.2	30.44	7.48	19.68	Ph 7.23

Signature of Data recorder: Michael P. Thom

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Sediment Trap Deployment (G606422)

Field Daily Log Form

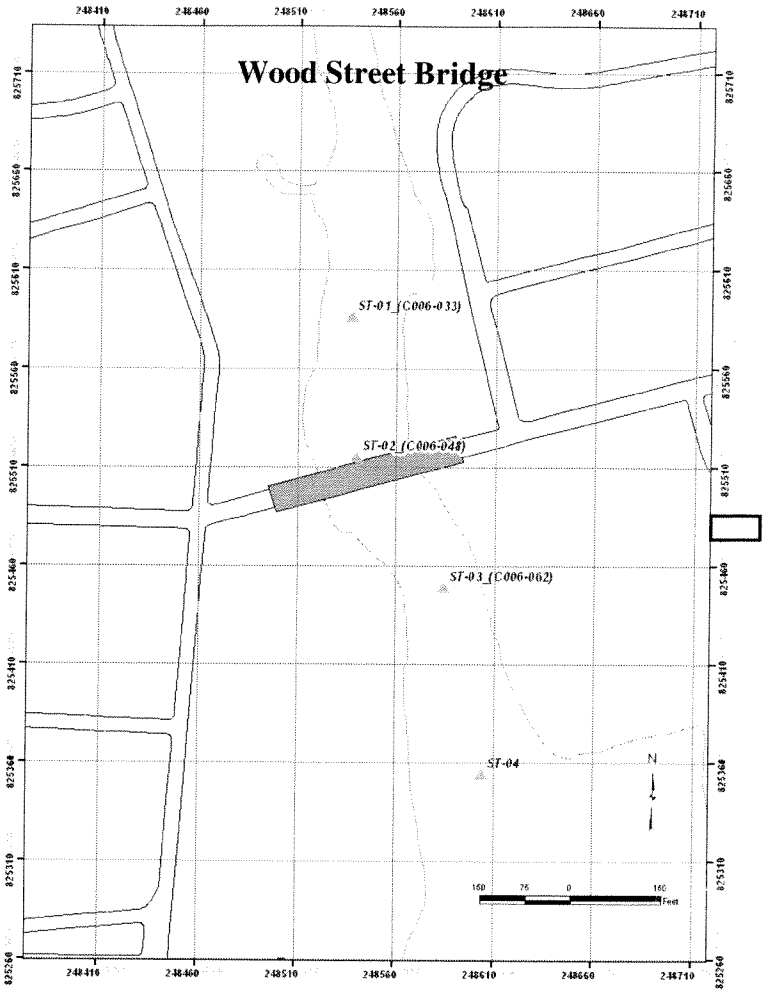
Date: 10/16/07 **Weather:** 55°F / sunny / wind NW 10-15 kt

Tides:

L 0428	@	0.4
H 1146	@	3.6
L 1712	@	0.7

Monitoring Period:
From: 1800 **To:** 1200
Tidal Stage: HWS Ebb LWS (Flood)
Dredging Activity:

completed / demob



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
ST04	2.6	1.03
	2.3	2.99
ST01	3.0	1.05
	2.3	3.04
ST02	8.6	1.03
	7.1	5.01
ST03	3.6	1.06
	2.3	4.02

Oil sheen/ Debris: none

Samples Collected for Laboratory Analysis
Sample IDs:
PCB (Sediment Trap) NA
PCB (Surface Grab) NA
Turbidity (500ml) NA
Dissolved PCB (2x1L) NA

Notes:
Insufficient quantity of material in sed traps. Redeployed for two weeks (until 10/30/07)

Sampling Crew: Mike McKee, Mike Walsh

Chief Scientist Signature: [signature]

Battelle **Sediment Trap Deployment (G606422)**

dGPS Calibration Form

Project #:

INITIALS MPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name NBH pcah
Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	MA2001 SP NAD83 ft	2701152.075	814564.881

Comments -

Date/Time 10/16/07 0909 Vessel Gale Force

Unit Make/Model Trimble XRS Pro

Mooring Deployment/Retrieval Log and Calibration Form

Project No. 0606422-07SEDSAMP	**Date:** 10/16/07	**Recorded By:** MW / MM
Station ID: ST-03	**On Station:** D 1107 / R (local)	**Off Station:** D 1145 / R (local)
Northing (NAD83, feet) 825449.835	**Easting** (NAD83, feet) 248585.592	**DGPS Accuracy Estimate** (± m): 1.7
Water depth (ft): 4.8	**Sample Platform:** (Vessel) Wading	**Deployment/Retrieval Time:** (local) D 1140 / R
Sensor Depth (ft): 3.03		
Data File Name: ~~ST03 02~~ (1) ST03_1B	**Instrument Model / SN:** 62A0880AA	
General Water Description-*Option* (from back-up meter)		
Temperature (°C): 16.07	**: D.O.** (mg/L) 9.89	
Salinity (‰): 29.51		
Turbidity (NTU): 2.5		

CALIBRATION and MAINTENANCE

DO membrane changed? (Y) N	Turbidity Wiper Changed? Y (N)
Battery Voltage: 12.7	Turbidly wiper parks 180° from optics? (Y) N

Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	1.03	1.00	Cell constant (4.55 – 5.45)
Depth (ft)	-0.083	0.000	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	0.2	0.0	Turbidity Offset:
Turbidity (NTU) 123	124.1	123.0	
D.O. (% Sat)	100.8%	100.8%	D.O. Gain (0.7 - 1.4)
Field Activities / Comments / Observations:			
Ph 4	4.02	3.99	
Ph 7	7.25	7.00	
Battery Changed			

(1) File name changed to ST03_1B to correspond w/ series - MPM 12/19/07

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Sediment Trap Deployment (G606422)

In situ Data Field Form

Dredging Location	NA (dredging complete / demob)
Dredging Description	NA
Survey Vessel	Gale Force
Chief Scientist	Mike McKee
Sampling Technician	
Vessel Captain	Mike Walsh
Other Personnel	
Weather conditions	55°F, Sunny & Winds NW @ 10-15 kts

Date	10/16/07
Page	1 of 1

Tide information		
High		
Low	0428	0.4
High	1146	3.6
Low	1712	0.7

Station Number	Time	N Latitude MASP2001_m	E Longitude MASP2001_m	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	pH	Notes
ST-04	1032	825355.285	248604.666	3.5	1.03	2.6	28.55	9.39	15.67	6.8 i	
					2.00	2.9	29.32	9.46	15.97	7.05	
					2.99	2.3	~~29.57~~ 29.48	9.51	16.04	7.35	
ST-01	1044	825587.814	248537.952	4.4	1.05	3.0	28.27	8.70	16.12	7.49	
					2.04	2.5	29.48	9.08	16.16	~~9.08~~ 7.55	
					3.04	2.3	29.56	9.21	16.20	7.57	
ST-02	1054	825516.524	248540.927	6.1	1.03	8.6	28.17	8.73	15.88	7.57	
					2.06	8.0	28.91	9.27	15.98	7.64	
					3.00	7.4	29.44	9.51	16.10	7.65	
					3.99	7.22	29.53	9.55	16.06	7.66	
					5.01	7.1	29.55	9.51	16.07	7.67	
ST-03	1107	825449.835	248585.592	4.8	1.06	3.6	28.23	~~15.96~~ 9.09	15.96	7.65	
					2.01	3.3	28.83	9.68	16.00	7.70	
					3.03	2.5	29.51	9.89	16.07	7.72	
					4.02	2.3	29.58	9.89	16.10	7.72	

Signature of Data recorder: Mike Walsh

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Sediment Trap Deployment (G606422)

Field Daily Log Form

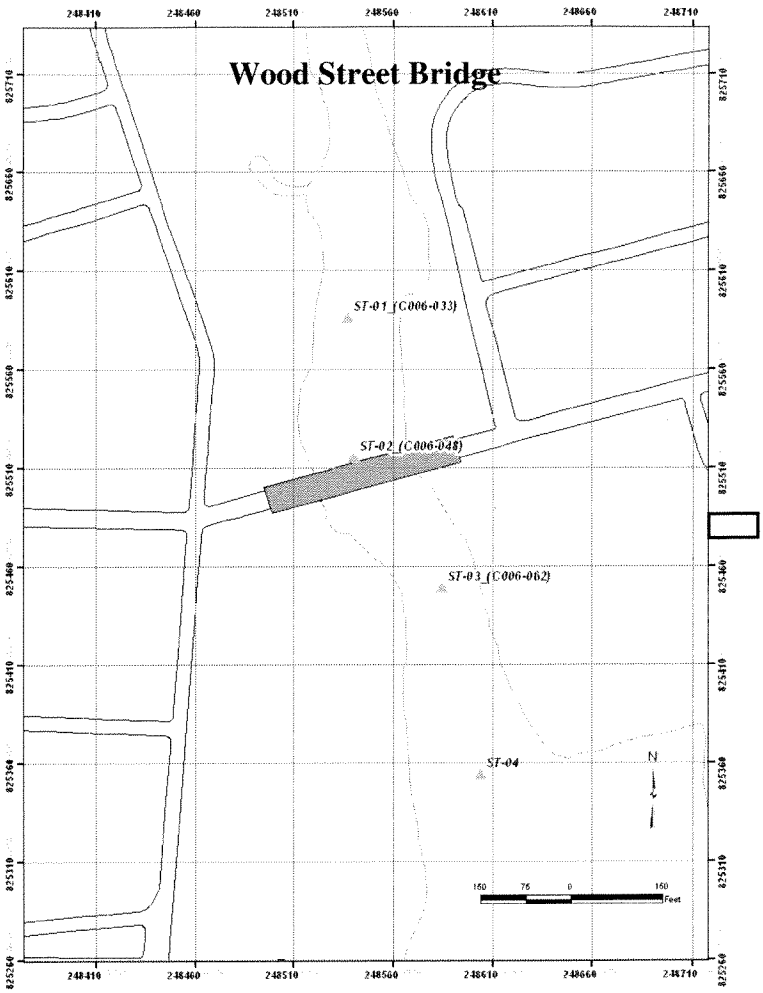
Date: 10/31/07 **Weather:** 50°F/ptly cloudy/winds 15 SW

Tides:

0546 L	@	0.2
1247 H	@	4.2
1858 L	@	0.4

Monitoring Period:
From: 1400 **To:** 1600
Tidal Stage: HWS Ebb LWS Flood
Dredging Activity:

dredging complete



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
ST04	1.4	3.02
ST03	3.4	3.00
ST02	2.4	3.04
ST01	2.5	3.03

Oil sheen/ Debris: yes
Samples Collected for Laboratory Analysis
Sample IDs:
PCB (Sediment Trap) ST-A-XXXXXX-Z
PCB (Surface Grab) NA
Turbidity (500ml) NA
Dissolved PCB (2x1L) NA
Notes: retrieved YSI mooring
retrieved 1st round of sediment traps → ST-01-103107-1, ST-01-103107-2, ST-01-103107-3, ST-02-103107-1, ST-02-103107-2, ST-03-103107-1, ST-03-103107-2, ST-04-103107-1, ST-04-103107-2

Sampling Crew: Mike McKee, Mike Walsh

Chief Scientist Signature: Michael P. [illegible]

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~~Passive Sampling Devices (G921346)~~ Sed Traps (G606422)

In situ Water Quality Field Form

Dredging Location	NA
Dredging Description	dredging complete
Survey Vessel	Gale Force
Chief Scientist	Mike McKee
Sampling Technician	
Vessel Captain	Mike Walsh
Other Personnel	
Weather conditions	50°F / ptly cloudy / winds 15 SW

Date	10/31/07
Page	1 of 1

Tide information	
High	
Low	0516 @ 0.2
High	1247 4.2
Low	1858 0.4

Station Number	Time	N Latitude MA SP 2001_m	E Longitude MA SP 2001_m	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	pH	Notes
ST04	1411	825355.285	248604.666	4.2'	1.02'	2.0	30.04	8.71	13.59	7.66	
↓	↓				2.03	2.0	30.03	8.06	13.59	7.66	
					3.02	1.4	30.27	7.30	13.62	7.66	
ST03	1422	825449.835	248585.592	4.7'	1.04	4.4	29.40	8.16	13.76	7.71	
↓	↓				2.02	4.1	29.35	7.93	13.76	7.70	
					3.00	3.4	29.67	7.40	13.65	7.68	
ST02	1431	825516.524	248540.927	5.7'	1.01	5.5	28.35	7.97	13.78	7.69	
↓	↓				2.03	3.2	29.13	7.69	13.71	7.70	
					3.04	2.4	29.70	7.17	13.37	7.63	
					4.01	1.8	30.02	6.83	13.30	7.60	
ST01	1441	825587.514	248537.952	4.4'	1.00	2.4	26.18	6.52	13.48	7.62	
↓	↓				2.04	2.3	29.17	6.42	13.46	7.64	
					3.03	2.5	29.70	6.39	13.41	7.63	

Signature of Data recorder: Michael R. Jones

Passive Sampling Devices (G921346)
SURVEY RECORD LOG

SURVEY: Passive Sampling Devices 21 day retrieval **DATE:** 10/31/07

0700 @ NBH trailer
0900 - depart for NBH4 from dock
0940 - on station @ NBH4
0948 - pulled moorings → mid & south floats fouled w/ seaweed
10:15 - new PEDs on moorings (7D)
1020 - mooring redeployed
1035 - YSI cast & water collection → Turbidity reading off (~5 NTU go back to dock to get other YSI
1220 - back on station @ NBH4 - new YSI
1238 - depart for NBH2
1305 - arrive @ NBH 2 @ recover moorings
1315 - collect PEDs
1320 - water collection & YSI cast
1343 - PEDs redeployed
Sed Trap 1411 - 1441 → YSI casts and sed. trap recovery @ N. wood St.

Surface Sampling Event No. 1

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Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring | *Location: New Bedford, MA*
Project #: G606422 | *Chief Scientist: M. Walsh*
Client: USACE NAE | *Vessel: R/V Gale Force*

Field Measurements

Survey ID: ST-04 (MW)	Station Depth (feet): 3.8
Station ID:	Time on Station: 0936
Date: 11/12/2007	Time Depart Station: 0955
Recorded by: MW	

Attempt #1	
Northing: 2707840.49	Grab Size: 0.1-m^2
Easting: 815620.64	Analyses : PCBs TOC/GS
Collection Time: 1000	
Sample ID: SS-ST04-111207	

Sample Description: Grey Brown silt/sand over black silt/sand and Gravel Oyster shells

Attempt #2	
Latitude:	Grab Size: 0.1-m^2
Longitude:	Analyses : PCBs
Time:	
Sample ID:	

Sample Description:

Additional Comments:

Field Measurements

Survey ID:	Station Depth (feet): 4.0'
Station ID: ST-03	Time on Station: 1014
Date: 11/12/07	Time Depart Station: 1024
Recorded by: MW	

Attempt #1	
Northing: 2708143.91	Grab Size: 0.1-m^2
Easting: 815574.35	Analyses : PCBs TOC/GS
Collection Time: 1016	
Sample ID: SS-ST03-111207	

Sample Description:

Attempt #2	
Latitude:	Grab Size: 0.1-m^2
Longitude:	Analyses : PCBs
Time:	
Sample ID:	

Sample Description: Grey Brown ~~silt/sand~~ (MW) sand and silt on surface Oper mostly Grey Brown SAND.
Snail and Glass Shrimp on Surface

Additional Comments:

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring | *Location: New Bedford, MA*
Project #: G606422 | *Chief Scientist: M. Walsh*
Client: USACE NAE | *Vessel: R/V Gale Force*

Field Measurements

Survey ID:	Station Depth (feet): 6.1'
Station ID: ST-02	Time on Station: 1030
Date: 11/12/07	Time Depart Station: 1058
Recorded by: MW	

Attempt #1	
Northing: 2708405.70	Grab Size: 0.1-m^2
Easting: 815438.52	Analyses : PCBs, TOC/GS
Collection Time: ~~1037~~ 1051	
Sample ID: SS-ST02-111207	

Sample Description: 1st Attemp N/G - 2nd Attempt N/G
Grey Brown sand and silt with Algae and Organic Detritus
Many Glass Shrimp - Slight Sheen on Surface

Attempt #2	
Latitude:	Grab Size: 0.1-m^2
Longitude:	Analyses : PCBs
Time:	
Sample ID:	

Sample Description:

Additional Comments:

Field Measurements

Survey ID:	Station Depth (feet): 3.9'
Station ID: ST01	Time on Station: 1105
Date: 11/12/07	Time Depart Station:
Recorded by: MW	

Attempt #1	
Northing: 2708600.18	Grab Size: 0.1-m^2
Easting: 815404.64	Analyses : PCBs TOC/GS
Collection Time: 1108	
Sample ID: SS-ST01-111207	

Sample Description: Black silt and Organic Detritus
Strong Sulfide Odor
SPOTTY Sheen on Surface - sheen noticed throughout Grab

Attempt #2	
N ~~Latitude~~: Northing 2708600.18	Grab Size: 0.1-m^2
E ~~Longitude~~: Easting 815404.64	Analyses : PCBs TOC/GS
Time: 1116	
Sample ID: SS-ST01-111207-DUP	

Sample Description: Black/Brown Silt and organic Detritus
Spotty Sheen on Surface - Strong Sulfide Odor

Additional Comments:

Deployment No. 2

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Battelle

Sediment Trap Deployment (G606422)

Field Daily Log Form

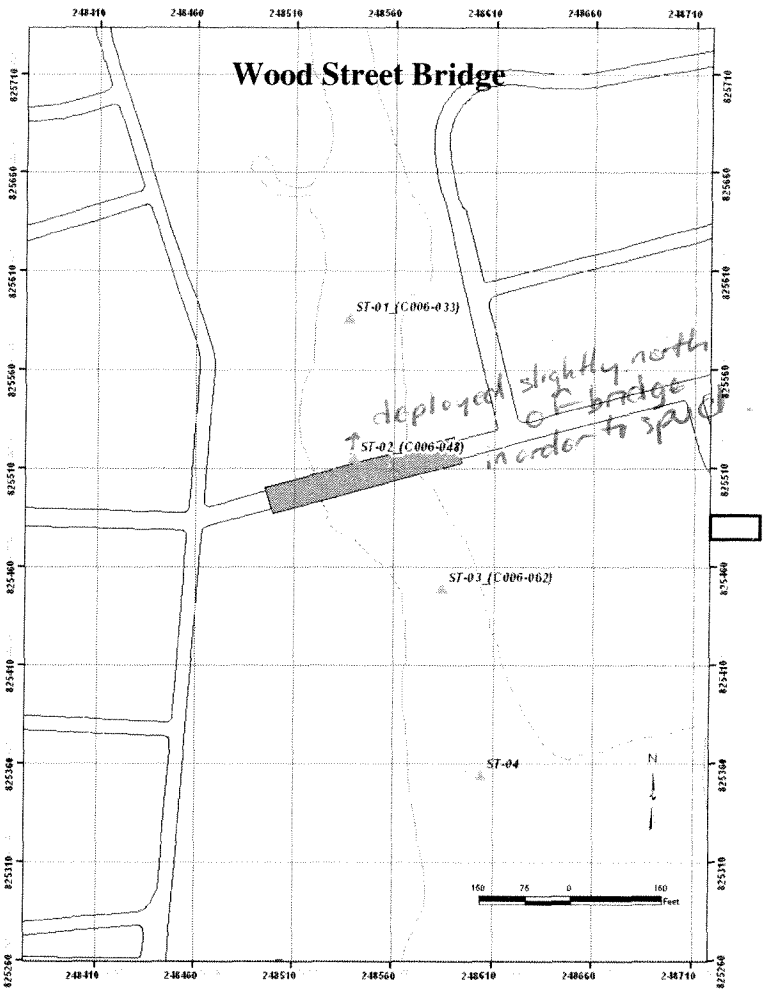
Date: 11/7/07 **Weather:** 50°F / Sunny / 8 kts WNW

Tides:

536	@	4.0 H
1213	@	0.3 L
1755	@	3.6 H

Monitoring Period:
From: 0800 **To:** 12:30
Tidal Stage: HWS (Ebb) LWS Flood
Dredging Activity:

dredging complete



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
ST01	2.2	1.08
ST02	2.8	1.02
11	2.4	2.02
ST03	3.2	1.04
ST04	2.6	1.00

Oil sheen/ Debris: none
Samples Collected for Laboratory Analysis
Sample IDs:
PCB (Sediment Trap) NA
PCB (Surface Grab) NA
Turbidity (500ml) NA
Dissolved PCB (2x1L) NA
Notes:
very low tide for sed trap deployment. churned up the bottom a bit at ST-04.

Sampling Crew: Mike McKee / Mike Walsh

Chief Scientist Signature: Mark P Mc

Battelle **Sediment Trap Deployment (G606422)**

dGPS Calibration Form

Project #: G-606422

INITIALS MPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name Jacobs NBH Benchmark

Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	~~MA~~ State Plane 2001 (ft)	2701297.880	814160.870

Comments -

Replacement Trimble XRS Pro used.

Date/Time 11/7/07 Vessel Gale force

Unit Make/Model Trimble XRS Pro

Sed Trap
G600422

Mooring Deployment/Retrieval Log and Calibration Form

Project No. G600422	**Date:** 11/6/07	**Recorded By:** MPM
Station ID: ST03	**On Station:** (local) 0921	**Off Station:** (local) 0925
Northing (NAD83, feet) 2708169.790	**Easting** (NAD83, feet) 815567.815	**DGPS Accuracy Estimate** (± m): 2.87
Water depth (ft): 2.3	**Sample Platform:** (Vessel) Wading	**Deployment/Retrieval Time:** (local) 11/7/07 @ 0921 Retrieved
Sensor Depth (ft): 1.04		
Data File Name: ST03B1 ① ST03_2A	**Instrument Model / SN:** 06J1733 4B	
General Water Description-*Option* (from back-up meter)		
Temperature (°C): 12.21	**: D.O.** (mg/L) 4.94	
Salinity (‰): 27.75		
Turbidity (NTU): 3.2		

CALIBRATION and MAINTENANCE

~~DO~~ membrane changed? (Y) N	Turbidity Wiper Changed? Y (N)
Battery Voltage: 12.5	Turbidly wiper parks 180° from optics? (Y) N

Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	0.977	1.0	Cell constant (4.55 – 5.45)
Depth (ft)	-0.665	0.000	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	0.07	0.00	Turbidity Offset:
Turbidity (NTU) 123	119.1	123.0	
D.O. (% Sat)	99.5	99.5	D.O. Gain (0.7 - 1.4)
Field Activities / Comments / Observations:			
pH 4.0	4.03	4.00	
pH 7.0	7.02	7.00	
Chl	-0.1	-0.1	

ST03_2A
① Renamed data file to correspond w/ rest of series - MPM 12/19/07

Battelle

Sediment Trap Deployment (G606422)

In situ Data Field Form

Dredging Location	NA
Dredging Description	dredging complete
Survey Vessel	Gale Force
Chief Scientist	Mike McKee
Sampling Technician	
Vessel Captain	Mike Walsh
Other Personnel	
Weather conditions	50°F / sunny / 8 kts WNW

Date	11/7/07
Page	1 of 1

Tide information		
High	536	4.0H
Low	1213	0.3L
High	1755	3.6H
Low		

Station Number	Time	N Latitude SPMA2001-ft	E Longitude SPMA 2001-ft	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes pH
ST01	0901	2708620.226	815413.123	3.3'	1.08	2.2	27.88	6.38	12.16	6.85
ST02	0910	2708405.62	815419.82	4.3'	1.02	2.8	27.92	7.73	12.16	7.03
"	"			2.	2.02	2.4	28.10	7.11	12.15	7.08
ST03	0921	2705169.80	815567.815	2.3	1.04	3.2	27.75	4.94	12.21	7.09
ST04	0927	2707358.632	815631.824	2.0	1.00	2.6	28.06	4.02	12.22	7.18
Signature of Data recorder:										

DUXBURY OPERATIONS

SURVEY PROBLEM LOG

SURVEY: Sed Trap / Pass Samp **DATE:** 11/7/07

Please record any problems or issues.

0830 - depart from dock for NWS bridge

0901 - arrive at ST01 & deployed sed traps

0905 - YSI cast (1 depth)

0910 - arrive at ST02 & deployed traps just N of station

0915 - YSI cast (2 depths)

0921 - arrived @ ST03 & deployed traps & YSI sonde

0925 - YSI cast (1 depth)

0927 - arrived @ ST04 & deployed traps

0930 - YST cast (1 depth) & depart for NBH4

1037 - arrive @ NBH4 & collect PEDs 1 = South 2 = Mid 3 = North

1045 - YSI cast

1055 - water collection @ 8' WD

1138 - on station @ NBH2 / collect PEDs 1 = South 2 = mid 3 = North

1145 - YSI cast

1205 - water collection @ 12' WD

1215 - rinsate blank

1230 - back @ dock

Mooring Deployment/Retrieval Log and Calibration Form

Project No. G606422	**Date:** 11/29/2007	**Recorded By:** MW
Station ID: ST03	**On Station:** (local) 1005	**Off Station:** (local) 1030
Northing (NAD83, feet)	**Easting** (NAD83, feet)	**DGPS Accuracy Estimate** (± m):
Water depth (ft): 5.2'	**Sample Platform:** (Vessel) Wading	**Deployment/Retrieval Time:** (local) 1025
Sensor Depth (ft): 4'		
Data File Name: ~~ST03B2~~ ② ST03_2B	**Instrument Model / SN:** ~~0210880 AA~~ ① M	
General Water Description-*Option* (from back-up meter)		
Temperature (°C):	**: D.O.** (mg/L)	
Salinity (‰):		
Turbidity (NTU):		

Retrieved 12/10/07 @0915 PM 11/29/07

CALIBRATION and MAINTENANCE

DO membrane changed? (Y) N	Turbidity Wiper Changed? Y (N)
Battery Voltage: 12.1	Turbidly wiper parks 180° from optics? (Y) N

Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	988	1001	Cell constant (4.55 – 5.45)
Depth (ft)	-0.013	0.000	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	1.2	0.0	Turbidity Offset:
Turbidity (NTU) 123	121.6	123.0	
D.O. (% Sat)	100.6	100.6	D.O. Gain (0.7 - 1.4)
Field Activities / Comments / Observations:			
Ph 4.00	3.99	4.00	
Ph 7.00	6.92	7.00	

① Wiper on sensor not working / redeployed sensor from previous week w/ new filename.

② Filename changed to correspond w/ rest of series - MPM 12/19/07

Battelle

Sediment Trap Deployment (G606422)

Field Daily Log Form

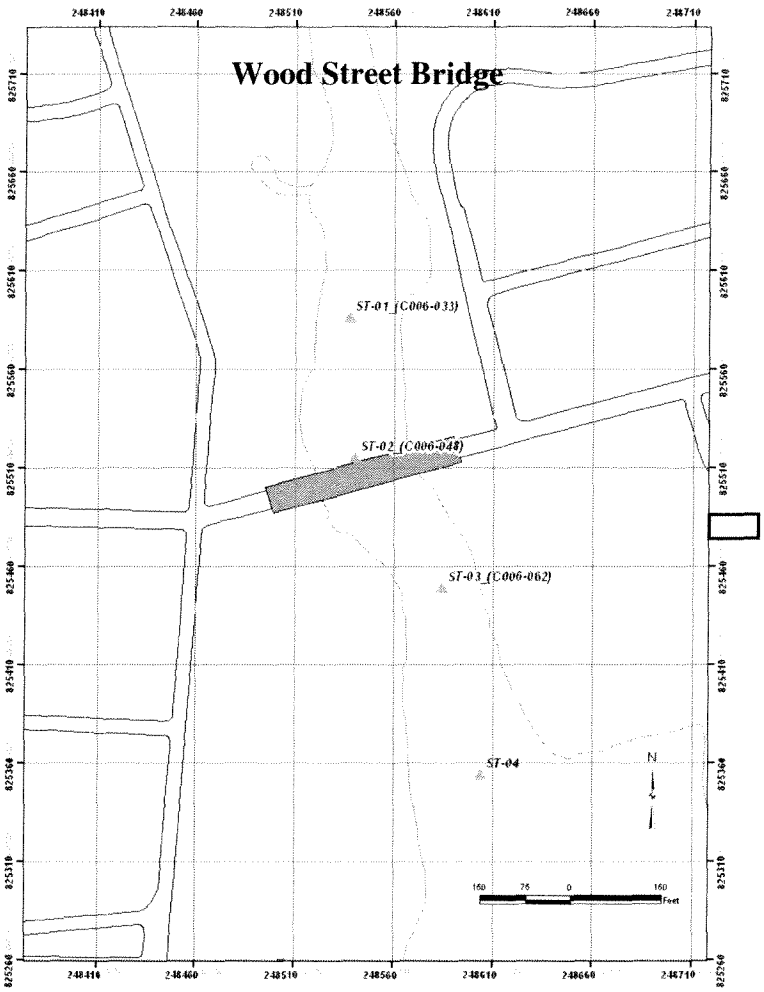
Date: 12/10/07 **Weather:** 32°F / rainy / winds N 5-10kts

Tides:

H 0752	@	4.0
L 1330	@	0.2
H 2014	@	3.2

Monitoring Period:
From: 0800 **To:** 1000
Tidal Stage: HWS (Ebb) LWS Flood
Dredging Activity:

dredging complete



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)	
ST04	x	x	
ST03	x	x	① MPM 12/10/07
ST02	x	x	
ST01	x	x	

Oil sheen/ Debris: none
Samples Collected for Laboratory Analysis
Sample IDs:
PCB (Sediment Trap) ST-STATI#-MMDDYY-Rep
PCB (Surface Grab) NA
Turbidity (500ml) NA
Dissolved PCB (2x1L) NA
Notes:
① Not able to conduct YSI casts during recovery → area around NWS bridge was iced out and we had to operate quickly to recover traps & fixed YSI before getting iced in.

Sampling Crew: Mike McKee Mike Walsh

Chief Scientist Signature: Mark P

Passive Sampling Devices (G921346)
SURVEY RECORD LOG

SURVEY: Sediment Traps/Passive Samplers **DATE:** 12/6/07

0815 Depart dock for North Wood St. Bridge to collect sediment traps
0845 Arrive at station 4 and begin retrievals (South to North)
0930 Depart NWS area for dock to drop off samples & YSI
1005 Depart dock for NBH4
1050 Arrive at NBH4 & recover SPMD/SPME canisters (21 day)
1058 Recover 21 day PEDs
1115 YSI cast & bulk water (8' WD)
1132 Depart for NBH2
1159 Arrive @ NBH2 and retrieve SPMDs/SPMEs
1220 Recover PEDs (21 Day)
1235 YSI cast & collect bulk water (10' WD)
1300 Back at dock

Deployment No. 3

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Battelle

Sediment Trap Deployment (G606422)

Field Daily Log Form

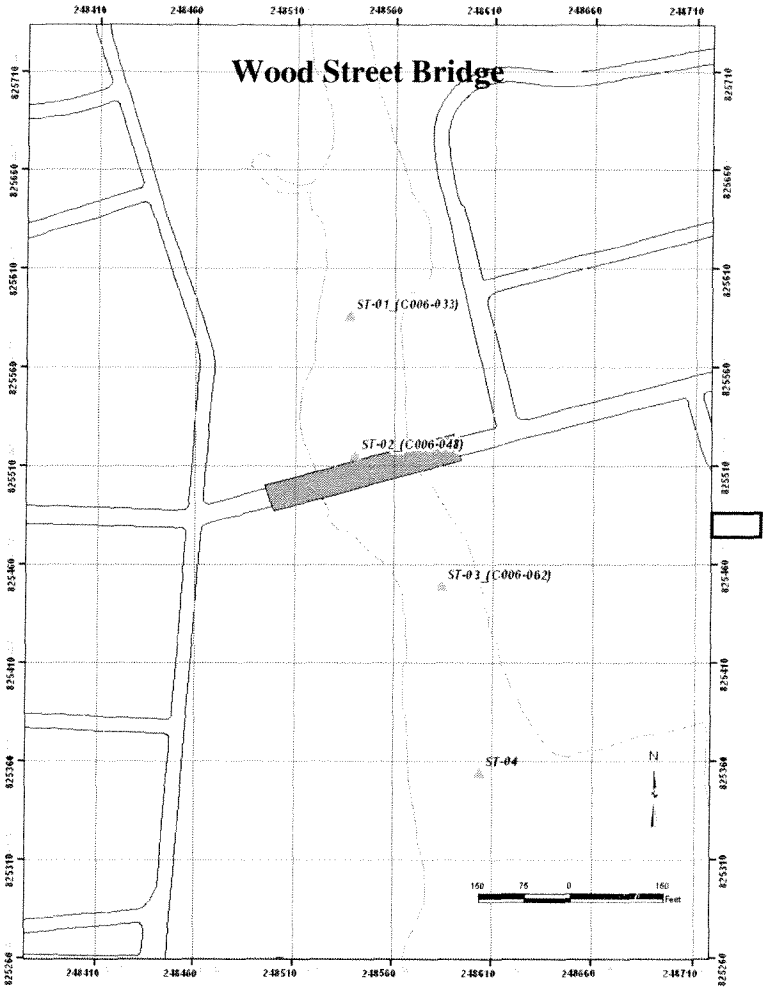
Date: 03/14/08 **Weather:** 50°F / overcast / windy 5kts S

Tides:

L	7:41	@ 0.3
H	14:28	@ 2.9
L	19:43	@ 0.3

Monitoring Period:
From: 12:00 **To:** 16:15
Tidal Stage: HWS Ebb LWS Flood
Dredging Activity:

Pre-dredge



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
ST01	1.0	2.0'
ST02	1.2	3.1'
ST03	1.1	2.05'
ST04	1.6	2.0'

Oil sheen/ Debris:
Samples Collected for Laboratory Analysis
Sample IDs:
PCB (Sediment Trap) N/A
PCB (Surface Grab) N/A
Turbidity (500ml) N/A
Dissolved PCB (2x1L) N/A
Notes:
Reddish brown tint to the water near Wood St bridge (humics?)
Sediment traps deployed for two weeks

Sampling Crew: Mike McKee / Mike Walsh

Chief Scientist Signature:

Battelle **Sediment Trap Deployment (G606422)**

dGPS Calibration Form

Project #: G606422

INITIALS MPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name NBH Trailer porch (NW corner)

Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	MA SP 2001/NAD83	2701153.27	814566.01

PDOP 2.43

GXplorist 210; WGS 84 41° 39.514N 070° 55.222W ACC=33'

Comments -

The new leased Trimble GeoXT did not have an active GPS upon boot. Reboot (soft reboot) corrected the problem after speaking to tech support as U.S. Environmental

Date/Time 03/14/08 Vessel Gale Force

Unit Make/Model Trimble GeoXT

YSI Calibration Form
Daily 2007 WQ Monitoring for New Bedford Harbor – G606422

Instrument Model # 6920 S/N# 02B00711 AR

Date: 3/14/2008	Initials: MPM
DO membrane changed? (Y) N	Turbidity Wiper Changed? (Y) N
Battery Voltage: 12.4	Turbidly wiper parks 180° from optics? (Y) N

Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	1.039	1.500	Cell constant (4.55 – 5.45)
Depth (ft)	0.821	0.002	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	2.1	0.0	Turbidity Offset:
Turbidity (NTU) 123	122.5	123.0	
D.O. (% Sat)	100.7% 9.67mg/l	→ "	D.O. Gain (0.7 - 1.4)
pH 4	4.06	4.00	
pH 7	7.07	6.99	
Comments: pH10	9.84	9.97	

Date:	Initials:
DO membrane changed? Y N	Turbidity Wiper Changed? Y N
Battery Voltage:	Turbidly wiper parks 180° from optics? Y N

Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)			Cell constant (4.55 – 5.45)
Depth (ft)			Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0			Turbidity Offset:
Turbidity (NTU) 123			
D.O. (% Sat)			D.O. Gain (0.7 - 1.4)
pH 4			
pH 7			
Comments:			

Battelle **Sediment Trap Deployment (G606422)**

Mooring Deployment/Retrieval Log and Calibration Form

Project No. 606422	**Date:** 3/14/2008	**Recorded By:** MW/MM
Station ID: ST-03	**On Station:** (local) 1535	**Off Station:** (local) 1546
Northing (NAD83, feet) 270516 3.51	**Easting** (NAD83, feet) 815512.03	**DGPS Accuracy Estimate** (± m): 2.09
Water depth (ft): 4.9'	**Sample Platform:** (Vessel) Wading	**Deployment/Retrieval Time:** (local) 1546 / -
Sensor Depth (ft): ~2' from bottom		
Data File Name: ~~ST03~~ ① MPM ST03_3A	**Instrument Model / SN:** 026007 114A	

Removed 04/15/08 1438

General Water Description-*Option* **(from back-up meter)**	
Temperature (°C): 6.53	**Other:**
Salinity (‰): 13.68	**D.O.** (mg/L) 11.16
Turbidity (NTU): 1.1	**pH** (pH units): 7.46

CALIBRATION and MAINTENANCE

DO membrane changed? (Y) N	Turbidity Wiper Changed? (Y) N	Chlorophyll Wiper Changed? Y N N/A
Battery Voltage: 12.3	Turbidly wiper parks 180° from optics? (Y) N	Chlorophyll Wiper Parks 180° from optics? Y N N/A

Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	1.039	1.000	Cell constant (4.55 – 5.45)
pH 4 ± 1	4.06	4.00	MV (0 ± 50)
pH 7 ± 1	7.07	6.99	MV (+ ~172 ± 7 from 7 buffer)
pH 10 ± 1	9.84	9.97	
Depth (ft)	0.821	0.002	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	2.1	0.0	Turbidity Offset:
Turbidity (NTU) 123	122.5	123.0	
D.O. (% Sat)	100.9	9.67 mg/l	D.O. Gain (0.7 - 1.4)

Field Activities / Comments / Observations:

ST03_3A → 03/14/08 through 03/28/08

ST03_3B → 03/28/08 through 04/15/08

ST03_4A → 04/15/08 through 05/15/08

① Filename changed to correspond with deployment period - MPM 05/19/08

Battelle

Sediment Trap Deployment (G606422)

In situ Data Field Form

Dredging Location	N/A
Dredging Description	Pre-Dredge
Survey Vessel	Gale Force
Chief Scientist	Mike McKee
Sampling Technician	
Vessel Captain	Mike Walsh
Other Personnel	
Weather conditions	40°F / overcast / winds 5 kts S

Date	03/14/08
Page	1 of 1

Tide information	
High	01:54 @ 3.7ft
Low	07:41 @ 0.3 ft
High	14:28 @ 2.9 ft
Low	19:43 @ 0.3 ft

NAD83 (ft)

PDOP	Station Number	Time	~~Latitude~~ Northing	~~Longitude~~ Easting	Water depth	Sample Depth	Turbidity NTU	Salinity ppt	DO mg/L	Temp C	Notes pH
2.25	ST-04	1512	2707853.40	815632.51	4.0'	2.0'	1.6	10.9	11.56	6.6	7.23
1.95	ST-01	1520	2708613.12	815410.75	4.2'	2.0'	1.0	10.25	10.97	6.51	7.50
2.24	ST-02	1529	2708389.20	815422.22	6.7'	3.1	1.2	20.5	10.8	6.38	7.67
2.09	ST-03	1538	2708163.51	815570.03	4.9'	2.05'	1.1	13.68	11.16	6.53	7.46

Signature of Data recorder: [signature]

DUXBURY OPERATIONS

SURVEY PROBLEM LOG

SURVEY: NBH Sed Trap **DATE:** 03/14/08

Please record any problems or issues.

~1000 - Arrive at NBH trailer, calibrate YSI sensor, benchmark the TrimbleGeoXT on the porch, load gear onto boat

1140 - Arrive at the public launch in Fairhaven and launch pontoon boat

1200 - Depart for upper Harbor

1300 - Arrived at NBHST-01 and prepared to deploy sediment traps

1315 - Deployed 1st three traps at ST-01 and conducted YSI cast → salinity values near 0 → may need to recal

1330 - Deploy remaining traps and head for more saline waters to test YSI

1438 - YSI cast at area H to quickly test salinity values 11 ppt seems reasonable for position in the Harbor → return to ST-01 to conduct YSI casts at sed trap locations

1545 - Depart for Jacobs dock to pick up 20' spuds

1615 - Return to Fairhaven launch and recover boat

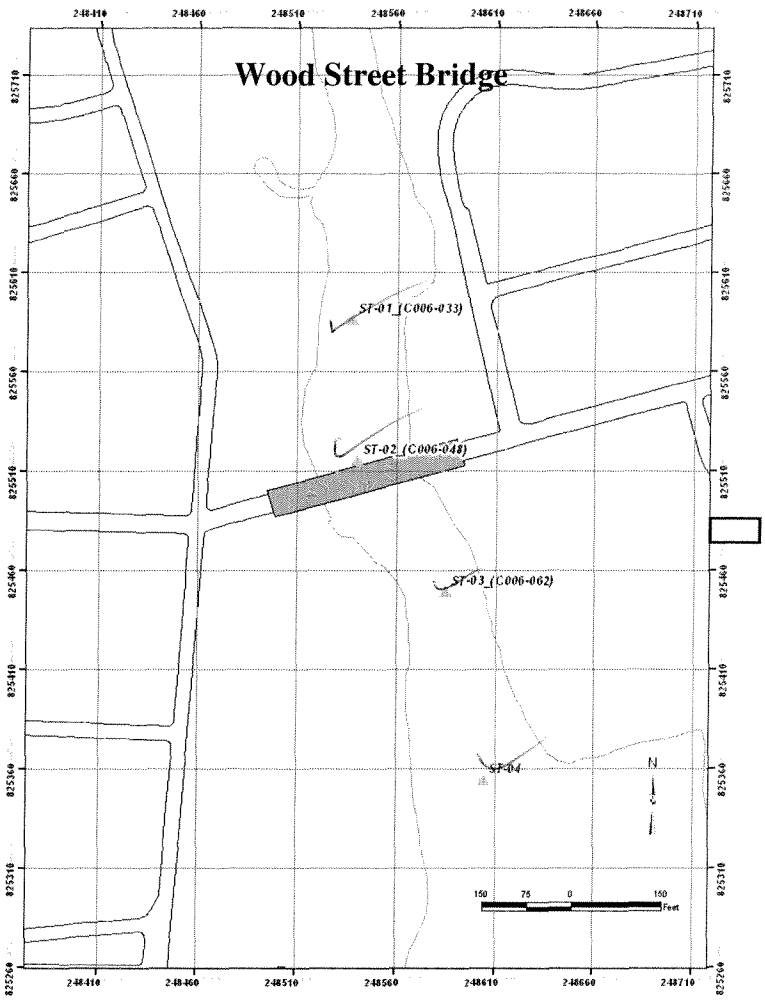
Battelle **Sediment Trap Deployment (G606422)**

Field Daily Log Form

Date: 03/28/08 **Weather:** 40°F/cloudy/winds 10-15 NE

Tides:

0.5'	@	05:42
2.4'	@	13:16
0.5'	@	17:48



Monitoring Period:
From: 08:00 **To:** 11:00
Tidal Stage: HWS Ebb LWS Flood
Dredging Activity:

NA

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)

Oil sheen/ Debris:

Samples Collected for Laboratory Analysis
Sample IDs:
PCB (Sediment Trap) N/A
PCB (Surface Grab) N/A
Turbidity (500ml) N/A
Dissolved PCB (2x1L) N/A

Notes:
Sediment traps deployed for 2 weeks so far. Checking amount of material collected → Light veneer of sediments on bottom of HDPE containers. Re-deployed for 2 weeks. Checked battery life & started data file for YSI

Sampling Crew: Mike Welsh / Mike McKee

Chief Scientist Signature:

Battelle **Sediment Trap Deployment (G606422)**

dGPS Calibration Form

Project #: G606422

INITIALS MPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name NBH Trailer Porch (NW corner)
Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	MA 2001 SP NAD83 (ft)	2701152.61'	814564.27'

DDOP
3.86

Comments -
None

Date/Time 03/28/08 08:15 Vessel Gale Force

Unit Make/Model Trimble GeoXT

Deployment No. 4

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Battelle

Sediment Trap Deployment (G606422)

Field Daily Log Form

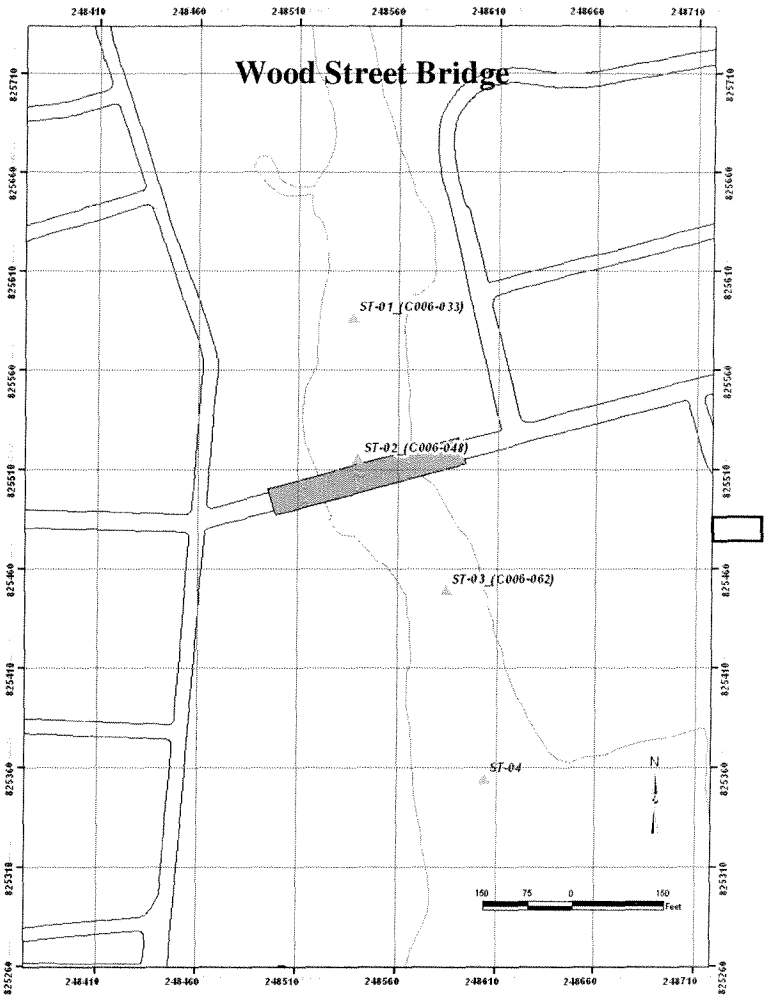
Date: 04/15/08 **Weather:** 50°F/sunny/winds 10-15 kts S

Tides:

3.6'	@	4:49
0.2'	@	11:23
3.7'	@	17:16

Monitoring Period:
From: 1400 **To:** 1700
Tidal Stage: HWS Ebb LWS ~~Flood~~
Dredging Activity:

None



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
ST-01	+0.4	2.04'
ST-02	-0.3	4.00'
ST-03	-0.3	2.00'
ST-04	-0.1	2.02'

Oil sheen/ Debris:
Samples Collected for Laboratory Analysis
Sample IDs:
PCB (Sediment Trap) N/A
PCB (Surface Grab) N/A
Turbidity (500ml) N/A
Dissolved PCB (2x1L) N/A
Notes:
- Reddish brown tint to water near Wood St. Bridge
- American eel in sed trap ST-02B
- Sediment traps recovered and re-deployed

Sampling Crew: Mike McKee / Mike Walsh

Chief Scientist Signature:

Battelle **Sediment Trap Deployment (G606422)**

dGPS Calibration Form

Project #: G606422

INITIALS MPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name NBH Trailer Porch (NW corner)
Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	MA SP 2001 NAD83 ft	2701151.53	814564.17

PDOP 2.29

Comments -
GPS ~ 10 ft off the reference point in the AM. Checked all settings (i.e. datum, units, benchmark waypoint) and all were correct. Reloaded factory settings and the problem was corrected

Date/Time 04/15/08 1718 Vessel Gale Force

Unit Make/Model Trimble GeoXT

Battelle Sediment Trap Deployment (G606422)

Mooring Deployment/Retrieval Log and Calibration Form

Project No. G606422	**Date:** 04/15/08	**Recorded By:** MPM / MW
Station ID: ST-Ø3	**On Station:** (local) 1430	**Off Station:** (local)
Northing (NAD83, feet) 2708168	**Easting** (NAD83, feet) 815569	**DGPS Accuracy Estimate** (± m): 2.87
Water depth (ft): 3.6' **Sensor Depth** (ft): 2.6'	**Sample Platform:** Vessel Wading	**Deployment/Retrieval Time:** (local) 04/15/08 1650 / 05/15/08 1459 ①
Data File Name: ~~ST-03E~~ ② ST03_4A	**Instrument Model / SN:** 6920 / 02B0071AA	

General Water Description-*Option* (from back-up meter)

Temperature (°C): 12.77	**Other:**
Salinity (‰): 26.20	**D.O.** (mg/L) 10.21
Turbidity (NTU): -0.1	**pH** (pH units): 8.01

CALIBRATION and MAINTENANCE

DO membrane changed? Y N	Turbidity Wiper Changed? Y N	Chlorophyll Wiper Changed? Y N NA
Battery Voltage: 12.9	Turbidly wiper parks 180° from optics? Y N	Chlorophyll Wiper Parks 180° from optics? Y N NA

Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	0.985	1.000	Cell constant (4.55 – 5.45)
pH 4 ± 1	3.91	4.01	MV (0 ± 50)
pH 7 ± 1	7.10	7.00	MV (+ ~172 ± 7 from 7 buffer)
pH 10 ± 1	9.86	9.99	
Depth (ft)	0.467	0.004	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	0.7	0.0	Turbidity Offset:
Turbidity (NTU) 123	126.3	123.0	
D.O. (% Sat)	10.23 / 102%		D.O. Gain (0.7 - 1.4) D.O. Charge 48.2

Field Activities / Comments / Observations:

① Re-deployed on 05/15/08 @ 1615 b/c other sonde is providing inconsistent DO & turbidity readings

② Filename changed to correspond w/ deployment period - MPM 05/19/08

Battelle

Sediment Trap Deployment (G606422)

In situ Data Field Form

Dredging Location	NA
Dredging Description	None
Survey Vessel	Gale Force
Chief Scientist	Mike McKee
Sampling Technician	
Vessel Captain	Mike Walsh
Other Personnel	
Weather conditions	50°F / sunny

Date	04/15/08
Page	1 of 1

Tide information	
High	3.6 @ 4:49
Low	0.2 @ 11:23
High	3.7 @ 17:16
Low	0.1 @ 23:56

PDOP

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity NTU	Salinity PSU	DO	Temp °C	Notes pH
2.57 ST-03	1438	2708168	815569	3.6'	1'	-0.5	15.14	10.81	13.22	7.93
					2'	-0.1	26.20	10.21	12.77	8.01
3.93 ST-01	1556	2708615	815410	4.2'	1.02'	-1.0	1.43	11.33	12.76	7.76
					2.04'	0.4	25.62	9.57	12.83	7.75
3.04 ST-02	1620	2708393	815422	6.4'	1.10'	-0.4	8.08	10.02	13.39	7.78
					2.08'	0.0	15.76	9.38	13.91	7.94
					3.03'	-0.2	25.91	9.34	12.76	8.04
					4.00'	-0.3	26.67	9.42	12.47	8.06
2.99 ST-04	1637	2707853	815630	4.2'	1.04'	0.4	16.32	9.48	14.05	7.96
					2.02	-0.3	20.94	9.27	13.83	8.02

Signature of Data recorder: Mike P. M

Battelle

Sediment Trap Deployment (G606422)

Field Daily Log Form

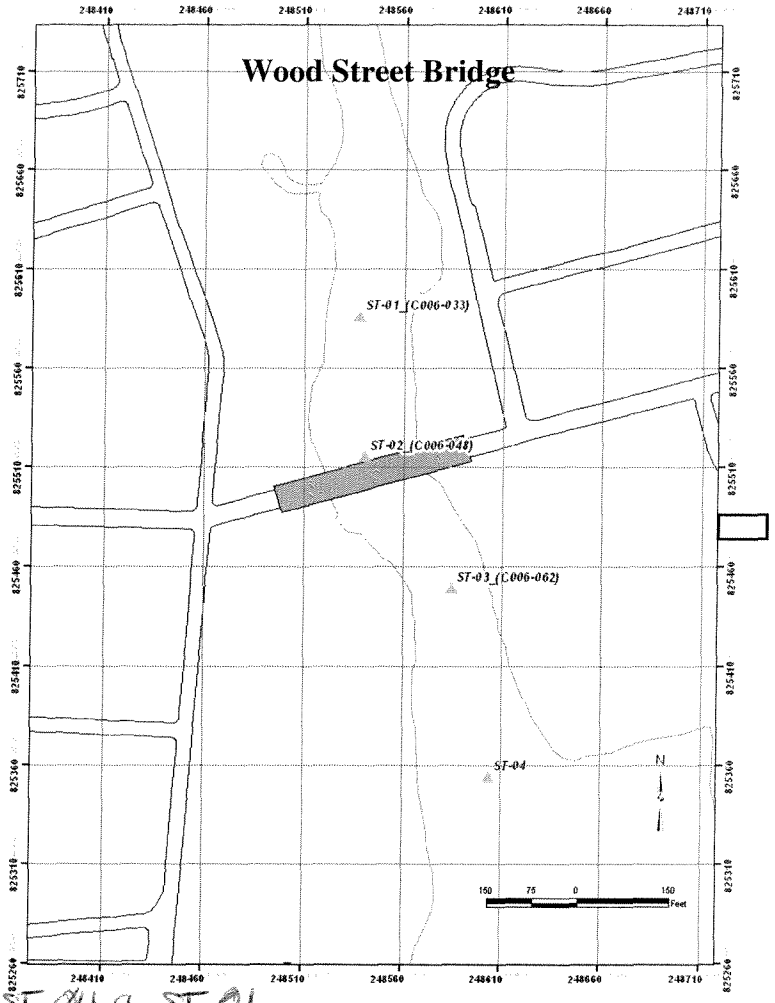
Date: 04/22/08 **Weather:** 60°F/calm/clear/winds 5-10 SE

Tides:

0.0	@	3:20
3.4	@	9:51
0.0	@	15:08

Monitoring Period:
From: 0800 **To:** 1100
Tidal Stage: HWS Ebb LWS Flood
Dredging Activity:

None



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)

Oil sheen/ Debris: slight sheen on grabs @ ST-04 & ST-01

Samples Collected for Laboratory Analysis
Sample IDs:
PCB (Sediment Trap) ##_MMDDYY
PCB (Surface Grab) SS-Station-Date-rep
Turbidity (500ml)
Dissolved PCB (2x1L)
Notes:

Sediment grabs at four sed trap locations w/ 0.1m² Van Veen grab

Sampling Crew: Mike Walsh / Mike McKee

Chief Scientist Signature:

Battelle **Sediment Trap Deployment (G606422)**

dGPS Calibration Form

Project #: 606422

INITIALS MPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name NBH Trailer Porch (NW Corner)
Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	MA SP 2001 NAD83 feet	270115 4.86'	814565.20'

Comments -

Date/Time 04/22/08 Vessel Gale Force

Unit Make/Model Trimble GeoXT

Pre-Dredge SURVEY RECORD LOG

SURVEY: Sediment Grabs **DATE:** 04/22/08

Please record any problems or issues.

0815 - On station at NBH ST-04 to collect surf sed grabs

0901 - depart st-04 for ST-03

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Surface Sampling Event No. 2

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Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring — *Location: New Bedford, MA*
Project #: G606422 — *Chief Scientist:*
Client: USACE NAE — *Vessel: R/V Gale Force*

Field Measurements

Survey ID: 07SEDTRAP	Station Depth (feet): 3.0'
Station ID: ST-04	Time on Station: 0818
Date: 04/22/08	Time Depart Station: 0901
Recorded by: MM	

Attempt #1	
Northing: 2701850.93' PDOP 2.03	Grab Size: 0.1-m²
Easting: 815615.74'	Analyses : PCBs / TOC & GS
Collection Time:	
Sample ID: SS04-042208	

Sample Description:
overpenetrated - using mud shoe

Attempt #2	
Latitude: 2701850.93'	Grab Size: 0.1-m²
Longitude: 815615.74'	Analyses : PCBs / TOC & GS
Time: 0835	
Sample ID: SS04-042208	

Sample Description: olive brown silt sand mixture over dark gray course sand/silt clay mixture / some gravel and shell hash / slight H_2S smell / light sheen in mixture

Additional Comments:
biota - sea lettuce, snails, amphipods, small eel

Field Measurements

Survey ID: 07SEDTRAP	Station Depth (feet): 3.7'
Station ID: ST-03	Time on Station: 0908
Date: 04/22/08	Time Depart Station: 0925
Recorded by: MM	

Attempt #1	
Northing: 2708196.58' PDOP 2.16	Grab Size: 0.1-m²
Easting: 815580.11'	Analyses : PCBs / TOC & GS
Collection Time: 0913	
Sample ID: SS03-042208	

Sample Description: olive brown to black silt / mixture of fine sand no clear odor

Attempt #2	
Latitude:	Grab Size: 0.1-m²
Longitude:	Analyses : PCBs
Time:	
Sample ID:	

Sample Description:

Additional Comments:
biota - sea lettuce, worm tubes, amphipods

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring — *Location: New Bedford, MA*
Project #: G606422 — *Chief Scientist:*
Client: USACE NAE — *Vessel: R/V Gale Force*

Field Measurements

Survey ID: 07SEDTRAP	Station Depth (feet): 44'
Station ID: ST-01	Time on Station: 0945
Date: 04/22/08	Time Depart Station: ~~0952~~ 1020
Recorded by: MM	

Attempt #1

Northing: 2708609.64' PDOP 4.19	Grab Size: 0.1-m²
Easting: 815420.65'	Analyses : PCBs / TOC & GS
Collection Time: 0952	
Sample ID: SS01-042208	

Sample Description: olive brown to black silt / detritus mixture
no clear odor

Attempt #2

Latitude: 2708609.64'	Grab Size: 0.1-m²
Longitude: 815420.65'	Analyses : PCBs / TOC & GS
Time: 1008	
Sample ID: SS01-042208-DUP	

Sample Description: olive brown to black silt / detritus mixture
no clear odor

Additional Comments:
light sheen on both grabs / lots of detritus / some amphipods and worm tubes

Field Measurements

Survey ID: 07SEDTRAP	Station Depth (feet): 6.5'
Station ID: ST-02	Time on Station: 1030
Date: 04/22/08	Time Depart Station:
Recorded by: MM	

Attempt #1

Northing: 2708382'	Grab Size: 0.1-m²
Easting: 815420'	Analyses : PCBs / TOC & GS
Collection Time: 1035	
Sample ID: SS02-042208	

Sample Description: olive brown to black silt / detritus mixture
slight H_2S odor

Attempt #2

Latitude:	Grab Size: 0.1-m²
Longitude:	Analyses : PCBs
Time:	
Sample ID:	

Sample Description:

Additional Comments:
biota- snails, sea lettuce, small eel, worm tubes

Deployment No. 5

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Battelle **Sediment Trap Deployment (G606422)**

Field Daily Log Form

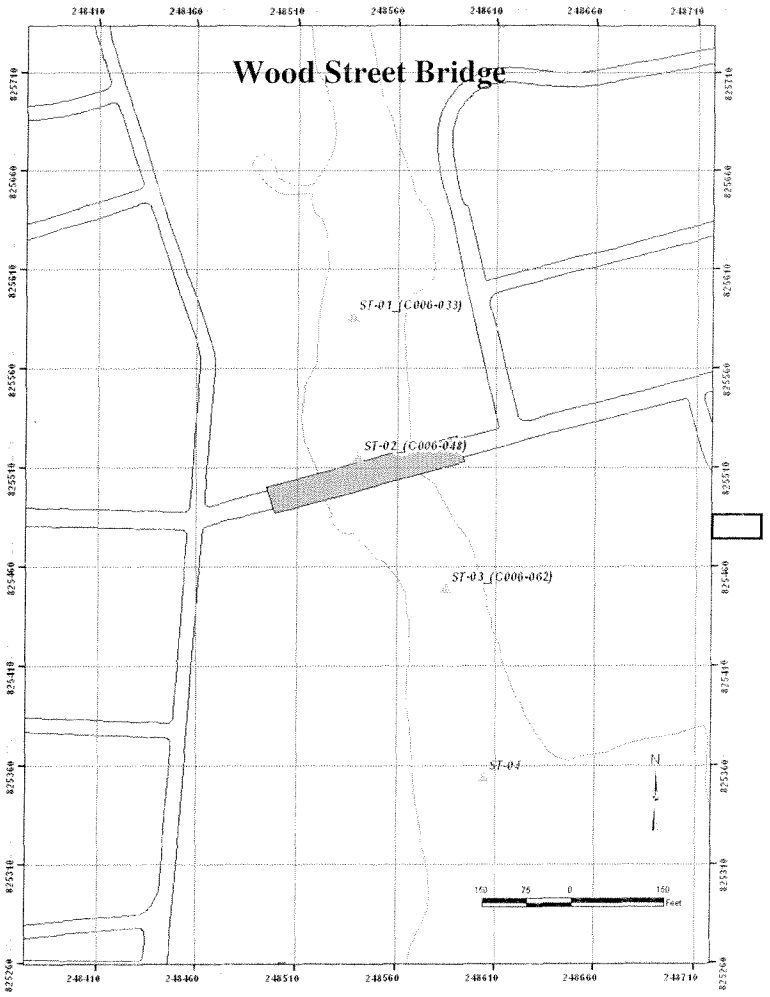
Date: 05/15/08 **Weather:** 65°F / overcast / winds 10 kts S

Tides:

3.3	@	05:11
0.4	@	11:23
4.0	@	17:36

Monitoring Period:
From: 1200 **To:** 1700
Tidal Stage: HWS Ebb LWS (Flood)
Dredging Activity:

- None
- shore-based mob for Aerovox dredging



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
ST-01	-0.9	2.0'
ST-02	-0.4	4.0'
ST-03	-0.6	2.0'
ST-04	-0.7	1.0'

Oil sheen/ Debris:
Samples Collected for Laboratory Analysis
Sample IDs:
PCB (Sediment Trap) ST-(station)-##-MMDDYY-rep
PCB (Surface Grab) NA
Turbidity (500ml) NA
Dissolved PCB (2x1L) NA
Notes:

- strong paint smell near stations ST03 & ST04

Sampling Crew: Mike Walsh / Mike McKee

Chief Scientist Signature: Michael P Thomas

Battelle **Sediment Trap Deployment (G606422)**

dGPS Calibration Form

Project #: G606422

INITIALS MPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name NBH Trailer porch (NW corner)
Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	MA State Plane 2001 NAD83, U.S. feet	27011556.1'	814565.01'

Comments -

Date/Time 05/15/08/ 11:45 Vessel Gale Force

Unit Make/Model Trimble GeoXT

~~Attachment 1.~~

Battelle
Applied Coastal and Environmental Services

Deployment/Retrieval Log and Calibration Form

Project No. 660622-07SEDTRAP	Date: 5/15/08	Recorded By: M. Walsh
Station ID: ST03	On Station: (local) 1608	Off Station: (local)
Latitude/Northing (circle one) 2708173'	Longitude/Easting (circle one) 815557'	Navigation System (units) NAD83/feet
DGPS Accuracy Estimate (units): 1.92		
Water depth (ft): 4.3'	Sample Platform: (Vessel) Wading	Deployment/Retrieval Time: (2) MPM (local) 05/15/08 1615 / 05/30/08 1500
Sensor Depth (ft): 2.3'		
Data File Name: ~~ST03F~~ (3) ST03-5A	Instrument Model / SN: Battelle Sonde 06J1733 AB	

General Water Description-*Option* (from back-up meter if available)	
Temperature (°C): 15.85	Other:
Salinity (‰): 21.85	D.O. (mg/L) 6.30
Turbidity (NTU): -0.6	pH (pH units): 7.70

CALIBRATION and MAINTENANCE

DO membrane changed? (Y) N	Turbidity Wiper Changed? (Y) N	Chlorophyll Wiper Changed? (Y) N
Battery Voltage: 12.3	Turbidly wiper parks 180° from optics? (Y) N	Chlorophyll Wiper Parks 180° from optics? (Y) N

Parameter	Initial Reading	Calibrated Reading	Cal Constants	Calibration Data (acceptable range)
Conductivity (mS/cm)	48.67	50.00		Cell constant should be between 4.55 – 5.45
pH 4 ± 1	~~4.04~~ 4.05	4.00		180 ± 50 MV (span from pH7 should be ~165 to 180 MV)
pH 7 ± 1	7.05	7.00		0 MV ± 50 MV
pH 10 ± 1	9.73	9.95		-180 ± 50 MV (span from pH7 should be ~165 to 180 MV)
pH - General	NA	NA	NA	pH offset -400 to 400; pH gain between -6.07 and -4.22
Depth (ft)	1.01	0.000		System is vented, acceptable offset is -6 to 6
Turbidity (NTU) 0	-0.8	0.0		Turbidity Offset: -10 to 10
Turbidity (NTU) 123	124.5	123.0		Range is ratio of M1 to A1 = 0.6 to 1.5
D.O. (% Sat)	100.0% / 9.55 mg/l	100.0% / 9.55 mg/l		D.O. Gain (0.5 – 2.0)
Field Activities / Comments / Observations:				
Chl	0.2	0.0		

(1) WN M.WALSH 5/15/08

(2) MPM 5/15/08 – redeployed 6920 sensor (SN 02B0071AA) b/c the Battelle sonde (above) was providing inconsistant data. Installed new batteries in 6920 and started new data file (ST03F) – see previous log

(3) MPM – renamed to match deployment – 08/25/08

~~Attachment 1.~~

Battelle

Applied Coastal and Environmental Services

Deployment/Retrieval Log and Calibration Form

Project No. 6606422	**Date:** 5/27/08	**Recorded By:** MW	
Station ID: ST03	**On Station:** (local) 1513	**Off Station:** (local) 1525	
Latitude/Northing (circle one)	**Longitude/Easting** (circle one)	**Navigation System (datum, units)**	**DGPS Accuracy Estimate** (units± m):
Water depth (ft):	**Sample Platform:** (Vessel) Wading	**Deployment/Retrieval Time:** 05/30/08 (local) Deploy 15:20 / Rec. 06/11/08 13:20	
Sensor Depth (ft):			
Data File Name: ~~ST03[illegible]4C~~ (1) ST03-5B		**Instrument Model / SN:** 01004794 AA	
General Water Description-*Option* (from back-up meter if available)			
Temperature (°C):		**Other:**	
Salinity (‰):		**D.O.** (mg/L)	
Turbidity (NTU):		**pH** (pH units):	

CALIBRATION and MAINTENANCE

DO membrane changed? (Y) N	Turbidity Wiper Changed? (Y) N	Chlorophyll Wiper Changed? Y N NA
Battery Voltage:	Turbidly wiper parks 180° from optics? (Y) N	Chlorophyll Wiper Parks 180° from optics? Y N NA

Parameter	Initial Reading	Calibrated Reading	Cal Constants	Calibration Data (acceptable range)
Conductivity (mS/cm)	~~9974~~ 1023	1000		Cell constant should be between 4.55 – 5.45
pH 4 ± 1	3.85	3.98		180 ± 50 MV (span from pH 7 should be ~165 to 180 MV)
pH 7 ± 1	6.94	7.00		0 MV ± 50 MV
pH 10 ± 1	9.83	10.00		-180 ± 50 MV (span from pH7 should be ~165 to 180 MV)
pH - General	NA	NA	NA	pH offset -400 to 400; pH gain between -6.07 and -4.22
Depth (ft)	1.074	0.000		System is vented, acceptable offset is -6 to 6
Turbidity (NTU) 0	0.9	0.0		Turbidity Offset: -10 to 10
Turbidity (NTU) 123	128.6	123.0		Range is ratio of M1 to A1 = 0.6 to 1.5
D.O. (% Sat)	~~107~~.0	100.0		D.O. Gain (0.5 – 2.0)

Field Activities / Comments / Observations:

Battelle

Sediment Trap Deployment (G606422)

In situ Data Field Form

Dredging Location	NA
Dredging Description	NA
Survey Vessel	Gale Force
Chief Scientist	Mike McKee
Sampling Technician	
Vessel Captain	Mike Walsh
Other Personnel	
Weather conditions	65°F / overcast / Winds 10 kts S

Date	05/15/08
Page	1 of 1

Tide information	
High	3.3' @ 05:11
Low	0.4' @ 11:23
High	4.0' @ 17:36
Low	

PDOP	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity NTU	Salinity ppt	DO mg/L	Temp °C	Notes pH
2.97	ST-04	1438	2707860'	8156347'	3.0'	1.0'	-0.7	21.36	6.2	15.92	7.65
1.92	ST-03	1459	2708173'	8155577'	4.3'	1.0'	-0.2	5.53	7.27	15.84	7.73
	↓	↓	↓	↓	↓	2.0'	-0.6	21.85	6.30	15.85	7.70
3.20	ST-02	1536	2708405'	8154287'	6.0'	1.0'	-0.5	11.48	7.54	15.80	7.84
	↓	↓	↓	↓	↓	2.0'	-0.9	23.03	6.55	15.86	7.77
	↓	↓	↓	↓	↓	3.0'	-0.7	24.75	6.09	15.71	7.78
	↓	↓	↓	↓	↓	4.0'	-0.4	26.28	5.79	15.58	7.73
2.43	ST-01	1552	2708617'	8154087'	4.4'	1.0'	-0.8	17.41	6.88	15.91	7.63
	↓	↓	↓	↓	↓	2.0'	-0.9	23.02	6.48	15.83	7.72
Signature of Data recorder:											

YSI Calibration Form for Water Quality Surveys

Project No. G606422	Date: 5/6/08	Recorded By: REM
Data File Name: ST03_6A	Instrument Model / SN: 02B00711AA	

CALIBRATION and MAINTENANCE

DO membrane changed? Y (N)	Turbidity Wiper Changed? Y (N)
Battery Voltage: 12.2	Turbidly wiper parks 180° from optics? (Y) N

Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	0.910	1.000	Cell constant (4.55 – 5.45)
Depth (ft)	0.334	0.005	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	-0.2	0.0	Turbidity Offset:
Turbidity (NTU) 123	121.9	123.0	
D.O. (% Sat) 101.1	101.1%	101.1%	D.O. Gain (0.7 - 1.4)
pH 4	3.68	3.95	
pH 7	6.95	7.0	
pH 10	9.80	10.1	

Comments:

Post-Cal

YSI Calibration Form for Water Quality Surveys

Project No. G606422	Date: 6/6/08	Recorded By: REM
Data File Name: ST03_7A	Instrument Model / SN: 98L0757AA	

CALIBRATION and MAINTENANCE

DO membrane changed? Y (N)	Turbidity Wiper Changed? Y (N)
Battery Voltage: 12.2	Turbidly wiper parks 180° from optics? (Y) N

Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	1002	1000	Cell constant (4.55 – 5.45)
Depth (ft)	0.268	0.002	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	0.7	0.0	Turbidity Offset:
Turbidity (NTU) 123	122.8	123.0	
D.O. (% Sat)	100.9%	100.9%	D.O. Gain (0.7 - 1.4)
pH 4	~~7.17~~ 3.72	~~7.04~~ 3.96	
pH 7	~~9.82~~ 7.17	7.00	
pH 10	9.82	10.00	

Comments:

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Deployment No. 6

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Battelle

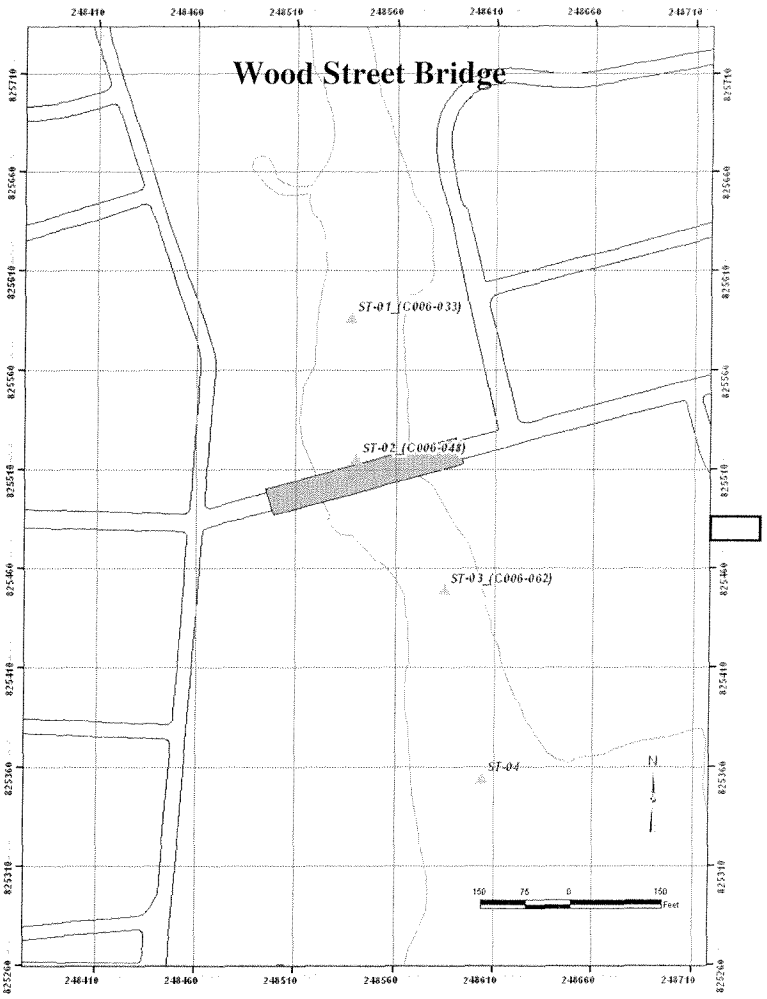
Sediment Trap Deployment (G606422)

Field Daily Log Form

Date: 06/11/08 **Weather:** 80°F/ sunny/ Winds 5-10 NW

Tides:

0.5'	@	0844
3.8'	@	1519
0.7	@	2158



Monitoring Period:
From: 11:15 **To:** 14:30
Tidal Stage: HWS Ebb LWS Flood
Dredging Activity:

shoreline dredging w/ back hoe at Accolox site

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
ST-01	19.3	3'
ST-02	20.7	5'
ST-03	19.6	3.7'
ST-04	~~2.7~~ 19.3	2.7'

Oil sheen/ Debris: none
Samples Collected for Laboratory Analysis
Sample IDs:
PCB (Sediment Trap) ST ## MMDDYY - REP
PCB (Surface Grab) NA
Turbidity (500ml) NA
Dissolved PCB (2x1L) NA
Notes:

Sampling Crew: Mike Walsh / Mike McKee

Chief Scientist Signature: Mike PM

Battelle **Sediment Trap Deployment (G606422)**

dGPS Calibration Form

Project #: G606422

INITIALS MPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name NBH Trailer (NW corner)
Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	MA SP 2001 NAD83/U.S. Feet	2701154.11'	814564.23'

Comments -

Date/Time 06/11/08 Vessel Gale Force

Unit Make/Model ~~Garmin~~ Trimble GeoXT

Battelle

Sediment Trap Deployment (G606422)

In situ Data Field Form

Dredging Location	Aerovox
Dredging Description	shoreline dredging w/ back hoe
Survey Vessel	Gale Force
Chief Scientist	Mike McKee
Sampling Technician	
Vessel Captain	Mike Walsh
Other Personnel	
Weather conditions	80°F / sunny / 5-10 kts NW

Date	06/11/08
Page	1 of 1

Tide information	
High	3.4' @ 0245
Low	0.5' @ 0844
High	3.8' @ 1519
Low	0.7' @ 2158

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity NTU	Salinity PPT	DO mg/L	Temp °C	Notes pH	
ST-01	1215	2708615.92	815410.41	3'	1.007'	19.3	31.60	10.12	26.73	7.86	PDOP 3.30
ST-02	1224	2708318.69	815423.23	5'	1.039'	20.7	31.44	8.56	26.24	7.85	PDOP 3.85
↓	↓	↓	↓	↓	2.012'	21.3	32.31	7.88	25.90	7.82	
↓	↓	↓	↓	↓	3.022'	21.7	32.56	7.64	25.79	7.81	
ST-04	1248	2707859.91	815632.91	2.7'	1.062	19.3	32.82	10.69	26.59	8.05	PDOP 2.29
ST-03	1310	2708166.92	815572.28	3.7'	1.006	19.6	32.83	10.46	26.41	7.98	PDOP 2.85
↓	↓	↓	↓	↓	2.030	19.3	32.97	9.43	26.07	7.92	
		~~2708166.92~~	~~815572.28~~								

Signature of Data recorder: Michael P. Mr

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Deployment No. 7

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Battelle

Sediment Trap Deployment (G606422)

Field Daily Log Form

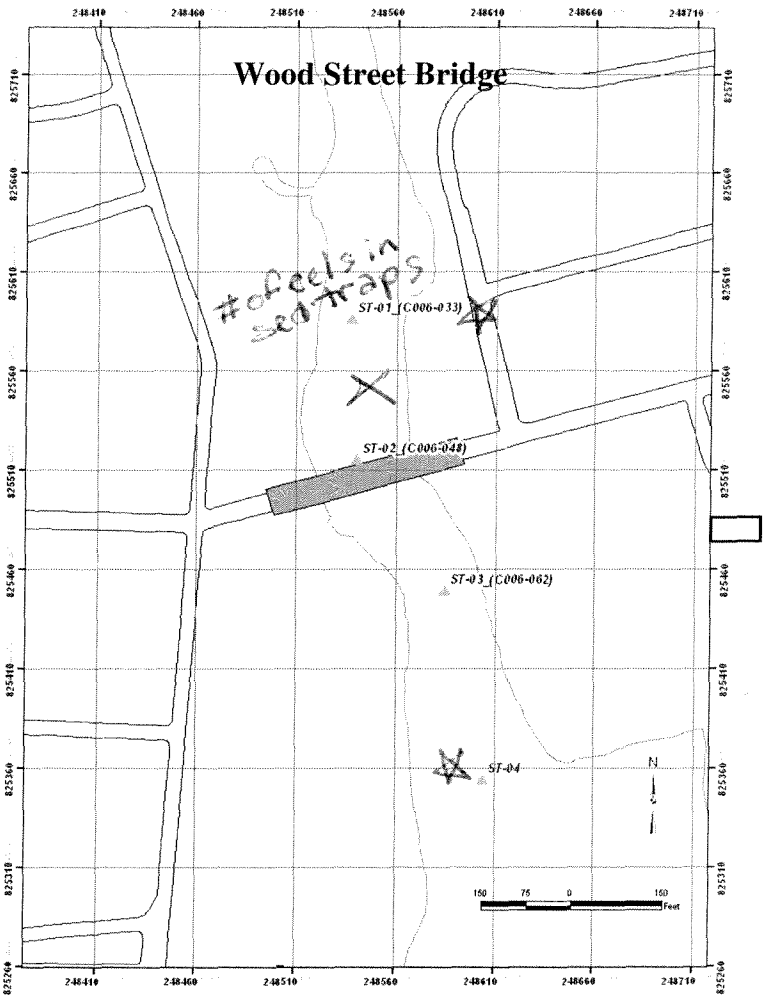
Date: 07/10/08 **Weather:** Sunny/85°F/Winds light

Tides:

L 0.6'	@	0737
H 3.8'	@	1440
L 1.6'	@	2056

Monitoring Period:
From: 11:15 **To:** 1445
Tidal Stage: HWS Ebb LWS Flood
Dredging Activity:

shoreline dredging at Aerovox



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
ST01	7.1	2'
ST02	7.1	4'
ST04	5.9	2'
ST03	7.8	3'

Oil sheen/ Debris: yes
Samples Collected for Laboratory Analysis
Sample IDs:
PCB (Sediment Trap) ST-##-MMDDYY-REP
PCB (Surface Grab) NA
Turbidity (500ml) NA
Dissolved PCB (2x1L) NA
Notes:
* noticed oily sheen on deck after redeploying traps.
X at least 20 dead fish (1-2") floating on surface slight oily sheen in ST-04-071008-A

Sampling Crew: Mike Walsh / Mike McKee

Chief Scientist Signature: Michael P Moore

Battelle **Sediment Trap Deployment (G606422)**

dGPS Calibration Form

Project #: G606422-07SEDTRAP

INITIALS MPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name NBH Trailer Porch (NW corner)
Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	MA SP 2001 NAD 83 (US ft)	270 1155.42'	814566.12'

PDOP 4.57

Comments -

Date/Time 07/10/08 11:07 Vessel Gale Force

Unit Make/Model Trimble XRS Pro

Battelle

Sediment Trap Deployment (G606422)

In situ Data Field Form

Dredging Location	Aerovox
Dredging Description	shoreline dredging w/ back hoe
Survey Vessel	Gale Force
Chief Scientist	Mike McKee
Sampling Technician	
Vessel Captain	Mike Walsh
Other Personnel	
Weather conditions	Sunny / 85°F / light winds

Date	07/10/08
Page	1 of 1

Tide information	
High	
Low	0.6' @ 0737
High	3.8' @ 1440
Low	1.0' @ 2056

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes (pH)
ST01	11.58	2708612.85	815409.43	3.3'	1.01'	6.4	26.62	9.86	28.01	8.11 PDOP 1.94
"	"	"	"	↓	2.00'	7.1	27.93	8.08	27.72	7.97
ST02	12:19	2708403.56	815422.84	5.6'	1.00'	9.8	26.62	11.76	28.27	8.25 PDOP-2.99
↓	↓	↓	↓	↓	2.00	7.6	28.33	9.34	27.72	8.05
					3.00'	7.3	28.41	9.34	27.68	8.03
					4.00'	7.1	28.42	9.31	27.67	8.03
ST04	1242	2707856.18	815629.38	3.2'	1.06'	6.5	27.99	11.74	28.40	8.22 PDOP-2.47
"	"	"	"		2.00' ①	~~7.1~~ 5.9	28.51	11.17	28.11	8.16
ST03	1317	2708160.11	815567.56	4.4	1.008	7.1	27.73	12.66	28.49	8.24 PDOP-1.86
↓	↓	↓	↓	↓	2.049	7.2	28.34	12.27	28.34	8.23
					3.009	7.8	28.50	11.24	27.94	8.10

Signature of Data recorder:

① MPM 07/10/08 - reading stabilized

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Deployment No. 8

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Battelle

Sediment Trap Study (G606422)

Field Daily Log Form

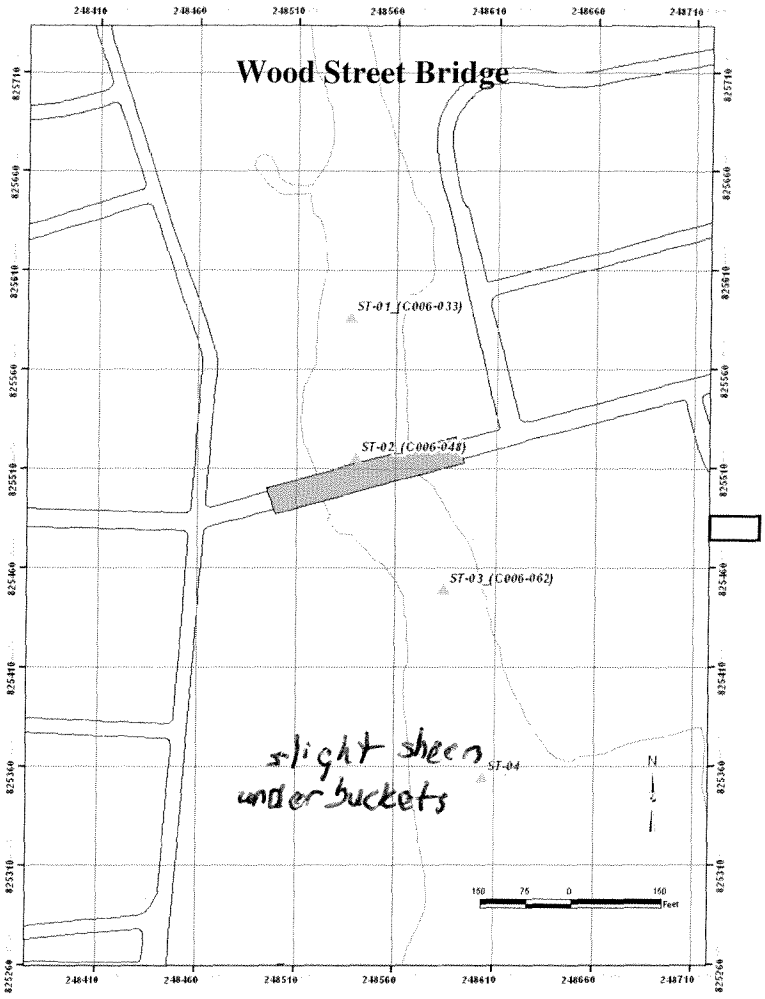
Date: 07/31/08 **Weather:** overcast / 75°F /

Tides:

4.2'	H @	07:31
-0.2'	L @	12:56
4.9'	H @	19:58

Monitoring Period:
From: 0800 **To:** 1200
Tidal Stage: HWS Ebb LWS Flood
Dredging Activity:

shoreline demobing at Aerovox



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
ST-04	0.6	1'
ST-01	2.7	1'
ST-02	8.4	1'
ST-03	7.0	1'

Oil sheen/ Debris: yes

Samples Collected for Laboratory Analysis
Sample IDs:
PCB (Sediment Trap) ST-##-MMDDYY-REP
PCB (Surface Grab) NA
Turbidity (500ml) NA
Dissolved PCB (2x1L) NA
Notes: ~~small baitfish schooling~~ ①

Sampling Crew: Mike McKee / Jess Fahey / Matt Fitzpatrick

Chief Scientist Signature: Matthew P Mahoney

① upon closer observation, water dripping from overhead utility cable - MPM 07/31/08

Battelle

Sediment Trap Deployment (G606422)

Mooring Deployment/Retrieval Log and Calibration Form

Project No. G606422	**Date:** 07/31/08	**Recorded By:** MPM
Station ID: ST03	**On Station:** (local)	**Off Station:** (local)
Northing (NAD83, feet) 270816G.92'	**Easting** (NAD83, feet) 815572.28'	**DGPS Accuracy Estimate** (± m):
Water depth (ft): 4.3'	**Sample Platform:** (Vessel) Wading	**Deployment/Retrieval Time:** (local) Deployed 09:35 / Retrieved 08/25/08 1435
Sensor Depth (ft): 2.3'		
Data File Name: ST03_08A	**Instrument Model / SN:**	
General Water Description-*Option* **(from back-up meter)**		
Temperature (°C): 28.14	**Other:**	
Salinity (‰): 26.75	**D.O.** (mg/L) 1.07	
Turbidity (NTU): 7.0	**pH** (pH units): 7.19	

CALIBRATION and MAINTENANCE

DO membrane changed? (Y) N	Turbidity Wiper Changed? Y (N)	Chlorophyll Wiper Changed? Y N N/A
Battery Voltage: 12.7 ✓	Turbidly wiper parks 180° from optics? (Y) N	Chlorophyll Wiper Parks 180° from optics? Y N N/A

Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	0.968	1.001	Cell constant (4.55 – 5.45)
pH 4 ± 1	3.97	4.00	MV (0 ± 50)
pH 7 ± 1	7.06	7.00	MV (+ ~172 ± 7 from 7 buffer)
pH 10 ± 1	9.68	9.95	
Depth (ft)	0.105'	-0.001'	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	-2.6	0.0	Turbidity Offset:
Turbidity (NTU) 123	124.5	123.0	
D.O. (% Sat)	100%	8.91 mg/L	D.O. Gain (0.7 - 1.4)

Field Activities / Comments / Observations:

Battelle

Sediment Trap Study (G606422)

In situ Data Field Form

Dredging Location	N/A
Dredging Description	demobing from Aerovox
Survey Vessel	Gale Force
Chief Scientist	Mike McKee
Sampling Technician	Jess Fahey
Vessel Captain	Matt Fitzpatrick
Other Personnel	
Weather conditions	

Date	07/31/08
Page	1 of 1

Tide information	
High	
Low	
High	
Low	

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity NTU	Salinity	DO mg/L	Temp	Notes
ST04	0928			4.9						
↓	↓			↓	1.01	0.6 NTU	29.11	2.04	28.03	pH 7.41
					2.04	-0.1	28.65	2.23	27.63	pH 7.47
↓	↓			↓	3.08	0.2	28.91	2.18	27.49	pH 7.47
ST01	0854			5.0	1.02	2.7	27.37	1.26	28.21	pH 7.27
↓	↓			↓	2.01	5.5	27.89	1.30	28.21	pH 7.34
↓	↓			↓	3.01	~~8~~ 2.8	28.29	1.02	28.05	pH 7.32
ST02	0913			6.9	1.03	8.4	27.62	1.07	28.27	pH 7.22
↓	↑			↓	2.02	3.6	29.08	1.36	28.26	pH 7.30
↓	↓			↓	3.01	1.7	29.36	1.35	28.14	pH 7.33
↓	↓			↓	4.01	0.4	29.70	1.14	27.97	pH 7.30
↓	↓			↓	5.02	-0.1	28.67	1.31	27.76	pH 7.33
ST03	0935			4.3	1.01	~~8~~ 7.0	~~28.19~~ ①	1.07	28.14 ②	pH 7.19
↓	↓				2.01	3.4	27.94	1.23	28.16	pH 7.29

Signature of Data recorder:

① 26.75 ② 28.14

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Deployment No. 9

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Battelle Sediment Trap Study (G606422)

Field Daily Log Form

Date: 08/25/08 **Weather:** 78°F / Winds 10-15 kts SW / cloudy

Tides:

L 0.4' @ 0820
H 4.1' @ 1551
L 0.7' @ 2215

Monitoring Period:
From: 12:30 **To:** 15:00
Tidal Stage: HWS Ebb LWS Flood
Dredging Activity:

- Dredging at Sawyer St. Cove

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
ST-01	6.0	1'
ST-02	7.1	1'
ST04	2.4	1'
ST03	4.4	1'

Oil sheen/ Debris: none
Samples Collected for Laboratory Analysis
Sample IDs:
PCB (Sediment Trap) ST-~~##~~-MMDDYY-REP
PCB (Surface Grab) NA
Turbidity (500ml) NA
Dissolved PCB (2x1L) NA
Notes:

Sampling Crew: Matt Fitzpatrick / Mike McKee

Chief Scientist Signature: [signature]

Battelle **Sediment Trap Deployment (G606422)**

dGPS Calibration Form

Project #:

INITIALS Matt Fitzpatrick

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name Outside of Lab trailer
Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	NAD83 Mass St plane	2701156.06	814565.35

Comments -
3.58' from target

Date/Time 8/25/08 1147 Vessel Gale force

Unit Make/Model Trimble GeoXT

Battelle

Sediment Trap Study

Mooring Deployment/Retrieval Log and Calibration Form

Project No. G606422	**Date:** 08/25/08	**Recorded By:** MPM
Station ID: ST03	**On Station:** (local)	**Off Station:** (local)
Northing (NAD83, feet) N 2708162.8'	**Easting** (NAD83, feet) E 815570.9'	**DGPS Accuracy Estimate** (± m): PDOP - 2.93
Water depth (ft): 5.0'	**Sample Platform:** (Vessel) Wading	**Deployment/Retrieval Time:** (local) 1445
Sensor Depth (ft): 3.0'		
Data File Name: ST03-09A	**Instrument Model / SN:**	
General Water Description-*Option* **(from back-up meter)**		
Temperature (°C): 25.22	**Other:**	
Salinity (‰): 25.75	**D.O.** (mg/L) 10.65	
Turbidity (NTU): 4.4	**pH** (pH units): 8.30	

CALIBRATION and MAINTENANCE

DO membrane changed? Y (N)	Turbidity Wiper Changed? Y (N)	Chlorophyll Wiper Changed? Y (N) NA
Battery Voltage: 12.4 v	Turbidly wiper parks 180° from optics? (Y) N	Chlorophyll Wiper Parks 180° from optics? Y (N) NA

Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	1002	1000	Cell constant (4.55 – 5.45)
pH 4 ± 1	4.03	4.00	MV (0 ± 50)
pH 7 ± 1	7.10	7.00	MV (+ ~172 ± 7 from 7 buffer)
pH 10 ± 1	9.64	9.93	
Depth (ft)	-0.624	0.002	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	1.2	0.0	Turbidity Offset:
Turbidity (NTU) 123	123.9	123.1	
D.O. (% Sat)	98.8	98.8	D.O. Gain (0.7 - 1.4)

Field Activities / Comments / Observations:

Battelle

Sediment Trap Study (G606422)

In situ Data Field Form

Dredging Location	Sawyer St. Cove
Dredging Description	hydraulic dredge & debris removal
Survey Vessel	Gale Force
Chief Scientist	Mike McKee
Sampling Technician	
Vessel Captain	Matt Fitzpatrick
Other Personnel	
Weather conditions	78°F / cloudy / winds 10-15 SW

Date	08/25/08
Page	1 of 1

Tide information	
High	
Low	0.4' @ 08:20
High	4.1' @ 1551
Low	0.7' @ 2215

DDCP	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity NTU	Salinity ppt	DO mg/L	Temp °C	pH	Notes
2.61	ST-01	13:07	N2708605.2'	E815399.69	3.6'	1'	6.0	24.20	10.49	24.81	8.13	
〃	〃	〃	〃	〃	〃	2'	6.7	25.80	5.53	25.28	7.69	
2.28	ST-02	13:30	N2708398.6'	E815422.65'	5.5'	1'	7.1	24.13	11.05	24.9	8.19	
↓	↓	↓	↓	↓	↓	2'	4.8	25.30	10.57	24.94	8.18	
↓	↓	↓	↓	↓	↓	3'	5.4	27.11	8.29	25.08	7.97	
↓	↓	↓	↓	↓	↓	4'	5.9	27.35	7.52	25.11	7.93	
1.78	ST-04	13:56	N2707855.5'	E815630.0'	3.8'	1'	2.4	26.05	9.46	25.20	8.18	
〃	〃	〃	〃	〃	〃	2'	2.2	27.39	8.82	25.29	8.14	
2.93	ST-03	14:18	N2708162.8	E815570.9'	5.0'	1'	4.4	25.25	10.65	25.22	8.30	
↓	↓	↓	↓	↓	↓	2'	4.1	25.75	10.35	25.23	8.26	
↓	↓	↓	↓	↓	↓	3'	3.8	27.2	9.15	25.25	8.13	

Signature of Data recorder: Matt P Mc

Battelle

Sediment Trap Study

Mooring Deployment/Retrieval Log and Calibration Form

Project No. G606422	**Date:** 9/16/08	**Recorded By:** MRF
Station ID: ST03	**On Station:** (local)	**Off Station:** (local)
Northing (NAD83, feet)	**Easting** (NAD83, feet)	**DGPS Accuracy Estimate** (± m):
Water depth (ft):	**Sample Platform:** Vessel / Wading	**Deployment/Retrieval Time:** (local) YSI 6920 9810757AA
Sensor Depth (ft): ~2.0 'from bottom		
Data File Name: ST10A	**Instrument Model / SN:**	
General Water Description-*Option* **(from back-up meter)**		
Temperature (°C):	**Other:**	
Salinity (‰):	**D.O.** (mg/L)	
Turbidity (NTU):	**pH** (pH units):	

CALIBRATION and MAINTENANCE

DO membrane changed? Y (N)	Turbidity Wiper Changed? Y (N)	Chlorophyll Wiper Changed? Y (N) NA
Battery Voltage: 12.2	Turbidly wiper parks 180° from optics? (Y) N	Chlorophyll Wiper Parks 180° from optics? Y (N) NA

Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	50.097	50.000	Cell constant (4.55 – 5.45)
pH 4 ± 1	4.02	4.00	MV (0 ± 50)
pH 7 ± 1	7.11	7.00	MV (+ ~172 ± 7 from 7 buffer)
pH 10 ± 1	9.81	9.97	
Depth (ft)	-.331	.001	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	5.0	0	Turbidity Offset: 0.0
Turbidity (NTU) 123	123.2	123.0	
D.O. (% Sat)	100.6	100	D.O. Gain (0.7 - 1.4)

Field Activities / Comments / Observations:

Battelle

Sediment Trap Study (G606422)

In situ Data Field Form

Dredging Location	Cove Area
Dredging Description	
Survey Vessel	Gale force
Chief Scientist	Matt Fitzpatrick
Sampling Technician	Jess Fahey
Vessel Captain	Matt Fitzpatrick
Other Personnel	—
Weather conditions	Overcast

Date	9/16/08
Page	1 of 1

Tide information	
High	
Low	
High	
Low	

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes %	Notes pH
ST04	0808	2707854.28	8156231.89	4.75	1.03	2.0	23.55	4.43	21.17	57.3	7.59
↓	↓	↓	↓	↓	2.06	1.7	25.06	3.79	21.82	50.0	7.55
↓	↓	↓	↓	↓	3.02	1.7	25.65	3.13	21.82	41.9	7.50
ST03	0846	2708150.30	8155772.70	5.3	1.0	1.6	24.73	3.31	21.46	44.3	7.53
↓	↓	↓	↓	↓	2.0	1.6	25.22	3.21	21.66	41.1	7.51
↓	↓	↓	↓	↓	3.0	1.6	25.62	3.19	21.84	40.9	7.53
Signature of Data recorder:											

not enough material

not enough material

pDOP 1.98

pdop 2.16

Deployment No. 10

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Battelle

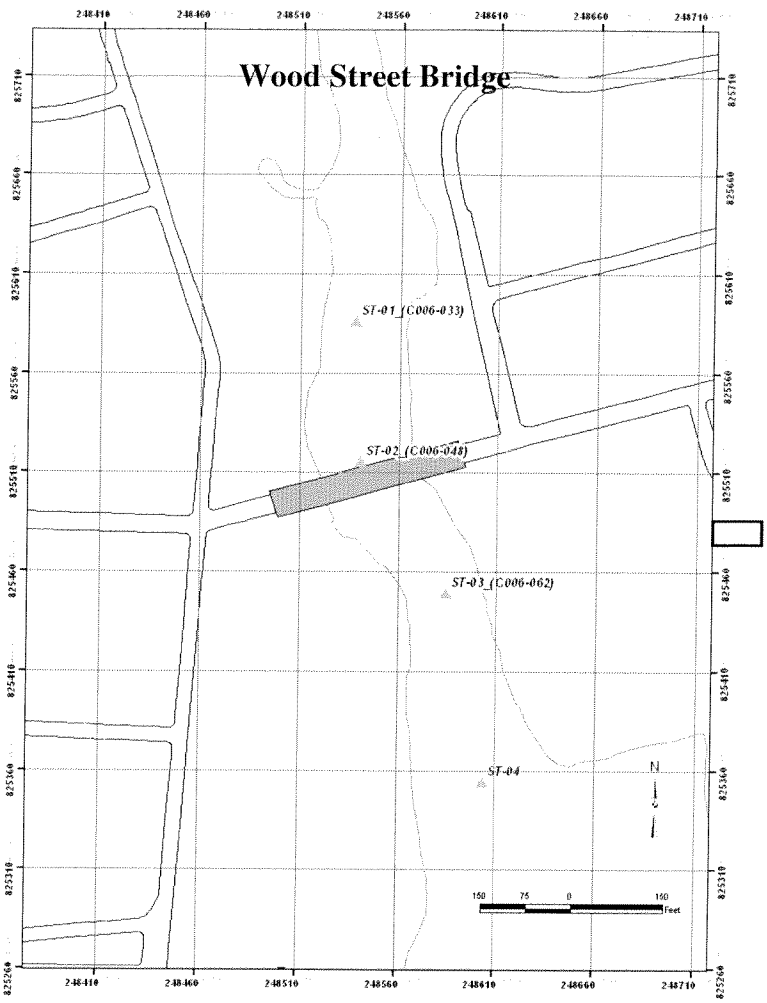
Sediment Trap Study (G606422)

Field Daily Log Form

Date: 10/2/08 **Weather:** Rain then clearing

Tides:

Low	@	03:30
High	@	10:21
Low	@	16:08



Monitoring Period:
From: 0900 **To:** 11:30
Tidal Stage: (HWS) Ebb LWS (Flood)
Dredging Activity:
Active dredging in Cove Area

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
ST01	3.4-4.5	1-4' / 5.4'
ST02	3.6-5.3	1-6' / 6.9'
ST04	3.5-4.5	1-4' / 5.2'
ST03	3.2-47	1-4' / ~~47~~ 5.5'

Oil sheen/ Debris: None
Samples Collected for Laboratory Analysis
Sample IDs:
PCB (Sediment Trap) STxx-MMDDYY-REP
PCB (Surface Grab) NA
Turbidity (500ml) NA
Dissolved PCB (2x1L) NA
Notes:
Very strong out going current observed throughout the monitoring period
large schools of adult

Sampling Crew: Matt Kirkpatrick + Annie Murphy

Chief Scientist Signature: Matthew E Kirkpatrick

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Project No. G606422	Date: 10/2/08	Recorder: AEM
DGPS (make/model/SN): Trimble/GeoXT/4701415091	Coordinate System and units: NAD83 Mass State Plane feet	

Morning dGPS Check

Time of check (local): 7:54	DGPS Estimate of Accuracy (PDOP): 4.69
Benchmark or Reference Point ID: Corner of stairs outside trailer	Benchmark or Reference Point Established By: MPM/Jacobs
Established Latitude/Northing: 2701154.11	Established Longitude/Easting: 814564.23
Measured Latitude/Northing: 2701154.45	Measured Longitude/Easting: 814563.87

Instrument Measured Displacement (~~meters~~ feet): 1.14ft

Displacement Acceptable? (≤3 m): (YES) NO

Afternoon dGPS Check

Time of check (local): 12:00	DGPS Estimate of Accuracy (PDOP): 2.88
Benchmark or Reference Point ID: corner of stairs outside trailer	Benchmark or Reference Point Established By: MPM/Jacobs
Established Latitude/Northing: 2701154.11	Established Longitude/Easting: 814564.23
Measured Latitude/Northing: 2701156.96	Measured Longitude/Easting: 814565.10

Instrument Measured Displacement (~~meters~~ feet): 2.92ft

Displacement Acceptable? (≤3 m): (YES) NO

Field Activities / Comments / Observations:

Field Team Leader Signature _____

Battelle

~~Water Quality Monitoring~~ Sediment Trap Study (GG006422)

In situ Data Field Form

Dredging Location	Cove Area
Dredging Description	Active dredging
Survey Vessel	Gale Force
Chief Scientist	Matt Fitzpatrick
Sampling Technician	Annie Murphy
Vessel Captain	Annie Murphy
Other Personnel	
Weather conditions	AM showers clearing by 9AM

Date	10/2/08
Page	1 of 1

Tide information	
High	10:21
Low	03:30
High	~~16:20~~ 22:39
Low	16:08

Station Name	Time ①	Latitude	Longitude	Water depth (ft)	Sample Depth (ft)	Turbidity (NTU)	Salinity (PSU)	DO (mg/L)	DO (% sat)	Temp (° C)	ph	Notes
ST01	~~7:01~~	270861307	815397.71	5.4	1.0	3.4	1.30	7.62	80.5	17.57	6.35	Flood Tide
	9:29				2.0	4.3	~~15~~.35	4.71	54.8	19.0	6.82	
	9:30				3.0	4.5	18.90	3.72	44.6	19.25	6.98	
	9:31				4.0	4.2	19.72	3.04	36.8	19.27	7.05	
ST02	10:00	270 8398.80	815 420.80	6.9	1.0	3.6	3.0	6.82	71.8	17.95	6.76	
	10:01				2.0	4.2	15.43	4.62	54.6	19.7	6.98	
	10:02				3.0	4.2	19.24	3.46	41.1	19.29	7.07	
	10:03				4.0	4.2	20.09	2.84	34.5	19.31	7.12	
	10:04				5.0	5.3	20.84	2.19	26.5	19.31	7.12	
	10:05				6.0	5.1	21.34	2.6	25.5	19.33	7.14	
~~ST03~~ ③	10:28	270 7846.78	815630.45	5.2	1.0	3.5	3.20	6.94	75.3	18.02	6.81	
	10:29				2.0	4.3	18.62	4.65	55.6	19.21	7.13	
	10:30				3.0	4.3	20.86	4.28	52.9	19.31	7.26	
	10:31				4.0	4.5	21.72	3.62	44.7	19.36	7.22	
~~ST04~~ ④	10:52	270 8166.2	815 568.82	5.5	1.0	3.2	4.05	6.69	72.6	17.99	6.74	
	10:53				2.0	4.4	~~18.~~ ②	4.24	51.0	19.5	7.05	
	10:54				3.0	4.2	20.14	4.02	49.2	19.25	7.20	
	10:55				4.0	4.7	21.64	3.09	35.8	19.37	7.17	

① 5/6 9:28 AEM 10/2/08

② 5/6 17.73 AEM 10/2/08

③ 5/6 ST04 AEM 10/2/08

Battelle

Sediment Trap Study (G606422)

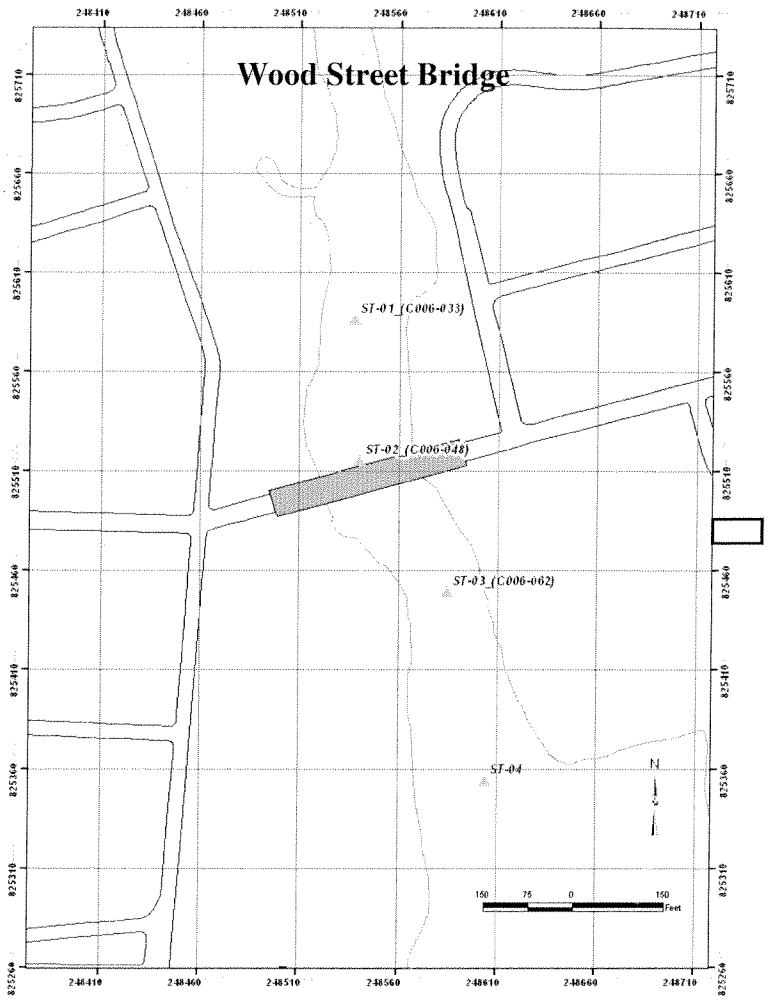
Field Daily Log Form

Date: 10/30/08 **Weather:** Sunny NW wind ~10kts

Tides:

High	@	913
Low	@	1510
High	@	2132

Monitoring Period:
From: 900 **To:** 1100
Tidal Stage: HWS Ebb LWS Flood
Dredging Activity:
Active dredging, Demob in Pierce Mill Cove Area



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
ST01	2.0-1.9	1'-4' / 5.1'
ST02	1.7-2.2	1'-5' / 6.3'
ST03	1.6-3.4	1'-4' / 5.0'
ST04	2.1-2.3	1'-3' / 4.5'

Oil sheen/ Debris:
Samples Collected for Laboratory Analysis
Sample IDs:
PCB (Sediment Trap) STXX-MMDDYY-REP
PCB (Surface Grab) NA
Turbidity (500ml) NA
Dissolved PCB (2x1L) NA
Notes:

Sampling Crew: Matt Fitzpatrick, Annie Murphy, Patrick Curran

Chief Scientist Signature:

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Project No. G606422	Date: 10/30/08	Recorder: MRF
DGPS (make/model/SN): Trimble/GeoXT/4701415091	Coordinate System and units: NAD83 Ma st plane feet	

Morning dGPS Check

Time of check (local): 0820	DGPS Estimate of Accuracy (PDOP): 2.63
Benchmark or Reference Point ID: Outside Lab trailer	Benchmark or Reference Point Established By: McKee / Jacobs
Established Latitude/Northing: 2701154.11	Established Longitude/Easting: 814564.23
Measured Latitude/Northing: 2701154.00	Measured Longitude/Easting: 814562.53

Instrument Measured Displacement (~~meters~~ feet): 1.66

Displacement Acceptable? (≤3 m): (YES) NO

Afternoon dGPS Check

Time of check (local): 1206	DGPS Estimate of Accuracy (PDOP): 2.45
Benchmark or Reference Point ID: outside lab trailer	Benchmark or Reference Point Established By: McKee/Jacobs
Established Latitude/Northing: 2701154.11	Established Longitude/Easting: 814564.23
Measured Latitude/Northing: 2701159.13	Measured Longitude/Easting: ~~815~~ 5/6 814564.76

Instrument Measured Displacement (~~meters~~ feet): 5.15

Displacement Acceptable? (≤3 m): (YES) NO

Field Activities / Comments / Observations:

Field Team Leader Signature _____

Mooring Deployment/Retrieval Log and Calibration Form

Project No. G606422	**Date:** 10/30/08	**Recorded By:** AEM
Station ID:	**On Station:** (local)	**Off Station:** (local)
Northing (NAD83, feet)	**Easting** (NAD83, feet)	**DGPS Accuracy Estimate** (± m):
Water depth (ft):	**Sample Platform:** *Gale Force*	**Deployment/Retrieval Time:** (local)
Sensor Depth (ft):		
Data File Name:	**Instrument Model / SN:**	
General Water Description-*Option* **(from back-up meter)**		
Temperature (°C):	**D.O.** (mg/L):	
Salinity (psu):	**pH :**	
Turbidity (NTU):		

CALIBRATION and MAINTENANCE

DO membrane changed? Y (N)	Turbidity Wiper Changed? Y (N)
Battery Voltage: 10.8	Turbidly wiper parks 180° from optics? (Y) N

Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	50102	50.005	Cell constant (4.55 – 5.45)
Depth (ft)	-0.031	0.0	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	0.1	0.0	Turbidity Offset:
Turbidity (NTU) 123	124.4	123.0	
D.O. (% Sat)	102.7	100.6	D.O. Gain (0.7 - 1.4)
pH 4	4.03	4.00	
pH 7	6.92	7.00	
pH 10	10.13	10.03	

Field Activities / Comments / Observations:

End of day Readings
Conductivity – 50665
Depth – 0.066
Turbidity (0) – 0.6
" (123) – 127.7
DO % – 88.0%
pH 4 – 4.03
pH 10 – 10.01
pH 7 – 6.93

Battelle

Sediment Trap ~~Deployment~~ Study (G606422)

In situ Data Field Form

Dredging Location	Cove Area
Dredging Description	Demobilization
Survey Vessel	Gale Force
Chief Scientist	Matt Fitzpatrick
Sampling Technician	Annie Murphy / Patrick Curran
Vessel Captain	Matt Fitzpatrick
Other Personnel	—
Weather conditions	Sunny NW winds ~10 kts

Date	10/30/08
Page	1 of 1

Tide information	
High	913
Low	1510
High	2132
Low	

Arrival Time

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO (mg/l)	Temp	Notes pH	Notes % DO sat.
900 ST01	0911	27086.63	8154 10.7	5.1	1.0	2.0	18.0	6.83	10.64	7.44	68.9
					2.0	2.0	20.97	6.42	11.23	7.52	66.8
					3.0	2.0	22.75	5.98	11.67	7.57	63.8
					4.0	1.9	23.39	5.9	11.88	7.64	63.2
928 ST02	930	27084 60[illegible].7	8154 22.9	6.3	1.0	2.2	17.1	6.71	10.36	7.45	67.2
					2.0	1.8	21.6	6.29	11.37	7.56	66.4
					3.0	1.8	23.43	6.05	11.81	7.65	64.9
					4.0	1.8	24.04	5.97	12.04	7.71	64.5
					5.0	1.7	24.29	5.92	12.11	7.75	64.3
944 ST03	950	27081 62.4	8155 66.9	5.0	1.0	1.6	18.30	8.12	9.10	7.43	~~64.0~~ s/b 74.8 AEM 10/31
					2.0	2.0	23.7	5.94	11.97	7.57	~~63.9~~ s/b 64.0
					3.0	1.7	24.41	5.88	12.18	7.69	63.9
					4.0	3.4	24.73	6.04	12.23	7.76	66.0
1003 ST04	1010	27078 50.2	8156 30.2	4.5	1.0	2.3	23.9	6.25	12.0	7.79	67.0
					2.0	2.1	24.9	6.12	12.23	7.83	66.9
					3.0	2.2	25.01	6.06	12.26	7.85	66.2

Signature of Data recorder:

APPENDIX B

Grain Size and TOC Data

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Deployment No. 1 and
Surface Sampling Event No. 1

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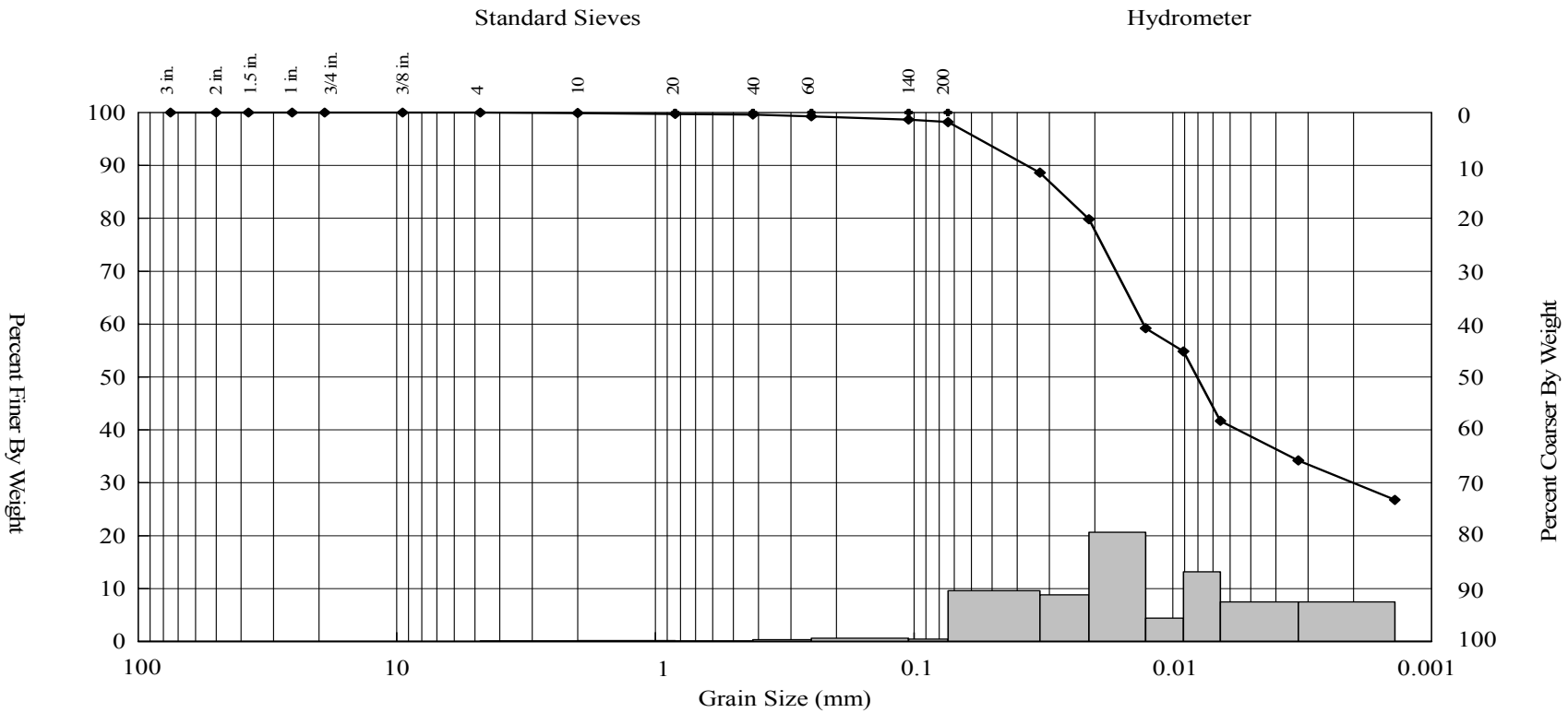
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.13	0.29	1.39	60.04	38.15

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
224										

Material Description

Elastic Silt ("MH"), black (2.5 N)

Client:	Battelle
Client Project Title:	New Bedford Harbor
Client Project Number:	G606422-DUXCHEM
AMS Project Number:	07-137
Date Sampled:	10/31/2007
Date Analyzed:	12/7/2007
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q0719
AMS Sample ID:	29271

APPLIED MARINE SCIENCES, INC.
502 N. Hwy 3, Suite B
League City, TX 77573
281.554.7272 Tel.
281.554.6356 Fax

These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

K.S. Davis, P.G.
AMS, Inc. Technical Director

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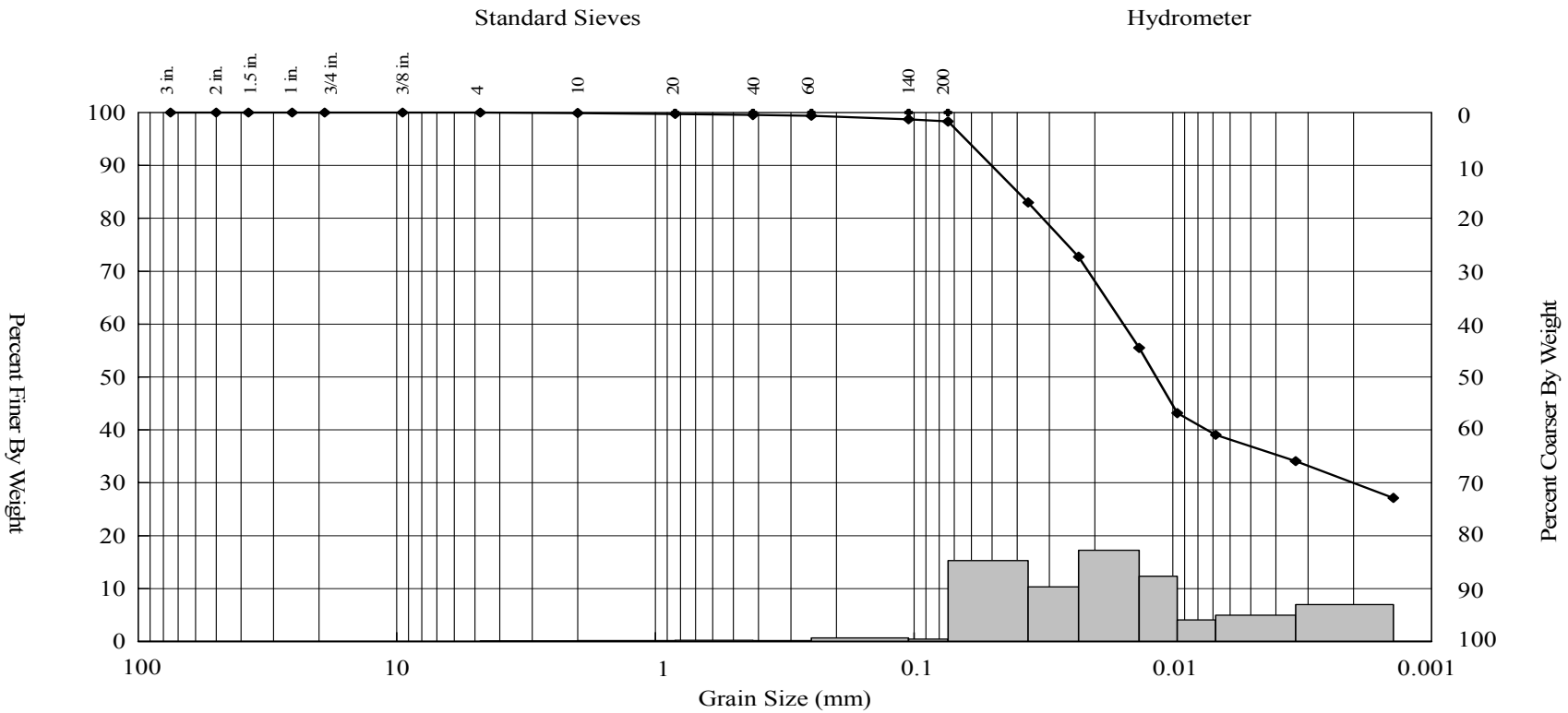
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.12	0.37	1.24	61.82	36.45

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
224										

Material Description

Elastic Silt ("MH"), black (2.5 N)

Client:	Battelle
Client Project Title:	New Bedford Harbor
Client Project Number:	G606422-DUXCHEM
AMS Project Number:	07-137
Date Sampled:	10/31/2007
Date Analyzed:	12/7/2007
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q0719
AMS Sample ID:	29271-2

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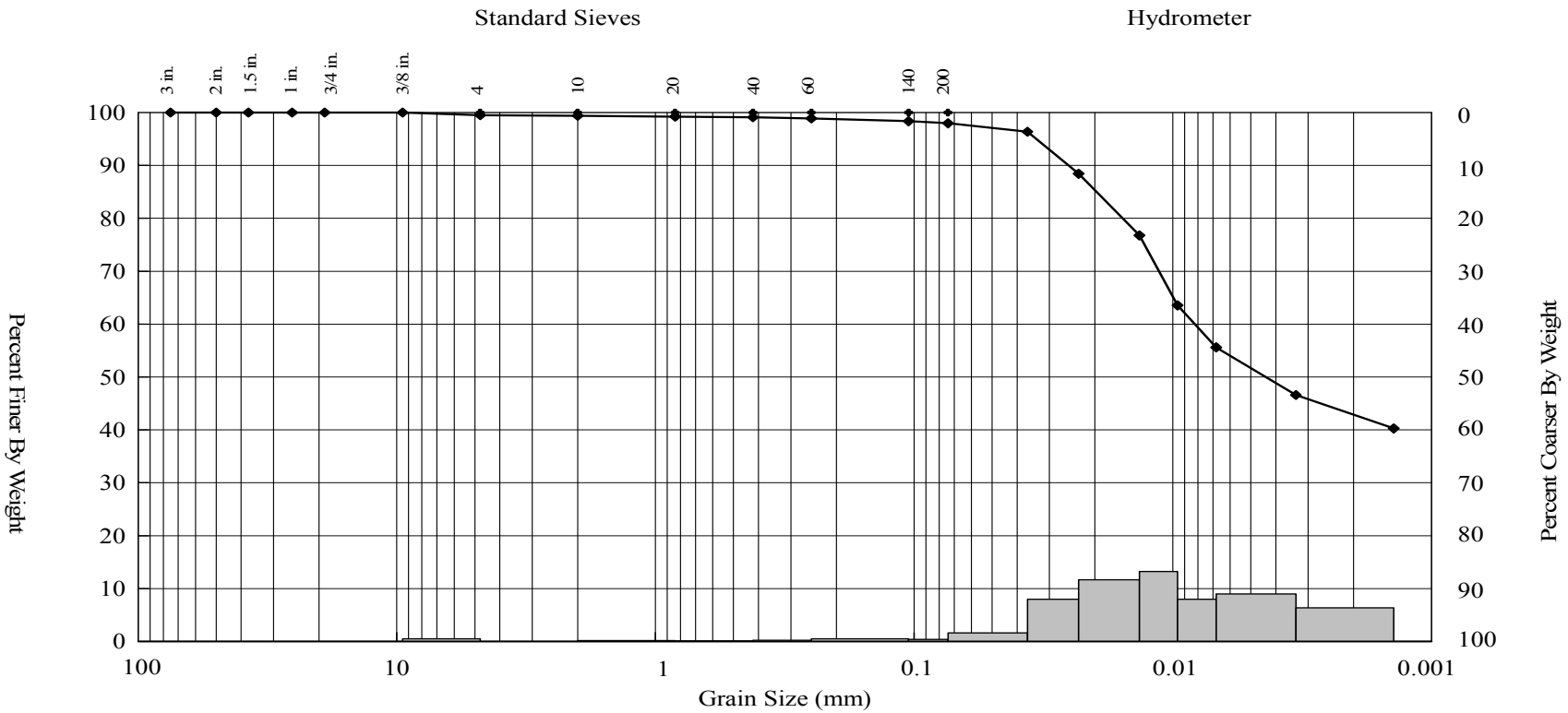

Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.53	0.08	0.29	1.14	47.07	50.89

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
285										

Material Description

Lean Clay ("CL"), black (2.5 N)

Client:	Battelle
Client Project Title:	New Bedford Harbor
Client Project Number:	G606422-DUXCHEM
AMS Project Number:	07-137
Date Sampled:	10/31/2007
Date Analyzed:	12/7/2007
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q0721
AMS Sample ID:	29272

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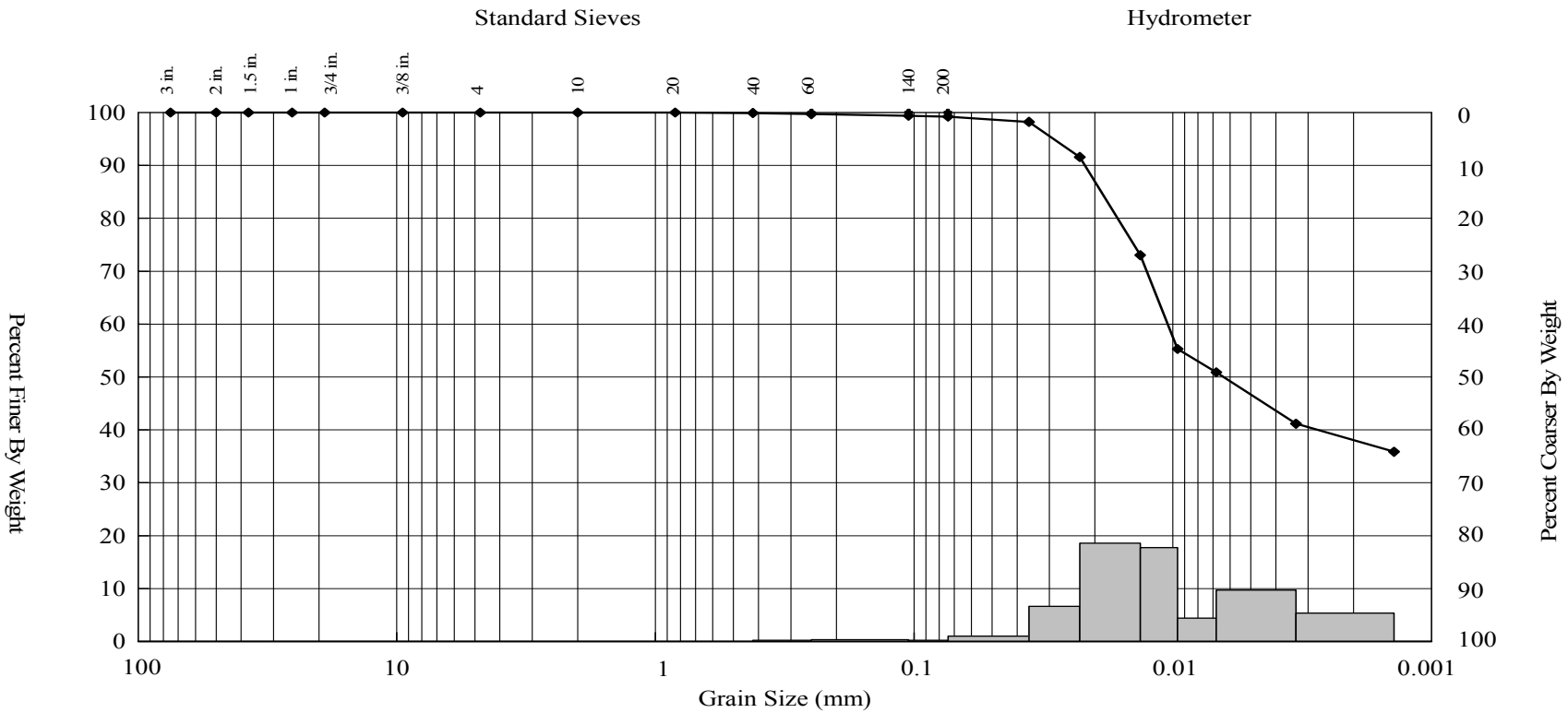
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.11	0.68	53.38	45.83

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
261										

Material Description

Elastic Silt ("MH"), black (2.5 N)

Client:	Battelle
Client Project Title:	New Bedford Harbor
Client Project Number:	G606422-DUXCHEM
AMS Project Number:	07-137
Date Sampled:	10/31/2007
Date Analyzed:	12/7/2007
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q0723
AMS Sample ID:	29273

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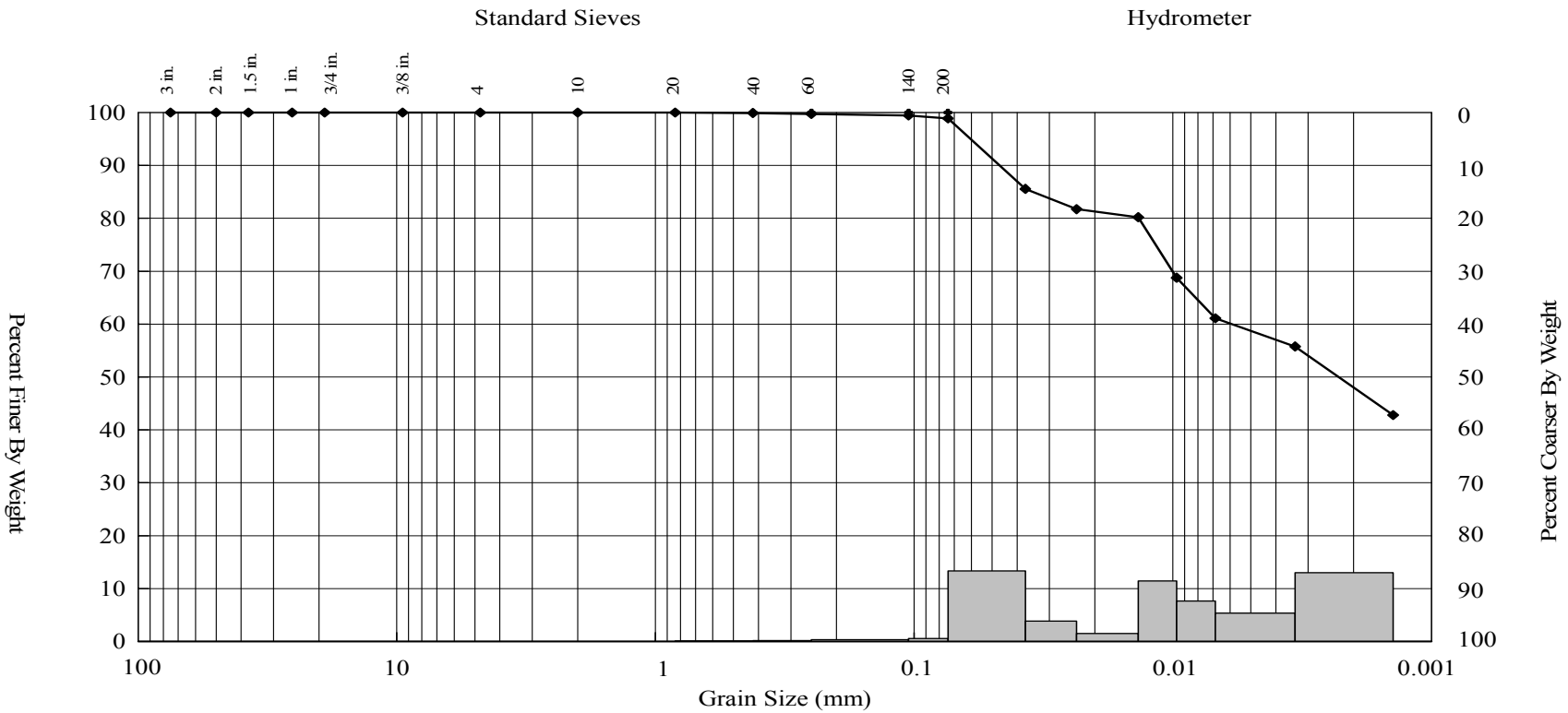

Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.12	1.01	40.61	58.26

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
283										

Material Description

Lean Clay ("CL"), black (2.5 N)

Client:	Battelle
Client Project Title:	New Bedford Harbor
Client Project Number:	G606422-DUXCHEM
AMS Project Number:	07-137
Date Sampled:	10/31/2007
Date Analyzed:	12/7/2007
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q0724
AMS Sample ID:	29274

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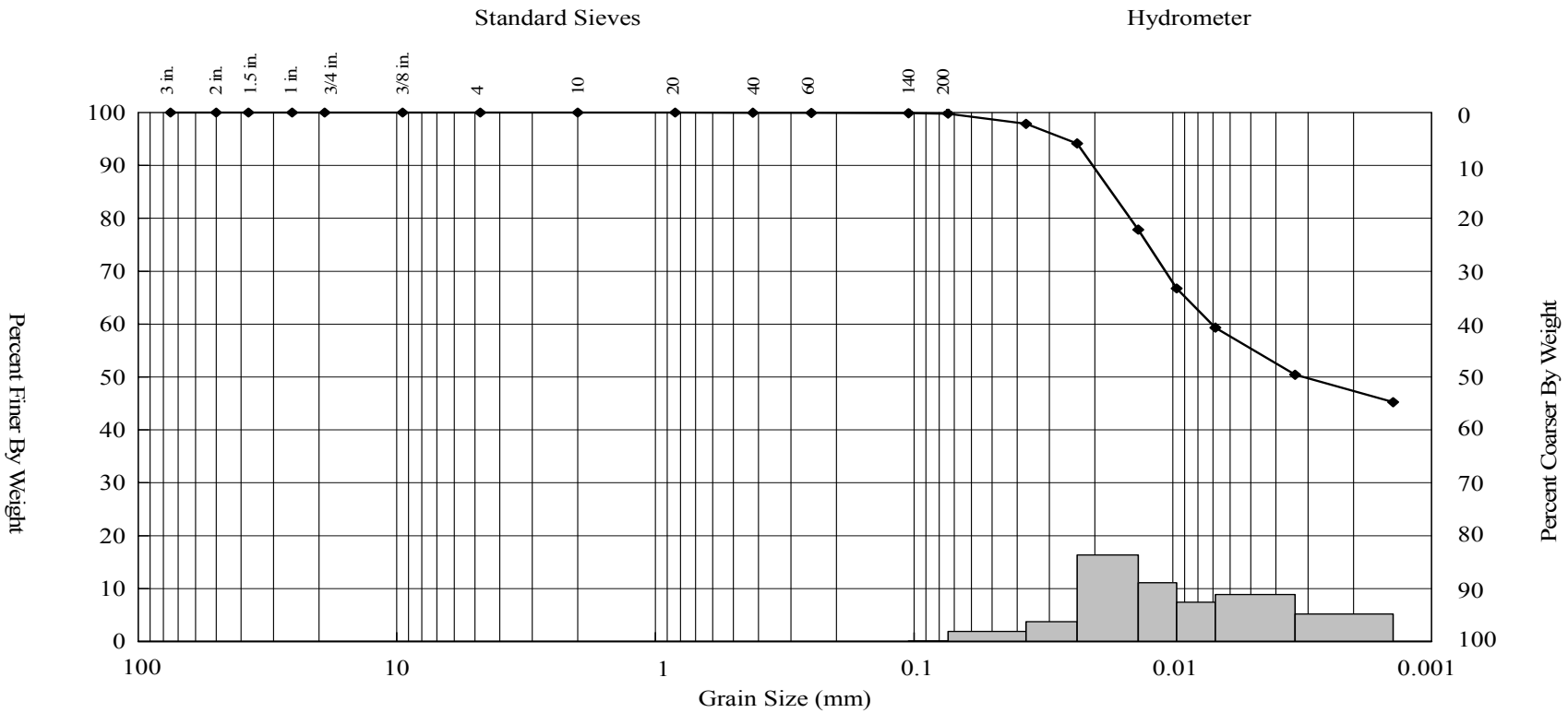
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.06	0.20	45.16	54.58

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
301										

Material Description

Lean Clay ("CL"), black (2.5 N)

Client:	Battelle
Client Project Title:	New Bedford Harbor
Client Project Number:	G606422-DUXCHEM
AMS Project Number:	07-137
Date Sampled:	10/31/2007
Date Analyzed:	12/7/2007
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q0725
AMS Sample ID:	29275

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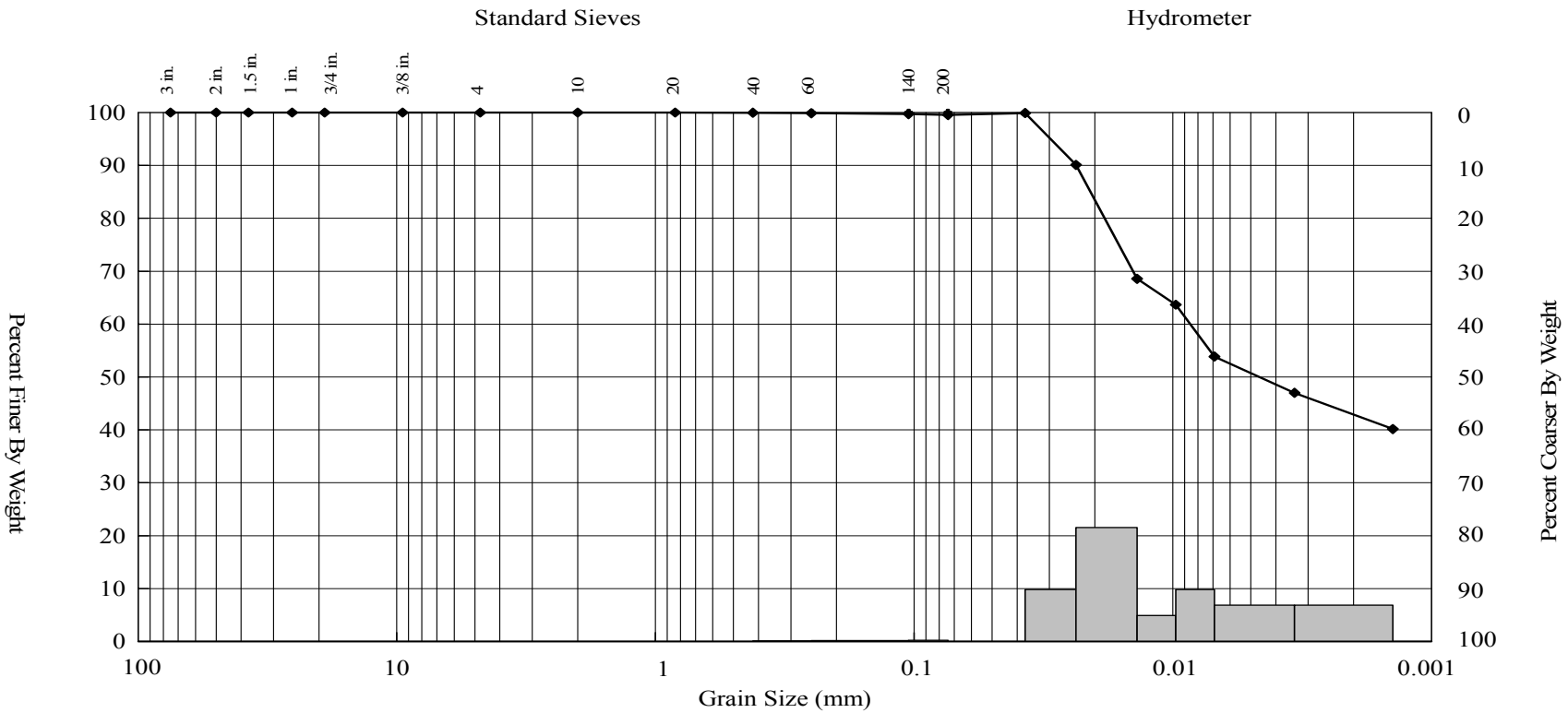

Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.05	0.43	49.37	50.15

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
293										

Material Description

Lean Clay ("CL"), black (2.5 N)

Client:	Battelle
Client Project Title:	New Bedford Harbor
Client Project Number:	G606422-DUXCHEM
AMS Project Number:	07-137
Date Sampled:	10/31/2007
Date Analyzed:	12/7/2007
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q0726
AMS Sample ID:	29276

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QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	07-137
Project Title:	New Bedford Harbor	Date Sampled:	10/31/2007
Project Number:	G606422-DUXCHEM	Date Analyzed:	12/7/2007
Client Sample ID:	Q0719	Matrix:	Sediment
AMS Sample ID:	29271	Method:	ASTM D 422
		Batch:	120707-01G

Particle Diameter Range (mm)	U.S. Standard Sieve Mesh #	Size Class	Sample Result (%)	Duplicate Result (%)	RPD (%)	Data Qualifier	QC Limits (% RPD)
4.76	No. 4	Gravel	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.13	0.12	8.00		≤ 25
0.425	No. 40	Medium Sand	0.29	0.37	24.24		≤ 25
0.074	No. 200	Fine Sand	1.39	1.24	11.41		≤ 25
<0.074 - 0.005	Hydrometer	Silt	60.04	61.82	2.92		≤ 25
<0.005	Hydrometer	Clay	38.15	36.45	4.56		≤ 25

Samples in Batch: 29271 29272 29273 29274 29275 29276 29280 29281 29282 29353 29355 29357 29360 29364 29365 29371 29372 29375 29376 29379

Qualifiers:
Q - RPD value outside Quality Control Limits
I - Insufficient sample material to perform Quality Control Analyses

Soil Classification: Unified Soil Classification System (USCS) classifications are estimated in accordance with ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) unless the sample contains less than 5% fines (GW, GP, SW, and SP), or the Liquid Limit, Plastic Limit, and Plasticity Index (Atterberg Limits) have been determined in accordance with ASTM D 4318. When these values have been determined the samples are definitively classified using ASTM D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

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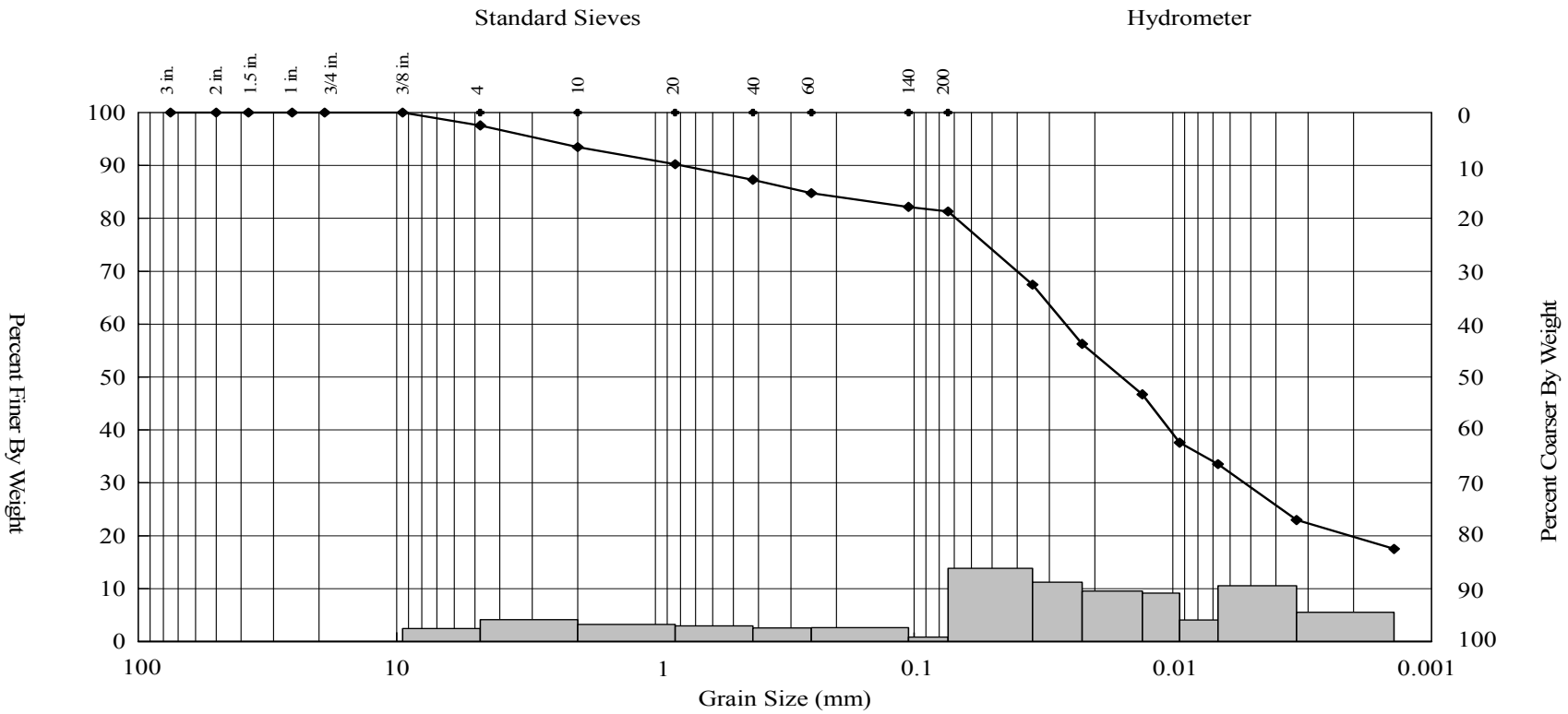

Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
2.45	4.11	6.14	6.02	53.06	28.22

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
185										

Material Description

Elastic Silt with Sand ("MH"), black (N 2.5)

Client:	Battelle
Client Project Title:	New Bedford Harbor 2007 WQM
Client Project Number:	G606422 DUXCHEM
AMS Project Number:	07-141
Date Sampled:	11/12/2007
Date Analyzed:	12/7/2007
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q0930 (SS-ST04-111207)
AMS Sample ID:	29318

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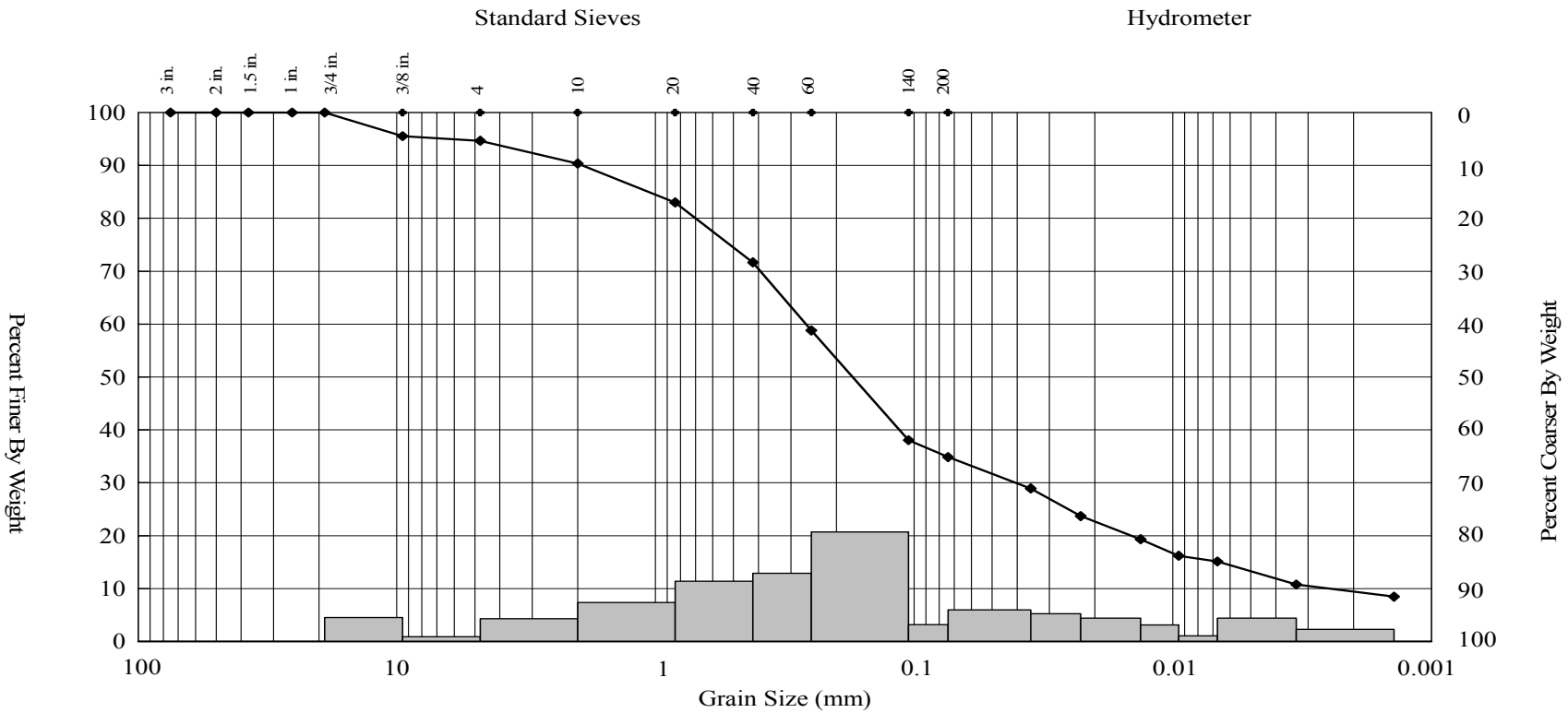

Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
5.35	4.30	18.70	36.80	21.95	12.90

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
70										

Material Description

Silty Sand ("SM"), black (5Y 2.5/2)

Client:	Battelle
Client Project Title:	New Bedford Harbor 2007 WQM
Client Project Number:	G606422 DUXCHEM
AMS Project Number:	07-141
Date Sampled:	11/12/2007
Date Analyzed:	12/7/2007
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q0931 (SS-ST03-111207)
AMS Sample ID:	29319

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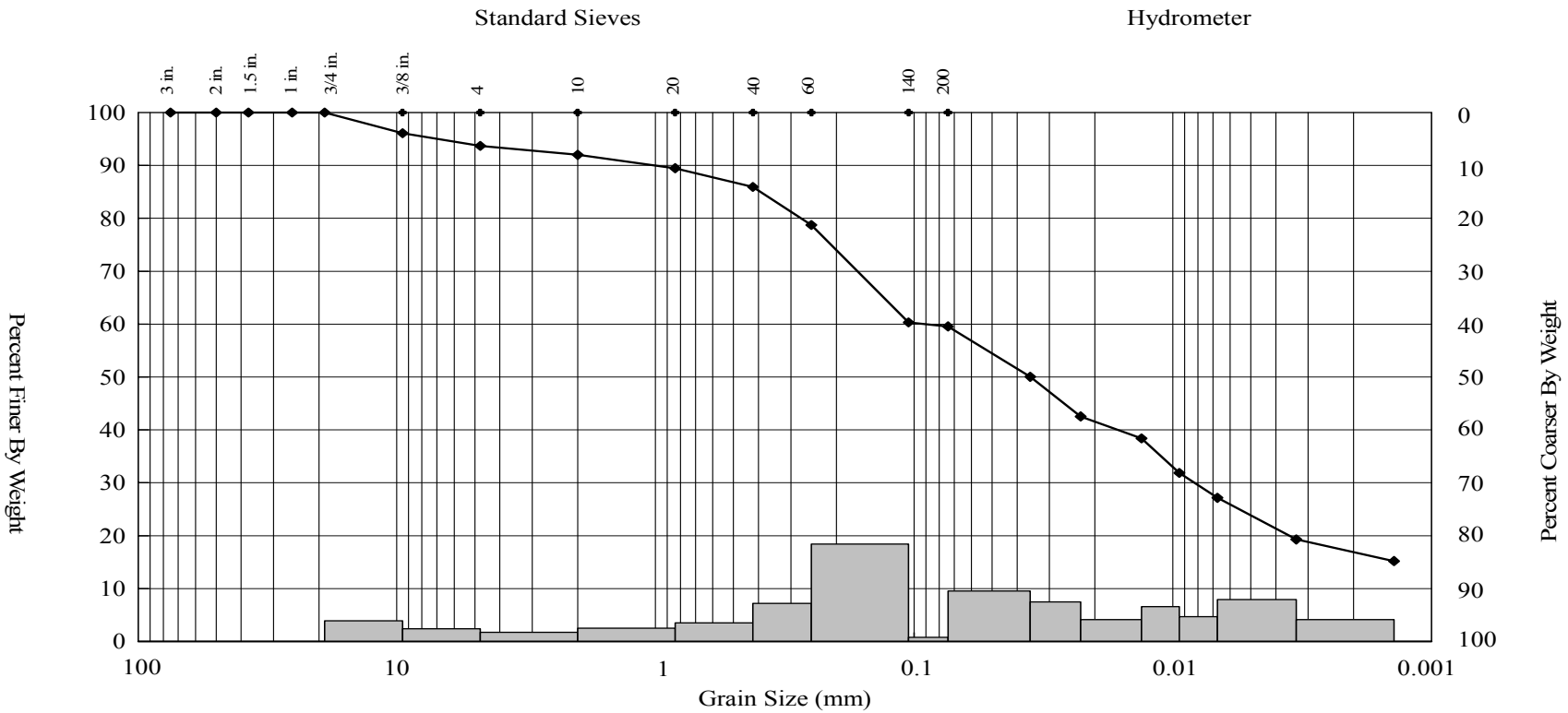
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
6.30	1.72	6.06	26.36	36.41	23.15

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
133										

Material Description

Sandy Elastic Silt ("MH"), black (N 2.5)

Client:	Battelle
Client Project Title:	New Bedford Harbor 2007 WQM
Client Project Number:	G606422 DUXCHEM
AMS Project Number:	07-141
Date Sampled:	11/12/2007
Date Analyzed:	12/7/2007
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q0932 (SS-ST02-111207)
AMS Sample ID:	29320

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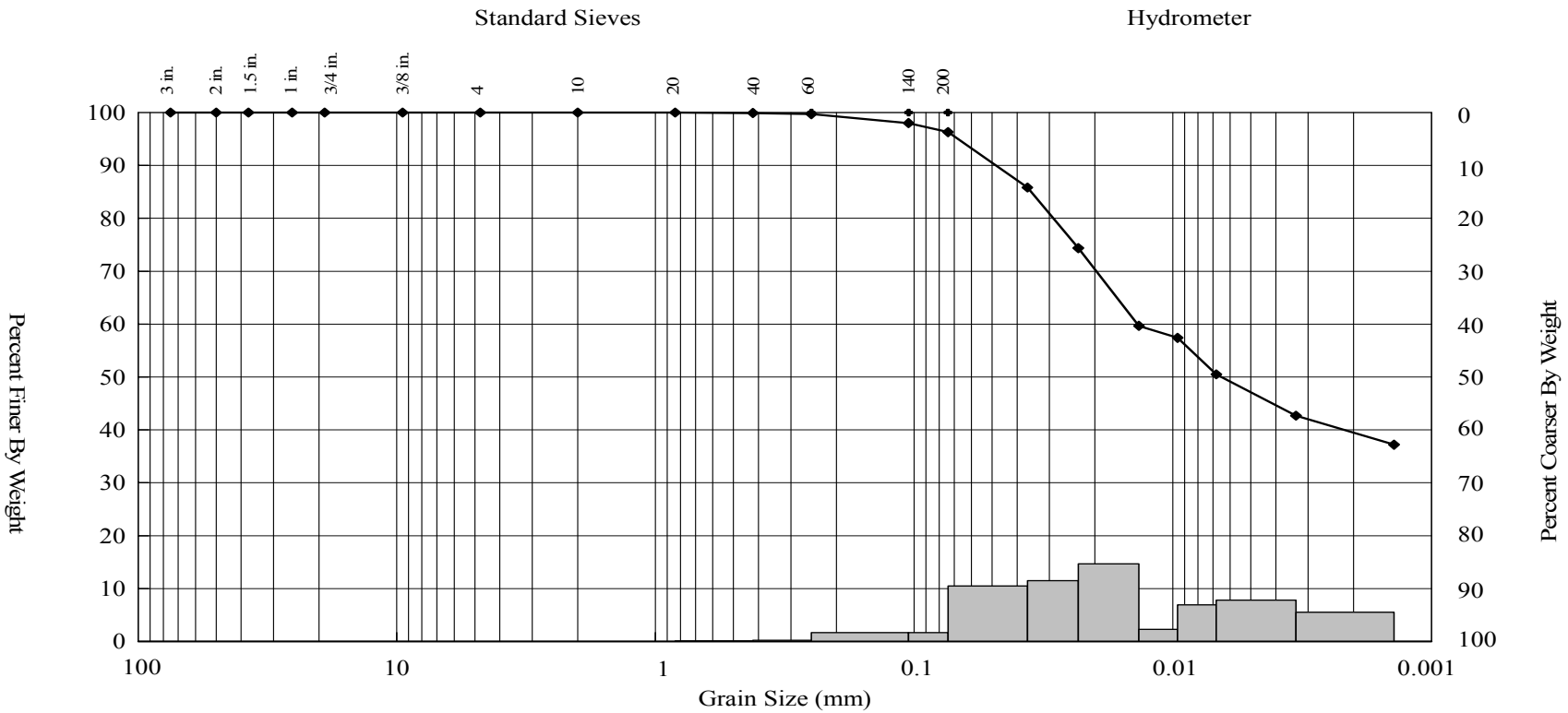
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.12	3.58	49.86	46.44

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
488										

Material Description

Elastic Silt ("MH"), black (N 1)

Client:	Battelle
Client Project Title:	New Bedford Harbor 2007 WQM
Client Project Number:	G606422 DUXCHEM
AMS Project Number:	07-141
Date Sampled:	11/12/2007
Date Analyzed:	12/7/2007
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q0933 (SS-ST01-111207)
AMS Sample ID:	29321

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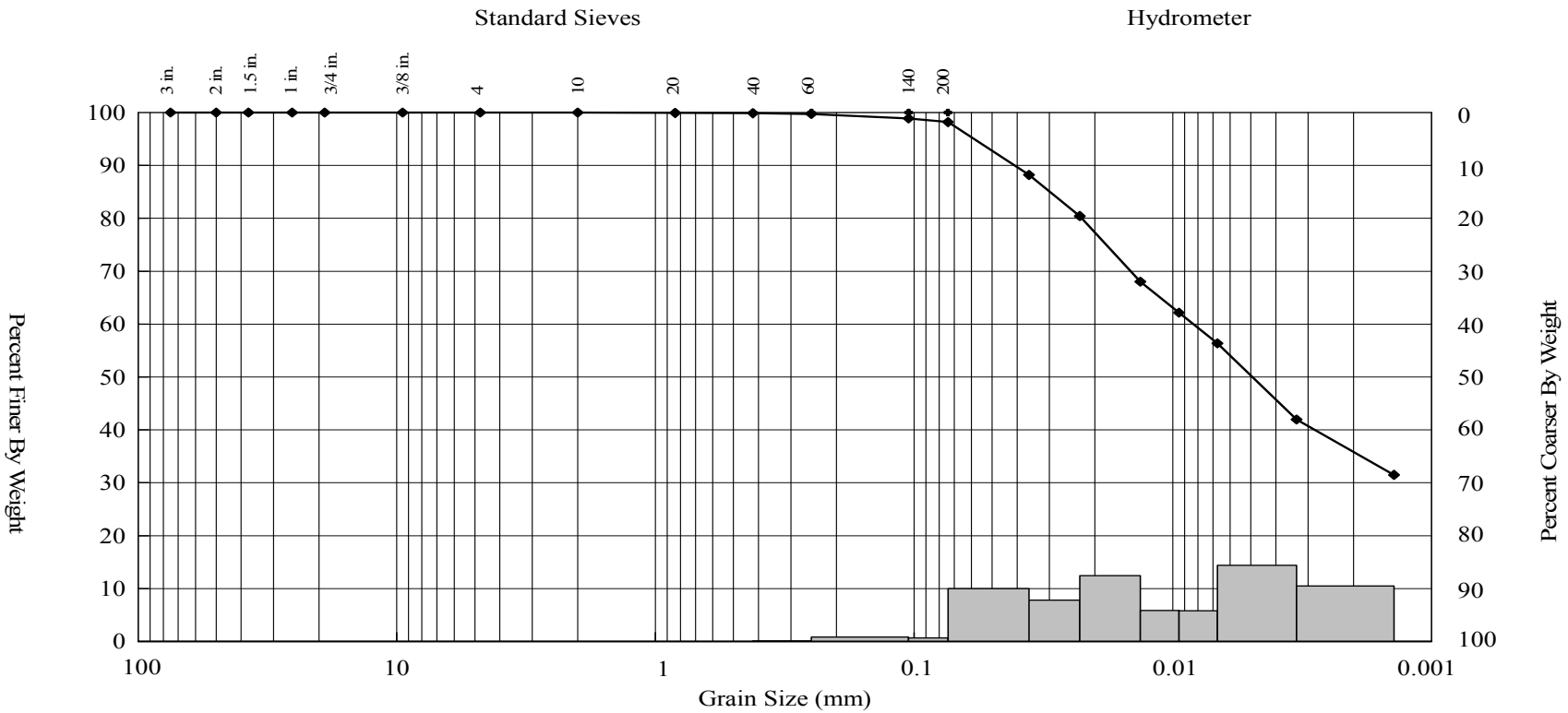

Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.16	1.64	49.17	49.03

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
318										

Material Description

Elastic Silt ("MH"), black (N 2.5)

Client:	Battelle
Client Project Title:	New Bedford Harbor 2007 WQM
Client Project Number:	G606422 DUXCHEM
AMS Project Number:	07-141
Date Sampled:	11/12/2007
Date Analyzed:	12/7/2007
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q0934 (SS-ST01-111207-DUP)
AMS Sample ID:	29322

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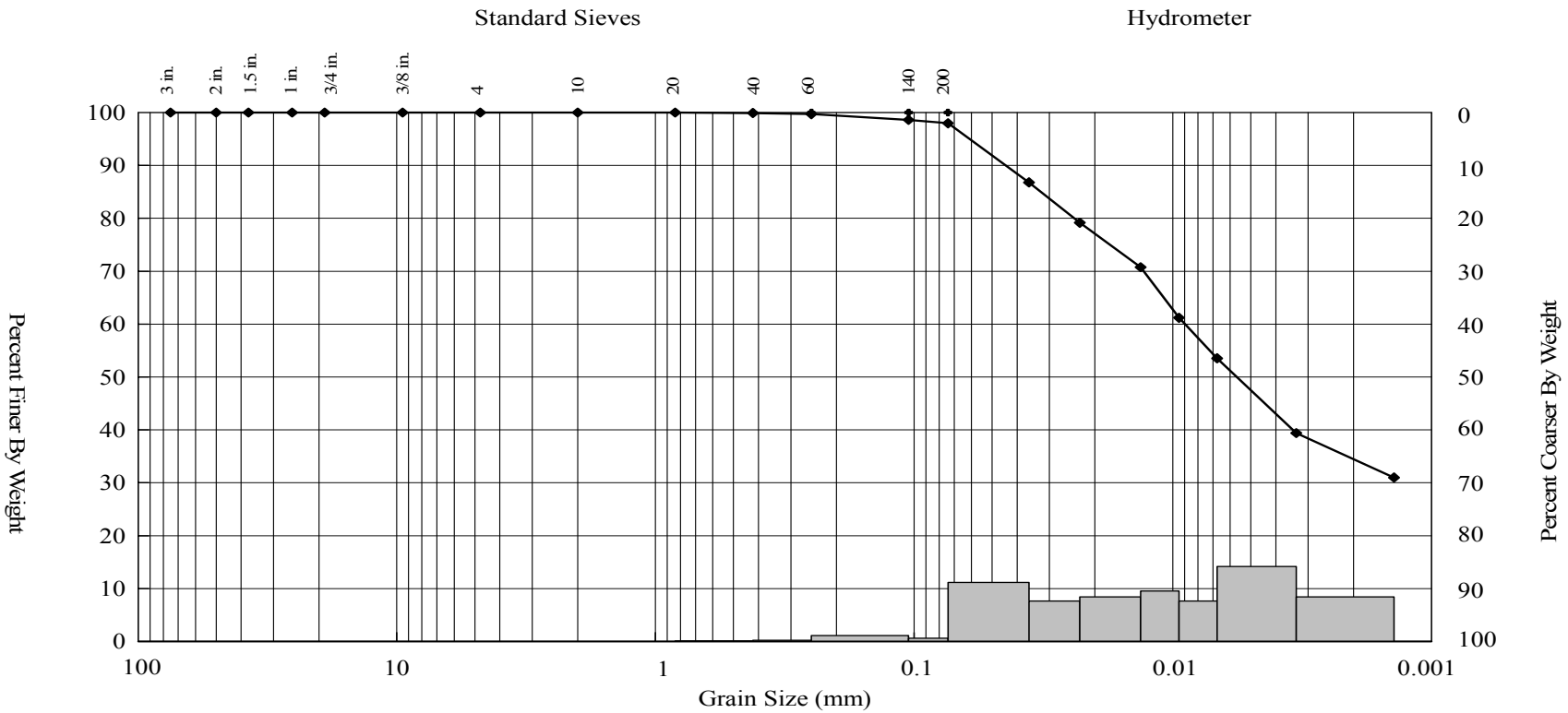
502 N. Hwy 3, Suite B
League City, TX 77573
281.554.7272 Tel.
281.554.6356 Fax

These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

K.S. Davis, P.G.
AMS, Inc. Technical Director

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.13	1.93	51.64	46.30

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
318										

Material Description

Elastic Silt ("MH"), black (N 2.5)

Client:	Battelle
Client Project Title:	New Bedford Harbor 2007 WQM
Client Project Number:	G606422 DUXCHEM
AMS Project Number:	07-141
Date Sampled:	11/12/2007
Date Analyzed:	12/7/2007
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q0934 (SS-ST01-111207-DUP)
AMS Sample ID:	29322-2

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K.S. Davis, P.G.
AMS, Inc. Technical Director

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	07-141
Project Title:	New Bedford Harbor 2007 WQM	Date Sampled:	11/12/2007
Project Number:	G606422 DUXCHEM	Date Analyzed:	12/7/2007
Client Sample ID:	Q0934 (SS-ST01-111207-DUP)	Matrix:	Sediment
AMS Sample ID:	29322	Method:	ASTM D 422
		Batch:	120707-02G

Particle Diameter Range (mm)	U.S. Standard Sieve Mesh #	Size Class	Sample Result (%)	Duplicate Result (%)	RPD (%)	Data Qualifier	QC Limits (% RPD)
4.76	No. 4	Gravel	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.16	0.13	20.69		≤ 25
0.074	No. 200	Fine Sand	1.64	1.93	16.25		≤ 25
<0.074 - 0.005	Hydrometer	Silt	49.17	51.64	4.90		≤ 25
<0.005	Hydrometer	Clay	49.03	46.30	5.73		≤ 25

Samples in Batch: 29280, 29281, 29282, 29318, 29319, 29320, 29321, 29322, 29394, 29395, 29402, 29403, 29407, 29410, 29417, 29418, 29419, 29420, 29421, 29422

Qualifiers:

Q - RPD value outside Quality Control Limits

I - Insufficient sample material to perform Quality Control Analyses

Soil Classification: Unified Soil Classification System (USCS) classifications are estimated in accordance with ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) unless the sample contains less than 5% fines (GW, GP, SW, and SP), or the Liquid Limit, Plastic Limit, and Plasticity Index (Atterberg Limits) have been determined in accordance with ASTM D 4318. When these values have been determined the samples are definitively classified using ASTM D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	07-137
Project Number:	G606422-DUXCHEM	Date Sampled:	10/31/2007
Project Name:	New Bedford Harbor	Date Received:	11/9/2007
Client Sample ID:	Q0719 (ST-04-103107-2)		
AMS Sample ID:	29271		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	10.10	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

KS Davis, P.G.
AMS, Inc. Technical Director

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	07-137
Project Number:	G606422-DUXCHEM	Date Sampled:	10/31/2007
Project Name:	New Bedford Harbor	Date Received:	11/9/2007
Client Sample ID:	Q0721 (ST-03-1203107-2)		
AMS Sample ID:	29272		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	10.14	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

KS Davis, P.G.
AMS, Inc. Technical Director

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	07-137
Project Number:	G606422-DUXCHEM	Date Sampled:	10/31/2007
Project Name:	New Bedford Harbor	Date Received:	11/9/2007
Client Sample ID:	Q0723 (ST-02-103107-2)		
AMS Sample ID:	29273		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	11.36	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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AMS, Inc. Technical Director

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Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	07-137
Project Number:	G606422-DUXCHEM	Date Sampled:	10/31/2007
Project Name:	New Bedford Harbor	Date Received:	11/9/2007
Client Sample ID:	Q0724 (ST-01-103107-1)		
AMS Sample ID:	29274		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	12.41	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

KS Davis, P.G.
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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	07-137
Project Number:	G606422-DUXCHEM	Date Sampled:	10/31/2007
Project Name:	New Bedford Harbor	Date Received:	11/9/2007
Client Sample ID:	Q0725 (ST-01-103107-2)		
AMS Sample ID:	29275		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	14.40	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	07-137
Project Number:	G606422-DUXCHEM	Date Sampled:	10/31/2007
Project Name:	New Bedford Harbor	Date Received:	11/9/2007
Client Sample ID:	Q0726 (ST-01-103107-3)		
AMS Sample ID:	29276		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	13.75	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	07-137
Project Number:	G606422-DUXCHEM	Date Analyzed:	12/13/2007
Project Name:	New Bedford Harbor	Batch ID:	121307-01T
Matrix:	Sediment		
Method:	EPA 9060A		

Method Blank (Batch Continuing Blank (CB)), Continuing Calibration Verification (CCV) and Independent Continuing Calibration Verification (ICCV) Results:

AMS Sample ID	Result (%)	CCV Conc. (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
CB-01	0.01	0.01	--	**U**	0.01	0.03	≤ 0.03
CCV-01	3.16	3.23	2.19		0.01	0.03	≤ 5 RPD
ICCV-01	2.08	2.00	3.92		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits
29271	10.10	10.21	1.08		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID):

29271	29274	29318	29321
29272	29275	29319	29322
29273	29276	29320	

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

KS Davis, P.G.
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Applied Marine Sciences, Inc.

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QUALITY CONTROL

Client: Battelle
Project Number: G606422-DUXCHEM
Project Name: New Bedford Harbor

AMS Project Number: 07-137

Data Qualifiers:

U	Undetected at the Limit of Detection (LOD): The associated value is the Limit of Detection, adjusted by any dilution factor used in the analysis.
J	The analyte was positively identified, but was below the Limit of Quantitation (LOQ). The quantitation is an estimate.
B	Blank contamination: The analyte was detected above one-half the LOD in an associated blank.
Q	One or more Quality Control criteria failed. Data usability should be carefully assessed by the Project Team.
I	Insufficient sample was provided to perform required Quality Control analyses and/or to meet method-specific sample volume recommendations.

Definitions:

LOD	The Limit of Detection (LOD) is determined by quantitative establishment of the Method Detection Limit (MDL), as defined in 40 CFR 136(b).
LOQ	The Limit of Quantitation (LOQ) is the minimum level, concentration or quantity of a target variable (target analyte) that can be quantitatively reported with a specified level of confidence. As defined in DoD QSM §D.1.2.2, the LOQ value must be a minimum of 3 times the LOD, although the specified level of confidence may have a lower quantitative value.

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	07-141
Project Number:	New Bedford Harbor 2007 WQM	Date Sampled:	11/12/2007
Project Name:	G606422 DUXCHEM	Date Received:	11/15/2007
Client Sample ID:	Q0930 (SS-ST04-111207)		
AMS Sample ID:	29318		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	7.77	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	07-141
Project Number:	New Bedford Harbor 2007 WQM	Date Sampled:	11/12/2007
Project Name:	G606422 DUXCHEM	Date Received:	11/15/2007
Client Sample ID:	Q0931 (SS-ST03-111207)		
AMS Sample ID:	29319		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	1.84	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	07-141
Project Number:	New Bedford Harbor 2007 WQM	Date Sampled:	11/12/2007
Project Name:	G606422 DUXCHEM	Date Received:	11/15/2007
Client Sample ID:	Q0932 (SS-ST02-111207)		
AMS Sample ID:	29320		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	7.91	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	07-141
Project Number:	New Bedford Harbor 2007 WQM	Date Sampled:	11/12/2007
Project Name:	G606422 DUXCHEM	Date Received:	11/15/2007
Client Sample ID:	Q0933 (SS-ST01-111207)		
AMS Sample ID:	29321		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	15.47	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	07-141
Project Number:	New Bedford Harbor 2007 WQM	Date Sampled:	11/12/2007
Project Name:	G606422 DUXCHEM	Date Received:	11/15/2007
Client Sample ID:	Q0934 (SS-ST01-111207-DUP)		
AMS Sample ID:	29322		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	12.25	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	07-141
Project Number:	New Bedford Harbor 2007 WQM	Date Analyzed:	12/13/2007
Project Name:	G606422 DUXCHEM	Batch ID:	121307-01T
Matrix:	Sediment		
Method:	EPA 9060A		

Method Blank (Batch Continuing Blank (CB)), Continuing Calibration Verification (CCV) and Independent Continuing Calibration Verification (ICCV) Results:

AMS Sample ID	Result (%)	CCV Conc. (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
CB-01	0.01	0.01	--	**U**	0.01	0.03	≤ 0.03
CCV-01	3.16	3.23	2.19		0.01	0.03	≤ 5 RPD
ICCV-01	2.08	2.00	3.92		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits
29322	12.25	15.04	20.45		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID):

29271	29274	29318	29321
29272	29275	29319	29322
29273	29276	29320	

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

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QUALITY CONTROL

Client: Battelle
Project Number: New Bedford Harbor 2007 WQM
Project Name: G606422 DUXCHEM

AMS Project Number: 07-141

Data Qualifiers:

U	Undetected at the Limit of Detection (LOD): The associated value is the Limit of Detection, adjusted by any dilution factor used in the analysis.
J	The analyte was positively identified, but was below the Limit of Quantitation (LOQ). The quantitation is an estimate.
B	Blank contamination: The analyte was detected above one-half the LOD in an associated blank.
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LOQ	The Limit of Quantitation (LOQ) is the minimum level, concentration or quantity of a target variable (target analyte) that can be quantitatively reported with a specified level of confidence. As defined in DoD QSM §D.1.2.2, the LOQ value must be a minimum of 3 times the LOD, although the specified level of confidence may have a lower quantitative value.

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AMS, Inc. Technical Director

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Battelle
The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No: G-606422

Proj. Name: Sediment Traps - NBH

SAMPLERS: Signature: Michael P. McKee

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER (TOC / Grain Size)	ACIDIFIED	PRESERVED	Total Number of Containers
10/31/07	1411	Q0718	ST-04-103107-1	station 4 1st sed trap deployment		✓						✓			1
	1411	Q0719	ST-04-103107-2	" 4		✓						✓			1
	1422	Q0720	ST-03-103107-1	" 3		✓						✓			1
	1422	Q0721	ST-03-103107-2	" 3		✓						✓			1
	1431	Q0722	ST-02-103107-1	" 2		✓						✓			1
	1431	Q0723	ST-02-103107-2	" 2		✓						✓			1
	1441	Q0724	ST-01-103107-1	" 1		✓						✓			1
	1441	Q0725	ST-01-103107-2	" 1		✓						✓			1
	1441	Q0726	ST-01-103107-3	" 1		✓						✓			1

Relinquished by:	Date/Time	Received by:	Date/Time
Mike McKee	11/01/07 12:00	Jeannine P. Seyfert	11/1/07 12:00

Comments:

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Battelle
The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No: G606422
Proj. Name: New Bedford Harbor

SAMPLERS: Signature: Michael Walsh

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	Client ID ~~BATTELLE ID~~	LIMS ID ~~CLIENT ID~~	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
11/12/2007	0950	SS-ST04-111207	Q0930	Surface Sediment from Sediment Trap Isotopes		✓									1
11/12/2007	1016	SS-ST03-111207	Q0931	" "		✓									1
11/12/2007	1051	SS-ST02-111207	Q0932	" "		✓									1
11/12/2007	1105	SS-ST01-111207	Q0933	1of2 " "		✓									1
11/12/2007	1116	SS-ST01-111207-DUP		2of2 " Q0934 "		✓									1

Relinquished by:	Date/Time	Received by:	Date/Time
Michael Walsh	11/12/2007 1545	Jeannine Shyfert	11-12-07 15:45
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

Deployment No. 2

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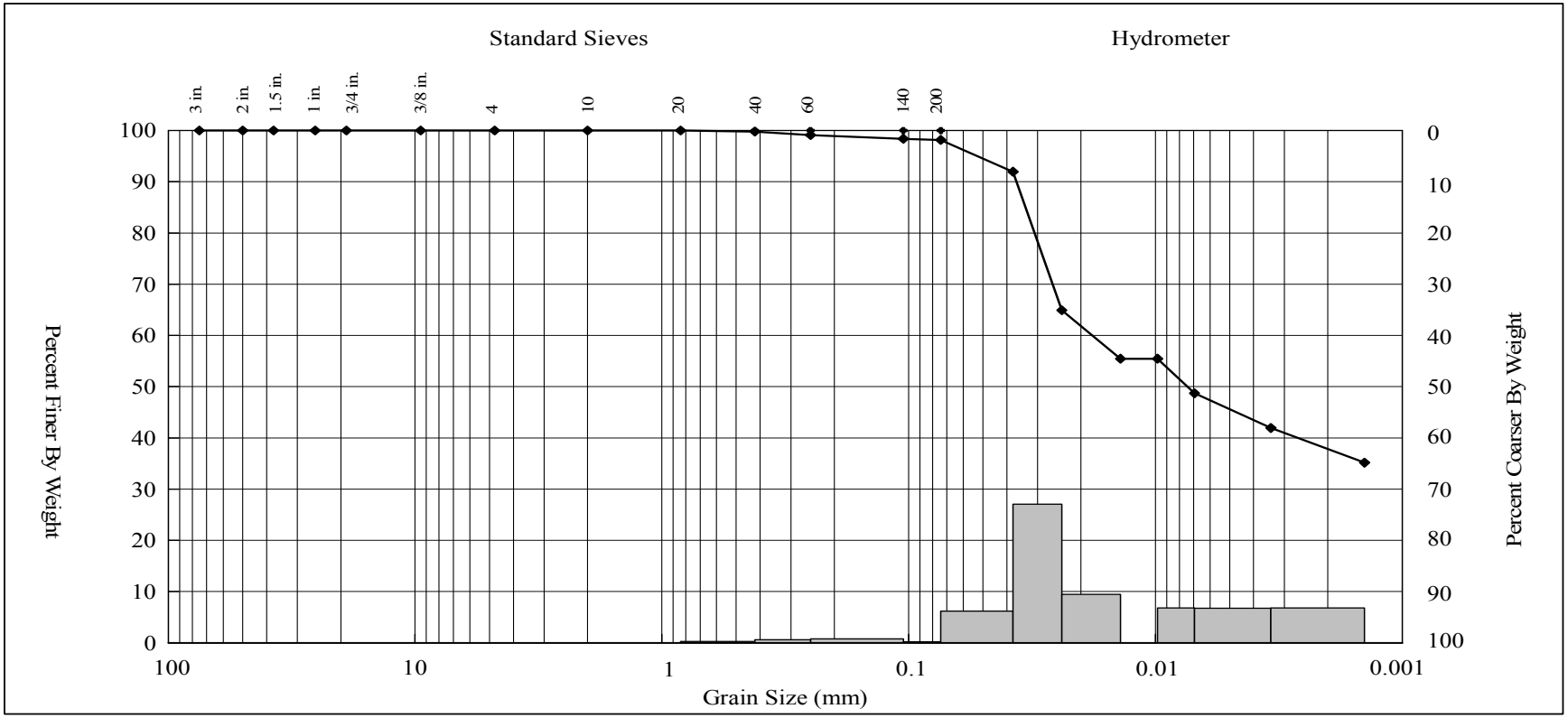
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.24	1.60	53.17	44.99

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
440										

Material Description

Elastic Silt ("MH"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422
AMS Project Number:	07-159
Date Sampled:	12/10/2007
Date Analyzed:	1/8/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q1173 (ST-01-121007-1)
AMS Sample ID:	29596

APPLIED MARINE SCIENCES, INC.
502 N. Hwy 3, Suite B
League City, TX 77573
281.554.7272 Tel.
281.554.6356 Fax

These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

K.S. Davis, P.G.
AMS, Inc. Technical Director

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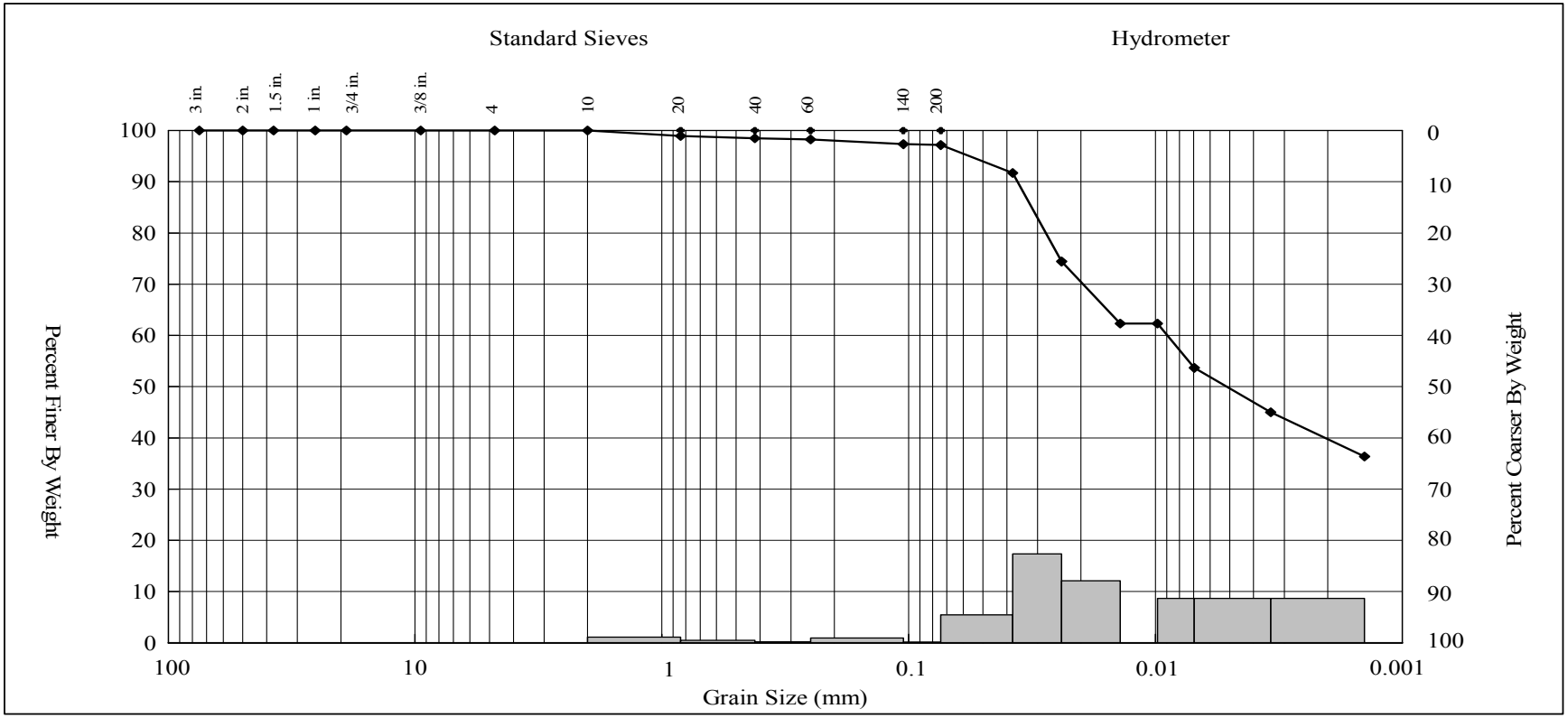
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	1.53	1.32	48.27	48.88

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
267										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422
AMS Project Number:	07-159
Date Sampled:	12/10/2007
Date Analyzed:	1/8/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q1174 (ST-01-121007-2)
AMS Sample ID:	29597

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AMS, Inc. Technical Director

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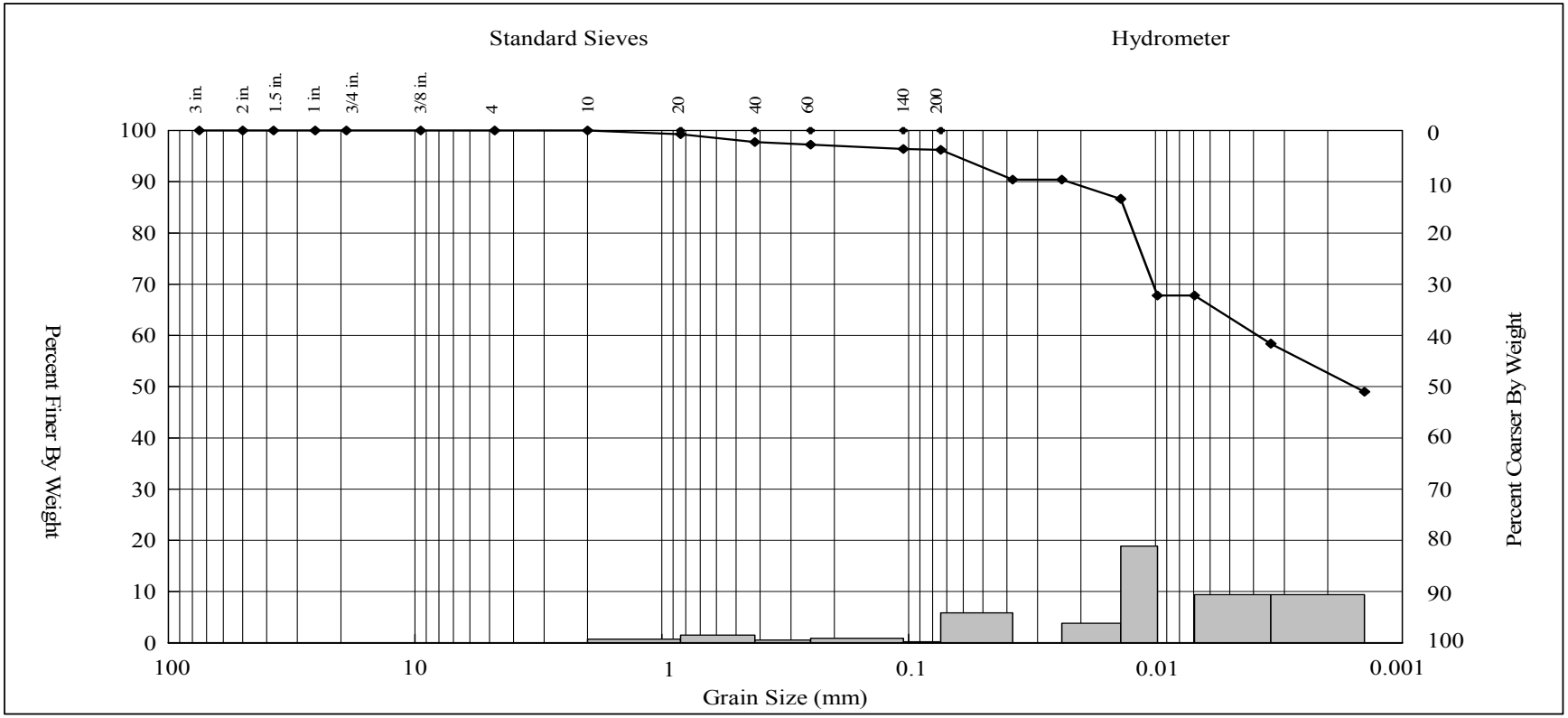
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	2.26	1.52	33.58	62.64

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
345										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422
AMS Project Number:	07-159
Date Sampled:	12/10/2007
Date Analyzed:	1/8/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q1175 (ST-01-121007-3)
AMS Sample ID:	29598

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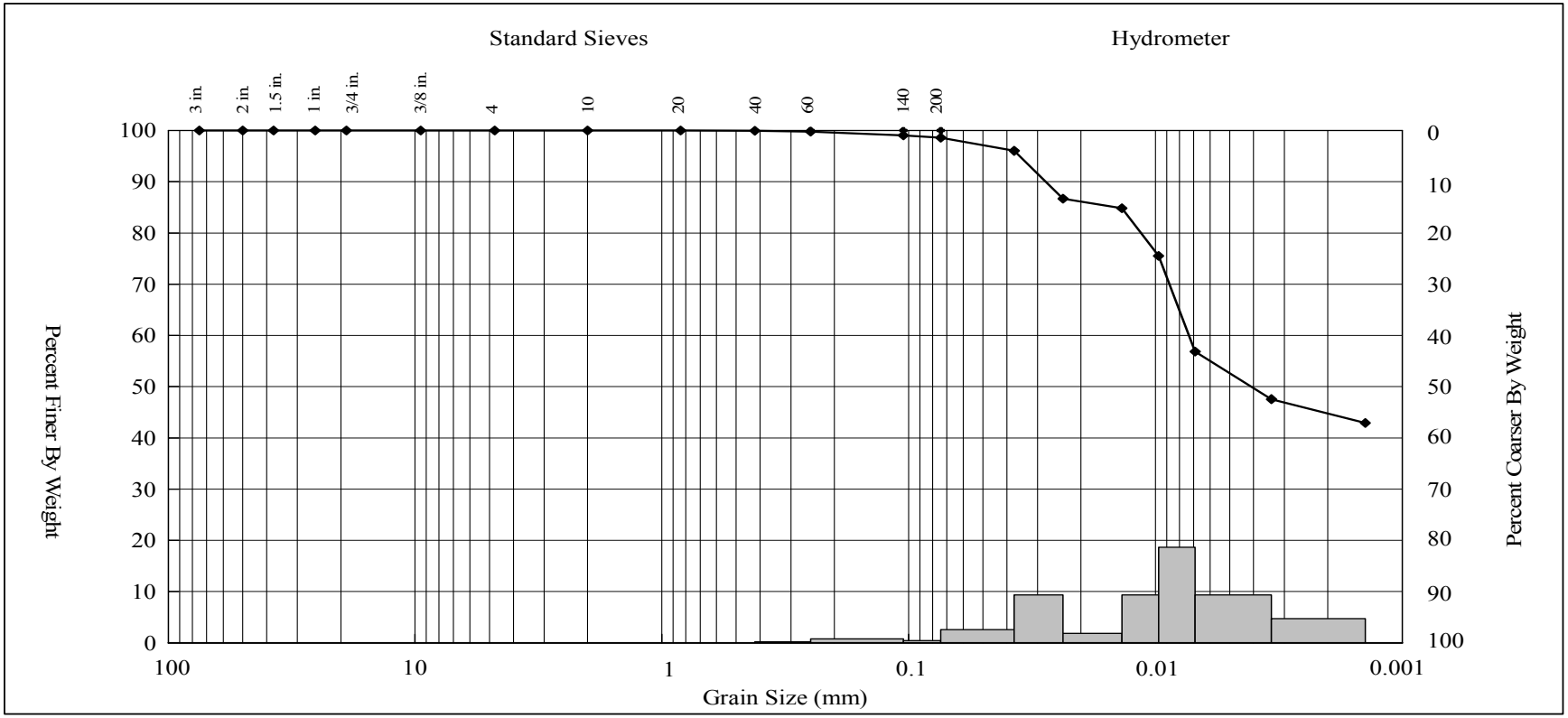
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.06	1.34	46.77	51.83

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
235										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422
AMS Project Number:	07-159
Date Sampled:	12/10/2007
Date Analyzed:	1/8/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q1177 (ST-02-121007-2)
AMS Sample ID:	29599

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AMS, Inc. Technical Director

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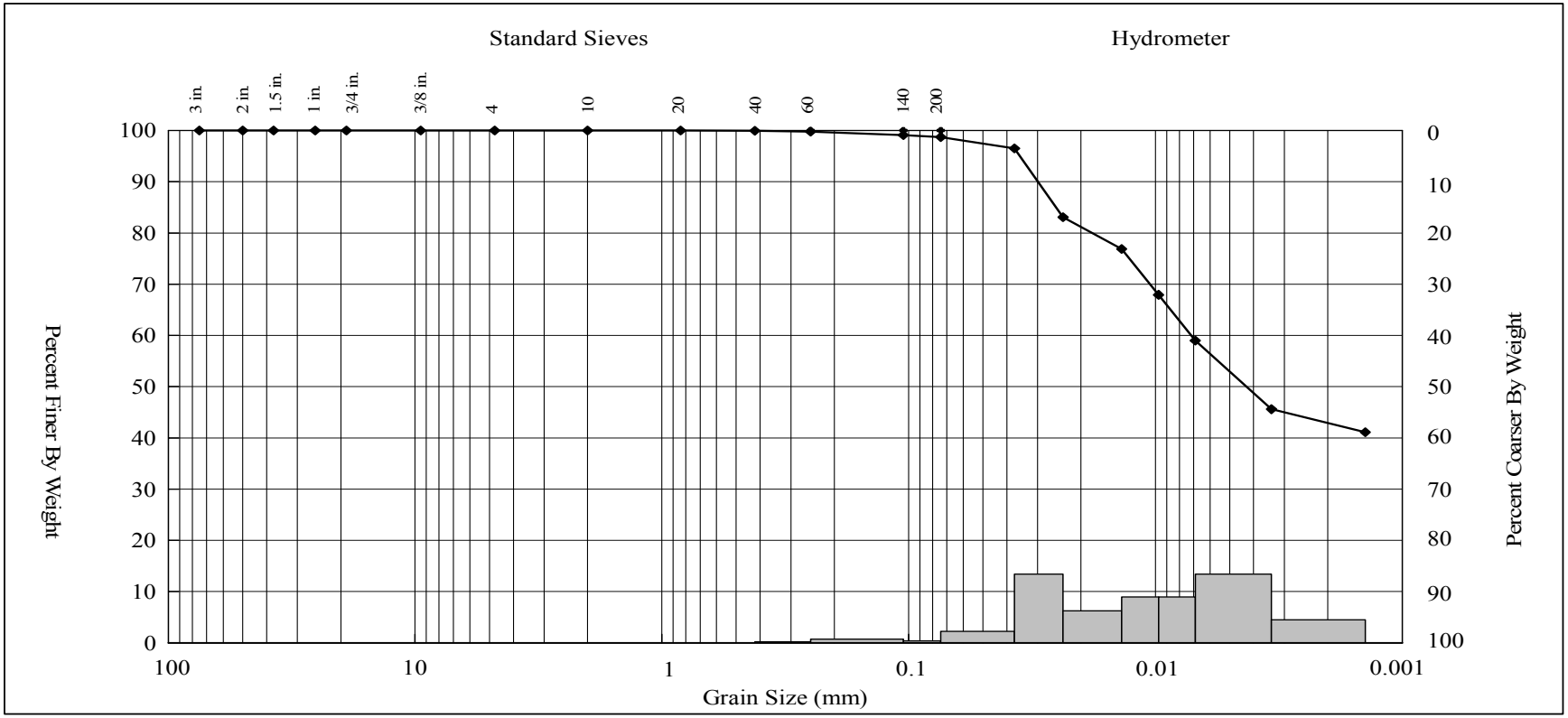
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.05	1.22	46.98	51.75

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
235										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422
AMS Project Number:	07-159
Date Sampled:	12/10/2007
Date Analyzed:	1/8/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q1177 (ST-02-121007-2)
AMS Sample ID:	29599-2

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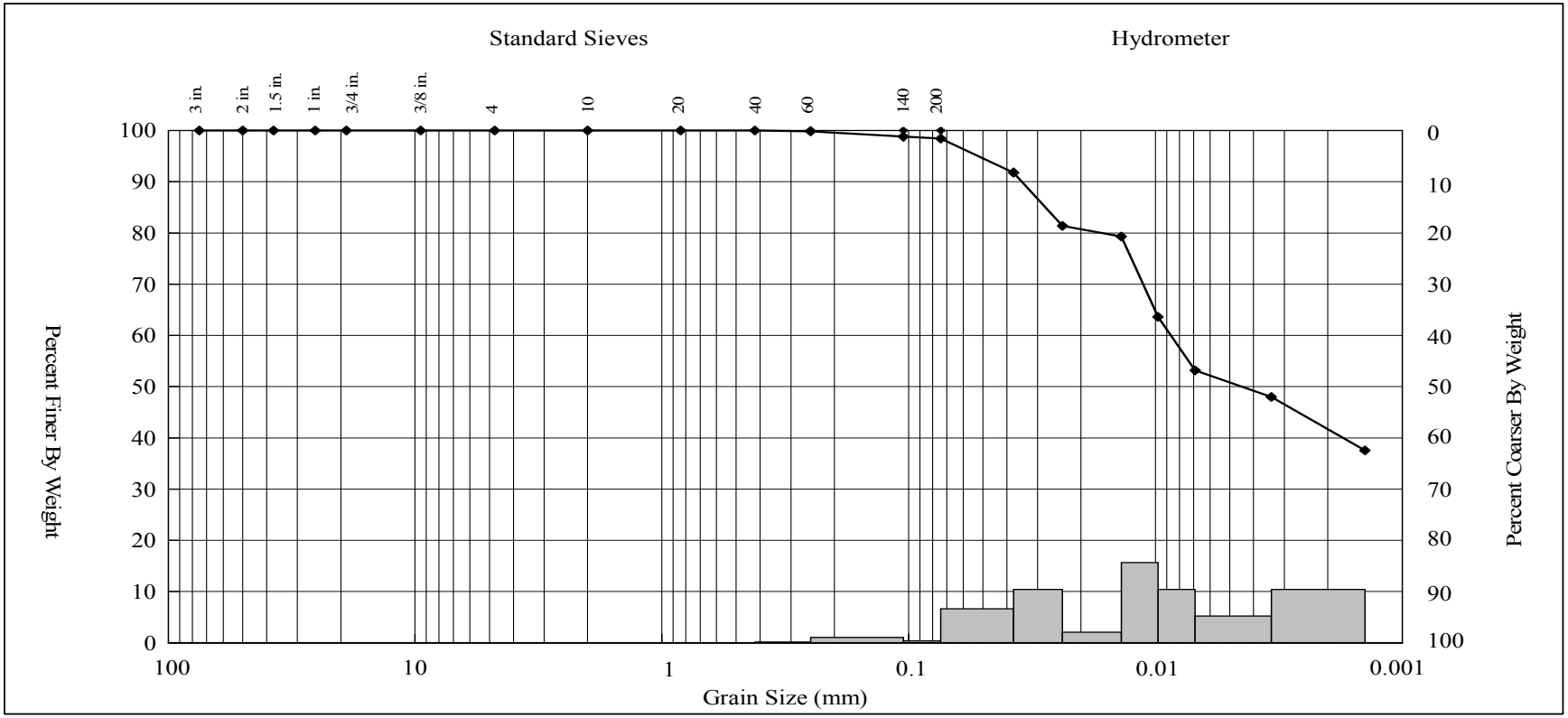
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.02	1.58	48.02	50.38

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
367										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422
AMS Project Number:	07-159
Date Sampled:	12/10/2007
Date Analyzed:	1/8/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q1179 (ST-03-121007-2)
AMS Sample ID:	29600

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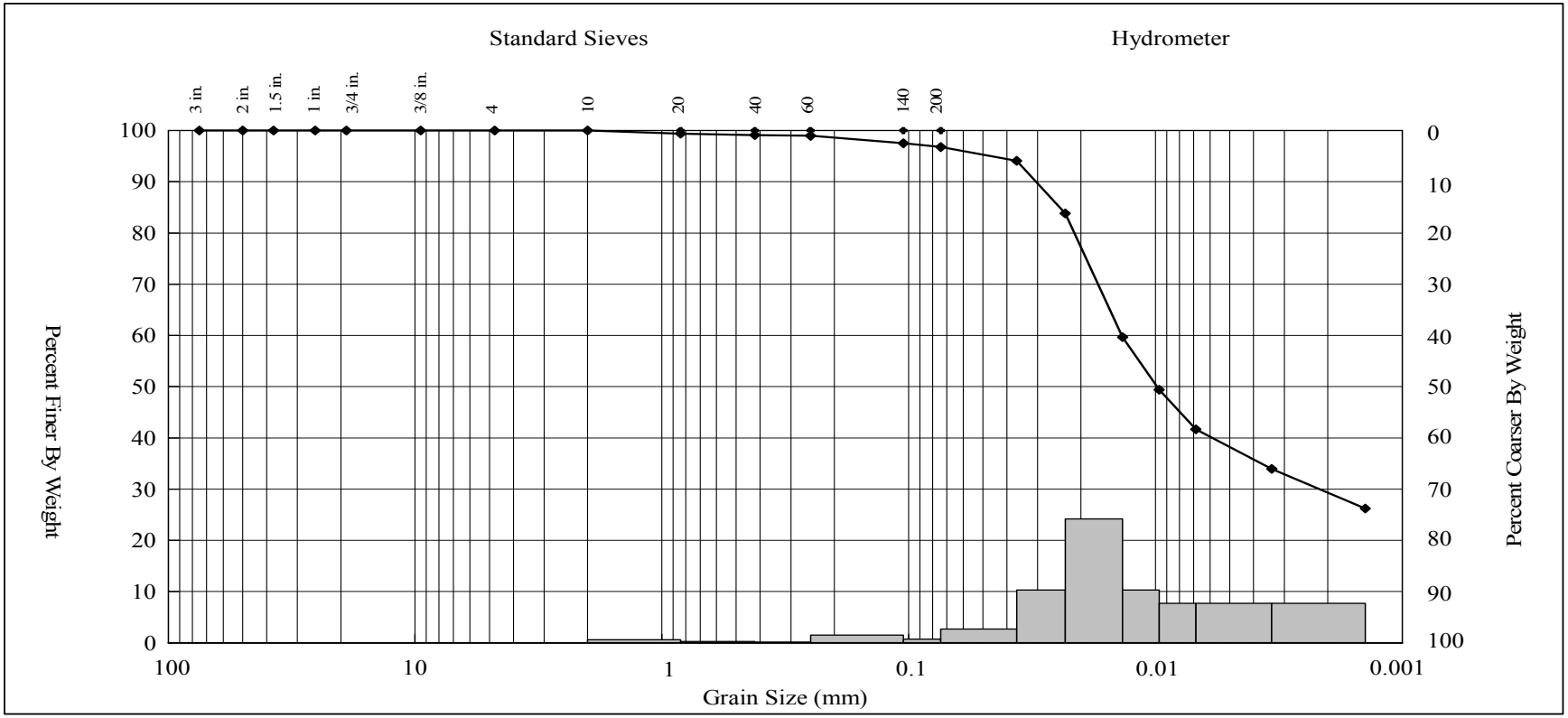
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.88	2.36	59.23	37.53

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
241										

Material Description

Elastic Silt ("MH"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422
AMS Project Number:	07-159
Date Sampled:	12/10/2007
Date Analyzed:	1/8/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q1181 (ST-04-121007-2)
AMS Sample ID:	29601

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These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

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AMS, Inc. Technical Director

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Laboratory No. E87956

QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	07-159
Project Title:	New Bedford Harbor WQM	Date Sampled:	12/10/2007
Project Number:	G606422	Date Analyzed:	1/8/2008
Client Sample ID:	Q1177 (ST-02-121007-2)	Matrix:	Sediment
AMS Sample ID:	29599	Method:	ASTM D 422
		Batch:	010808-01G

Particle Diameter Range (mm)	U.S. Standard Sieve Mesh #	Size Class	Sample Result (%)	Duplicate Result (%)	RPD (%)	Data Qualifier	QC Limits (% RPD)
4.76	No. 4	Gravel	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.06	0.05	0.00		≤ 25
0.074	No. 200	Fine Sand	1.34	1.22	9.37		≤ 25
<0.074 - 0.005	Hydrometer	Silt	46.77	46.98	0.45		≤ 25
<0.005	Hydrometer	Clay	51.83	51.75	0.15		≤ 25

Samples in Batch: 29596 29598 29600
29597 29599 29601

Qualifiers: Q - RPD value outside Quality Control Limits
I - Insufficient sample material to perform Quality Control Analyses

Soil Classification: Unified Soil Classification System (USCS) classifications are estimated in accordance with ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) unless the sample contains less than 5% fines (GW, GP, SW, and SP), or the Liquid Limit, Plastic Limit and Plasticity Index (Atterberg Limits) have been determined in accordance with ASTM D 4318. When these values have been determined the samples are definitively classified using ASTM D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

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Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	07-159
Project Number:	G606422	Date Sampled:	12/10/2007
Project Name:	New Bedford Harbor WQM	Date Received:	12/28/2007
Client Sample ID:	Q1173 (ST-01-121007-1)		
AMS Sample ID:	29596		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	11.85	%		0.01	0.03	EPA 9060A	Sediment	1/15/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

KS Davis, P.G.
AMS, Inc. Technical Director

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	07-159
Project Number:	G606422	Date Sampled:	12/10/2007
Project Name:	New Bedford Harbor WQM	Date Received:	12/28/2007
Client Sample ID:	Q1174 (ST-01-121007-2)		
AMS Sample ID:	29597		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	11.14	%		0.01	0.03	EPA 9060A	Sediment	1/15/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	07-159
Project Number:	G606422	Date Sampled:	12/10/2007
Project Name:	New Bedford Harbor WQM	Date Received:	12/28/2007
Client Sample ID:	Q1175 (ST-01-121007-3)		
AMS Sample ID:	29598		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	12.50	%		0.01	0.03	EPA 9060A	Sediment	1/15/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

KS Davis, P.G.
AMS, Inc. Technical Director

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	07-159
Project Number:	G606422	Date Sampled:	12/10/2007
Project Name:	New Bedford Harbor WQM	Date Received:	12/28/2007
Client Sample ID:	Q1177 (ST-02-121007-2)		
AMS Sample ID:	29599		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	10.44	%		0.01	0.03	EPA 9060A	Sediment	1/15/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	07-159
Project Number:	G606422	Date Sampled:	12/10/2007
Project Name:	New Bedford Harbor WQM	Date Received:	12/28/2007
Client Sample ID:	Q1179 (ST-03-121007-2)		
AMS Sample ID:	29600		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	9.72	%		0.01	0.03	EPA 9060A	Sediment	1/15/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	07-159
Project Number:	G606422	Date Sampled:	12/10/2007
Project Name:	New Bedford Harbor WQM	Date Received:	12/28/2007
Client Sample ID:	Q1181 (ST-04-121007-2)		
AMS Sample ID:	29601		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	10.53	%		0.01	0.03	EPA 9060A	Sediment	1/15/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

KS Davis, P.G.
AMS, Inc. Technical Director

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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	07-159
Project Number:	G606422	Date Analyzed:	1/15/2008
Project Name:	New Bedford Harbor WQM	Batch ID:	011508-02T
Matrix:	Sediment		
Method:	EPA 9060A		

Method Blank (Batch Continuing Blank (CB)), Continuing Calibration Verification (CCV) and Independent Continuing Calibration Verification (ICCV) Results:

AMS Sample ID	Result (%)	CCV Conc. (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
CB-02	0.01	0.01	--	**U**	0.01	0.03	≤ 0.03
CCV-02	3.14	3.23	2.83		0.01	0.03	≤ 5 RPD
ICCV-02	2.06	2.00	2.96		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits
29599	10.44	10.31	1.25		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID):

29591	29594	29597	29600
29592	29595	29598	29601
29593	29596	29599	

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

KS Davis, P.G.
AMS, Inc. Technical Director

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QUALITY CONTROL

Client: Battelle
Project Number: G606422
Project Name: New Bedford Harbor WQM

AMS Project Number: 07-159

Data Qualifiers:

U	Undetected at the Limit of Detection (LOD): The associated value is the Limit of Detection, adjusted by any dilution factor used in the analysis.
J	The analyte was positively identified, but was below the Limit of Quantitation (LOQ). The quantitation is an estimate.
B	Blank contamination: The analyte was detected above one-half the LOD in an associated blank.
Q	One or more Quality Control criteria failed. Data usability should be carefully assessed by the Project Team.
I	Insufficient sample was provided to perform required Quality Control analyses and/or to meet method-specific sample volume recommendations.

Definitions:

LOD	The Limit of Detection (LOD) is determined by quantitative establishment of the Method Detection Limit (MDL), as defined in 40 CFR 136(b).
LOQ	The Limit of Quantitation (LOQ) is the minimum level, concentration or quantity of a target variable (target analyte) that can be quantitatively reported with a specified level of confidence. As defined in DoD QSM §D.1.2.2, the LOQ value must be a minimum of 3 times the LOD, although the specified level of confidence may have a lower quantitative value.

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

KS Davis, P.G.
AMS, Inc. Technical Director

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Chain of Custody

Battelle

Project Name: NBH Sed Traps
Project Number: G606422

Relinquished by: Mike McKee
Received by: Jeanne Leyfit

Date: 12-11-07
Date: 12-11-07

Field Sample ID	Analytical Lab Sample ID	Sample Date (ddmmmyy)	Sample Time (local)	Station ID	Analysis	No. of Containers	Size (liters)	Container Type	Preservative
ST-01-121007-1	Q1173	12-10-2007	0915	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-01-121007-2	Q1174	12-10-2007	0915	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-01-121007-3	Q1175	12-10-2007	0915	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-02-121007-1	Q1176	12-10-2007	0910	ST02	PCB, TOC, Grain Size	1	2	PE	NA
ST-02-121007-2	Q1177	12-10-2007	0910	ST02	PCB, TOC, Grain Size	1	2	PE	NA
ST-03-121007-1	Q1178	12-10-2007	0900	ST03	PCB, TOC, Grain Size	1	2	PE	
ST-03-121007-2	Q1179	12-10-2007	0900	ST03	PCB, TOC, Grain Size	1	2	PE	
ST-04-121007-1	Q1180	12-10-2007	0855	ST04	PCB, TOC, Grain Size	1	2	PE	NA
ST-04-121007-2	Q1181	12-10-2007	0855	ST04	PCB, TOC, Grain Size	1	2	PE	NA

This is the corrected COC. Please see the corrective action for details.

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Deployment No. 3

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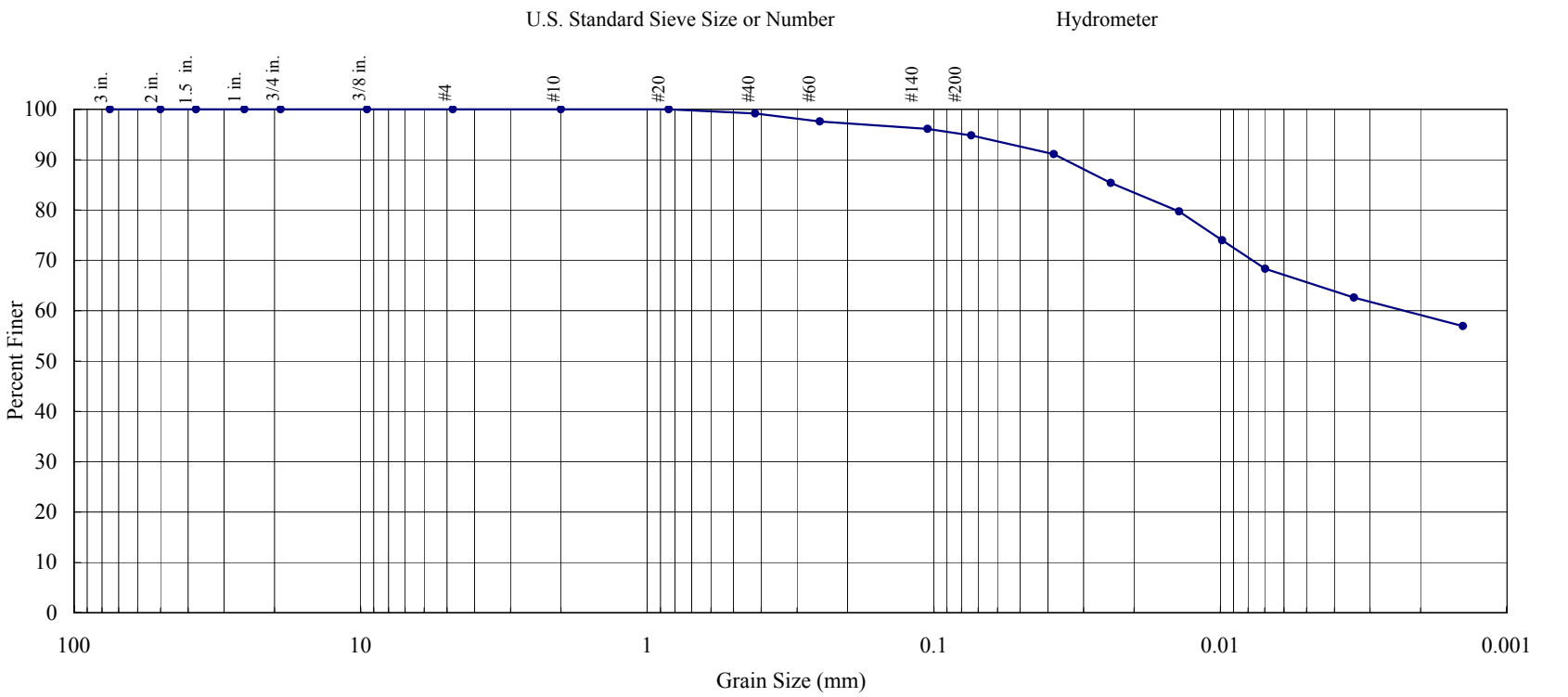
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.83	4.37	29.64	65.16

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
309										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C6
Date Sampled:	4/15/2008
Date Analyzed:	4/23/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q2744 (ST-01-041508-B)
AMS Sample ID:	8C6-1

APPLIED MARINE SCIENCES, INC.
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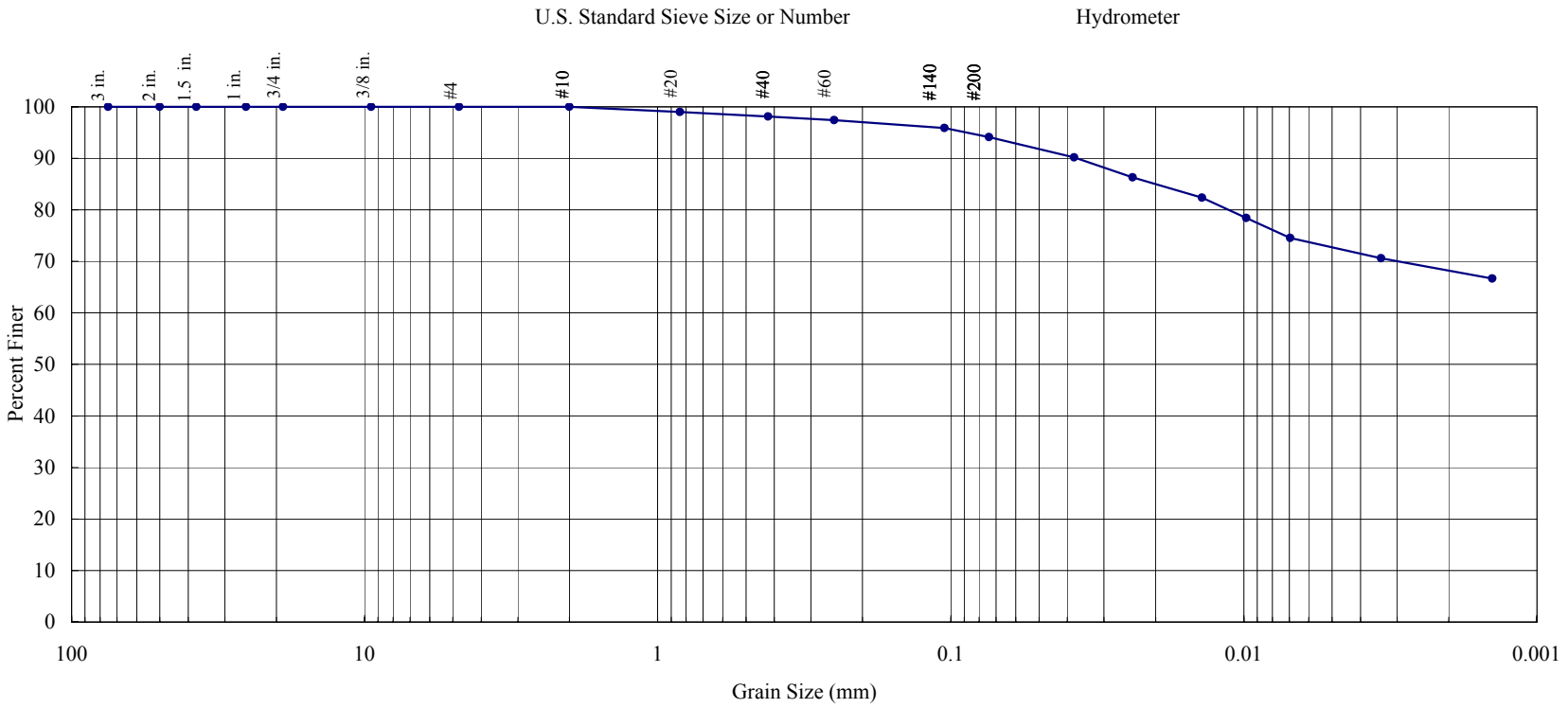
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	1.88	4.02	21.73	72.37

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
305										

Material Description

Fat Clay ("CH"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C6
Date Sampled:	4/15/2008
Date Analyzed:	4/23/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q2745 (ST-01-041508-C)
AMS Sample ID:	8C6-2

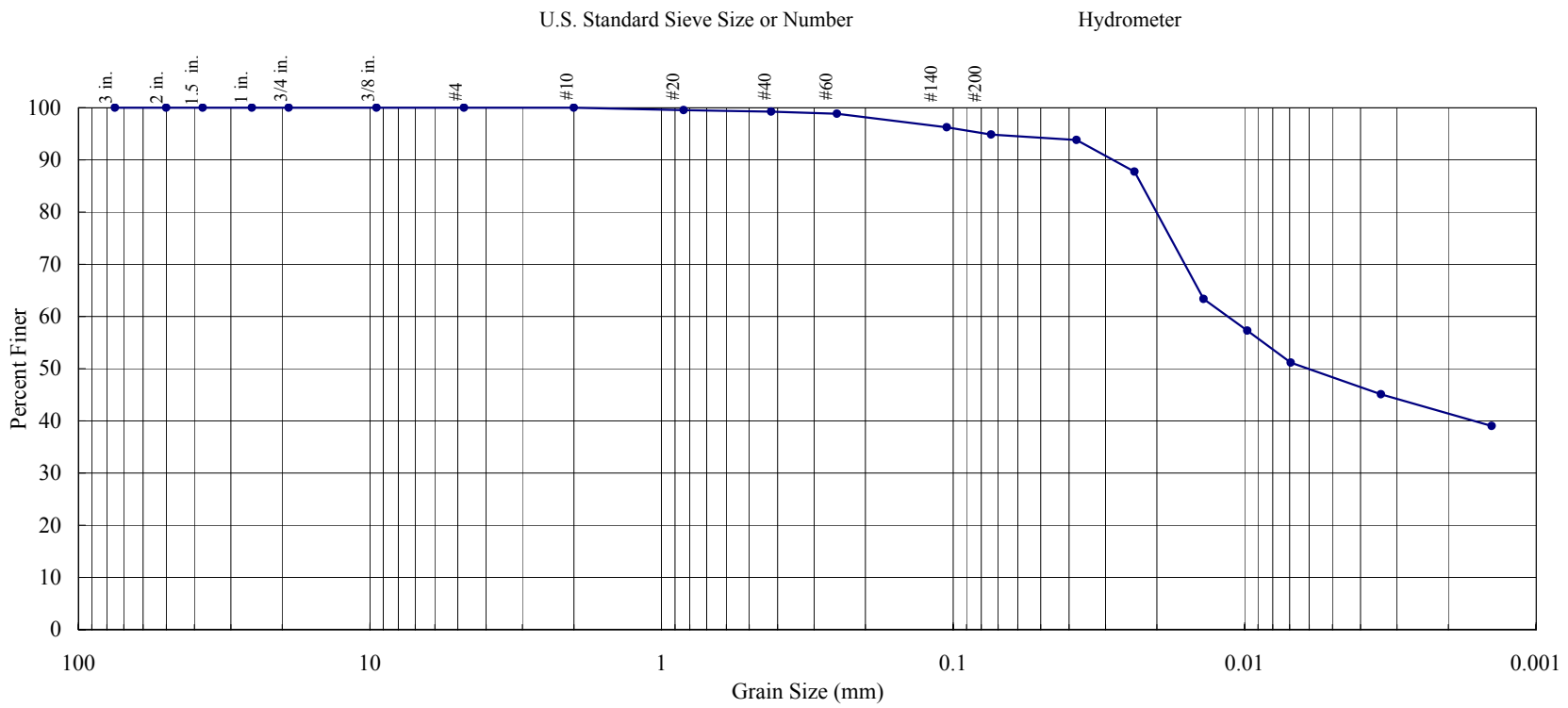
APPLIED MARINE SCIENCES, INC.
502 N. Hwy 3, Suite B
League City, TX 77573
281.554.7272 Tel.
281.554.6356 Fax

These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis
AMS, Inc. Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.75	4.41	47.00	47.84

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
316										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C6
Date Sampled:	4/15/2008
Date Analyzed:	4/23/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q2747 (ST-02-041508-B)
AMS Sample ID:	8C6-3

APPLIED MARINE SCIENCES, INC.
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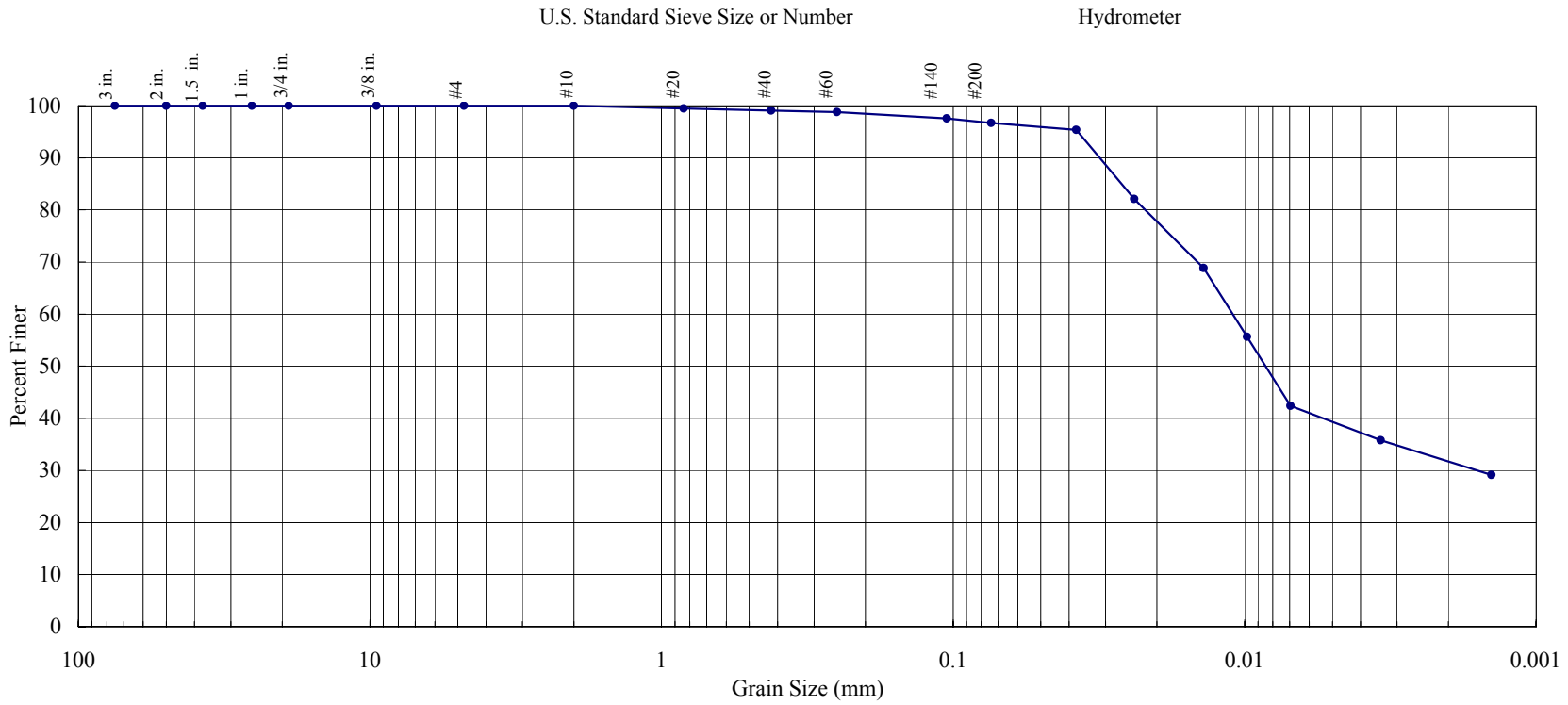
Jennifer D. Davis
AMS, Inc. Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.90	2.41	57.96	38.73

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
272										

Material Description

Elastic Silt ("MH"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C6
Date Sampled:	4/15/2008
Date Analyzed:	4/23/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q2749 (ST-03-041508-B)
AMS Sample ID:	8C6-4

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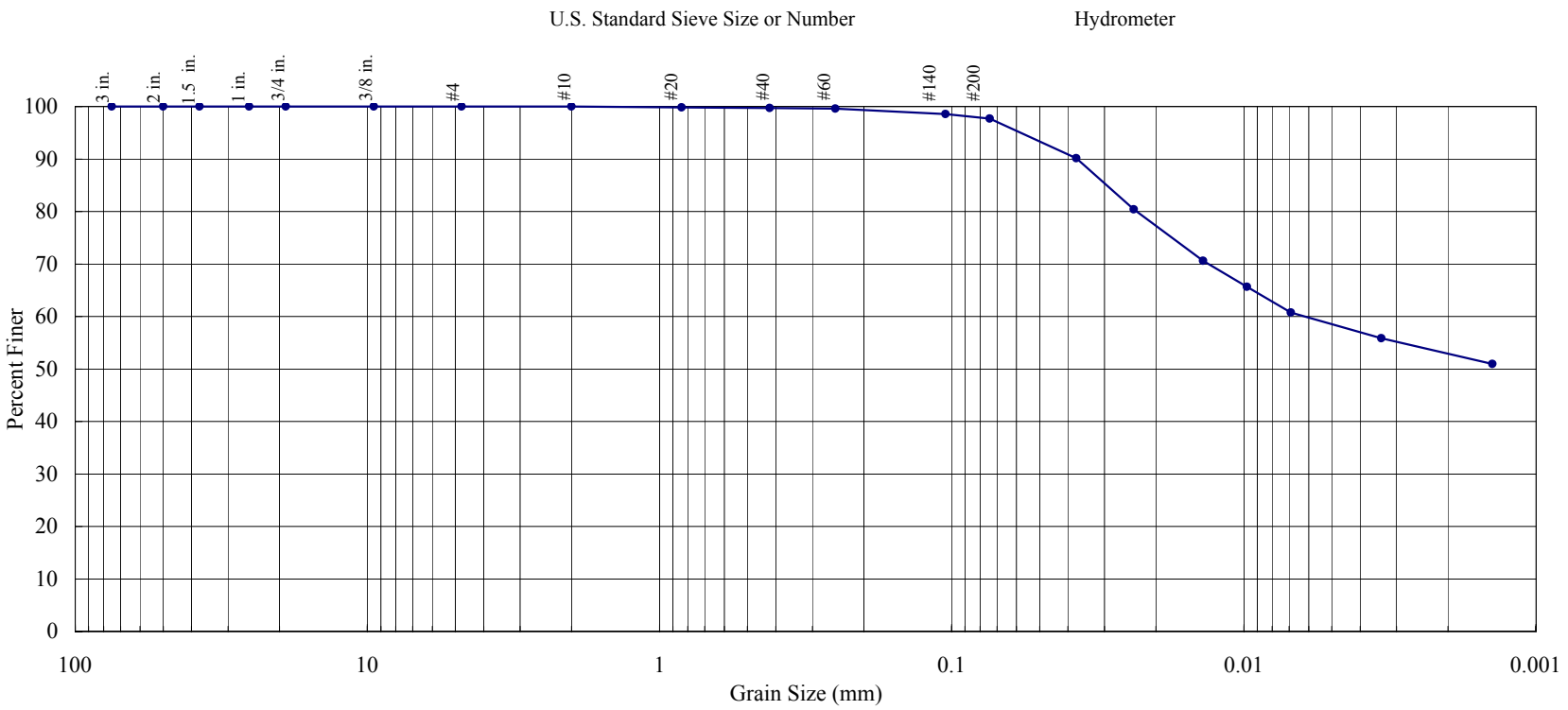
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.28	2.02	39.58	58.12

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
289										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C6
Date Sampled:	4/15/2008
Date Analyzed:	4/23/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q2751 (ST-04-041508-B)
AMS Sample ID:	8C6-5

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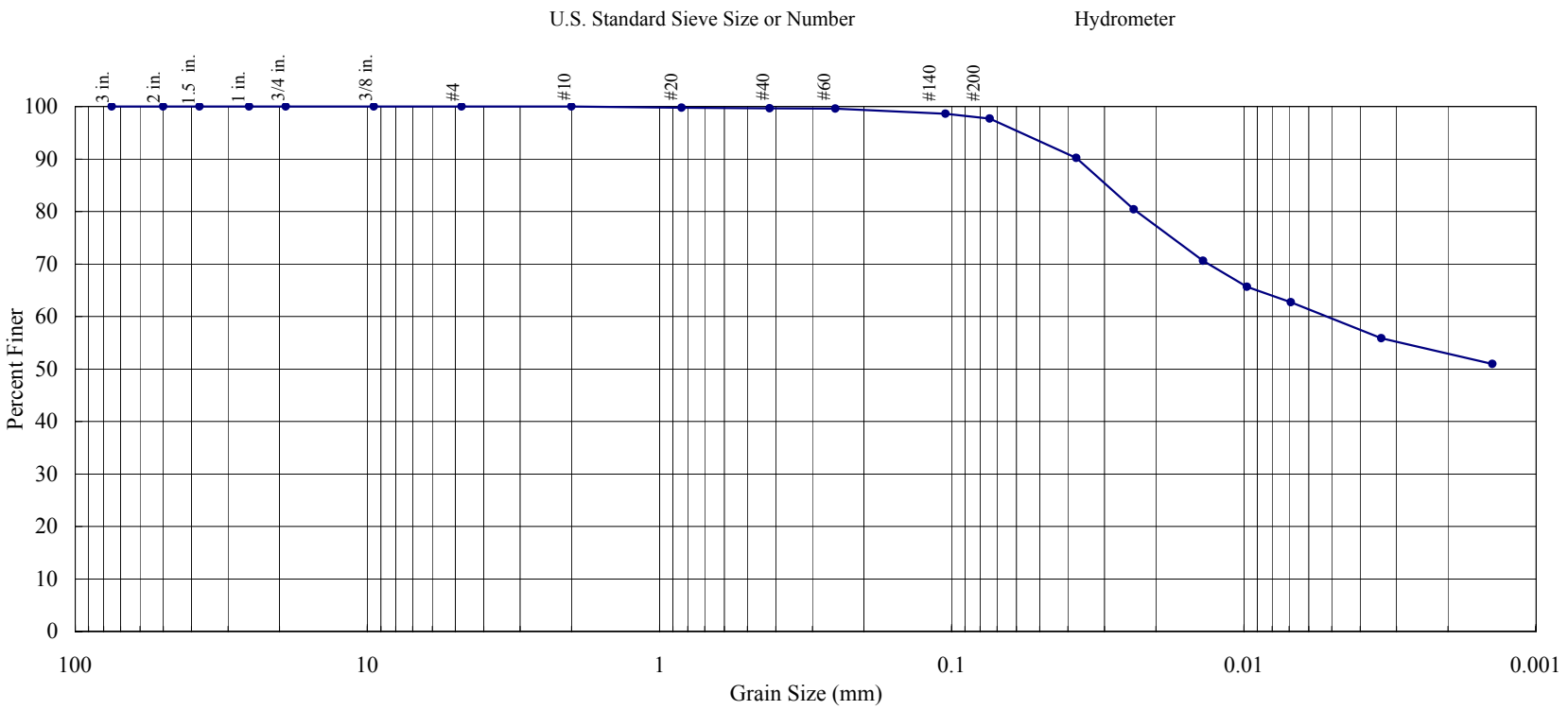
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.35	1.95	38.68	59.02

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
289										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C6
Date Sampled:	4/15/2008
Date Analyzed:	4/23/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q2751 (ST-04-041508-B)
AMS Sample ID:	8C6-5Q

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Jennifer D. Davis
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Laboratory No. E87956

QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C6
Project Title:	New Bedford Harbor Sed Traps	Date Sampled:	4/15/2008
Project Number:	G606422	Date Analyzed:	4/23/2008
Client Sample ID:	Q2751 (ST-04-041508-B)	Matrix:	Sediment
AMS Sample ID:	8C6-5	Method:	ASTM D 422
		Batch:	042208-01G

Particle Diameter Range (mm)	U.S. Standard Sieve Mesh #	Size Class	Sample Result (%)	Duplicate Result (%)	RPD (%)	Data Qualifier	QC Limits (% RPD)
4.76	No. 4	Gravel	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.28	0.35	22.22		≤ 25
0.074	No. 200	Fine Sand	2.02	1.95	3.53		≤ 25
<0.074 - 0.005	Hydrometer	Silt	39.58	38.68	2.30		≤ 25
<0.005	Hydrometer	Clay	58.12	59.02	1.54		≤ 25

Samples in Batch: 8C6-1, 8C6-2, 8C6-3, 8C6-4, 8C6-5

Qualifiers:
Q - RPD value outside Quality Control Limits
I - Insufficient sample material to perform Quality Control Analyses

Soil Classification: Unified Soil Classification System (USCS) classifications are estimated in accordance with ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) unless the sample contains less than 5% fines (GW, GP, SW, and SP), or the Liquid Limit, Plastic Limit, and Plasticity Index (Atterberg Limits) have been determined in accordance with ASTM D 4318. When these values have been determined the samples are definitively classified using ASTM D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

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Laboratory No. E87956

Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C6
Project Number:	G606422-07DUXCHE	Date Sampled:	4/15/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	4/22/2008
Client Sample ID:	Q2744 (ST-01-041508-B)		
AMS Sample ID:	8C6-1		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	13.05	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Jennifer D. Davis
AMS, Inc. Project Manager

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C6
Project Number:	G606422-07DUXCHE	Date Sampled:	4/15/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	4/22/2008
Client Sample ID:	Q2745 (ST-01-041508-C)		
AMS Sample ID:	8C6-2		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	12.66	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Jennifer D. Davis
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Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C6
Project Number:	G606422-07DUXCHE	Date Sampled:	4/15/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	4/22/2008
Client Sample ID:	Q2747 (ST-02-041508-B)		
AMS Sample ID:	8C6-3		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	12.61	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C6
Project Number:	G606422-07DUXCHE	Date Sampled:	4/15/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	4/22/2008
Client Sample ID:	Q2749 (ST-03-041508-B)		
AMS Sample ID:	8C6-4		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	9.18	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C6
Project Number:	G606422-07DUXCHE	Date Sampled:	4/15/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	4/22/2008
Client Sample ID:	Q2751 (ST-04-041508-B)		
AMS Sample ID:	8C6-5		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	10.57	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Jennifer D. Davis
AMS, Inc. Project Manager

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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C6
Project Number:	G606422-07DUXCHE	AMS SOP Number:	2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed:	5/1/2008
Matrix:	Sediment	Batch ID:	050108-01T
Method:	EPA 9060A		

Method Blank (Batch Continuing Blank (CB)), Continuing Calibration Verification (CCV) and Independent Continuing Calibration Verification (ICCV) Results:

AMS Sample ID	Result (%)	CCV Conc. (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
CB-01	0.01	0.01	--	U	0.01	0.03	≤ 0.03
CCV-01	3.16	3.23	2.19		0.01	0.03	≤ 5 RPD
ICCV-01	2.07	2.00	3.44		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits
8C6-5	10.57	10.10	4.55		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 8C6-1, 8C6-2, 8C6-3, 8C6-4, 8C6-5

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

Jennifer D. Davis
AMS, Inc. Project Manager

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Laboratory No. E87956

Applied Marine Sciences, Inc.

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QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C6
AMS SOP Number: 2201

Data Qualifiers:

U	Undetected at the Limit of Detection (LOD): The associated value is the Limit of Detection, adjusted by any dilution factor used in the analysis.
J	The analyte was positively identified, but was below the Limit of Quantitation (LOQ). The quantitation is an estimate.
B	Blank contamination: The analyte was detected above one-half the LOD in an associated blank.
Q	One or more Quality Control criteria failed. Data usability should be carefully assessed by the Project Team.
I	Insufficient sample was provided to perform required Quality Control analyses and/or to meet method-specific sample volume recommendations.

Definitions:

LOD	The Limit of Detection (LOD) is determined by quantitative establishment of the Method Detection Limit (MDL), as defined in 40 CFR 136(b).
LOQ	The Limit of Quantitation (LOQ) is the minimum level, concentration or quantity of a target variable (target analyte) that can be quantitatively reported with a specified level of confidence. As defined in DoD QSM §D.1.2.2, the LOQ value must be a minimum of 3 times the LOD, although the specified level of confidence may have a lower quantitative value.

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

Jennifer D. Davis
AMS, Inc. Project Manager

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Laboratory No. E87956

Chain of Custody

Battelle

Project Name: NBH Sed Traps
Project Number: G606422

Relinquished by: Mike McKee
Received by: Jeannie Seyfert

Date: 04-16-08
Date: 4-17-08

Field Sample ID	Analytical Lab Sample ID	Sample Date (ddmmmyy)	Sample Time (local)	Station ID	Analysis[1]	No. of Containers	Size (liters)	Container Type	Preservative
ST-01-041508-A	Q2743	04-15-2008	1556	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-01-041508-B	Q2744	04-15-2008	1556	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-01-041508-C	Q2745	04-15-2008	1556	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-02-041508-A	Q2746	04-15-2008	1620	ST02	PCB, TOC, Grain Size	1	2	PE	NA
ST-02-041508-B	Q2747	04-15-2008	1620	ST02	PCB, TOC, Grain Size	1	2	PE	NA
ST-03-041508-A	Q2748	04-15-2008	1438	ST03	PCB, TOC, Grain Size	1	2	PE	NA
ST-03-041508-B	Q2749	04-15-2008	1438	ST03	PCB, TOC, Grain Size	1	2	PE	NA
ST-04-041508-A	Q2750	04-15-2008	1637	ST04	PCB, TOC, Grain Size	1	2	PE	NA
ST-04-041508-B	Q2751	04-15-2008	1637	ST04	PCB, TOC, Grain Size	1	2	PE	NA

[1] All sediment trap samples will be allowed to settle overnight at 4°C. On the following day, overlying water will be decanted and remaining sediment slurry will be centrifuged to remove excessive water. The weight of each centrifuged sample will be weighed to assess reproducibility of total mass at each location. PCB, TOC, and grain size analyses will be conducted on 1 of 2 samples at ST-02, 03, and 04. PCB, TOC, and grain size analyses will be conducted on 2 of 3 samples collected at ST-01. Samples designated for PCB analysis will be frozen until sample analysis starts. Samples designated for TOC and grain size analyses will be shipped to Applied Marine Sciences located in League City, TX.

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Surface Sampling Event No. 2

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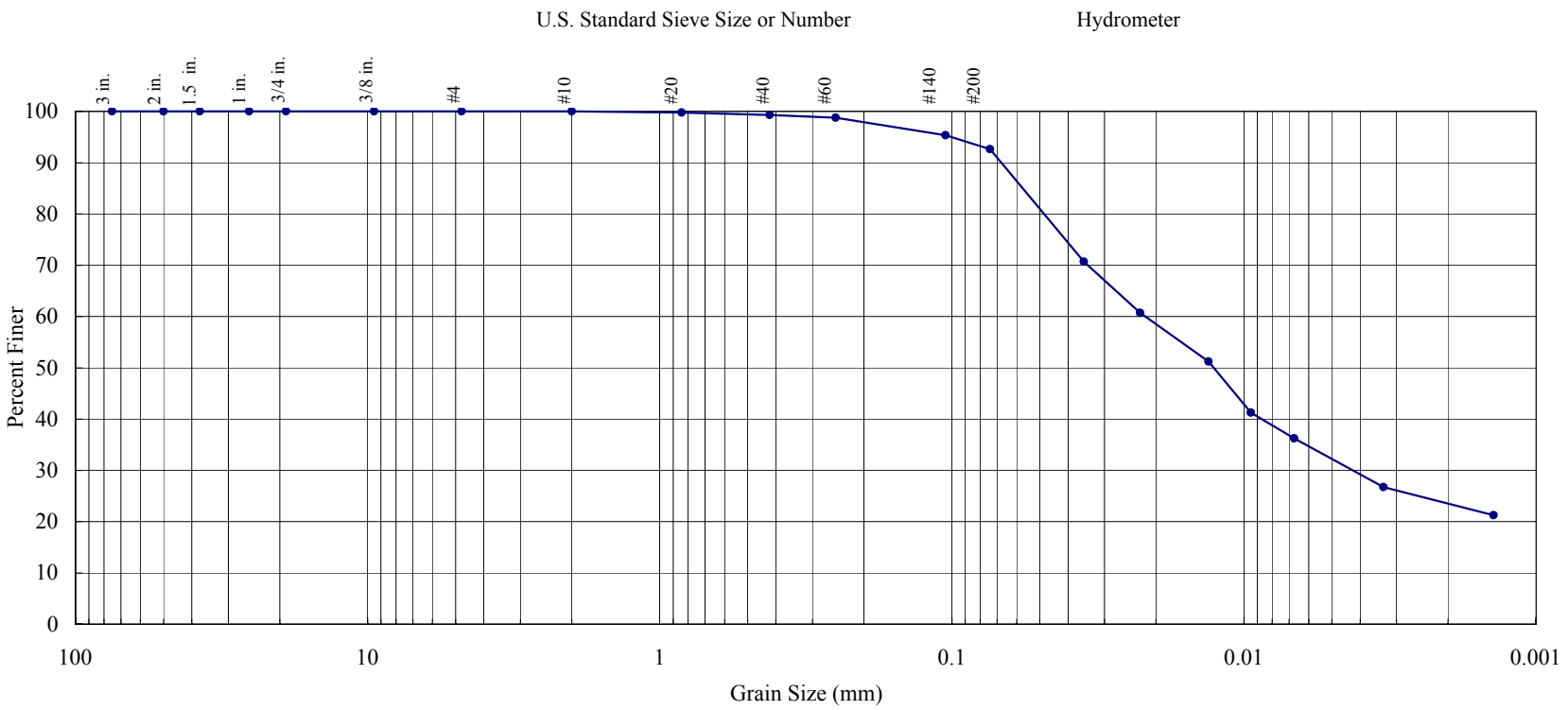
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.68	6.67	61.27	31.38

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
237										

Material Description

Elastic Silt ("MH"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C7
Date Sampled:	4/22/2008
Date Analyzed:	4/28/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	SS01-042208
AMS Sample ID:	8C7-1

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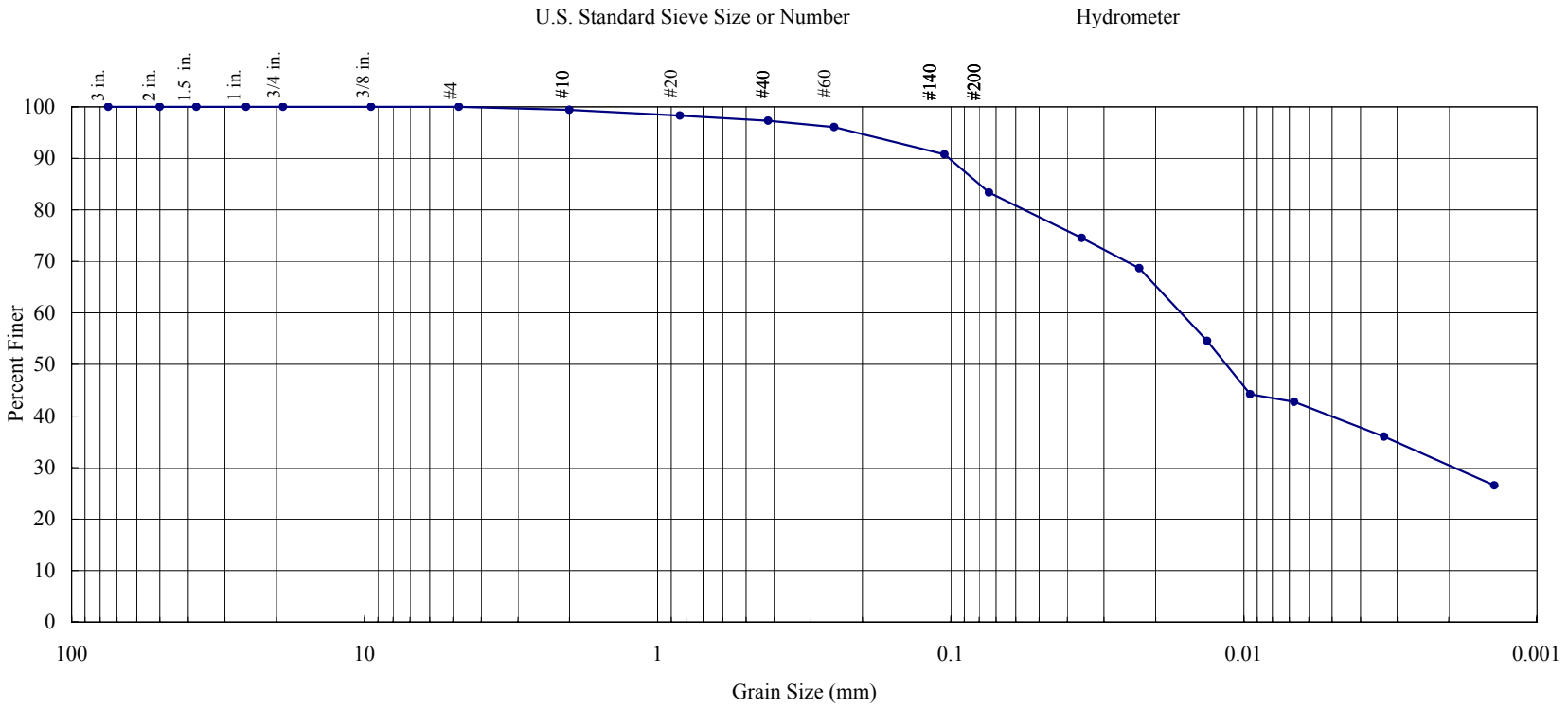
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.57	2.15	13.91	44.07	39.30

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
244										

Material Description

Elastic Silt with Sand ("MH"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C7
Date Sampled:	4/22/2008
Date Analyzed:	4/28/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	SS02-042208
AMS Sample ID:	8C7-2

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AMS, Inc. Project Manager

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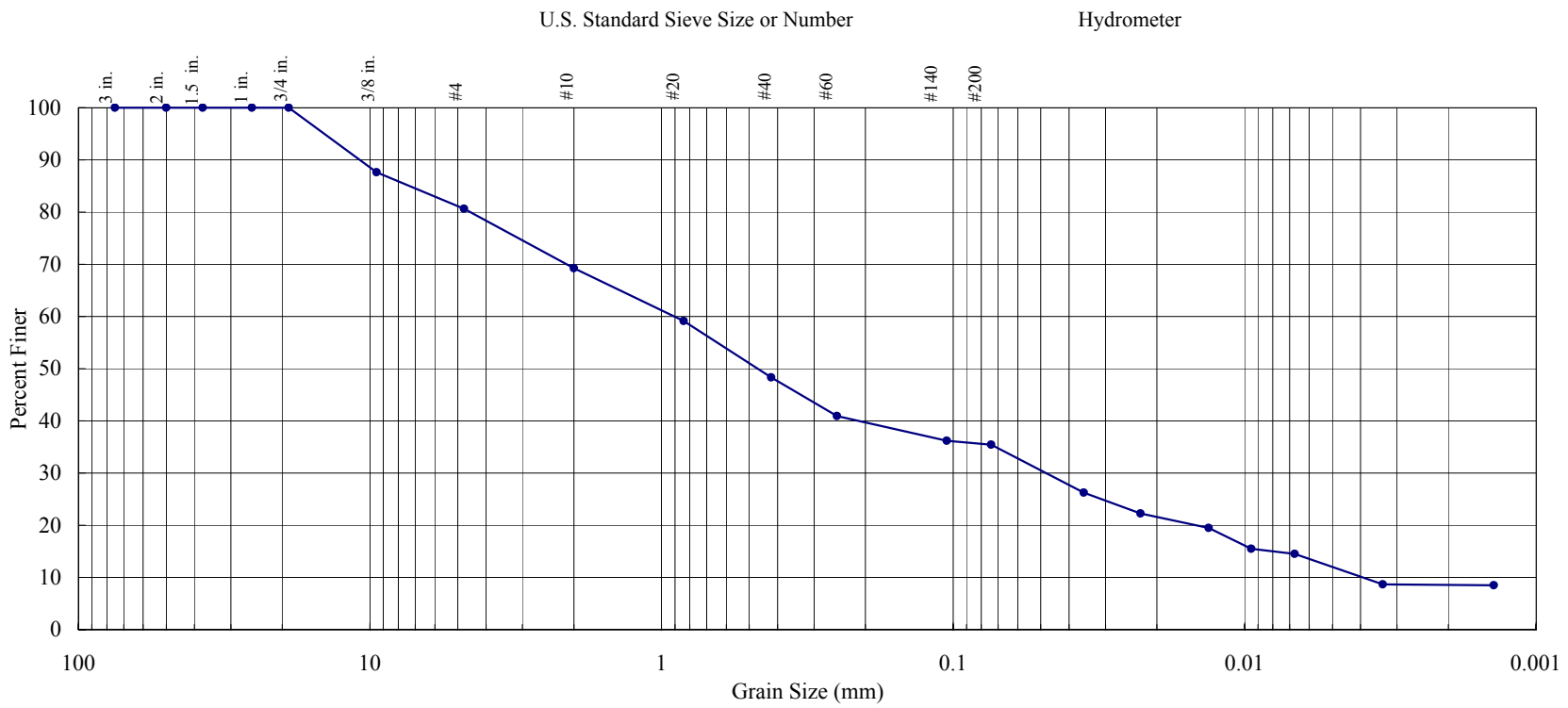
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
19.38	11.40	20.92	12.87	23.92	11.51

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
51										

Material Description

Silty Sand with Gravel ("SM"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C7
Date Sampled:	4/22/2008
Date Analyzed:	4/28/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	SS04-042208
AMS Sample ID:	8C7-4

APPLIED MARINE SCIENCES, INC.
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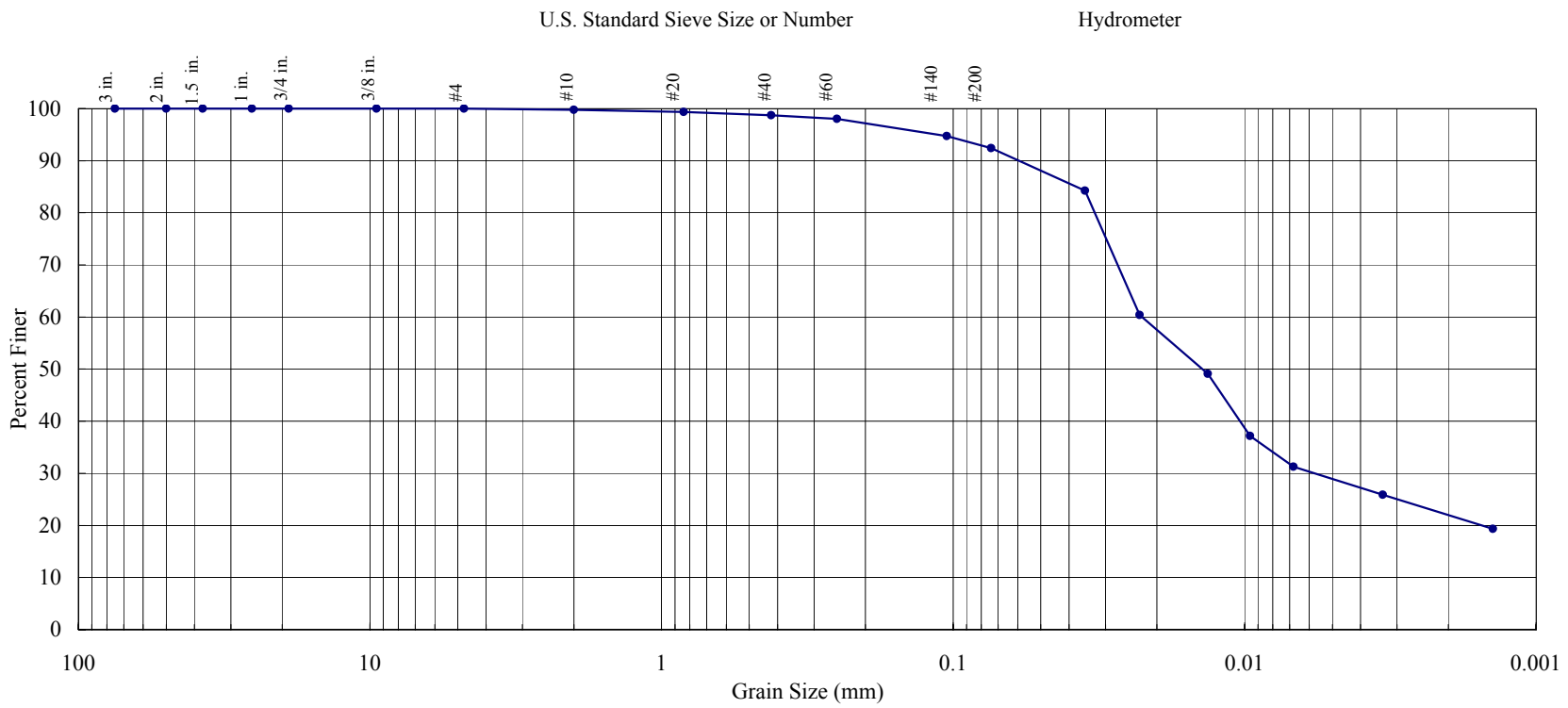
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.24	1.05	6.30	63.96	28.45

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
287										

Material Description

Elastic Silt ("MH"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C7
Date Sampled:	4/22/2008
Date Analyzed:	4/28/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	SS01-042208-dup
AMS Sample ID:	8C7-5

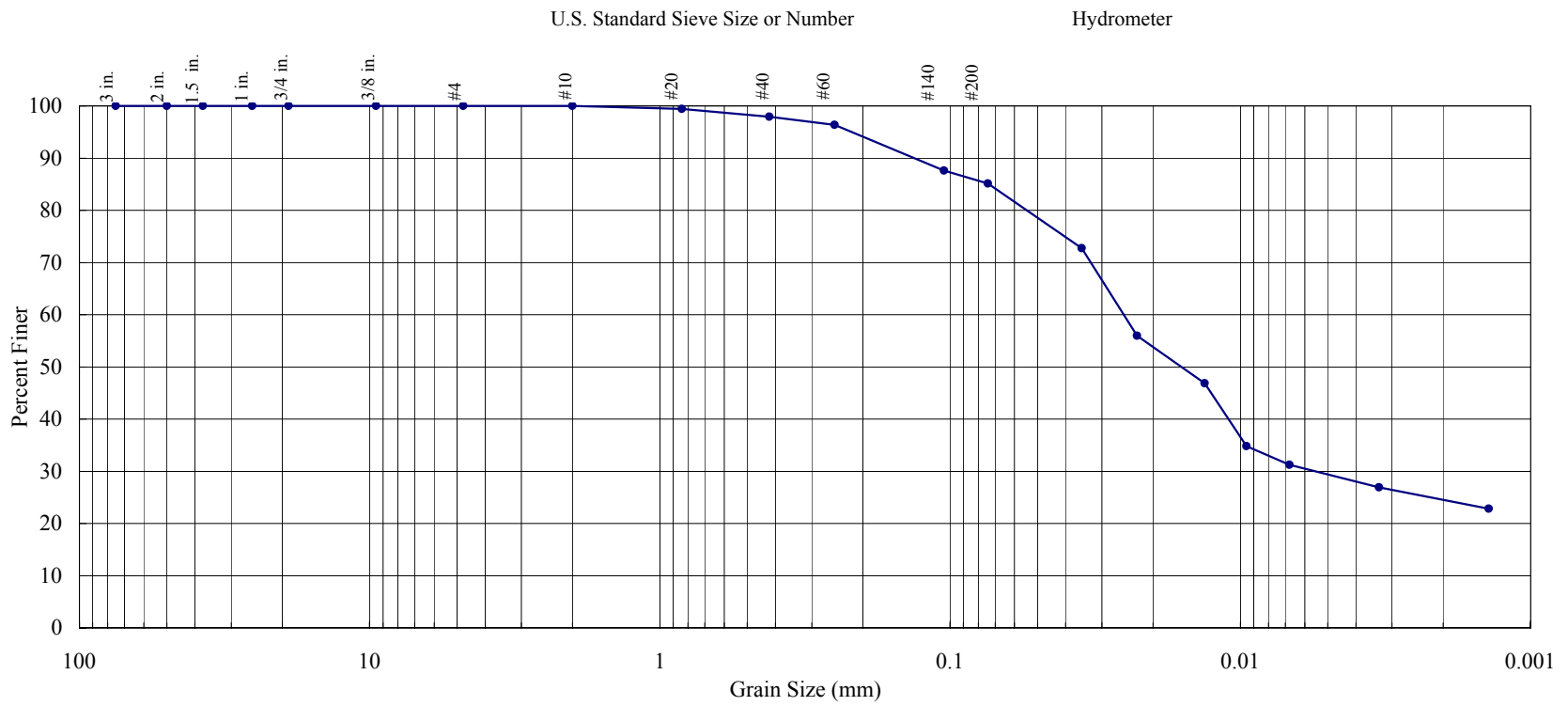
APPLIED MARINE SCIENCES, INC.
502 N. Hwy 3, Suite B
League City, TX 77573
281.554.7272 Tel.
281.554.6356 Fax

These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis
AMS, Inc. Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	2.09	12.78	56.13	29.00

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
208										

Material Description

Elastic Silt ("MH"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C7
Date Sampled:	4/22/2008
Date Analyzed:	4/28/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	SS03-042208
AMS Sample ID:	8C7-3

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Jennifer D. Davis
AMS, Inc. Project Manager

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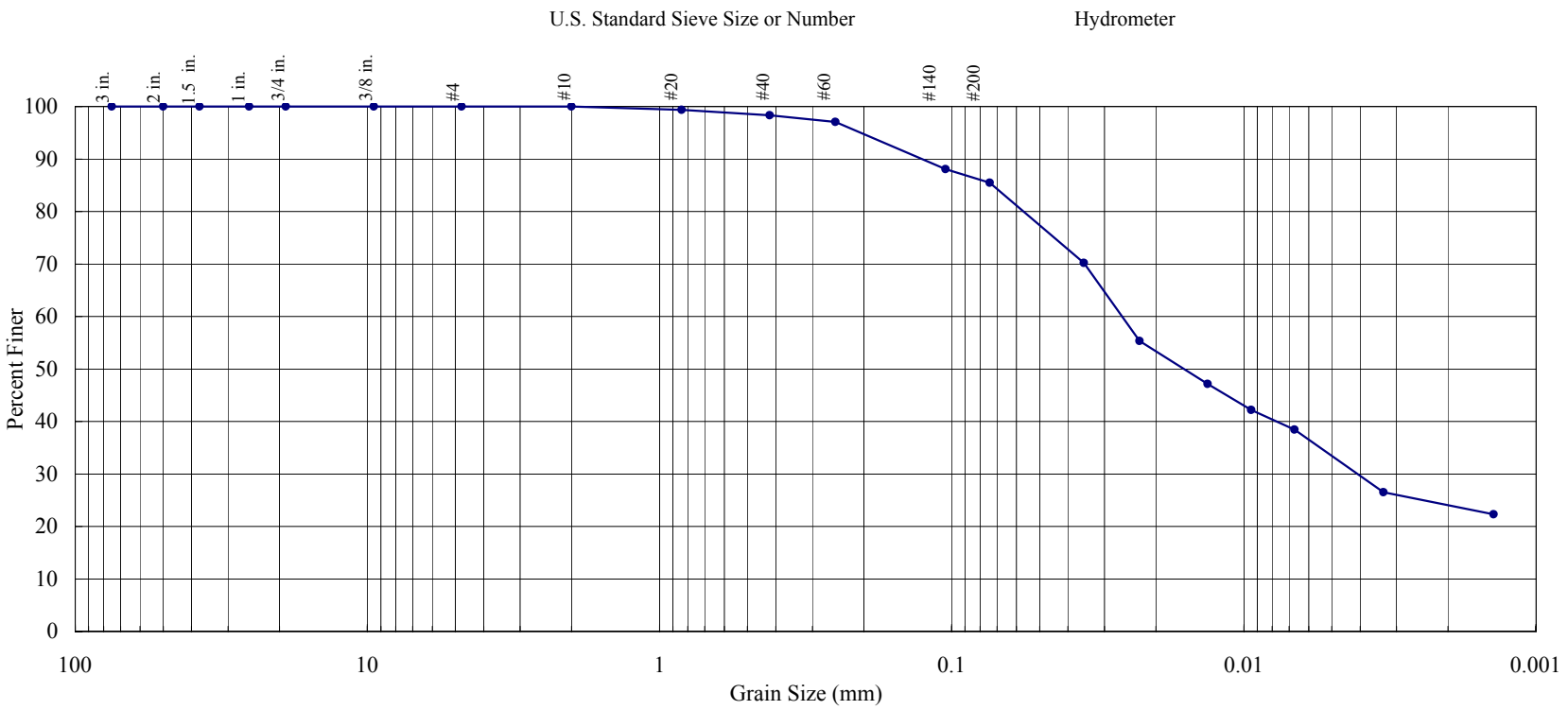
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	1.68	12.85	53.05	32.42

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
208										

Material Description

Elastic Silt ("MH"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C7
Date Sampled:	4/22/2008
Date Analyzed:	4/28/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	SS03-042208
AMS Sample ID:	8C7-3Q

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Jennifer D. Davis
AMS, Inc. Project Manager

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Laboratory No. E87956

QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C7
Project Title:	New Bedford Harbor Sed Traps	Date Sampled:	4/22/2008
Project Number:	G606422	Date Analyzed:	4/28/2008
Client Sample ID:	SS03-042208	Matrix:	Sediment
AMS Sample ID:	8C7-3	Method:	ASTM D 422
		Batch:	042708-01G

Particle Diameter Range (mm)	U.S. Standard Sieve Mesh #	Size Class	Sample Result (%)	Duplicate Result (%)	RPD (%)	Data Qualifier	QC Limits (% RPD)
4.76	No. 4	Gravel	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	2.09	1.68	21.75		≤ 25
0.074	No. 200	Fine Sand	12.78	12.85	0.55		≤ 25
<0.074 - 0.005	Hydrometer	Silt	56.13	53.05	5.64		≤ 25
<0.005	Hydrometer	Clay	29.00	32.42	11.14		≤ 25

Samples in Batch: 8C7-1, 8C7-2, 8C7-3, 8C7-4, 8C7-5

Qualifiers:
Q - RPD value outside Quality Control Limits
I - Insufficient sample material to perform Quality Control Analyses

Soil Classification: Unified Soil Classification System (USCS) classifications are estimated in accordance with ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) unless the sample contains less than 5% fines (GW, GP, SW, and SP), or the Liquid Limit, Plastic Limit, and Plasticity Index (Atterberg Limits) have been determined in accordance with ASTM D 4318. When these values have been determined the samples are definitively classified using ASTM D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C7
Project Number:	G606422-07DUXCHE	Date Sampled:	4/22/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	4/24/2008
Client Sample ID:	SS01-042208		
AMS Sample ID:	8C7-1		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	12.16	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Jennifer D. Davis
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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C7
Project Number:	G606422-07DUXCHE	Date Sampled:	4/22/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	4/24/2008
Client Sample ID:	SS02-042208		
AMS Sample ID:	8C7-2		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	9.31	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C7
Project Number:	G606422-07DUXCHE	Date Sampled:	4/22/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	4/24/2008
Client Sample ID:	SS01-042208-dup		
AMS Sample ID:	8C7-5		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	12.92	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C7
Project Number:	G606422-07DUXCHE	Date Sampled:	4/22/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	4/24/2008
Client Sample ID:	SS04-042208		
AMS Sample ID:	8C7-4		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	3.33	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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* TOC spike duplicate not analyzed every 10 samples

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Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C7
Project Number:	G606422-07DUXCHE	Date Sampled:	4/22/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	4/24/2008
Client Sample ID:	SS03-042208		
AMS Sample ID:	8C7-3		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	8.07	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C7
Project Number:	G606422-07DUXCHE	AMS SOP Number:	2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed:	5/1/2008
Matrix:	Sediment	Batch ID:	050108-02T
Method:	EPA 9060A		

Method Blank (Batch Continuing Blank (CB)), Continuing Calibration Verification (CCV) and Independent Continuing Calibration Verification (ICCV) Results:

AMS Sample ID	Result (%)	CCV Conc. (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
CB-02	0.01	0.01	--	U	0.01	0.03	≤ 0.03
CCV-02	3.16	3.23	2.19		0.01	0.03	≤ 5 RPD
ICCV-02	2.07	2.00	3.44		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits
8C7-3	8.07	8.14	0.86		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 8C7-1, 8C7-2, 8C7-5, 8C7-4, 8C7-3

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

Jennifer D. Davis
AMS, Inc. Project Manager

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Applied Marine Sciences, Inc.

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QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C7
AMS SOP Number: 2201

Data Qualifiers:

U	Undetected at the Limit of Detection (LOD): The associated value is the Limit of Detection, adjusted by any dilution factor used in the analysis.
J	The analyte was positively identified, but was below the Limit of Quantitation (LOQ). The quantitation is an estimate.
B	Blank contamination: The analyte was detected above one-half the LOD in an associated blank.
Q	One or more Quality Control criteria failed. Data usability should be carefully assessed by the Project Team.
I	Insufficient sample was provided to perform required Quality Control analyses and/or to meet method-specific sample volume recommendations.

Definitions:

LOD	The Limit of Detection (LOD) is determined by quantitative establishment of the Method Detection Limit (MDL), as defined in 40 CFR 136(b).
LOQ	The Limit of Quantitation (LOQ) is the minimum level, concentration or quantity of a target variable (target analyte) that can be quantitatively reported with a specified level of confidence. As defined in DoD QSM §D.1.2.2, the LOQ value must be a minimum of 3 times the LOD, although the specified level of confidence may have a lower quantitative value.

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

Jennifer D. Davis
AMS, Inc. Project Manager

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Battelle
The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
G606422	NBH Sed Trap

SAMPLERS: Signature: [signature]

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC Grain size	ACIDIFIED	PRESERVED	Total Number of Containers
04/22/08	0945	SS01-042208		station 1 sed grab								✓			
	1030	SS02-042208		station 2 sed grab								✓			
	0908	SS03-042208		station 3 sed grab								✓			
	0818	SS04-042208		station 4 sed grab								✓			
		~~SS04-0~~ MPM 04/23/08													
	1005	SS01-042208-DUP		station 1 sed grab - field duplicate								✓			

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	04/23/08	0800			
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

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Deployment No. 4

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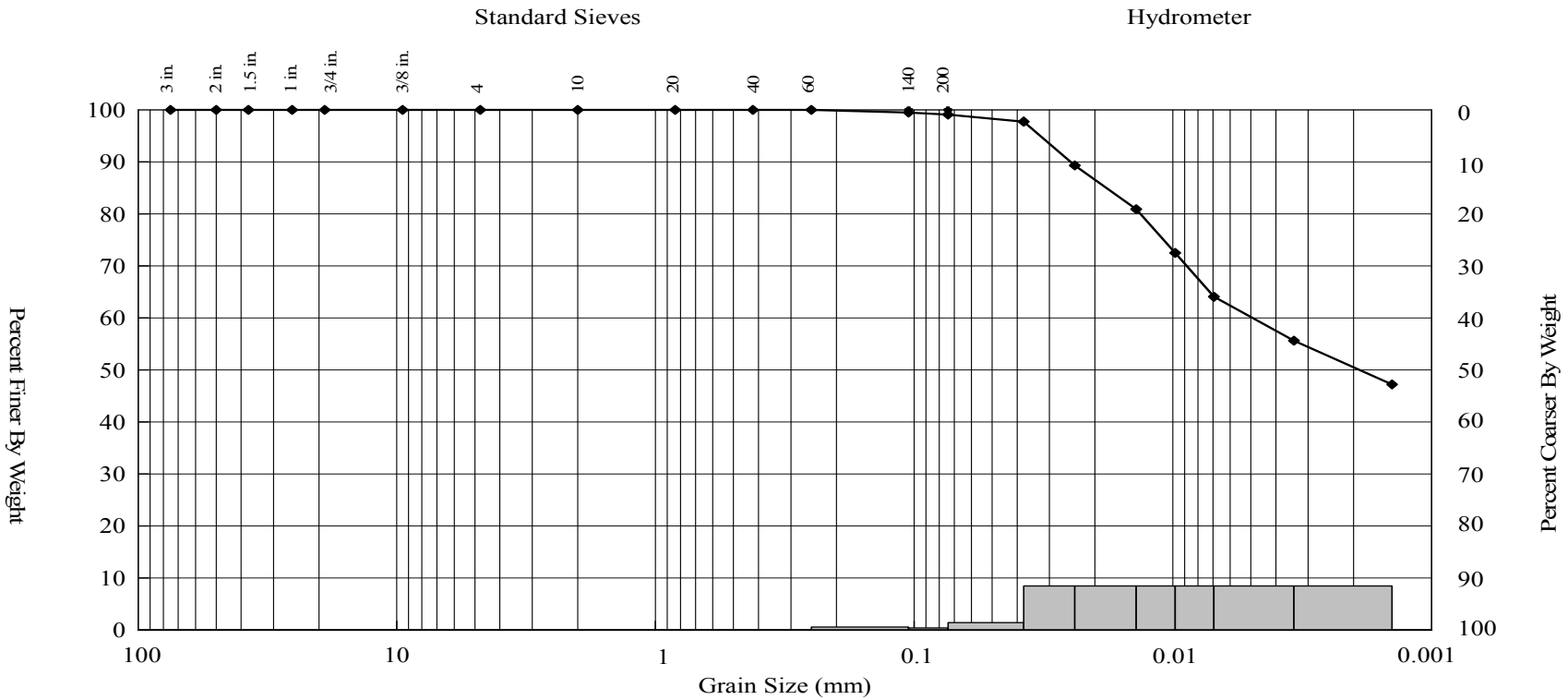
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.00	0.87	39.71	59.42

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
371										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C9
Date Sampled:	5/15/2008
Date Analyzed:	6/15/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q2880 (ST-04-051508-B)
AMS Sample ID:	8C9-1

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502 N. Hwy 3, Suite B
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Jennifer D. Davis
AMS, Inc. Project Manager

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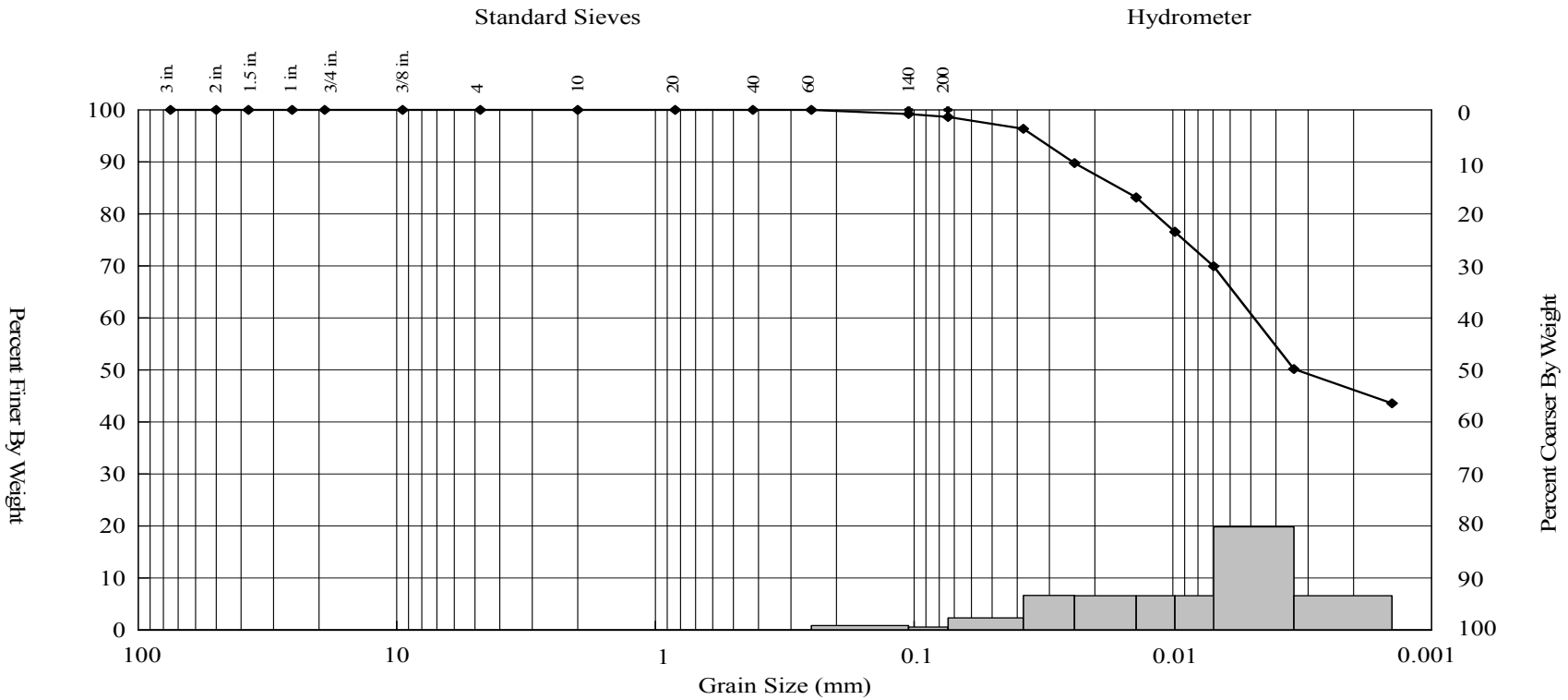
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.00	1.35	39.60	59.05

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
375										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C9
Date Sampled:	5/15/2008
Date Analyzed:	6/15/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q2882 (ST-03-051508-B)
AMS Sample ID:	8C9-2

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AMS, Inc. Project Manager

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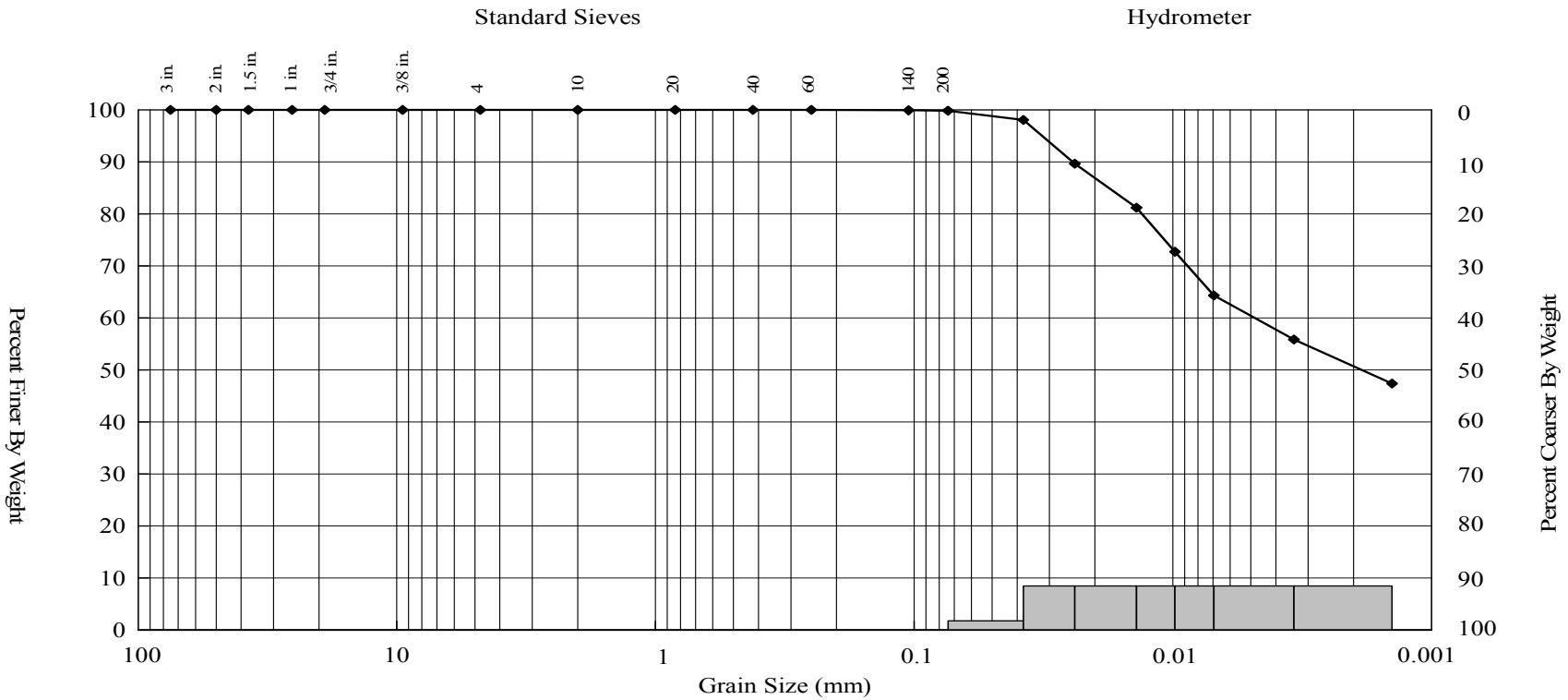
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.00	0.17	40.20	59.63

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
408										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C9
Date Sampled:	5/15/2008
Date Analyzed:	6/15/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q2884 (ST-02-051508-B)
AMS Sample ID:	8C9-3

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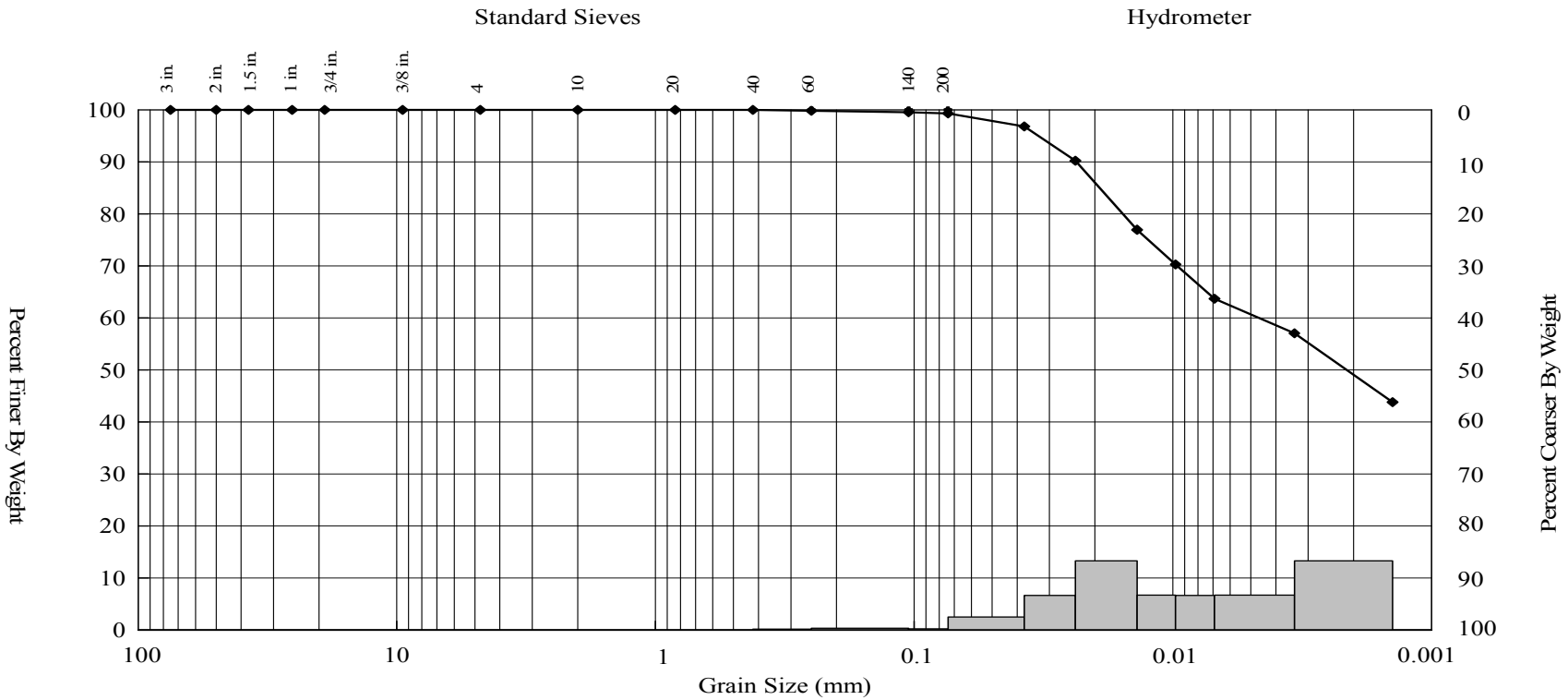
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.00	0.67	39.25	60.08

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
507										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C9
Date Sampled:	5/15/2008
Date Analyzed:	6/15/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q2886 (ST-01-051508-B)
AMS Sample ID:	8C9-4

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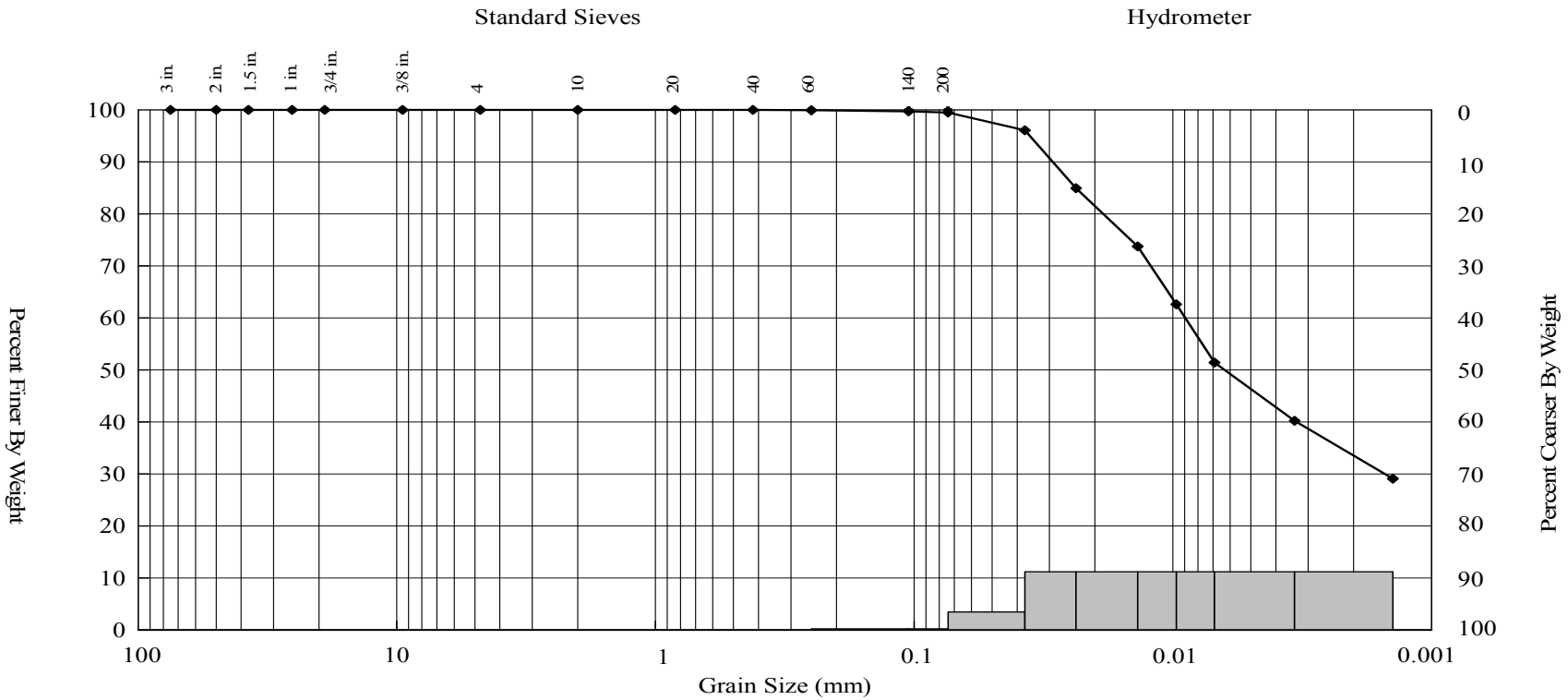
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.00	0.52	54.12	45.36

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
507										

Material Description

Elastic Silt ("MH"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C9
Date Sampled:	5/15/2008
Date Analyzed:	6/15/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q2887 (ST-01-051508-C)
AMS Sample ID:	8C9-5

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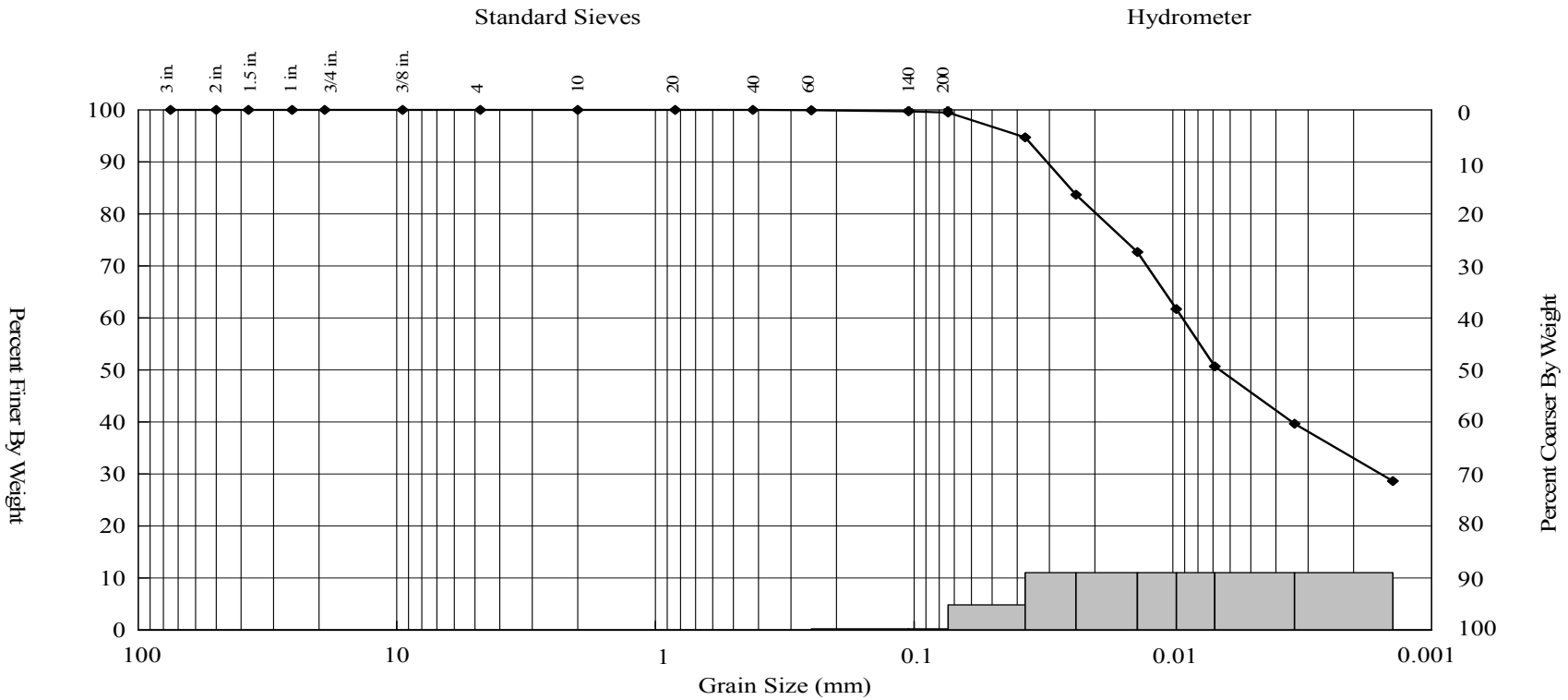
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.00	0.51	54.77	44.72

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
565										

Material Description

Elastic Silt ("MH"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C9
Date Sampled:	5/15/2008
Date Analyzed:	6/15/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q2887 (ST-01-051508-C)
AMS Sample ID:	8C9-5Q

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AMS, Inc. Project Manager

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Laboratory No. E87956

QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C9
Project Title:	New Bedford Harbor WQM	Date Sampled:	5/15/2008
Project Number:	G606422-07DUXCHE	Date Analyzed:	6/15/2008
Client Sample ID:	Q2887 (ST-01-051508-C)	Matrix:	Sediment
AMS Sample ID:	8C9-5	Method:	ASTM D 422
		Batch:	061508-01G

Particle Diameter Range (mm)	U.S. Standard Sieve Mesh #	Size Class	Sample Result (%)	Duplicate Result (%)	RPD (%)	Data Qualifier	QC Limits (% RPD)
4.76	No. 4	Gravel	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.00	0.00	0.00		≤ 25
0.074	No. 200	Fine Sand	0.52	0.51	1.94		≤ 25
<0.074 - 0.005	Hydrometer	Silt	54.12	54.77	1.19		≤ 25
<0.005	Hydrometer	Clay	45.36	44.72	1.42		≤ 25

Samples in Batch: 8C9-1 8C9-3 8C9-5
8C9-2 8C9-4

Qualifiers: Q - RPD value outside Quality Control Limits
I - Insufficient sample material to perform Quality Control Analyses

Soil Classification: Unified Soil Classification System (USCS) classifications are estimated in accordance with ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) unless the sample contains less than 5% fines (GW, GP, SW, and SP), or the Liquid Limit, Plastic Limit and Plasticity Index (Atterberg Limits) have been determined in accordance with ASTM D 4318. When these values have been determined the samples are definitively classified using ASTM D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

APPLIED MARINE SCIENCES, INC.
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281.554.7272 Tel.
281.554.6356 Fax

These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis
AMS, Inc. Project Manager

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Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C9
Project Number:	G606422-07DUXCHE	Date Sampled:	5/15/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	6/4/2008
Client Sample ID:	Q2880 (ST-04-051508-B)		
AMS Sample ID:	8C9-1		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	9.89	%		0.01	0.03	EPA 9060A	Sediment	6/18/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C9
Project Number:	G606422-07DUXCHE	Date Sampled:	5/15/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	6/4/2008
Client Sample ID:	Q2882 (ST-03-051508-B)		
AMS Sample ID:	8C9-2		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	11.72	%		0.01	0.03	EPA 9060A	Sediment	6/18/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C9
Project Number:	G606422-07DUXCHE	Date Sampled:	5/15/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	6/4/2008
Client Sample ID:	Q2884 (ST-02-051508-B)		
AMS Sample ID:	8C9-3		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	11.77	%		0.01	0.03	EPA 9060A	Sediment	6/18/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C9
Project Number:	G606422-07DUXCHE	Date Sampled:	5/15/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	6/4/2008
Client Sample ID:	Q2886 (ST-01-051508-B)		
AMS Sample ID:	8C9-4		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	16.36	%		0.01	0.03	EPA 9060A	Sediment	6/18/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C9
Project Number:	G606422-07DUXCHE	Date Sampled:	5/15/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	6/4/2008
Client Sample ID:	Q2887 (ST-01-051508-C)		
AMS Sample ID:	8C9-5		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	17.19	%		0.01	0.03	EPA 9060A	Sediment	6/18/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C9
Project Number:	G606422-07DUXCHE	AMS SOP Number:	2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed:	6/18/2008
Matrix:	Sediment	Batch ID:	061808-01T
Method:	EPA 9060A		

Method Blank (Batch Continuing Blank (CB)), Continuing Calibration Verification (CCV) and Independent Continuing Calibration Verification (ICCV) Results:

AMS Sample ID	Result (%)	CCV Conc. (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
CB-01	0.01	0.01	--	U	0.01	0.03	≤ 0.03
CCV-01	3.12	3.23	3.46		0.01	0.03	≤ 5 RPD
ICCV-01	2.06	2.00	2.96		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits
8C9-5	17.19	17.94	4.27		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 8C9-1, 8C9-2, 8C9-3, 8C9-4, 8C9-5

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

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QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C9
AMS SOP Number: 2201

Data Qualifiers:

U	Undetected at the Limit of Detection (LOD): The associated value is the Limit of Detection, adjusted by any dilution factor used in the analysis.
J	The analyte was positively identified, but was below the Limit of Quantitation (LOQ). The quantitation is an estimate.
B	Blank contamination: The analyte was detected above one-half the LOD in an associated blank.
Q	One or more Quality Control criteria failed. Data usability should be carefully assessed by the Project Team.
I	Insufficient sample was provided to perform required Quality Control analyses and/or to meet method-specific sample volume recommendations.

Definitions:

LOD	The Limit of Detection (LOD) is determined by quantitative establishment of the Method Detection Limit (MDL), as defined in 40 CFR 136(b).
LOQ	The Limit of Quantitation (LOQ) is the minimum level, concentration or quantity of a target variable (target analyte) that can be quantitatively reported with a specified level of confidence. As defined in DoD QSM §D.1.2.2, the LOQ value must be a minimum of 3 times the LOD, although the specified level of confidence may have a lower quantitative value.

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

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Battelle
The Business of Innovation

Chain of Custody

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Proj. No	Proj. Name
GG06422	Sediment Trap - NBH

SAMPLERS: Signature: Michael P McCann

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	LAB ~~BATTELLE~~ ID	FIELD ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC/Grain Size	ACIDIFIED	PRESERVED	Total Number of Containers
05/15/08	14:38	Q2879	ST-04-051508-A	4th sediment trap recovery station 04		✓						✓			
	↓	Q2880	ST-04-051508-B	station 04		✓						✓			
	14:59	Q2881	ST-03-051508-A	station 03		✓						✓			
	↓	Q2882	ST-03-051508-B	station 03		✓						✓			
	15:36	Q2883	ST-02-051508-A	station 02		✓						✓			
	↓	Q2884	ST-02-051508-B	station 02		✓						✓			
	15:52	Q2885	ST-01-051508-A	station 01		✓						✓			
		Q2886	ST-01-051508-B	station 01		✓						✓			
	↓	Q2887	ST-01-051508-C	station 01		✓						✓			

Relinquished by:	Date/Time	Received by:	Date/Time
Michael P McCann	05/16/08 1200	Jeannie Light	5/16/08 1200

Comments: After settling and decanting, all samples will be weighed for reproducibility. At station 01, 2 of 3 samples will be analyzed for PCB, TOC, & Grain Size. At stations 02, 03 & 04, 1 of 2 samples will be analyzed for PCB, TOC, & Grain Size.

ORIGINAL

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Deployment No. 5

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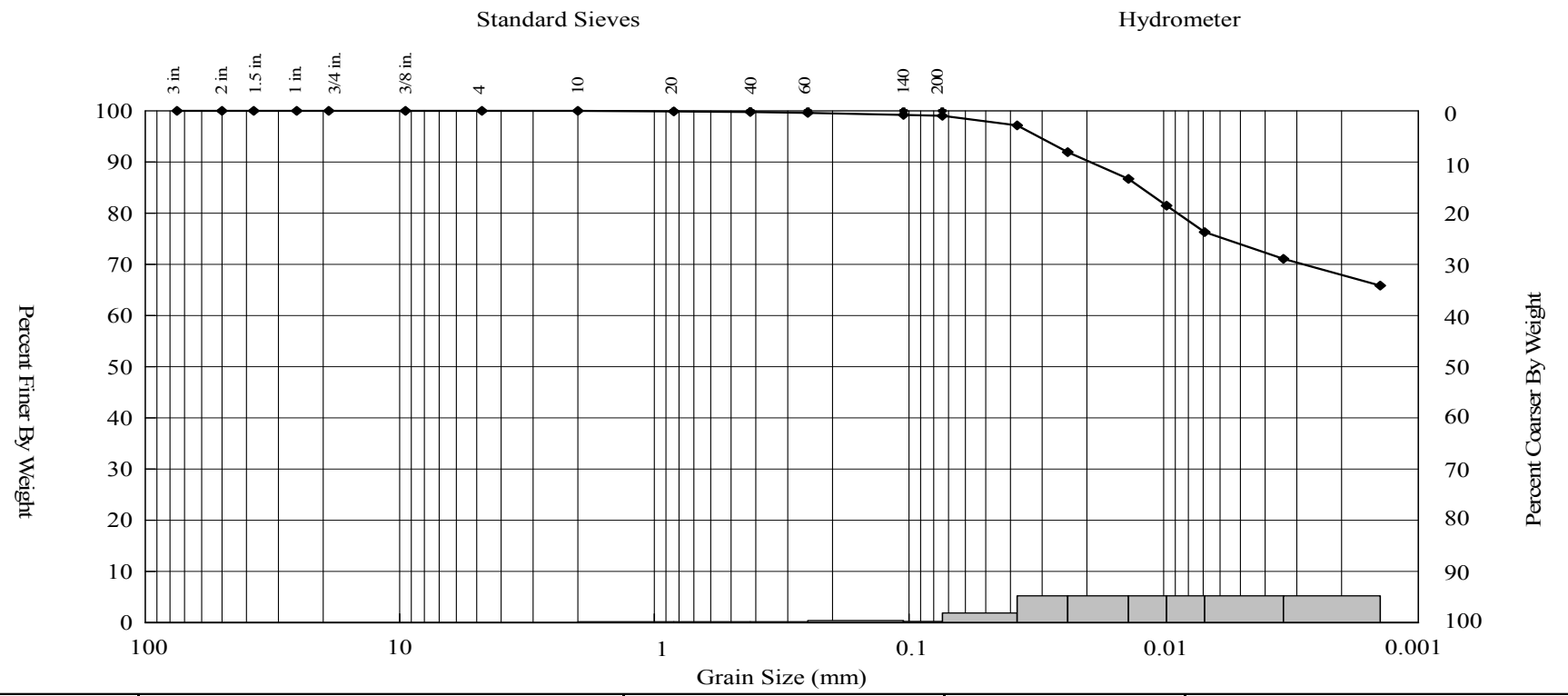
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.24	0.75	25.56	73.45

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
249										

Material Description

Fat Clay ("CH"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C13
Date Sampled:	6/11/2008
Date Analyzed:	7/12/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q3079 (ST-01-061108-B)
AMS Sample ID:	8C13-1

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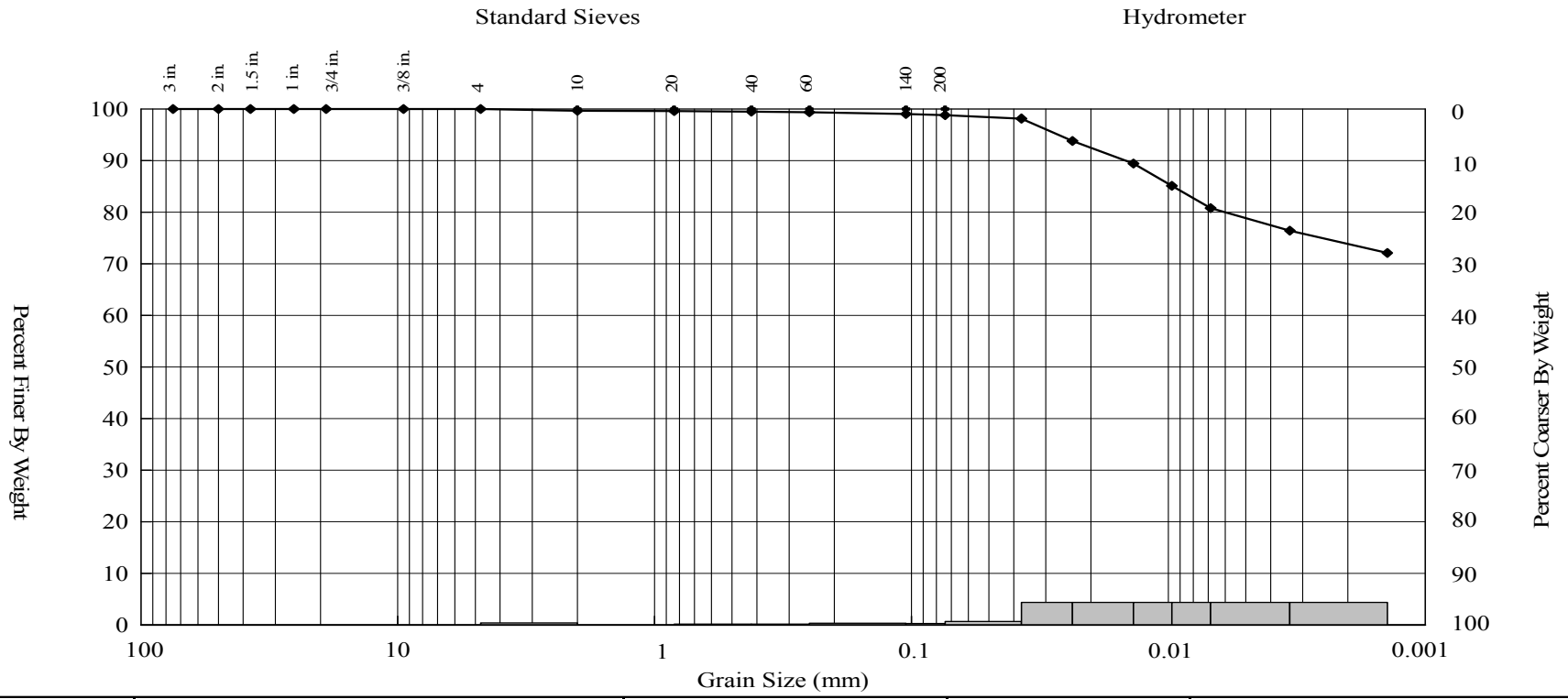
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.34	0.16	0.70	20.34	78.46

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
375										

Material Description

Fat Clay ("CH"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C13
Date Sampled:	6/11/2008
Date Analyzed:	7/12/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q3080 (ST-01-061108-C)
AMS Sample ID:	8C13-2

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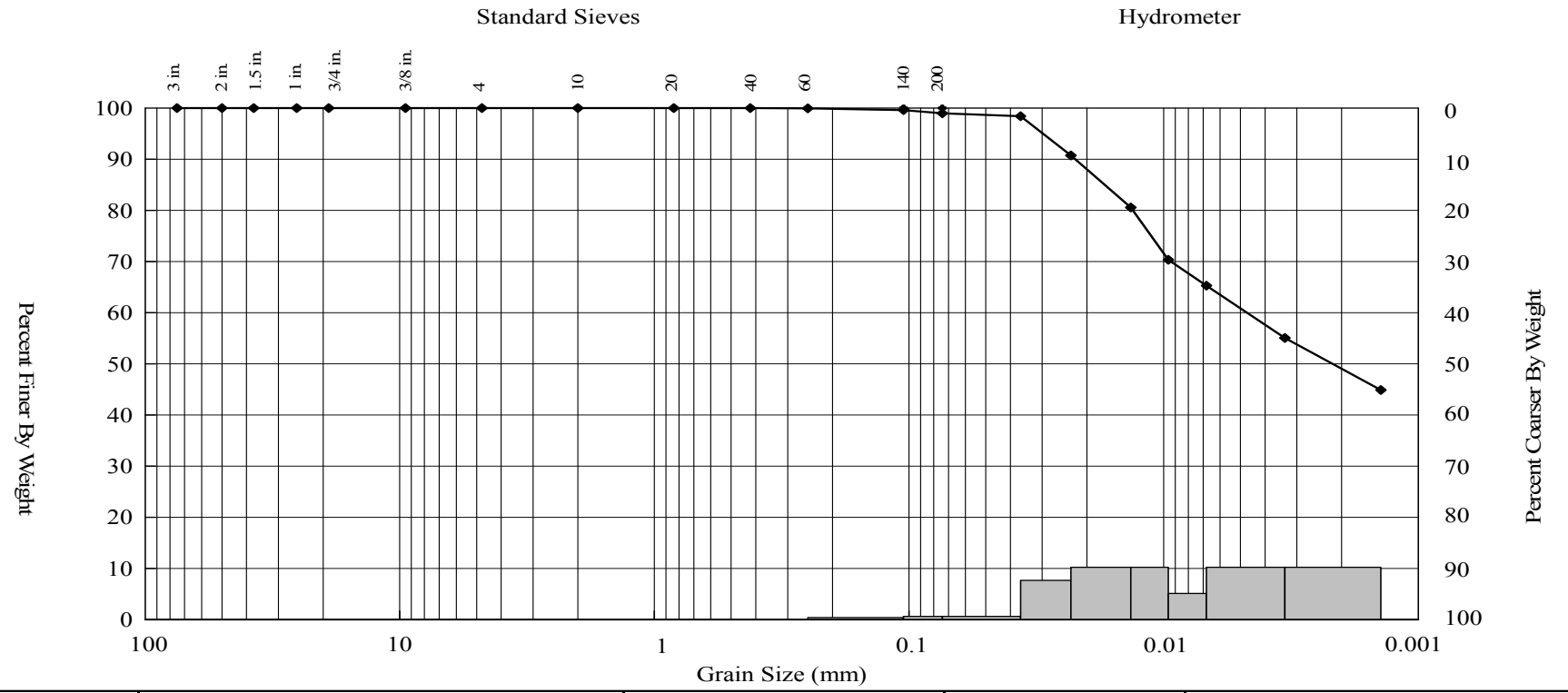
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.01	1.01	39.02	59.96

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
216										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C13
Date Sampled:	6/11/2008
Date Analyzed:	7/12/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q3082 (ST-02-061108-B)
AMS Sample ID:	8C13-3

APPLIED MARINE SCIENCES, INC.
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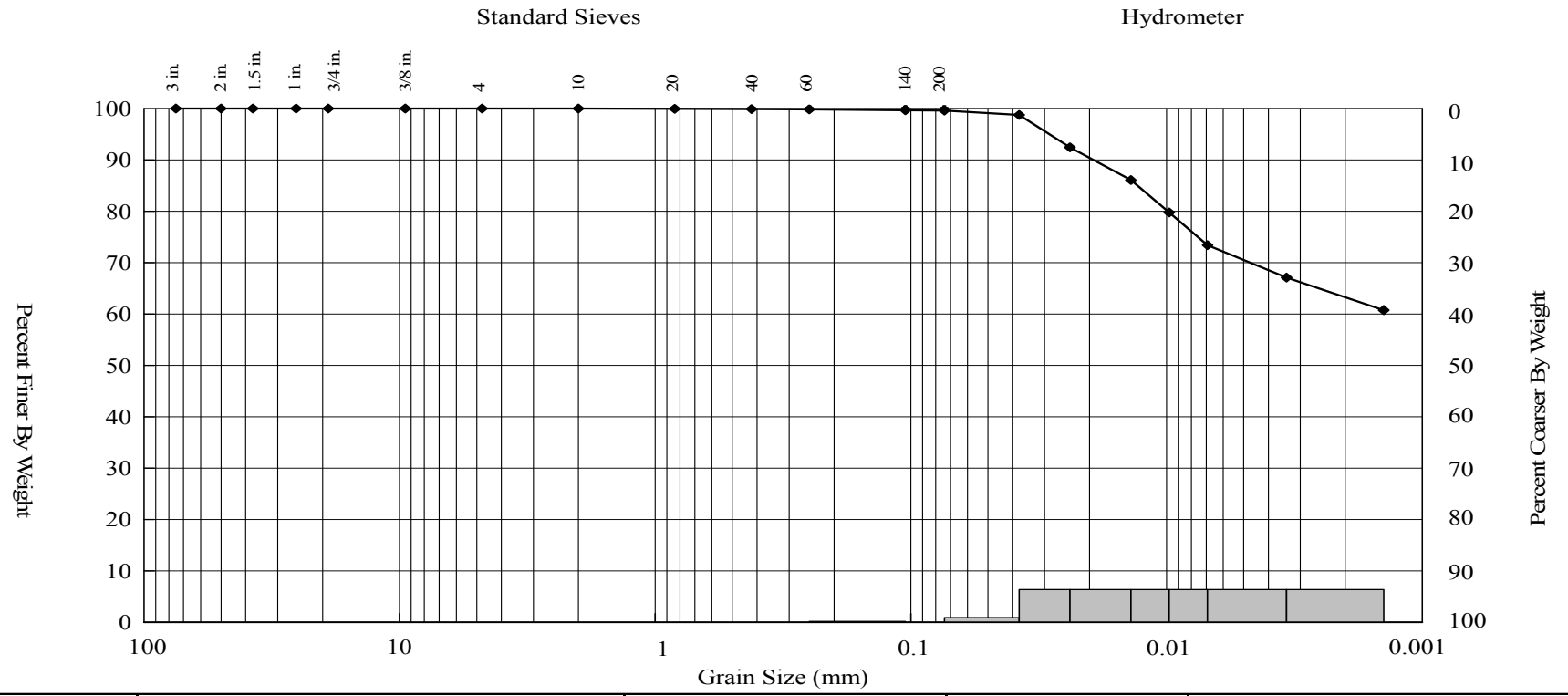
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.13	0.27	29.62	69.98

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
342										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C13
Date Sampled:	6/11/2008
Date Analyzed:	7/12/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q3084 (ST-04-061108-B)
AMS Sample ID:	8C13-4

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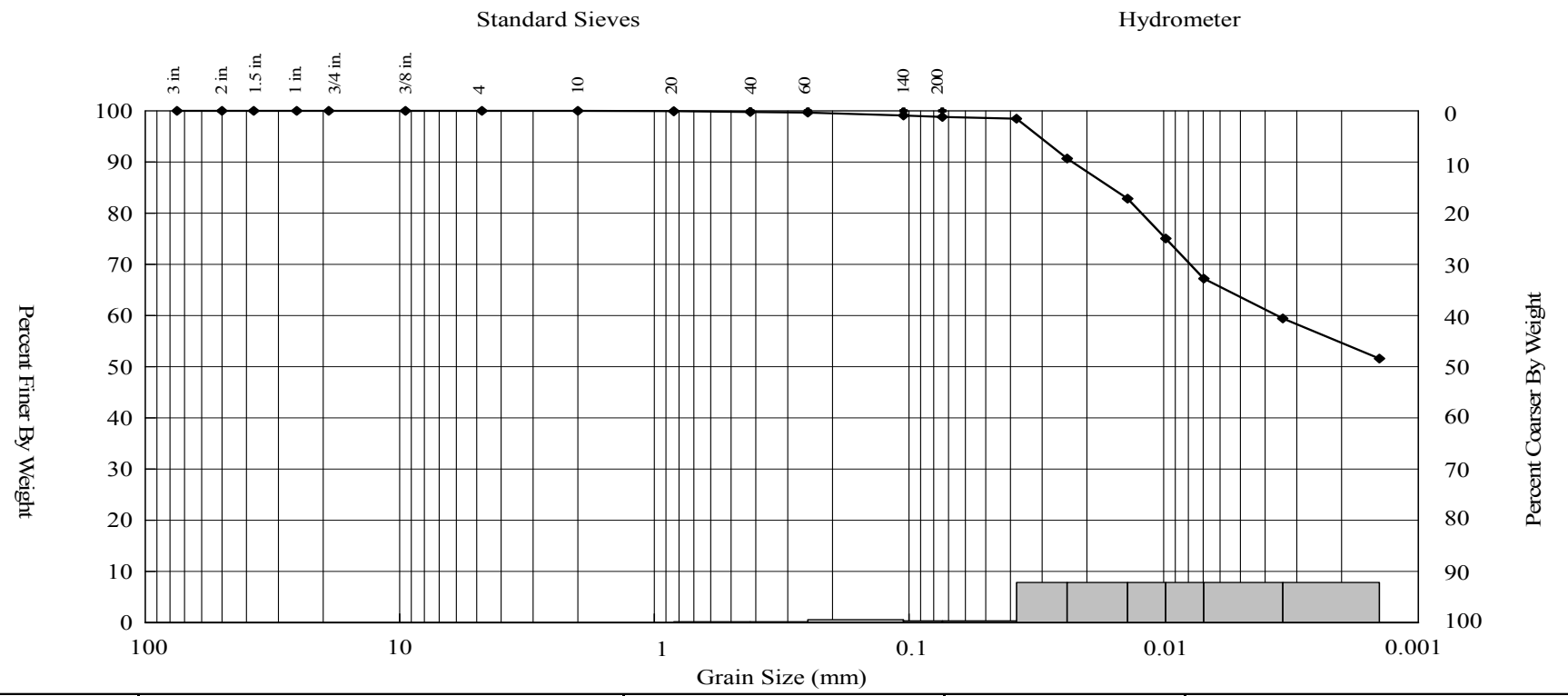
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.20	0.99	35.88	62.93

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
342										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C13
Date Sampled:	6/11/2008
Date Analyzed:	7/12/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q3086 (ST-03-061108-B)
AMS Sample ID:	8C13-5

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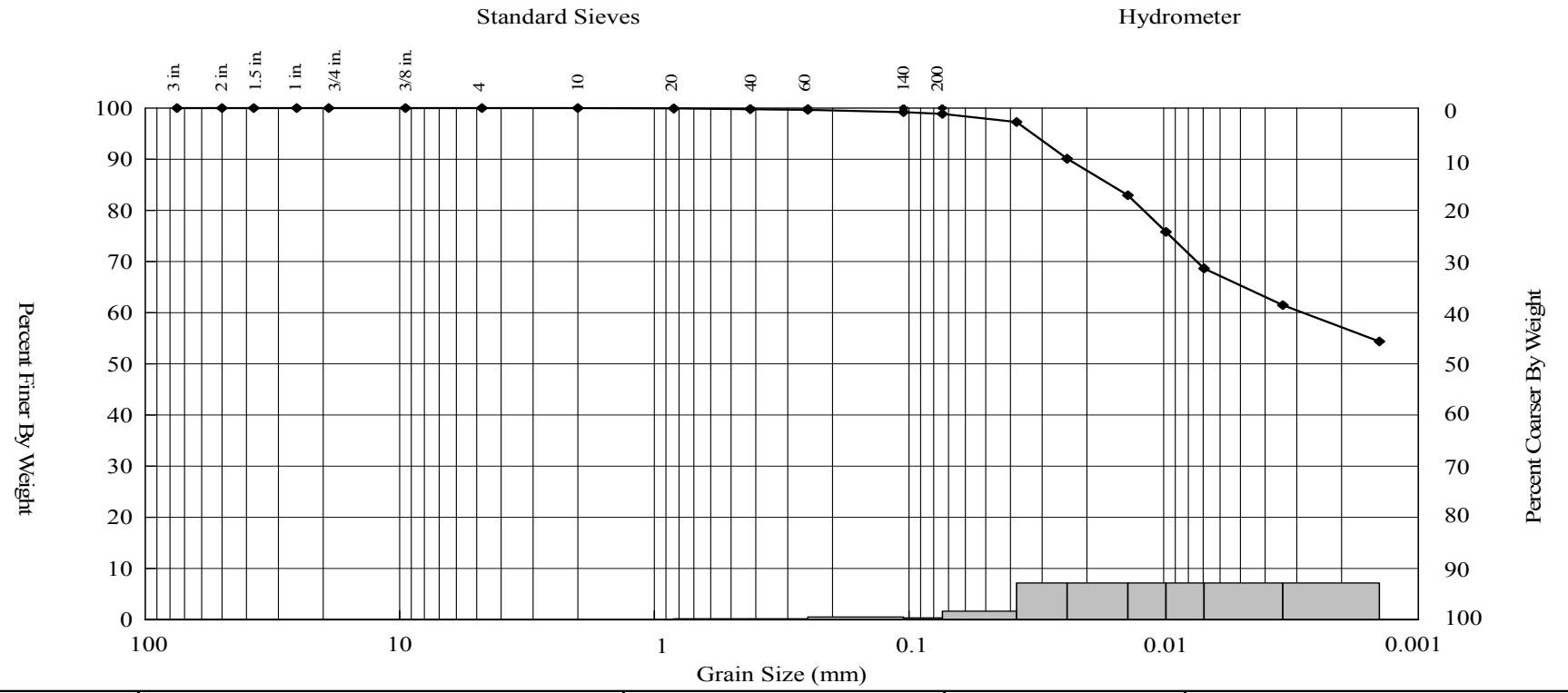
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.20	0.93	34.15	64.72

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
412										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C13
Date Sampled:	6/11/2008
Date Analyzed:	7/12/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q3086 (ST-03-061108-B)
AMS Sample ID:	8C13-5Q

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QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C13
Project Title:	New Bedford Harbor WQM	Date Sampled:	6/11/2008
Project Number:	G606422-07DUXCHE	Date Analyzed:	7/12/2008
Client Sample ID:	Q3086 (ST-03-061108-B)	Matrix:	Sediment
AMS Sample ID:	8C13-5	Method:	ASTM D 422
		Batch:	071108-01G

Particle Diameter Range (mm)	U.S. Standard Sieve Mesh #	Size Class	Sample Result (%)	Duplicate Result (%)	RPD (%)	Data Qualifier	QC Limits (% RPD)
4.76	No. 4	Gravel	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.20	0.20	0.00		≤ 25
0.074	No. 200	Fine Sand	0.99	0.93	6.25		≤ 25
<0.074 - 0.005	Hydrometer	Silt	35.88	34.15	4.94		≤ 25
<0.005	Hydrometer	Clay	62.93	64.72	2.80		≤ 25

Samples in Batch: 8C13-1 8C13-3 8C13-5
8C13-2 8C13-4

Qualifiers: Q - RPD value outside Quality Control Limits
I - Insufficient sample material to perform Quality Control Analyses

Soil Classification: Unified Soil Classification System (USCS) classifications are estimated in accordance with ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) unless the sample contains less than 5% fines (GW, GP, SW, and SP), or the Liquid Limit, Plastic Limit and Plasticity Index (Atterberg Limits) have been determined in accordance with ASTM D 4318. When these values have been determined the samples are definitively classified using ASTM D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C13
Project Number:	G606422-07DUXCHE	Date Sampled:	6/11/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	6/24/2008
Client Sample ID:	Q3079 (ST-01-061108-B)		
AMS Sample ID:	8C13-1		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	15.45	%		0.01	0.03	EPA 9060A	Sediment	7/5/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C13
Project Number:	G606422-07DUXCHE	Date Sampled:	6/11/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	6/24/2008
Client Sample ID:	Q3080 (ST-01-061108-C)		
AMS Sample ID:	8C13-2		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	15.54	%		0.01	0.03	EPA 9060A	Sediment	7/5/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Jennifer D. Davis
AMS, Inc. Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

Applied Marine Sciences, Inc.

502 N. Hwy 3, Suite B, League City, TX 77573, (281) 554-7272 Fax (281) 554-6356

ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C13
Project Number:	G606422-07DUXCHE	Date Sampled:	6/11/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	6/24/2008
Client Sample ID:	Q3082 (ST-02-061108-B)		
AMS Sample ID:	8C13-3		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	11.20	%		0.01	0.03	EPA 9060A	Sediment	7/5/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C13
Project Number:	G606422-07DUXCHE	Date Sampled:	6/11/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	6/24/2008
Client Sample ID:	Q3084 (ST-04-061108-B)		
AMS Sample ID:	8C13-4		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	11.44	%		0.01	0.03	EPA 9060A	Sediment	7/5/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C13
Project Number:	G606422-07DUXCHE	Date Sampled:	6/11/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	6/24/2008
Client Sample ID:	Q3086 (ST-03-061108-B)		
AMS Sample ID:	8C13-5		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	10.79	%		0.01	0.03	EPA 9060A	Sediment	7/5/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C13
Project Number:	G606422-07DUXCHE	AMS SOP Number:	2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed:	7/5/2008
Matrix:	Sediment	Batch ID:	070508-01T
Method:	EPA 9060A		

Method Blank (Batch Continuing Blank (CB)), Continuing Calibration Verification (CCV) and Independent Continuing Calibration Verification (ICCV) Results:

AMS Sample ID	Result (%)	CCV Conc. (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
CB-01	0.01	0.01	--	U	0.01	0.03	≤ 0.03
CCV-01	3.11	3.23	3.79		0.01	0.03	≤ 5 RPD
ICCV-01	2.05	2.00	2.47		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits
8C13-5	10.79	10.76	0.28		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 8C13-1, 8C13-2, 8C13-3, 8C13-4, 8C13-5

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

Jennifer D. Davis
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QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C13
AMS SOP Number: 2201

Data Qualifiers:

U	Undetected at the Limit of Detection (LOD): The associated value is the Limit of Detection, adjusted by any dilution factor used in the analysis.
J	The analyte was positively identified, but was below the Limit of Quantitation (LOQ). The quantitation is an estimate.
B	Blank contamination: The analyte was detected above one-half the LOD in an associated blank.
Q	One or more Quality Control criteria failed. Data usability should be carefully assessed by the Project Team.
I	Insufficient sample was provided to perform required Quality Control analyses and/or to meet method-specific sample volume recommendations.

Definitions:

LOD	The Limit of Detection (LOD) is determined by quantitative establishment of the Method Detection Limit (MDL), as defined in 40 CFR 136(b).
LOQ	The Limit of Quantitation (LOQ) is the minimum level, concentration or quantity of a target variable (target analyte) that can be quantitatively reported with a specified level of confidence. As defined in DoD QSM §D.1.2.2, the LOQ value must be a minimum of 3 times the LOD, although the specified level of confidence may have a lower quantitative value.

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

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Battelle
The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
G606422	NBH Sed Trap

SAMPLERS: Signature: Michael P McManus

DATE	TIME	Lab ~~BATTELLE~~ ID	Field ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC/Grain Size	ACIDIFIED	PRESERVED	Total Number of Containers
06/11/08	1215	Q3078	ST-01-061108-A	5m sediment trap recovery station 01		✓						✓			
	↓	Q3079	ST-01-061108-B	01		✓						✓			
		Q3080	ST-01-061108-C	01		✓						✓			
	1224	Q3081	ST-02-061108-A	02		✓						✓			
	↓	Q3082	ST-02-061108-B	02		✓						✓			
	1248	Q3083	ST-04-061108-A	04		✓						✓			
	↓	Q3084	ST-04-061108-B	04		✓						✓			
	1310	Q3085	ST-03-061108-A	03		✓						✓			
	↓	Q3086	ST-03-061108-B	03		✓						✓			

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

Relinquished by:	Date/Time	Received by:	Date/Time
Michael P McManus	~~06/12/08~~ 06/12/08 0800	Jeannine Leight	6/12/08 1148
Relinquished by:	Date/Time	Received by:	Date/Time
MPM	06/12/08		

Comments: After settling samples for 24 hrs and decanting, all samples will be weighed for reproducibility. At ST-01 2 of 3 samples will be analyzed for PCB, TOC & GS. At ST-02, 03 & 04 only 1 of 2 samples will be analyzed for PCB, TOC & GS

ORIGINAL

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Deployment No. 6

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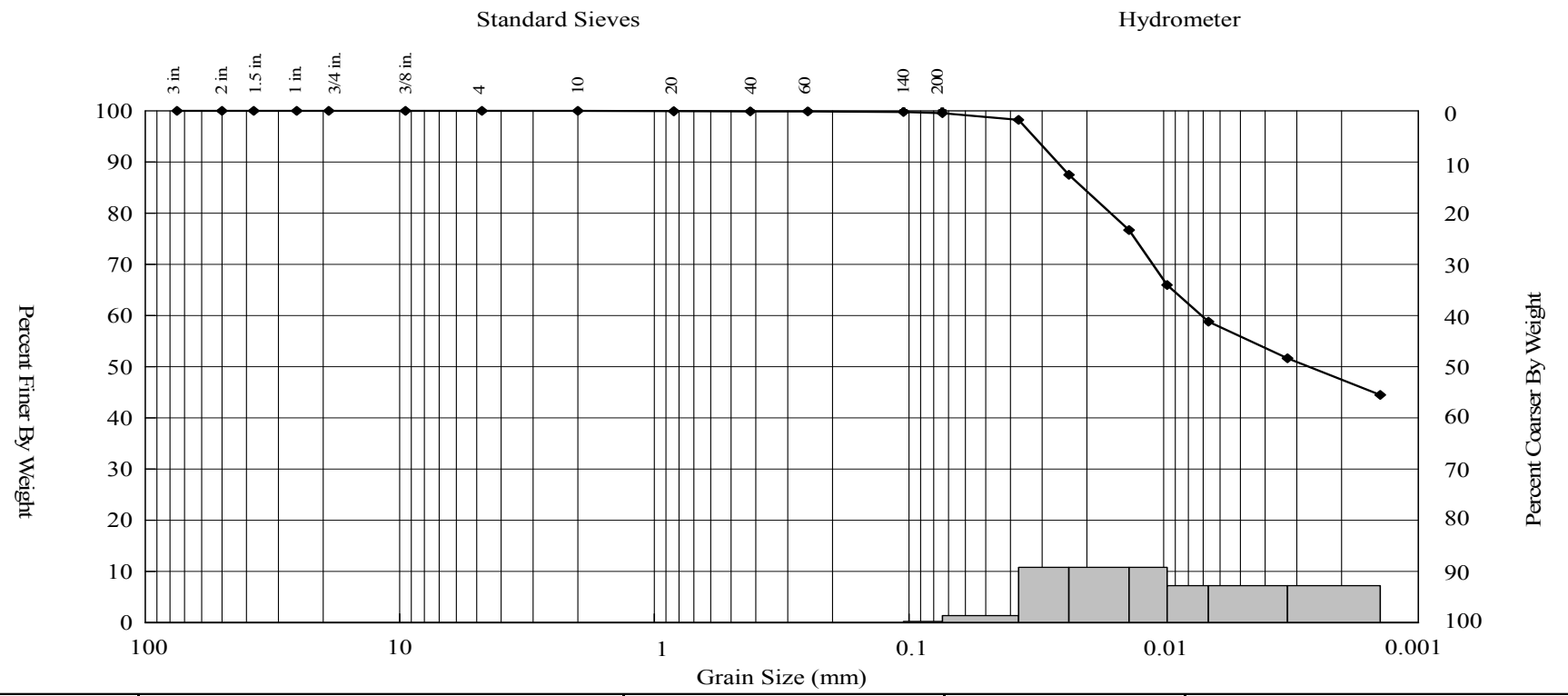
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.12	0.32	44.28	55.28

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
407										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C14
Date Sampled:	7/10/2008
Date Analyzed:	8/4/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q3438 (ST-01-071008-B)
AMS Sample ID:	8C14-1

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League City, TX 77573
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281.554.6356 Fax

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AMS, Inc. Project Manager

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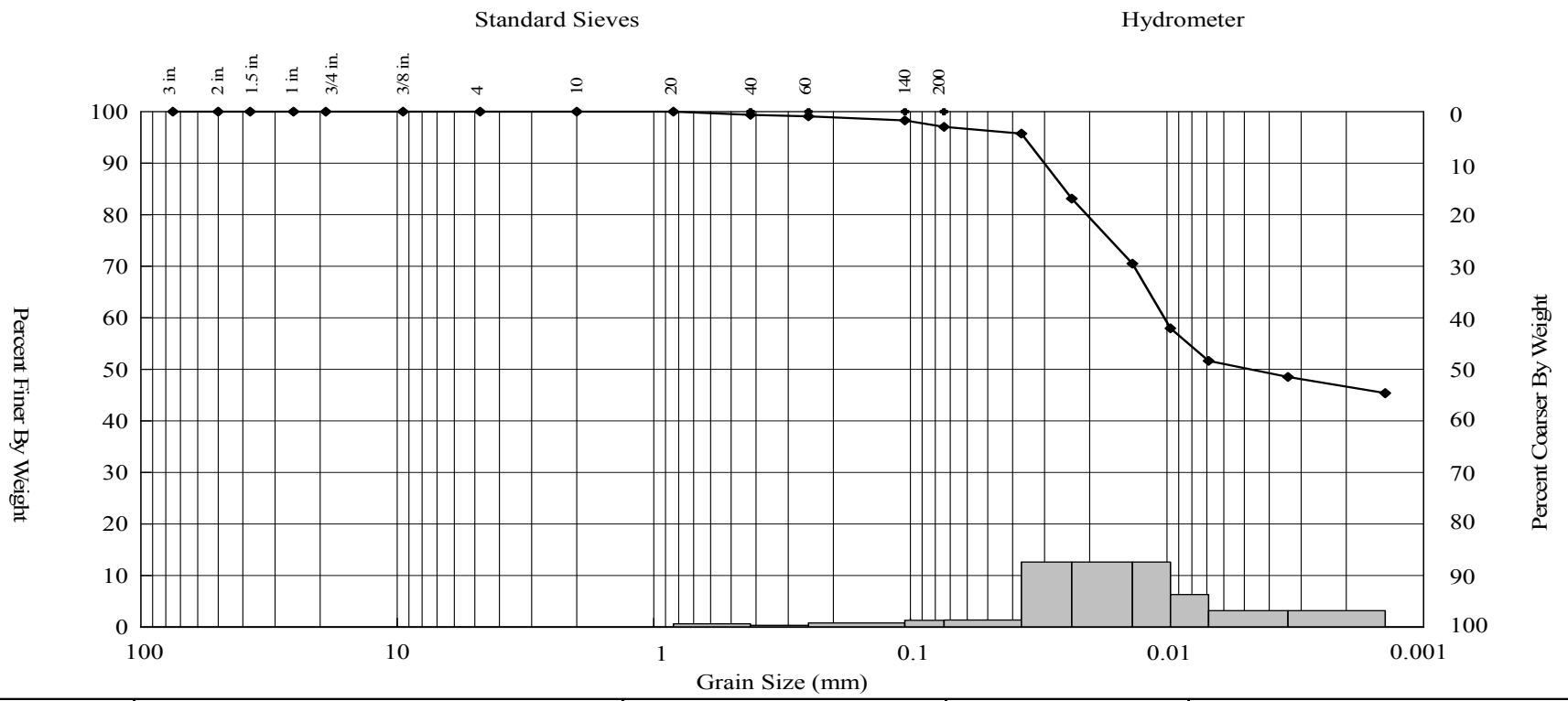
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.62	2.34	47.10	49.94

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
375										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C14
Date Sampled:	7/10/2008
Date Analyzed:	8/4/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q3439 (ST-01-071008-C)
AMS Sample ID:	8C14-2

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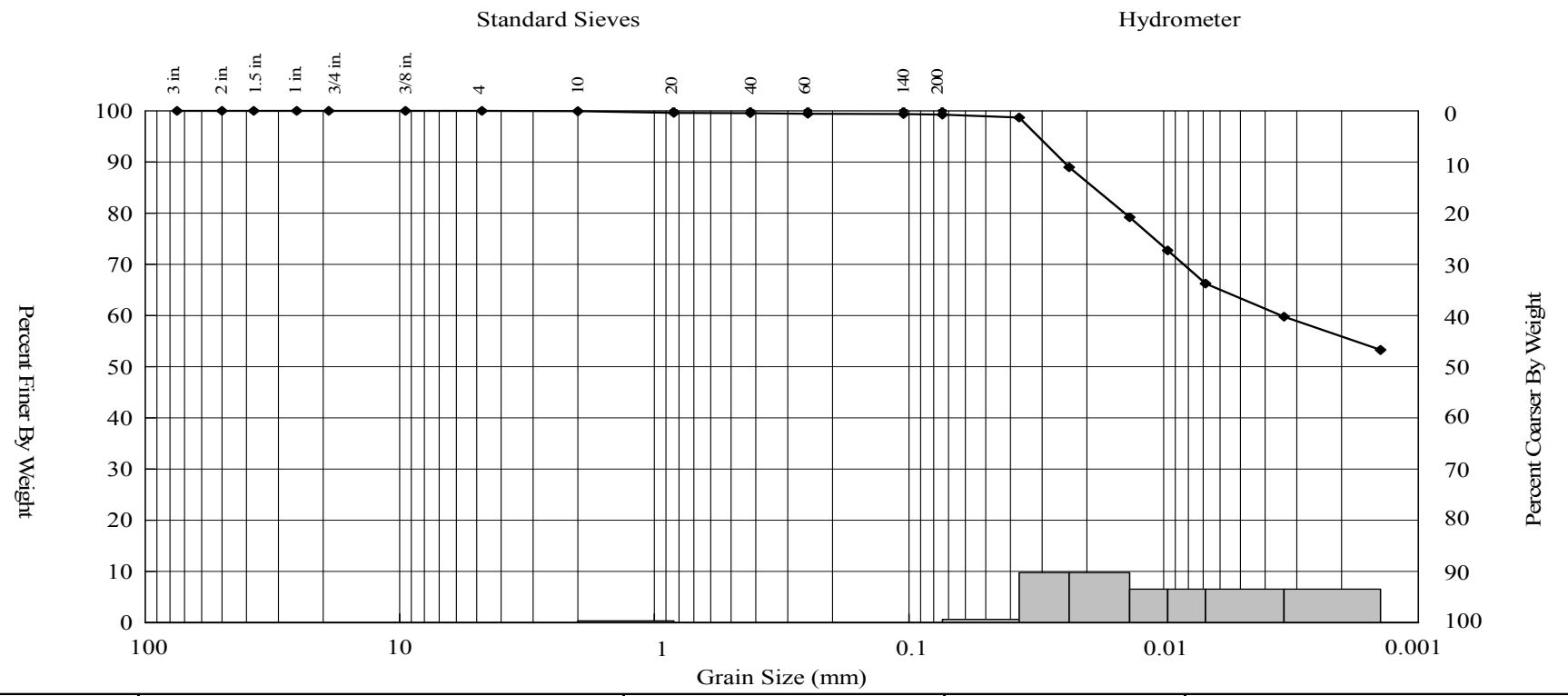
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.10	0.36	0.27	36.49	62.78

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
297										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C14
Date Sampled:	7/10/2008
Date Analyzed:	8/4/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q3441 (ST-02-071008-B)
AMS Sample ID:	8C14-3

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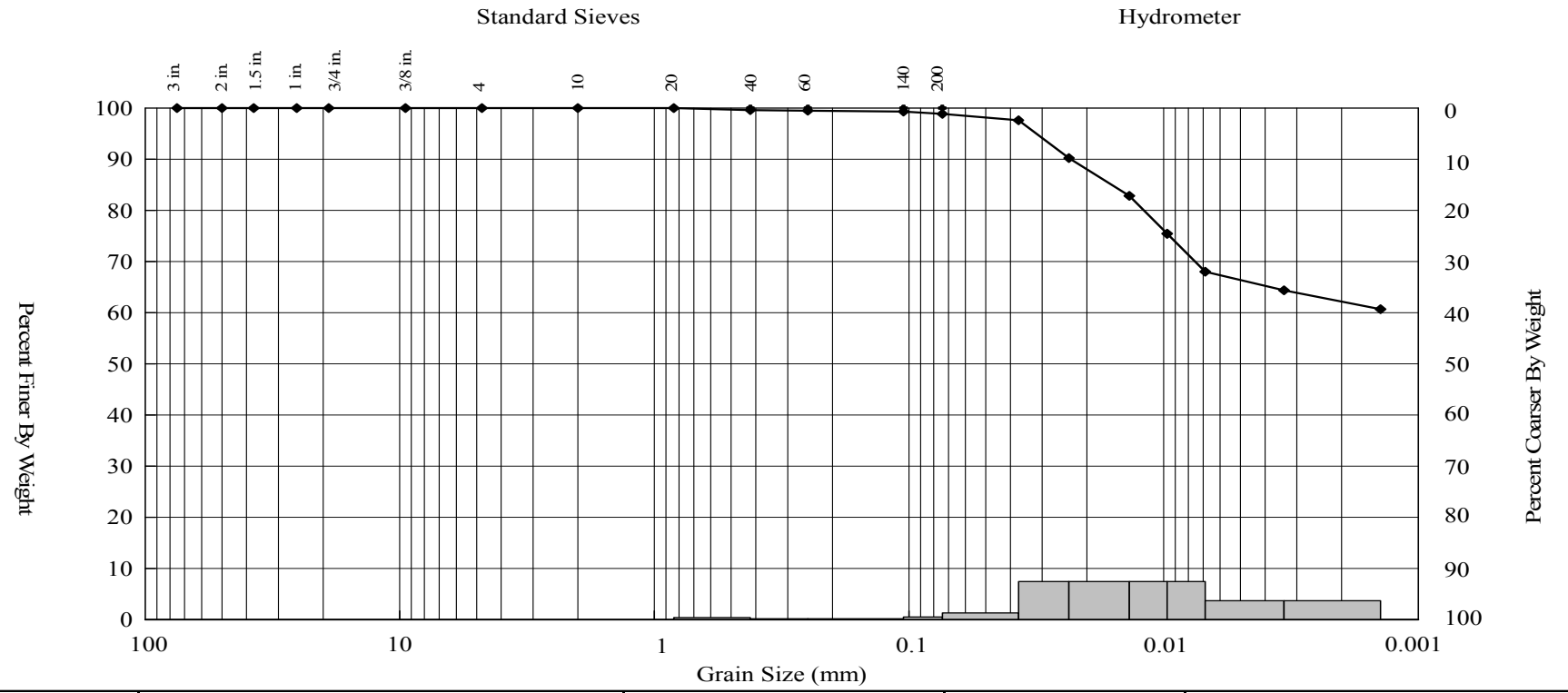
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.37	0.77	32.80	66.06

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
293										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C14
Date Sampled:	7/10/2008
Date Analyzed:	8/4/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q3443 (ST-03-071008-B)
AMS Sample ID:	8C14-4

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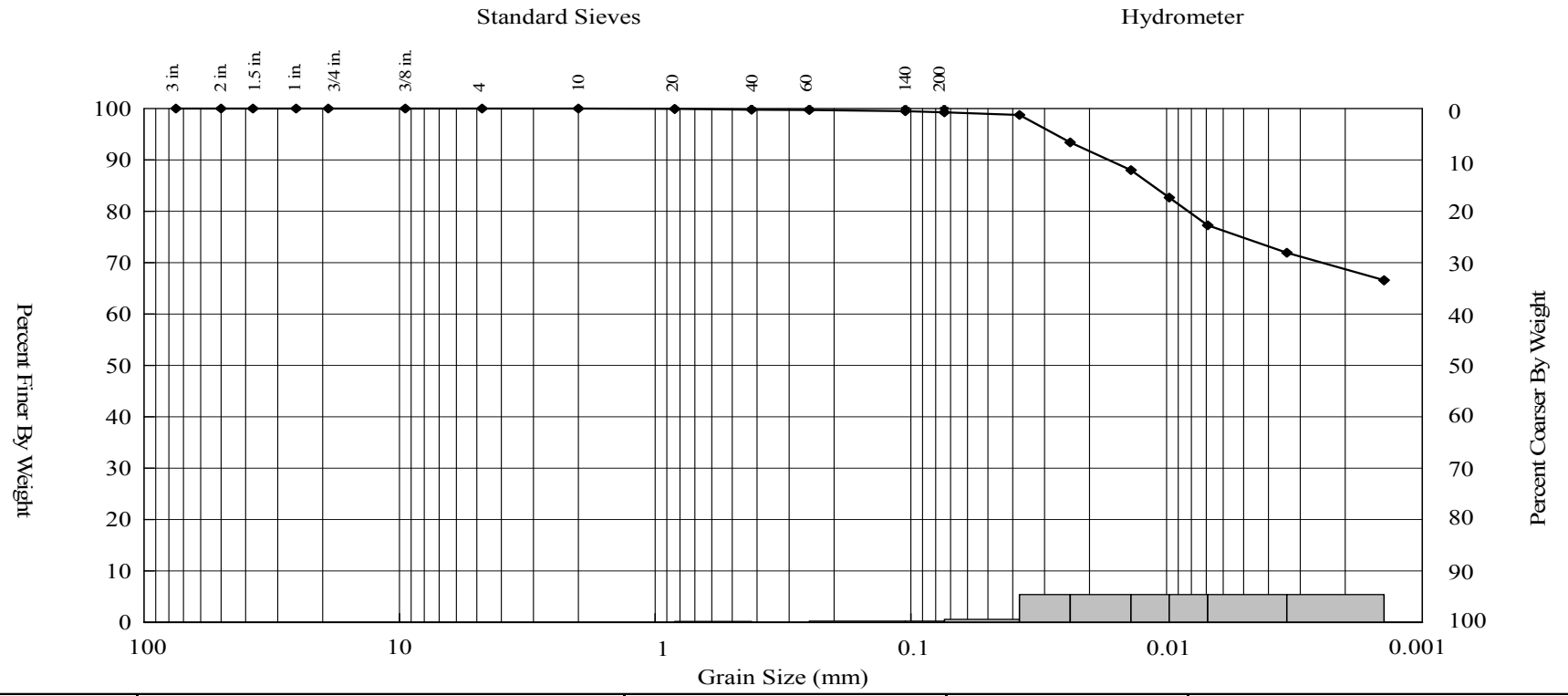
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.21	0.49	24.93	74.37

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
293										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C14
Date Sampled:	7/10/2008
Date Analyzed:	8/4/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q3445 (ST-03-071008-B)
AMS Sample ID:	8C14-5

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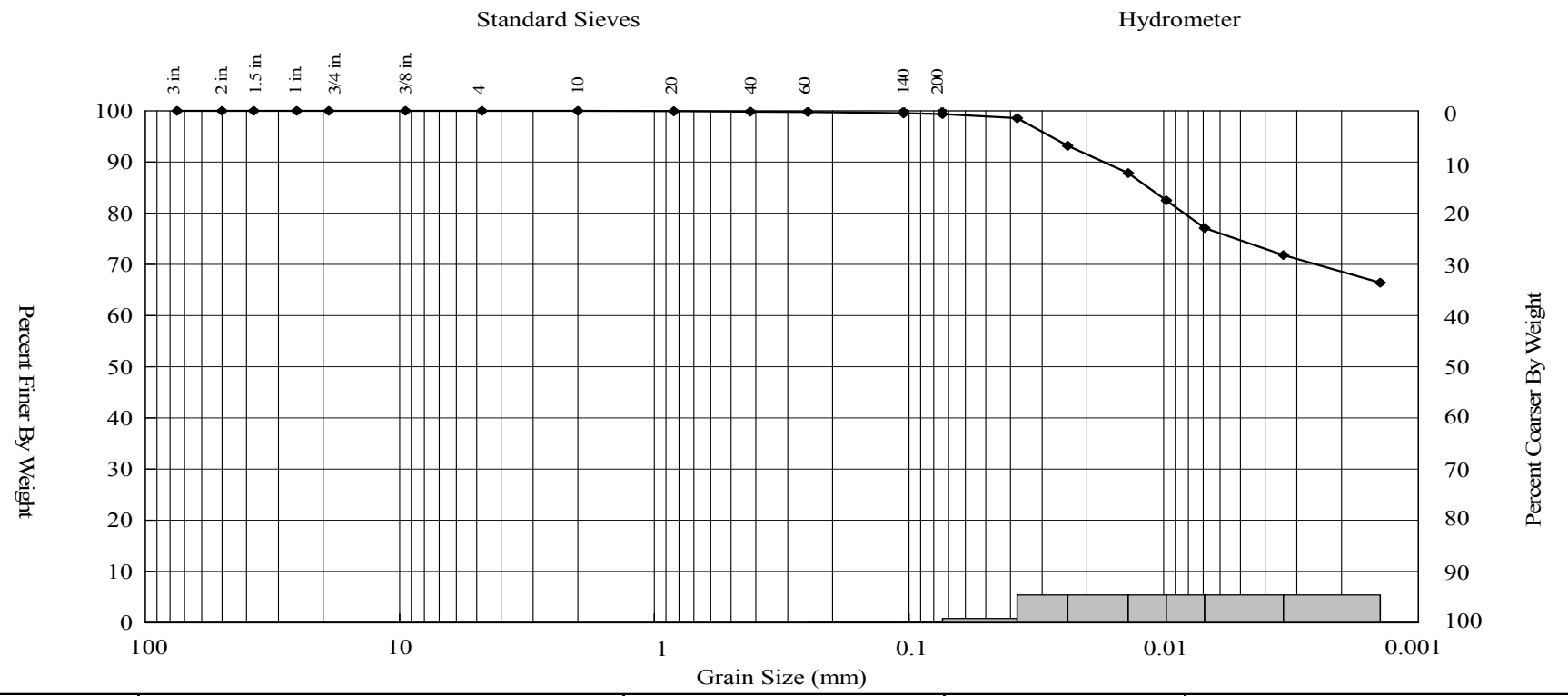
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.17	0.47	25.12	74.24

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
292										

Material Description

Lean Clay ("CL"), black (5Y 2.5/1)

Client Project Title:	New Bedford Harbor WQM
Client Project Number:	G606422-07DUXCHE
AMS Project Number:	8C14
Date Sampled:	7/10/2008
Date Analyzed:	8/4/2008
Matrix:	Sediment
Method:	ASTM D 422
Client Sample ID:	Q3445 (ST-03-071008-B)
AMS Sample ID:	8C14-5Q

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QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C14
Project Title:	New Bedford Harbor WQM	Date Sampled:	7/10/2008
Project Number:	G606422-07DUXCHE	Date Analyzed:	8/4/2008
Client Sample ID:	Q3445 (ST-03-071008-B)	Matrix:	Sediment
AMS Sample ID:	8C14-5	Method:	ASTM D 422
		Batch:	073108-01G

Particle Diameter Range (mm)	U.S. Standard Sieve Mesh #	Size Class	Sample Result (%)	Duplicate Result (%)	RPD (%)	Data Qualifier	QC Limits (% RPD)
4.76	No. 4	Gravel	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.21	0.17	21.05		≤ 25
0.074	No. 200	Fine Sand	0.49	0.47	4.17		≤ 25
<0.074 - 0.005	Hydrometer	Silt	24.93	25.12	0.76		≤ 25
<0.005	Hydrometer	Clay	74.37	74.24	0.17		≤ 25

Samples in Batch: 8C14-1 8C14-3 8C14-5
8C14-2 8C14-4

Qualifiers: Q - RPD value outside Quality Control Limits
I - Insufficient sample material to perform Quality Control Analyses

Soil Classification: Unified Soil Classification System (USCS) classifications are estimated in accordance with ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) unless the sample contains less than 5% fines (GW, GP, SW, and SP), or the Liquid Limit, Plastic Limit and Plasticity Index (Atterberg Limits) have been determined in accordance with ASTM D 4318. When these values have been determined the samples are definitively classified using ASTM D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C14
Project Number:	G606422-07DUXCHE	Date Sampled:	7/10/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	7/23/2008
Client Sample ID:	Q3438 (ST-01-071008-B)		
AMS Sample ID:	8C14-1		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	12.89	%		0.01	0.03	EPA 9060A	Sediment	8/4/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C14
Project Number:	G606422-07DUXCHE	Date Sampled:	7/10/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	7/23/2008
Client Sample ID:	Q3439 (ST-01-071008-C)		
AMS Sample ID:	8C14-2		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	14.02	%		0.01	0.03	EPA 9060A	Sediment	8/4/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C14
Project Number:	G606422-07DUXCHE	Date Sampled:	7/10/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	7/23/2008
Client Sample ID:	Q3441 (ST-02-071008-B)		
AMS Sample ID:	8C14-3		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	15.01	%		0.01	0.03	EPA 9060A	Sediment	8/4/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C14
Project Number:	G606422-07DUXCHE	Date Sampled:	7/10/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	7/23/2008
Client Sample ID:	Q3443 (ST-03-071008-B)		
AMS Sample ID:	8C14-4		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	10.62	%		0.01	0.03	EPA 9060A	Sediment	8/4/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C14
Project Number:	G606422-07DUXCHE	Date Sampled:	7/10/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	7/23/2008
Client Sample ID:	Q3445 (ST-03-071008-B)		
AMS Sample ID:	8C14-5		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	12.10	%		0.01	0.03	EPA 9060A	Sediment	8/4/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C14
Project Number:	G606422-07DUXCHE	AMS SOP Number:	2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed:	8/4/2008
Matrix:	Sediment	Batch ID:	080408-03T
Method:	EPA 9060A		

Method Blank (Batch Continuing Blank (CB)), Continuing Calibration Verification (CCV) and Independent Continuing Calibration Verification (ICCV) Results:

AMS Sample ID	Result (%)	CCV Conc. (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
CB-03	0.01	0.01	--	U	0.01	0.03	≤ 0.03
CCV-03	3.14	3.23	2.83		0.01	0.03	≤ 5 RPD
ICCV-03	2.07	2.00	3.44		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits
8C14-5	12.10	12.23	1.07		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 8C14-1, 8C14-2, 8C14-3, 8C14-4, 8C14-5

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

Jennifer D. Davis
AMS, Inc. Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

Applied Marine Sciences, Inc.

502 N. Hwy 3, Suite B, League City, TX 77573, (281) 554-7272 Fax (281) 554-6356

QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C14
AMS SOP Number: 2201

Data Qualifiers:

U	Undetected at the Limit of Detection (LOD): The associated value is the Limit of Detection, adjusted by any dilution factor used in the analysis.
J	The analyte was positively identified, but was below the Limit of Quantitation (LOQ). The quantitation is an estimate.
B	Blank contamination: The analyte was detected above one-half the LOD in an associated blank.
Q	One or more Quality Control criteria failed. Data usability should be carefully assessed by the Project Team.
I	Insufficient sample was provided to perform required Quality Control analyses and/or to meet method-specific sample volume recommendations.

Definitions:

LOD	The Limit of Detection (LOD) is determined by quantitative establishment of the Method Detection Limit (MDL), as defined in 40 CFR 136(b).
LOQ	The Limit of Quantitation (LOQ) is the minimum level, concentration or quantity of a target variable (target analyte) that can be quantitatively reported with a specified level of confidence. As defined in DoD QSM §D.1.2.2, the LOQ value must be a minimum of 3 times the LOD, although the specified level of confidence may have a lower quantitative value.

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

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The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
G606422	NBH Sed Trap

SAMPLERS: Signature: Michael P. McGee

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	LAB ~~BATTELLE~~ ID	FIELD ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	~~OTHER~~ TOC/Grain Size	ACIDIFIED	PRESERVED	Total Number of Containers
07/10/08	1158	Q3437	ST-01-071008-A	6th sediment trap recovery station Ø1		✓						✓			
	↓	Q3438	ST-01-071008-B	Ø1		✓						✓			
		Q3439	ST-01-071008-C	Ø1		✓						✓			
	1219	Q3440	ST-02-071008-A	Ø2		✓						✓			
	↓	Q3441	ST-02-071008-B	Ø2		✓						✓			
	1242	Q3442	ST-04-071008-A	Ø4		✓						✓			
	↓	Q3443	ST-04-071008-B	Ø4		✓						✓			
	1317	Q3444	ST-03-071008-A	Ø3		✓						✓			
	↓	Q3445	ST-03-071008-B	Ø3		✓						✓			

Relinquished by:	Date/Time	Received by:	Date/Time
Michael P. McGee	07/11/08 12:00	Jeannie Light	7-11-08 12:00
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: After settling for 24 hrs and decanting, all samples will be weighed for reproducibility. At station ST-Ø1 2 of 3 samples will be analyzed for PCB, TOC, & GS. At ST-02, Ø3 & Ø4, only 1 of 2 samples will be analyzed.

ORIGINAL

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Deployment No. 7

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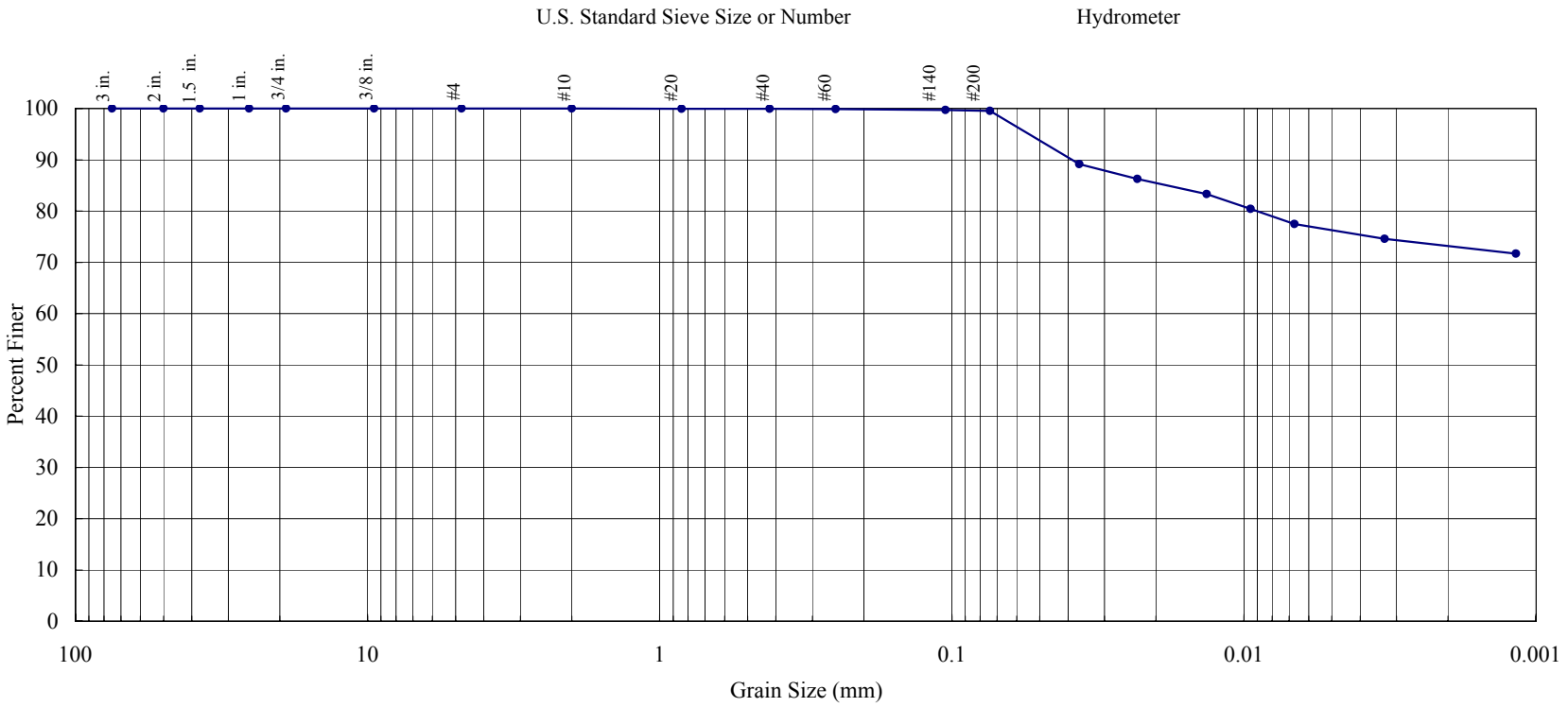
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.06	0.43	23.49	76.02

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
292										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C17
Date Sampled:	7/31/2008
Date Analyzed:	10/3/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q3735
AMS Sample ID:	8C17-01

APPLIED MARINE SCIENCES, INC.
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These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis
AMS, Inc. Project Manager

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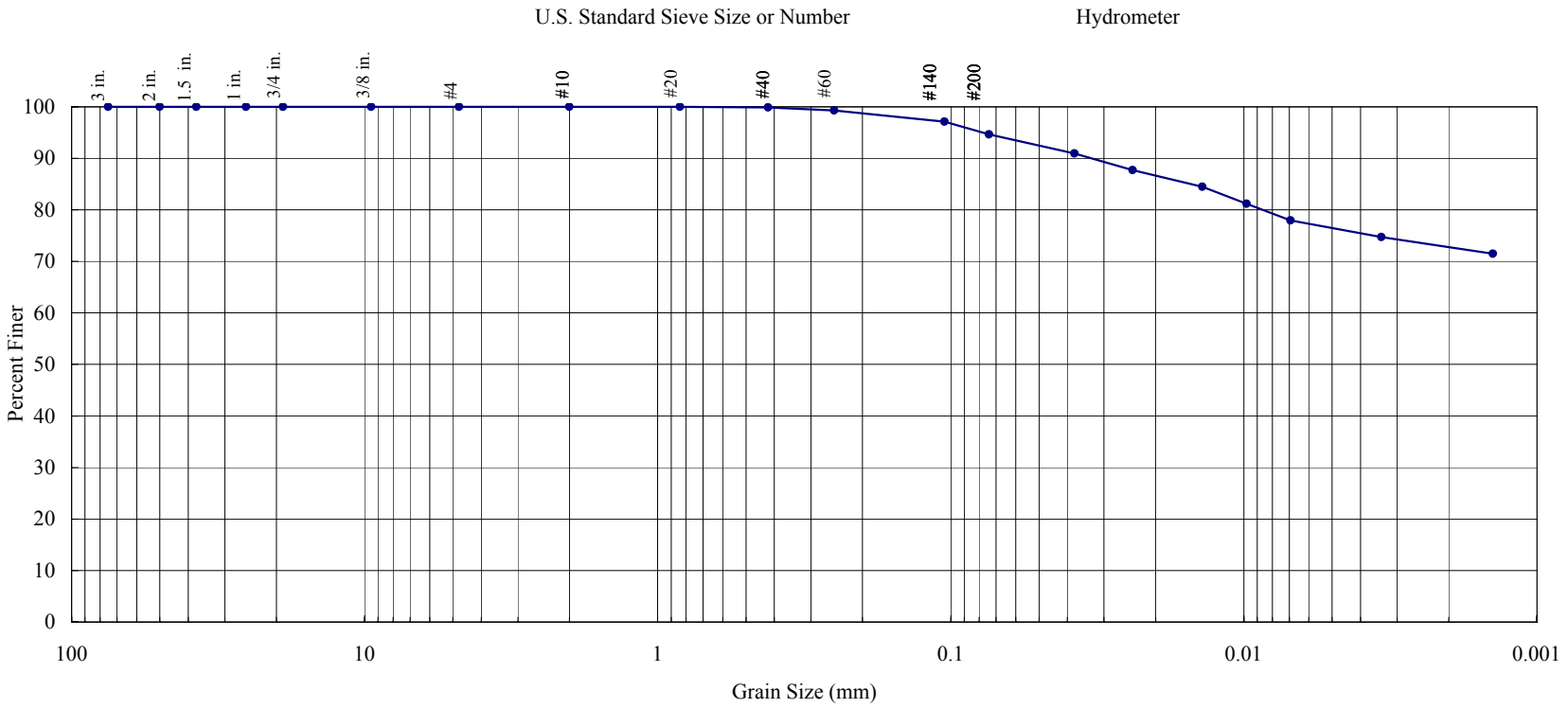
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.12	5.24	18.45	76.19

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
210										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C17
Date Sampled:	7/31/2008
Date Analyzed:	10/3/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q3737
AMS Sample ID:	8C17-02

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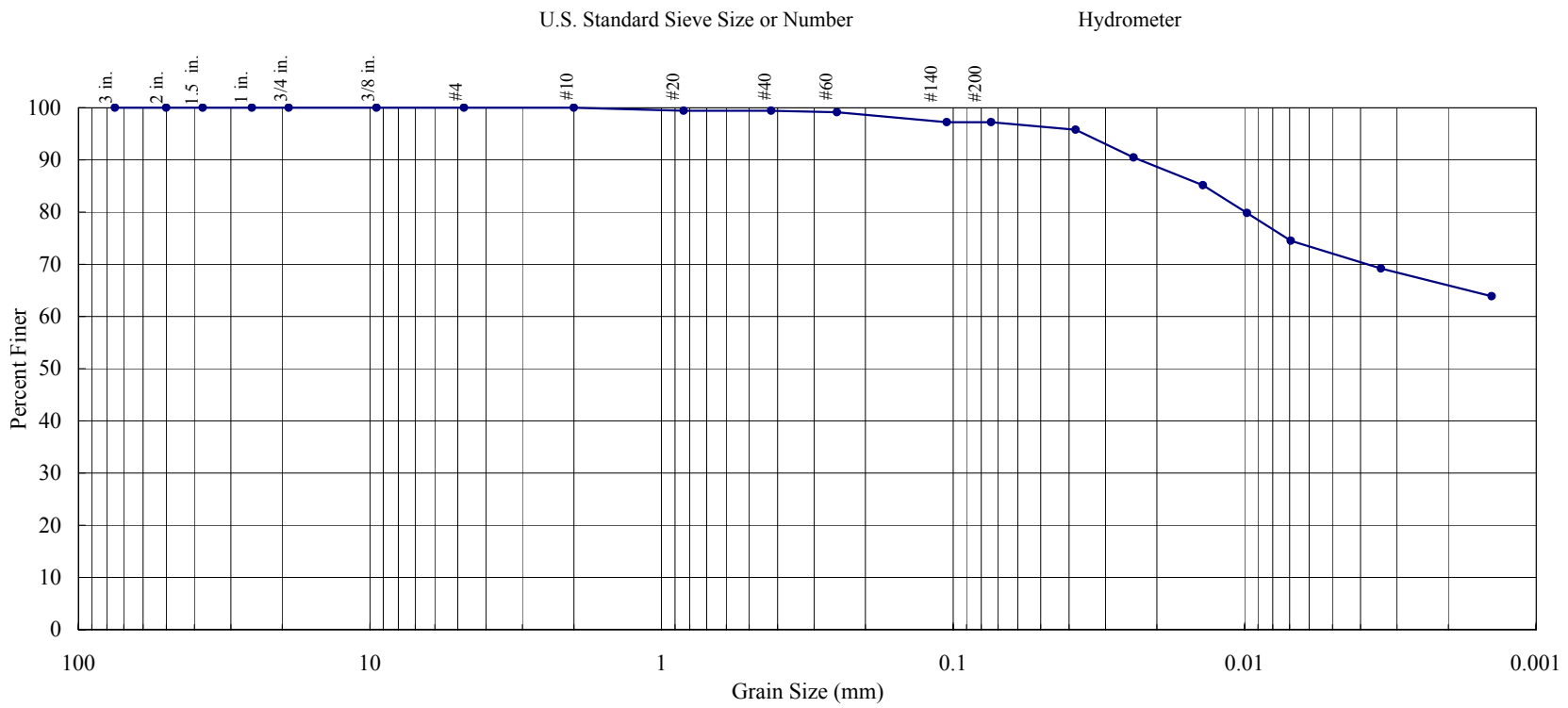
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.60	2.19	25.62	71.59

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
246										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C17
Date Sampled:	7/31/2008
Date Analyzed:	10/3/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q3738
AMS Sample ID:	8C17-03

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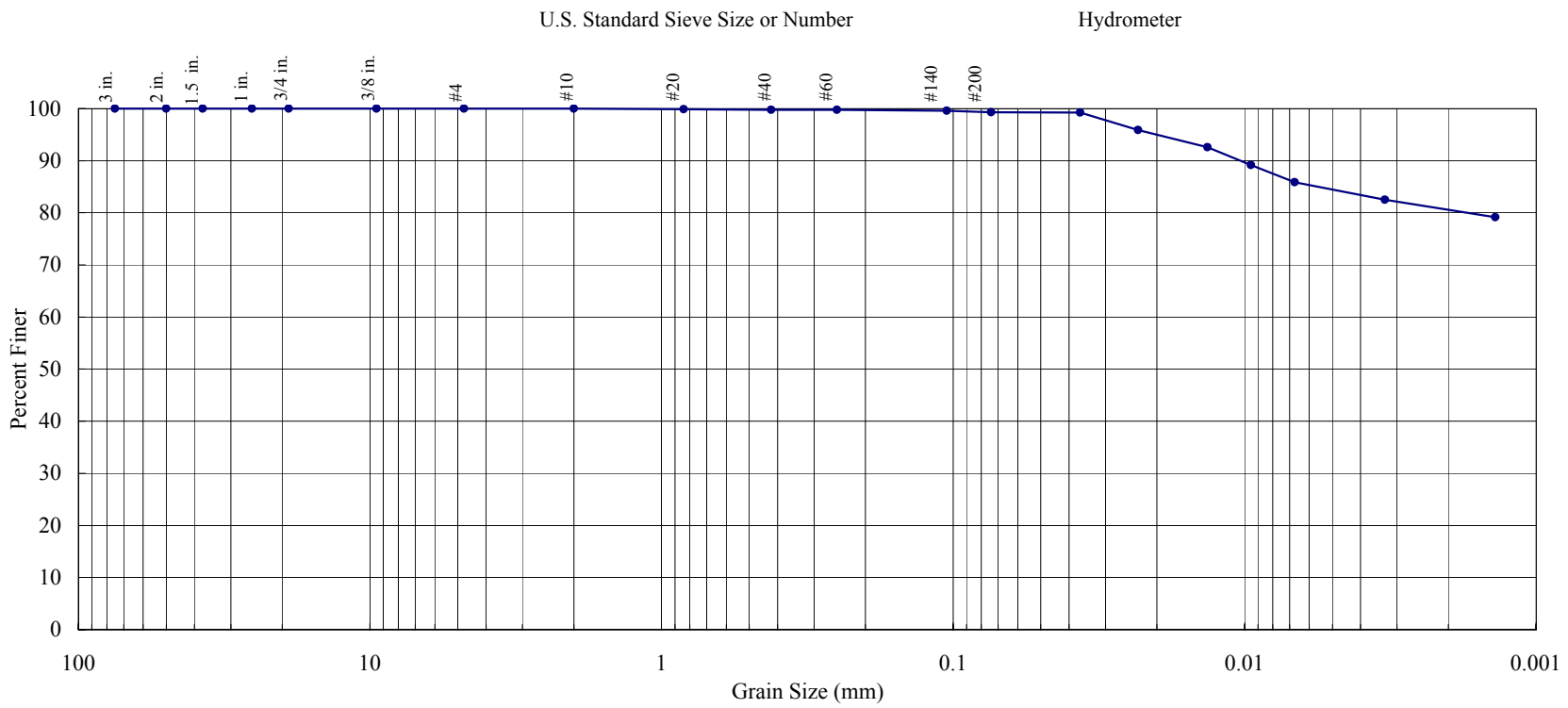
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.21	0.49	15.14	84.16

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
244										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C17
Date Sampled:	7/31/2008
Date Analyzed:	10/3/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q3740
AMS Sample ID:	8C17-04

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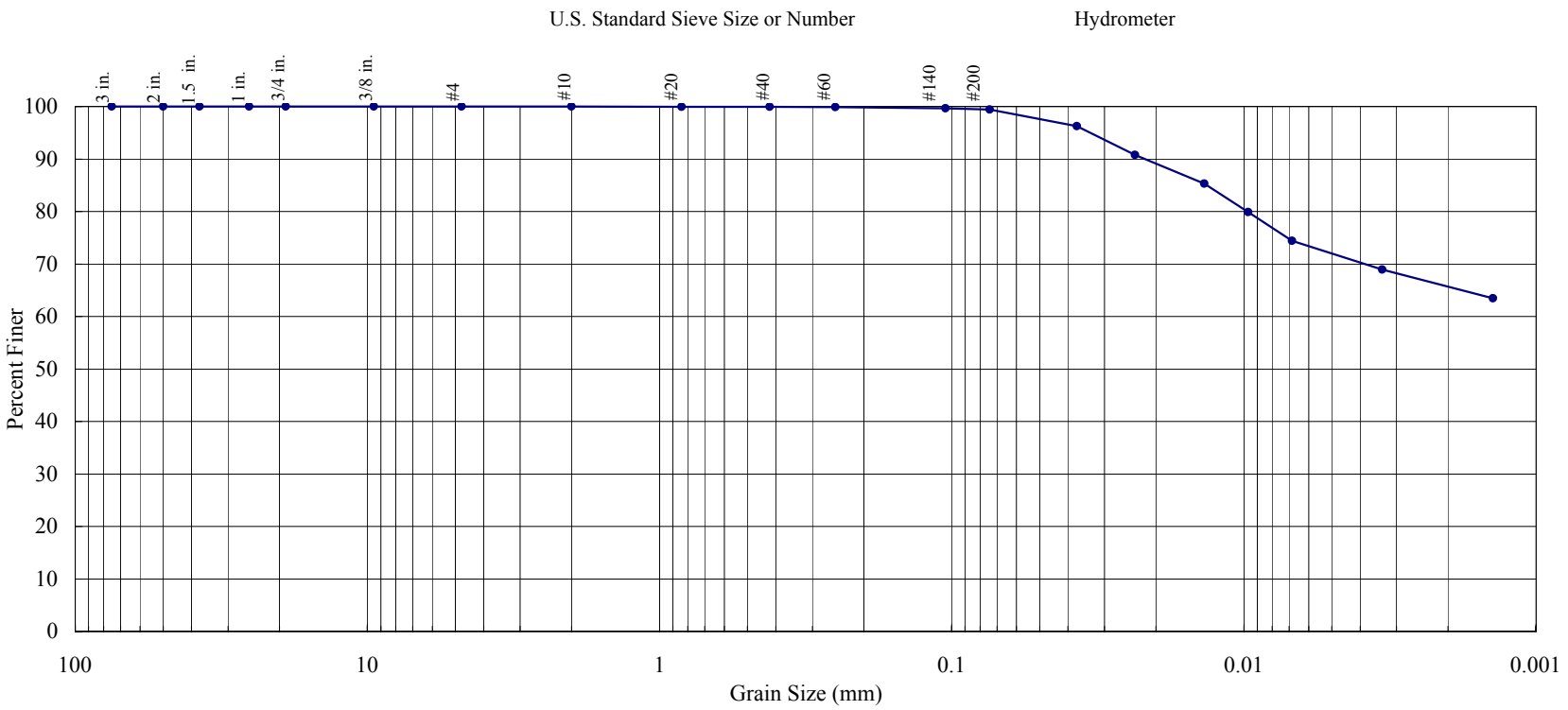
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.05	0.50	27.95	71.50

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
257										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C17
Date Sampled:	7/31/2008
Date Analyzed:	10/3/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q3742
AMS Sample ID:	8C17-05

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GEOTECHNICAL RESULTS

Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.05	0.45	27.97	71.53

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
257										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C17
Date Sampled:	7/31/2008
Date Analyzed:	10/3/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q3742
AMS Sample ID:	8C17-05Q

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QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C17
Project Title:	New Bedford Harbor Sed Traps	Date Sampled:	7/31/2008
Project Number:	G606422	Date Analyzed:	10/3/2008
Client Sample ID:	Q3742	Matrix:	Sediment
AMS Sample ID:	8C17-05	Method:	ASTM D 422
		Batch:	1

Particle Diameter Range (mm)	U.S. Standard Sieve Mesh #	Size Class	Sample Result (%)	Duplicate Result (%)	RPD (%)	Data Qualifier	QC Limits (% RPD)
4.76	No. 4	Gravel	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.05	0.05	0.00		≤ 25
0.074	No. 200	Fine Sand	0.50	0.45	10.53		≤ 25
<0.074 - 0.005	Hydrometer	Silt	27.95	27.97	0.07		≤ 25
<0.005	Hydrometer	Clay	71.50	71.53	0.04		≤ 25

Samples in Batch: 8C17-01, 8C17-02, 8C17-03, 8C17-04, 8C17-05

Qualifiers:
Q - RPD value outside Quality Control Limits
I - Insufficient sample material to perform Quality Control Analyses

Soil Classification: Unified Soil Classification System (USCS) classifications are estimated in accordance with ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) unless the sample contains less than 5% fines (GW, GP, SW, and SP), or the Liquid Limit, Plastic Limit, and Plasticity Index (Atterberg Limits) have been determined in accordance with ASTM D 4318. When these values have been determined the samples are definitively classified using ASTM D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

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Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C17
Project Number:	G606422-07DUXCHE	Date Sampled:	7/31/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	8/21/2008
Client Sample ID:	Q3735 (ST-04-073108-B)		
AMS Sample ID:	8C17-1		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	11.71	%		0.01	0.03	EPA 9060A	Sediment	9/4/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Jennifer D. Davis
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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C17
Project Number:	G606422-07DUXCHE	Date Sampled:	7/31/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	8/21/2008
Client Sample ID:	Q3737 (ST-01-073108-B)		
AMS Sample ID:	8C17-2		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	16.25	%		0.01	0.03	EPA 9060A	Sediment	9/4/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C17
Project Number:	G606422-07DUXCHE	Date Sampled:	7/31/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	8/21/2008
Client Sample ID:	Q3738 (ST-01-073108-C)		
AMS Sample ID:	8C17-3		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	12.40	%		0.01	0.03	EPA 9060A	Sediment	9/4/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C17
Project Number:	G606422-07DUXCHE	Date Sampled:	7/31/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	8/21/2008
Client Sample ID:	Q3740 (ST-02-073108-B)		
AMS Sample ID:	8C17-4		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	13.70	%		0.01	0.03	EPA 9060A	Sediment	9/4/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C17
Project Number:	G606422-07DUXCHE	Date Sampled:	7/31/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	8/21/2008
Client Sample ID:	Q3742 (ST-03-073108-B)		
AMS Sample ID:	8C17-5		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	11.29	%		0.01	0.03	EPA 9060A	Sediment	9/4/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C17
Project Number:	G606422-07DUXCHE	AMS SOP Number:	2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed:	9/4/2008
Matrix:	Sediment	Batch ID:	090408-03T
Method:	EPA 9060A		

Method Blank (Batch Continuing Blank (CB)), Continuing Calibration Verification (CCV) and Independent Continuing Calibration Verification (ICCV) Results:

AMS Sample ID	Result (%)	CCV Conc. (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
CB-03	0.01	0.01	--	U	0.01	0.03	≤ 0.03
CCV-03	3.15	3.23	2.51		0.01	0.03	≤ 5 RPD
ICCV-03	2.04	2.00	1.98		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits
8C17-5	12.30	12.23	0.57		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 8C17-1, 8C17-2, 8C17-3, 8C17-4, 8C17-5

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C17
AMS SOP Number: 2201

Data Qualifiers:

U	Undetected at the Limit of Detection (LOD): The associated value is the Limit of Detection, adjusted by any dilution factor used in the analysis.
J	The analyte was positively identified, but was below the Limit of Quantitation (LOQ). The quantitation is an estimate.
B	Blank contamination: The analyte was detected above one-half the LOD in an associated blank.
Q	One or more Quality Control criteria failed. Data usability should be carefully assessed by the Project Team.
I	Insufficient sample was provided to perform required Quality Control analyses and/or to meet method-specific sample volume recommendations.

Definitions:

LOD	The Limit of Detection (LOD) is determined by quantitative establishment of the Method Detection Limit (MDL), as defined in 40 CFR 136(b).
LOQ	The Limit of Quantitation (LOQ) is the minimum level, concentration or quantity of a target variable (target analyte) that can be quantitatively reported with a specified level of confidence. As defined in DoD QSM §D.1.2.2, the LOQ value must be a minimum of 3 times the LOD, although the specified level of confidence may have a lower quantitative value.

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

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Battelle
The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
G60642 2	Sed Trap

SAMPLERS: Signature

DATE	TIME	LAB ~~BATTELLE~~ ID	FIELD ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	~~OTHER~~ GS/TOC	ACIDIFIED	PRESERVED	Total Number of Containers
07/31/08	0828	Q3734	ST-04-073108-A	7th sediment trap recovery station 04		✓						✓			
	↓	Q3735	ST-04-073108-B	04		✓						✓			
	0854	Q3736	ST-01-073108-A	01		✓						✓			
	↓	Q3737	ST-01-073108-B	01		✓						✓			
	↓	Q3738	ST-01-073108-C	01		✓						✓			
	0913	Q3739	ST-02-073108-A	02		✓						✓			
	↓	Q3740	ST-02-073108-B	02		✓						✓			
	0935	Q3741	ST-03-073108-A	03		✓						✓			
	↓	Q3742	ST-03-073108-B	03		✓						✓			

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

Relinquished by:	Date/Time	Received by:	Date/Time
	07/31/08 11:45		7-31-08 11:45am
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: After settling for 24 hrs & decanting, all samples will be weighed for reproducibility. At station ST-01 of 3 samples will be analyzed for PCB, TOC & GS. At ST-02, 03 & 04, only 1 of 2 samples will be analyzed.

ORIGINAL

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Deployment No. 8

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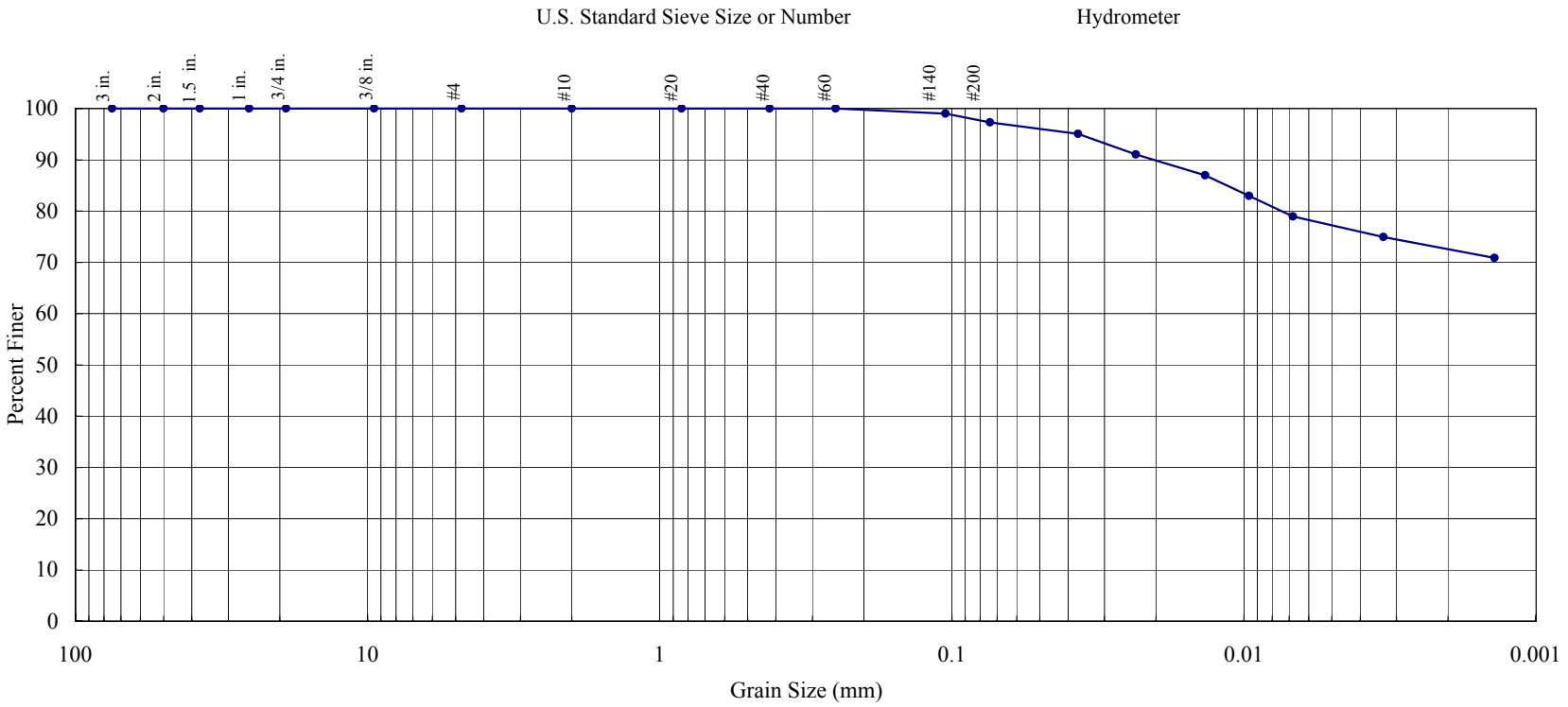
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.00	2.70	20.45	76.85

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
236										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C20
Date Sampled:	8/25/2008
Date Analyzed:	10/3/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q4052 (ST-01-082508-B)
AMS Sample ID:	8C20-1

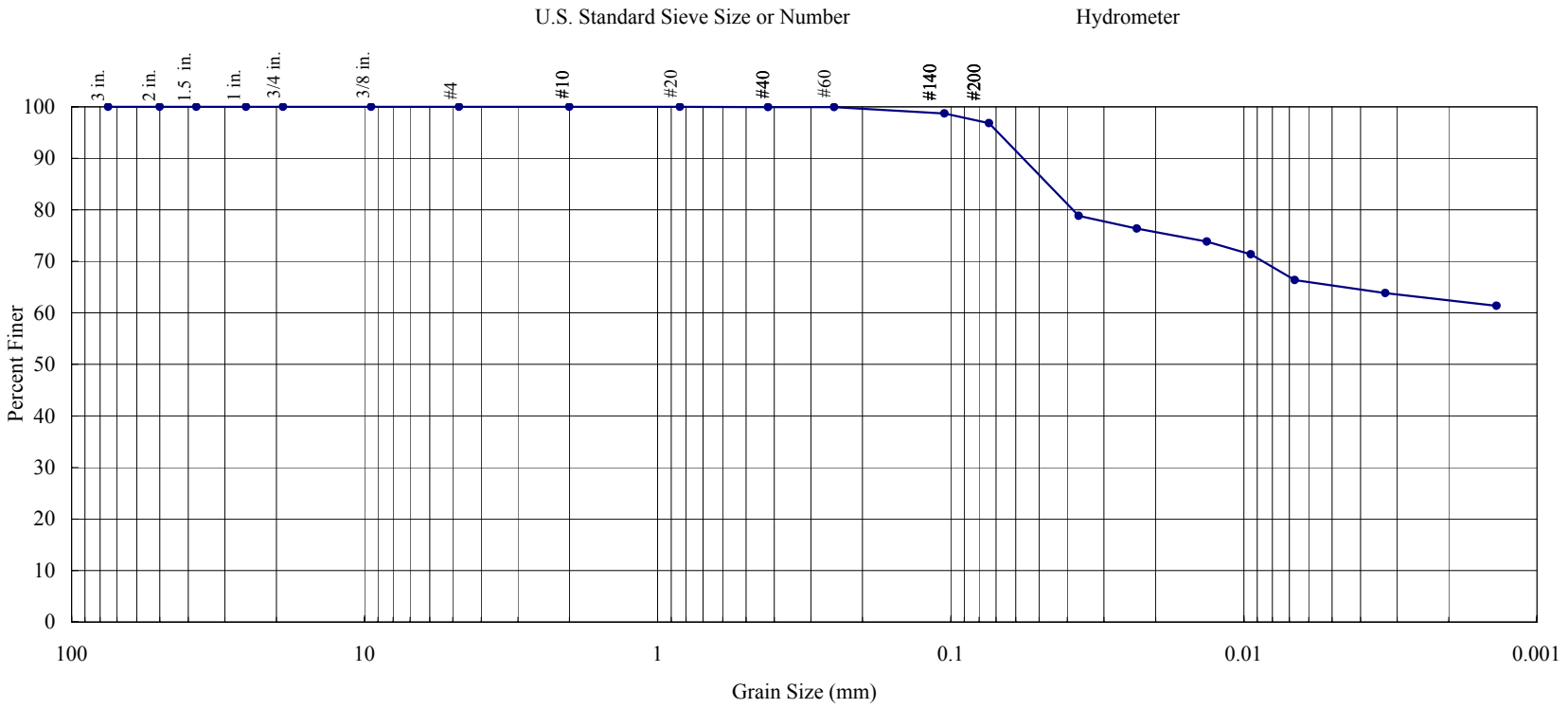
APPLIED MARINE SCIENCES, INC.
502 N. Hwy 3, Suite B
League City, TX 77573
281.554.7272 Tel.
281.554.6356 Fax

These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis
AMS, Inc. Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.04	3.15	31.69	65.12

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
234										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C20
Date Sampled:	8/25/2008
Date Analyzed:	10/3/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q4053 (ST-01-082508-C)
AMS Sample ID:	8C20-2

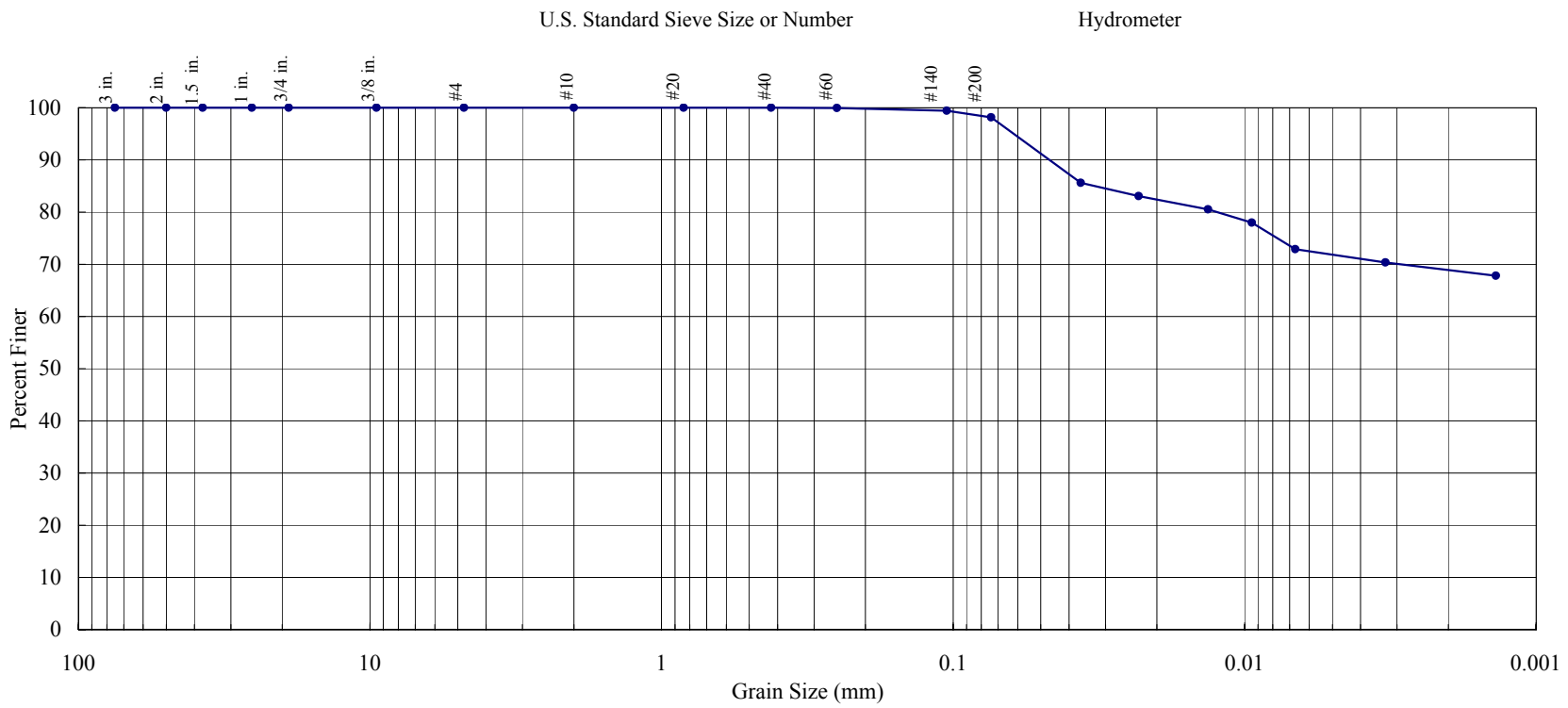
APPLIED MARINE SCIENCES, INC.
502 N. Hwy 3, Suite B
League City, TX 77573
281.554.7272 Tel.
281.554.6356 Fax

These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis
AMS, Inc. Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.00	1.84	26.53	71.63

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
224										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C20
Date Sampled:	8/25/2008
Date Analyzed:	10/3/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q4055 (ST-02-082508-B)
AMS Sample ID:	8C20-3

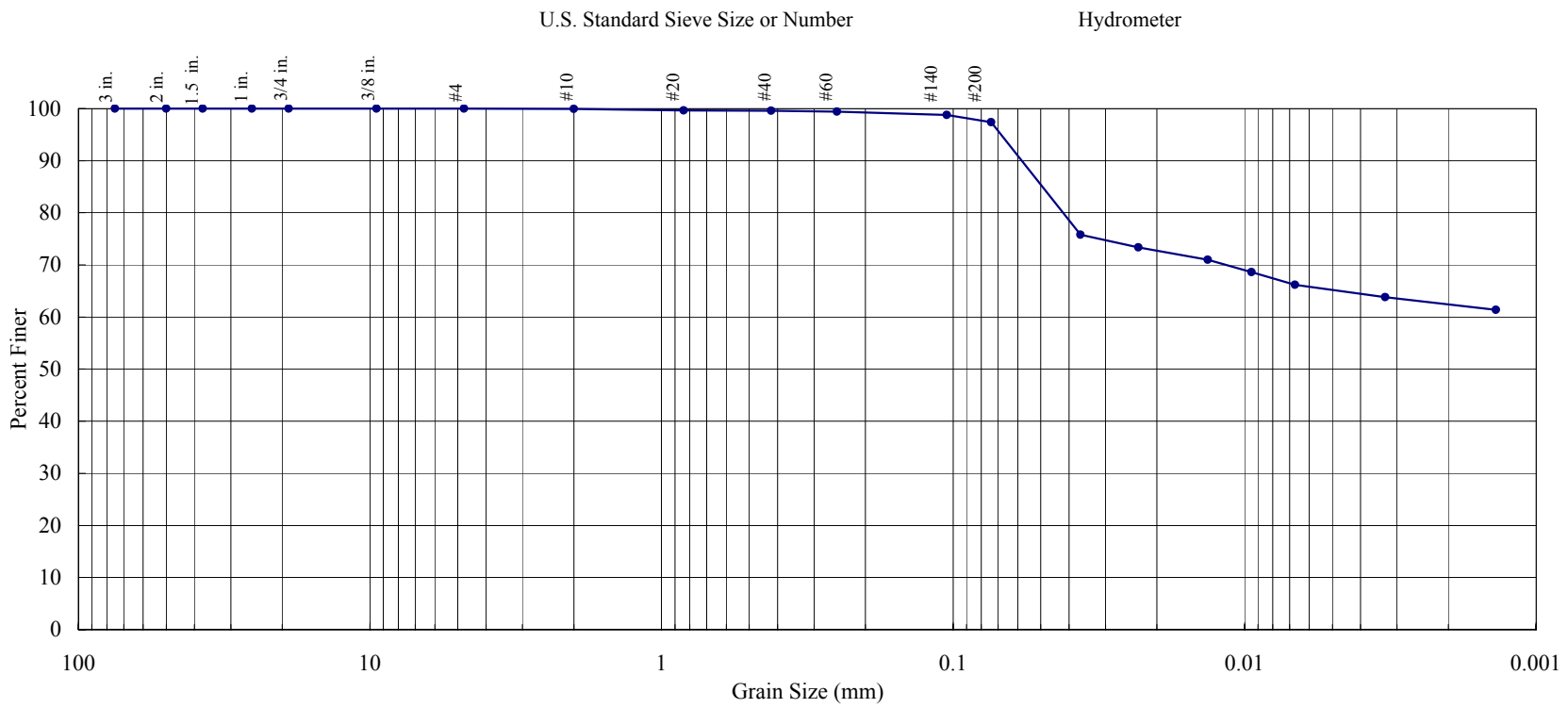
APPLIED MARINE SCIENCES, INC.
502 N. Hwy 3, Suite B
League City, TX 77573
281.554.7272 Tel.
281.554.6356 Fax

These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis
AMS, Inc. Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.05	0.36	2.22	32.37	65.00

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
219										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C20
Date Sampled:	8/25/2008
Date Analyzed:	10/3/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q4057 (ST-03-082508-B)
AMS Sample ID:	8C20-4

APPLIED MARINE SCIENCES, INC.
502 N. Hwy 3, Suite B
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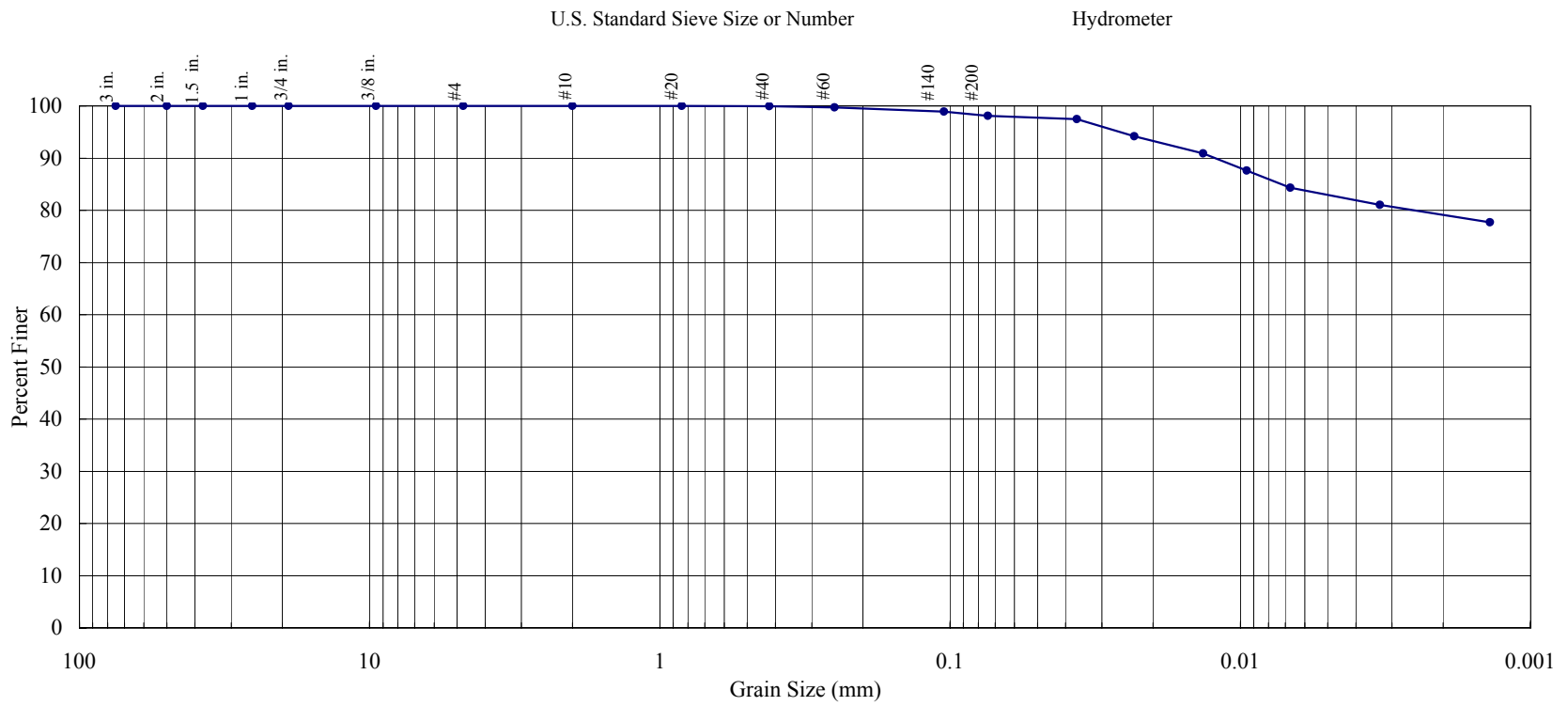
281.554.6356 Fax

These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis
AMS, Inc. Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.08	1.81	15.46	82.65

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
198										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C20
Date Sampled:	8/25/2008
Date Analyzed:	10/3/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q4059 (ST-04-082508-B)
AMS Sample ID:	8C20-5

APPLIED MARINE SCIENCES, INC.
502 N. Hwy 3, Suite B
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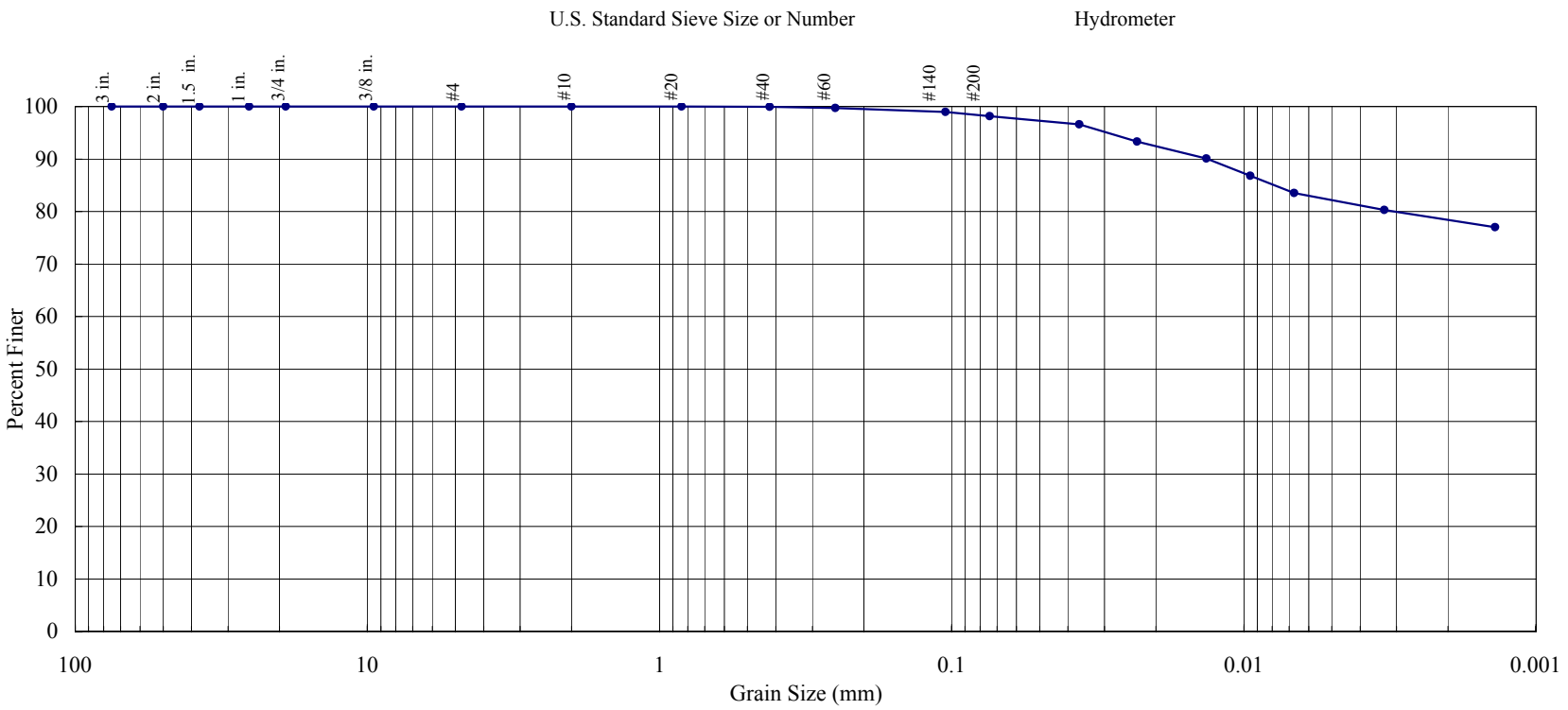
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis
AMS, Inc. Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.08	1.78	16.25	81.89

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
198										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C20
Date Sampled:	8/25/2008
Date Analyzed:	10/3/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q4059 (ST-04-082508-B)
AMS Sample ID:	8C20-05Q

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Jennifer D. Davis
AMS, Inc. Project Manager

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Laboratory No. E87956

QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C20
Project Title:	New Bedford Harbor Sed Traps	Date Sampled:	8/25/2008
Project Number:	G606422	Date Analyzed:	10/3/2008
Client Sample ID:	Q4059 (ST-04-082508-B)	Matrix:	Sediment
AMS Sample ID:	8C20-5	Method:	ASTM D 422
		Batch:	1

Particle Diameter Range (mm)	U.S. Standard Sieve Mesh #	Size Class	Sample Result (%)	Duplicate Result (%)	RPD (%)	Data Qualifier	QC Limits (% RPD)
4.76	No. 4	Gravel	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.08	0.08	0.00		≤ 25
0.074	No. 200	Fine Sand	1.81	1.78	1.67		≤ 25
<0.074 - 0.005	Hydrometer	Silt	15.46	16.25	4.98		≤ 25
<0.005	Hydrometer	Clay	82.65	81.89	0.92		≤ 25

Samples in Batch: 8C20-1, 8C20-2, 8C20-3, 8C20-4, 8C20-05

Qualifiers:
Q - RPD value outside Quality Control Limits
I - Insufficient sample material to perform Quality Control Analyses

Soil Classification: Unified Soil Classification System (USCS) classifications are estimated in accordance with ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) unless the sample contains less than 5% fines (GW, GP, SW, and SP), or the Liquid Limit, Plastic Limit, and Plasticity Index (Atterberg Limits) have been determined in accordance with ASTM D 4318. When these values have been determined the samples are definitively classified using ASTM D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

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Jennifer D. Davis
AMS, Inc. Project Manager

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Laboratory No. E87956

Applied Marine Sciences, Inc.

502 N. Hwy 3, Suite B, League City, TX 77573, (281) 554-7272 Fax (281) 554-6356

ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C20
Project Number:	G606422-07DUXCHE	Date Sampled:	8/25/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	9/9/2008
Client Sample ID:	Q4052 (ST-01-082508-B)		
AMS Sample ID:	8C20-1		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	12.68	%		0.01	0.03	EPA 9060A	Sediment	10/3/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Jennifer D. Davis
AMS, Inc. Project Manager

Laboratory No. E87956

Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C20
Project Number:	G606422-07DUXCHE	Date Sampled:	8/25/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	9/9/2008
Client Sample ID:	Q4053 (ST-01-082508-C)		
AMS Sample ID:	8C20-2		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	13.06	%		0.01	0.03	EPA 9060A	Sediment	10/3/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Jennifer D. Davis
AMS, Inc. Project Manager

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Laboratory No. E87956

Applied Marine Sciences, Inc.

502 N. Hwy 3, Suite B, League City, TX 77573, (281) 554-7272 Fax (281) 554-6356

ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C20
Project Number:	G606422-07DUXCHE	Date Sampled:	8/25/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	9/9/2008
Client Sample ID:	Q4055 (ST-02-082508-B)		
AMS Sample ID:	8C20-3		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	13.88	%		0.01	0.03	EPA 9060A	Sediment	10/3/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Jennifer D. Davis
AMS, Inc. Project Manager

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Laboratory No. E87956

Applied Marine Sciences, Inc.

502 N. Hwy 3, Suite B, League City, TX 77573, (281) 554-7272 Fax (281) 554-6356

ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C20
Project Number:	G606422-07DUXCHE	Date Sampled:	8/25/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	9/9/2008
Client Sample ID:	Q4057 (ST-03-082508-B)		
AMS Sample ID:	8C20-4		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	11.83	%		0.01	0.03	EPA 9060A	Sediment	10/3/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Jennifer D. Davis
AMS, Inc. Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

Applied Marine Sciences, Inc.

502 N. Hwy 3, Suite B, League City, TX 77573, (281) 554-7272 Fax (281) 554-6356

ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C20
Project Number:	G606422-07DUXCHE	Date Sampled:	8/25/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	9/9/2008
Client Sample ID:	Q4059 (ST-04-082508-B)		
AMS Sample ID:	8C20-5		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	12.59	%		0.01	0.03	EPA 9060A	Sediment	10/3/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Jennifer D. Davis
AMS, Inc. Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

Applied Marine Sciences, Inc.

502 N. Hwy 3, Suite B, League City, TX 77573, (281) 554-7272 Fax (281) 554-6356

TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C20
Project Number:	G606422-07DUXCHE	AMS SOP Number:	2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed:	10/3/2008
Matrix:	Sediment	Batch ID:	100308-04T
Method:	EPA 9060A		

Method Blank (Batch Continuing Blank (CB)), Continuing Calibration Verification (CCV) and Independent Continuing Calibration Verification (ICCV) Results:

AMS Sample ID	Result (%)	CCV Conc. (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
CB-03	0.01	0.01	--	U	0.01	0.03	≤ 0.03
CCV-03	3.17	3.23	1.88		0.01	0.03	≤ 5 RPD
ICCV-03	2.08	2.00	3.92		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits
8C20-5	11.51	12.23	6.07		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 8C20-1, 8C20-2, 8C20-3, 8C20-4, 8C20-5

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

Jennifer D. Davis
AMS, Inc. Project Manager

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Laboratory No. E87956

Applied Marine Sciences, Inc.

502 N. Hwy 3, Suite B, League City, TX 77573, (281) 554-7272 Fax (281) 554-6356

QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C20
AMS SOP Number: 2201

Data Qualifiers:

U	Undetected at the Limit of Detection (LOD): The associated value is the Limit of Detection, adjusted by any dilution factor used in the analysis.
J	The analyte was positively identified, but was below the Limit of Quantitation (LOQ). The quantitation is an estimate.
B	Blank contamination: The analyte was detected above one-half the LOD in an associated blank.
Q	One or more Quality Control criteria failed. Data usability should be carefully assessed by the Project Team.
I	Insufficient sample was provided to perform required Quality Control analyses and/or to meet method-specific sample volume recommendations.

Definitions:

LOD	The Limit of Detection (LOD) is determined by quantitative establishment of the Method Detection Limit (MDL), as defined in 40 CFR 136(b).
LOQ	The Limit of Quantitation (LOQ) is the minimum level, concentration or quantity of a target variable (target analyte) that can be quantitatively reported with a specified level of confidence. As defined in DoD QSM §D.1.2.2, the LOQ value must be a minimum of 3 times the LOD, although the specified level of confidence may have a lower quantitative value.

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

Jennifer D. Davis
AMS, Inc. Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

Battelle
The Business of Innovation

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Chain of Custody

Proj. No	Proj. Name
G606422	NBH Sed Trap

SAMPLERS: Signature

DATE	TIME	LAB ~~BATTELLE~~ ID	FIELD ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER (GS/TOC)	ACIDIFIED	PRESERVED	Total Number of Containers
08/25/08	13:07	Q4051	ST-01-082508-A			✓						✓			1
	↓	Q4052	ST-01-082508-B			✓						✓			1
	↓	Q4053	ST-01-082508-C			✓						✓			1
	13:30	Q4054	ST-02-082508-A			✓						✓			1
	↓	Q4055	ST-02-082508-B			✓						✓			1
	14:18	Q4056	ST-03-082508-A			✓						✓			1
	↓	Q4057	ST-03-082508-B			✓						✓			1
	13:56	Q4058	ST-04-082508-A			✓						✓			1
	↓	Q4059	ST-04-082508-B			✓						✓			1

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

Relinquished by:	Date/Time	Received by:	Date/Time
	08/26/08 14:10	Joanne Donovan	8/26 08 1410
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: After settling for 24 hrs & decanting, all samples will be weighed for reproducibility. At station ST-01, 2 of 3 samples will be analyzed for PCB, TOC & Grain Size. At station ST-02, 03 & 04 only 1 of 2 samples will be analyzed

ORIGINAL

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Deployment No. 9

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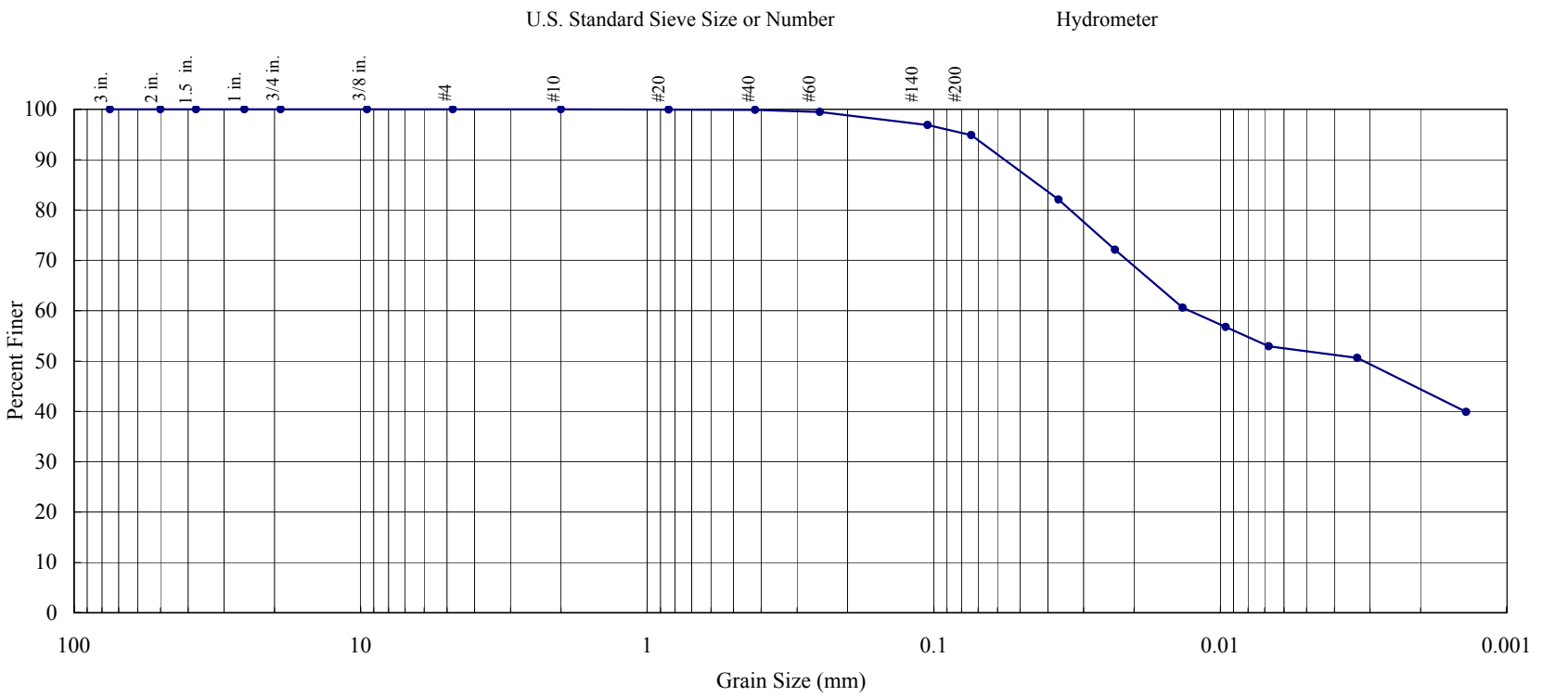
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.14	4.99	43.15	51.72

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
261										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C24
Date Sampled:	10/2/2008
Date Analyzed:	11/15/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q4850 (ST01-100208-B)
AMS Sample ID:	8C24-1

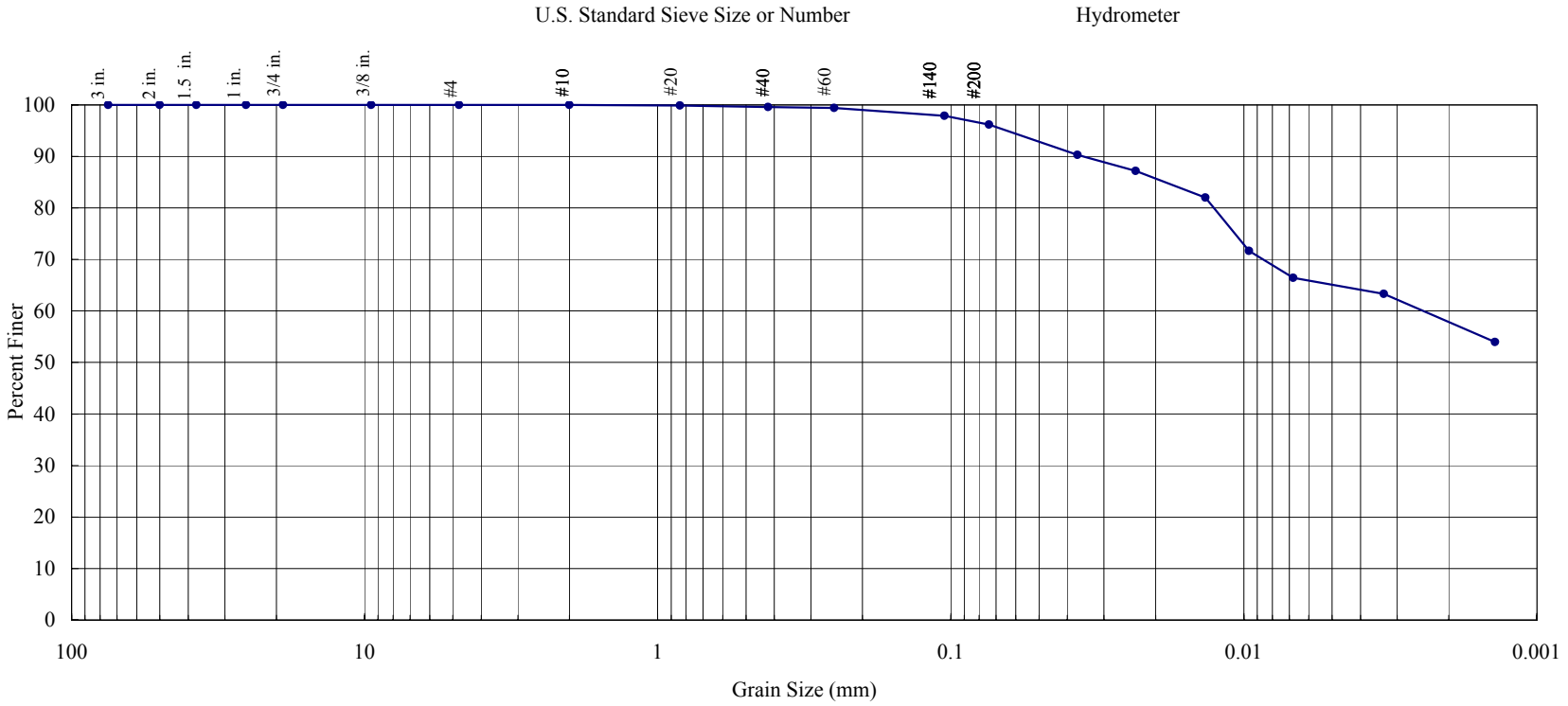
APPLIED MARINE SCIENCES, INC.
502 N. Hwy 3, Suite B
League City, TX 77573
281.554.7272 Tel.
281.554.6356 Fax

These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis
AMS, Inc. Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.40	3.41	31.35	64.84

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
253										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C24
Date Sampled:	10/2/2008
Date Analyzed:	11/15/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q4851 (ST01-100208-C)
AMS Sample ID:	8C24-2

APPLIED MARINE SCIENCES, INC.
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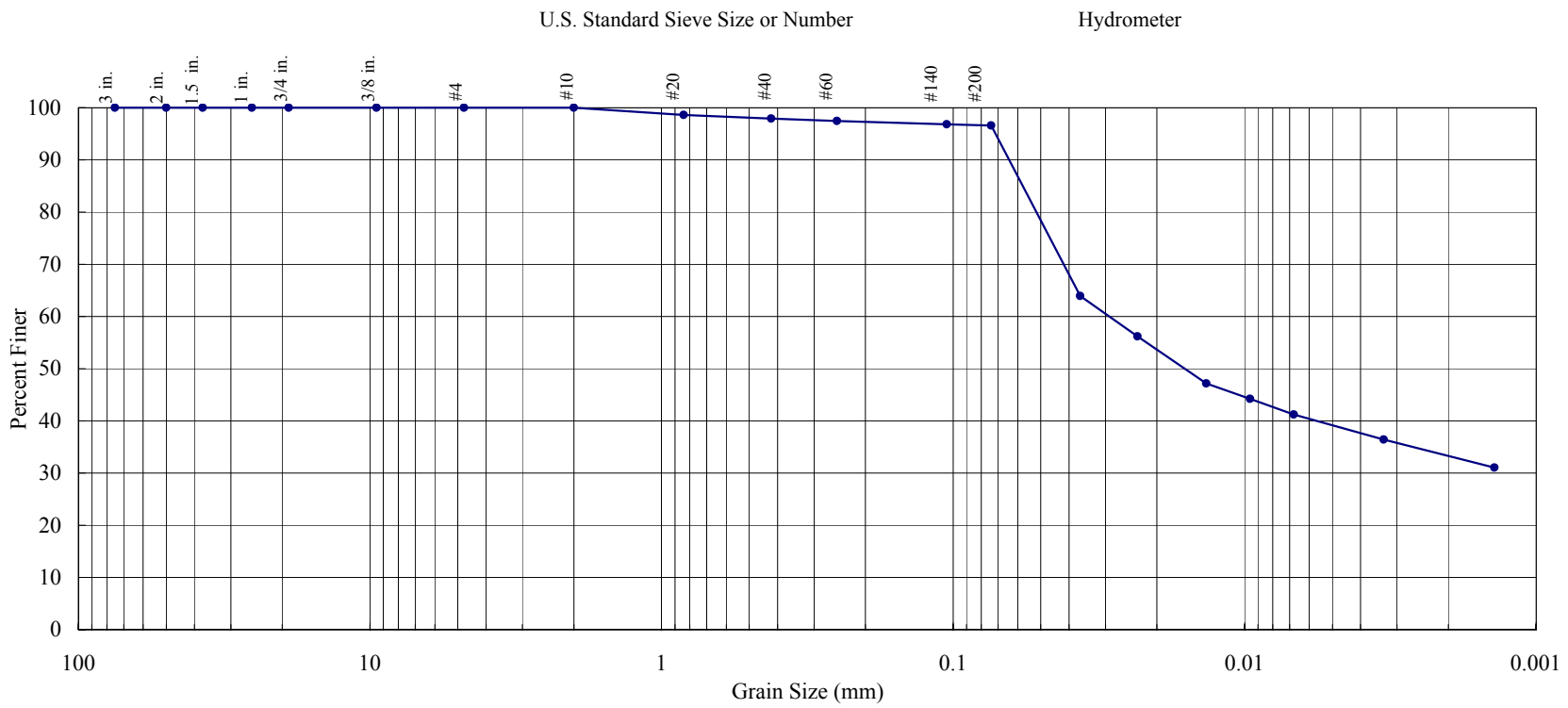
ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	2.07	1.35	57.83	38.75

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
315										

Material Description

Elastic Silt ("MH"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C24
Date Sampled:	10/2/2008
Date Analyzed:	11/15/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q4853 (ST02-100208-B)
AMS Sample ID:	8C24-3

APPLIED MARINE SCIENCES, INC.
502 N. Hwy 3, Suite B
League City, TX 77573
281.554.7272 Tel.
281.554.6356 Fax

These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis
AMS, Inc. Project Manager

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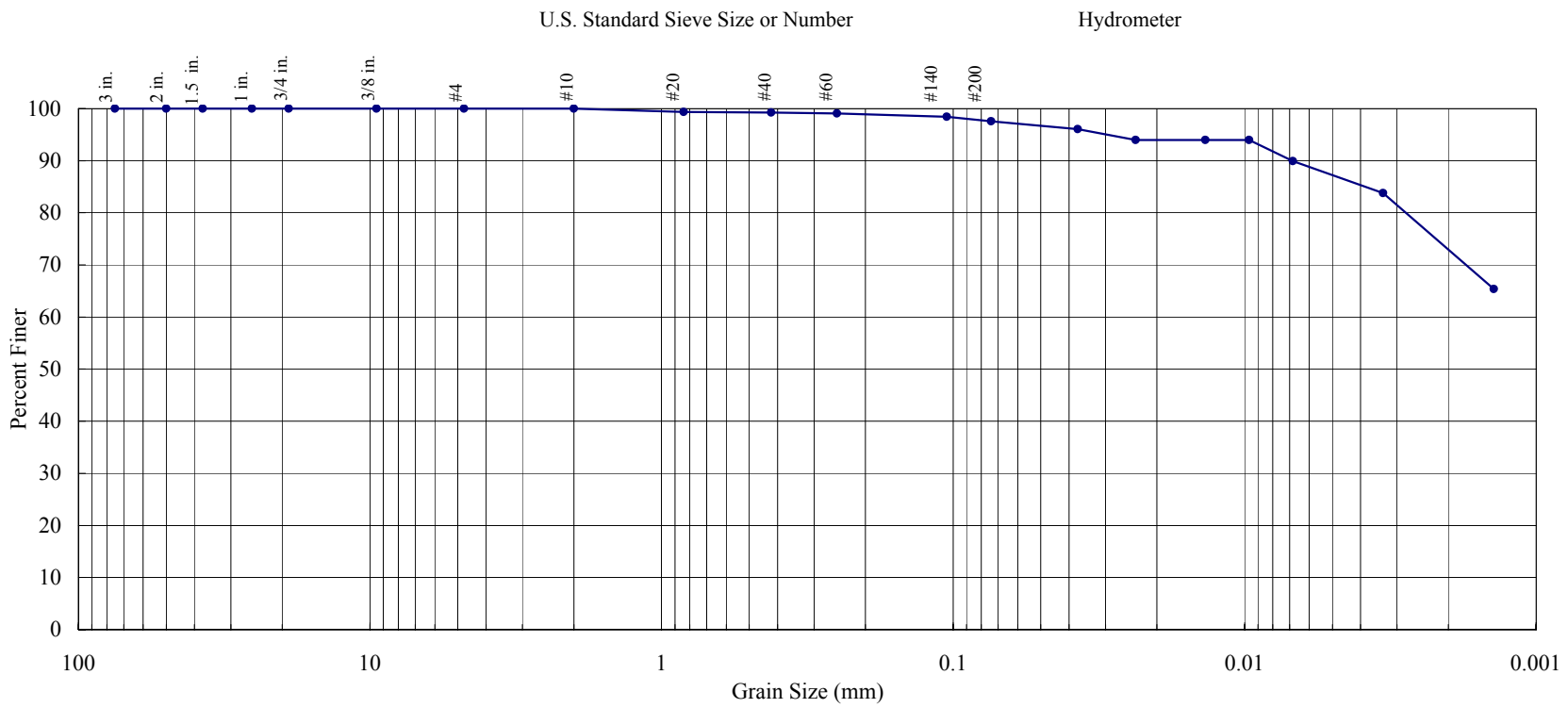
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.76	1.65	10.89	86.70

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
223										

Material Description

Fat Clay ("CH"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C24
Date Sampled:	10/2/2008
Date Analyzed:	11/15/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q4854 (ST04-100208-A)
AMS Sample ID:	8C24-4

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Jennifer D. Davis
AMS, Inc. Project Manager

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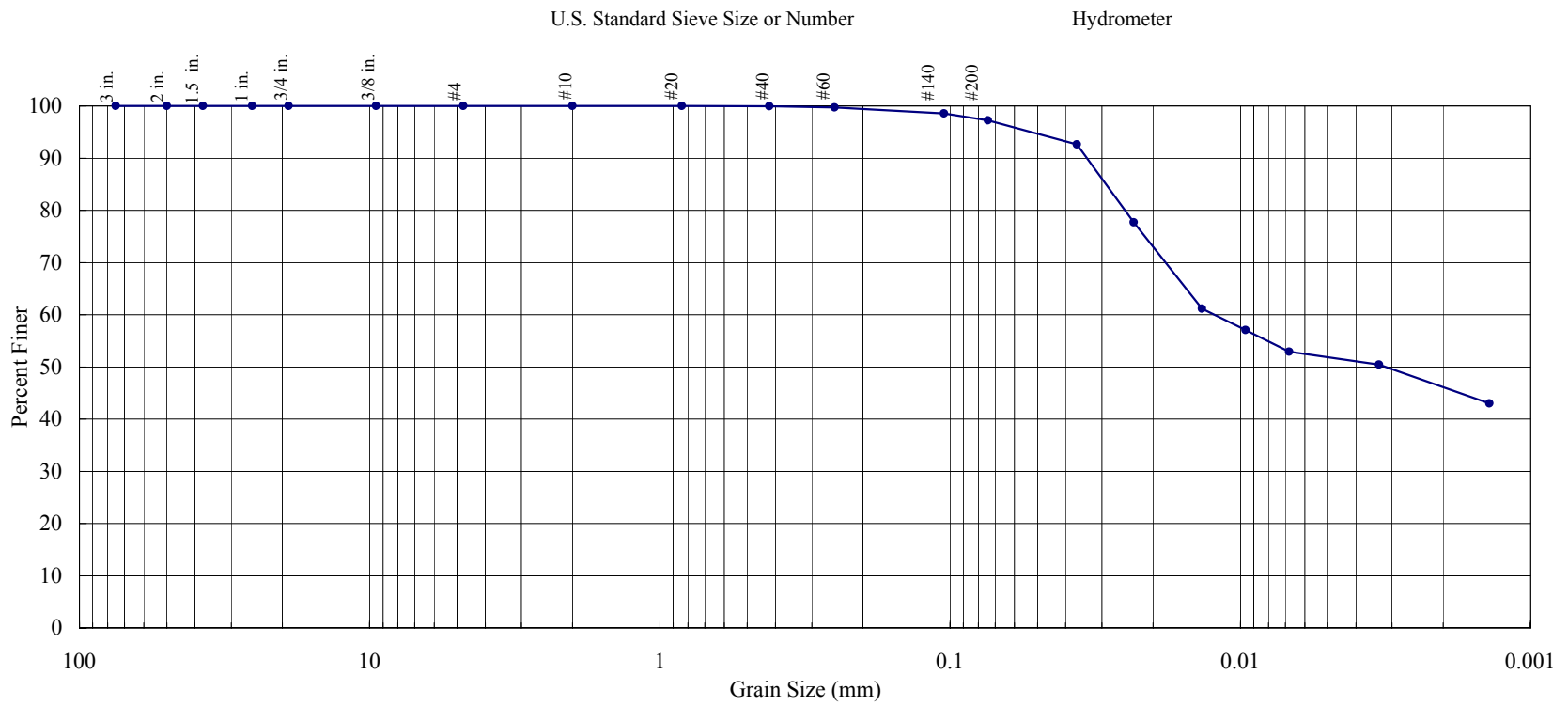
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.06	2.72	45.59	51.63

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
259										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C24
Date Sampled:	10/2/2008
Date Analyzed:	11/15/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q4857 (ST03-100208-B)
AMS Sample ID:	8C24-5

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Jennifer D. Davis
AMS, Inc. Project Manager

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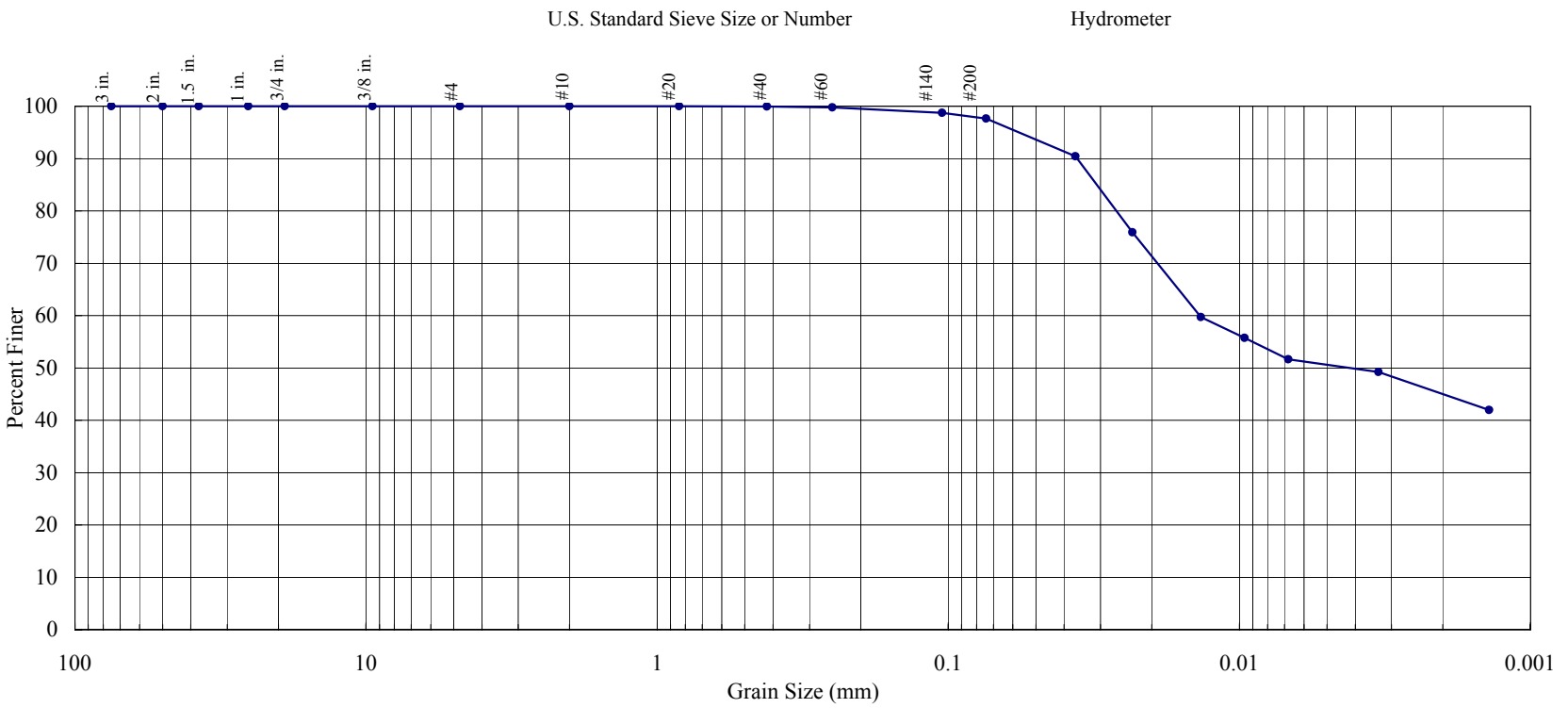
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.05	2.32	47.22	50.41

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
259										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C24
Date Sampled:	10/2/2008
Date Analyzed:	11/15/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q4857 (ST03-100208-B)
AMS Sample ID:	8C24-5Q

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Jennifer D. Davis
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QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C24
Project Title:	New Bedford Harbor Sed Traps	Date Sampled:	10/2/2008
Project Number:	G606422	Date Analyzed:	11/15/2008
Client Sample ID:	Q4857 (ST03-100208-B)	Matrix:	Sediment
AMS Sample ID:	8C24-5	Method:	ASTM D 422
		Batch:	1

Particle Diameter Range (mm)	U.S. Standard Sieve Mesh #	Size Class	Sample Result (%)	Duplicate Result (%)	RPD (%)	Data Qualifier	QC Limits (% RPD)
4.76	No. 4	Gravel	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.06	0.05	18.18		≤ 25
0.074	No. 200	Fine Sand	2.72	2.32	15.87		≤ 25
<0.074 - 0.005	Hydrometer	Silt	45.59	47.22	3.51		≤ 25
<0.005	Hydrometer	Clay	51.63	50.41	2.39		≤ 25

Samples in Batch: 8C24-1, 8C24-2, 8C24-3, 8C24-4, 8C20-5

Qualifiers:
Q - RPD value outside Quality Control Limits
I - Insufficient sample material to perform Quality Control Analyses

Soil Classification: Unified Soil Classification System (USCS) classifications are estimated in accordance with ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) unless the sample contains less than 5% fines (GW, GP, SW, and SP), or the Liquid Limit, Plastic Limit, and Plasticity Index (Atterberg Limits) have been determined in accordance with ASTM D 4318. When these values have been determined the samples are definitively classified using ASTM D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

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Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C24
Project Number:	G606422-07DUXCHE	Date Sampled:	10/2/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	10/8/2008
Client Sample ID:	Q4850 (ST01-100208-B)		
AMS Sample ID:	8C24-1		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	15.41	%		0.01	0.03	EPA 9060A	Sediment	10/25/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Jennifer D. Davis
AMS, Inc. Project Manager

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C24
Project Number:	G606422-07DUXCHE	Date Sampled:	10/2/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	10/8/2008
Client Sample ID:	Q4851 (ST01-100208-C)		
AMS Sample ID:	8C24-2		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	15.37	%		0.01	0.03	EPA 9060A	Sediment	10/25/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C24
Project Number:	G606422-07DUXCHE	Date Sampled:	10/2/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	10/8/2008
Client Sample ID:	Q4853 (ST02-100208-B)		
AMS Sample ID:	8C24-3		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	23.83	%		0.01	0.03	EPA 9060A	Sediment	10/25/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

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* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C24
Project Number:	G606422-07DUXCHE	Date Sampled:	10/2/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	10/8/2008
Client Sample ID:	Q4854 (ST04-100208-A)		
AMS Sample ID:	8C24-4		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	13.58	%		0.01	0.03	EPA 9060A	Sediment	10/25/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C24
Project Number:	G606422-07DUXCHE	Date Sampled:	10/2/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	10/8/2008
Client Sample ID:	Q4857 (ST03-100208-B)		
AMS Sample ID:	8C24-5		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	12.39	%		0.01	0.03	EPA 9060A	Sediment	10/25/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C24
Project Number:	G606422-07DUXCHE	AMS SOP Number:	2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed:	10/25/2008
Matrix:	Sediment	Batch ID:	102508-01T
Method:	EPA 9060A		

Method Blank (Batch Continuing Blank (CB)), Continuing Calibration Verification (CCV) and Independent Continuing Calibration Verification (ICCV) Results:

AMS Sample ID	Result (%)	CCV Conc. (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
CB-01	0.01	0.01	--	U	0.01	0.03	≤ 0.03
CCV-01	3.11	3.23	3.79		0.01	0.03	≤ 5 RPD
ICCV-01	2.07	2.00	3.44		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits
8C24-5	12.39	11.74	5.39		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 8C24-1, 8C24-2, 8C24-3, 8C24-4, 8C24-5

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

Jennifer D. Davis
AMS, Inc. Project Manager

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Laboratory No. E87956

Applied Marine Sciences, Inc.

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QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C24
AMS SOP Number: 2201

Data Qualifiers:

U	Undetected at the Limit of Detection (LOD): The associated value is the Limit of Detection, adjusted by any dilution factor used in the analysis.
J	The analyte was positively identified, but was below the Limit of Quantitation (LOQ). The quantitation is an estimate.
B	Blank contamination: The analyte was detected above one-half the LOD in an associated blank.
Q	One or more Quality Control criteria failed. Data usability should be carefully assessed by the Project Team.
I	Insufficient sample was provided to perform required Quality Control analyses and/or to meet method-specific sample volume recommendations.

Definitions:

LOD	The Limit of Detection (LOD) is determined by quantitative establishment of the Method Detection Limit (MDL), as defined in 40 CFR 136(b).
LOQ	The Limit of Quantitation (LOQ) is the minimum level, concentration or quantity of a target variable (target analyte) that can be quantitatively reported with a specified level of confidence. As defined in DoD QSM §D.1.2.2, the LOQ value must be a minimum of 3 times the LOD, although the specified level of confidence may have a lower quantitative value.

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

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Battelle
. . . Putting Technology To Work

Chain of Custody

Proj. No	Proj. Name
G606422	Sed Trap

SAMPLERS: Signature

Matthew R Hyslop

DATE	TIME	Lab ~~BATTELLE~~ ID	Field ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	~~OTHER~~ GS/TOC	ACIDIFIED	PRESERVED	Total Number of Containers
10/2/08	0926	Q4849	ST01-100208-A	9th sediment trap recovery station ST01		X						X			1
	↓	Q4850	ST01-100208-B	ST01		X						X			1
	↓	Q4851	ST01-100208-C	ST01		X						X			1
	0955	Q4852	ST02-100208-A	ST02		X						X			1
	↓	Q4853	ST02-100208-B	ST02		X						X			1
	1022	Q4854	ST04-100208-A	ST04		X						X			1
	↓	Q4855	ST04-100208-B	ST04		X						X			1
	1045	Q4856	ST03-100208-A	ST03		X						X			1
↓	↓	Q4857	ST03-100208-B	ST03		X						X			1

Relinquished by:	Date/Time	Received by:	Date/Time
Matthew R Hyslop	10/2/08 1315	Jeannine Leyfat	10/2/08 13:15
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: After settling for 24 hours, All samples will be decanted + weighed for reproducability. At station ST01 2 of 3 samples will be analyzed for PCB, TOC, + GS. At the remaining stations only 1 of 2 samples will be analyzed

ORIGINAL

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Deployment No. 10

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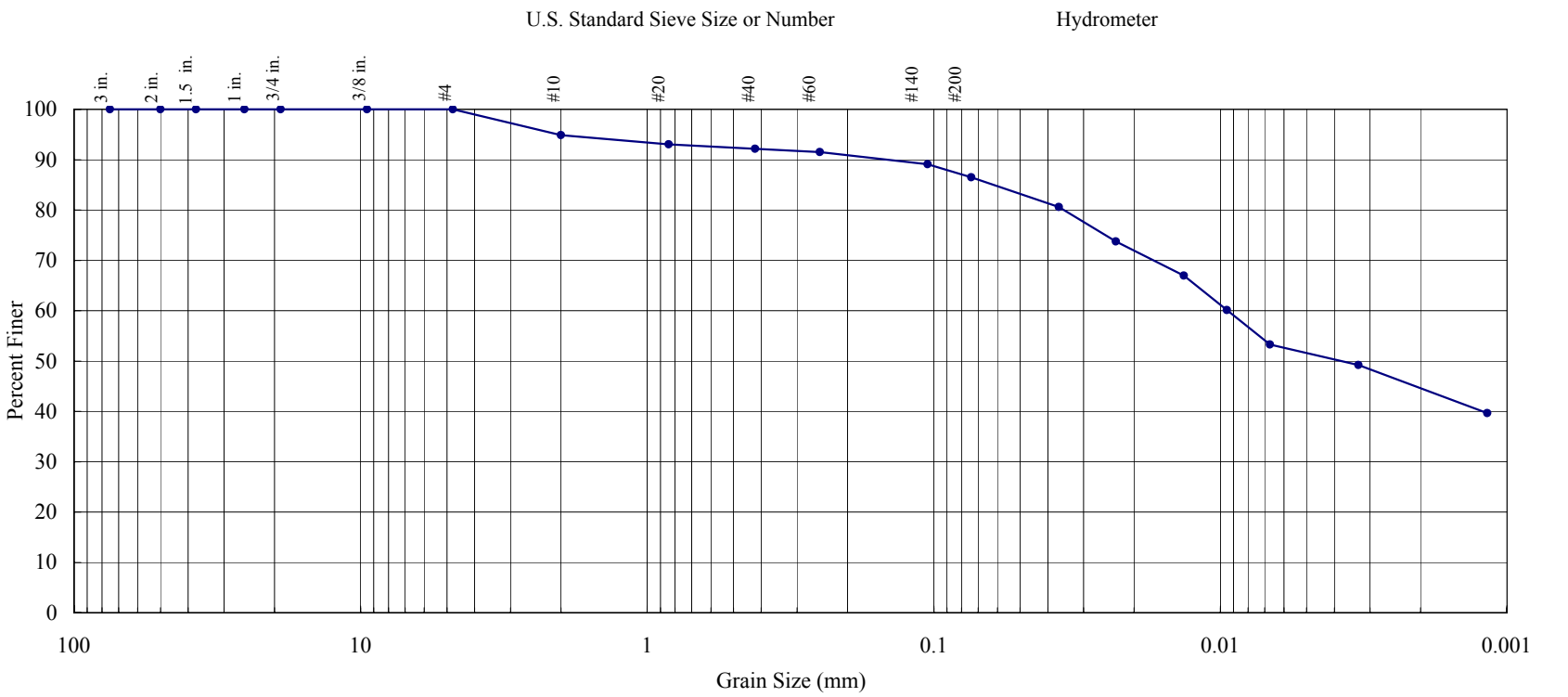
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	5.13	2.69	5.69	35.27	51.22

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
227										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C26
Date Sampled:	10/30/2008
Date Analyzed:	12/2/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q5252 (ST-01-103008-B)
AMS Sample ID:	8C26-01

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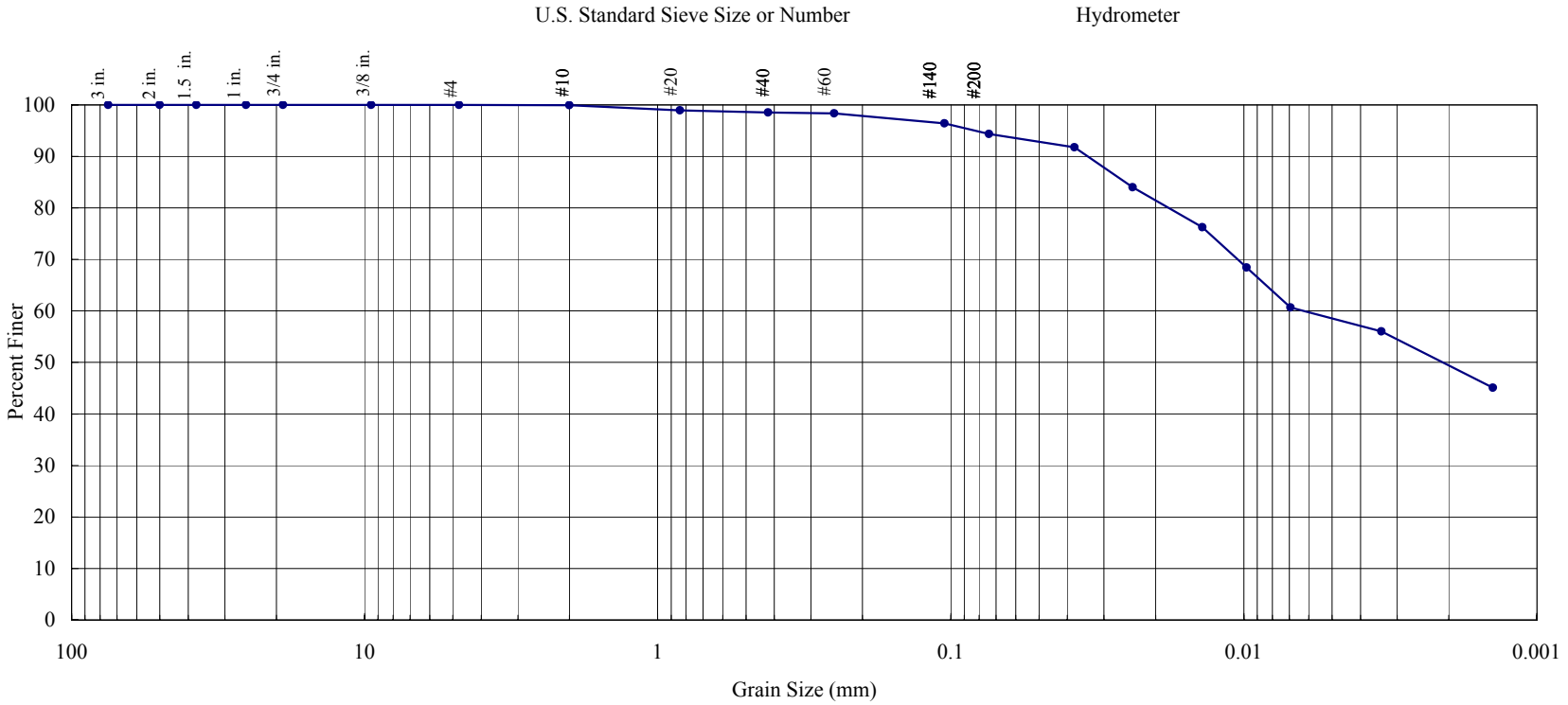
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.05	1.43	4.18	36.20	58.14

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
320										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C26
Date Sampled:	10/30/2008
Date Analyzed:	12/2/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q5253 (ST-01-103008-C)
AMS Sample ID:	8C26-02

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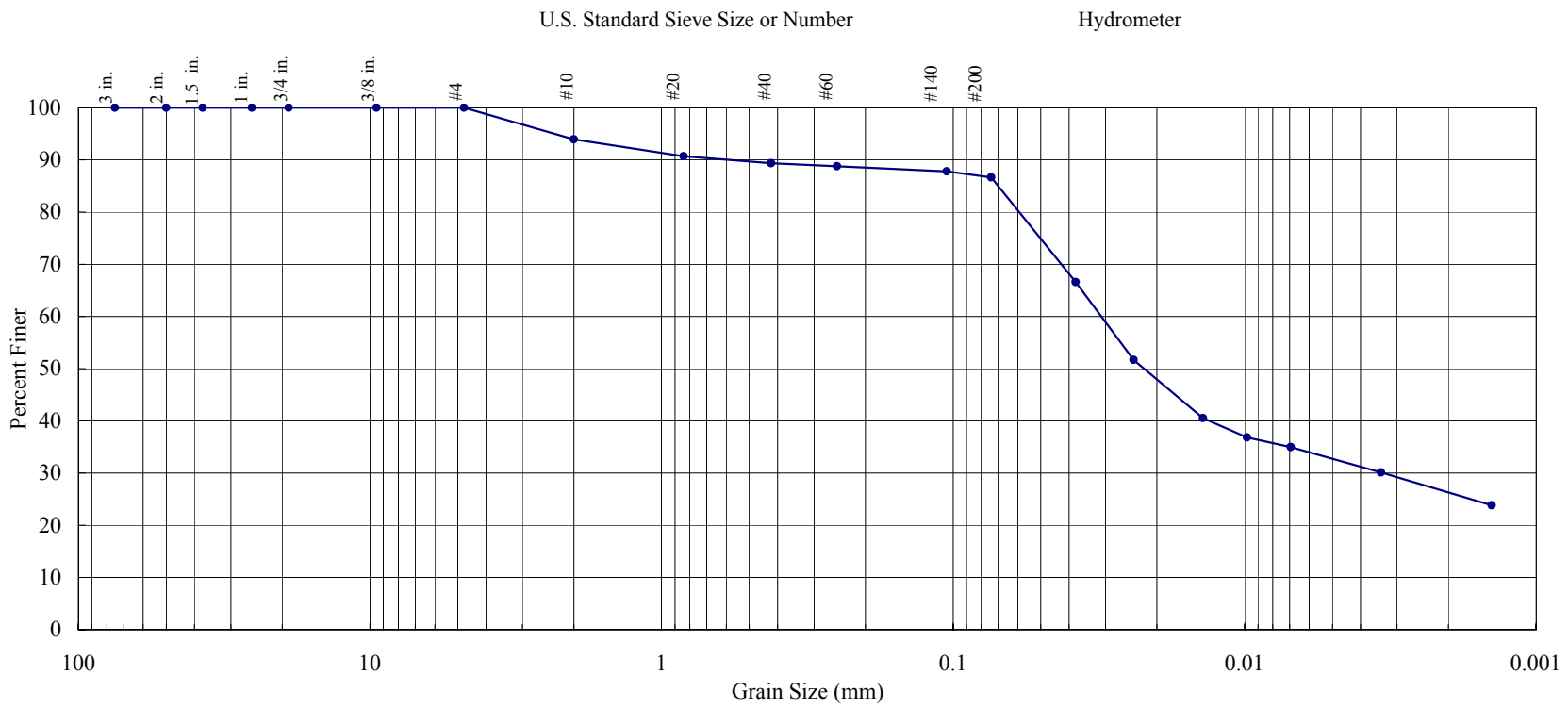
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	6.08	4.56	2.69	54.36	32.31

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
253										

Material Description

Elastic Silt ("MH"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C26
Date Sampled:	10/30/2008
Date Analyzed:	12/2/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q5255 (ST-02-103008-B)
AMS Sample ID:	8C26-03

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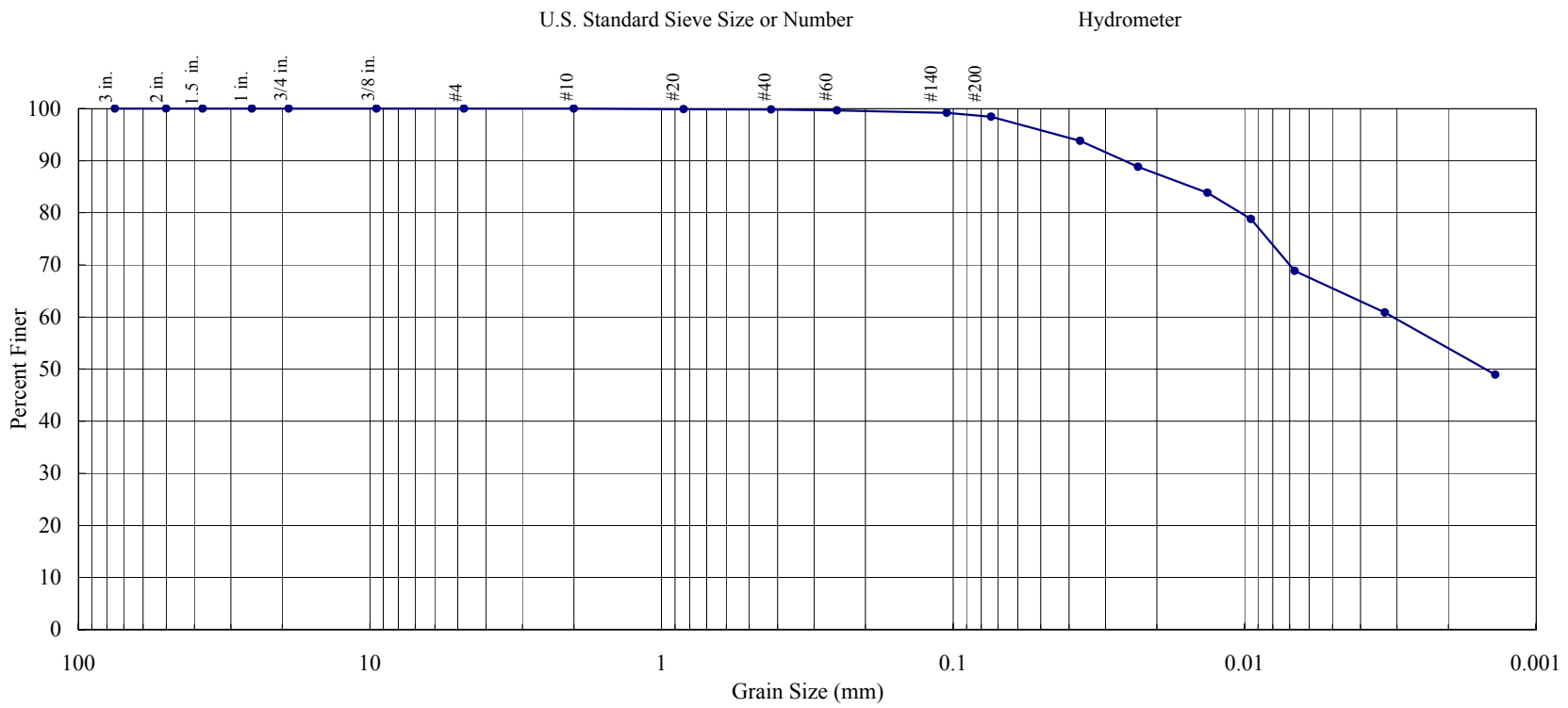
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.20	1.35	33.62	64.83

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
302										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C26
Date Sampled:	10/30/2008
Date Analyzed:	12/2/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q5257 (ST-03-103008-B)
AMS Sample ID:	8C26-04

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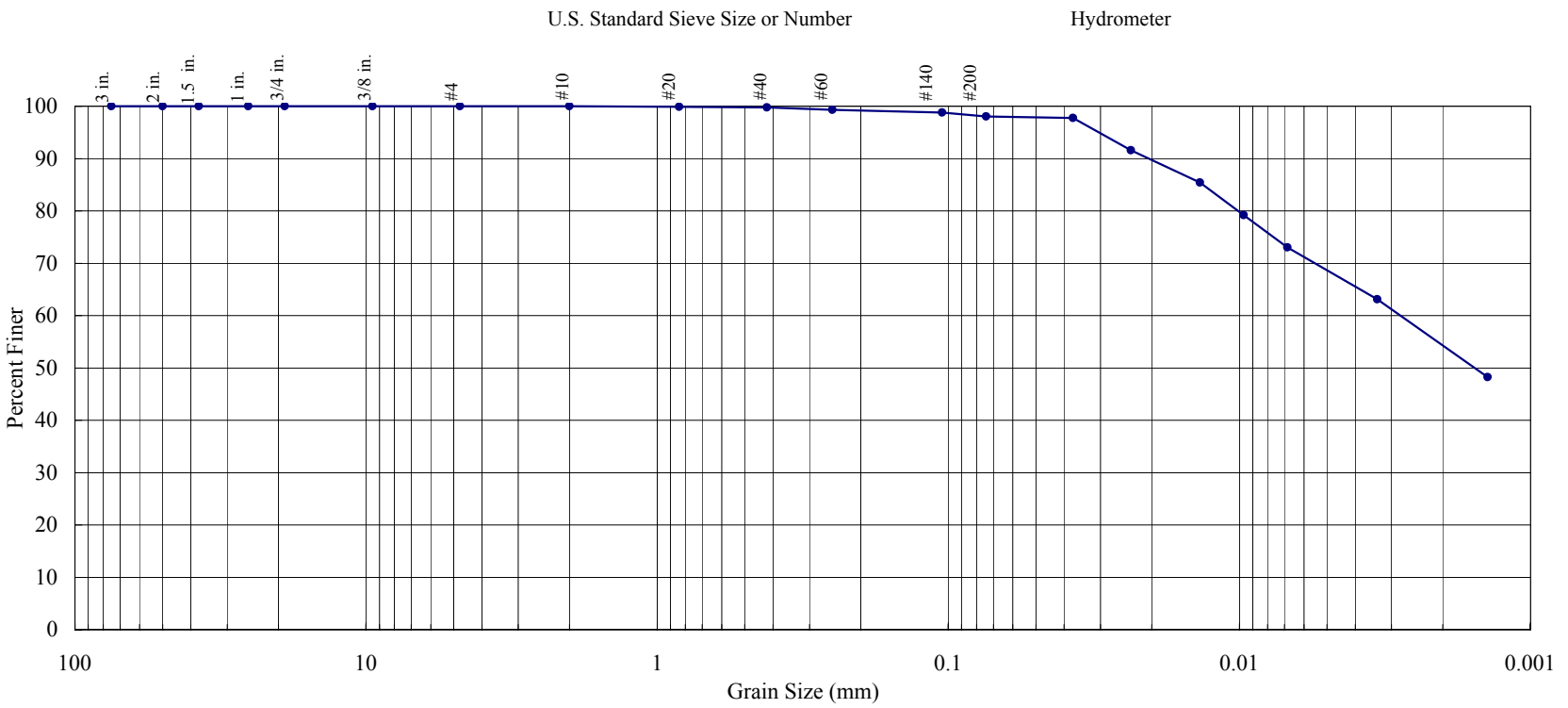
GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.25	1.69	30.28	67.78

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
317										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C26
Date Sampled:	10/30/2008
Date Analyzed:	12/2/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q5259 (ST-04-103008-B)
AMS Sample ID:	8C26-05

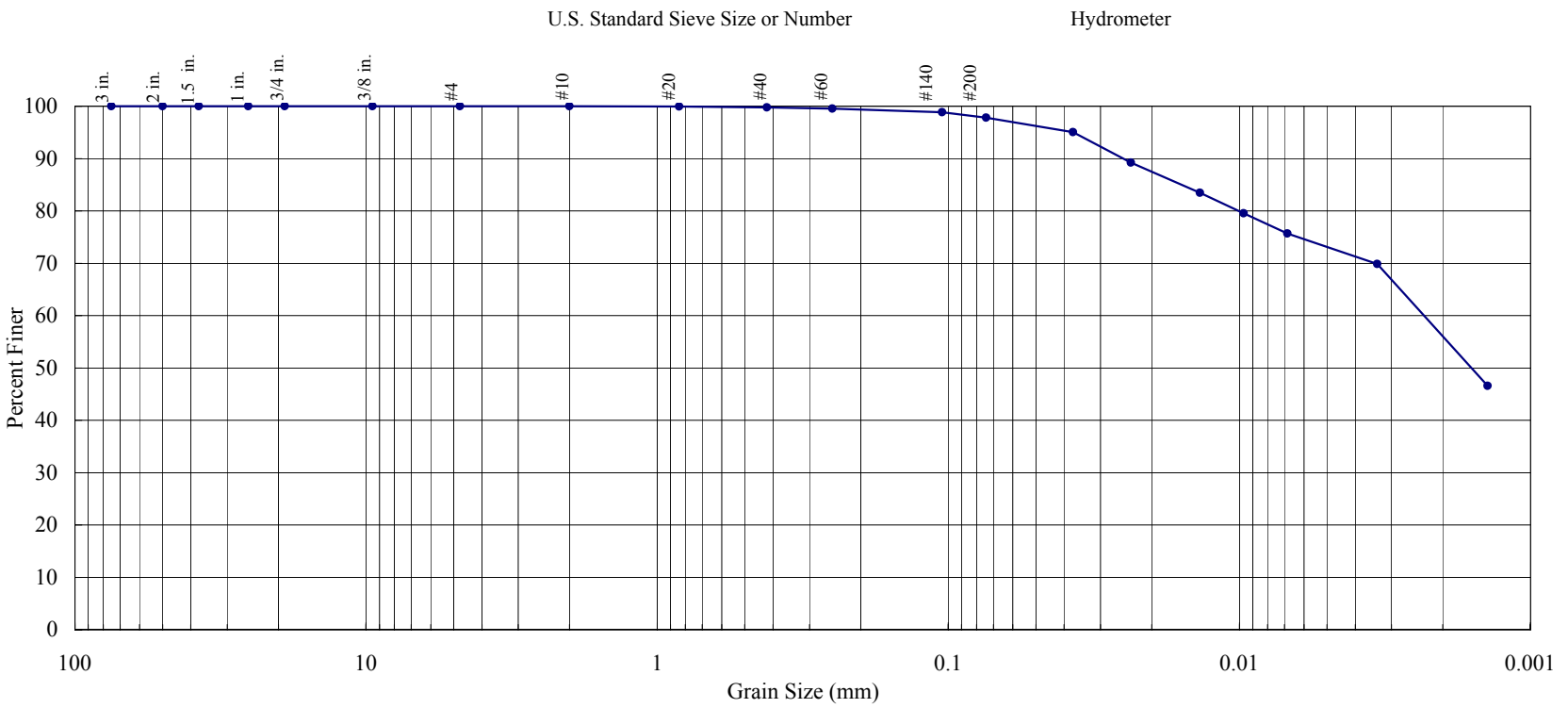
APPLIED MARINE SCIENCES, INC.
502 N. Hwy 3, Suite B
League City, TX 77573
281.554.7272 Tel.
281.554.6356 Fax

These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis
AMS, Inc. Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)	
	Coarse	Medium	Fine	Silt	Clay
0.00	0.00	0.22	1.95	25.24	72.59

Water Cont. (%)	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
317										

Material Description

Lean Clay ("CL"), black (N1)

Client:	Battelle
Client Project Title:	New Bedford Harbor Sed Traps
Client Project Number:	G606422
AMS Project Number:	8C26
Date Sampled:	10/30/2008
Date Analyzed:	12/2/2008
Matrix, Method:	Sediment, ASTM D 422
Client Sample ID:	Q5259 (ST-04-103008-B)
AMS Sample ID:	8C26-05Q

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Jennifer D. Davis
AMS, Inc. Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C26
Project Title:	New Bedford Harbor Sed Traps	Date Sampled:	10/30/2008
Project Number:	G606422	Date Analyzed:	12/2/2008
Client Sample ID:	Q5259 (ST-04-103008-B)	Matrix:	Sediment
AMS Sample ID:	8C26-05	Method:	ASTM D 422
		Batch:	112208-01G

Particle Diameter Range (mm)	U.S. Standard Sieve Mesh #	Size Class	Sample Result (%)	Duplicate Result (%)	RPD (%)	Data Qualifier	QC Limits (% RPD)
4.76	No. 4	Gravel	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.25	0.22	12.77		≤ 25
0.074	No. 200	Fine Sand	1.69	1.95	14.29		≤ 25
<0.074 - 0.005	Hydrometer	Silt	30.28	25.24	18.16		≤ 25
<0.005	Hydrometer	Clay	67.78	72.59	6.85		≤ 25

Samples in Batch: 8C26-01, 8C26-02, 8C26-03, 8C26-04, 8C26-05

Qualifiers:
Q - RPD value outside Quality Control Limits
I - Insufficient sample material to perform Quality Control Analyses

Soil Classification: Unified Soil Classification System (USCS) classifications are estimated in accordance with ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) unless the sample contains less than 5% fines (GW, GP, SW, and SP), or the Liquid Limit, Plastic Limit, and Plasticity Index (Atterberg Limits) have been determined in accordance with ASTM D 4318. When these values have been determined the samples are definitively classified using ASTM D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

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Applied Marine Sciences, Inc.

502 N. Hwy 3, Suite B, League City, TX 77573, (281) 554-7272 Fax (281) 554-6356

ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C26
Project Number:	G606422-07DUXCHE	Date Sampled:	10/30/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	11/4/2008
Client Sample ID:	Q5252 (ST-01-103008-B)		
AMS Sample ID:	8C26-1		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	13.38	%		0.01	0.03	EPA 9060A	Sediment	11/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Jennifer D. Davis
AMS, Inc. Project Manager

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Applied Marine Sciences, Inc.

502 N. Hwy 3, Suite B, League City, TX 77573, (281) 554-7272 Fax (281) 554-6356

ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C26
Project Number:	G606422-07DUXCHE	Date Sampled:	10/30/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	11/4/2008
Client Sample ID:	Q5253 (ST-01-103008-C)		
AMS Sample ID:	8C26-2		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	13.21	%		0.01	0.03	EPA 9060A	Sediment	11/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Jennifer D. Davis
AMS, Inc. Project Manager

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C26
Project Number:	G606422-07DUXCHE	Date Sampled:	10/30/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	11/4/2008
Client Sample ID:	Q5255 (ST-02-103008-B)		
AMS Sample ID:	8C26-3		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	16.97	%		0.01	0.03	EPA 9060A	Sediment	11/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Jennifer D. Davis
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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C26
Project Number:	G606422-07DUXCHE	Date Sampled:	10/30/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	11/4/2008
Client Sample ID:	Q5257 (ST-03-103008-B)		
AMS Sample ID:	8C26-4		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	13.05	%		0.01	0.03	EPA 9060A	Sediment	11/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Jennifer D. Davis
AMS, Inc. Project Manager

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Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C26
Project Number:	G606422-07DUXCHE	Date Sampled:	10/30/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	11/4/2008
Client Sample ID:	Q5259 (ST-04-103008-B)		
AMS Sample ID:	8C26-5		

Parameter	Result	Unit	Data Qualifier	LOD	LOQ	Method	Matrix	Date Analyzed
Total Organic Carbon	12.21	%		0.01	0.03	EPA 9060A	Sediment	11/24/2008

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC sample not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Jennifer D. Davis
AMS, Inc. Project Manager

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Laboratory No. E87956

Applied Marine Sciences, Inc.

502 N. Hwy 3, Suite B, League City, TX 77573, (281) 554-7272 Fax (281) 554-6356

TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C26
Project Number:	G606422-07DUXCHE	AMS SOP Number:	2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed:	11/24/2008
Matrix:	Sediment	Batch ID:	112408-01T
Method:	EPA 9060A		

Method Blank (Batch Continuing Blank (CB)), Continuing Calibration Verification (CCV) and Independent Continuing Calibration Verification (ICCV) Results:

AMS Sample ID	Result (%)	CCV Conc. (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
CB-01	0.01	0.01	--	U	0.01	0.03	≤ 0.03
CCV-01	3.17	3.23	1.88		0.01	0.03	≤ 5 RPD
ICCV-01	2.05	2.00	2.47		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits
8C26-5	12.21	12.15	0.49		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 8C26-1, 8C26-2, 8C26-3, 8C26-4, 8C26-5

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

Jennifer D. Davis
AMS, Inc. Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Laboratory No. E87956

Applied Marine Sciences, Inc.

502 N. Hwy 3, Suite B, League City, TX 77573, (281) 554-7272 Fax (281) 554-6356

QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C26
AMS SOP Number: 2201

Data Qualifiers:

U	Undetected at the Limit of Detection (LOD): The associated value is the Limit of Detection, adjusted by any dilution factor used in the analysis.
J	The analyte was positively identified, but was below the Limit of Quantitation (LOQ). The quantitation is an estimate.
B	Blank contamination: The analyte was detected above one-half the LOD in an associated blank.
Q	One or more Quality Control criteria failed. Data usability should be carefully assessed by the Project Team.
I	Insufficient sample was provided to perform required Quality Control analyses and/or to meet method-specific sample volume recommendations.

Definitions:

LOD	The Limit of Detection (LOD) is determined by quantitative establishment of the Method Detection Limit (MDL), as defined in 40 CFR 136(b).
LOQ	The Limit of Quantitation (LOQ) is the minimum level, concentration or quantity of a target variable (target analyte) that can be quantitatively reported with a specified level of confidence. As defined in DoD QSM §D.1.2.2, the LOQ value must be a minimum of 3 times the LOD, although the specified level of confidence may have a lower quantitative value.

Quality Assurance: These analyses were performed in accordance with EPA guidelines, the 2006 DoD Quality Systems Manual for Environmental Laboratories (Version 3), and the 2003 NELAC Standard, with the following exceptions:

* TOC samples not analyzed in quadruplicate
* TOC spike duplicate not analyzed every 10 samples

Project-specific Quality Assurance requirements supersede those provided by the above quality systems and documents. Measurements of uncertainty are available upon request.

Jennifer D. Davis
AMS, Inc. Project Manager

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Laboratory No. E87956

Battelle
. . . Putting Technology To Work

Chain of Custody

Proj. No	Proj. Name
G606422	New Bedford Harbor Sed. Trap

SAMPLERS: Signature

Matt Kuzyk Annie Murphy Patrick Curran

DATE	TIME	Field ~~BATTELLE~~ ID	Lab ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
10/30/08	0911	ST-01-103008-A	Q5251	Sediment trap sample from station ST01		X									1
	↓	ST-01-103008-B	Q5252			X									1
		ST01-103008-C	Q5253			X									1
	0930	ST-02-103008-A	Q5254	ST02		X									1
	↓	ST-02-103008-B	Q5255	ST02		X									1
	0950	ST03-103008-A	Q5256	ST-03		X									1
	↓	ST-03-103008-B	Q5257	↓		X									1
	1010	ST-04-103008-A	Q5258	ST-04		X									1
↓	↓	ST-04-103008-B	Q5259	↓		X									1

Relinquished by:	Date/Time	Received by:	Date/Time
Matthew A Kuzyk	10/30/08 1700	Jeannine Lyfert	10/30/08 1700
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

APPENDIX C

Polychlorinated Biphenyl Data

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Deployment Nos. 1 and 2 and Surface Sampling Event No. 1

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Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	SS-ST04-111207	SS-ST03-111207	SS-ST02-111207	SS-ST01-111207	SS-ST01-111207-DUP	ST-04-103107-1
Battelle ID	Q0930-P	Q0931-P	Q0932-P	Q0933-P	Q0934-P	Q0718-P
Sample Type	SA	SA	SA	SA	SA	SA
Collection Date	11/12/07	11/12/07	11/12/07	11/12/07	11/12/07	10/31/07
Extraction Date	01/11/08	01/11/08	01/11/08	01/11/08	01/11/08	01/11/08
Analysis Date	01/17/08	01/17/08	01/17/08	01/17/08	01/17/08	01/17/08
Analytical Instrument	MS	MS	MS	MS	MS	MS
% Moisture	62.01	32.5	52.41	74.19	74.29	53.42
% Lipid	NA	NA	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT TRAP
Sample Size	12.65	20.64	14.76	7.71	7.76	2.83
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Cl2(8)	3400.58 D	818.99 D	1890.1 D	2244.48 D	956.26	5679.8 D
Cl3(18)	7438.4 D	1783.45 D	4088.35 D	3867.9 D	1763.69 D	16792.21 D
Cl3(28)	10019.8 D	2642.93 D	7351.11 D	4436.1 D	2302.55 D	23225.51 D
Cl3(31)	10416.34 D	2852.54 D	7321.77 D	4495.55 D	2298.87 D	23772.1 D
Cl3(37)	671.64 E	234.82	532.02	409.04	196.49	1706.89
Cl4(44)	4651.99 D	980.83 D	2660.92 D	1693.33 D	805.3	9972.12 D
Cl4(49)	15382.49 D	3446.34 D	9723.85 D	4909.66 D	2453.7 D	37717.62 D
Cl4(52)	16421.95 D	3476.24 D	9180.82 D	5575.44 D	2509.13 D	41261.61 D
Cl4(66)	909.81 D	233.58 D	958.42 D	922.7	428.84	2689.08 D
Cl4(70)	548.13 D	476.77	643.19 D	806.51	380.04	1384.57 D
Cl4(74)	363.65 D	413.1	401.84 D	636.35	289.61	1008.45 D
Cl4(77)	145.6	58.49	122.17	100.07	50.73	440.07
Cl4(81)	8.78 U	5.38 U	7.53 U	14.41 U	14.32 U	39.26 U
Cl5(87)	323.84	94.87	235.78	137.95	64.59	938.73
Cl5(99)	3019.59 D	850.89 D	2442 D	1229.98 D	668.64	10297.02 D
Cl5(101)	3363.68 D	685.05 D	2129.65 D	1449.78	637.32	8539.04 D
Cl5(105)	358.61	106.31	258.23	119.01	56.42	994.79
Cl5(110)	5655.67 D	1180.62 D	3918.18 D	1975.41 D	727.57 D	14564.17 D
Cl5(114)	8.78 U	5.38 U	7.53 U	14.41 U	14.32 U	39.26 U
Cl5(118)	1398.34 D	358.44 D	923.01 D	515.45 D	482.22	5082.02 D
Cl5(123)	337.42	113.31	261.22	163.93	78.75	1039.64
Cl5(126)	8.78 U	5.38 U	7.53 U	14.41 U	14.32 U	39.26 U
Cl6(128)	290.85	76.1	181.7	91.83	40.36	839.61
Cl6(138)	878.78 D	240.74	540.49	271.46	131.5	2304.44
Cl6(149)	5390.84 D	1246.69 D	2925.76 D	1624.82 D	872.03 D	13062.32 D
Cl6(151)	1328.66 D	176.7	422.23	221.78	93.09	1962.79
Cl6(153)	4255.41 D	946.94 D	2226.5 D	1463.59 D	613.85 D	10631.02 D
Cl6(156)	249.33	70.61	163.64	86.54	45.4	748.98
Cl6(157)	58.2	20.06	41.44	28.56	23.91	178.7
Cl6(158)	314.98	88.04	201.86	106.19	46.49	865.25
Cl6(167)	261.46	68.2	166.51	95.47	47.75	719.87
Cl6(169)	14.67	5.38 U	7.53 U	14.41 U	14.32 U	120.51
Cl7(170)	267.23	66.76	170.36	81.62	35.72	756.57
Cl7(177)	110.88	30.62	71.01	40.88	18.07	336.98
Cl7(180)	542.22	148.49	331.25	180.85	79.84	1518.17
Cl7(183)	193.17	48.5	121.47	60.53	25.38	535.91
Cl7(187)	646.01	170.14	397.24	208.89	90.93	1812.63
Cl7(189)	37.74	11.87	21.45	20.13	14.32 U	97.21
Cl8(194)	136.3	32.93	87.16	55.35	29.05	395.17
Cl8(195)	37.65	8.98	20.64	16.66	12.29 J	122.55
Cl8(201)	20.42	5.6	13.94	13.81 J	14.32 U	61.69
Cl8(203)	140.85	30.59	54.6	52.15	30.9	420.95
Cl9(206)	78.37	25.07	50.84	32.9	21.85	232.41
LOC 10	25.53	8.64	17.91	14.41 U	14.32 U	88.99
Surrogate Recoveries (%)						
Cl3(34)	88	80	89	76	81	81
Cl6(152)	78	71	79	66	79	75

Battelle
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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	ST-03-103107-1	ST-02-103107-1	ST-01-103107-1	ST-01-103107-2	ST-01-103107-3	ST-01-121007-1
Battelle ID	Q0720-P	Q0722-P	Q0724-P	Q0725-P	Q0726-P	Q1173-P
Sample Type	SA	SA	SA	SA	SA	SA
Collection Date	10/31/07	10/31/07	10/31/07	10/31/07	10/31/07	12/10/07
Extraction Date	01/11/08	01/11/08	01/11/08	01/11/08	01/11/08	01/11/08
Analysis Date	01/17/08	01/17/08	01/17/08	01/17/08	01/17/08	01/18/08
Analytical Instrument	MS	MS	MS	MS	MS	MS
% Moisture	53.47	49.4	41.67	44.44	43.6	51.67
% Lipid	NA	NA	NA	NA	NA	NA
Matrix	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP
Sample Size	6.11	2.55	1.52	4.34	3.67	2.67
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Cl2(8)	5091.04 D	6129.59 D	1771.22	683.15	720.89	337.89
Cl3(18)	14911.12 D	15108.42 D	4824.26	1872.09	1956.77	1228.4
Cl3(28)	18158.42 D	21047.19 D	10471.09 D	3977.5 D	3267.24 D	2235.53
Cl3(31)	18223.91 D	21543 D	8340.93 D	2962.59 D	2788.5 D	1996.28
Cl3(37)	1104.38	1626.17	786.38	316.39	304.8	216.48
Cl4(44)	7020.02 D	8865.84 D	3400.53	1281.47	1287.01	909.64
Cl4(49)	26940.36 D	30994.66 D	11297.7 D	3688.29 D	3932.65 D	3035.21
Cl4(52)	29361.53 D	33635.25 D	13033.42 D	4387.37 D	4227.2 D	3345.27
Cl4(66)	1504.36 D	1736.91 D	1848.78	698.41	673.77	446.32
Cl4(70)	870.69 D	1563.42 D	1347.89	510.44	521.65	349.93
Cl4(74)	513.38 D	2970.64	1534.63	585.01	548.92	361.73
Cl4(77)	278.85	411.02	273.84	102.93	99.78	88.93
Cl4(81)	18.19 U	43.57 U	73.1 U	25.6 U	30.28 U	41.61 U
Cl5(87)	535.12	855.6	323.02	122.1	131.56	91.68
Cl5(99)	6074.65 D	6897.66 D	4429.48	1758.6	1604.1	1133.2
Cl5(101)	5253.26 D	6116.26 D	3144.03	1223.13	1231.88	863.12
Cl5(105)	623.75	824.53	373.85	149.85	149.12	108.62
Cl5(110)	8709.26 D	12453.77 D	4788.77 D	1672.52 D	2371.61	1653.35
Cl5(114)	18.19 U	43.57 U	73.1 U	25.6 U	30.28 U	41.61 U
Cl5(118)	2032.73 D	3334.92 D	3245.99	1277.51	1194.02	772.34
Cl5(123)	607.94	936.56	479.72	177.36	202.58	150.96
Cl5(126)	18.19 U	43.57 U	73.1 U	25.6 U	30.28 U	41.61 U
Cl6(128)	513.48	612.75	290.25	123.05	101.33	72.5
Cl6(138)	2927.27 D	1904.65	888.06	349	345.4	248.41
Cl6(149)	9282.75 D	11196.66 D	3592.1	1370.28	1462.96	1085.6
Cl6(151)	1163.29	1516.21	508.88	192.81	203.25	133.96
Cl6(153)	6252.49 D	7737.35 D	4108.54	1577.16	1524.56	1063.02
Cl6(156)	459.88	590.18	338.06	122.68	121.16	106.86
Cl6(157)	109.83	143.25	131.69	50.05	49.25	66.46
Cl6(158)	536.71	665.69	320.77	131.41	122.79	102.69
Cl6(167)	445.92	554.31	329.86	116.5	124.06	104.13
Cl6(169)	18.19 U	43.57 U	73.1 U	25.6 U	30.28 U	41.61 U
Cl7(170)	435.22	565.7	275.41	102.89	106.91	89.84
Cl7(177)	187.96	252.36	116.64	46.41	51.01	41.92
Cl7(180)	900.75	1217.53	581.96	222.03	219.51	167.74
Cl7(183)	330.23	413.05	162.42	72.86	63.9	45.99
Cl7(187)	1102.03	1441.9	645.41	246.32	244.77	178.84
Cl7(189)	58.47	95.78	73.1 U	25.6 U	41.49	41.61 U
Cl8(194)	219.97	314.27	206.47	67.17	76.19	41.61 U
Cl8(195)	60.31	86.06	83.12	22.01 J	28.1 J	41.61 U
Cl8(201)	32.47	59.95	63.36 J	20.1 J	30.28 U	41.61 U
Cl8(203)	229.69	224.07	209.59	75.13	74.14	41.61 U
Cl9(206)	132.7	189.76	140.12	49.74	60.49	57.73
LOC 10	44.74	81.87	85.9	28.79	33.03	41.61 U
Surrogate Recoveries (%)						
Cl3(34)	78	77	73	70	72	76
Cl6(152)	66	68	67	67	68	70

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	ST-01-121007-2	ST-01-121007-3	ST-02-121007-1	ST-03-121007-1	ST-04-121007-1
Battelle ID	Q1174-P	Q1175-P	Q1176-P	Q1178-P	Q1180-P
Sample Type	SA	SA	SA	SA	SA
Collection Date	12/10/07	12/10/07	12/10/07	12/10/07	12/10/07
Extraction Date	01/11/08	01/11/08	01/11/08	01/11/08	01/11/08
Analysis Date	01/18/08	01/18/08	01/18/08	01/18/08	01/18/08
Analytical Instrument	MS	MS	MS	MS	MS
% Moisture	64.79	58.73	55.26	57.55	61.76
% Lipid	NA	NA	NA	NA	NA
Matrix	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP
Sample Size	2.00	2.26	3.42	9.94	5.85
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Cl2(8)	758.68	575.22	1991.49	1795.91 D	2529.08 D
Cl3(18)	2853.21	2187.4	9742.72 D	5707.23 D	8682.51 D
Cl3(28)	4465.18 D	4113.27	17125.7 D	6772.64 D	10566.09 D
Cl3(31)	4980.6	3774.13	16250.45 D	6751.38 D	11005.69 D
Cl3(37)	485.54	350.54	1319.66	599.65	906.3
Cl4(44)	2232.46	1641.67	6498.74 D	3197.22 D	5544.8 D
Cl4(49)	6611.76 D	4826.89 D	23730.84 D	11282.94 D	17837.94 D
Cl4(52)	7317.35 D	5781.23 D	24970.82 D	12693.81 D	21404.92 D
Cl4(66)	1066.73	811.24	2152.13 D	396.78 D	801.52 D
Cl4(70)	891.67	634.22	1096.88 D	283.07 D	402.37 D
Cl4(74)	857.18	663.37	2439.91	162.08 D	1609.68 E
Cl4(77)	159.76	132.63	364.38	150.28	242.99
Cl4(81)	55.56 U	49.16 U	32.49 U	11.18 U	18.99 U
Cl5(87)	245.88	170.04	625.24	324.63	483.48
Cl5(99)	2617.2	2005.08	6189.85 D	2536.34 D	4007.16 D
Cl5(101)	2142.56	1542.89	5140.1 D	2178.11 D	3057.32 D
Cl5(105)	236.19	191.03	674.67	349.07	530.31
Cl5(110)	4183.91	3025.11	8999.61 D	3662.09 D	5707.67 D
Cl5(114)	55.56 U	49.16 U	32.49 U	11.18 U	18.99 U
Cl5(118)	1869.96	1377.57	2933.66 D	907.48 D	1271.44 D
Cl5(123)	300.85	227.32	714.77	350.77	549.72
Cl5(126)	55.56 U	49.16 U	32.49 U	11.18 U	18.99 U
Cl6(128)	179.08	120.86	510.62	278.25	439.52
Cl6(138)	552.14	453.3	1469.15	813.89	1232.03
Cl6(149)	2567.28	1909.4	7352.9 D	5237.03 D	7687.49 D
Cl6(151)	323.88	271.37	1136.72	655.58	1052.66
Cl6(153)	2412.62	1977.77	6765.5 D	3601.25 D	6268.01 D
Cl6(156)	188.76	165.48	481.46	252.49	384.78
Cl6(157)	97.19	85.43	131.33	58.57	94.99
Cl6(158)	210.11	162.56	564.96	281.41	456.57
Cl6(167)	197.4	175.67	457.17	259.75	379.94
Cl6(169)	55.56 U	49.16 U	32.49 U	11.18 U	18.99 U
Cl7(170)	165.23	151.63	461.07	248.44	411.18
Cl7(177)	73.34	72.91	192.27	114.1	159.35
Cl7(180)	380.68	297.83	966.56	520.38	820.43
Cl7(183)	104.75	96	340.69	187.28	282.78
Cl7(187)	408.26	321.88	1126.53	593.19	964.82
Cl7(189)	55.56 U	49.16 U	71.11	33.85	57.94
Cl8(194)	128.51	115.1	242.29	133.35	215.98
Cl8(195)	56.28	49.16 U	72.05	39.74	64.59
Cl8(201)	55.56 U	49.16 U	43.99	19.64	33.26
Cl8(203)	139.27	106.38	170.51	88.3	135.82
Cl9(206)	86.22	72.04	143.18	78.31	130.61
LOC 10	59.04	57.07	65.36	25.52	44.1
Surrogate Recoveries (%)					
Cl3(34)	72	81	75	77	81
Cl6(152)	69	79	72	70	80

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	Procedural Blank	
Battelle ID	BL300PB-P	
Sample Type	PB	
Collection Date	01/11/08	
Extraction Date	01/11/08	
Analysis Date	01/16/08	
Analytical Instrument	MS	
% Moisture	54.77	
% Lipid	NA	
Matrix	SEDIMENT	
Sample Size	6.89	
Size Unit-Basis	G_DRY	
Units	UG/KG_DRY	
Cl2(8)	16.29	U
Cl3(18)	16.29	U
Cl3(28)	20.4	
Cl3(31)	15.21	J
Cl3(37)	16.13	U
Cl4(44)	16.13	U
Cl4(49)	16.13	U
Cl4(52)	17.63	
Cl4(66)	16.29	U
Cl4(70)	16.13	U
Cl4(74)	16.13	U
Cl4(77)	16.29	U
Cl4(81)	16.13	U
Cl5(87)	16.13	U
Cl5(99)	16.13	U
Cl5(101)	16.29	U
Cl5(105)	16.13	U
Cl5(110)	16.13	U
Cl5(114)	16.13	U
Cl5(118)	16.29	U
Cl5(123)	16.13	U
Cl5(126)	16.13	U
Cl6(128)	16.29	U
Cl6(138)	16.29	U
Cl6(149)	16.13	U
Cl6(151)	16.13	U
Cl6(153)	16.29	U
Cl6(156)	16.13	U
Cl6(157)	16.13	U
Cl6(158)	16.13	U
Cl6(167)	16.13	U
Cl6(169)	16.13	U
Cl7(170)	16.29	U
Cl7(177)	16.13	U
Cl7(180)	16.29	U
Cl7(183)	16.13	U
Cl7(187)	16.13	U
Cl7(189)	16.13	U
Cl8(194)	16.13	U
Cl8(195)	16.13	U
Cl8(201)	16.13	U
Cl8(203)	16.13	U
Cl9(206)	16.13	U
LOC 10	16.13	U

Surrogate Recoveries (%)

Cl3(34)	76
Cl6(152)	83

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	060208-03: Sand, White Quartz, -50+70				
Battelle ID	BL301LCS-P				
Sample Type	LCS				
Collection Date	01/11/08				
Extraction Date	01/11/08				
Analysis Date	01/16/08				
Analytical Instrument	MS				
% Moisture	NA				
% Lipid	NA				
Matrix	SEDIMENT				
Sample Size	NA				
Size Unit-Basis	NA				
Units	NG		Target	% Recovery	Qualifier
Cl2(8)	2907.86		4012.00	72	
Cl3(18)	2731.06		4012.00	68	
Cl3(28)	2706.82		4004.00	68	
Cl3(31)	317.61				
Cl3(37)	111.11	U			
Cl4(44)	3040.36		4008.00	76	
Cl4(49)	111.11	U			
Cl4(52)	2899.95		4000.00	72	
Cl4(66)	2954.69		4004.00	74	
Cl4(70)	111.11	U			
Cl4(74)	111.11	U			
Cl4(77)	2683.72		4000.00	67	
Cl4(81)	111.11	U			
Cl5(87)	111.11	U			
Cl5(99)	111.11	U			
Cl5(101)	2618.17		4008.00	65	
Cl5(105)	3151.57		4004.00	79	
Cl5(110)	111.11	U			
Cl5(114)	111.11	U			
Cl5(118)	2658.32		4004.00	66	
Cl5(123)	111.11	U			
Cl5(126)	2480.8		4024.00	62	
Cl6(128)	2919.76		4024.00	73	
Cl6(138)	2776.57		4008.00	69	
Cl6(149)	111.11	U			
Cl6(151)	111.11	U			
Cl6(153)	2948.05		4004.00	74	
Cl6(156)	111.11	U			
Cl6(157)	111.11	U			
Cl6(158)	111.11	U			
Cl6(167)	111.11	U			
Cl6(169)	111.11	U			
Cl7(170)	3079.27		4020.00	77	
Cl7(177)	111.11	U			
Cl7(180)	3283.51		4016.00	82	
Cl7(183)	111.11	U			
Cl7(187)	3165.89		4012.00	79	
Cl7(189)	111.11	U			
Cl8(194)	111.11	U			
Cl8(195)	3069.34		4012.00	77	
Cl8(201)	111.11	U			
Cl8(203)	111.11	U			
Cl9(206)	3144.12		4012.00	78	
LOC 10	3541.02		4004.00	88	

Surrogate Recoveries (%)

Cl3(34)	79
Cl6(152)	82

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	SS-ST01-111207		SS-ST01-111207				
Battelle ID	Q0933-P		Q0933MS-P				
Sample Type	SA		MS				
Collection Date	11/12/07		11/12/2007				
Extraction Date	01/11/08		1/11/2008				
Analysis Date	01/17/08		1/17/2008				
Analytical Instrument	MS		MS				
% Moisture	74.19		78.81				
% Lipid	NA		NA				
Matrix	SEDIMENT		SEDIMENT				
Sample Size	7.71		2.94				
Size Unit-Basis	G_DRY		G_DRY				
Units	UG/KG_DRY		UG/KG_DRY		Target	% Recovery	Qualifier
Cl2(8)	2244.48	D	3784.65	E	1364.63	113	
Cl3(18)	3867.9	D	5902.9	E	1364.63	149	
Cl3(28)	4436.1	D	7278.18	E	1361.90	209	
Cl3(31)	4495.55	D	6673.93	E			
Cl3(37)	409.04		508.41				
Cl4(44)	1693.33	D	3501.27		1363.27	133	
Cl4(49)	4909.66	D	6910.61	E			
Cl4(52)	5575.44	D	8713.31	E	1360.54	231	
Cl4(66)	922.7		2283.67		1361.90	100	
Cl4(70)	806.51		934.82				
Cl4(74)	636.35		770.95				
Cl4(77)	100.07		1282.43		1360.54	87	
Cl4(81)	14.41	U	37.79	U			
Cl5(87)	137.95		181.03				
Cl5(99)	1229.98	D	1852.56				
Cl5(101)	1449.78		2813.99		1363.27	100	
Cl5(105)	119.01		1293.65		1361.90	86	
Cl5(110)	1975.41	D	3431.78				
Cl5(114)	14.41	U	37.79	U			
Cl5(118)	515.45	D	2418.63		1361.90	140	
Cl5(123)	163.93		209.15				
Cl5(126)	14.41	U	1117.09		1368.71	82	
Cl6(128)	91.83		1238.51		1368.71	84	
Cl6(138)	271.46		1419.63		1363.27	84	
Cl6(149)	1624.82	D	1925.62				
Cl6(151)	221.78		273.81				
Cl6(153)	1463.59	D	2640.2		1361.90	86	
Cl6(156)	86.54		123.2				
Cl6(157)	28.56		74.98				
Cl6(158)	106.19		142.67				
Cl6(167)	95.47		146.48				
Cl6(169)	14.41	U	37.79	U			
Cl7(170)	81.62		1263.64		1367.35	86	
Cl7(177)	40.88		54.53				
Cl7(180)	180.85		1438.39		1365.99	92	
Cl7(183)	60.53		61.98				
Cl7(187)	208.89		1378.82		1364.63	86	
Cl7(189)	20.13		37.79	U			
Cl8(194)	55.35		87.3				
Cl8(195)	16.66		1102.19		1364.63	80	
Cl8(201)	13.81	J	37.79	U			
Cl8(203)	52.15		92.76				
Cl9(206)	32.9		1154.51		1364.63	82	
LOC 10	14.41	U	1055.47		1361.90	77	

Surrogate Recoveries (%)

Cl3(34)	76	83
Cl6(152)	66	75

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	SS-ST01-111207						
Battelle ID	Q0933MSD-P						
Sample Type	MSD						
Collection Date	11/12/2007						
Extraction Date	1/11/2008						
Analysis Date	1/17/2008						
Analytical Instrument	MS						
% Moisture	77.34						
% Lipid	NA						
Matrix	SEDIMENT						
Sample Size	3.09						
Size Unit-Basis	G_DRY						
Units	UG/KG_DRY		Target	% Recovery	Qualifier	RPD (%)	Qualifier
Cl2(8)	2101.63		1298.38	0		200.0	
Cl3(18)	2871.52		1298.38	0		200.0	
Cl3(28)	3424.1		1295.79	0		200.0	
Cl3(31)	2694						
Cl3(37)	225.41						
Cl4(44)	1924.24		1297.09	18		152.3	
Cl4(49)	2651.35						
Cl4(52)	3901.34	E	1294.50	0		200.0	
Cl4(66)	1460.13		1295.79	41		83.7	
Cl4(70)	370.12						
Cl4(74)	313.17						
Cl4(77)	1091.27		1294.50	77		12.2	
Cl4(81)	35.96	U					
Cl5(87)	73.77						
Cl5(99)	655.27						
Cl5(101)	1551.2		1297.09	8		170.4	
Cl5(105)	1136.38		1295.79	79		8.5	
Cl5(110)	1217.77						
Cl5(114)	35.96	U					
Cl5(118)	1472.32		1295.79	74		61.7	
Cl5(123)	104.11						
Cl5(126)	1049.43		1302.27	81		1.2	
Cl6(128)	1045.92		1302.27	73		14.0	
Cl6(138)	1083.89		1297.09	63		28.6	
Cl6(149)	632.41						
Cl6(151)	83.23						
Cl6(153)	1504.21		1295.79	3		186.5	
Cl6(156)	65.66						
Cl6(157)	54.07						
Cl6(158)	74.38						
Cl6(167)	82.16						
Cl6(169)	35.96	U					
Cl7(170)	1086.76		1300.97	77		11.0	
Cl7(177)	29.39	J					
Cl7(180)	1230.99		1299.68	81		12.7	
Cl7(183)	25.4	J					
Cl7(187)	1092.83		1298.38	68		23.4	
Cl7(189)	35.96	U					
Cl8(194)	35.96	U					
Cl8(195)	1027.69		1298.38	78		2.5	
Cl8(201)	35.96	U					
Cl8(203)	35.96	U					
Cl9(206)	1072.47		1298.38	80		2.5	
LOC 10	1100.84		1295.79	85		9.9	

Surrogate Recoveries (%)

Cl3(34)	75
Cl6(152)	70

PCB Congeners – Sediment Trap QA/QC Summary
Batch 08-0005

PROJECT: New Bedford Harbor Sediment Trap Study (USACE)
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment Trap Samples
SAMPLE CUSTODY: Surface sediment and sediment trap samples were collected on 10/31/07, 11/12/07, and 12/10/07. Samples arrived in three shipments, and were hand delivered to the Battelle Duxbury Chemistry Sample Custodian. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. After being received by the lab, the sediment trap samples were centrifuged to remove excess water. The samples were then stored in the walk-in freezer until preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	LCS/LCSD, Laboratory Duplicate Relative Percent Difference	Detection Limits (ug/kg dry wt)
PCB Congeners	EPA 1668A and 8270C	< RL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	≤30% RPD	16.13

METHOD: Sediment trap samples were extracted for PCB congeners following modified EPA Method 3545. Approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was poured through a funnel and passed through glass wool and sodium sulfate. The extract was then brought to 100 mL; 10 mL was removed and continued on for further processing. The 10 mL split was treated with copper, solvent exchanged to hexane, and passed through a Florisil SPE cartridge. The post-Florisil extract was then brought to 10 mL, out of which 1 mL was removed to be fortified with internal standards (IS). Extracts designated for PCB congener analysis were analyzed using gas chromatography/mass spectrometry (GC/MS), following Battelle SOP 5-315 which is based on EPA Methods 1668A and 8270C. Sample data were quantified by the method of internal standards, using the IS compounds. Data was evaluated against sample specific reporting limits.

HOLDING TIMES: Sediments of this batch were extracted within 1 year of sample holding time for frozen sediments. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
08-0005	10/31/2007 – 12/07/2007	1/11/08	1/16/08-1/18/08

PCB Congeners – Sediment Trap QA/QC Summary
Batch 08-0005

LIST OF SAMPLES:

08-0005

Sample ID	Battelle ID
SS-ST04-111207	Q0930
SS-ST03-111207	Q0931
SS-ST02-111207	Q0932
SS-ST01-111207	Q0933
SS-ST01-111207DUP	Q0934
ST-04-103107-01	Q0718
ST-03-103107-01	Q0720
ST-02-103107-01	Q0722
ST-01-103107-01	Q0724
ST-01-103107-02	Q0725
ST-01-103107-03	Q0726
ST-01-121007-1	Q1173
ST-01-121007-2	Q1174
ST-01-121007-3	Q1175
ST-02-121007-1	Q1176
ST-03-121007-1	Q1178
ST-04-121007-1	Q1180

BLANK:

A procedural blank (PB) was prepared with each analytical batch. Blanks were analyzed to ensure the sample extraction and analysis methods were free of contamination.

08-0005 – PCB 28, and PCB 52 were detected in the PB at concentration slightly above the reporting limits and qualified with a "N". The presence of these compounds in the PB does not have any impact on the data quality because the detected concentrations in the field samples were at least three orders of magnitude higher for these compounds.

LABORATORY CONTROL SAMPLE:

A pair of laboratory control (LCS) and laboratory control sample duplicate (LCSD) samples was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. The RPD between the percent recoveries is calculated to measure the data quality in terms of precision.

08-0005 – No exceedence noted. All percent recoveries were within laboratory control limit of 40-120%.

MATRIX SPIKE

A pair of matrix spike (MS) and matrix spike duplicate samples (MSD) was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. The RPD between percent recoveries was calculated to measure the data quality in terms of precision.

08-0005 – The background sample was highly-contaminated with PCBs. Many of the target compounds were not spiked at a concentration > 5 x background, and therefore could not be used for data evaluation. For this reason, the MS sample was not diluted to resolve the concentrations qualified with "E". Data were reported as is.

PCB Congeners – Sediment Trap QA/QC Summary
Batch 08-0005

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

08-0005 – No exceedence noted. All surrogate recoveries were within laboratory control limit of 40-120%.

CALIBRATIONS: The GC/MS is calibrated with a minimum of a 6-point curve. The co-efficient of determination must be > 0.995 for each target analyte in the initial calibration (ICAL). Each batch of samples analyzed is bracketed by a continuing calibration check (CCC) sample, run at a frequency of every 12 hours (minimally). This percent difference (PD) between the ICAL and the CCC should be <25% for individual analytes; additionally, an instrument calibration check (ICC) sample was run with the initial calibration. The PD for the ICC should be < 25% for each analyte.

08-0005 –
0 ICAL exceedence,
1 ICC exceedence: PCB 81 had a %D at 32.6% in the ICC due to standard impurity.
2 CCC exceedence: PCB 123 were responding slightly higher than criteria in two CCCs. This slight overestimation should have limited impact on interpretation of the data.

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397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No: G-606422

Proj. Name: Sediment Traps - NBH

SAMPLERS: Signature: Michael P. McKee

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER (TOC / Grain Size)	ACIDIFIED	PRESERVED	Total Number of Containers
10/31/07	1411	Q0718	ST-04-103107-1	station 4 1st sed trap deployment		✓						✓			1
	1411	Q0719	ST-04-103107-2	" 4		✓						✓			1
	1422	Q0720	ST-03-103107-1	" 3		✓						✓			1
	1422	Q0721	ST-03-103107-2	" 3		✓						✓			1
	1431	Q0722	ST-02-103107-1	" 2		✓						✓			1
	1431	Q0723	ST-02-103107-2	" 2		✓						✓			1
	1441	Q0724	ST-01-103107-1	" 1		✓						✓			1
	1441	Q0725	ST-01-103107-2	" 1		✓						✓			1
	1441	Q0726	ST-01-103107-3	" 1		✓						✓			1

Relinquished by:	Date/Time	Received by:	Date/Time
Mike McKee	11/01/07 12:00	Jeannine P. Seyfert	11/1/07 12:00

Comments:

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397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No: G606422
Proj. Name: New Bedford Harbor

SAMPLERS: Signature: Michael Walsh

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	Client ID ~~BATTELLE ID~~	LIMS ID ~~CLIENT ID~~	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
11/12/2007	0950	SS-ST04-111207	Q0930	Surface Sediment from Sediment Trap Isotopes		✓									1
11/12/2007	1016	SS-ST03-111207	Q0931	" "		✓									1
11/12/2007	1051	SS-ST02-111207	Q0932	" "		✓									1
11/12/2007	1105	SS-ST01-111207	Q0933	1of2 " "		✓									1
11/12/2007	1116	SS-ST01-111207-DUP		2of2 " Q0934 "		✓									1

Relinquished by:	Date/Time	Received by:	Date/Time
Michael Walsh	11/12/2007 1545	Jeannine Shyfert	11-12-07 15:45
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

Chain of Custody

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Project Name: NBH Sed Traps
Project Number: G606422

Relinquished by: Mike McKee
Received by: Jeanne Leyfit

Date: 12-11-07
Date: 12-11-07

Field Sample ID	Analytical Lab Sample ID	Sample Date (ddmmmyy)	Sample Time (local)	Station ID	Analysis	No. of Containers	Size (liters)	Container Type	Preservative
ST-01-121007-1	Q1173	12-10-2007	0915	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-01-121007-2	Q1174	12-10-2007	0915	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-01-121007-3	Q1175	12-10-2007	0915	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-02-121007-1	Q1176	12-10-2007	0910	ST02	PCB, TOC, Grain Size	1	2	PE	NA
ST-02-121007-2	Q1177	12-10-2007	0910	ST02	PCB, TOC, Grain Size	1	2	PE	NA
ST-03-121007-1	Q1178	12-10-2007	0900	ST03	PCB, TOC, Grain Size	1	2	PE	
ST-03-121007-2	Q1179	12-10-2007	0900	ST03	PCB, TOC, Grain Size	1	2	PE	
ST-04-121007-1	Q1180	12-10-2007	0855	ST04	PCB, TOC, Grain Size	1	2	PE	NA
ST-04-121007-2	Q1181	12-10-2007	0855	ST04	PCB, TOC, Grain Size	1	2	PE	NA

This is the corrected COC. Please see the corrective action for details.

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Deployment Nos. 3-5 and Surface Sampling Event No. 2

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	ST-01-041508-B	ST-01-041508-C	ST-02-041508-A	ST-03-041508-A	ST-04-041508-A	SS01-042208
Battelle ID	Q2744-P	Q2745-P	Q2746-P	Q2748-P	Q2750-P	Q2793-P
Sample Type	SA	SA	SA	SA	SA	SA
Collection Date	04/15/08	04/15/08	04/15/08	04/15/08	04/15/08	04/22/08
Extraction Date	07/17/08	07/17/08	07/17/08	07/17/08	07/17/08	07/17/08
Analysis Date	07/26/08	07/26/08	07/27/08	07/27/08	07/27/08	07/27/08
Analytical Instrument	MS	MS	MS	MS	MS	MS
% Moisture	75.49	73.74	74.88	74.06	75.98	67.25
% Lipid	NA	NA	NA	NA	NA	NA
Matrix	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT
Sample Size	1.08	1.14	1.25	1.30	1.20	1.69
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Cl2(8)	644.03	777.61	1263.73	1116.99	2299.82	1912.34
Cl3(18)	2151.18	2733.89	4698.6 D	4669.49 D	8914.26 D	3834.4 D
Cl3(28)	3686.37	4145.59 D	8130.16 D	7165.21 D	11642.27 D	9592.74 D
Cl3(31)	3345.63	3866.87	6792.44 D	6366.65 D	12606.64 D	8325.15 D
Cl3(37)	337.31	395.59	670.34	580.14	1113.17	951.07
Cl4(44)	1887.39	2088.98	3822.36 D	3651.71 D	6667.89 D	3308.47 D
Cl4(49)	5854.56 D	6318.25 D	11911.58 D	10782.12 D	21859.26 D	11673.16 D
Cl4(52)	6474.27 D	7280.28 D	12970.05 D	12483.68 D	25372.96 D	10469.31 D
Cl4(66)	885.09	1041.06	1923.96	1716.89	2914.75	2514.1 D
Cl4(70)	650.48	715.67	1347.52	1195.66	2035.29	2140.9
Cl4(74)	592.91	667.67	1244.17	1064.99	1862.2	1658.18
Cl4(77)	129.77	135.08	184.26	178.75	281.96	249.69
Cl4(81)	66.46 J	122.32 U	111.56 U	107.26 U	116.2 U	82.51 U
Cl5(87)	157.18	225.42	335.77	264.51	548.34	349.22
Cl5(99)	1618.91	1869.74	4606.22 D	4123.12 D	6558.19 D	3755.34 D
Cl5(101)	1740.67	1895.92	4076.76 D	3791.54 D	5765.3 D	3571.27 D
Cl5(105)	194.16	198.3	316.63	341.19	556.1	390.99
Cl5(110)	2635.84	2914.03	5510.89 D	5100.62 D	9410.72 D	5130.69 D
Cl5(114)	266.21	265	241.99	249.34	211.04	139.18
Cl5(118)	1178.35	1324.23	2428.11	2305.89	4983.87 D	3380.19 D
Cl5(123)	137.63	152.17	304.24	290.29	496.97	339.88
Cl5(126)	129.12 U	122.32 U	111.56 U	107.26 U	116.2 U	82.51 U
Cl6(128)	139.13	172.62	258.73	259.54	460.53	284.44
Cl6(138)	455.88	471.89	796	802.03	1367.96	913.12
Cl6(149)	2037.99	2154.49	4328.76 D	3848.38 D	6757.55 D	3564.15 D
Cl6(151)	337.18	368.17	618.23	615.78	1219.04	578.48
Cl6(153)	1693.36	1898.41	4309.02 D	4111.28 D	6379.07 D	3570.3 D
Cl6(156)	144.98	143.19	233.28	219.33	384.18	268.34
Cl6(157)	128.6 U	121.83 U	63.19 J	53.42 J	95.08 J	62.75 J
Cl6(158)	211.61	189.95	284.8	277.93	440.63	336.39
Cl6(167)	140.38	135.57	209.17	225.23	396.81	229.9
Cl6(169)	129.12 U	122.32 U	111.56 U	107.26 U	97.95 J	82.51 U
Cl7(170)	138.42	152.58	243.51	245.53	408.22	242.2
Cl7(177)	62.29 J	84.4 J	96.41 J	98.75 J	195.23	106.94
Cl7(180)	244.4	291.63	443	441.92	860.63	493.29
Cl7(183)	113.68 J	107.52 J	197.75	176.14	297.9	193.77
Cl7(187)	253.48	268.1	514	499.02	998.16	525.04
Cl7(189)	128.6 U	121.83 U	38.82 J	106.84 U	65.23 J	30.92 J
Cl8(194)	128.6 U	124.08	114.91	96.6 J	191.57	134.75
Cl8(195)	128.6 U	121.83 U	111.11 U	106.84 U	82.89 J	47.55 J
Cl8(201)	128.6 U	121.83 U	57.95 J	106.84 U	115.74 U	82.18 U
Cl8(203)	128.6 U	121.83 U	142.69	164.2	247.76	144.6
Cl9(206)	15.63 J	48.69 J	35.22 J	28 J	100.6 J	70.95 J
Cl10(209)	12.34 J	49.07 J	28.36 J	17.94 J	41.92 J	22.53 J
Surrogate Recoveries (%)						
Cl3(34)	90	103	94	85	91	94
Cl6(152)	84	94	84	76	81	86

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	SS02-042208	SS03-042208	SS04-042208	SS01-042208-DUP	ST-04-051508-A	ST-03-051508-A
Battelle ID	Q2794-P	Q2795-P	Q2796-P	Q2797-P	Q2879-P	Q2881-P
Sample Type	SA	SA	SA	SA	SA	SA
Collection Date	04/22/08	04/22/08	04/22/08	04/22/08	05/15/08	05/15/08
Extraction Date	07/17/08	07/17/08	07/17/08	07/17/08	07/17/08	07/17/08
Analysis Date	07/27/08	07/27/08	07/27/08	07/27/08	07/27/08	07/28/08
Analytical Instrument	MS	MS	MS	MS	MS	MS
% Moisture	66.29	63.96	47.4	69.35	79.03	80.31
% Lipid	NA	NA	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT TRAP	SEDIMENT TRAP
Sample Size	1.69	1.80	2.74	1.54	1.10	0.98
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Cl2(8)	1353.87	2021.44	748.2	2316.33	1188.43	1135.11
Cl3(18)	3439.46 D	5515.36 D	2224 D	4791.14 D	5448.59 D	4238.42
Cl3(28)	10622.8 D	11475.25 D	3144.39 D	10128.23 D	9160.46 D	8544.93 D
Cl3(31)	10611.97 D	10928.57 D	2950.03 D	9978.66 D	8443.61 D	6712.76 D
Cl3(37)	993.38	1111.73	241.46	1198.34	771.14	734.51
Cl4(44)	3127.58 D	4227.73 D	1639.63	3379.89 D	4074.95	3200.62
Cl4(49)	15320.96 D	16047.83 D	4006.94 D	12635.5 D	13563.71 D	10579.31 D
Cl4(52)	12115.55 D	15977.21 D	4404.55 D	11275.11 D	14956.62 D	12010.15 D
Cl4(66)	2537.38 D	2762.62 D	676.42	2986.98 D	2141.79	1942.85
Cl4(70)	1981.48	2048.36 D	458.86	2345.66	1490.01	1343.76
Cl4(74)	1804.33	1921.26	510.76	1858.34	1461.45	1284.68
Cl4(77)	237.06	263.41	77.48	260.95	232.72	217.52
Cl4(81)	82.51 U	77.47 U	50.89 U	90.55 U	126.77 U	142.29 U
Cl5(87)	375.11	426.88	122.5	413.34	345.61	297.04
Cl5(99)	4557.04 D	4870.36 D	1092.09	4484.38 D	5370.51 D	3447.18
Cl5(101)	4342.8 D	4470.25 D	1100.32	4512.28 D	4235.96 D	3629.85
Cl5(105)	433.59	480.78	109.48	448.94	400.38	335.75
Cl5(110)	6512.13 D	6817.45 D	2130.08 D	5829.13 D	6639.42 D	6722.65 D
Cl5(114)	129.95	183.39	109.91	176.68	217.4	264.4
Cl5(118)	3920.97 D	3539.68 D	752.42	3793.45 D	2921.1	2465.95
Cl5(123)	403.53	464.49	91.73	379.95	374.33	299.38
Cl5(126)	82.51 U	77.47 U	50.89 U	90.55 U	126.77 U	142.29 U
Cl6(128)	349.12	319.83	80.22	286.99	300.55	260.5
Cl6(138)	1046.93	1077.65	230.48	950.12	968.98	869.44
Cl6(149)	3897.4 D	5724 D	1283.47	4217.21 D	4932.75 D	4407.34 D
Cl6(151)	693.74	817.01	209.42	628.1	807.37	645.64
Cl6(153)	4603.99 D	4667.28 D	1045.52	4194.91 D	4629.92 D	3566.67
Cl6(156)	293.97	298.51	62.53	286.06	272.11	250.92
Cl6(157)	67.81 J	74.53 J	50.69 U	67.48 J	61.74 J	76.8 J
Cl6(158)	352.94	385.58	96.51	305.37	383.03	346.75
Cl6(167)	267.99	307.03	77.61	237.51	264.41	256.76
Cl6(169)	82.51 U	62.09 J	50.89 U	90.55 U	126.77 U	142.29 U
Cl7(170)	289	298.57	63.06	250.01	286.95	255.36
Cl7(177)	134.48	146.51	38.51 J	97.97	150.8	97.14 J
Cl7(180)	577.39	618.78	130.61	510.7	584.39	438.25
Cl7(183)	219.59	253.42	57.03	213.59	216.04	192.28
Cl7(187)	664.16	733.12	152.53	582.37	635.38	557.78
Cl7(189)	40.98 J	33 J	50.69 U	28.55 J	33.99 J	141.72 U
Cl8(194)	140.38	153.42	28.89 J	132.47	167.7	134.93 J
Cl8(195)	60.13 J	45.6 J	50.69 U	90.19 U	126.26 U	141.72 U
Cl8(201)	53.73 J	49.75 J	50.69 U	50.81 J	126.26 U	141.72 U
Cl8(203)	181.86	185.43	37.64 J	143.93	188.28	141.72 U
Cl9(206)	81.61 J	90.78	15.68 J	55.09 J	53.78 J	90.38 J
Cl10(209)	31.6 J	28.99 J	50.69 U	27.1 J	126.26 U	141.72 U
Surrogate Recoveries (%)						
Cl3(34)	91	94	89	93	85	85
Cl6(152)	81	84	78	82	76	79

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	ST-02-051508-A	ST-01-051508-B	ST-01-051508-C	ST-01-061108-B	ST-01-061108-C	ST-02-061108-A
Battelle ID	Q2883-P	Q2886-P	Q2887-P	Q3079-P	Q3080-P	Q3081-P
Sample Type	SA	SA	SA	SA	SA	SA
Collection Date	05/15/08	05/15/08	05/15/08	06/11/08	06/11/08	06/11/08
Extraction Date	07/17/08	07/17/08	07/17/08	07/17/08	07/17/08	07/17/08
Analysis Date	07/28/08	07/28/08	07/28/08	07/28/08	07/28/08	07/28/08
Analytical Instrument	MS	MS	MS	MS	MS	MS
% Moisture	76.21	83.89	83.72	79.03	75.91	67.9
% Lipid	NA	NA	NA	NA	NA	NA
Matrix	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP
Sample Size	1.18	0.80	0.82	1.04	1.28	1.59
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Cl2(8)	1384.28	832.42	894.98	2318.06	2762.66	3226.4 D
Cl3(18)	5677.33 D	3122.68	3425.23	7859.03 D	8673.7 D	8472.97 D
Cl3(28)	11132.2 D	5061.77 D	5464.33 D	12674.81 D	11620.01 D	13520.13 D
Cl3(31)	9366.5 D	4675.43 D	5132.51 D	10699.23 D	11681.36 D	12573.76 D
Cl3(37)	950.12	459.19	470.13	1134.94	1147.81	1257.04
Cl4(44)	4166.03 D	2175.09	2372.93	4836.78 D	4963 D	5201.64 D
Cl4(49)	13273.16 D	7215.42 D	7546.79 D	14335.28 D	15999.94 D	19026.7 D
Cl4(52)	15169.61 D	7977.01 D	8564.41 D	16317.74 D	17420.6 D	20509.02 D
Cl4(66)	2617.03	1162.73	1325.56	3277.05	3113.42	3707.36 D
Cl4(70)	1790.21	864.81	935.17	2356.42	2447.86	2942.68 D
Cl4(74)	1754.47	809.12	895.67	1964.96	1890.74	2028.32
Cl4(77)	260.38	169.38 J	169.27 J	284.61	286.26	311.63
Cl4(81)	118.17 U	174.31 U	170.05 U	134.08 U	108.94 U	87.7 U
Cl5(87)	343.88	194.63	227.63	652.05	681.85	830.57
Cl5(99)	4980.72 D	1876.48	2111.96	6330.1 D	5821.53 D	6636.02 D
Cl5(101)	4348.02 D	2199.43	2292.75	5488.06 D	5800.54 D	6369.72 D
Cl5(105)	455.35	199.25	224.52	689.05	665.93	776.43
Cl5(110)	8897.88 D	3129.3	3411.71	7229.89 D	8373.76 D	9367.73 D
Cl5(114)	247.38	325.39	320.57	226.68	179.41	134.91
Cl5(118)	4512.59 D	1395.98	1562.66	5334.38 D	5205.99 D	5144.24 D
Cl5(123)	398.34	175.12	176.21	455.59	510.84	564.84
Cl5(126)	118.17 U	174.31 U	170.05 U	134.08 U	108.94 U	87.7 U
Cl6(128)	344.4	193.45	149.55 J	414.39	479.78	530.93
Cl6(138)	1072.6	484.84	563.19	1483.96	1448.41	1750.51
Cl6(149)	5711.56 D	2354.45	2626.23	5193.3 D	6300.89 D	6858.05 D
Cl6(151)	774.62	382.21	422.03	870.29	960.3	1262.94
Cl6(153)	4800.82 D	1941.91	2187.24	5488.14 D	5410.11 D	6745.46 D
Cl6(156)	308.09	165.07 J	159.76 J	369.68	393.49	410.7
Cl6(157)	84 J	173.61 U	63.96 J	97.87 J	76.95 J	85.87 J
Cl6(158)	344.74	229.25	233.44	447.51	448.1	541.3
Cl6(167)	292.1	145.77 J	151.18 J	312.31	312	383.77
Cl6(169)	118.17 U	174.31 U	170.05 U	134.08 U	108.94 U	87.7 U
Cl7(170)	287.94	174.21	187.42	309.59	350.34	408.5
Cl7(177)	121.93	65.37 J	60.38 J	147.35	137.9	184.06
Cl7(180)	594.11	281.15	328.52	697.46	644.28	834.93
Cl7(183)	237.23	117.48 J	118.62 J	264.78	259.9	302.84
Cl7(187)	650.72	298.65	315.56	765.15	760.01	1007.51
Cl7(189)	48.52 J	173.61 U	169.38 U	49.66 J	108.51 U	48.86 J
Cl8(194)	161.01	66.08 J	169.38 U	158.46	172.71	197.1
Cl8(195)	70.48 J	173.61 U	169.38 U	72.5 J	108.51 U	68.15 J
Cl8(201)	117.7 U	173.61 U	169.38 U	69.8 J	108.51 U	56.49 J
Cl8(203)	191.67	173.61 U	144.63 J	205.06	184.45	223.1
Cl9(206)	64.71 J	173.61 U	169.38 U	75.2 J	76.59 J	104.07
Cl10(209)	23.12 J	173.61 U	169.38 U	23.53 J	24.06 J	32.58 J
Surrogate Recoveries (%)						
Cl3(34)	90	85	95	89	90	91
Cl6(152)	85	78	88	84	84	85

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	ST-04-061108-A		ST-03-061108-A	
Battelle ID	Q3083-P		Q3085-P	
Sample Type	SA		SA	
Collection Date	06/11/08		06/11/08	
Extraction Date	07/17/08		07/17/08	
Analysis Date	07/28/08		07/28/08	
Analytical Instrument	MS		MS	
% Moisture	72.8		76.62	
% Lipid	NA		NA	
Matrix	SEDIMENT TRAP		SEDIMENT TRAP	
Sample Size	1.42		1.21	
Size Unit-Basis	G_DRY		G_DRY	
Units	UG/KG_DRY		UG/KG_DRY	
Cl2(8)	2617.82		2262.56	
Cl3(18)	10476.1	D	8865.01	D
Cl3(28)	14588.01	D	13746.49	D
Cl3(31)	14188.62	D	12865.96	D
Cl3(37)	1506.59		1407.02	
Cl4(44)	6645.89	D	6450.8	D
Cl4(49)	23428.11	D	19929.82	D
Cl4(52)	26312.38	D	22642.86	D
Cl4(66)	3633.26	D	3964.74	D
Cl4(70)	2897.5	D	2861.35	
Cl4(74)	2484.63		2292.4	
Cl4(77)	372.95		338.41	
Cl4(81)	98.2	U	115.24	U
Cl5(87)	854.39		929.57	
Cl5(99)	8222.48	D	7061.3	D
Cl5(101)	7339.22	D	7123.05	D
Cl5(105)	847.25		919.23	
Cl5(110)	11904.7	D	9908.2	D
Cl5(114)	129.34		175.24	
Cl5(118)	5923.24	D	5938.8	D
Cl5(123)	600.51		572.17	
Cl5(126)	98.2	U	115.24	U
Cl6(128)	550.8		600.57	
Cl6(138)	1594.2		2045.39	
Cl6(149)	8413.17	D	8217.08	D
Cl6(151)	1229.65		1267.16	
Cl6(153)	8100.69	D	7419.54	D
Cl6(156)	438.28		543.8	
Cl6(157)	113.25		145.92	
Cl6(158)	616.47		573.25	
Cl6(167)	426.7		401.85	
Cl6(169)	98.2	U	115.24	U
Cl7(170)	399.64		478.88	
Cl7(177)	177.64		200.72	
Cl7(180)	893.36		905.96	
Cl7(183)	331.54		330.44	
Cl7(187)	1014.78		1022.86	
Cl7(189)	58.24	J	49.66	J
Cl8(194)	227.85		214.06	
Cl8(195)	97.81	U	110.25	J
Cl8(201)	97.81	U	114.78	U
Cl8(203)	252.61		267.27	
Cl9(206)	117.71		101.06	J
Cl10(209)	30.34	J	35.05	J

Surrogate Recoveries (%)

Cl3(34)	83	82
Cl6(152)	76	76

Battelle
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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	Procedural Blank
Battelle ID	BM032PB-P
Sample Type	PB
Collection Date	07/17/08
Extraction Date	07/17/08
Analysis Date	07/26/08
Analytical Instrument	MS
% Moisture	73.19
% Lipid	NA
Matrix	SEDIMENT
Sample Size	1.35
Size Unit-Basis	G_DRY
Units	UG/KG_DRY

Cl2(8)	102.88	U
Cl3(18)	102.88	U
Cl3(28)	103.29	U
Cl3(31)	102.88	U
Cl3(37)	103.29	U
Cl4(44)	103.29	U
Cl4(49)	102.88	U
Cl4(52)	102.88	U
Cl4(66)	102.88	U
Cl4(70)	102.88	U
Cl4(74)	102.88	U
Cl4(77)	102.88	U
Cl4(81)	103.29	U
Cl5(87)	103.29	U
Cl5(99)	102.88	U
Cl5(101)	102.88	U
Cl5(105)	102.88	U
Cl5(110)	103.29	U
Cl5(114)	102.88	U
Cl5(118)	103.29	U
Cl5(123)	103.29	U
Cl5(126)	103.29	U
Cl6(128)	103.29	U
Cl6(138)	102.88	U
Cl6(149)	102.88	U
Cl6(151)	103.29	U
Cl6(153)	103.29	U
Cl6(156)	103.29	U
Cl6(157)	102.88	U
Cl6(158)	102.88	U
Cl6(167)	102.88	U
Cl6(169)	103.29	U
Cl7(170)	102.88	U
Cl7(177)	102.88	U
Cl7(180)	103.29	U
Cl7(183)	103.29	U
Cl7(187)	103.29	U
Cl7(189)	102.88	U
Cl8(194)	102.88	U
Cl8(195)	102.88	U
Cl8(201)	102.88	U
Cl8(203)	102.88	U
Cl9(206)	102.88	U
Cl10(209)	102.88	U

Surrogate Recoveries (%)

Cl3(34)	83
Cl6(152)	87

Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	060208-03: Sand, White Quartz, -50+70
Battelle ID	BM033LCS-P
Sample Type	LCS
Collection Date	07/17/08
Extraction Date	07/17/08
Analysis Date	07/26/08
Analytical Instrument	MS
% Moisture	NA
% Lipid	NA
Matrix	SEDIMENT
Sample Size	5.17
Size Unit-Basis	G_DRY

Units	UG/KG_DRY		Target	% Recovery	Qualifier
Cl2(8)	671.21		776.02	86	
Cl3(18)	654.3		776.02	84	
Cl3(28)	616.04		774.47	80	
Cl3(31)	61.68				
Cl3(37)	26.97	U			
Cl4(44)	699.86		775.24	90	
Cl4(49)	26.86	U			
Cl4(52)	719.86		773.69	93	
Cl4(66)	738.46		774.47	95	
Cl4(70)	26.86	U			
Cl4(74)	26.86	U			
Cl4(77)	678.56		773.69	88	
Cl4(81)	26.97	U			
Cl5(87)	26.97	U			
Cl5(99)	26.86	U			
Cl5(101)	640.47		775.24	83	
Cl5(105)	737.36		774.47	95	
Cl5(110)	26.97	U			
Cl5(114)	60.06				
Cl5(118)	625.91		774.47	81	
Cl5(123)	26.97	U			
Cl5(126)	698.6		778.34	90	
Cl6(128)	705.87		778.34	91	
Cl6(138)	596.88		775.24	77	
Cl6(149)	26.86	U			
Cl6(151)	26.97	U			
Cl6(153)	682.11		774.47	88	
Cl6(156)	26.97	U			
Cl6(157)	26.86	U			
Cl6(158)	26.86	U			
Cl6(167)	26.86	U			
Cl6(169)	26.97	U			
Cl7(170)	668.14		777.56	86	
Cl7(177)	26.86	U			
Cl7(180)	723.52		776.79	93	
Cl7(183)	26.97	U			
Cl7(187)	696.8		776.02	90	
Cl7(189)	26.86	U			
Cl8(194)	26.86	U			
Cl8(195)	667.7		776.02	86	
Cl8(201)	26.86	U			
Cl8(203)	26.86	U			
Cl9(206)	749.25		776.02	97	
Cl10(209)	752.09		774.47	97	

Surrogate Recoveries (%)

Cl3(34)	91
Cl6(152)	93

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	SS01-042208		SS01-042208				
Battelle ID	Q2793-P		Q2793MS-P				
Sample Type	SA		MS				
Collection Date	04/22/08		4/22/2008				
Extraction Date	07/17/08		7/17/2008				
Analysis Date	07/27/08		7/27/2008				
Analytical Instrument	MS		MS				
% Moisture	67.25		67.62				
% Lipid	NA		NA				
Matrix	SEDIMENT		SEDIMENT				
Sample Size	1.69		1.64				
Size Unit-Basis	G_DRY		G_DRY				
Units	UG/KG_DRY		UG/KG_DRY		Target	% Recovery	Qualifier
Cl2(8)	1912.34		4548.31	D	2446.34	108	
Cl3(18)	3834.4	D	6042.06	D	2446.34	90	
Cl3(28)	9592.74	D	10861.76	D	2441.46	52	
Cl3(31)	8325.15	D	8406.61	D			
Cl3(37)	951.07		815.05				
Cl4(44)	3308.47	D	4705.39	D	2443.90	57	
Cl4(49)	11673.16	D	10134.93	D			
Cl4(52)	10469.31	D	11727.27	D	2439.02	52	
Cl4(66)	2514.1	D	4231.88	D	2441.46	70	
Cl4(70)	2140.9		1770.42				
Cl4(74)	1658.18		1403.68				
Cl4(77)	249.69		2242.98		2439.02	82	
Cl4(81)	82.51	U	85.03	U			
Cl5(87)	349.22		311.77				
Cl5(99)	3755.34	D	3872.63	D			
Cl5(101)	3571.27	D	5265.46	D	2443.90	69	
Cl5(105)	390.99		2143.38	D	2441.46	72	
Cl5(110)	5130.69	D	5046.61	D			
Cl5(114)	139.18		137.71				
Cl5(118)	3380.19	D	4781.1	D	2441.46	57	
Cl5(123)	339.88		287.12				
Cl5(126)	82.51	U	2208.41		2453.66	90	
Cl6(128)	284.44		1684.49	D	2453.66	57	
Cl6(138)	913.12		3151.63	D	2443.90	92	
Cl6(149)	3564.15	D	3843.78	D			
Cl6(151)	578.48		502.04				
Cl6(153)	3570.3	D	5016.5	D	2441.46	59	
Cl6(156)	268.34		221.11				
Cl6(157)	62.75	J	78.55	J			
Cl6(158)	336.39		252.28				
Cl6(167)	229.9		210.84				
Cl6(169)	82.51	U	85.03	U			
Cl7(170)	242.2		2150.71		2451.22	78	
Cl7(177)	106.94		83.62	J			
Cl7(180)	493.29		2965.33	D	2448.78	101	
Cl7(183)	193.77		160.15				
Cl7(187)	525.04		2059.28	D	2446.34	63	
Cl7(189)	30.92	J	84.69	U			
Cl8(194)	134.75		99.5				
Cl8(195)	47.55	J	2023.24		2446.34	81	
Cl8(201)	82.18	U	84.69	U			
Cl8(203)	144.6		132.64				
Cl9(206)	70.95	J	2076.19		2446.34	82	
Cl10(209)	22.53	J	1992.54		2441.46	81	

Surrogate Recoveries (%)

Cl3(34)	94	87
Cl6(152)	86	76

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	SS01-042208						
Battelle ID	Q2793MSD-P						
Sample Type	MSD						
Collection Date	4/22/2008						
Extraction Date	7/17/2008						
Analysis Date	7/27/2008						
Analytical Instrument	MS						
% Moisture	67.87						
% Lipid	NA						
Matrix	SEDIMENT						
Sample Size	1.69						
Size Unit-Basis	G_DRY						
Units	UG/KG_DRY		Target	% Recovery	Qualifier	RPD (%)	Qualifier
Cl2(8)	4669	D	2373.96	116		7.1	
Cl3(18)	6053.73	D	2373.96	93		3.3	
Cl3(28)	10116.75	D	2369.23	22		81.1	
Cl3(31)	8892.11	D					
Cl3(37)	1009.68						
Cl4(44)	5263.07	D	2371.60	82		36.0	
Cl4(49)	11600.79	D					
Cl4(52)	12260.44	D	2366.86	76		37.5	
Cl4(66)	4406.46	D	2369.23	80		13.3	
Cl4(70)	2015.21						
Cl4(74)	1569.37						
Cl4(77)	2640.7	D	2366.86	101		20.8	
Cl4(81)	82.51	U					
Cl5(87)	370.37						
Cl5(99)	4170.43	D					
Cl5(101)	5131.58	D	2371.60	66		4.4	
Cl5(105)	2269.17	D	2369.23	79		9.3	
Cl5(110)	5090.85	D					
Cl5(114)	130.76						
Cl5(118)	4975.2	D	2369.23	67		16.1	
Cl5(123)	306.68						
Cl5(126)	1822.07	D	2381.07	77		15.6	
Cl6(128)	2025.49	D	2381.07	73		24.6	
Cl6(138)	3339.6	D	2371.60	102		10.3	
Cl6(149)	3911.33	D					
Cl6(151)	507.19						
Cl6(153)	5211.72	D	2369.23	69		15.6	
Cl6(156)	213.98						
Cl6(157)	71.06	J					
Cl6(158)	268.89						
Cl6(167)	209.91						
Cl6(169)	82.51	U					
Cl7(170)	2740.38	D	2378.70	105		29.5	
Cl7(177)	97.66						
Cl7(180)	2671.7	D	2376.33	92		9.3	
Cl7(183)	165.96						
Cl7(187)	2638.1	D	2373.96	89		34.2	
Cl7(189)	82.18	U					
Cl8(194)	128.35						
Cl8(195)	2263.54	D	2373.96	93		13.8	
Cl8(201)	82.18	U					
Cl8(203)	162.72						
Cl9(206)	2125.59	D	2373.96	87		5.9	
Cl10(209)	2253.29	D	2369.23	94		14.9	

Surrogate Recoveries (%)

Cl3(34)	94
Cl6(152)	81

PCB Congeners – Sediment Trap QA/QC Summary
Batch 08-0170

PROJECT: New Bedford Harbor Sediment Trap Study (USACE)
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment Trap Samples
SAMPLE CUSTODY: Surface sediment and sediment trap samples were collected on 4/15/08, 4/22/08, 5/15/08, and 6/11/08. Samples arrived in four shipments, and were hand delivered to the Battelle Duxbury Chemistry Sample Custodian. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. After being received by the lab, the sediment trap samples were centrifuged to remove excess water. The samples were then stored in the walk-in freezer until preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	LCS/LCSD, Laboratory Duplicate Relative Percent Difference	Detection Limits (ug/kg dry wt)
PCB Congeners	EPA 1668A and 8270C	< RL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	≤30% RPD	103.29

METHOD: Sediment trap samples were extracted for PCB congeners following modified EPA Method 3545. Sediments were air-dried overnight and approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was poured through a funnel and passed through glass wool and sodium sulfate. The extract was then brought to 100 mL; 10 mL was removed and continued on for further processing. The 10 mL split was treated with copper, solvent exchanged to hexane, and passed through a Florisil SPE cartridge. The post-Florisil extract was then brought to 10 mL, out of which 1 mL was removed to be fortified with internal standards (IS). Extracts designated for PCB congener analysis were analyzed using gas chromatography/mass spectrometry (GC/MS), following Battelle SOP 5-315 which is based on EPA Methods 1668A and 8270C. Sample data were quantified by the method of internal standards, using the IS compounds. Data was evaluated against sample specific reporting limits.

HOLDING TIMES: Sediments of this batch were extracted within 1 year of sample holding time for frozen sediments. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
08-0170	4/15/2008 – 6/11/2008	7/17/08	7/26/08-7/28/08

PCB Congeners – Sediment Trap QA/QC Summary
Batch 08-0170

LIST OF SAMPLES:

08-0005

Sample ID	Battelle ID
ST-01-041508B	Q2744
ST-01-041508C	Q2745
ST-02-041508A	Q2746
ST-03-041508A	Q2748
ST-04-041508A	Q2750
SS01-042208	Q2793
SS02-042208	Q2794
SS03-042208	Q2795
SS04-042208	Q2796
SS01-042208DUP	Q2797
ST-04-051508-A	Q2879
ST-03-051508-A	Q2881
ST-02-051508-A	Q2883
ST-01-051508-B	Q2886
ST-01-051508-C	Q2887
ST-01-061108-B	Q3079
ST-01-061108-C	Q3080
ST-02-061108-A	Q3081
ST-04-061108-A	Q3083
ST-03-061108-A	Q3085

BLANK: A procedural blank (PB) was prepared with each analytical batch. Blanks were analyzed to ensure the sample extraction and analysis methods were free of contamination.

08-0170 – No exceedences noted. No target analytes were detected in the blank sample.

LABORATORY CONTROL SAMPLE: A pair of laboratory control (LCS) and laboratory control sample duplicate (LCSD) samples was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. The RPD between the percent recoveries is calculated to measure the data quality in terms of precision.

08-0170 – No exceedence noted. All percent recoveries of spiked analytes were within laboratory control limit of 40-120%.

MATRIX SPIKE A pair of matrix spike (MS) and matrix spike duplicate samples (MSD) was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. The RPD between percent recoveries was calculated to measure the data quality in terms of precision.

08-0170 – No exceedence noted. All percent recoveries of spiked analytes were within laboratory control limit of 40-120%. All RPDs were within laboratory control limit of <30%.

PCB Congeners – Sediment Trap QA/QC Summary
Batch 08-0170

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

08-0170 – No exceedence noted. All surrogate recoveries were within laboratory control limit of 40-120%.

CALIBRATIONS: The GC/MS is calibrated with a minimum of a 6-point curve. The co-efficient of determination must be > 0.995 for each target analyte in the initial calibration (ICAL). Each batch of samples analyzed is bracketed by a continuing calibration check (CCC) sample, run at a frequency of every 12 hours (minimally). This percent difference (PD) between the ICAL and the CCC should be <25% for individual analytes; additionally, an instrument calibration check (ICC) sample was run with the initial calibration. The PD for the ICC should be < 25% for each analyte.

08-0170 –
0 ICAL exceedence,
1 ICC exceedence: PCB 81 exceeded the %D criteria in the ICC due to standard impurity.
0 CCC exceedence: PCB 123 were responding slightly higher than criteria in two CCCs. This slight overestimation should have limited impact on interpretation of the data.

Chain of Custody

Battelle

Project Name: NBH Sed Traps
Project Number: G606422

Relinquished by: Mike McKee
Received by: Jeannie Seyfert

Date: 04-16-08
Date: 4-17-08

Field Sample ID	Analytical Lab Sample ID	Sample Date (ddmmmyy)	Sample Time (local)	Station ID	Analysis[1]	No. of Containers	Size (liters)	Container Type	Preservative
ST-01-041508-A	Q2743	04-15-2008	1556	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-01-041508-B	Q2744	04-15-2008	1556	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-01-041508-C	Q2745	04-15-2008	1556	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-02-041508-A	Q2746	04-15-2008	1620	ST02	PCB, TOC, Grain Size	1	2	PE	NA
ST-02-041508-B	Q2747	04-15-2008	1620	ST02	PCB, TOC, Grain Size	1	2	PE	NA
ST-03-041508-A	Q2748	04-15-2008	1438	ST03	PCB, TOC, Grain Size	1	2	PE	NA
ST-03-041508-B	Q2749	04-15-2008	1438	ST03	PCB, TOC, Grain Size	1	2	PE	NA
ST-04-041508-A	Q2750	04-15-2008	1637	ST04	PCB, TOC, Grain Size	1	2	PE	NA
ST-04-041508-B	Q2751	04-15-2008	1637	ST04	PCB, TOC, Grain Size	1	2	PE	NA

[1] All sediment trap samples will be allowed to settle overnight at 4°C. On the following day, overlying water will be decanted and remaining sediment slurry will be centrifuged to remove excessive water. The weight of each centrifuged sample will be weighed to assess reproducibility of total mass at each location. PCB, TOC, and grain size analyses will be conducted on 1 of 2 samples at ST-02, 03, and 04. PCB, TOC, and grain size analyses will be conducted on 2 of 3 samples collected at ST-01. Samples designated for PCB analysis will be frozen until sample analysis starts. Samples designated for TOC and grain size analyses will be shipped to Applied Marine Sciences located in League City, TX.

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ShpNo SHP-080424-01

Battelle Project No:

Sample Receipt Form

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Thursday, April 24, 2008 12:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered **Tracking Number:** NA

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal Condition	Container Condition	Temp C	Smps
1 of 1	Cooler	NA	None	Not Applicable	Intact	4.0	5

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 4 Temperature Blank used ☐ Yes ☑ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☑ Yes ☐ No ☐ Unknown /Lot No.: Unknown

Storage Location: Field Room II: Refrigerator - R0004 (Lower Col **BDO IDs Assigned:** Q2793 - Q2797

Samples logged in by: Seyfert, Jeannine **Date/Time:** 04/24/2008 12:00 AM

Approved By: **Approved On:**

Authorized By: **Authorized On:**

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ShpNo SHP-080424-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Thursday, April 24, 2008 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q2793	SS01-042208	04/22/08 9:45	04/24/08 16:13	1	SEDIMENT	4	NA	NA	NA	F0002 (Walk-in)			
Q2794	SS02-042208	04/22/08 10:30	04/24/08 16:13	1	SEDIMENT	4	NA	NA	NA	F0002 (Walk-in)			
Q2795	SS03-042208	04/22/08 9:08	04/24/08 16:14	1	SEDIMENT	4	NA	NA	NA	F0002 (Walk-in)			
Q2796	SS04-042208	04/22/08 8:18	04/24/08 16:14	1	SEDIMENT	4	NA	NA	NA	F0002 (Walk-in)			
Q2797	SS01-042208-DUP	04/22/08 10:05	04/24/08 16:14	1	SEDIMENT	4	NA	NA	NA	F0002 (Walk-in)			

Total Samples: 5

Chain of Custody

Battelle

Project Name: NBH Sed Traps
Project Number: G606422

Relinquished by: Mike McKee
Received by: Jeannine Hyatt

Date: 04-23-08
Date: 4-24-08

Field Sample ID	Analytical Lab Sample ID	Sample Date (ddmmmyy)	Sample Time (local)	Station ID	Analysis[1]	No. of Containers	Size (liters)	Container Type	Preservative
SS01-042208	Q2793	04-22-2008	0945	ST01	PCB	1	0.5	PC glass	NA
SS02-042208	Q2794	04-22-2008	1030	ST02	PCB	1	0.5	PC glass	NA
SS03-042208	Q2795	04-22-2008	0908	ST03	PCB	1	0.5	PC glass	NA
SS04-042208	Q2796	04-22-2008	0818	ST04	PCB	1	0.5	PC glass	NA
SS01-042208-DUP	Q2797	04-22-2008	1005	ST01	PCB[1]	1	0.5	PC glass	NA

[1] The field sampling plan did not specify field duplicates for sediment grab analysis. Please contact Deirdre before running the duplicate sample.

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ShpNo SHP-080519-01

Battelle Project No:

Sample Receipt Form

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Friday, May 16, 2008 12:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered **Tracking Number:** NA

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal Condition	Container Condition	Temp C	Smps
1 of 1	Cooler	NA	None	Not Applicable	Intact	4.0	9

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 4 Temperature Blank used ☐ Yes ☑ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: Unknown

Storage Location: Field Room II: Refrigerator - R0004 (Lower Col **BDO IDs Assigned:** Q2879 - Q2887

Samples logged in by: Seyfert, Jeannine **Date/Time:** 05/16/2008 12:00 AM

Approved By: **Approved On:**

Authorized By: **Authorized On:**

Battelle
The Business of Innovation

ShpNo SHP-080519-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Friday, May 16, 2008 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q2879	ST-04-051508-A	05/15/08 14:38	05/19/08 16:45	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q2880	ST-04-051508-B	05/15/08 14:38	05/19/08 16:45	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q2881	ST-03-051508-A	05/15/08 14:59	05/19/08 16:45	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q2882	ST-03-051508-B	05/15/08 14:59	05/19/08 16:45	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q2883	ST-02-051508-A	05/15/08 15:36	05/19/08 16:46	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q2884	ST-02-051508-B	05/15/08 15:36	05/19/08 16:46	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q2885	ST-01-051508-A	05/15/08 15:52	05/19/08 16:46	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q2886	ST-01-051508-B	05/15/08 15:52	05/19/08 16:46	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q2887	ST-01-051508-C	05/15/08 15:52	05/19/08 16:47	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			

Total Samples: 9

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Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
GG06422	Sediment Trap - NBH

SAMPLERS: Signature: Michael P McCann

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	LAB ~~BATTELLE~~ ID	FIELD ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC/Grain Size	ACIDIFIED	PRESERVED	Total Number of Containers
05/15/08	14:38	Q2879	ST-04-051508-A	4th sediment trap recovery station 04		✓						✓			
	↓	Q2880	ST-04-051508-B	station 04		✓						✓			
	14:59	Q2881	ST-03-051508-A	station 03		✓						✓			
	↓	Q2882	ST-03-051508-B	station 03		✓						✓			
	15:36	Q2883	ST-02-051508-A	station 02		✓						✓			
	↓	Q2884	ST-02-051508-B	station 02		✓						✓			
	15:52	Q2885	ST-01-051508-A	station 01		✓						✓			
		Q2886	ST-01-051508-B	station 01		✓						✓			
	↓	Q2887	ST-01-051508-C	station 01		✓						✓			

Relinquished by:	Date/Time	Received by:	Date/Time
Michael P McCann	05/16/08 1200	Jeannie Light	5/16/08 1200

Comments: After settling and decanting, all samples will be weighed for reproducibility. At station 01, 2 of 3 samples will be analyzed for PCB, TOC, & Grain Size. At stations 02, 03 & 04, 1 of 2 samples will be analyzed for PCB, TOC, & Grain Size.

ORIGINAL

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ShpNo SHP-080616-01

Battelle Project No:

Sample Receipt Form

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Thursday, June 12, 2008 12:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered **Tracking Number:** NA

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal Condition	Container Condition	Temp C	Smps
1 of 1	Cooler	NA	None	Not Applicable	Intact	4.0	9

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☑ Tape ☐ Custody Seals ☑ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 4 Temperature Blank used ☐ Yes ☑ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: Unknown

Storage Location: Chem South: Refrigerator - R0003 (Upper Cold **BDO IDs Assigned:** Q3078 - Q3086

Samples logged in by: Seyfert, Jeannine **Date/Time:** 06/12/2008 12:00 AM

Approved By: **Approved On:**

Authorized By: **Authorized On:**

Battelle
The Business of Innovation

ShpNo SHP-080616-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Thursday, June 12, 2008 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q3078	ST-01-061108-A	06/11/08 12:15	06/16/08 10:12	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3079	ST-01-061108-B	06/11/08 12:15	06/16/08 10:12	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3080	ST-01-061108-C	06/11/08 12:15	06/16/08 10:12	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3081	ST-02-061108-A	06/11/08 12:24	06/16/08 10:12	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3082	ST-02-061108-B	06/11/08 12:24	06/16/08 10:13	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3083	ST-04-061108-A	06/11/08 12:48	06/16/08 10:13	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3084	ST-04-061108-B	06/11/08 12:48	06/16/08 10:13	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3085	ST-03-061108-A	06/11/08 13:10	06/16/08 10:13	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3086	ST-03-061108-B	06/11/08 13:10	06/16/08 10:14	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			

Total Samples: 9

Battelle
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Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
G606422	NBH Sed Trap

SAMPLERS: Signature: Michael P McManus

DATE	TIME	Lab ~~BATTELLE~~ ID	Field ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC/Grain Size	ACIDIFIED	PRESERVED	Total Number of Containers
06/11/08	1215	Q3078	ST-01-061108-A	5m sediment trap recovery station 01		✓						✓			
	↓	Q3079	ST-01-061108-B	01		✓						✓			
		Q3080	ST-01-061108-C	01		✓						✓			
	1224	Q3081	ST-02-061108-A	02		✓						✓			
	↓	Q3082	ST-02-061108-B	02		✓						✓			
	1248	Q3083	ST-04-061108-A	04		✓						✓			
	↓	Q3084	ST-04-061108-B	04		✓						✓			
	1310	Q3085	ST-03-061108-A	03		✓						✓			
	↓	Q3086	ST-03-061108-B	03		✓						✓			

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

Relinquished by:	Date/Time	Received by:	Date/Time
Michael P McManus	~~06/12/08~~ 06/12/08 0800	Jeannine Leight	6/12/08 1148
Relinquished by:	Date/Time	Received by:	Date/Time
MPM	06/12/08		

Comments: After settling samples for 24 hrs and decanting, all samples will be weighed for reproducibility. At ST-01 2 of 3 samples will be analyzed for PCB, TOC & GS. At ST-02, 03 & 04 only 1 of 2 samples will be analyzed for PCB, TOC & GS

ORIGINAL

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Deployment Nos. 6-9

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Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	ST-01-071008-B	ST-01-071008-C	ST-02-071008-A	ST-04-071008-A	ST-03-071008-A	ST-04-073108-A
Battelle ID	Q3438-P	Q3439-P	Q3440-P	Q3442-P	Q3444-P	Q3734-P
Sample Type	SA	SA	SA	SA	SA	SA
Collection Date	07/10/08	07/10/08	07/10/08	07/10/08	07/10/08	07/31/08
Extraction Date	10/08/08	10/08/08	10/08/08	10/08/08	10/08/08	10/08/08
Analysis Date	10/27/08	10/27/08	10/27/08	10/28/08	10/28/08	10/28/08
Analytical Instrument	MS	MS	MS	MS	MS	MS
% Moisture	78.47	76.42	73.11	75.2	76.08	71.51
% Lipid	NA	NA	NA	NA	NA	NA
Matrix	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP
Sample Size	0.73	1.08	2.72	2.49	2.40	2.88
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Cl2(8)	3171.16	5259.4	4375.59	4997.94	3216.31	3166.33
Cl3(18)	9084.48	12244.4	9171.37 D	11663.2 D	7746.34 D	9120.59 D
Cl3(28)	12946.59	17824 D	13791.05 D	17601.49 D	11999.74 D	14787.37 D
Cl3(31)	13090.66	17730.25 D	13616.51 D	17113.06 D	12477.15 D	14880.54 D
Cl3(37)	1419.38	1881.66	1804.27	1647.76	1443.07	1378.43
Cl4(44)	5881.55	8197.97	6618.67 D	7476.4 D	6905.91 D	7369.79 D
Cl4(49)	18105.43	20745.5 D	17921.51 D	22999.22 D	17893.48 D	22582.46 D
Cl4(52)	20182.42	22840.11 D	20069.71 D	29231 D	19585.57 D	24176.16 D
Cl4(66)	3883.38	5890.57	4529.14	4872.13	3589.64	3543.88
Cl4(70)	3553.12	5499.64	4119.25	4224.19	3404.3	3265.92
Cl4(74)	2206.01	3263.21	2933.56	3116.94	2427.03	2320.53
Cl4(77)	533.34	538.3	381.77	383.4	342.98	330.6
Cl4(81)	344.52 U	232.87 U	92.46 U	101 U	104.79 U	87.33 U
Cl5(87)	2058.8	2107.54	1983.65	1693	1592.02	1583.6
Cl5(99)	6557.48	9034.77	6920.73 D	8573.09 D	7016.24 D	7604.93 D
Cl5(101)	8727.95	11477.63	8374.51 D	9871.65 D	8457.82 D	8713.05 D
Cl5(105)	1553.88	1895.77	1778.42	1736.74	1546.57	1575.54
Cl5(110)	10412.39	12677.74	9738.71 D	11926.14 D	9932.35 D	11267.2 D
Cl5(114)	342.47 U	231.48 U	91.91 U	100.4 U	104.17 U	86.81 U
Cl5(118)	6640.82	7996.71	6800.61 D	7585.93 D	6821.53 D	6973.38 D
Cl5(123)	914.74	1053.92	820.34	922.79	783.16	790.48
Cl5(126)	343.84 U	232.41 U	92.28 U	100.8 U	104.58 U	87.15 U
Cl6(128)	1111.27	1177.54	1025.99	1047.1	927.79	1024.14
Cl6(138)	2893.46	3470.33	3124.6	3115.7	2776.89	2688.19
Cl6(149)	7261.38	8523.08	7672.59 D	9489.89 D	8419.5 D	8911.33 D
Cl6(151)	1335.55	1679.94	1497.16	1533.23	1312.32	1350.62
Cl6(153)	7489.36	9683.25	6438.37 D	7987.63 D	6412.45 D	7999.59 D
Cl6(156)	771.7	882.67	702.29	759.02	652.94	711.15
Cl6(157)	319.04 J	286.03	182.68	170.34	172	164.11
Cl6(158)	852.88	936.98	922.94	930.69	812.42	834.25
Cl6(167)	469.59	555.61	486.28	513.05	481.73	514.74
Cl6(169)	343.84 U	232.41 U	92.28 U	100.8 U	104.58 U	87.15 U
Cl7(170)	625.16	645.67	561.23	580.06	547.2	662.52
Cl7(177)	354.71	397.81	280.41	289.47	265.27	276.56
Cl7(180)	1059.3	1286.45	1079.51	1130.87	1026.87	1096.71
Cl7(183)	312.34 J	456.51	403.34	438.64	407.24	430.41
Cl7(187)	871.11	1084.56	1044.71	1215.39	1012.28	1225.86
Cl7(189)	342.47 U	231.48 U	91.91 U	100.4 U	104.17 U	86.81 U
Cl8(194)	342.47 U	312.77	220.27	231.61	199.42	246.89
Cl8(195)	342.47 U	164.16 J	93.16	75.76 J	71.71 J	116.73
Cl8(201)	342.47 U	231.48 U	91.91 U	39.37 J	37.5 J	39.48 J
Cl8(203)	342.47 U	231.48 U	243.27	283.34	232.14	289.54
Cl9(206)	342.47 U	231.48 U	146.73	142.75	146.69	136.67
Cl10(209)	342.47 U	231.48 U	91.91 U	100.4 U	104.17 U	43.42 J
Surrogate Recoveries (%)						
Cl3(34)	85	88	90	86	72	90
Cl6(152)	92	92	97	87	79	98

Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	ST-01-073108-B	ST-01-073108-C	ST-02-073108-A	ST-03-073108-A	ST-01-082508-B	ST-01-082508-C
Battelle ID	Q3737-P	Q3738-P	Q3739-P	Q3741-P	Q4052-P	Q4053-P
Sample Type	SA	SA	SA	SA	SA	SA
Collection Date	07/31/08	07/31/08	07/31/08	07/31/08	08/25/08	08/25/08
Extraction Date	10/08/08	10/08/08	10/08/08	10/08/08	10/08/08	10/08/08
Analysis Date	10/28/08	10/28/08	10/28/08	10/28/08	10/28/08	10/28/08
Analytical Instrument	MS	MS	MS	MS	MS	MS
% Moisture	72.56	78.05	69.3	74.11	70.44	70.1
% Lipid	NA	NA	NA	NA	NA	NA
Matrix	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP
Sample Size	2.74	1.86	3.10	2.60	0.92	1.14
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Cl2(8)	2269.01	2116.47 D	3576.08	3162.56	1362.11	1879.78
Cl3(18)	4852.21 D	6199.34	8785.95 D	6838.47 D	3048.23	4522.18
Cl3(28)	7721.04 D	7590.21 D	14286.55 D	12747.62 D	5305.12	9791.71
Cl3(31)	7325.03 D	7981.65 D	13867.22 D	12231.19 D	5203.89	9363.12
Cl3(37)	768	747.96	1403.15	1305.96	472.86	588.22
Cl4(44)	3368.2	3678.6	6285.97 D	6130.6 D	1931.5	3276.68
Cl4(49)	9426.1 D	10329.55 D	19409.55 D	17396.77 D	6603.1	12525.27
Cl4(52)	10152.78 D	10054.97 D	20610.41 D	18481.46 D	6891.05	13074.18
Cl4(66)	2009.63	2015.21	3821.88	3582.27	1194.83	2166.85
Cl4(70)	2015.39	1835.05	3471.28	3256.52	983.63	1825.41
Cl4(74)	1299.92	1286.06	2478.63	2420.16	799.63	1420.33
Cl4(77)	225.99	252.96	329.48	388.9	274.54	277.39
Cl4(81)	91.79 U	135.22 U	81.13 U	96.73 U	273.37 U	220.61 U
Cl5(87)	979.64	725.35	1523.83	1480.74	472	798.7
Cl5(99)	3441.63	3583.17	6266.24 D	6988.79 D	1939.46	3957.55
Cl5(101)	4414.34	4170.74	7714.54 D	7798.43 D	2174.54	4571.25
Cl5(105)	887.11	676.77	1481.87	1584.02	285.1	583.31
Cl5(110)	5075.49 D	5316.02	8933.44 D	9251.02 D	2803.58	5154.47
Cl5(114)	91.24 U	134.41 U	80.65 U	96.15 U	271.74 U	219.3 U
Cl5(118)	3227.28	3092.07	5721.38 D	6167.31 D	1677.76	3142.84
Cl5(123)	446.39	485.09	747.34	779.55	404.73	523.64
Cl5(126)	91.61 U	134.95 U	80.97 U	96.54 U	272.83 U	220.18 U
Cl6(128)	565.79	444.36	888.33	1012.47	266.55 J	395.17
Cl6(138)	1641.54	1229.23	2898.88	3173.03	681.55	1138.12
Cl6(149)	3939.42	3941.98	7232.87 D	8291.79 D	2105.26	3759.68
Cl6(151)	642.34	612.2	1232.18	1343.55	433.91	708.27
Cl6(153)	4268.44	3863.58	6107.56 D	6040.89 D	1942.94	3853.2
Cl6(156)	347.18	341.43	649.9	704.6	307.23	369.61
Cl6(157)	122.66	134.41 U	156.03	176.58	271.74 U	166.78 J
Cl6(158)	405.23	419.05	747.37	896.33	248.39 J	349.43
Cl6(167)	257.54	253.25	443.53	516.71	198.22 J	250.55
Cl6(169)	91.61 U	134.95 U	80.97 U	96.54 U	272.83 U	220.18 U
Cl7(170)	306.43	295.23	500.97	633.86	216.18 J	237.13
Cl7(177)	169.39	186.47	248.1	292.55	271.74 U	209.69 J
Cl7(180)	568.45	489.74	934.31	1179.92	366.84	445.98
Cl7(183)	194.42	189.07	355.61	428.71	108.88 J	170.16 J
Cl7(187)	483.59	535.99	959.22	1183.76	319.33	447.48
Cl7(189)	91.24 U	134.41 U	61.71 J	81.97 J	271.74 U	219.3 U
Cl8(194)	139.15	142	230.17	253.96	271.74 U	219.3 U
Cl8(195)	91.24 U	134.41 U	100.39	96.3	271.74 U	219.3 U
Cl8(201)	91.24 U	134.41 U	32.43 J	40.09 J	271.74 U	219.3 U
Cl8(203)	144.6	170.95	250.99	289.17	271.74 U	219.3 U
Cl9(206)	92.42	108.14 J	134.52	141.57	271.74 U	219.3 U
Cl10(209)	91.24 U	134.41 U	31.46 J	52.03 J	271.74 U	219.3 U
Surrogate Recoveries (%)						
Cl3(34)	86	86	89	97	83	87
Cl6(152)	89	92	92	102	88	93

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	ST-02-082508-A	ST-03-082508-A	ST-04-082508-A	ST01-100208-B	ST01-100208-C	ST02-100208-A
Battelle ID	Q4054-P	Q4056-P	Q4058-P	Q4850-P	Q4851-P	Q4852-P
Sample Type	SA	SA	SA	SA	SA	SA
Collection Date	08/25/08	08/25/08	08/25/08	10/02/08	10/02/08	10/02/08
Extraction Date	10/08/08	10/08/08	10/08/08	10/08/08	10/08/08	10/08/08
Analysis Date	10/28/08	10/28/08	10/29/08	10/29/08	10/29/08	10/29/08
Analytical Instrument	MS	MS	MS	MS	MS	MS
% Moisture	68.26	71.17	80	73.23	72.51	72.67
% Lipid	NA	NA	NA	NA	NA	NA
Matrix	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP
Sample Size	3.23	2.89	2.03	2.72	2.77	2.77
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Cl2(8)	1444.01	1630.8	2201.43	1336.27	1259.33	1295.65
Cl3(18)	3473.48	4376.65	6442.8	3095.2	2926.17	3324.74
Cl3(28)	4706.1 D	6898.05 D	9354.26 D	6010.29	5384.38	5331.09
Cl3(31)	4772.81 D	5946.13 D	8500.48 D	4748.85	4243.63	5150.2
Cl3(37)	423.38	556.74	875.82	452.29	477.47	403.33
Cl4(44)	2052.85	3418.44	4477.57	2079.33	1777.06	2041.39
Cl4(49)	5945.37 D	9982.03 D	12558.96 D	4732.43 D	5495.5	5902.71 D
Cl4(52)	6120.43 D	10222.65 D	14387.17 D	5794.82 D	5538.22 D	6219.21 D
Cl4(66)	1093.7	1836.97	2476.43	1051.99	1028.53	1066.35
Cl4(70)	999.36	1296.87	2105.96	847.28	744.08	909.31
Cl4(74)	745.73	1207.89	1690.24	864.77	842.75	708.21
Cl4(77)	126.07	141.21	274.43	173.95	161.77	135.28
Cl4(81)	77.86 U	87.02 U	123.89 U	92.46 U	90.79 U	90.79 U
Cl5(87)	387.07	691.55	893.42	398.26	321.1	372.62
Cl5(99)	1972.3	3965.67	5172.81	2651.58	2356.5	1910.02
Cl5(101)	2329.89	4435.69	5508.59	2242.54	1819.35	2223.48
Cl5(105)	337.78	680.27	885.54	345.93	346.04	328.78
Cl5(110)	2964.7	5152.44	7156.41	2997.73	2484.65	2863.64
Cl5(114)	77.4 U	86.51 U	123.15 U	91.91 U	90.25 U	90.25 U
Cl5(118)	1648.43	3109.7	4005.88	2117.65	1896.22	1597.39
Cl5(123)	242.74	384.88	530.8	289.97	259.64	245.59
Cl5(126)	77.71 U	86.85 U	123.65 U	92.28 U	90.61 U	90.61 U
Cl6(128)	244.47	404.83	622.16	293.04	236.28	261.03
Cl6(138)	669.51	1217.73	1677.59	824.89	722.53	668.4
Cl6(149)	2238.17	3746.34	5713.79	2205.45	1981.33	2171.2
Cl6(151)	366.1	621.04	853.53	373.21	347.34	349.35
Cl6(153)	2221.84	4157.3	5969.61	2978.31	2717.35	2255.37
Cl6(156)	189.02	331.1	445.68	259.95	246.19	205.46
Cl6(157)	87.38	105.66	158.61	92.04	90.25 U	65.68 J
Cl6(158)	241.7	373.65	564.17	246.66	215.77	206.15
Cl6(167)	134.08	239.83	333.27	196.98	173.25	149.43
Cl6(169)	77.71 U	86.85 U	123.65 U	92.28 U	90.61 U	90.61 U
Cl7(170)	151.53	262.29	358.97	201.64	203.14	164.3
Cl7(177)	113.59	138.03	193.8	136.61	124.84	98.05
Cl7(180)	286.7	497.61	712.82	441.9	326.28	304.18
Cl7(183)	100.27	189.16	277.72	150.96	123.46	95.05
Cl7(187)	304.63	487.6	744.75	361.27	343.86	310.95
Cl7(189)	77.4 U	86.51 U	123.15 U	91.91 U	90.25 U	90.25 U
Cl8(194)	86.21	136.61	195.81	117.5	111.84	90.25 U
Cl8(195)	55.36 J	58.43 J	85.66 J	63.22 J	90.25 U	90.25 U
Cl8(201)	77.4 U	86.51 U	123.15 U	91.91 U	90.25 U	90.25 U
Cl8(203)	90.25	137	206.51	104.58	114.17	102.12
Cl9(206)	77.4 U	85.63 J	121.34 J	91.91 U	80.17 J	90.25 U
Cl10(209)	77.4 U	86.51 U	123.15 U	91.91 U	90.25 U	90.25 U
Surrogate Recoveries (%)						
Cl3(34)	85	87	95	90	93	85
Cl6(152)	92	92	100	96	98	95

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	ST04-100208-A	ST03-100208-A
Battelle ID	Q4854-P	Q4856-P
Sample Type	SA	SA
Collection Date	10/02/08	10/02/08
Extraction Date	10/08/08	10/08/08
Analysis Date	10/29/08	10/29/08
Analytical Instrument	MS	MS
% Moisture	75.18	70.66
% Lipid	NA	NA
Matrix	SEDIMENT TRAP	SEDIMENT TRAP
Sample Size	2.52	2.93
Size Unit-Basis	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY
Cl2(8)	1297.48	1436.66
Cl3(18)	3250.95	3582.54
Cl3(28)	5936.65	4211.53 D
Cl3(31)	5545.16	4226.27 D
Cl3(37)	464.36	514.25
Cl4(44)	2324.01	2410.14
Cl4(49)	6332.29 D	5065.52 D
Cl4(52)	6804.79 D	5346.63 D
Cl4(66)	1273.34	1312.79
Cl4(70)	1051.43	1124.55
Cl4(74)	859	882.33
Cl4(77)	178.58	178.54
Cl4(81)	99.8 U	85.84 U
Cl5(87)	456.57	493.96
Cl5(99)	2389.63	2486.66
Cl5(101)	2613.42	2705.46
Cl5(105)	380.5	418.89
Cl5(110)	3393.12	3533.23
Cl5(114)	99.21 U	85.32 U
Cl5(118)	1948.2	2050.23
Cl5(123)	292.41	298.63
Cl5(126)	99.6 U	85.67 U
Cl6(128)	285.04	274.53
Cl6(138)	768.71	786.28
Cl6(149)	2727.23	2786.57
Cl6(151)	424.76	404.07
Cl6(153)	2547.58	2594.33
Cl6(156)	212.47	223.79
Cl6(157)	99.21 U	75.31 J
Cl6(158)	255.91	239.39
Cl6(167)	164.85	159
Cl6(169)	99.6 U	85.67 U
Cl7(170)	164.83	185.01
Cl7(177)	114.99	100.4
Cl7(180)	336.86	345.89
Cl7(183)	114.93	132.91
Cl7(187)	332.95	358.97
Cl7(189)	99.21 U	85.32 U
Cl8(194)	112.12	87.12
Cl8(195)	99.21 U	85.32 U
Cl8(201)	99.21 U	85.32 U
Cl8(203)	130.03	111.73
Cl9(206)	73.5 J	76.29 J
Cl10(209)	99.21 U	85.32 U
Surrogate Recoveries (%)		
Cl3(34)	86	90
Cl6(152)	90	94

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	Procedural Blank
Battelle ID	BM466PB-P
Sample Type	PB
Collection Date	10/08/08
Extraction Date	10/08/08
Analysis Date	10/27/08
Analytical Instrument	MS
% Moisture	73.45
% Lipid	NA
Matrix	SEDIMENT
Sample Size	2.69
Size Unit-Basis	G_DRY
Units	UG/KG_DRY

Cl2(8)	92.94	U
Cl3(18)	92.94	U
Cl3(28)	93.49	U
Cl3(31)	92.94	U
Cl3(37)	93.49	U
Cl4(44)	93.31	U
Cl4(49)	92.94	U
Cl4(52)	92.94	U
Cl4(66)	92.94	U
Cl4(70)	92.94	U
Cl4(74)	92.94	U
Cl4(77)	92.94	U
Cl4(81)	93.49	U
Cl5(87)	93.31	U
Cl5(99)	92.94	U
Cl5(101)	92.94	U
Cl5(105)	93.12	U
Cl5(110)	93.49	U
Cl5(114)	92.94	U
Cl5(118)	93.31	U
Cl5(123)	93.49	U
Cl5(126)	93.31	U
Cl6(128)	93.49	U
Cl6(138)	92.94	U
Cl6(149)	92.94	U
Cl6(151)	93.31	U
Cl6(153)	93.49	U
Cl6(156)	93.49	U
Cl6(157)	92.94	U
Cl6(158)	92.94	U
Cl6(167)	92.94	U
Cl6(169)	93.31	U
Cl7(170)	92.94	U
Cl7(177)	92.94	U
Cl7(180)	93.49	U
Cl7(183)	93.49	U
Cl7(187)	93.49	U
Cl7(189)	92.94	U
Cl8(194)	92.94	U
Cl8(195)	92.94	U
Cl8(201)	92.94	U
Cl8(203)	92.94	U
Cl9(206)	92.94	U
Cl10(209)	92.94	U

Surrogate Recoveries (%)

Cl3(34)	90
Cl6(152)	99

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	060208-03: Sand, White Quartz, -50+70				
Battelle ID	BM467LCS-P				
Sample Type	LCS				
Collection Date	10/08/08				
Extraction Date	10/08/08				
Analysis Date	10/27/08				
Analytical Instrument	MS				
% Moisture	NA				
% Lipid	NA				
Matrix	SEDIMENT				
Sample Size	10.07				
Size Unit-Basis	G_DRY				
Units	UG/KG_DRY		Target	% Recovery	Qualifier
Cl2(8)	350.7		398.41	88	
Cl3(18)	311.06		398.41	78	
Cl3(28)	298.74		397.62	75	
Cl3(31)	24.83	U			
Cl3(37)	24.98	U			
Cl4(44)	320.92		398.01	81	
Cl4(49)	24.83	U			
Cl4(52)	311.11		397.22	78	
Cl4(66)	299.76		397.62	75	
Cl4(70)	24.83	U			
Cl4(74)	24.83	U			
Cl4(77)	246.93		397.22	62	
Cl4(81)	24.98	U			
Cl5(87)	24.93	U			
Cl5(99)	24.83	U			
Cl5(101)	310.62		398.01	78	
Cl5(105)	333.19		397.62	84	
Cl5(110)	24.98	U			
Cl5(114)	24.83	U			
Cl5(118)	257.71		397.62	65	
Cl5(123)	24.98	U			
Cl5(126)	281.81		399.60	71	
Cl6(128)	323.82		399.60	81	
Cl6(138)	274.24		398.01	69	
Cl6(149)	24.83	U			
Cl6(151)	24.93	U			
Cl6(153)	325.65		397.62	82	
Cl6(156)	24.98	U			
Cl6(157)	24.83	U			
Cl6(158)	24.83	U			
Cl6(167)	24.83	U			
Cl6(169)	24.93	U			
Cl7(170)	330.81		399.21	83	
Cl7(177)	24.83	U			
Cl7(180)	319.77		398.81	80	
Cl7(183)	24.98	U			
Cl7(187)	323.75		398.41	81	
Cl7(189)	24.83	U			
Cl8(194)	24.83	U			
Cl8(195)	276.17		398.41	69	
Cl8(201)	24.83	U			
Cl8(203)	24.83	U			
Cl9(206)	295.31		398.41	74	
Cl10(209)	281.95		397.62	71	

Surrogate Recoveries (%)

Cl3(34)	80
Cl6(152)	102

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	ST-04-071008-A		ST-04-071008-A				
Battelle ID	Q3442-P		Q3442MS-P				
Sample Type	SA		MS				
Collection Date	07/10/08		7/10/2008				
Extraction Date	10/08/08		10/8/2008				
Analysis Date	10/28/08		10/28/2008				
Analytical Instrument	MS		MS				
% Moisture	75.2		75.42				
% Lipid	NA		NA				
Matrix	SEDIMENT TRAP		SEDIMENT TRAP				
Sample Size	2.49		2.5				
Size Unit-Basis	G_DRY		G_DRY				
Units	UG/KG_DRY		UG/KG_DRY		Target	% Recovery	Qualifier
Cl2(8)	4997.94		6759.37	E	1604.80	110	
Cl3(18)	11663.2	D	18840.62	E	1604.80	447	
Cl3(28)	17601.49	D	27731.97	E	1601.60	633	
Cl3(31)	17113.06	D	25404.13	E			
Cl3(37)	1647.76		2002.6				
Cl4(44)	7476.4	D	11789.02	E	1603.20	269	
Cl4(49)	22999.22	D	35262.5	E			
Cl4(52)	29231	D	42339.17	E	1600.00	819	
Cl4(66)	4872.13		7201.73	E	1601.60	145	
Cl4(70)	4224.19		5261.22	E			
Cl4(74)	3116.94		3877.7				
Cl4(77)	383.4		1554.58		1600.00	73	
Cl4(81)	101	U	100.6	U			
Cl5(87)	1693		2116.32				
Cl5(99)	8573.09	D	10958.86	E			
Cl5(101)	9871.65	D	14358.42	E	1603.20	280	
Cl5(105)	1736.74		3719.52		1601.60	124	
Cl5(110)	11926.14	D	15687.42	E			
Cl5(114)	100.4	U	100	U			
Cl5(118)	7585.93	D	9469.13	E	1601.60	118	
Cl5(123)	922.79		1106.36				
Cl5(126)	100.8	U	1380.15		1609.60	86	
Cl6(128)	1047.1		2628.88		1609.60	98	
Cl6(138)	3115.7		5786.09	E	1603.20	167	
Cl6(149)	9489.89	D	11394.65	E			
Cl6(151)	1533.23		1900.33				
Cl6(153)	7987.63	D	14333.33	E	1601.60	396	
Cl6(156)	759.02		910.74				
Cl6(157)	170.34		211.84				
Cl6(158)	930.69		1164.87				
Cl6(167)	513.05		615.64				
Cl6(169)	100.8	U	100.4	U			
Cl7(170)	580.06		2126.02		1608.00	96	
Cl7(177)	289.47		329.24				
Cl7(180)	1130.87		2602.94		1606.40	92	
Cl7(183)	438.64		561.46				
Cl7(187)	1215.39		2728.76		1604.80	94	
Cl7(189)	100.4	U	92.22	J			
Cl8(194)	231.61		251.65				
Cl8(195)	75.76	J	1304.58		1604.80	77	
Cl8(201)	39.37	J	39.45	J			
Cl8(203)	283.34		297.59				
Cl9(206)	142.75		1285.4		1604.80	71	
Cl10(209)	100.4	U	1101.46		1601.60	69	

Surrogate Recoveries (%)

Cl3(34)	86	93
Cl6(152)	87	96

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	ST-04-071008-A						
Battelle ID	Q3442MSD-P						
Sample Type	MSD						
Collection Date	7/10/2008						
Extraction Date	10/8/2008						
Analysis Date	10/28/2008						
Analytical Instrument	MS						
% Moisture	75.1						
% Lipid	NA						
Matrix	SEDIMENT TRAP						
Sample Size	2.5						
Size Unit-Basis	G_DRY						
Units	UG/KG_DRY		Target	% Recovery	Qualifier	RPD (%)	Qualifier
Cl2(8)	6115.33	E	1604.80	70		44.4	
Cl3(18)	16963.94	E	1604.80	330		30.1	
Cl3(28)	24884.17	E	1601.60	455		32.7	
Cl3(31)	22662.05	E					
Cl3(37)	1805.43						
Cl4(44)	10532.19	E	1603.20	191		33.9	
Cl4(49)	32121.91	E					
Cl4(52)	38445.18	E	1600.00	576		34.8	
Cl4(66)	6515.33	E	1601.60	103		33.9	
Cl4(70)	4639.38						
Cl4(74)	3515.31						
Cl4(77)	1535.71		1600.00	72		1.4	
Cl4(81)	100.6	U					
Cl5(87)	1923.53						
Cl5(99)	10043.48	E					
Cl5(101)	13041.67	E	1603.20	198		34.3	
Cl5(105)	3376.06		1601.60	102		19.5	
Cl5(110)	14697.06	E					
Cl5(114)	100	U					
Cl5(118)	8911.77	E	1601.60	83		34.8	
Cl5(123)	1007.28						
Cl5(126)	1349.74		1609.60	84		2.4	
Cl6(128)	2575.52		1609.60	95		3.1	
Cl6(138)	4808.02		1603.20	106		44.7	
Cl6(149)	10556.17	E					
Cl6(151)	1703.21						
Cl6(153)	13069.11	E	1601.60	317		22.2	
Cl6(156)	811.81						
Cl6(157)	216.95						
Cl6(158)	1017.83						
Cl6(167)	564.67						
Cl6(169)	100.4	U					
Cl7(170)	1934.81		1608.00	84		13.3	
Cl7(177)	309.55						
Cl7(180)	2558.99		1606.40	89		3.3	
Cl7(183)	478.89						
Cl7(187)	2657.51		1604.80	90		4.3	
Cl7(189)	94.36	J					
Cl8(194)	251.41						
Cl8(195)	1207.07		1604.80	70		9.5	
Cl8(201)	40.92	J					
Cl8(203)	270.21						
Cl9(206)	1164.83		1604.80	64		10.4	
Cl10(209)	1119.39		1601.60	70		1.4	

Surrogate Recoveries (%)

Cl3(34)	89
Cl6(152)	90

PCB Congeners – Sediment Trap QA/QC Summary
Batch 08-0280

PROJECT: New Bedford Harbor Sediment Trap Study (USACE)
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment Trap Samples
SAMPLE CUSTODY: Sediment trap samples were collected on 7/10/2008, 7/31/2008, 8/25/2008, and 10/2/2008. Samples were hand delivered to the Battelle Duxbury Chemistry Sample Custodian on four separate occasions. All samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. After being received by the lab, the sediment trap samples were centrifuged to remove excess water. The samples were then stored in the walk-in freezer until preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	Duplicate Relative Percent Difference	Reporting Limits (ug/kg dry wt)
PCB Congeners	EPA 1668A and 8270C	< RL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	≤30% RPD	~ 93.00

METHOD: Sediment trap samples were extracted for PCB congeners following modified EPA Method 3545. Sediments were air-dried overnight and approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was poured through a funnel and passed through glass wool and sodium sulfate. The extract was then brought to 100 mL; 10 mL was removed and continued on for further processing. The 10 mL split was treated with copper, solvent exchanged to hexane, and passed through a Florisil SPE cartridge. The post-Florisil extract was then brought to 10 mL, out of which 1 mL was removed to be fortified with internal standards (IS). Extracts designated for PCB congener analysis were analyzed using gas chromatography/mass spectrometry (GC/MS), following Battelle SOP 5-315 which is based on EPA Methods 1668A and 8270C. Sample data were quantified by the method of internal standards, using the IS compounds. Data was evaluated against sample specific reporting limits.

HOLDING TIMES: Sediments of this batch were extracted within 1 year of sample holding time for frozen sediments. All extracts were initially analyzed within 40 days of extract holding time, however some dilutions were analyzed after the 40 days expired.

Batch	Collection Date	Extraction Date	Analysis Date
08-0280	7/10, 7/31, 8/2, & 10/2/2008	10/8/08	10/27/2008 – 11/21/2008

PCB Congeners – Sediment Trap QA/QC Summary
Batch 08-0280

LIST OF SAMPLES:
08-0005

Sample ID	Battelle ID
ST-01-071008-B	Q3438
ST-01-071008-C	Q3439
ST-02-071008-A	Q3440
ST-04-071008-A	Q3442
ST-03-071008-A	Q3444
ST-04-073108-A	Q3734
ST-01-073108-B	Q3737
ST-01-073108-C	Q3738
ST-02-073108-A	Q3739
ST-03-073108-A	Q3741
ST-01-082508-B	Q4052
ST-01-082508-C	Q4053
ST-02-082508-A	Q4054
ST-03-082508-A	Q4056
ST-04-082508-A	Q4058
ST01-100208-B	Q4850
ST01-100208-C	Q4851
ST02-100208-A	Q4852
ST04-100208-A	Q4854
ST03-100208-A	Q4856

BLANK: A procedural blank (PB) was prepared with each analytical batch. Blanks were analyzed to ensure the sample extraction and analysis methods were free of contamination.

08-0280 – No exceedences noted. No target analytes were detected in the blank sample.

LABORATORY CONTROL SAMPLE: A of laboratory control (LCS) sample was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy.

08-0280 – No exceedence noted. All percent recoveries of spiked analytes were within laboratory control limit of 40-120%.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE: A pair of matrix spike (MS) and matrix spike duplicate samples (MSD) was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. The RPD between percent recoveries was calculated to measure the data quality in terms of precision.

08-0280 – No exceedence noted. All percent recoveries of analytes spiked at a concentration great enough to be used for data quality assessment (> 5 x background) were within laboratory control limit of 40-120%. All RPDs between analytes spiked at a concentration great enough to be used for data quality assessment (> 5 x background) were within laboratory control limit of <30%.

PCB Congeners – Sediment Trap QA/QC Summary
Batch 08-0280

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

08-0280 – No exceedence noted. All surrogate recoveries were within laboratory control limit of 40-120%.

CALIBRATIONS: The GC/MS is calibrated with a minimum of a 6oint curve. The co-efficient of determination must be > 0.995 for each target analyte in the initial calibration (ICAL). Each batch of samples analyzed is bracketed by a continuing calibration verification (CCV) sample, run at a frequency of every 12 hours (minimally). This percent difference (PD) for the CCV should be <25% for individual analytes. Additionally an instrument calibration check (ICC) sample was run with the initial calibration. The PD for the ICC should be < 25% for each analyte.

08-0280 – PCB 81 exceeded the %D criteria in the ICC due to standard impurity. A second ICC was run and results were acceptable for this compound. All other calibration criteria were met.

Battelle
The Business of Innovation

ShpNo SHP-080715-01

Battelle Project No:

Sample Receipt Form

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Friday, July 11, 2008 12:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered **Tracking Number:** NA

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal Condition	Container Condition	Temp C	Smps
1 of 1	Cooler	NA	None	Not Applicable	Intact	4.0	9

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☑ Tape ☐ Custody Seals ☑ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 4 Temperature Blank used ☐ Yes ☑ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: Unknown

Storage Location: Chem South: Refrigerator - R0003 (Upper Cold **BDO IDs Assigned:** Q3437 - Q3445

Samples logged in by: Seyfert, Jeannine **Date/Time:** 07/11/2008 12:00 AM

Approved By: **Approved On:**

Authorized By: **Authorized On:**

Battelle
The Business of Innovation

ShpNo: SHP-080715-01

Battelle Project No: 07DUXCHEM

Report Corrective Actions

Corrective Action No: 1 of 1

Authorized ☐ Approved: ☐

COC Client:
COC Project: NBH sediment traps
COC Date: 7/15/2008 10:06:

	Description of Problem:	Explanation:
Client Id	Jars and C-O-C do not have matching Ids	The COC for Q3437 lists the client ID as "ST-01-071008-A." The jar simple lists the client ID as "ST01A."

Documentation of project manager notification

Sample Custodian Seyfert, Jeannine **Date:** 7/15/2008 10:12:00 A

Laboratory Manager: Thorn, Jonathan **Date:** 9/16/2008 11:48:00 A

Project Manager: Zhang, Yixian **Date:** 9/16/2008 10:59:00 A

Documentation of client notification (should be completed by project manager within 24 hrs):

On _____ **I contacted** _____ **at**

Results of communication with client (Describe any corrective action directed by the client):

Battelle field sampling staff was notified of the error on the jar.

Date this form was received back to the custodian: _____

Reference Number: _____

Battelle
The Business of Innovation

ShpNo SHP-080715-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Friday, July 11, 2008 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q3437	ST-01-071008-A	07/10/08 11:58	07/15/08 10:08	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3438	ST-01-071008-B	07/10/08 11:58	07/15/08 10:08	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3439	ST-01-071008-C	07/10/08 11:58	07/15/08 10:08	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3440	ST-02-071008-A	07/10/08 12:19	07/15/08 10:09	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3441	ST-02-071008-B	07/10/08 12:19	07/15/08 10:10	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3442	ST-03-071008-A	07/10/08 12:42	07/15/08 10:10	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3443	ST-03-071008-B	07/10/08 12:42	07/15/08 10:10	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3444	ST-04-071008-A	07/10/08 13:17	07/15/08 10:10	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3445	ST-04-071008-B	07/10/08 13:17	07/15/08 10:11	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			

Total Samples: 9

Battelle
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Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
G606422	NBH Sed Trap

SAMPLERS: Signature: Michael P. McGee

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	LAB ~~BATTELLE~~ ID	FIELD ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	~~OTHER~~ TOC/Grain Size	ACIDIFIED	PRESERVED	Total Number of Containers
07/10/08	1158	Q3437	ST-01-071008-A	6th sediment trap recovery station Ø1		✓						✓			
	↓	Q3438	ST-01-071008-B	Ø1		✓						✓			
		Q3439	ST-01-071008-C	Ø1		✓						✓			
	1219	Q3440	ST-02-071008-A	Ø2		✓						✓			
	↓	Q3441	ST-02-071008-B	Ø2		✓						✓			
	1242	Q3442	ST-04-071008-A	Ø4		✓						✓			
	↓	Q3443	ST-04-071008-B	Ø4		✓						✓			
	1317	Q3444	ST-03-071008-A	Ø3		✓						✓			
	↓	Q3445	ST-03-071008-B	Ø3		✓						✓			

Relinquished by:	Date/Time	Received by:	Date/Time
Michael P. McGee	07/11/08 12:00	Jeannie Light	7-11-08 12:00
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: After settling for 24 hrs and decanting, all samples will be weighed for reproducibility. At station ST-Ø1 2 of 3 samples will be analyzed for PCB, TOC, & GS. At ST-02, Ø3 & Ø4, only 1 of 2 samples will be analyzed.

ORIGINAL

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ShpNo SHP-080805-02

Battelle Project No:

Sample Receipt Form

Approved: ☐ **Authorized** ☐

Project Number: **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Thursday, July 31, 2008 12:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered **Tracking Number:** Not Recorded

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal Condition	Container Condition	Temp C	Smps
1 of 1	Cooler		None		Intact	Ambient	9

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): Ambient Temperature Blank used: ☐ Yes ☑ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: Chem South: Refrigerator - R0003 (Upper Cold **BDO IDs Assigned:** Q3734 - Q3742

Samples logged in by: Arsenault, Joanne **Date/Time:** 07/31/2008 12:00 AM

Approved By: **Approved On:**

Authorized By: **Authorized On:**

Battelle
The Business of Innovation

ShpNo SHP-080805-02

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ Authorized ☐

Project Number: **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Thursday, July 31, 2008 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q3734	ST-04-073108-A	07/31/08 8:28	08/05/08 10:23	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper Co			
Q3735	ST-04-073108-B	07/31/08 8:28	08/05/08 10:26	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper Co			
Q3736	ST-01-072108-A	07/31/08 8:54	08/05/08 10:26	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper Co			
Q3737	ST-01-073108-B	07/31/08 8:54	08/05/08 10:28	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper Co			
Q3738	ST-01-073108-C	07/31/08 8:54	08/05/08 10:28	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper Co			
Q3739	ST-02-073108-A	07/31/08 9:13	08/05/08 10:30	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper Co			
Q3740	ST-02-073108-B	07/31/08 9:13	08/05/08 10:31	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper Co			
Q3741	ST-03-073108-A	07/31/08 9:35	08/05/08 10:31	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper Co			
Q3742	ST-03-073108-B	07/31/08 9:35	08/05/08 10:32	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper Co			

Total Samples: 9

Battelle
The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
G60642 2	Sed Trap

SAMPLERS: Signature

DATE	TIME	LAB ~~BATTELLE~~ ID	FIELD ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	~~OTHER~~ GS/TOC	ACIDIFIED	PRESERVED	Total Number of Containers
07/31/08	0828	Q3734	ST-04-073108-A	7th sediment trap recovery station 04		✓						✓			
	↓	Q3735	ST-04-073108-B	04		✓						✓			
	0854	Q3736	ST-01-073108-A	01		✓						✓			
	↓	Q3737	ST-01-073108-B	01		✓						✓			
	↓	Q3738	ST-01-073108-C	01		✓						✓			
	0913	Q3739	ST-02-073108-A	02		✓						✓			
	↓	Q3740	ST-02-073108-B	02		✓						✓			
	0935	Q3741	ST-03-073108-A	03		✓						✓			
	↓	Q3742	ST-03-073108-B	03		✓						✓			

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

Relinquished by:	Date/Time	Received by:	Date/Time
	07/31/08 11:45		7-31-08 11:45am
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: After settling for 24 hrs & decanting, all samples will be weighed for reproducibility. At station ST-01 of 3 samples will be analyzed for PCB, TOC & GS. At ST-02, 03 & 04, only 1 of 2 samples will be analyzed.

ORIGINAL

Battelle
The Business of Innovation

ShpNo SHP-080827-02

Battelle Project No: 17DUXCHEM

Sample Receipt Form

Approved: ☑ Authorized ☐

Project Number: | **Client:** NBH Sediment Trap

Received by: Arsenault, Joanne | **Date/Time Received:** Tuesday, August 26, 2008 2:10 PM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered | **Tracking Number:** Not Recorded

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal Condition	Container Condition	Temp C	Smps
1 of 1	No Container				Not Applicable	4.0	9

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☑ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 4 Temperature Blank used ☐ Yes ☑ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: Chem South: Refrigerator - R0003 (Upper Cold | **BDO IDs Assigned:** Q4051 - Q4059

Samples logged in by: Arsenault, Joanne | **Date/Time:** 08/26/2008 2:10 PM

Approved By: Brackett, Roxanne | **Approved On:** 9/18/2008 11:3

Authorized By: | **Authorized On:**

Battelle
The Business of Innovation

ShpNo SHP-080827-02

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ **Authorized** ☐

Project Number: **Client:** NBH Sediment Trap

Received by: Arsenault, Joanne **Date/Time Received:** Tuesday, August 26, 2008 2:10 PM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q4051	ST-01-082508-A	08/25/08 13:07	08/27/08 13:46	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			
Q4052	ST-01-082508-B	08/25/08 13:07	08/27/08 13:50	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			
Q4053	ST-01-082508-C	08/25/08 13:07	08/27/08 13:50	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			
Q4054	ST-02-082508-A	08/25/08 13:30	08/27/08 13:50	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			
Q4055	ST-02-082508-B	08/25/08 13:30	08/27/08 13:51	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			
Q4056	ST-03-082508-A	08/25/08 14:18	08/27/08 13:51	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			
Q4057	ST-03-082508-B	08/25/08 14:18	08/27/08 13:52	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			
Q4058	ST-04-082508-A	08/25/08 13:56	08/27/08 13:52	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			
Q4059	ST-04-082508-B	08/25/08 13:56	08/27/08 13:52	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			

Total Samples: 9

Battelle
The Business of Innovation

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Chain of Custody

Proj. No	Proj. Name
G606422	NBH Sed Trap

SAMPLERS: Signature

DATE	TIME	LAB ~~BATTELLE~~ ID	FIELD ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER (GS/TOC)	ACIDIFIED	PRESERVED	Total Number of Containers
08/25/08	13:07	Q4051	ST-01-082508-A			✓						✓			1
	↓	Q4052	ST-01-082508-B			✓						✓			1
	↓	Q4053	ST-01-082508-C			✓						✓			1
	13:30	Q4054	ST-02-082508-A			✓						✓			1
	↓	Q4055	ST-02-082508-B			✓						✓			1
	14:18	Q4056	ST-03-082508-A			✓						✓			1
	↓	Q4057	ST-03-082508-B			✓						✓			1
	13:56	Q4058	ST-04-082508-A			✓						✓			1
	↓	Q4059	ST-04-082508-B			✓						✓			1

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

Relinquished by:	Date/Time	Received by:	Date/Time
	08/26/08 14:10	Joanne Donovan	8/26 08 1410
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: After settling for 24 hrs & decanting, all samples will be weighed for reproducibility. At station ST-01, 2 of 3 samples will be analyzed for PCB, TOC & Grain Size. At station ST-02, 03 & 04 only 1 of 2 samples will be analyzed

ORIGINAL

Battelle
The Business of Innovation

ShpNo SHP-081003-01

Battelle Project No:

Sample Receipt Form

Approved: ☐ **Authorized** ☐

Project Number: G606422-07DUXCHEM **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Thursday, October 02, 2008 12:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered **Tracking Number:** NA

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal Condition	Container Condition	Temp C	Smps
1 of 1	Cooler	NA	None	Not Applicable	Intact	4.0	9

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 4 Temperature Blank used ☐ Yes ☑ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: Unknown

Storage Location: Field Room II: Refrigerator - R0004 (Lower Col **BDO IDs Assigned:** Q4849 - Q4857

Samples logged in by: Seyfert, Jeannine **Date/Time:** 10/02/2008 12:00 AM

Approved By: **Approved On:**

Authorized By: **Authorized On:**

Battelle
The Business of Innovation

ShpNo SHP-081003-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ **Authorized** ☐

Project Number: G606422-07DUXCHEM **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Thursday, October 02, 2008 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q4849	ST01-100208-A	10/02/08 9:26	10/03/08 15:52	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q4850	ST01-100208-B	10/02/08 9:26	10/03/08 15:54	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q4851	ST01-100208-C	10/02/08 9:26	10/03/08 15:54	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q4852	ST02-100208-A	10/02/08 9:55	10/03/08 15:54	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q4853	ST02-100208-B	10/02/08 9:55	10/03/08 15:55	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q4854	ST04-100208-A	10/02/08 10:22	10/03/08 15:55	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q4855	ST04-100208-B	10/02/08 10:22	10/03/08 15:56	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q4856	ST03-100208-A	10/02/08 10:45	10/03/08 15:56	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q4857	ST03-100208-B	10/02/08 10:45	10/03/08 15:57	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			

Total Samples: 9

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Chain of Custody

Proj. No	Proj. Name
G606422	Sed Trap

SAMPLERS: Signature

Matthew R Hyslop

DATE	TIME	Lab ~~BATTELLE~~ ID	Field ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	~~OTHER~~ GS/TOC	ACIDIFIED	PRESERVED	Total Number of Containers
10/2/08	0926	Q4849	ST01-100208-A	9th sediment trap recovery station ST01		X						X			1
	↓	Q4850	ST01-100208-B	ST01		X						X			1
	↓	Q4851	ST01-100208-C	ST01		X						X			1
	0955	Q4852	ST02-100208-A	ST02		X						X			1
	↓	Q4853	ST02-100208-B	ST02		X						X			1
	1022	Q4854	ST04-100208-A	ST04		X						X			1
	↓	Q4855	ST04-100208-B	ST04		X						X			1
	1045	Q4856	ST03-100208-A	ST03		X						X			1
↓	↓	Q4857	ST03-100208-B	ST03		X						X			1

Relinquished by:	Date/Time	Received by:	Date/Time
Matthew R Hyslop	10/2/08 1315	Jeannine Leyfat	10/2/08 13:15
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: After settling for 24 hours, All samples will be decanted + weighed for reproducability. At station ST01 2 of 3 samples will be analyzed for PCB, TOC, + GS. At the remaining stations only 1 of 2 samples will be analyzed

ORIGINAL

Deployment No. 10

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	ST-01-103008-B	ST-01-103008-C	ST-02-103008-A	ST-03-103008-A	ST-04-103008-A
Battelle ID	Q5252-P	Q5253-P	Q5254-P	Q5256-P	Q5258-P
Sample Type	SA	SA	SA	SA	SA
Collection Date	10/30/08	10/30/08	10/30/08	10/30/08	10/30/08
Extraction Date	02/02/09	02/02/09	02/02/09	02/02/09	02/02/09
Analysis Date	02/08/09	02/08/09	02/09/09	02/09/09	02/09/09
Analytical Instrument	MS	MS	MS	MS	MS
% Moisture	74	78	68.62	71.92	74.85
% Lipid	NA	NA	NA	NA	NA
Matrix	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP
Sample Size	1.17	0.81	3.31	2.81	2.53
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Cl2(8)	1264.48	1040.39	1057.33	1039.1	1166.42
Cl3(18)	3414.9	2688.7	3012.62	3180.43	3447.58
Cl3(28)	6214.49	4727.63	6207.53 D	5798.58 D	5498.99
Cl3(31)	5476.05	4165.73	5561.12 D	5201.87 D	5211.4
Cl3(37)	580.58	527.82	512.14	435.97	424.34
Cl4(44)	2535.43	2050.05	2210.94	2263.93	2534.61
Cl4(49)	8886.1	6781.92	7791.17 D	7518.55 D	8400.96 D
Cl4(52)	9722.48	7614.38	8188.55 D	8447.86 D	9127.51 D
Cl4(66)	1391.79	1244.3	1235.75	1093.54	1123.36
Cl4(70)	1091.25	1122.07	1023.46	831.89	855.47
Cl4(74)	1099.05	914.9	879.35	829.36	768.14
Cl4(77)	190.89	200.97	125.11	123.71	137.79
Cl4(81)	107.26 U	154.94 U	37.92 U	44.66 U	49.6 U
Cl5(87)	366.5	504.8	338.99	255.28	297.73
Cl5(99)	2991.65	2479.29	2349.47	2566.34	2568.76
Cl5(101)	2810.9	2574.32	2476.56	2363.59	2366.53
Cl5(105)	410.21	567.6	338.44	296.28	320.27
Cl5(110)	4212.42	3753.59	3660.05	3623.08	3750.93
Cl5(114)	106.84 U	154.32 U	47.49	51.94	60.32
Cl5(118)	2289.77	2218.69	1796.22	1850.77	1895.48
Cl5(123)	318.68	341.91	234.12	221.84	244.75
Cl5(126)	107.26 U	154.94 U	37.92 U	44.66 U	49.6 U
Cl6(128)	261.92	296.17	228.15	218.25	227.05
Cl6(138)	919.51	1135.95	696.89	705.37	659.39
Cl6(149)	3074.35	2573.66	2515.61	2683.35	2723.4
Cl6(151)	510.27	496.32	408.75	408.8	442.33
Cl6(153)	3155.18	2982.84	2331.5	2588.26	2603.79
Cl6(156)	250.81	259.88	166.57	165.84	173.97
Cl6(157)	110.41	154.32 U	54.25	60.58	59.87
Cl6(158)	331.94	393.65	207.73	224.28	237.71
Cl6(167)	217.24	252.47	160.53	160.31	164.23
Cl6(169)	107.26 U	154.94 U	37.92 U	44.66 U	49.6 U
Cl7(170)	231.76	258.62	170.75	181.28	176.25
Cl7(177)	159.36	200.24	89.22	95.23	102.28
Cl7(180)	489.44	533.96	319.61	352.22	402.53
Cl7(183)	201.62	212.99	123.53	141.71	151.2
Cl7(187)	506.13	439.78	331.39	405	369.47
Cl7(189)	106.84 U	154.32 U	28.69 J	35.23 J	43.2 J
Cl8(194)	16.13 J	154.32 U	46.39	43.31 J	39.8 J
Cl8(195)	30.18 J	154.32 U	14.83 J	21.08 J	19.26 J
Cl8(201)	109.42	154.32 U	43.99	48.86	55.03
Cl8(203)	177.29	231.08	76.01	92.96	107.25
Cl9(206)	36.39 J	7.99 J	30.44 J	43.49 J	39.55 J
Cl10(209)	17.99 J	154.32 U	13 J	11.31 J	10.75 J
Surrogate Recoveries (%)					
Cl3(34)	73	76	76	80	82
Cl6(152)	75	79	74	79	82

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	Procedural Blank	
Battelle ID	BM762PB-P	
Sample Type	PB	
Collection Date	02/02/09	
Extraction Date	02/02/09	
Analysis Date	02/08/09	
Analytical Instrument	MS	
% Moisture	NA	
% Lipid	NA	
Matrix	SEDIMENT	
Sample Size	10.46	
Size Unit-Basis	G_DRY	
Units	UG/KG_DRY	
Cl2(8)	11.95	U
Cl3(18)	11.95	U
Cl3(28)	12	U
Cl3(31)	11.95	U
Cl3(37)	12	U
Cl4(44)	12	U
Cl4(49)	11.95	U
Cl4(52)	11.95	U
Cl4(66)	11.95	U
Cl4(70)	11.95	U
Cl4(74)	11.95	U
Cl4(77)	11.95	U
Cl4(81)	12	U
Cl5(87)	12	U
Cl5(99)	11.95	U
Cl5(101)	11.95	U
Cl5(105)	11.95	U
Cl5(110)	12	U
Cl5(114)	11.95	U
Cl5(118)	12	U
Cl5(123)	12	U
Cl5(126)	12	U
Cl6(128)	12	U
Cl6(138)	11.95	U
Cl6(149)	11.95	U
Cl6(151)	12	U
Cl6(153)	12	U
Cl6(156)	12	U
Cl6(157)	11.95	U
Cl6(158)	11.95	U
Cl6(167)	11.95	U
Cl6(169)	12	U
Cl7(170)	11.95	U
Cl7(177)	11.95	U
Cl7(180)	12	U
Cl7(183)	12	U
Cl7(187)	12	U
Cl7(189)	11.95	U
Cl8(194)	11.95	U
Cl8(195)	11.95	U
Cl8(201)	11.95	U
Cl8(203)	11.95	U
Cl9(206)	11.95	U
Cl10(209)	11.95	U

Surrogate Recoveries (%)

Cl3(34)	87
Cl6(152)	95

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	Laboratory Control Sample				
Battelle ID	BM763LCS-P				
Sample Type	LCS				
Collection Date	02/02/09				
Extraction Date	02/02/09				
Analysis Date	02/08/09				
Analytical Instrument	MS				
% Moisture	NA				
% Lipid	NA				
Matrix	SEDIMENT				
Sample Size	10.56				
Size Unit-Basis	G_DRY				
Units	UG/KG_DRY		Target	% Recovery	Qualifier
Cl2(8)	280.48		379.92	74	
Cl3(18)	278.4		379.92	73	
Cl3(28)	247.79		379.17	65	
Cl3(31)	31.42				
Cl3(37)	11.88	U			
Cl4(44)	281.45		379.55	74	
Cl4(49)	11.84	U			
Cl4(52)	275.55		378.79	73	
Cl4(66)	269.29		379.17	71	
Cl4(70)	11.84	U			
Cl4(74)	11.84	U			
Cl4(77)	261.78		378.79	69	
Cl4(81)	11.88	U			
Cl5(87)	11.88	U			
Cl5(99)	11.84	U			
Cl5(101)	248.36		379.55	65	
Cl5(105)	273.25		379.17	72	
Cl5(110)	11.88	U			
Cl5(114)	11.84	U			
Cl5(118)	266.19		379.17	70	
Cl5(123)	11.88	U			
Cl5(126)	231.11		381.06	61	
Cl6(128)	261.37		381.06	69	
Cl6(138)	250.8		379.55	66	
Cl6(149)	11.84	U			
Cl6(151)	11.88	U			
Cl6(153)	285.07		379.17	75	
Cl6(156)	11.88	U			
Cl6(157)	11.84	U			
Cl6(158)	11.84	U			
Cl6(167)	11.84	U			
Cl6(169)	11.88	U			
Cl7(170)	243.77		380.68	64	
Cl7(177)	11.84	U			
Cl7(180)	273.36		380.30	72	
Cl7(183)	11.88	U			
Cl7(187)	261.94		379.92	69	
Cl7(189)	11.84	U			
Cl8(194)	11.84	U			
Cl8(195)	223.84		379.92	59	
Cl8(201)	11.84	U			
Cl8(203)	11.84	U			
Cl9(206)	229.31		379.92	60	
Cl10(209)	236.79		379.17	62	

Surrogate Recoveries (%)

Cl3(34)	78
Cl6(152)	89

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	ST-03-103008-A		ST-03-103008-A				
Battelle ID	Q5256-P		Q5256MS-P				
Sample Type	SA		MS				
Collection Date	10/30/08		10/30/2008				
Extraction Date	02/02/09		2/2/2009				
Analysis Date	02/09/09		2/9/2009				
Analytical Instrument	MS		MS				
% Moisture	71.92		71.77				
% Lipid	NA		NA				
Matrix	SEDIMENT TRAP		SEDIMENT TRAP				
Sample Size	2.81		1.5				
Size Unit-Basis	G_DRY		G_DRY				
Units	UG/KG_DRY		UG/KG_DRY		Target	% Recovery	Qualifier
Cl2(8)	1039.1		3886.46		2674.67	106	
Cl3(18)	3180.43		7935.14		2674.67	178	
Cl3(28)	5798.58	D	12231.56	E	2669.33	241	
Cl3(31)	5201.87	D	9697.67				
Cl3(37)	435.97		831.6				
Cl4(44)	2263.93		6333.89		2672.00	152	
Cl4(49)	7518.55	D	15560.65	E			
Cl4(52)	8447.86	D	19347.08	E	2666.67	409	
Cl4(66)	1093.54		4405.73		2669.33	124	
Cl4(70)	831.89		1569.26				
Cl4(74)	829.36		1572.75				
Cl4(77)	123.71		2213.9		2666.67	78	
Cl4(81)	44.66	U	83.67	U			
Cl5(87)	255.28		515.6				
Cl5(99)	2566.34		5055.93				
Cl5(101)	2363.59		6676.53		2672.00	161	
Cl5(105)	296.28		2826.18		2669.33	95	
Cl5(110)	3623.08		7120.92				
Cl5(114)	51.94		126.33				
Cl5(118)	1850.77		5837.06		2669.33	149	
Cl5(123)	221.84		452.82				
Cl5(126)	44.66	U	2074.42		2682.67	77	
Cl6(128)	218.25		2651.08		2682.67	91	
Cl6(138)	705.37		3316.17		2672.00	98	
Cl6(149)	2683.35		5332.65				
Cl6(151)	408.8		832.16				
Cl6(153)	2588.26		7390.18		2669.33	180	
Cl6(156)	165.84		366.6				
Cl6(157)	60.58		109.27				
Cl6(158)	224.28		452.99				
Cl6(167)	160.31		364.05				
Cl6(169)	44.66	U	83.67	U			
Cl7(170)	181.28		2533.96		2680.00	88	
Cl7(177)	95.23		197.19				
Cl7(180)	352.22		3203.31		2677.33	106	
Cl7(183)	141.71		280.2				
Cl7(187)	405		2952.71		2674.67	95	
Cl7(189)	35.23	J	85.62				
Cl8(194)	43.31	J	116.04				
Cl8(195)	21.08	J	2041.23		2674.67	76	
Cl8(201)	48.86		100.95				
Cl8(203)	92.96		176.76				
Cl9(206)	43.49	J	2233.76		2674.67	82	
Cl10(209)	11.31	J	2096.71		2669.33	78	

Surrogate Recoveries (%)

Cl3(34)	80	83
Cl6(152)	79	83

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	ST-03-103008-A						
Battelle ID	Q5256MSD-P						
Sample Type	MSD						
Collection Date	10/30/2008						
Extraction Date	2/2/2009						
Analysis Date	2/9/2009						
Analytical Instrument	MS						
% Moisture	71.54						
% Lipid	NA						
Matrix	SEDIMENT TRAP						
Sample Size	1.44						
Size Unit-Basis	G_DRY						
Units	UG/KG_DRY		Target	% Recovery	Qualifier	RPD (%)	Qualifier
Cl2(8)	3704.6		2786.11	96		9.9	
Cl3(18)	7338.56		2786.11	149		17.7	
Cl3(28)	11926.97	E	2780.56	220		9.1	
Cl3(31)	9233.12						
Cl3(37)	815.15						
Cl4(44)	6166.3		2783.33	140		8.2	
Cl4(49)	14518.5	E					
Cl4(52)	18035.42	E	2777.78	345		17.0	
Cl4(66)	4335.04		2780.56	117		5.8	
Cl4(70)	1583.59						
Cl4(74)	1563.6						
Cl4(77)	2218.88		2777.78	75		3.9	
Cl4(81)	87.15	U					
Cl5(87)	511.33						
Cl5(99)	4683.86						
Cl5(101)	6552.41		2783.33	150		7.1	
Cl5(105)	2795.35		2780.56	90		5.4	
Cl5(110)	6610.24						
Cl5(114)	108.86						
Cl5(118)	5576.43		2780.56	134		10.6	
Cl5(123)	422.96						
Cl5(126)	2056.51		2794.44	74		4.0	
Cl6(128)	2540.58		2794.44	83		9.2	
Cl6(138)	3274.99		2783.33	92		6.3	
Cl6(149)	4981.86						
Cl6(151)	794.09						
Cl6(153)	7066.87		2780.56	161		11.1	
Cl6(156)	344.26						
Cl6(157)	118.99						
Cl6(158)	426.2						
Cl6(167)	336.52						
Cl6(169)	87.15	U					
Cl7(170)	2485.33		2791.67	83		5.8	
Cl7(177)	192.08						
Cl7(180)	3009.68		2788.89	95		10.9	
Cl7(183)	266.8						
Cl7(187)	2821.08		2786.11	87		8.8	
Cl7(189)	86.81	U					
Cl8(194)	94.52						
Cl8(195)	2050.41		2786.11	73		4.0	
Cl8(201)	97.82						
Cl8(203)	238.14						
Cl9(206)	2223.2		2786.11	78		5.0	
Cl10(209)	2085.59		2780.56	75		3.9	

Surrogate Recoveries (%)

Cl3(34)	78
Cl6(152)	76

PCB Congeners – Sediment Trap QA/QC Summary
Batch 09-0016

PROJECT: New Bedford Harbor Sediment Trap Study (USACE)
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment Trap Samples
SAMPLE CUSTODY: Surface sediment and sediment trap samples were collected on 10/30/2008. Samples were hand delivered to the Battelle Duxbury Chemistry Sample Custodian. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. After being received by the lab, the sediment trap samples were centrifuged to remove excess water. The samples were then stored in the walk-in freezer until preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	Duplicate Relative Percent Difference	Reporting Limits (ug/kg dry wt)
PCB Congeners	EPA 1668A and 8270C	< RL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	≤30% RPD	~ 11.95 – 12.00

METHOD: Sediment trap samples were extracted for PCB congeners following modified EPA Method 3545. Sediments were air-dried overnight and approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was poured through a funnel and passed through glass wool and sodium sulfate. The extract was then brought to 100 mL; 10 mL was removed and continued on for further processing. The 10 mL split was treated with copper, solvent exchanged to hexane, and passed through a Florisil SPE cartridge. The post-Florisil extract was then brought to 10 mL, out of which 1 mL was removed to be fortified with internal standards (IS). Extracts designated for PCB congener analysis were analyzed using gas chromatography/mass spectrometry (GC/MS), following Battelle SOP 5-315 which is based on EPA Methods 1668A and 8270C. Sample data were quantified by the method of internal standards, using the IS compounds. Data was evaluated against sample specific reporting limits.

HOLDING TIMES: Sediments of this batch were extracted within 1 year of sample holding time for frozen sediments. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
09-0016	10/30/2008	2/2/2009	2/8/2009 – 2/21/2009

PCB Congeners – Sediment Trap QA/QC Summary
Batch 09-0016

LIST OF SAMPLES:
08-0005

Sample ID	Battelle ID
ST-01-103008-B	Q5252
ST-01-103008-C	Q5253
ST-02-103008-A	Q5254
ST-03-103008-A	Q5256
ST-04-103008-A	Q5258

BLANK: A procedural blank (PB) was prepared with each analytical batch. Blanks were analyzed to ensure the sample extraction and analysis methods were free of contamination.

09-0016 – No exceedences noted. No target analytes were detected in the blank sample.

LABORATORY CONTROL SAMPLE: A of laboratory control (LCS) sample was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy.

09-0016 – No exceedence noted. All percent recoveries of spiked analytes were within laboratory control limit of 40-120%.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE: A pair of matrix spike (MS) and matrix spike duplicate samples (MSD) was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. The RPD between percent recoveries was calculated to measure the data quality in terms of precision.

09-0016 – No exceedence noted. All percent recoveries of analytes spiked at a concentration great enough to be used for data quality assessment (> 5 x background) were within laboratory control limit of 40-120%. All RPDs between analytes spiked at a concentration great enough to be used for data quality assessment (> 5 x background) were within laboratory control limit of <30%.

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

09-0016 – No exceedence noted. All surrogate recoveries were within laboratory control limit of 40-120%.

CALIBRATIONS: The GC/MS is calibrated with a minimum of a 6-point curve. The co-efficient of determination must be > 0.995 for each target analyte in the initial calibration (ICAL). Each batch of samples analyzed is bracketed by a continuing calibration verification (CCV) sample, run at a frequency of every 12 hours (minimally). This percent difference (PD) for the CCV should be <25% for individual analytes. Additionally an instrument calibration check (ICC) sample was run with the initial calibration. The PD for the ICC should be < 25% for each analyte.

09-0016 – PCB 81 exceeded the %D criteria in the ICC due to standard impurity. A second ICC was run and results were acceptable for this compound. All other calibration criteria were met.

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ShpNo SHP-081031-01

Battelle Project No:

Sample Receipt Form

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Friday, October 31, 2008 12:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered **Tracking Number:** NA

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal Condition	Container Condition	Temp C	Smps
1 of 1	Cooler	NA	None	Not Applicable	Intact	4.0	9

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☑ Tape ☐ Custody Seals ☑ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 4 Temperature Blank used ☐ Yes ☑ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☑ No ☐ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: Unknown

Storage Location: Chem South: Refrigerator - R0003 (Upper Cold **BDO IDs Assigned:** Q5251 - Q5259

Samples logged in by: Seyfert, Jeannine **Date/Time:** 10/31/2008 12:00 AM

Approved By: **Approved On:**

Authorized By: **Authorized On:**

Battelle
The Business of Innovation

ShpNo SHP-081031-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Friday, October 31, 2008 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q5251	ST-01-103008-A	10/30/08 9:11	10/31/08 9:53	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			
Q5252	ST-01-103008-B	10/30/08 9:11	10/31/08 9:54	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			
Q5253	ST-01-103008-C	10/30/08 9:11	10/31/08 9:54	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			
Q5254	ST-02-103008-A	10/30/08 9:30	10/31/08 9:54	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			
Q5255	ST-02-103008-B	10/30/08 9:30	10/31/08 9:55	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			
Q5256	ST-03-103008-A	10/30/08 9:50	10/31/08 9:55	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			
Q5257	ST-03-103008-B	10/30/08 9:50	10/31/08 9:55	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			
Q5258	ST-04-103008-A	10/30/08 10:10	10/31/08 9:55	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			
Q5259	ST-04-103008-B	10/30/08 10:10	10/31/08 9:56	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			

Total Samples: 9

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Chain of Custody

Proj. No	Proj. Name
G606422	New Bedford Harbor Sed. Trap

SAMPLERS: Signature

Matt Kuzyk Annie Murphy Patrick Curran

DATE	TIME	Field ~~BATTELLE~~ ID	Lab ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
10/30/08	0911	ST-01-103008-A	Q5251	Sediment trap sample from station ST01		X									1
	↓	ST-01-103008-B	Q5252			X									1
		ST01-103008-C	Q5253			X									1
	0930	ST-02-103008-A	Q5254	ST02		X									1
	↓	ST-02-103008-B	Q5255	ST02		X									1
	0950	ST03-103008-A	Q5256	ST-03		X									1
	↓	ST-03-103008-B	Q5257	↓		X									1
	1010	ST-04-103008-A	Q5258	ST-04		X									1
↓	↓	ST-04-103008-B	Q5259	↓		X									1

Relinquished by:	Date/Time	Received by:	Date/Time
Matthew A Kuzyk	10/30/08 1700	Jeannine Lyfert	10/30/08 1700
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL