

TO: Whom It May Concern

FROM: Diane Desotelle, St. Louis River Area of Concern Coordinator

RE: MPCA Disclaimer for this Report – Sediment Assessment Report, Howard' Bay by Weston Solutions, Inc., July 2012

DATE: April 12, 2013

The study for this report was funded by U.S. EPA GLNPO as part of the sediment investigation work in the St. Louis River Harbor. The report was prepared for the Wisconsin Department of Natural Resources to summarize site characterization activities conducted for the Howard's Bay site in Superior, Wisconsin.

The Wisconsin Department of Natural resources is the authorized agency and the MPCA is not responsible for review of the data and analysis. The outcome of this report will be included as part of the sediment database for the St. Louis River Area of Concern. Any mention of trade names or commercial products does not constitute endorsement or recommendation for use by the MPCA.

**SEDIMENT ASSESSMENT REPORT, 2010 SAMPLING EVENT
HOWARD'S BAY – ST. LOUIS RIVER AOC
SUPERIOR, DOUGLAS COUNTY, WISCONSIN**

REVISION 1

Prepared for

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Great Lakes National Program Office
77 West Jackson Boulevard
Chicago, IL 60604

Prepared by

WESTON SOLUTIONS, INC.
20 North Wacker Drive, Suite 1210
Chicago, IL 60606

July 11, 2012

Date Prepared	July 11, 2012
TDD Number	S05-0008-1004-032
Document Control Number	1023-2A-AUGH
Contract Number	EP-S5-06-04
START Project Manager	Rick Mehl
Telephone No.	(312) 424-3312
U.S. EPA Task Monitor	Mark Loomis

TABLE OF CONTENTS

Section	Page
EXECUTIVE SUMMARY.....	ES-1
1. INTRODUCTION.....	1
1.1 REPORT ORGANIZATION.....	1
1.2 SITE DESCRIPTION	2
1.3 SITE HISTORY	2
1.4 PURPOSE OF STUDY AND PROJECT OBJECTIVE.....	2
1.5 COPCS AND TARGET ANALYTES	3
2. SITE CHARACTERIZATION ACTIVITIES.....	3
2.1 SEDIMENT SAMPLE COLLECTION	3
2.2 SEDIMENT CHARACTERISTICS.....	5
2.2.1 Area 1.....	5
2.2.2 Area 2.....	5
3. FIELD AND ANALYTICAL RESULTS	5
3.1 PAHS	7
3.1.1 Area 1.....	7
3.1.2 Area 2.....	9
3.2 TAL METALS.....	10
3.2.1 Area 1.....	10
3.2.2 Area 2.....	11
3.3 PCBS.....	12
3.3.1 Area 1.....	12
3.3.2 Area 2.....	13
3.4 TCL PESTICIDES.....	13
3.4.1 Area 1.....	13
3.4.2 Area 2.....	14
3.5 TPH.....	15
3.5.1 Area 1.....	15
3.5.2 Area 2.....	15
3.6 ORGANOTIN.....	16
3.6.1 Area 1.....	16
3.6.2 Area 2.....	17
3.7 AVS/SEM	17
3.7.1 Area 1.....	17
3.7.2 Area 2.....	18
3.8 PHYSICAL PROPERTIES	18

3.8.1	Area 1	18
3.8.2	Area 2	18
4.	DATA COMPLETENESS	19
5.	SUMMARY	20
6.	NEXT STEPS/DATA GAPS	23
7.	REFERENCES.....	24

LIST OF TABLES

Table	Title
2-1	Sampling Location Coordinates
2-2	Sampling and Analysis Summary
3-1a	Summary of Howard's Bay Sediment Sample Results
3-1b	Summary of Area 1 Sediment Sample Results
3-1c	Summary of Area 2 Sediment Sample Results
3-2a	Area 1 Sediment Sample Analytical Results – PAHs
3-2b	Area 2 Sediment Sample Analytical Results – PAHs
3-3a	Area 1 Sediment Sample Analytical Results – TAL Metals
3-3b	Area 2 Sediment Sample Analytical Results – TAL Metals
3-4a	Area 1 Sediment Sample Analytical Results – PCB Aroclors
3-4b	Area 2 Sediment Sample Analytical Results – PCB Aroclors
3-5a	Area 1 Sediment Sample Analytical Results – TCL Pesticides
3-5b	Area 2 Sediment Sample Analytical Results – TCL Pesticides
3-6a	Area 1 Sediment Sample Analytical Results – TPH
3-6b	Area 2 Sediment Sample Analytical Results – TPH
3-7a	Area 1 Sediment Sample Analytical Results – Organotins
3-7b	Area 2 Sediment Sample Analytical Results – Organotins
3-8a	Area 1 Sediment Sample Analytical Results – AVS/SEM
3-8b	Area 2 Sediment Sample Analytical Results – AVS/SEM
3-9a	Area 1 Sediment Sample Analytical Results – Physical Properties
3-9b	Area 2 Sediment Sample Analytical Results – Physical Properties

LIST OF FIGURES

Figure	Title
1-1	Site Location Map
1-2	Site Features Map
2-1	Sample Location Map
3-1	Sampling Results Exceeding the WDNR Consensus-Based Sediment Quality Guidelines
3-2a	Sampling Results Exceeding the WDNR Consensus-Based Sediment Quality Guidelines for Area 1 – PAHs
3-2b	Sampling Results Exceeding the WDNR Consensus-Based Sediment Quality Guidelines for Area 2 – PAHs
3-3a	Sampling Results Exceeding the WDNR Consensus-Based Sediment Quality Guidelines for Area 1 – TAL Metals
3-3b	Sampling Results Exceeding the WDNR Consensus-Based Sediment Quality Guidelines for Area 2 – TAL Metals
3-4a	Sampling Results Exceeding the WDNR Consensus-Based Sediment Quality Guidelines for Area 1 – Total PCBs
3-4b	Sampling Results Exceeding the WDNR Consensus-Based Sediment Quality Guidelines for Area 2 – Total PCBs
3-5a	Sampling Results Exceeding the WDNR Consensus-Based Sediment Quality Guidelines for Area 1 – TCL Pesticides
3-5b	Sampling Results Exceeding the WDNR Consensus-Based Sediment Quality Guidelines for Area 2 – TCL Pesticides
3-6a	Sampling Results for Area 1 – TPH DRO
3-6b	Sampling Results for Area 2 – TPH DRO
3-7a	Sampling Results for Area 1 – TPH ORO
3-7b	Sampling Results for Area 2 – TPH ORO
3-8a	Sampling Results Exceeding the WDNR Consensus-Based Sediment Quality Guidelines for Area 1 – Organotin
3-8b	Sampling Results Exceeding the WDNR Consensus-Based Sediment Quality Guidelines for Area 2 – Organotin

LIST OF APPENDICES

APPENDIX A – PHOTOGRAPHIC LOG

APPENDIX B – SEDIMENT COLLECTION FIELD DATA SHEETS

ACRONYMS AND ABBREVIATIONS

%	percent
AOC	Area of Concern
AVS/SEM	Acid Volatile Sulfide/Simultaneously Extracted Metal
bss	Below sediment surface
BUI	Beneficial use impairments
CLP	U.S. EPA Contract Laboratory Program
DRO	Diesel Range Organic
ESAT	Environmental Services Assistance Team
ESB	Equilibrium Partitioning Sediment Benchmark
EXES	Electronic Data Exchange and Evaluation System
GLLA	Great Lakes Legacy Act
GLNPO	Great Lakes National Program Office
MEC	Median Effect Concentration
mg/kg	Milligram per kilogram
µg/kg	Microgram per kilogram
µmole/g _{oc}	Micromole per gram of organic carbon
NFG	National Functional Guideline
ORO	Oil Range Organic
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated biphenyl
PEC	Probable Effect Concentration
QAPP	Quality Assurance Project Plan
RAP	Remedial Action Plan
R/V	Research Vessel
SLRCAC	St. Louis River Citizens Action Committee
SQG	Sediment Quality Guideline
START	Superfund Technical Assistance and Response Team
S.U.	Standard Unit
TAL	Target Analyte List
TCL	Target Compound List
TDD	Technical Directive Document
TEC	Threshold Effect Concentration
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbon
U.S. EPA	United States Environmental Protection Agency
WDNR	Wisconsin Department of Natural Resources
WESTON	Weston Solutions, Inc.

EXECUTIVE SUMMARY

Weston Solutions, Inc. (WESTON[®]) has prepared this Sediment Assessment Report to summarize site characterization activities conducted for the Howard's Bay Site (the Site) in Superior, Douglas County, Wisconsin. The site characterization activities were conducted as part of the St. Louis River Area of Concern (AOC) Great Lakes Legacy Act (GLLA) project. The objectives of the site characterization activities were to collect geophysical and chemical samples needed to support project area characterization and potential remediation activities. The data collection activities were conducted in accordance with WESTON's Quality Assurance Project Plan (QAPP) dated September 2010.

A total of 124 sediment samples (including duplicate samples) were collected from 42 sampling locations in the Howard's Bay project area. Where sediment recovery was adequate, samples typically were collected from the following sampling intervals: 0 to 6 inches, 0 to 12 inches, 12 to 36 inches, 36 to 60 inches, and 60 to 96 inches below sediment surface (bss). If less than 12 inches of sediment was encountered in the bottom interval, it was included with the previous interval. If more than 12 inches of sediment was encountered in the bottom interval, it was considered a new interval. The surface interval, 0 to 6 inches, was collected using a ponar to ensure that the required sample volumes were obtained. In addition, the 6- to 12-inch interval, presented in the QAPP, was changed to the 0- to 12-inch interval to ensure that the required sample volumes were obtained. Sediment cores were completed with the Great Lakes National Program Office (GLNPO) research vessel (R/V) Mudpuppy II vibracoring system through the sediment depth to refusal or until native material was encountered. In shallower areas that were inaccessible with the Mudpuppy, sediment cores were completed using a vibracoring system mounted to a pontoon or hand-driven Lexan tubes.

All sediment samples were analyzed for the following contaminants of potential concern (COPC): Target Analyte List (TAL) metals, polycyclic aromatic hydrocarbons (PAH) 17 list, organotins, Target Compound List (TCL) pesticides, and total petroleum hydrocarbons (TPH) as diesel range organics (DRO) corresponding to an alkaline range of C₁₀ through C₂₈, and oil range organics (ORO) corresponding to an alkaline range of C₂₈ through C₃₆. In addition,

approximately 30 percent (%) of all sediment samples collected were analyzed for acid volatile sulfide/simultaneously extracted metal (AVS/SEM), PAH 34 list (in lieu of PAH 17 list at surface sediment samples 0 to 6 inches), and polychlorinated biphenyls (PCBs) as Aroclors. All sediment samples also were analyzed for physical properties, including total organic carbon (TOC) and grain size.

The sample results for PAHs, TAL metals, PCB Aroclors, TCL pesticides, and organotins were compared to the Threshold Effect Concentration (TEC), Median Effect Concentration (MEC), and Probable Effect Concentration (PEC) Sediment Quality Guidelines (SQGs) as set forth in the Wisconsin Department of Natural Resources (WDNR) document "Consensus-Based Sediment Quality Guidelines; Recommendations for Use and Application." The TECs and PECs provide screening criteria to evaluate sediment chemistry data. TECs are defined as concentrations below which adverse effects are not expected to occur and PECs are defined as concentrations above which adverse effects are expected to occur more often than not. There is an incremental increase in toxicity as the contaminant concentrations increase between the TEC and PEC concentrations. The MEC is a concentration midway between the TEC and PEC concentrations (WDNR, 2003). The sample results for TOC, grain size, AVS/SEM, TPH DRO, and TPH ORO are tabulated but are not compared to any numerical screening criteria.

The project area for Howard's Bay was segregated into Area 1 and Area 2, where Area 1 has had limited investigation and Area 2 was last investigated in 2007. Based on previous sampling events conducted in Howard's Bay, the sample design was given a higher density in Area 1 where little data has been acquired. Area 2, which is better defined by historic data, was given a lower sample density. A summary of the SQG exceedances is provided below for Areas 1 and 2.

Area 1

Exceedances of TEC SQGs were identified for the following:

- Total PAH 17 concentrations exceeded TEC SQGs in 17 of 84 sediment samples and Total PAH 34 concentrations exceeded TEC SQGs in 16 of 26 sediment samples. At least one PAH exceeded TEC SQGs in 41 sediment samples.
- At least one metal exceeded TEC SQGs in 78 of 84 sediment samples.

- Total PCB concentrations exceeded TEC SQGs in 2 of 26 sediment samples.
- At least one pesticide exceeded TEC SQGs in 7 of 84 sediment samples.
- One organotin exceeded TEC SQGs in 32 of 84 sediment samples.

Exceedances of MEC SQGs were identified for the following:

- Total PAH 17 concentrations exceeded MEC SQGs in 2 of 84 sediment samples and Total PAH 34 concentrations exceeded MEC SQGs in 1 of 26 sediment samples. At least one PAH exceeded MEC SQGs in five sediment samples.
- At least one metal exceeded MEC SQGs in 27 of 84 sediment samples.
- At least one pesticide exceeded MEC SQGs in 2 of 84 sediment samples.
- One organotin exceeded MEC SQGs in 13 of 84 sediment samples.

Exceedances of PEC SQGs were identified for the following:

- Total PAH 34 concentrations exceeded PEC SQGs in 1 of 26 sediment samples. At least one PAH exceeded PEC SQGs in two sediment samples.
- At least one metal exceeded PEC SQGs in 14 of 84 sediment samples.
- At least one pesticide exceeded PEC SQGs in 1 of 84 sediment samples.
- One organotin exceeded PEC SQGs in 8 of 84 sediment samples.

Area 2

Exceedances of TEC SQGs were identified for the following:

- Total PAH 17 concentrations exceeded TEC SQGs in 10 of 40 sediment samples and Total PAH 34 concentrations exceeded TEC SQGs in 4 of 9 sediment samples. At least one PAH exceeded TEC SQGs in 25 sediment samples.
- At least one metal exceeded TEC SQGs in 34 of 40 sediment samples.
- At least one pesticide exceeded TEC SQGs in 1 of 40 sediment samples.
- One organotin exceeded TEC SQGs in 8 of 40 sediment samples.

Exceedances of MEC SQGs were identified for the following:

- At least one PAH exceeded MEC SQGs in four sediment samples.
- At least one metal exceeded MEC SQGs in 24 of 40 sediment samples.
- One pesticide exceeded MEC SQGs in 1 of 40 sediment samples.

- One organotin exceeded MEC SQGs in 1 of 40 sediment samples.

Exceedances of PEC SQGs were identified for the following:

- At least one PAH exceeded PEC SQGs in two sediment samples.
- At least one metal exceeded PEC SQGs in 12 of 40 sediment samples.
- One pesticide exceeded PEC SQGs in 1 of 40 sediment samples.

1. INTRODUCTION

Weston Solutions, Inc. (WESTON®) has prepared this Sediment Assessment Report to summarize site characterization activities conducted for the Howard's Bay Site (the Site) in Superior, Douglas County, Wisconsin (**Figure 1-1**). WESTON prepared the Sediment Assessment Report in response to a request from the United States Environmental Protection Agency (U.S. EPA) Great Lakes National Program Office (GLNPO) under the Superfund Technical Assessment and Response Team (START) III contract EP-S5-06-04, Technical Directive Document (TDD) No. S05-0008-1004-032. The site characterization activities were conducted as part of the St. Louis River Area of Concern (AOC) Great Lakes Legacy Act (GLLA) project. The objectives of the site characterization activities were to collect geophysical and chemical samples needed to support project area characterization and potential remediation activities. The data collection activities were conducted in accordance with WESTON's Quality Assurance Project Plan (QAPP) dated September 2010.

The sections below discuss the report organization, site description, site history, the purpose of the study and project objectives, and contaminants of potential concern (COPC) and target analytes.

1.1 REPORT ORGANIZATION

The Sediment Assessment Report is organized as follows and addresses the following:

- Section 1 – Introduction
- Section 2 – Site Characterization Activities
- Section 3 – Field and Analytical Results
- Section 4 – Data Completeness
- Section 5 – Summary
- Section 6 – Next Steps/Data Gaps
- Section 7 – References

Tables and figures are included following Section 5. Photographs of sampling activities are included in **Appendix A** and field data sheets for each sediment core are included in **Appendix B**.

1.2 SITE DESCRIPTION

Howard's Bay is located in the St. Louis River AOC, Superior, Douglas County, Wisconsin (**Figure 1-1**). The project area for Howard's Bay was segregated into Area 1 and Area 2 (**Figure 1-2**), where Area 1 has had limited investigation and Area 2 was last investigated in 2007. Based on previous sampling events conducted in Howard's Bay, the sample design was given a higher density in Area 1 where little data has been acquired. Area 2, which is better defined by historic data, was given a lower sample density.

The land use surrounding Howard's Bay is primarily industrial and commercial and includes an active ship yard. In general, sediments in the area were suspected to have elevated concentrations of oil and grease, mercury, and heavy metals.

1.3 SITE HISTORY

Contaminated sediments in the study area contribute to many of the beneficial use impairments (BUIs) in the AOC. Impairment of beneficial use is defined as a change in the chemical, physical, or biological integrity of the Great Lakes ecosystem. The Remedial Action Plan (RAP) for the St. Louis River AOC identified the following BUIs in the AOC (St. Louis River Citizens Action Committee [SLRCAC], 1992):

- Restrictions on fish and wildlife consumption
- Excessive loading of sediment and nutrients
- Degradation of fish and wildlife populations
- Beach closings
- Fish tumors or other deformities
- Degradation of aesthetics
- Degradation of benthos
- Restriction on dredging activities
- Loss of fish and wildlife habitat

1.4 PURPOSE OF STUDY AND PROJECT OBJECTIVE

The purpose of the Howard's Bay site characterization activities was to further define chemical contaminants in the sediment, locate contaminated areas for additional evaluation, and identify priority areas for remediation and habitat restoration. The objective of the site characterization

activities was to collect samples for chemical and physical properties analysis needed to support project area characterization and potential remediation activities.

1.5 COPCS AND TARGET ANALYTES

All sediment samples were analyzed for the following COPCs: Target Analyte List (TAL) metals, polycyclic aromatic hydrocarbons (PAH) 17 list, organotins, Target Compound List (TCL) pesticides, and total petroleum hydrocarbons (TPH) as diesel range organics (DRO) corresponding to an alkaline range of C₁₀ through C₂₈, and oil range organics (ORO) corresponding to an alkaline range of C₂₈ through C₃₆. In addition, approximately 30 percent (%) of all sediment samples collected were analyzed for acid volatile sulfide/simultaneously extracted metal (AVS/SEM), PAH 34 list (in lieu of PAH 17 list at surface sediment samples 0 to 6 inches), and polychlorinated biphenyls (PCBs) as Aroclors. All sediment samples also were analyzed for physical properties, including total organic carbon (TOC) and grain size.

2. SITE CHARACTERIZATION ACTIVITIES

Site characterization activities were conducted from October 16 through 18, 2010, and included sediment sample collection and sediment characterization as discussed below.

2.1 SEDIMENT SAMPLE COLLECTION

The sample collection procedures are detailed in the WESTON's QAPP dated September 2010. The data collected during characterization activities will be used to (1) evaluate the locations of the most heavily contaminated sediments and (2) focus areas for further evaluation and/or remediation.

The approximate area of the Howard's Bay project area is 300 acres. Most sediment sampling locations were selected using Visual Sampling Plan (VSP) software with a sample design based on detecting "hot spots" (local areas of elevated concentrations). Area 1 consisted of sampling locations HB10-1-1 through HB10-1-8; HB10-1-10 through HB10-1-17; HB10-1-20; HB10-1-21; HB10-1-23 through HB10-1-25; and HB10-1-27 through HB10-1-31. Proposed sampling location HB10-1-9 was not completed because pellets were encountered. Proposed sampling

locations HB10-1-19 and HB10-1-22 were not completed because native material was encountered. Area 2 consisted of sampling locations HB10-2-18, HB10-2-26, and HB10-2-32 through HB10-2-45. **Table 2-1** presents the sediment sample location coordinates for Area 1 and Area 2. **Figure 2-1** presents the sediment sampling locations for Area 1 and Area 2.

Sediment cores were completed with the GLNPO research vessel (R/V) Mudpuppy II vibracoring system through the sediment depth to refusal or until native material was encountered. In shallower areas that were inaccessible with the Mudpuppy, sediment cores were completed using a vibracoring system mounted to a pontoon or hand-driven Lexan tubes. The maximum water depth encountered during sediment sampling was 30 feet and the maximum sediment depth measured was 9.25 feet.

Where sediment recovery was adequate, samples typically were collected from the following sampling intervals: 0 to 6 inches, 0 to 12 inches, 12 to 36 inches, 36 to 60 inches, and 60 to 96 inches below sediment surface (bss). If less than 12 inches of sediment was encountered in the bottom interval, it was included with the previous interval. If more than 12 inches of sediment was encountered in the bottom interval, it was considered a new interval. The surface interval, 0 to 6 inches, was collected using a ponar to ensure that the required sample volumes were obtained. In addition, the 6- to 12-inch interval, presented in the QAPP, was changed to the 0- to 12-inch interval to ensure that the required sample volumes were obtained. Sediment collected from the sample depth interval, noted above, was homogenized and an aliquot of each sediment sample was submitted for laboratory analysis.

A total of 124 sediment samples (including duplicate samples) were collected from 42 sampling locations in the Howard's Bay project area. A total of 84 sediment samples (76 investigative and 8 duplicate) were collected from 26 locations within Area 1. A total of 40 sediment samples (35 investigative and 5 duplicate) were collected from 16 locations within Area 2.

A U.S. EPA Contract Laboratory Program (CLP) laboratory analyzed the samples for TAL metals, PCB Aroclors, PAHs (17 and 34 lists), TCL pesticides, and AVS/SEM. A WESTON-procured laboratory, TestAmerica Burlington of Burlington, Vermont, analyzed the samples for grain size and organotin. A WESTON-procured laboratory, Columbia Analytical Services of

Kelso, Washington, analyzed the samples for TOC. A WESTON-procured laboratory, TriMatrix Laboratories of Grand Rapids, Michigan, analyzed the samples for TPH DRO and TPH ORO. A summary of the sample information and analyses for Area 1 and Area 2 are presented on **Table 2-2**. The results of the sediment sampling investigation are discussed in Section 3.

2.2 SEDIMENT CHARACTERISTICS

2.2.1 Area 1

During site characterization activities, sediment from Area 1 consisted mostly of dark brown silt with trace sands and trace organics (less than 10% organic materials present). Dark brown fine-to medium-grained sand was encountered in the area of HB10-1-21; black silt was encountered in the areas of HB10-1-24 and HB10-1-29; and red clay was encountered in the area of HB10-1-27. Depth of sediment recovery at Area 1 ranged from 6 inches to 9.25 feet. Additional detail regarding geologic profile, water depth, and sediment depth are included in **Appendix B**.

2.2.2 Area 2

During site characterization activities, sediment from Area 2 consisted mostly of dark brown silt with trace sands and trace organics (less than 10% organic materials present). Dark brown fine-grained sand was encountered in the areas of HB10-2-26, HB10-2-35 and HB10-2-37; red clayey silt was encountered in the area of HB10-2-39; dark brown to black sandy silt was encountered in the area of HB10-2-42, HB10-2-43, HB10-2-44, and HB10-2-45; and red clay was encountered in the area of HB10-2-34. Depth of sediment recovery at Area 2 ranged from 6 inches to 4.92 feet. Additional detail regarding geologic profile, water depth, and sediment depth are included in **Appendix B**.

3. FIELD AND ANALYTICAL RESULTS

This section summarizes analytical results for the site characterization samples collected from October 16 through 18, 2010. A total of 124 sediment samples (111 investigative and 13 duplicate) were collected from the 42 sampling locations within Howard's Bay. The table below summarizes the analytical parameters for the samples collected.

Analytical Parameter Summary Table				
Analysis	Sample Depth (inches bss)	Area 1 No. Samples	Area 2 No. Samples	Total Sediment Samples
PAHs (17 list)	All depths	58	31	89
PAHs (34 list)	All depths	26	9	35
TAL Metals	All depths	84	40	124
PCB Aroclors	All depths	26	9	35
TCL Pesticides	All depths	84	40	124
TPH DRO/ORO	All depths	84	40	124
Organotin	All depths	84	40	124
Grain Size	All depths	76	35	111
TOC	All depths	84	39	123
AVS/SEM	All depths	26	9	35

The sample results for PAHs, TAL metals, PCB Aroclors, TCL pesticides, and organotins were compared to the Threshold Effect Concentration (TEC), Median Effect Concentration (MEC), and Probable Effect Concentration (PEC) Sediment Quality Guidelines (SQGs) as set forth in the Wisconsin Department of Natural Resources (WDNR) document "Consensus-Based Sediment Quality Guidelines." The TECs and PECs provide screening criteria to evaluate sediment chemistry data. TECs are defined as concentrations below which adverse effects are not expected to occur and PECs are defined as concentrations above which adverse effects are expected to occur more often than not. There is an incremental increase in toxicity as the contaminant concentrations increase between the TEC and PEC concentrations. The MEC is a concentration midway between the TEC and PEC concentrations. The sample results for TOC, grain size, AVS/SEM, TPH DRO, and TPH ORO are tabulated but are not compared to any numerical screening criteria.

The sediment sample concentrations for PAHs, PCB Aroclors, TCL pesticides, and organotins were normalized to 1% TOC to permit comparison to the screening criteria. Total PAHs (17 list) and Total PAHs (34 list) were calculated by summing the detections and using half the reporting limit for non-detect values. Total PCBs were calculated by summing the detections. **Tables 3-1a through 3-1c** summarize the analytical results by sediment depth interval. These tables include the number of samples analyzed per depth interval; the number of detected results; number and percent of non-detect results; maximum, minimum, and average detected

concentrations; screening criteria; and the percent of samples exceeding the screening criteria. **Tables 3-2a** through **3-8a** present the analytical results for Area 1 and **Tables 3-2b** through **3-8b** present the analytical results for Area 2. **Figure 3-1** shows the locations where concentrations of COPCs exceeded SQGs for the entire Howard's Bay project area. The sections below compare the analytical data to the SQGs.

A total of 84 sediment samples (76 investigative and 8 duplicate) were collected from 26 locations within Area 1 and consisted of sampling locations HB10-1-1 through HB10-1-8; HB10-1-10 through HB10-1-17; HB10-1-20; HB10-1-21; HB10-1-23 through HB10-1-25; and HB10-1-27 through HB10-1-31.

A total of 40 sediment samples (35 investigative and 5 duplicate) were collected from 16 locations within Area 2 and consisted of sampling locations HB10-2-18, HB10-2-26, and HB10-2-32 through HB10-2-45.

A comparison of the analytical data to the respective SQGs, when available, is discussed in the following sections per parameter group.

3.1 PAHs

3.1.1 Area 1

A total of 58 and 26 sediment samples from Area 1 were analyzed for PAH (17 list) and PAH (34 list), respectively. All 38 PAHs were detected in the sediment samples.

Of the 38 PAHs detected, 18 PAHs—1,2-benzphenanthracene (chrysene), 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(e)pyrene, benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene—were detected at concentrations that exceeded their respective SQGs as summarized below:

PAH SQG Exceedances Summary Table												
Analyte	No. of Results	TEC Exceedances			MEC Exceedances			PEC Exceedances			Maximum Detection	
		TEC (µg/kg)	No.	%	MEC (µg/kg)	No.	%	PEC (µg/kg)	No.	%	Result (µg/kg)	Sample ID
1,2-benzphenanthracene	84	166	11	13.3	728	2	2.4	1290	1	1.2	1326	HB10-1-03-06
2-methylnaphthalene	84	20.2	6	7.1	111	2	2.4	201	0	0.0	193	HB10-1-07-06
Acenaphthene	84	6.7	35	41.7	48	5	6.0	89	1	1.2	355.3	HB10-1-07-06
Acenaphthylene	83	5.9	26	31.2	67	1	1.2	128	0	0.0	105	HB10-1-03-06
Anthracene	84	57.2	9	10.9	451	1	1.2	845	1	1.2	921.1	HB10-1-07-06
Benzo(a)anthracene	84	108	19	22.9	579	3	3.6	1050	2	2.4	1228.1	HB10-1-07-06
Benzo(a)pyrene	84	150	16	19.3	800	2	2.4	1450	0	0.0	1105	HB10-1-03-06
Benzo(b)fluoranthene	84	240	6	7.1	6820	0	0.0	13400	0	0.0	1602.2	HB10-1-03-06
Benzo(e)pyrene	26	150	4	15.6	800	0	0.0	1450	0	0.0	482.5	HB10-1-07-06
Benzo(g,h,i)perylene	84	170	3	3.6	1685	0	0.0	3200	0	0.0	939.2	HB10-1-03-06
Benzo(k)fluoranthene	84	240	3	3.6	6820	0	0.0	13400	0	0.0	607.7	HB10-1-03-06
Dibenzo(a,h)anthracene	84	33	9	10.8	84	2	2.4	135	1	1.2	143.7	HB10-1-03-06
Fluoranthene	84	423	11	13.1	1327	3	3.6	2230	2	2.4	3201.8	HB10-1-07-06
Fluorene	84	77.4	2	2.4	307	1	1.2	536	1	1.2	614	HB10-1-07-06
Indeno(1,2,3-cd) pyrene	84	200	3	3.6	1700	0	0.0	3200	0	0.0	828.8	HB10-1-03-06
Naphthalene	83	176	2	2.5	369	0	0.0	561	0	0.0	270.7	HB10-1-03-06
Phenanthrene	84	204	11	13.0	687	3	3.6	1170	1	1.2	3640.4	HB10-1-07-06
Pyrene	84	195	27	32.2	858	3	3.6	1520	2	2.4	2193	HB10-1-07-06
Total PAHs 17	84	1610	17	20.4	12205	2	2.4	22800	0	0.0	17204	HB10-1-07-06
Total PAHs 34	26	1610	16	61.5	12205	1	3.9	22800	1	3.9	22897	HB10-1-07-06

Notes:

BOLD – Chemical detected at a concentration exceeding TEC, MEC, and PEC SQGs in at least one sample

SQG – Sediment Quality Guideline

µg/kg – Microgram per kilogram

The complete PAH analytical results are presented on **Table 3-2a**. The calculated Total PAH 17 concentration exceeded TEC SQGs in 17 sediment samples, exceeded MEC SQGs in two sediment samples, and did not exceed PEC SQGs. The calculated Total PAH 34 concentration exceeded TEC SQGs in 16 sediment samples, exceeded MEC SQGs in one sediment sample, and exceeded PEC SQGs in one sediment sample. At least one PAH was detected at a concentration exceeding TEC SQGs in 41 sediment samples, exceeding MEC SQGs in five sediment samples, and exceeding PEC SQGs in two sediment samples. PAH concentrations exceeding PEC SQGs are limited to the surface (0 to 6 inches bss); however concentrations of PAHs exceeding TEC SQGs were noted through the core to 7 ft bss. Sampling locations where Total PAH concentrations exceeded the SQGs are shown on **Figure 3-2a**.

3.1.2 Area 2

A total of 31 and 9 sediment samples from Area 2 were analyzed for PAH (17 list) and PAH (34 list), respectively. All 38 PAHs were detected in the sediment samples.

Of the 38 PAHs detected, 15 PAHs—1,2-benzphenanthracene (chrysene), 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, dibenzo(a,h)anthracene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene—were detected at concentrations that exceeded their respective SQGs as summarized below:

PAH SQG Exceedances Summary Table												
Analyte	No. of Results	TEC Exceedances			MEC Exceedances			PEC Exceedances			Maximum Detection	
		TEC (µg/kg)	No.	%	MEC (µg/kg)	No.	%	PEC (µg/kg)	No.	%	Result (µg/kg)	Sample ID
1,2-benzphenanthracene	40	166	7	17.7	728	0	0.0	1290	0	0.0	567.38	HB10-2-37-06
2-methylnaphthalene	40	20.2	8	19.8	111	0	0.0	201	0	0.0	49.65	HB10-2-37-06
Acenaphthene	40	6.7	18	45.0	48	3	7.8	89	1	2.6	90.66	HB10-2-32-06
Acenaphthylene	40	5.9	17	42.8	67	0	0.0	128	0	0.0	19.39	HB10-2-37-06
Anthracene	40	57.2	5	12.8	451	1	2.6	845	0	0.0	472.81	HB10-2-37-06
Benzo(a)anthracene	40	108	10	24.9	579	1	2.6	1050	0	0.0	591.02	HB10-2-37-06
Benzo(a)pyrene	39	150	6	15.4	800	0	0.0	1450	0	0.0	496.45	HB10-2-37-06
Benzo(b)fluoranthene	39	240	1	2.6	6820	0	0.0	13400	0	0.0	347.39	HB10-2-38-38
Benzo(g,h,i)perylene	40	170	2	5.0	1685	0	0.0	3200	0	0.0	186.10	HB10-2-38-38
Dibenzo(a,h)anthracene	40	33	5	12.8	84	1	2.6	135	0	0.0	85.11	HB10-2-37-06
Fluoranthene	39	423	4	10.3	1327	1	2.6	2230	0	0.0	1560.3	HB10-2-37-06
Fluorene	40	77.4	2	5.2	307	0	0.0	536	0	0.0	81.723	HB10-2-41-06
Naphthalene	40	176	1	2.6	369	1	2.6	561	1	2.6	1044	HB10-2-32-06
Phenanthrene	39	204	6	15.4	687	1	2.6	1170	1	2.6	1513	HB10-2-37-06
Pyrene	39	195	12	30.6	858	1	2.6	1520	0	0.0	1016.5	HB10-2-37-06
Total PAHs 17	40	1610	10	24.9	12205	0	0.0	22800	0	0.0	7910.6	HB10-2-37-06
Total PAHs 34	9	1610	4	44.0	12205	0	0.0	22800	0	0.0	11521	HB10-2-37-06

Notes:

BOLD – Chemical detected at a concentration exceeding TEC, MEC, and PEC SQGs in at least one sample

SQG – Sediment Quality Guideline

µg/kg – Microgram per kilogram

The complete PAH analytical results are presented on **Table 3-2b**. The calculated Total PAH 17 concentration exceeded TEC SQGs in 10 sediment samples and did not exceed MEC or PEC SQGs. The calculated Total PAH 34 concentration exceeded TEC SQGs in four sediment

samples and did not exceed MEC or PEC SQGs. At least one PAH was detected at a concentration exceeding TEC SQGs in 25 sediment samples, exceeding MEC SQGs in four sediment samples, and exceeding PEC SQGs in two sediment samples (HB10-2-32-06 and HB10-2-37-06). Sampling locations where Total PAH concentrations exceeded the SQGs are shown on **Figure 3-2b**.

3.2 TAL METALS

3.2.1 Area 1

A total of 84 sediment samples from Area 1 were analyzed for TAL metals. All 23 TAL metals were detected in the sediment samples.

Of the 23 TAL metals detected, 12 metals—antimony, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver, and zinc—were detected at concentrations that exceeded their respective SQGs as summarized below. It should be noted that some non-detect reporting limit values for cadmium and silver did exceed the TEC, MEC, and/or PEC SQGs.

TAL Metal SQG Exceedances Summary Table												
Analyte	No. of Results	TEC Exceedances			MEC Exceedances			PEC Exceedances			Maximum Detection	
		TEC (mg/kg)	No.	%	MEC (mg/kg)	No.	%	PEC (mg/kg)	No.	%	Result (mg/kg)	Sample ID
Antimony	84	2	13	15.5	13.5	1	1.1	25	1	1.1	38.5	HB10-1-24-36
Arsenic	84	9.8	2	2.3	21.4	0	0.0	33	0	0.0	12.4	HB10-1-29-36
Cadmium	84	0.99	11	13.3	3	1	1.1	5	0	0.0	3.7	HB10-1-29-36
Chromium	84	43	7	8.5	76.5	3	3.5	110	1	1.1	117	HB10-1-29-12
Copper	84	32	58	69.1	91	8	9.5	150	3	3.4	321	HB10-1-29-36
Iron	84	20000	63	74.7	30000	12	14.5	40000	1	1.1	41400	HB10-1-29-12
Lead	84	36	61	72.8	83	28	33.1	130	12	14.3	481	HB10-1-29-36
Manganese	84	460	40	47.7	780	2	2.4	1100	0	0.0	891	HB10-1-29-12
Mercury	84	0.18	58	69.0	0.64	14	16.8	1.1	6	7.2	58	HB10-1-16-31
Nickel	84	23	43	51.1	36	5	6.1	49	0	0.0	44.4	HB10-1-29-12
Silver	84	1.6	2	2.3	1.9	0	0.0	2.2	0	0.0	1.8	HB10-1-29-36
Zinc	84	120	51	60.6	290	10	12.1	460	6	7.2	945	HB10-1-29-36

Notes:

BOLD – Chemical detected at a concentration exceeding TEC, MEC, and PEC SQGs in at least one sample

SQG – Sediment Quality Guideline

mg/kg – Milligram per kilogram

The complete TAL metals analytical results are presented on **Table 3-3a**. At least one metal was detected at a concentration exceeding TEC SQGs in 78 sediment samples, exceeding MEC SQGs in 27 sediment samples, and exceeding PEC SQGs in 14 sediment samples. Sampling locations where TAL metal concentrations exceeded the SQGs are shown on **Figure 3-3a**.

3.2.2 Area 2

A total of 40 sediment samples from Area 2 were analyzed for TAL metals. Twenty-one TAL metals were detected in the sediment samples:

- Aluminum
- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Calcium
- Chromium
- Cobalt
- Copper
- Iron
- Lead
- Magnesium
- Manganese
- Mercury
- Nickel
- Potassium
- Silver
- Thallium
- Vanadium
- Zinc

Of the 21 TAL metals detected, 10 metals—antimony, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, and zinc—were detected at concentrations that exceeded their respective SQGs as summarized below. It should be noted that some non-detect reporting limit values for cadmium and silver did exceed the TEC, MEC, and/or PEC SQGs.

TAL Metal SQG Exceedances Summary Table												
Analyte	No. of Results	TEC Exceedances			MEC Exceedances			PEC Exceedances			Maximum Detection	
		TEC (mg/kg)	No.	%	MEC (mg/kg)	No.	%	PEC (mg/kg)	No.	%	Result (mg/kg)	Sample ID
Antimony	40	2	3	7.7	13.5	0	0.0	25	0	0.0	2.3	HB10-2-39-28
Cadmium	40	0.99	1	2.6	3	0	0.0	5	0	0.0	1.1	HB10-2-36-06DP
Chromium	40	43	4	9.8	76.5	0	0.0	110	0	0.0	50.5	HB10-2-39-28
Copper	40	32	25	62.8	91	0	0.0	150	0	0.0	67.2	HB10-2-38-12
Iron	40	20000	23	57.1	30000	10	25.1	40000	0	0.0	38000	HB10-2-43-06
Lead	40	36	31	77.4	83	19	47.3	130	10	24.8	1140	HB10-2-45-06
Manganese	40	460	17	42.4	780	8	19.8	1100	2	5.3	1250	HB10-2-32-06
Mercury	40	0.18	24	60.1	0.64	1	2.6	1.1	0	0.0	0.74	HB10-2-36-06DP
Nickel	40	23	22	54.7	36	1	2.5	49	0	0.0	42.8	HB10-2-39-28
Zinc	40	120	26	65.0	290	3	7.8	460	0	0.0	442	HB10-2-36-06

Notes:

BOLD – Chemical detected at a concentration exceeding TEC, MEC, and PEC SQGs in at least one sample
SQG – Sediment Quality Guideline

mg/kg – Milligram per kilogram

The complete TAL metals analytical results are presented on **Table 3-3b**. At least one TAL metal was detected at a concentration exceeding TEC SQGs in 34 sediment samples, exceeding MEC SQGs in 24 sediment samples, and exceeding PEC SQGs in 12 sediment samples. Sampling locations where TAL metal concentrations exceeded the SQGs are shown on **Figure 3-3b**.

3.3 PCBs

3.3.1 Area 1

A total of 26 sediment samples from Area 1 were analyzed for PCB Aroclors. Two PCB Aroclors were detected in the sediment samples:

- Aroclor-1254
- Aroclor-1260

A total PCB concentration was calculated for each of the 26 sediment samples analyzed for PCB Aroclors. Total PCBs for Aroclors was calculated by summing the detections for each sample. Total PCB concentrations that exceeded their respective SQGs are summarized below:

Total PCB SQG Exceedances Summary Table												
Analyte	No. of Results	TEC Exceedances			MEC Exceedances			PEC Exceedances			Maximum Detection	
		TEC (µg/kg)	No.	%	MEC (µg/kg)	No.	%	PEC (µg/kg)	No.	%	Result (µg/kg)	Sample ID
Total PCBs (Aroclors)	26	60	2	7.8	368	0	0.0	676	0	0.0	271	HB10-1-04-06

Notes:

SQG – Sediment Quality Guideline

µg/kg – Microgram per kilogram

The complete PCB Aroclors analytical results are presented on **Table 3-4a**. For samples analyzed for PCB Aroclors, Total PCB concentrations exceeded TEC SQGs in two sediment samples (HB10-1-04-06 and HB10-1-21-23) and did not exceed MEC or PEC SQGs. Sampling locations where Total PCB concentrations exceeded the SQGs are shown on **Figure 3-4a**.

3.3.2 Area 2

A total of 9 sediment samples collected from the 0- to 6-inch bss sample interval from Area 2 were analyzed for PCB Aroclors. Two PCB Aroclors were detected in the sediment samples:

- Aroclor-1254
- Aroclor-1260

A total PCB concentration was calculated for each of the nine sediment samples analyzed for PCB Aroclors. Total PCBs for PCB Aroclors was calculated by summing the detections for each sample.

The complete PCB Aroclors analytical results are presented on **Table 3-4b**. Total PCB concentrations did not exceed TEC, MEC, or PEC SQGs. The sampling locations where samples were collected for PCB Aroclor analysis are shown on **Figure 3-4b**.

3.4 TCL PESTICIDES

3.4.1 Area 1

A total of 84 sediment samples from Area 1 were analyzed for TCL pesticides. Fifteen TCL pesticides were detected in the sediment samples:

- | | | |
|-------------|-----------------|----------------|
| • 4,4'-DDD | • Endosulfan I | • Gamma-BHC |
| • 4,4'-DDE | • Endosulfan | • Heptachlor |
| • 4,4'-DDT | Sulfate | Epoxide |
| • Aldrin | • Endrin | • Methoxychlor |
| • Alpha-BHC | • Endrin | |
| • Beta-BHC | Aldehyde | |
| • Delta-BHC | • Endrin Ketone | |

Of the 15 TCL pesticides detected, five pesticides—beta-BHC, 4,4'-DDD, 4,4-DDT, endrin, and heptachlor epoxide—were detected at concentrations that exceeded their respective SQGs as summarized below. It should be noted that some non-detect reporting limit values did exceed the TEC, MEC, and/or PEC SQGs.

TCL Pesticide SQG Exceedances Summary Table												
Analyte	No. of Results	TEC Exceedances			MEC Exceedances			PEC Exceedances			Maximum Detection	
		TEC (µg/kg)	No.	%	MEC (µg/kg)	No.	%	PEC (µg/kg)	No.	%	Result (µg/kg)	Sample ID
Beta-BHC	84	5	1	1.2	108	0	0.0	210	0	0.0	11.049724	HB10-1-03-06
4,4'-DDD	84	4.9	1	1.1	16.5	0	0.0	28	0	0.0	8.4848485	HB10-1-29-36
4,4'-DDT	84	4.2	5	6.1	33.6	2	2.3	63	1	1.2	77.348066	HB10-1-03-06
Endrin	84	2.2	2	2.3	104.6	0	0.0	207	0	0.0	5.4901961	HB10-1-29-06
Heptachlor epoxide	84	2.5	4	4.7	9.3	1	1.2	16	1	1.2	38.674033	HB10-1-03-06

Notes:

BOLD – Chemical detected at a concentration exceeding TEC, MEC, and PEC SQGs in at least one sample

SQG – Sediment Quality Guideline

µg/kg – Microgram per kilogram

The complete TCL pesticides analytical results are presented on **Table 3-5a**. At least one pesticide was detected at a concentration exceeding TEC SQGs in seven sediment samples, exceeding MEC SQGs in two sediment samples, and exceeding PEC SQGs in one sediment sample. Sampling locations where TCL pesticide concentrations exceeded the SQGs are shown on **Figure 3-5a**.

3.4.2 Area 2

A total of 40 sediment samples from Area 2 were analyzed for TCL pesticides. Thirteen TCL pesticides were detected in the sediment samples:

- 4,4'-DDD
- 4,4'-DDT
- Aldrin
- Alpha-BHC
- Delta-BHC
- Dieldrin
- Gamma-Chlordane
- Endrin
- Endrin Ketone
- Endosulfan I
- Endosulfan Sulfate
- Heptachlor
- Heptachlor Epoxide

Of the 13 TCL pesticides detected, two pesticides—aldrin and gamma-chlordane—were detected at concentrations that exceeded their respective SQGs as summarized below. It should be noted that some non-detect reporting limit values did exceed the TEC, MEC, and/or PEC SQGs.

TCL Pesticide SQG Exceedances Summary Table												
Analyte	No. of Results	TEC Exceedances			MEC Exceedances			PEC Exceedances			Maximum Detection	
		TEC (µg/kg)	No.	%	MEC (µg/kg)	No.	%	PEC (µg/kg)	No.	%	Result (µg/kg)	Sample ID
Aldrin	40	2	1	2.6	41	0	0.0	80	0	0.0	14.58	HB10-2-35-12
Gamma-chlordane	40	3.2	1	2.6	10.6	1	2.6	18	1	2.6	19.67	HB10-2-40-12

Notes:

BOLD – Chemical detected at a concentration exceeding TEC, MEC, and PEC SQGs in at least one sample

SQG – Sediment Quality Guideline

µg/kg – Microgram per kilogram

The complete TCL pesticides analytical results are presented on **Table 3-5b**. At least one pesticide was detected at a concentration exceeding TEC SQGs in one sediment sample, and one pesticide (gamma-chlordane) was detected at a concentration exceeding MEC and PEC SQGs in one sediment sample. Sampling locations where TCL pesticide concentrations exceeded the SQGs are shown on **Figure 3-5b**.

3.5 TPH

3.5.1 Area 1

A total of 84 sediment samples from Area 1 were analyzed for TPH DRO and TPH ORO. TPH DRO was detected in 83 sediment samples at concentrations ranging from 11 to 730 mg/kg. The highest concentration was detected in sediment sample HB10-1-29-93. Ranges of TPH DRO concentrations are presented on **Figure 3-6a**. TPH ORO was detected in all 84 sediment samples at concentrations ranging from 11 to 850 mg/kg. The highest concentration was detected in sediment sample HB10-1-24-36. Ranges of TPH ORO concentrations are presented on **Figure 3-7a**. The complete TPH DRO and ORO analytical results are presented on **Table 3-6a**.

3.5.2 Area 2

A total of 40 sediment samples from Area 2 were analyzed for TPH DRO and TPH ORO. TPH DRO was detected in all 40 sediment samples at concentrations ranging from 4 to 450 mg/kg. The highest concentration was detected in sediment sample HB10-2-36-06DP. Ranges of TPH DRO concentrations are presented on **Figure 3-6b**. TPH ORO was detected in 38 of the 40

sediment samples at concentrations ranging from 28 to 610 mg/kg. The highest concentration was detected in sediment sample HB10-2-43-22. Ranges of TPH ORO concentrations are presented on **Figure 3-7b**. The complete TPH DRO and ORO analytical results are presented on **Table 3-6b**.

3.6 ORGANOTIN

3.6.1 Area 1

A total of 84 sediment samples from Area 1 were analyzed for organotins. Two organotins were detected in the sediment samples:

- Dibutyltin
- Tributyltin

Of the two organotins detected, one organotin—tributyltin—was detected at concentrations that exceeded their respective SQGs as summarized below. It should be noted that some non-detect reporting limit values for tributyltin did exceed the TEC, MEC, and/or PEC SQGs.

Organotin SQG Exceedances Summary Table												
Analyte	No. of Results	TEC Exceedances			MEC Exceedances			PEC Exceedances			Maximum Detection	
		TEC (µg/kg)	No.	%	MEC (µg/kg)	No.	%	PEC (µg/kg)	No.	%	Result (µg/kg)	Sample ID
Tributyltin	84	0.52	32	38.1	1.73	13	15.7	2.94	8	9.6	64.59	HB10-1-28-06

Notes:

BOLD – Chemical detected at a concentration exceeding TEC, MEC, and PEC SQGs in at least one sample

SQG – Sediment Quality Guideline

µg/kg – Microgram per kilogram

The complete organotin analytical results are presented on **Table 3-7a**. One organotin (tributyltin) was detected at a concentration exceeding TEC SQGs in 32 sediment samples, exceeding MEC SQGs in 13 sediment samples, and exceeding PEC SQGs in eight sediment samples. TEC, MEC, and PEC exceedances were noted in the western portion of Area 1 (HB10-1-2, HB10-1-3, HB10-1-5, HB10-1-6, HB10-1-16, and HB10-1-28). Sampling locations where organotin concentrations exceeded the SQGs are shown on **Figure 3-8a**.

3.6.2 Area 2

A total of 40 sediment samples from Area 2 were analyzed for organotins. All four organotins were detected in the sediment samples.

Of the four organotins, one organotin (tributyltin) was detected at concentrations that exceeded its respective SQGs as summarized below. It should be noted that some non-detect reporting limit values for tributyltin did exceed the TEC, MEC, and/or PEC SQGs.

Organotin SQG Exceedances Summary Table												
Analyte	No. of Results	TEC Exceedances			MEC Exceedances			PEC Exceedances			Maximum Detection	
		TEC (µg/kg)	No.	%	MEC (µg/kg)	No.	%	PEC (µg/kg)	No.	%	Result (µg/kg)	Sample ID
Tributyltin	40	0.52	8	19.9	1.73	1	2.6	2.94	0	0.0	2.59	HB10-2-44-06

Notes:

SQG – Sediment Quality Guideline

µg/kg – Microgram per kilogram

The complete organotin analytical results are presented on **Table 3-7b**. One organotin (tributyltin) was detected at a concentration exceeding TEC SQGs in eight sediment samples, exceeding MEC SQGs in one sediment sample, and did not exceed PEC SQGs. Sampling locations where organotin concentrations exceeded the SQGs are shown on **Figure 3-8b**.

3.7 AVS/SEM

Measurement of AVS and SEM concentrations associated with AVS extraction can provide insight into the bioavailability of metals in anaerobic (anoxic) sediments (U.S. EPA, 2001). A model for predicting toxicity from divalent trace metals is based on the binding of these metals to AVS. When the sum of the moles of the SEM (including silver, cadmium, copper, nickel, lead, and zinc) is exceeded by the molar concentration of AVS, the metals are considered insoluble and largely unavailable to biota. However, if the AVS is less than the SEM, metals may or may not be toxic due to other controlling factors (such as TOC content) (U.S. EPA 2001).

3.7.1 Area 1

From Area 1, a total of 26 sediment samples were analyzed for AVS/SEM. The derivation of the AVS/SEM values are presented on **Table 3-8a**. The $[(\text{Sum SEM}-\text{AVS})/f_{\text{oc}}]$ yielded results less

than 130 micromole per gram of organic carbon ($\mu\text{mole/g}_{\text{oc}}$) at all locations except HB10-1-24-12 ($2.9 \mu\text{mole/g}_{\text{oc}}$), which indicates a low risk of adverse biological effects from metals. The AVS/SEM ratios yielded results less than 1 standard unit (S.U.) at all locations except HB10-1-24-12 (1.3 S.U.).

3.7.2 Area 2

From Area 2, a total of nine sediment samples were analyzed for AVS/SEM. The derivation of the AVS/SEM values are presented on **Table 3-8b**. The $[(\text{Sum SEM-AVS})/f_{\text{oc}}]$ yielded results less than $130 \mu\text{mole/g}_{\text{oc}}$ at all locations except HB10-2-37-06 ($28.8 \mu\text{mole/g}_{\text{oc}}$) and HB10-2-39-06 ($2 \mu\text{mole/g}_{\text{oc}}$), which indicates a low risk of adverse biological effects from metals. The AVS/SEM ratios yielded results less than 1 S.U. at all locations except HB10-2-37-06 (13.9 S.U.) and HB10-2-39-06 (2 S.U.).

3.8 PHYSICAL PROPERTIES

3.8.1 Area 1

From Area 1, a total of 76 sediment samples were analyzed for grain size and a total of 84 sediment samples were analyzed for TOC. The analytical results are presented on **Table 3-9a**. The geotechnical results for the 76 samples collected for grain size analysis indicate that the material sampled consisted of a mixture of silt, sand, and clay. The average composition was 40% silt, 36% sand, and 22% clay.

3.8.2 Area 2

From Area 2, a total of 35 sediment samples were analyzed for grain size and a total of 39 sediment samples were analyzed for TOC. The analytical results are presented on **Table 3-9b**. The geotechnical results for the 35 samples collected for grain size analysis indicate that the material sampled consisted of a mixture of sand, silt, and clay. The average composition was 54% sand, 28% silt, and 15% clay.

4. DATA COMPLETENESS

Data validation summaries were produced for each chemical group. Data generated through the U.S. EPA CLP had an initial performance assessment and compliance screening check that was performed and uploaded by the Sample Management Office to the Electronic Data Exchange and Evaluation System (EXES) website. These checks were to confirm conformance with the U.S. EPA CLP National Functional Guidelines (NFGs). After this assessment was completed, U.S. EPA Region 5 Environmental Services Assistance Team (ESAT) completed full manual data validation of approximately 5% of the data generated by the U.S. EPA CLP (TAL metals, PCB Aroclors, PAHs, TCL pesticides, and AVS/SEM analyses).

During the validation process, ESAT may have removed data qualifiers for the following reasons:

- The EXES Software often J or R flag analytical results for temperature more precisely than U.S. CLP NFG standards. Data flags may have been removed in some instances where temperature was not out of range, but the software indicated it was out of range.
- EXES generated flags may have been removed by a validator because EXES does not decipher between multiple columns/calibrations.
- U.S. CLP NFG does not qualify for matrix spikes; EXES qualifies for spikes based on R2 guidance. Validation was conducted following U.S. EPA CLP NFGs and some flags may have been removed by the validator.
- Relative percent difference (RPD) over 40 are noted by a validator and flagged with the dataset.

Data that was received from a subcontracted laboratory was run through the Automated Data Review checker. This was conducted for all parameters except grain size. WESTON completed a 5% full manual data validation for all of the analyses conducted by the WESTON-procured subcontractor laboratories (grain size, organotin, TOC, TPH DRO, and TPH ORO). The following are the general guidelines for the data validation:

- NFGs for Superfund Organics Method Data Review, U.S. EPA, June 2008
- NFGs for Superfund Inorganics Method Data Review, U.S. EPA, January 2010
- NFGs for Inorganic Data Review, U.S. EPA, January 2010
- NFGs for Chlorinated Dioxin/Furan Data Review, U.S. EPA September 2005

- Data not covered in the NFGs will be compared to the applicable analytical methods, the laboratory standard operating procedures, and guidelines described in WESTON's QAPP dated September 2010

The data validation consisted of completing the GLNPO Quality Assurance/Quality Control checklist and preparing a data narrative summary report for each chemical parameter, which included the following completeness and usability components:

- Summary of Data Review
- Minor problems
 - Holding times
 - Matrix Spike/Matrix Spike Duplicates
 - Surrogates, as applicable
 - Calibration
 - Laboratory Control Samples
 - Field Replicate Results
- Data Quality Indicator Review
 - Sensitivity
 - Precision
 - Accuracy
 - Completeness

Overall, the data is considered usable for project decisions. All of the data validation summaries have been previously submitted to GLNPO under separate cover along with all of the ESAT and WESTON Data Validation Summaries for inclusion into GLNPO's GLSED.

5. SUMMARY

During the sediment investigation activities, a total of 124 sediment samples (including duplicate samples) were collected from 42 sampling locations in the Howard's Bay project area. Where sediment recovery was adequate, samples were collected from the following sampling intervals: 0 to 6 inches, 0 to 12 inches, 12 to 36 inches, 36 to 60 inches, and 60 to 96 inches bss. All sediment samples were analyzed for the following COPCs: TAL metals, PAH 17 list, organotins, TCL pesticides, and TPH as DRO corresponding to an alkaline range of C₁₀ through C₂₈, and ORO corresponding to an alkaline range of C₂₈ through C₃₆. In addition, approximately 30% of all sediment samples collected were analyzed for AVS/SEM, PAH 34 list (in lieu of PAH 17 list

at surface sediment samples 0 to 6 inches), and PCBs as Aroclors. All sediment samples also were analyzed for physical properties, including TOC and grain size.

The sample results for PAHs, TAL metals, PCB Aroclors, TCL pesticides, and organotins were compared to the TEC, MEC, and PEC SQGs as set forth in the WDNR document "Consensus-Based Sediment Quality Guidelines; Recommendations for Use and Application." The TECs and PECs provide screening criteria to evaluate sediment chemistry data. TECs are defined as concentrations below which adverse effects are not expected to occur and PECs are defined as concentrations above which adverse effects are expected to occur more often than not. There is an incremental increase in toxicity as the contaminant concentrations increase between the TEC and PEC concentrations. The MEC is a concentration midway between the TEC and PEC concentrations (WDNR, 2003). The sample results for TOC, grain size, AVS/SEM, TPH DRO, and TPH ORO are tabulated but are not compared to any numerical screening criteria.

A summary of the SQG exceedances is provided below for Areas 1 and 2.

Area 1

Exceedances of TEC SQGs were identified for the following:

- Total PAH 17 concentrations exceeded TEC SQGs in 17 of 84 sediment samples and Total PAH 34 concentrations exceeded TEC SQGs in 16 of 26 sediment samples. At least one PAH (i.e., 1,2-benzphenanthracene, 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(e)pyrene, benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene) exceeded their respective TEC SQGs in 41 sediment samples.
- At least one metal (i.e., antimony, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver, and zinc) exceeded their respective TEC SQGs in 78 of 84 sediment samples.
- Total PCB concentrations exceeded TEC SQGs in 2 of 26 sediment samples.
- At least one pesticide (i.e., beta-BHC, 4,4'-DDD, 4,4'-DDT, endrin, and heptachlor epoxide) exceeded their respective TEC SQGs in 7 of 84 sediment samples.
- One organotin (tributyltin) exceeded TEC SQGs in 32 of 84 sediment samples.

Exceedances of MEC SQGs were identified for the following:

- Total PAH 17 concentrations exceeded MEC SQGs in 2 of 84 sediment samples and Total PAH 34 concentrations exceeded MEC SQGs in 1 of 26 sediment samples. At least one PAH (i.e., 1,2-benzphenanthracene, 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, dibenzo(a,h)anthracene, fluoranthene, fluorene, phenanthrene, and pyrene) exceeded their respective MEC SQGs in five sediment samples.
- At least one metal (i.e., antimony, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, and zinc) exceeded their respective MEC SQGs in 27 of 84 sediment samples.
- At least one pesticide (i.e., 4,4'-DDT and heptachlor epoxide) exceeded their respective MEC SQGs in 2 of 84 sediment samples.
- One organotin (tributyltin) exceeded MEC SQGs in 13 of 84 sediment samples.

Exceedances of PEC SQGs were identified for the following:

- Total PAH 34 concentrations exceeded PEC SQGs in 1 of 26 sediment sample. At least one PAH (i.e., 1,2-benzphenanthracene, acenaphthene, anthracene, benzo(a)anthracene, dibenzo(a,h)anthracene, fluoranthene, fluorene, phenanthrene, and pyrene) exceeded their respective PEC SQGs in two sediment samples.
- At least one metal (i.e., antimony, chromium, copper, iron, lead, mercury, and zinc) exceeded their respective PEC SQGs in 14 of 84 sediment samples.
- At least one pesticide (i.e.; 4,4'-DDT and heptachlor epoxide) exceeded their respective PEC SQGs in 1 of 84 sediment samples. .
- One organotin (tributyltin) exceeded PEC SQGs in 8 of 84 sediment samples.

Area 2

Exceedances of TEC SQGs were identified for the following:

- Total PAH 17 concentrations exceeded TEC SQGs in 10 of 40 sediment samples and Total PAH 34 concentrations exceeded TEC SQGs in 4 of 9 sediment samples. At least one PAH (i.e., 1,2-benzphenanthracene, 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, dibenzo(a,h)anthracene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene) exceeded their respective TEC SQGs in 25 sediment samples.
- At least one metal (i.e., antimony, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, and zinc) exceeded their respective TEC SQGs in 34 of 40 sediment samples.
- At least one pesticide (i.e., aldrin and gamma-chlordane) exceeded their respective TEC SQGs in 1 of 40 sediment samples.
- One organotin (tributyltin) exceeded TEC SQGs in 8 of 40 sediment samples.

Exceedances of MEC SQGs were identified for the following:

- At least one PAH (i.e., acenaphthene, anthracene, benzo(a)anthracene, dibenzo(a,h)anthracene, fluoranthene, naphthalene, phenanthrene, and pyrene) exceeded their respective MEC SQGs in four sediment samples.
- At least one metal (i.e., iron, lead, manganese, mercury, nickel, and zinc) exceeded their respective MEC SQGs 24 of 40 sediment samples.
- One pesticide (gamma-chlordane) exceeded MEC SQGs in 1 of 40 sediment samples.
- One organotin (tributyltin) exceeded MEC SQGs in 1 of 40 sediment samples.

Exceedances of PEC SQGs were identified for the following:

- At least one PAH (i.e., acenaphthene, naphthalene, and phenanthrene) exceeded their respective PEC SQGs in two sediment samples.
- At least one metal (i.e., lead and manganese) exceeded their respective PEC SQGs in 12 of 40 sediment samples.
- One pesticide (gamma-chlordane) exceeded PEC SQGs in 1 of 40 sediment samples.

6. NEXT STEPS/DATA GAPS

The purpose of the Howard's Bay site characterization activities was to further define chemical contaminants in the sediment, locate contaminated areas for additional evaluation, and identify priority areas for remediation and habitat restoration. The objective of the site characterization activities was to collect samples for chemical and physical properties analysis needed to support project area characterization and potential remediation activities. The data gaps and recommendations for future work to meet the objectives of the GLLA project are as follows:

- Delineate hot spots of contamination and determine the nature and extent of PAH, TAL metal, PCB, TCL pesticide, and organotin contamination in the Howards Bay project area.
- Identify any on-going sources of contamination.
- Identify sources of potential upstream contamination.
- Estimate the bioavailability of contaminants of concern using Equilibrium Partitioning Sediment Benchmarks (ESB) and determine ESB Toxic Units.
- Evaluate metal toxicity through an indirect estimate of bioavailability based on concentrations of Simultaneously Extracted Metals.
- Where bio-accumulative chemicals are present in sediment, it may be necessary to

evaluate fish tissue and/or water column data in addition to sediment data in order to determine appropriate sediment management options.

- Estimate the volume of contaminated sediments.
- Develop site-specific risk-based cleanup objectives for PAH, TAL metal, TCL pesticide, and organotin that exceeded their respective PEC SQGs.

7. REFERENCES

SLRCAC. *The St. Louis River System RAP Stage One*. April 1992.

U.S. EPA. *Methods for Collection, Storage and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual*. EPA-823-B-01-002. October 2001.

WDNR. *Consensus-Based Sediment Quality Guidelines; Recommendations for Use and Application: Interim Guidance*. WT-732 2003. December 2003.

TABLES

Table 2-1
Sample Location Coordinates
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Location ID	Latitude (D.d)	Longitude (D.d)
Area 1		
HB10-1-01	-92.09925185	46.74350580
HB10-1-02	-92.09969713	46.74264458
HB10-1-03	-92.09854912	46.74287782
HB10-1-04	-92.09750000	46.74291667
HB10-1-05	-92.09895418	46.74208100
HB10-1-06	-92.09797400	46.74222600
HB10-1-07	-92.09696720	46.74237277
HB10-1-08	-92.09583333	46.74245000
HB10-1-09	-92.09930000	46.74136700
HB10-1-10	-92.09728010	46.74148902
HB10-1-11	-92.09621292	46.74182502
HB10-1-12	-92.09520000	46.74186667
HB10-1-13	-92.09661562	46.74098317
HB10-1-14	-92.09559431	46.74117317
HB10-1-15	-92.09453333	46.74130000
HB10-1-16	-92.09905167	46.74075000
HB10-1-17	-92.09599289	46.74049057
HB10-1-19	-92.09930000	46.74070000
HB10-1-20	-92.09946667	46.73945000
HB10-1-21	-92.09636971	46.73981330
HB10-1-22	-92.09430000	46.73995000
HB10-1-23	-92.09320000	46.74011667
HB10-1-24	-92.09635073	46.73914213
HB10-1-25	-92.09452860	46.73933310
HB10-1-27	-92.09247280	46.73949213
HB10-1-28	-92.09918333	46.73820000
HB10-1-29	-92.09616667	46.73801667
HB10-1-30	-92.09406632	46.73875902
HB10-1-31	-92.09315925	46.73897465

Location ID	Latitude (D.d)	Longitude (D.d)
Area 2		
HB10-2-18	-92.08726283	46.73555410
HB10-2-26	-92.08408527	46.73410409
HB10-2-32	-92.09174208	46.73894317
HB10-2-33	-92.09024610	46.73908798
HB10-2-34	-92.09085018	46.73811295
HB10-2-35	-92.08935560	46.73829355
HB10-2-36	-92.08988295	46.73733570
HB10-2-37	-92.08845225	46.73738936
HB10-2-38	-92.08856818	46.73621638
HB10-2-39	-92.08753386	46.73670649
HB10-2-40	-92.08650308	46.73589400
HB10-2-41	-92.08576448	46.73510519
HB10-2-42	-92.08482537	46.73432143
HB10-2-43	-92.08370007	46.73372529
HB10-2-44	-92.08604608	46.73513842
HB10-2-45	-92.08523020	46.73429475

Notes:

D.d - Decimal Degrees

ID - Identification

Table 2-2
Summary of Analyses
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Location ID	Field Sample ID	Depth (inches bss)	Sample Date	PAH (17 List)	PAH (34 List)	TAL Metal	PCB Aroclor	TCL Pesticide	TPH DRO/ ORO	Organotins	Grain Size	TOC	AVS/ SEM
Area 1													
HB10-1-01	HB10-1-01-06	0 - 6	10/16/10	X		X		X	X	X	X	X	
	HB10-1-01-12	0 - 12	10/16/10	X		X		X	X	X	X	X	
	HB10-1-01-40	36 - 40	10/16/10	X		X		X	X	X	X	X	
HB10-1-02	HB10-1-02-06	0 - 6	10/16/10	X		X		X	X	X	X	X	
	HB10-1-02-06DP	0 - 6	10/16/10	X		X		X	X	X		X	
	HB10-1-02-23	12 - 23	10/16/10	X		X		X	X	X	X	X	
HB10-1-03	HB10-1-03-06	0 - 6	10/16/10	X		X		X	X	X	X	X	
	HB10-1-03-12	0 - 12	10/16/10	X		X		X	X	X	X	X	
	HB10-1-03-36	12 - 36	10/16/10	X		X		X	X	X	X	X	
	HB10-1-03-60	36 - 60	10/16/10	X		X		X	X	X	X	X	
HB10-1-04	HB10-1-03-84	60 - 84	10/16/10	X		X		X	X	X	X	X	
	HB10-1-04-06	0 - 6	10/17/10		X	X	X	X	X	X	X	X	X
	HB10-1-04-12	0 - 12	10/17/10	X		X		X	X	X	X	X	
	HB10-1-04-36	12 - 36	10/17/10	X		X		X	X	X	X	X	
HB10-1-05	HB10-1-04-50	36 - 50	10/17/10	X		X		X	X	X	X	X	
	HB10-1-05-06	0 - 6	10/16/10		X	X	X	X	X	X	X	X	X
	HB10-1-05-06DP	0 - 6	10/16/10		X	X	X	X	X	X		X	X
HB10-1-06	HB10-1-06-06	0 - 6	10/16/10	X		X		X	X	X	X	X	
	HB10-1-06-06DP	0 - 6	10/16/10	X		X		X	X	X		X	
	HB10-1-06-12	0 - 12	10/16/10	X		X		X	X	X	X	X	
	HB10-1-06-36	12 - 36	10/16/10	X		X		X	X	X	X	X	
	HB10-1-06-51	36 - 51	10/16/10	X		X		X	X	X	X	X	
HB10-1-07	HB10-1-07-06	0 - 6	10/17/10		X	X	X	X	X	X	X	X	X
	HB10-1-07-12	0 - 12	10/17/10	X		X		X	X	X	X	X	
	HB10-1-07-36	12 - 36	10/17/10	X		X		X	X	X	X	X	
	HB10-1-07-64	60 - 64	10/17/10	X		X		X	X	X	X	X	
HB10-1-08	HB10-1-08-06	0 - 6	10/17/10		X	X	X	X	X	X	X	X	X
	HB10-1-08-12	0 - 12	10/17/10	X		X		X	X	X	X	X	
	HB10-1-08-36	12 - 36	10/17/10	X		X		X	X	X	X	X	
HB10-1-10	HB10-1-10-06	0 - 6	10/18/10		X	X	X	X	X	X	X	X	X
HB10-1-11	HB10-1-11-06	0 - 6	10/16/10		X	X	X	X	X	X	X	X	X
	HB10-1-11-21	12 - 21	10/16/10	X		X		X	X	X	X	X	
HB10-1-12	HB10-1-12-06	0 - 6	10/17/10		X	X	X	X	X	X	X	X	X
	HB10-1-12-12	0 - 12	10/17/10	X		X		X	X	X	X	X	
	HB10-1-12-34	12 - 34	10/17/10	X		X		X	X	X	X	X	
HB10-1-13	HB10-1-13-06	0 - 6	10/18/10		X	X	X	X	X	X	X	X	X
	HB10-1-13-12	0 - 12	10/18/10	X		X		X	X	X	X	X	
	HB10-1-13-36	12 - 36	10/18/10	X		X		X	X	X	X	X	
	HB10-1-13-67	60 - 67	10/18/10	X		X		X	X	X	X	X	
HB10-1-14	HB10-1-14-06	0 - 6	10/17/10		X	X	X	X	X	X	X	X	X
	HB10-1-14-12	0 - 12	10/17/10	X		X		X	X	X	X	X	
	HB10-1-14-36	12 - 36	10/17/10	X		X		X	X	X	X	X	
	HB10-1-14-66	60 - 66	10/17/10	X		X		X	X	X	X	X	
HB10-1-15	HB10-1-15-06	0 - 6	10/18/10		X	X	X	X	X	X	X	X	X
	HB10-1-15-16	12 - 16	10/18/10	X		X		X	X	X	X	X	
HB10-1-16	HB10-1-16-06	0 - 6	10/17/10		X	X	X	X	X	X	X	X	X
	HB10-1-16-12	0 - 12	10/17/10		X	X	X	X	X	X	X	X	X
	HB10-1-16-31	12 - 31	10/17/10		X	X	X	X	X	X	X	X	X
HB10-1-17	HB10-1-17-06	0 - 6	10/17/10		X	X	X	X	X	X	X	X	X
HB10-1-20	HB10-1-20-06	0 - 6	10/17/10		X	X	X	X	X	X	X	X	X
HB10-1-21	HB10-1-21-06	0 - 6	10/18/10		X	X	X	X	X	X	X	X	X
	HB10-1-21-23	12 - 23	10/18/10		X	X	X	X	X	X	X	X	X
HB10-1-23	HB10-1-23-06	0 - 6	10/17/10	X		X		X	X	X	X	X	
	HB10-1-23-06DP	0 - 6	10/17/10	X		X		X	X	X		X	
	HB10-1-23-12	0 - 12	10/17/10	X		X		X	X	X	X	X	
	HB10-1-23-36	12 - 36	10/17/10	X		X		X	X	X	X	X	

Table 2-2
Summary of Analyses
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Location ID	Field Sample ID	Depth (inches bss)	Sample Date	PAH (17 List)	PAH (34 List)	TAL Metal	PCB Aroclor	TCL Pesticide	TPH DRO/ ORO	Organotins	Grain Size	TOC	AVS/ SEM
HB10-1-24	HB10-1-24-06	0 - 6	10/18/10		X	X	X	X	X	X	X	X	X
	HB10-1-24-12	0 - 12	10/18/10		X	X	X	X	X	X	X	X	X
	HB10-1-24-36	12 - 36	10/18/10		X	X	X	X	X	X	X	X	X
HB10-1-25	HB10-1-25-06	0 - 6	10/17/10	X		X		X	X	X	X	X	
	HB10-1-25-06DP	0 - 6	10/17/10	X		X		X	X	X		X	
HB10-1-27	HB10-1-27-06	0 - 6	10/18/10	X		X		X	X	X	X	X	
	HB10-1-27-06DP	0 - 6	10/18/10	X		X		X	X	X		X	
HB10-1-28	HB10-1-28-06	0 - 6	10/17/10	X		X		X	X	X	X	X	
	HB10-1-28-12	0 - 12	10/17/10	X		X		X	X	X	X	X	
	HB10-1-28-36	12 - 36	10/17/10	X		X		X	X	X	X	X	
	HB10-1-28-60	36 - 60	10/17/10	X		X		X	X	X	X	X	
	HB10-1-28-84	60 - 84	10/17/10	X		X		X	X	X	X	X	
	HB10-1-28-96	60 - 96	10/17/10	X		X		X	X	X	X	X	
HB10-1-29	HB10-1-29-06	0 - 6	10/17/10		X	X	X	X	X	X	X	X	X
	HB10-1-29-12	0 - 12	10/17/10		X	X	X	X	X	X	X	X	X
	HB10-1-29-36	12 - 36	10/17/10		X	X	X	X	X	X	X	X	X
	HB10-1-29-60	36 - 60	10/17/10		X	X	X	X	X	X	X	X	X
	HB10-1-29-93	60 - 93	10/17/10		X	X	X	X	X	X	X	X	X
HB10-1-30	HB10-1-30-06	0 - 6	10/18/10	X		X		X	X	X	X	X	
	HB10-1-30-06DP	0 - 6	10/18/10	X		X		X	X	X		X	
	HB10-1-30-12	0 - 12	10/18/10	X		X		X	X	X	X	X	
	HB10-1-30-36	12 - 36	10/18/10	X		X		X	X	X	X	X	
	HB10-1-30-60	36 - 60	10/18/10	X		X		X	X	X	X	X	
	HB10-1-30-77	60 - 77	10/18/10	X		X		X	X	X	X	X	
HB10-1-31	HB10-1-31-06	0 - 6	10/18/10	X		X		X	X	X	X	X	
	HB10-1-31-06DP	0 - 6	10/18/10	X		X		X	X	X		X	
	HB10-1-31-12	0 - 12	10/18/10	X		X		X	X	X	X	X	
	HB10-1-31-36	12 - 36	10/18/10	X		X		X	X	X	X	X	
Total number of samples analyzed for Area 1:				58	26	84	26	84	84	84	76	84	26
Area 2													
HB10-2-18	HB10-2-18-06	0 - 6	10/18/10	X		X		X	X	X	X	X	
	HB10-2-18-06DP	0 - 6	10/18/10	X		X		X	X	X		X	
HB10-2-26	HB10-2-26-06	0 - 6	10/16/10		X	X	X	X	X	X	X	X	X
	HB10-2-26-17	12 - 17	10/16/10	X		X		X	X	X	X	X	
HB10-2-32	HB10-2-32-06	0 - 6	10/18/10	X		X		X	X	X	X	X	
	HB10-2-32-06DP	0 - 6	10/18/10	X		X		X	X	X		X	
HB10-2-33	HB10-2-33-06	0 - 6	10/18/10		X	X	X	X	X	X	X	X	X
	HB10-2-33-22	12 - 22	10/18/10	X		X		X	X	X	X	X	
HB10-2-34	HB10-2-34-06	0 - 6	10/18/10	X		X		X	X	X	X	X	
	HB10-2-34-06DP	0 - 6	10/18/10	X		X		X	X	X		X	
HB10-2-35	HB10-2-35-06	0 - 6	10/18/10		X	X	X	X	X	X	X	X	X
	HB10-2-35-12	0 - 12	10/18/10	X		X		X	X	X	X	X	
	HB10-2-35-30	12 - 30	10/18/10	X		X		X	X	X	X	X	
HB10-2-36	HB10-2-36-06	0 - 6	10/18/10	X		X		X	X	X	X	X	
	HB10-2-36-06DP	0 - 6	10/18/10	X		X		X	X	X		X	
HB10-2-37	HB10-2-37-06	0 - 6	10/18/10		X	X	X	X	X	X	X	X	X
	HB10-2-37-23	12 - 23	10/18/10	X		X		X	X	X	X	X	
HB10-2-38	HB10-2-38-06	0 - 6	10/18/10	X		X		X	X	X	X	X	
	HB10-2-38-06DP	0 - 6	10/18/10	X		X		X	X	X			
	HB10-2-38-12	0 - 12	10/18/10	X		X		X	X	X	X	X	
	HB10-2-38-38	36 - 38	10/18/10	X		X		X	X	X	X	X	
HB10-2-39	HB10-2-39-06	0 - 6	10/18/10		X	X	X	X	X	X	X	X	X
	HB10-2-39-12	0 - 12	10/18/10	X		X		X	X	X	X	X	
	HB10-2-39-28	12 - 28	10/18/10	X		X		X	X	X	X	X	

Table 2-2
Summary of Analyses
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Location ID	Field Sample ID	Depth (inches bss)	Sample Date	PAH (17 List)	PAH (34 List)	TAL Metal	PCB Aroclor	TCL Pesticide	TPH DRO/ ORO	Organotins	Grain Size	TOC	AVS/ SEM
HB10-2-40	HB10-2-40-06	0 - 6	10/18/10		X	X	X	X	X	X	X	X	X
	HB10-2-40-12	0 - 12	10/18/10	X		X		X	X	X	X	X	
	HB10-2-40-36	12 - 36	10/18/10	X		X		X	X	X	X	X	
	HB10-2-40-48	36 - 48	10/18/10	X		X		X	X	X	X	X	
HB10-2-41	HB10-2-41-06	0 - 6	10/18/10		X	X	X	X	X	X	X	X	X
	HB10-2-41-12	0 - 12	10/18/10	X		X		X	X	X	X	X	
	HB10-2-41-31	12 - 31	10/18/10	X		X		X	X	X	X	X	
HB10-2-42	HB10-2-42-06	0 - 6	10/18/10		X	X	X	X	X	X	X	X	X
	HB10-2-42-12	0 - 12	10/18/10	X		X		X	X	X	X	X	
	HB10-2-42-30	12 - 30	10/18/10	X		X		X	X	X	X	X	
HB10-2-43	HB10-2-43-06	0 - 6	10/17/10		X	X	X	X	X	X	X	X	X
	HB10-2-43-22	12 - 22	10/17/10	X		X		X	X	X	X	X	
HB10-2-44	HB10-2-44-06	0 - 6	10/18/10	X		X		X	X	X	X	X	
	HB10-2-44-16	12 - 16	10/18/10	X		X		X	X	X	X	X	
HB10-2-45	HB10-2-45-06	0 - 6	10/18/10	X		X		X	X	X	X	X	
	HB10-2-45-19	12 - 19	10/18/10	X		X		X	X	X	X	X	
Total number of samples analyzed for Area 2:				31	9	40	9	40	40	40	35	39	9
Total number of samples analyzed for Howard's Bay:				89	35	124	35	124	124	124	111	123	35

Notes:

AVS/SEM - Acid Volatile Sulfide/Simultaneously Extracted Metal

bss - below sediment surface

DP - Duplicate

DRO - Diesel Range Organic

ID - Identification

ORO - Oil Range Organic

PAH - Polycyclic Aromatic Hydrocarbon

PCB - Polychlorinated Biphenyls

TAL - Target Analyte List

TCL - Target Compound List

TOC - Total Organic Carbon

TPH - Total Petroleum Hydrocarbon

Table 3-1a
Summary of Howard's Bay Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
PAHs (17 and 34 list) (µg/kg)														
<i>2-METHYLNAPHTHALENE, OCN</i>	0-12	22	20	2	9.1	5.0	28.8	12.5	20.2	9	111	--	201	--
	0-6	55	46	9	16.4	1.8	193.0	17.5	20.2	11	111	4	201	--
	12-36	30	27	3	10.0	1.0	38.3	12.8	20.2	13	111	--	201	--
	36-60	9	7	2	22.2	3.5	39.7	12.8	20.2	11	111	--	201	--
<i>ACENAPHTHENE, OCN</i>	0-12	22	19	3	13.6	2.0	62.5	10.9	6.7	41	48	5	89	--
	0-6	55	48	7	12.7	1.3	355.3	20.2	6.7	40	48	11	89	4
	12-36	30	26	4	13.3	2.5	51.5	10.8	6.7	50	48	3	89	--
	36-60	9	7	2	22.2	2.2	37.2	11.9	6.7	33	48	--	89	--
<i>ACENAPHTHYLENE, OCN</i>	0-12	22	19	3	13.6	2.5	21.2	6.5	5.9	27	67	--	128	--
	0-6	55	47	8	14.5	1.2	105.0	8.8	5.9	35	67	2	128	--
	12-36	29	27	2	6.9	0.6	18.5	5.8	5.9	38	67	--	128	--
	36-60	9	7	2	22.2	2.4	9.7	5.2	5.9	33	67	--	128	--
<i>ANTHRACENE, OCN</i>	0-12	22	20	2	9.1	7.0	153.8	34.5	57.2	9	451	--	845	--
	0-6	55	53	2	3.6	2.5	921.1	66.4	57.2	11	451	4	845	2
	12-36	30	28	2	6.7	2.1	121.2	30.9	57.2	10	451	--	845	--
	36-60	9	6	3	33.3	8.9	106.7	30.6	57.2	11	451	--	845	--
<i>BENZO(A)ANTHRACENE, OCN</i>	0-12	22	21	1	4.5	32.8	292.8	103.7	108	27	579	--	1050	--
	0-6	55	54	1	1.8	5.8	1228.1	132.1	108	22	579	7	1050	4
	12-36	30	29	1	3.3	6.0	303.0	85.1	108	20	579	--	1050	--
	36-60	9	7	2	22.2	32.3	397.0	112.1	108	22	579	--	1050	--
<i>BENZO(A)PYRENE, OCN</i>	0-12	22	21	1	4.5	38.2	261.9	108.6	150	18	800	--	1450	--
	0-6	54	54	0	0.0	5.8	1105.0	130.5	150	17	800	4	1450	--
	12-36	30	29	1	3.3	6.0	303.0	90.6	150	17	800	--	1450	--
	36-60	9	7	2	22.2	28.0	297.8	98.9	150	22	800	--	1450	--
<i>BENZO(B)FLUORANTHENE, OCN</i>	0-12	22	21	1	4.5	40.2	292.8	114.9	240	5	6820	--	13400	--
	0-6	54	53	1	1.9	7.6	1602.2	145.6	240	7	6820	--	13400	--
	12-36	30	29	1	3.3	10.5	327.3	104.0	240	3	6820	--	13400	--
	36-60	9	7	2	22.2	32.3	347.4	114.0	240	11	6820	--	13400	--
<i>BENZO(G,H,I)PERYLENE, OCN</i>	0-12	22	21	1	4.5	11.0	227.0	108.0	240	--	6820	--	13400	--
	0-6	55	53	2	3.6	3.8	939.2	78.8	170	5	1685	--	3200	--
	12-36	30	29	1	3.3	11.6	185.2	63.6	170	3	1685	--	3200	--
	36-60	9	6	3	33.3	8.0	186.1	57.2	170	11	1685	--	3200	--
<i>BENZO(K)FLUORANTHENE, OCN</i>	0-12	22	21	1	4.5	25.6	162.2	73.3	170	--	1685	--	3200	--
	0-6	55	53	2	3.6	3.8	939.2	78.8	170	5	1685	--	3200	--
	12-36	30	29	1	3.3	11.6	185.2	63.6	170	3	1685	--	3200	--
	36-60	9	6	3	33.3	8.0	186.1	57.2	170	11	1685	--	3200	--
<i>1,2-BENZPHENANTHRACENE, OCN²</i>	0-12	22	21	1	4.5	16.2	148.8	62.3	240	--	6820	--	13400	--
	0-6	55	53	2	3.6	3.3	607.7	71.1	240	5	6820	--	13400	--
	12-36	30	29	1	3.3	2.8	163.6	59.0	240	--	6820	--	13400	--
	36-60	9	6	3	33.3	9.7	163.8	51.2	240	--	6820	--	13400	--
<i>DIBENZ(A,H)ANTHRACENE, OCN</i>	0-12	22	20	2	9.1	5.4	72.1	19.0	33	14	84	--	135	--
	0-6	55	52	3	5.5	1.9	143.6	20.5	33	11	84	5	135	2
	12-36	30	28	2	6.7	2.2	43.2	16.4	33	10	84	--	135	--
	36-60	9	6	3	33.3	3.0	57.1	18.1	33	11	84	--	135	--
<i>FLUORANTHENE, OCN</i>	0-12	22	21	1	4.5	2.3	44.6	16.0	33	12	84	--	135	--
	0-6	54	54	0	0.0	15.7	3201.8	316.8	423	9	1327	--	2230	--
	12-36	30	29	1	3.3	16.7	848.5	201.9	423	3	1327	--	2230	--
	36-60	9	7	2	22.2	70.1	744.4	239.6	423	22	1327	--	2230	--
<i>FLUORENE, OCN</i>	0-12	22	20	2	9.1	3.5	79.8	14.9	77.4	5	307	--	536	--
	0-6	55	49	6	10.9	1.9	614.0	27.8	77.4	5	307	2	536	2
	12-36	30	26	4	13.3	0.9	36.0	13.2	77.4	--	307	--	536	--
	36-60	9	7	2	22.2	4.1	47.1	16.3	77.4	--	307	--	536	--
<i>INDENO(1,2,3-CD)PYRENE, OCN</i>	0-12	22	21	1	4.5	20.1	148.8	64.4	200	--	1700	--	3200	--
	0-6	55	52	3	5.5	3.5	828.7	74.4	200	5	1700	--	3200	--
	12-36	30	29	1	3.3	4.3	151.5	55.5	200	--	1700	--	3200	--
	36-60	9	7	2	22.2	11.0	173.7	57.6	200	--	1700	--	3200	--
	0-6	8	7	1	12.5	7.1	133.9	59.3	200	--	1700	--	3200	--

Table 3-1a
Summary of Howard's Bay Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
NAPHTHALENE, OCN	0-12	22	20	2	9.1	4.0	55.8	14.6	176	--	369	--	561	--
	0-6	55	49	6	10.9	1.9	1044.0	41.5	176	5	369	2	561	2
	12-36	29	27	2	6.9	1.1	34.5	11.7	176	--	369	--	561	--
	36-60	9	7	2	22.2	4.6	34.7	17.2	176	--	369	--	561	--
	60-96	8	7	1	12.5	1.1	24.8	14.2	176	--	369	--	561	--
PHENANTHRENE, OCN	0-12	22	21	1	4.5	21.3	528.8	122.3	204	14	687	--	1170	--
	0-6	54	54	0	0.0	6.4	3640.4	211.5	204	13	687	7	1170	4
	12-36	30	29	1	3.3	9.3	593.9	116.5	204	10	687	--	1170	--
	36-60	9	7	2	22.2	30.6	620.3	167.9	204	22	687	--	1170	--
	60-96	8	8	0	0.0	5.3	461.0	140.6	204	25	687	--	1170	--
PYRENE, OCN	0-12	22	21	1	4.5	57.4	585.6	210.2	195	41	858	--	1520	--
	0-6	54	54	0	0.0	12.2	2193.0	251.1	195	24	858	7	1520	4
	12-36	30	29	1	3.3	14.8	666.7	181.5	195	37	858	--	1520	--
	36-60	9	7	2	22.2	57.3	719.6	222.4	195	33	858	--	1520	--
	60-96	8	8	0	0.0	8.8	510.6	186.2	195	38	858	--	1520	--
TOTAL PAHs 17, OCN	0-12	22	22	0	0.0	11.4	3419.8	1263.2	1610	23	12205	--	22800	--
	0-6	55	55	0	0.0	78.6	17203.9	1732.8	1610	20	12205	4	22800	--
	12-36	30	30	0	0.0	42.5	4153.9	1114.1	1610	23	12205	--	22800	--
	36-60	9	9	0	0.0	23.4	4404.2	1057.9	1610	22	12205	--	22800	--
	60-96	8	8	0	0.0	53.1	3029.8	1180.1	1610	25	12205	--	22800	--
BENZO(E)PYRENE, OCN	0-12	3	3	0	0.0	59.2	85.4	71.7	150	--	800	--	1450	--
	0-6	25	23	2	8.0	4.5	482.5	85.6	150	12	800	--	1450	--
	12-36	4	4	0	0.0	27.0	169.7	100.1	150	25	800	--	1450	--
	36-60	1	1	0	0.0	93.3	93.3	93.3	150	--	800	--	1450	--
	60-96	1	1	0	0.0	120.6	120.6	120.6	150	--	800	--	1450	--
C1-CHRYSENEs, OCN	0-12	3	3	0	0.0	57.5	168.5	97.1	NL	--	NL	--	NL	--
	0-6	26	26	0	0.0	4.5	570.2	89.2	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	54.0	139.4	97.4	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	93.3	93.3	93.3	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	113.5	113.5	113.5	NL	--	NL	--	NL	--
C1-FLUORANTHENEs/ PYRENEs, OCN	0-12	3	3	0	0.0	118.5	359.6	199.9	NL	--	NL	--	NL	--
	0-6	26	26	0	0.0	10.5	1491.2	208.3	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	104.3	272.7	192.8	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	173.3	173.3	173.3	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	241.1	241.1	241.1	NL	--	NL	--	NL	--
C1-FLUORENEs, OCN	0-12	3	3	0	0.0	7.2	29.2	15.9	NL	--	NL	--	NL	--
	0-6	26	24	2	7.7	1.1	153.5	17.7	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	7.2	33.3	17.8	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	18.0	18.0	18.0	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	22.0	22.0	22.0	NL	--	NL	--	NL	--
C1-NAPHTHALENEs, OCN	0-12	3	3	0	0.0	7.8	31.5	17.9	NL	--	NL	--	NL	--
	0-6	26	23	3	11.5	1.9	201.8	20.1	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	6.5	33.9	17.9	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	13.3	13.3	13.3	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	22.0	22.0	22.0	NL	--	NL	--	NL	--
C1-PHENANTHRENEs/ ANTHRACENEs, OCN	0-12	3	3	0	0.0	64.6	247.2	135.8	NL	--	NL	--	NL	--
	0-6	26	26	0	0.0	4.5	1228.1	140.6	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	56.4	224.2	126.4	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	140.0	140.0	140.0	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	184.4	184.4	184.4	NL	--	NL	--	NL	--
C2-CHRYSENEs, OCN	0-12	3	3	0	0.0	34.8	105.6	61.2	NL	--	NL	--	NL	--
	0-6	26	26	0	0.0	3.8	197.4	47.8	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	41.9	111.1	64.0	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	40.7	40.7	40.7	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	47.5	47.5	47.5	NL	--	NL	--	NL	--
C2-FLUORENEs, OCN	0-12	3	3	0	0.0	25.1	47.2	34.0	NL	--	NL	--	NL	--
	0-6	26	25	1	3.8	2.3	83.3	19.1	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	17.2	54.5	37.7	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	28.0	28.0	28.0	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	24.1	24.1	24.1	NL	--	NL	--	NL	--
C2-NAPHTHALENEs, OCN	0-12	3	3	0	0.0	25.2	49.4	33.9	NL	--	NL	--	NL	--
	0-6	26	25	1	3.8	3.2	193.0	26.9	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	13.5	72.7	38.4	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	42.0	42.0	42.0	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	51.1	51.1	51.1	NL	--	NL	--	NL	--
C2-PHENANTHRENEs/ ANTHRACENEs, OCN	0-12	3	3	0	0.0	87.0	247.2	145.5	NL	--	NL	--	NL	--
	0-6	26	26	0	0.0	4.9	438.6	85.5	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	83.4	170.4	137.7	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	106.7	106.7	106.7	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	113.5	113.5	113.5	NL	--	NL	--	NL	--

Table 3-1a
Summary of Howard's Bay Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
C3-CHRYSENES, OCN	0-12	3	3	0	0.0	24.3	89.9	51.8	NL	--	NL	--	NL	--
	0-6	26	24	2	7.7	4.5	162.3	47.4	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	38.5	96.3	56.7	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	37.3	37.3	37.3	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	41.1	41.1	41.1	NL	--	NL	--	NL	--
C3-FLUORENES, OCN	0-12	3	3	0	0.0	47.8	87.6	61.3	NL	--	NL	--	NL	--
	0-6	26	20	6	23.1	3.6	59.6	25.2	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	34.4	96.3	71.7	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	50.7	50.7	50.7	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	47.5	47.5	47.5	NL	--	NL	--	NL	--
C3-NAPHTHALENES, OCN	0-12	3	3	0	0.0	39.5	53.9	45.9	NL	--	NL	--	NL	--
	0-6	26	25	1	3.8	3.6	118.4	24.7	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	16.0	121.2	64.5	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	73.3	73.3	73.3	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	62.4	62.4	62.4	NL	--	NL	--	NL	--
C3-PHENANTHRENES/ ANTHRACENES, OCN	0-12	3	3	0	0.0	67.0	200.0	124.3	NL	--	NL	--	NL	--
	0-6	26	26	0	0.0	6.6	175.4	56.1	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	88.3	200.0	120.8	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	80.0	80.0	80.0	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	69.5	69.5	69.5	NL	--	NL	--	NL	--
C4-CHRYSENES, OCN	0-12	3	3	0	0.0	15.7	47.2	27.5	NL	--	NL	--	NL	--
	0-6	26	20	6	23.1	2.6	70.2	22.2	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	18.4	60.0	30.9	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	18.0	18.0	18.0	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	16.3	16.3	16.3	NL	--	NL	--	NL	--
C4-NAPHTHALENES, OCN	0-12	3	3	0	0.0	44.9	52.1	47.7	NL	--	NL	--	NL	--
	0-6	26	24	2	7.7	2.3	52.6	17.8	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	17.2	103.0	64.4	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	56.0	56.0	56.0	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	40.4	40.4	40.4	NL	--	NL	--	NL	--
C4-PHENANTHRENES/ ANTHRACENES, OCN	0-12	3	3	0	0.0	35.7	182.0	91.7	NL	--	NL	--	NL	--
	0-6	26	26	0	0.0	4.0	101.0	36.5	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	48.5	111.1	73.3	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	48.7	48.7	48.7	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	52.5	52.5	52.5	NL	--	NL	--	NL	--
PERYLENE, OCN	0-12	3	2	1	33.3	23.3	26.1	24.7	NL	--	NL	--	NL	--
	0-6	26	23	3	11.5	2.6	210.5	43.8	NL	--	NL	--	NL	--
	12-36	4	2	2	50.0	24.5	74.1	49.3	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	36.7	36.7	36.7	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	46.8	46.8	46.8	NL	--	NL	--	NL	--
TOTAL PAHs 34, OCN	0-12	3	3	0	0.0	1968.2	4170.8	2822.6	1610	100	12205	--	22800	--
	0-6	26	26	0	0.0	162.9	22896.9	3209.6	1610	46	12205	4	22800	4
	12-36	4	4	0	0.0	1261.5	5937.6	3311.2	1610	75	12205	--	22800	--
	36-60	1	1	0	0.0	3221.3	3221.3	3221.3	1610	100	12205	--	22800	--
	60-96	1	1	0	0.0	4327.7	4327.7	4327.7	1610	100	12205	--	22800	--
1-METHYLNAPHTHALENE, OCN	0-12	3	1	2	66.7	9.2	9.2	9.2	NL	--	NL	--	NL	--
	0-6	26	22	4	15.4	1.3	153.5	14.8	NL	--	NL	--	NL	--
	12-36	3	3	0	0.0	4.4	25.5	12.9	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	10.7	10.7	10.7	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	17.0	17.0	17.0	NL	--	NL	--	NL	--
C2-FLUORANTHENES/PYRENES, OCN	0-12	3	3	0	0.0	66.1	191.0	115.0	NL	--	NL	--	NL	--
	0-6	26	26	0	0.0	7.0	570.2	94.2	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	69.9	185.2	123.6	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	93.3	93.3	93.3	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	113.5	113.5	113.5	NL	--	NL	--	NL	--
C3-FLUORANTHENES/PYRENES, OCN	0-12	3	3	0	0.0	39.1	125.8	75.3	NL	--	NL	--	NL	--
	0-6	26	26	0	0.0	4.9	241.2	53.1	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	57.7	133.3	83.1	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	50.7	50.7	50.7	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	52.5	52.5	52.5	NL	--	NL	--	NL	--
TAL Metals (mg/kg)														
ALUMINUM	0-12	22	22	0	0.0	6320.0	19400.0	11810.0	NL	--	NL	--	NL	--
	0-6	55	55	0	0.0	2710.0	19100.0	11243.3	NL	--	NL	--	NL	--
	12-36	30	30	0	0.0	3610.0	26500.0	12212.0	NL	--	NL	--	NL	--
	36-60	9	9	0	0.0	6270.0	18800.0	12441.1	NL	--	NL	--	NL	--
	60-96	8	8	0	0.0	4700.0	17300.0	11937.5	NL	--	NL	--	NL	--
ANTIMONY	0-12	22	22	0	0.0	0.8	4.1	1.6	2	18	13.5	--	25	--
	0-6	55	55	0	0.0	0.4	3.2	1.4	2	7	13.5	--	25	--
	12-36	30	29	1	3.3	0.7	38.5	2.8	2	17	13.5	3	25	3
	36-60	9	9	0	0.0	0.7	5.3	1.8	2	22	13.5	--	25	--
	60-96	8	7	1	12.5	0.4	2.3	1.5	2	12	13.5	--	25	--

Table 3-1a
Summary of Howard's Bay Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
ARSENIC	0-12	22	22	0	0.0	2.7	9.9	5.3	9.8	5	21.4	--	33	--
	0-6	55	55	0	0.0	1.8	8.8	5.2	9.8	--	21.4	--	33	--
	12-36	30	30	0	0.0	2.3	12.4	5.3	9.8	3	21.4	--	33	--
	36-60	9	9	0	0.0	2.3	8.6	4.5	9.8	--	21.4	--	33	--
	60-96	8	8	0	0.0	2.1	7.3	4.8	9.8	--	21.4	--	33	--
BARIUM	0-12	22	22	0	0.0	45.6	245.0	103.4	NL	--	NL	--	NL	--
	0-6	55	55	0	0.0	16.2	285.0	107.4	NL	--	NL	--	NL	--
	12-36	30	30	0	0.0	27.1	335.0	110.9	NL	--	NL	--	NL	--
	36-60	9	9	0	0.0	43.8	303.0	122.1	NL	--	NL	--	NL	--
	60-96	8	8	0	0.0	28.8	280.0	119.6	NL	--	NL	--	NL	--
BERYLLIUM	0-12	22	21	1	4.5	0.4	1.1	0.7	NL	--	NL	--	NL	--
	0-6	55	49	6	10.9	0.2	1.0	0.6	NL	--	NL	--	NL	--
	12-36	30	29	1	3.3	0.3	1.4	0.7	NL	--	NL	--	NL	--
	36-60	9	9	0	0.0	0.3	1.0	0.7	NL	--	NL	--	NL	--
	60-96	8	7	1	12.5	0.6	0.9	0.7	NL	--	NL	--	NL	--
CADMIUM	0-12	22	5	17	77.3	0.7	2.3	1.2	0.99	14	3	--	5	--
	0-6	55	5	50	90.9	0.6	1.7	1.2	0.99	7	3	--	5	--
	12-36	30	9	21	70.0	0.5	3.7	1.2	0.99	7	3	3	5	--
	36-60	9	2	7	77.8	1.1	2.0	1.6	0.99	22	3	--	5	--
	60-96	8	2	6	75.0	0.9	2.7	1.8	0.99	12	3	--	5	--
CALCIUM	0-12	22	22	0	0.0	3980.0	24100.0	10278.2	NL	--	NL	--	NL	--
	0-6	55	55	0	0.0	1230.0	22900.0	10988.4	NL	--	NL	--	NL	--
	12-36	30	30	0	0.0	3560.0	20200.0	10992.3	NL	--	NL	--	NL	--
	36-60	9	9	0	0.0	3730.0	25400.0	12748.9	NL	--	NL	--	NL	--
	60-96	8	8	0	0.0	6260.0	15300.0	11407.5	NL	--	NL	--	NL	--
CHROMIUM	0-12	22	22	0	0.0	16.3	117.0	32.3	43	14	76.5	5	110	5
	0-6	55	55	0	0.0	6.8	85.0	28.5	43	9	76.5	2	110	--
	12-36	30	30	0	0.0	10.2	97.6	31.0	43	10	76.5	3	110	--
	36-60	9	9	0	0.0	16.0	41.2	27.2	43	--	76.5	--	110	--
	60-96	8	8	0	0.0	11.3	36.4	26.1	43	--	76.5	--	110	--
COBALT	0-12	22	20	2	9.1	5.7	13.6	9.6	NL	--	NL	--	NL	--
	0-6	55	48	7	12.7	3.2	14.0	9.3	NL	--	NL	--	NL	--
	12-36	30	28	2	6.7	5.3	17.1	9.6	NL	--	NL	--	NL	--
	36-60	9	7	2	22.2	6.4	13.4	10.1	NL	--	NL	--	NL	--
	60-96	8	6	2	25.0	5.3	11.8	9.3	NL	--	NL	--	NL	--
COPPER	0-12	22	22	0	0.0	16.4	178.0	50.1	32	73	91	9	150	5
	0-6	55	55	0	0.0	6.3	145.0	41.7	32	60	91	4	150	--
	12-36	30	30	0	0.0	9.9	321.0	52.6	32	73	91	7	150	3
	36-60	9	9	0	0.0	10.5	114.0	43.9	32	56	91	11	150	--
	60-96	8	8	0	0.0	8.0	179.0	54.3	32	88	91	12	150	12
IRON	0-12	22	22	0	0.0	13400.0	41400.0	23490.9	20000	68	30000	18	40000	5
	0-6	55	55	0	0.0	7460.0	38000.0	23985.6	20000	75	30000	24	40000	--
	12-36	30	30	0	0.0	9780.0	36500.0	23359.3	20000	70	30000	10	40000	--
	36-60	9	9	0	0.0	12700.0	35400.0	21366.7	20000	44	30000	22	40000	--
	60-96	8	8	0	0.0	10400.0	29800.0	20337.5	20000	62	30000	--	40000	--
LEAD	0-12	22	22	0	0.0	8.0	382.0	105.5	36	86	83	32	130	27
	0-6	55	55	0	0.0	14.0	1140.0	94.8	36	67	83	38	130	16
	12-36	30	30	0	0.0	4.6	481.0	94.9	36	80	83	43	130	17
	36-60	9	9	0	0.0	2.8	188.0	70.4	36	78	83	33	130	11
	60-96	8	8	0	0.0	2.9	308.0	84.6	36	62	83	38	130	12
MAGNESIUM	0-12	22	22	0	0.0	4270.0	12500.0	8274.5	NL	--	NL	--	NL	--
	0-6	55	55	0	0.0	1500.0	13200.0	7982.9	NL	--	NL	--	NL	--
	12-36	30	30	0	0.0	2150.0	16100.0	8375.7	NL	--	NL	--	NL	--
	36-60	9	9	0	0.0	3450.0	14900.0	9488.9	NL	--	NL	--	NL	--
	60-96	8	8	0	0.0	4050.0	11800.0	8162.5	NL	--	NL	--	NL	--
MANGANESE	0-12	22	22	0	0.0	191.0	891.0	426.1	460	41	780	5	1100	--
	0-6	55	55	0	0.0	79.5	1250.0	536.4	460	60	780	15	1100	4
	12-36	30	30	0	0.0	138.0	1040.0	425.5	460	37	780	3	1100	--
	36-60	9	9	0	0.0	188.0	521.0	358.9	460	44	780	--	1100	--
	60-96	8	8	0	0.0	175.0	437.0	337.6	460	--	780	--	1100	--
MERCURY	0-12	22	22	0	0.0	0.0	1.1	0.4	0.18	77	0.64	14	1.1	--
	0-6	55	55	0	0.0	0.0	0.9	0.2	0.18	58	0.64	7	1.1	--
	12-36	30	30	0	0.0	0.0	58.0	2.3	0.18	70	0.64	13	1.1	10
	36-60	9	9	0	0.0	0.0	1.8	0.5	0.18	78	0.64	22	1.1	11
	60-96	8	8	0	0.0	0.0	5.9	1.1	0.18	62	0.64	25	1.1	25
NICKEL	0-12	22	22	0	0.0	13.3	44.4	24.5	23	41	36	14	49	--
	0-6	55	55	0	0.0	6.2	35.7	23.6	23	55	36	--	49	--
	12-36	30	30	0	0.0	8.2	42.8	24.6	23	60	36	10	49	--
	36-60	9	9	0	0.0	14.3	35.9	23.3	23	44	36	--	49	--
	60-96	8	8	0	0.0	10.9	30.5	22.8	23	50	36	--	49	--

Table 3-1a
Summary of Howard's Bay Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
POTASSIUM	0-12	22	21	1	4.5	625.0	1850.0	1158.1	NL	--	NL	--	NL	--
	0-6	55	45	10	18.2	506.0	2110.0	1322.1	NL	--	NL	--	NL	--
	12-36	30	22	8	26.7	610.0	2450.0	1308.2	NL	--	NL	--	NL	--
	36-60	9	8	1	11.1	584.0	1880.0	1287.9	NL	--	NL	--	NL	--
	60-96	8	6	2	25.0	872.0	1560.0	1258.7	NL	--	NL	--	NL	--
SELENIUM	0-12	22	0	22	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	55	0	55	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	30	1	29	96.7	1.8	1.8	1.8	NL	--	NL	--	NL	--
	36-60	9	0	9	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--
SILVER	0-12	22	3	19	86.4	0.0	0.5	0.2	1.6	--	1.9	--	2.2	--
	0-6	55	5	50	90.9	0.1	1.3	0.4	1.6	--	1.9	--	2.2	--
	12-36	30	7	23	76.7	0.0	1.8	0.6	1.6	3	1.9	--	2.2	--
	36-60	9	2	7	77.8	0.1	1.2	0.7	1.6	--	1.9	--	2.2	--
	60-96	8	3	5	62.5	0.0	1.7	0.7	1.6	12	1.9	--	2.2	--
SODIUM	0-12	22	1	21	95.5	2630.0	2630.0	2630.0	NL	--	NL	--	NL	--
	0-6	55	1	54	98.2	1190.0	1190.0	1190.0	NL	--	NL	--	NL	--
	12-36	30	1	29	96.7	3560.0	3560.0	3560.0	NL	--	NL	--	NL	--
	36-60	9	1	8	88.9	2370.0	2370.0	2370.0	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--
THALLIUM	0-12	22	5	17	77.3	1.2	1.9	1.5	NL	--	NL	--	NL	--
	0-6	55	6	49	89.1	0.4	1.7	1.1	NL	--	NL	--	NL	--
	12-36	30	7	23	76.7	1.0	2.2	1.6	NL	--	NL	--	NL	--
	36-60	9	1	8	88.9	0.9	0.9	0.9	NL	--	NL	--	NL	--
	60-96	8	3	5	62.5	0.9	1.0	0.9	NL	--	NL	--	NL	--
VANADIUM	0-12	22	22	0	0.0	25.3	68.8	39.6	NL	--	NL	--	NL	--
	0-6	55	55	0	0.0	15.3	87.2	42.2	NL	--	NL	--	NL	--
	12-36	30	30	0	0.0	19.3	65.2	39.3	NL	--	NL	--	NL	--
	36-60	9	9	0	0.0	25.4	50.2	36.5	NL	--	NL	--	NL	--
	60-96	8	8	0	0.0	23.0	44.1	35.7	NL	--	NL	--	NL	--
ZINC	0-12	22	22	0	0.0	62.9	605.0	191.1	120	68	290	18	460	5
	0-6	55	55	0	0.0	33.1	487.0	150.9	120	55	290	7	460	2
	12-36	30	30	0	0.0	36.8	945.0	198.7	120	70	290	7	460	7
	36-60	9	9	0	0.0	40.1	656.0	198.3	120	67	290	22	460	11
	60-96	8	8	0	0.0	24.4	810.0	212.9	120	62	290	12	460	12
PCB Aroclors (µg/kg)														
AROCLOR-1016, OCN	0-12	3	0	3	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	26	0	26	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	4	0	4	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1221, OCN	0-12	3	0	3	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	26	0	26	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	4	0	4	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1232, OCN	0-12	3	0	3	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	26	0	26	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	4	0	4	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1242, OCN	0-12	3	0	3	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	26	0	26	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	4	0	4	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1248, OCN	0-12	3	0	3	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	26	0	26	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	4	0	4	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1254, OCN	0-12	3	2	1	33.3	13.9	21.5	17.7	NL	--	NL	--	NL	--
	0-6	26	6	20	76.9	4.6	21.6	14.5	NL	--	NL	--	NL	--
	12-36	4	3	1	25.0	16.8	88.9	42.7	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	5.1	5.1	5.1	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1260, OCN	0-12	3	2	1	33.3	11.3	19.7	15.5	NL	--	NL	--	NL	--
	0-6	26	8	18	69.2	8.2	271.3	47.4	NL	--	NL	--	NL	--
	12-36	4	2	2	50.0	16.8	81.5	49.1	NL	--	NL	--	NL	--
	36-60	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--

Table 3-1a
Summary of Howard's Bay Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
AROCLOR-1262, OCN	0-12	3	0	3	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	26	0	26	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	4	0	4	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1268, OCN	0-12	3	0	3	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	26	0	26	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	4	0	4	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
TOTAL PCBs, OCN	0-12	3	2	1	33.3	25.2	41.3	33.3	60	--	368	--	676	--
	0-6	26	9	17	65.4	4.6	271.3	51.8	60	4	368	--	676	--
	12-36	4	3	1	25.0	22.4	170.4	75.4	60	25	368	--	676	--
	36-60	1	1	0	0.0	5.1	5.1	5.1	60	--	368	--	676	--
	60-96	1	0	1	100.0	--	--	--	60	--	368	--	676	--
TCL Pesticides (µg/kg)														
4,4'-DDD, OCN	0-12	22	3	19	86.4	0.7	2.7	1.5	4.9	--	16.5	--	28	--
	0-6	55	2	53	96.4	0.6	1.4	1.0	4.9	--	16.5	--	28	--
	12-36	30	1	29	96.7	8.5	8.5	8.5	4.9	3	16.5	--	28	--
	36-60	9	1	8	88.9	2.2	2.2	2.2	4.9	--	16.5	--	28	--
	60-96	8	2	6	75.0	1.8	3.6	2.7	4.9	--	16.5	--	28	--
4,4'-DDE, OCN	0-12	22	1	21	95.5	0.9	0.9	0.9	3.2	--	17	--	31	--
	0-6	55	1	54	98.2	2.3	2.3	2.3	3.2	--	17	--	31	--
	12-36	30	0	30	100.0	--	--	--	3.2	--	17	--	31	--
	36-60	9	1	8	88.9	2.2	2.2	2.2	3.2	--	17	--	31	--
	60-96	8	1	7	87.5	1.6	1.6	1.6	3.2	--	17	--	31	--
4,4'-DDT, OCN	0-12	22	5	17	77.3	1.0	6.9	2.9	4.2	5	33.6	--	63	--
	0-6	55	4	51	92.7	0.6	77.3	21.3	4.2	4	33.6	2	63	2
	12-36	30	4	26	86.7	1.1	47.3	14.4	4.2	7	33.6	3	63	--
	36-60	9	1	8	88.9	3.2	3.2	3.2	4.2	--	33.6	--	63	--
	60-96	8	1	7	87.5	2.6	2.6	2.6	4.2	--	33.6	--	63	--
ALDRIN, OCN	0-12	22	5	17	77.3	0.5	14.6	3.9	2	5	41	--	80	--
	0-6	55	4	51	92.7	0.5	1.4	0.9	2	--	41	--	80	--
	12-36	30	1	29	96.7	0.8	0.8	0.8	2	--	41	--	80	--
	36-60	9	1	8	88.9	0.6	0.6	0.6	2	--	41	--	80	--
	60-96	8	0	8	100.0	--	--	--	2	--	41	--	80	--
ALPHA-BHC, OCN	0-12	22	2	20	90.9	0.2	1.2	0.7	6	--	53	--	100	--
	0-6	55	0	55	100.0	--	--	--	6	--	53	--	100	--
	12-36	30	0	30	100.0	--	--	--	6	--	53	--	100	--
	36-60	9	0	9	100.0	--	--	--	6	--	53	--	100	--
	60-96	8	1	7	87.5	0.1	0.1	0.1	6	--	53	--	100	--
ALPHA-CHLORDANE, OCN	0-12	22	0	22	100.0	--	--	--	3.2	--	10.6	--	18	--
	0-6	55	0	55	100.0	--	--	--	3.2	--	10.6	--	18	--
	12-36	30	0	30	100.0	--	--	--	3.2	--	10.6	--	18	--
	36-60	9	0	9	100.0	--	--	--	3.2	--	10.6	--	18	--
	60-96	8	0	8	100.0	--	--	--	3.2	--	10.6	--	18	--
BETA-BHC, OCN	0-12	22	1	21	95.5	1.3	1.3	1.3	5	--	108	--	210	--
	0-6	55	1	54	98.2	11.0	11.0	11.0	5	2	108	--	210	--
	12-36	30	0	30	100.0	--	--	--	5	--	108	--	210	--
	36-60	9	0	9	100.0	--	--	--	5	--	108	--	210	--
	60-96	8	0	8	100.0	--	--	--	5	--	108	--	210	--
DELTA-BHC, OCN	0-12	22	0	22	100.0	--	--	--	3	--	62	--	120	--
	0-6	55	2	53	96.4	0.2	0.2	0.2	3	--	62	--	120	--
	12-36	30	1	29	96.7	0.3	0.3	0.3	3	--	62	--	120	--
	36-60	9	1	8	88.9	0.2	0.2	0.2	3	--	62	--	120	--
	60-96	8	0	8	100.0	--	--	--	3	--	62	--	120	--
DIELDRIN, OCN	0-12	22	0	22	100.0	--	--	--	1.9	--	32	--	62	--
	0-6	55	1	54	98.2	0.7	0.7	0.7	1.9	--	32	--	62	--
	12-36	30	0	30	100.0	--	--	--	1.9	--	32	--	62	--
	36-60	9	0	9	100.0	--	--	--	1.9	--	32	--	62	--
	60-96	8	0	8	100.0	--	--	--	1.9	--	32	--	62	--
ENDOSULFAN I, OCN	0-12	22	4	18	81.8	0.5	1.1	0.8	NL	--	NL	--	NL	--
	0-6	55	0	55	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	30	1	29	96.7	0.4	0.4	0.4	NL	--	NL	--	NL	--
	36-60	9	0	9	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--
ENDOSULFAN II, OCN	0-12	22	0	22	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	55	0	55	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	30	0	30	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	9	0	9	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--

Table 3-1a
Summary of Howard's Bay Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
ENDOSULFAN SULFATE, OCN	0-12	22	1	21	95.5	0.5	0.5	0.5	NL	--	NL	--	NL	--
	0-6	55	3	52	94.5	0.9	5.5	3.3	NL	--	NL	--	NL	--
	12-36	30	2	28	93.3	0.8	1.7	1.3	NL	--	NL	--	NL	--
	36-60	9	0	9	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--
ENDRIN, OCN	0-12	22	1	21	95.5	2.0	2.0	2.0	2.2	--	104.6	--	207	--
	0-6	55	4	51	92.7	0.6	5.5	2.4	2.2	2	104.6	--	207	--
	12-36	30	2	28	93.3	1.7	2.7	2.2	2.2	3	104.6	--	207	--
	36-60	9	1	8	88.9	1.1	1.1	1.1	2.2	--	104.6	--	207	--
	60-96	8	0	8	100.0	--	--	--	2.2	--	104.6	--	207	--
ENDRIN ALDEHYDE, OCN	0-12	22	2	20	90.9	0.9	0.9	0.9	NL	--	NL	--	NL	--
	0-6	55	4	51	92.7	1.1	4.1	2.3	NL	--	NL	--	NL	--
	12-36	30	1	29	96.7	1.0	1.0	1.0	NL	--	NL	--	NL	--
	36-60	9	0	9	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--
ENDRIN KETONE, OCN	0-12	22	2	20	90.9	0.4	1.4	0.9	NL	--	NL	--	NL	--
	0-6	55	0	55	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	30	3	27	90.0	0.5	1.5	1.0	NL	--	NL	--	NL	--
	36-60	9	1	8	88.9	1.1	1.1	1.1	NL	--	NL	--	NL	--
	60-96	8	1	7	87.5	0.9	0.9	0.9	NL	--	NL	--	NL	--
GAMMA-BHC (LINDANE), OCN	0-12	22	0	22	100.0	--	--	--	3	--	4	--	5	--
	0-6	55	0	55	100.0	--	--	--	3	--	4	--	5	--
	12-36	30	1	29	96.7	0.6	0.6	0.6	3	--	4	--	5	--
	36-60	9	1	8	88.9	0.4	0.4	0.4	3	--	4	--	5	--
	60-96	8	0	8	100.0	--	--	--	3	--	4	--	5	--
GAMMA-CHLORDANE, OCN	0-12	22	1	21	95.5	19.7	19.7	19.7	3.2	5	10.6	5	18	5
	0-6	55	0	55	100.0	--	--	--	3.2	--	10.6	--	18	--
	12-36	30	0	30	100.0	--	--	--	3.2	--	10.6	--	18	--
	36-60	9	0	9	100.0	--	--	--	3.2	--	10.6	--	18	--
	60-96	8	0	8	100.0	--	--	--	3.2	--	10.6	--	18	--
HEPTACHLOR, OCN	0-12	22	1	21	95.5	0.6	0.6	0.6	NL	--	NL	--	NL	--
	0-6	55	0	55	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	30	0	30	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	9	0	9	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--
HEPTACHLOR EPOXIDE, OCN	0-12	22	2	20	90.9	1.0	3.8	2.4	2.5	5	9.3		16	
	0-6	55	4	51	92.7	0.6	38.7	10.7	2.5	4	9.3	2	16	2
	12-36	30	1	29	96.7	3.0	3.0	3.0	2.5	3	9.3	--	16	--
	36-60	9	2	7	77.8	0.3	2.2	1.2	2.5	--	9.3	--	16	--
	60-96	8	0	8	100.0	--	--	--	2.5	--	9.3	--	16	--
METHOXYCLOR, OCN	0-12	22	0	22	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	55	1	54	98.2	5.9	5.9	5.9	NL	--	NL	--	NL	--
	12-36	30	0	30	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	9	0	9	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	1	7	87.5	5.0	5.0	5.0	NL	--	NL	--	NL	--
TOXAPHENE, OCN	0-12	22	0	22	100.0	--	--	--	1	--	1.5	--	2	--
	0-6	55	0	55	100.0	--	--	--	1	--	1.5	--	2	--
	12-36	30	0	30	100.0	--	--	--	1	--	1.5	--	2	--
	36-60	9	0	9	100.0	--	--	--	1	--	1.5	--	2	--
	60-96	8	0	8	100.0	--	--	--	1	--	1.5	--	2	--
TPH (mg/kg)														
DRO	0-12	22	22	0	0.0	16.0	430.0	152.3	NL	--	NL	--	NL	--
	0-6	55	55	0	0.0	26.0	450.0	123.3	NL	--	NL	--	NL	--
	12-36	30	30	0	0.0	4.0	540.0	164.1	NL	--	NL	--	NL	--
	36-60	9	8	1	11.1	5.0	230.0	101.6	NL	--	NL	--	NL	--
	60-96	8	8	0	0.0	11.0	730.0	202.8	NL	--	NL	--	NL	--
ORO	0-12	22	22	0	0.0	19.0	650.0	215.1	NL	--	NL	--	NL	--
	0-6	55	55	0	0.0	24.0	700.0	179.9	NL	--	NL	--	NL	--
	12-36	30	29	1	3.3	28.0	850.0	224.5	NL	--	NL	--	NL	--
	36-60	9	8	1	11.1	11.0	260.0	115.8	NL	--	NL	--	NL	--
	60-96	8	8	0	0.0	17.0	710.0	249.5	NL	--	NL	--	NL	--
Organotin (µg/kg)														
DIBUTYL TIN, OCN	0-12	22	6	16	72.7	0.6	1.1	0.9	NL	--	NL	--	NL	--
	0-6	55	17	38	69.1	0.2	7.7	1.3	NL	--	NL	--	NL	--
	12-36	30	4	26	86.7	0.4	0.9	0.7	NL	--	NL	--	NL	--
	36-60	9	1	8	88.9	1.0	1.0	1.0	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--
MONOBUTYL TIN, OCN	0-12	22	0	22	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	55	0	55	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	30	0	30	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	9	0	9	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--

Table 3-1a
Summary of Howard's Bay Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
TETRABUTYLtin, OCN	0-12	22	0	22	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	55	0	55	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	30	0	30	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	9	0	9	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--
TRIBUTYLtin, OCN	0-12	22	9	13	59.1	0.4	5.7	2.0	0.52	36	1.73	14	2.94	14
	0-6	55	30	25	45.5	0.3	64.6	4.0	0.52	47	1.73	13	2.94	7
	12-36	30	6	24	80.0	0.3	3.7	1.8	0.52	17	1.73	10	2.94	3
	36-60	9	1	8	88.9	2.8	2.8	2.8	0.52	11	1.73	11	2.94	--
	60-96	8	0	8	100.0	--	--	--	0.52	--	1.73	--	2.94	--

Notes:

% - Percent

"--" - Not Applicable

bss - below sediment surface

DRO - Diesel Range Organic

MEC - Median Effects Concentration

mg/kg - Milligram per kilogram

ND - Non-Detect

NL - Not Listed

OCN - Organic Carbon Normalized

ORO - Oil Range Organic

PAH - Polycyclic Aromatic Hydrocarbon

PCB - Polychlorinated Biphenyls

PEC - Probable Effect Concentration

RL - Reporting Limit

SQG - Sediment Quality Guidelines

TAL - Target Analyte List

TCL - Target Compound List

TEC - Threshold Effects Concentration

TOC - Total Organic Carbon

TPH - Total Petroleum Hydrocarbon

µg/kg - Microgram per kilogram

WDNR - Wisconsin Department of Natural Resources

TOTAL PAHs 17/34 - Calculated by WESTON (sum of detections plus 1/2 RL for NDs)

Italic = Analytes used for Total PAH 17 calculation

Underline = Analytes not used for Total PAH 34 calculation, all other analytes listed under PAHs used

TOTAL PCBs - Calculated by WESTON (sum of detections)

¹ WDNR Consensus-Based SQGs

² It should be noted that CHRYSENE is sometimes referred to as 1,2-BENZPHENANTHRACENE

Table 3-1b
Summary of Area 1 Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
PAHs (17 and 34 list) (µg/kg)														
<i>2-METHYLNAPHTHALENE, OCN</i>	0-12	16	14	2	12.5	6.5	24.8	12.7	20.2	6	111	--	201	--
	0-6	34	29	5	14.7	3.4	193.0	19.5	20.2	9	111	6	201	--
	12-36	19	19	0	0.0	1.0	30.3	9.8	20.2	5	111	--	201	--
	36-60	7	6	1	14.3	3.5	14.8	8.4	20.2	--	111	--	201	--
	60-96	8	7	1	12.5	1.5	21.4	13.5	20.2	12	111	--	201	--
<i>ACENAPHTHENE, OCN</i>	0-12	16	14	2	12.5	3.5	29.3	9.0	6.7	44	48	--	89	--
	0-6	34	30	4	11.8	1.8	355.3	23.9	6.7	41	48	12	89	3
	12-36	19	18	1	5.3	2.5	51.5	10.0	6.7	42	48	5	89	--
	36-60	7	6	1	14.3	2.2	24.0	7.7	6.7	29	48	--	89	--
	60-96	8	7	1	12.5	0.5	40.4	13.8	6.7	50	48	--	89	--
<i>ACENAPHTHYLENE, OCN</i>	0-12	16	13	3	18.8	3.0	21.2	6.8	5.9	31	67	--	128	--
	0-6	34	29	5	14.7	1.2	105.0	10.0	5.9	29	67	3	128	--
	12-36	18	18	0	0.0	0.6	11.5	5.0	5.9	28	67	--	128	--
	36-60	7	6	1	14.3	2.4	7.3	4.5	5.9	29	67	--	128	--
	60-96	8	7	1	12.5	0.7	10.7	6.9	5.9	50	67	--	128	--
<i>ANTHRACENE, OCN</i>	0-12	16	14	2	12.5	13.0	112.6	32.5	57.2	6	451	--	845	--
	0-6	34	32	2	5.9	2.5	921.1	75.9	57.2	12	451	3	845	3
	12-36	19	18	1	5.3	2.5	121.2	29.1	57.2	11	451	--	845	--
	36-60	7	5	2	28.6	8.9	29.6	15.4	57.2	--	451	--	845	--
	60-96	8	7	1	12.5	1.8	134.8	41.5	57.2	25	451	--	845	--
<i>BENZO(A)ANTHRACENE, OCN</i>	0-12	16	15	1	6.3	48.2	292.8	99.5	108	19	579	--	1050	--
	0-6	34	34	0	0.0	5.8	1228.1	154.3	108	24	579	9	1050	6
	12-36	19	19	0	0.0	6.0	303.0	77.2	108	21	579	--	1050	--
	36-60	7	6	1	14.3	32.3	160.0	64.6	108	14	579	--	1050	--
	60-96	8	8	0	0.0	3.5	212.8	81.6	108	38	579	--	1050	--
<i>BENZO(A)PYRENE, OCN</i>	0-12	16	15	1	6.3	44.5	247.7	104.3	150	19	800	--	1450	--
	0-6	34	34	0	0.0	5.8	1105.0	150.4	150	21	800	6	1450	--
	12-36	19	19	0	0.0	6.0	303.0	81.5	150	16	800	--	1450	--
	36-60	7	6	1	14.3	28.0	166.7	65.7	150	14	800	--	1450	--
	60-96	8	7	1	12.5	9.6	227.7	101.3	150	25	800	--	1450	--
<i>BENZO(B)FLUORANTHENE, OCN</i>	0-12	16	15	1	6.3	50.1	292.8	112.4	240	6	6820	--	13400	--
	0-6	34	34	0	0.0	7.6	1602.2	176.1	240	12	6820	--	13400	--
	12-36	19	19	0	0.0	10.5	327.3	94.5	240	5	6820	--	13400	--
	36-60	7	6	1	14.3	32.3	173.3	75.1	240	--	6820	--	13400	--
	60-96	8	7	1	12.5	11.0	227.0	108.0	240	--	6820	--	13400	--
<i>BENZO(G,H,I)PERYLENE, OCN</i>	0-12	16	15	1	6.3	29.7	162.2	69.6	170	--	1685	--	3200	--
	0-6	34	34	0	0.0	3.8	939.2	89.6	170	9	1685	--	3200	--
	12-36	19	19	0	0.0	11.6	163.6	54.8	170	--	1685	--	3200	--
	36-60	7	5	2	28.6	8.0	58.4	31.4	170	--	1685	--	3200	--
	60-96	8	6	2	25.0	8.8	160.7	62.3	170	--	1685	--	3200	--
<i>BENZO(K)FLUORANTHENE, OCN</i>	0-12	16	15	1	6.3	16.2	144.1	57.5	240	--	6820	--	13400	--
	0-6	34	33	1	2.9	3.3	607.7	81.6	240	9	6820	--	13400	--
	12-36	19	19	0	0.0	2.8	163.6	50.9	240	--	6820	--	13400	--
	36-60	7	5	2	28.6	9.7	40.1	28.7	240	--	6820	--	13400	--
	60-96	8	7	1	12.5	8.5	192.0	68.2	240	--	6820	--	13400	--
<i>1,2-BENZPHENANTHRACENE, OCN²</i>	0-12	16	15	1	6.3	50.1	315.3	109.9	166	6	728	--	1290	--
	0-6	34	34	0	0.0	5.8	1326.0	163.8	166	15	728	6	1290	3
	12-36	19	19	0	0.0	8.0	290.9	83.1	166	11	728	--	1290	--
	36-60	7	6	1	14.3	34.5	173.3	70.8	166	14	728	--	1290	--
	60-96	8	8	0	0.0	3.5	234.0	92.2	166	25	728	--	1290	--
<i>DIBENZ(A,H)ANTHRACENE, OCN</i>	0-12	16	14	2	12.5	5.4	72.1	18.4	33	12	84	--	135	--
	0-6	34	31	3	8.8	4.2	143.6	22.1	33	12	84	6	135	3
	12-36	19	18	1	5.3	2.2	38.2	13.6	33	11	84	--	135	--
	36-60	7	5	2	28.6	3.0	23.3	10.3	33	--	84	--	135	--
	60-96	8	7	1	12.5	2.3	44.6	16.0	33	12	84	--	135	--
<i>FLUORANTHENE, OCN</i>	0-12	16	15	1	6.3	98.3	585.6	238.0	423	6	1327	--	2230	--
	0-6	34	34	0	0.0	15.7	3201.8	376.2	423	18	1327	9	2230	6
	12-36	19	19	0	0.0	16.7	848.5	188.1	423	5	1327	--	2230	--
	36-60	7	6	1	14.3	70.1	433.3	155.5	423	14	1327	--	2230	--
	60-96	8	8	0	0.0	10.6	617.0	217.7	423	25	1327	--	2230	--
<i>FLUORENE, OCN</i>	0-12	16	14	2	12.5	4.8	45.0	12.9	77.4	--	307	--	536	--
	0-6	34	31	3	8.8	2.9	614.0	36.1	77.4	6	307	3	536	3
	12-36	19	17	2	10.5	0.9	23.9	9.4	77.4	--	307	--	536	--
	36-60	7	6	1	14.3	4.1	33.3	11.2	77.4	--	307	--	536	--
	60-96	8	7	1	12.5	1.0	52.5	20.5	77.4	--	307	--	536	--
<i>INDENO(1,2,3-CD)PYRENE, OCN</i>	0-12	16	15	1	6.3	26.0	148.6	61.9	200	--	1700	--	3200	--
	0-6	34	33	1	2.9	3.5	828.7	86.9	200	9	1700	--	3200	--
	12-36	19	19	0	0.0	4.3	151.5	48.9	200	--	1700	--	3200	--
	36-60	7	6	1	14.3	11.0	93.3	38.3	200	--	1700	--	3200	--
	60-96	8	7	1	12.5	7.1	133.9	59.3	200	--	1700	--	3200	--

Table 3-1b
Summary of Area 1 Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
NAPHTHALENE, OCN	0-12	16	14	2	12.5	6.4	33.6	14.5	176	--	369	--	561	--
	0-6	34	30	4	11.8	3.2	270.7	25.5	176	6	369	--	561	--
	12-36	18	18	0	0.0	1.2	34.5	10.3	176	--	369	--	561	--
	36-60	7	6	1	14.3	4.6	32.3	14.3	176	--	369	--	561	--
	60-96	8	7	1	12.5	1.1	24.8	14.2	176	--	369	--	561	--
PHENANTHRENE, OCN	0-12	16	15	1	6.3	40.5	315.3	116.4	204	12	687	--	1170	--
	0-6	34	34	0	0.0	6.4	3640.4	245.1	204	15	687	9	1170	3
	12-36	19	19	0	0.0	9.3	593.9	104.3	204	5	687	--	1170	--
	36-60	7	6	1	14.3	30.6	280.0	92.5	204	14	687	--	1170	--
	60-96	8	8	0	0.0	5.3	461.0	140.6	204	25	687	--	1170	--
PYRENE, OCN	0-12	16	15	1	6.3	99.8	585.6	216.5	195	44	858	--	1520	--
	0-6	34	34	0	0.0	12.2	2193.0	297.6	195	26	858	9	1520	6
	12-36	19	19	0	0.0	14.8	666.7	159.9	195	32	858	--	1520	--
	36-60	7	6	1	14.3	57.3	346.7	139.5	195	29	858	--	1520	--
	60-96	8	8	0	0.0	8.8	510.6	186.2	195	38	858	--	1520	--
TOTAL PAHs 17, OCN	0-12	16	16	0	0.0	11.4	3419.8	1222.6	1610	19	12205	--	22800	--
	0-6	34	34	0	0.0	78.6	17203.9	2014.8	1610	21	12205	6	22800	--
	12-36	19	19	0	0.0	99.4	4153.9	1030.3	1610	21	12205	--	22800	--
	36-60	7	7	0	0.0	23.4	2083.3	726.5	1610	14	12205	--	22800	--
	60-96	8	8	0	0.0	53.1	3029.8	1180.1	1610	25	12205	--	22800	--
BENZO(E)PYRENE, OCN	0-12	3	3	0	0.0	59.2	85.4	71.7	150	--	800	--	1450	--
	0-6	17	17	0	0.0	4.5	482.5	98.6	150	18	800	--	1450	--
	12-36	4	4	0	0.0	27.0	169.7	100.1	150	25	800	--	1450	--
	36-60	1	1	0	0.0	93.3	93.3	93.3	150	--	800	--	1450	--
	60-96	1	1	0	0.0	120.6	120.6	120.6	150	--	800	--	1450	--
C1-CHRYSENES, OCN	0-12	3	3	0	0.0	57.5	168.5	97.1	NL	--	NL	--	NL	--
	0-6	17	17	0	0.0	4.5	570.2	87.2	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	54.0	139.4	97.4	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	93.3	93.3	93.3	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	113.5	113.5	113.5	NL	--	NL	--	NL	--
C1-FLUORANTHENES/ PYRENES, OCN	0-12	3	3	0	0.0	118.5	359.6	199.9	NL	--	NL	--	NL	--
	0-6	17	17	0	0.0	10.5	1491.2	211.4	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	104.3	272.7	192.8	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	173.3	173.3	173.3	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	241.1	241.1	241.1	NL	--	NL	--	NL	--
C1-FLUORENES, OCN	0-12	3	3	0	0.0	7.2	29.2	15.9	NL	--	NL	--	NL	--
	0-6	17	15	2	11.8	2.0	153.5	18.0	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	7.2	33.3	17.8	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	18.0	18.0	18.0	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	22.0	22.0	22.0	NL	--	NL	--	NL	--
C1-NAPHTHALENES, OCN	0-12	3	3	0	0.0	7.8	31.5	17.9	NL	--	NL	--	NL	--
	0-6	17	14	3	17.6	3.5	201.8	22.0	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	6.5	33.9	17.9	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	13.3	13.3	13.3	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	22.0	22.0	22.0	NL	--	NL	--	NL	--
C1-PHENANTHRENEs/ ANTHRACENEs, OCN	0-12	3	3	0	0.0	64.6	247.2	135.8	NL	--	NL	--	NL	--
	0-6	17	17	0	0.0	4.5	1228.1	142.1	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	56.4	224.2	126.4	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	140.0	140.0	140.0	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	184.4	184.4	184.4	NL	--	NL	--	NL	--
C2-CHRYSENEs, OCN	0-12	3	3	0	0.0	34.8	105.6	61.2	NL	--	NL	--	NL	--
	0-6	17	17	0	0.0	3.8	197.4	41.7	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	41.9	111.1	64.0	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	40.7	40.7	40.7	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	47.5	47.5	47.5	NL	--	NL	--	NL	--
C2-FLUORENEs, OCN	0-12	3	3	0	0.0	25.1	47.2	34.0	NL	--	NL	--	NL	--
	0-6	17	16	1	5.9	3.7	83.3	17.4	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	17.2	54.5	37.7	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	28.0	28.0	28.0	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	24.1	24.1	24.1	NL	--	NL	--	NL	--
C2-NAPHTHALENES, OCN	0-12	3	3	0	0.0	25.2	49.4	33.9	NL	--	NL	--	NL	--
	0-6	17	16	1	5.9	5.2	193.0	24.9	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	13.5	72.7	38.4	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	42.0	42.0	42.0	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	51.1	51.1	51.1	NL	--	NL	--	NL	--
C2-PHENANTHRENEs/ ANTHRACENEs, OCN	0-12	3	3	0	0.0	87.0	247.2	145.5	NL	--	NL	--	NL	--
	0-6	17	17	0	0.0	4.9	438.6	77.3	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	83.4	170.4	137.7	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	106.7	106.7	106.7	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	113.5	113.5	113.5	NL	--	NL	--	NL	--

Table 3-1b
Summary of Area 1 Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
C3-CHRYSENES, OCN	0-12	3	3	0	0.0	24.3	89.9	51.8	NL	--	NL	--	NL	--
	0-6	17	15	2	11.8	7.6	162.3	40.2	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	38.5	96.3	56.7	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	37.3	37.3	37.3	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	41.1	41.1	41.1	NL	--	NL	--	NL	--
C3-FLUORENES, OCN	0-12	3	3	0	0.0	47.8	87.6	61.3	NL	--	NL	--	NL	--
	0-6	17	12	5	29.4	6.3	40.0	20.4	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	34.4	96.3	71.7	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	50.7	50.7	50.7	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	47.5	47.5	47.5	NL	--	NL	--	NL	--
C3-NAPHTHALENES, OCN	0-12	3	3	0	0.0	39.5	53.9	45.9	NL	--	NL	--	NL	--
	0-6	17	16	1	5.9	5.4	118.4	22.2	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	16.0	121.2	64.5	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	73.3	73.3	73.3	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	62.4	62.4	62.4	NL	--	NL	--	NL	--
C3-PHENANTHRENES/ ANTHRACENES, OCN	0-12	3	3	0	0.0	67.0	200.0	124.3	NL	--	NL	--	NL	--
	0-6	17	17	0	0.0	9.4	175.4	47.5	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	88.3	200.0	120.8	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	80.0	80.0	80.0	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	69.5	69.5	69.5	NL	--	NL	--	NL	--
C4-CHRYSENES, OCN	0-12	3	3	0	0.0	15.7	47.2	27.5	NL	--	NL	--	NL	--
	0-6	17	12	5	29.4	4.0	37.7	15.5	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	18.4	60.0	30.9	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	18.0	18.0	18.0	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	16.3	16.3	16.3	NL	--	NL	--	NL	--
C4-NAPHTHALENES, OCN	0-12	3	3	0	0.0	44.9	52.1	47.7	NL	--	NL	--	NL	--
	0-6	17	15	2	11.8	4.3	52.6	15.2	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	17.2	103.0	64.4	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	56.0	56.0	56.0	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	40.4	40.4	40.4	NL	--	NL	--	NL	--
C4-PHENANTHRENES/ ANTHRACENES, OCN	0-12	3	3	0	0.0	35.7	182.0	91.7	NL	--	NL	--	NL	--
	0-6	17	17	0	0.0	5.2	78.9	32.1	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	48.5	111.1	73.3	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	48.7	48.7	48.7	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	52.5	52.5	52.5	NL	--	NL	--	NL	--
PERYLENE, OCN	0-12	3	2	1	33.3	23.3	26.1	24.7	NL	--	NL	--	NL	--
	0-6	17	16	1	5.9	3.3	210.5	48.0	NL	--	NL	--	NL	--
	12-36	4	2	2	50.0	24.5	74.1	49.3	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	36.7	36.7	36.7	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	46.8	46.8	46.8	NL	--	NL	--	NL	--
TOTAL PAHs 34, OCN	0-12	3	3	0	0.0	1968.2	4170.8	2822.6	1610	100	12205	--	22800	--
	0-6	17	17	0	0.0	162.9	22896.9	3421.0	1610	47	12205	6	22800	6
	12-36	4	4	0	0.0	1261.5	5937.6	3311.2	1610	75	12205	--	22800	--
	36-60	1	1	0	0.0	3221.3	3221.3	3221.3	1610	100	12205	--	22800	--
	60-96	1	1	0	0.0	4327.7	4327.7	4327.7	1610	100	12205	--	22800	--
1-METHYLNAPHTHALENE, OCN	0-12	3	1	2	66.7	9.2	9.2	9.2	NL	--	NL	--	NL	--
	0-6	17	13	4	23.5	2.6	153.5	16.0	NL	--	NL	--	NL	--
	12-36	3	3	0	0.0	4.4	25.5	12.9	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	10.7	10.7	10.7	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	17.0	17.0	17.0	NL	--	NL	--	NL	--
<u>C2-FLUORANTHENES/PYRENES, OCN</u>	0-12	3	3	0	0.0	66.1	191.0	115.0	NL	--	NL	--	NL	--
	0-6	17	17	0	0.0	7.0	570.2	92.7	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	69.9	185.2	123.6	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	93.3	93.3	93.3	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	113.5	113.5	113.5	NL	--	NL	--	NL	--
<u>C3-FLUORANTHENES/PYRENES, OCN</u>	0-12	3	3	0	0.0	39.1	125.8	75.3	NL	--	NL	--	NL	--
	0-6	17	17	0	0.0	5.2	241.2	47.7	NL	--	NL	--	NL	--
	12-36	4	4	0	0.0	57.7	133.3	83.1	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	50.7	50.7	50.7	NL	--	NL	--	NL	--
	60-96	1	1	0	0.0	52.5	52.5	52.5	NL	--	NL	--	NL	--
TAL Metals (mg/kg)														
ALUMINUM	0-12	16	16	0	0.0	6320.0	19400.0	12985.0	NL	--	NL	--	NL	--
	0-6	34	34	0	0.0	4340.0	19100.0	11367.4	NL	--	NL	--	NL	--
	12-36	19	19	0	0.0	5900.0	20700.0	13175.8	NL	--	NL	--	NL	--
	36-60	7	7	0	0.0	7020.0	18800.0	13028.6	NL	--	NL	--	NL	--
	60-96	8	8	0	0.0	4700.0	17300.0	11937.5	NL	--	NL	--	NL	--
ANTIMONY	0-12	16	16	0	0.0	0.8	4.1	1.7	2	25	13.5	--	25	--
	0-6	34	34	0	0.0	0.6	3.2	1.4	2	6	13.5	--	25	--
	12-36	19	18	1	5.3	0.9	38.5	3.7	2	21	13.5	5	25	5
	36-60	7	7	0	0.0	0.8	5.3	2.0	2	29	13.5	--	25	--
	60-96	8	7	1	12.5	0.4	2.3	1.5	2	12	13.5	--	25	--

Table 3-1b
Summary of Area 1 Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
ARSENIC	0-12	16	16	0	0.0	2.8	9.9	5.7	9.8	6	21.4	--	33	--
	0-6	34	34	0	0.0	2.2	8.5	5.1	9.8	--	21.4	--	33	--
	12-36	19	19	0	0.0	3.2	12.4	5.7	9.8	5	21.4	--	33	--
	36-60	7	7	0	0.0	2.4	8.6	4.7	9.8	--	21.4	--	33	--
	60-96	8	8	0	0.0	2.1	7.3	4.8	9.8	--	21.4	--	33	--
BARIUM	0-12	16	16	0	0.0	45.6	245.0	113.2	NL	--	NL	--	NL	--
	0-6	34	34	0	0.0	29.1	223.0	95.7	NL	--	NL	--	NL	--
	12-36	19	19	0	0.0	45.6	335.0	121.0	NL	--	NL	--	NL	--
	36-60	7	7	0	0.0	57.6	303.0	131.3	NL	--	NL	--	NL	--
	60-96	8	8	0	0.0	28.8	280.0	119.6	NL	--	NL	--	NL	--
BERYLLIUM	0-12	16	15	1	6.3	0.4	1.1	0.7	NL	--	NL	--	NL	--
	0-6	34	29	5	14.7	0.2	1.0	0.6	NL	--	NL	--	NL	--
	12-36	19	19	0	0.0	0.4	1.4	0.8	NL	--	NL	--	NL	--
	36-60	7	7	0	0.0	0.5	1.0	0.7	NL	--	NL	--	NL	--
	60-96	8	7	1	12.5	0.6	0.9	0.7	NL	--	NL	--	NL	--
CADMIUM	0-12	16	4	12	75.0	0.8	2.3	1.4	0.99	19	3	--	5	--
	0-6	34	4	30	88.2	0.6	1.7	1.2	0.99	9	3	--	5	--
	12-36	19	6	13	68.4	0.5	3.7	1.4	0.99	11	3	5	5	--
	36-60	7	2	5	71.4	1.1	2.0	1.6	0.99	29	3	--	5	--
	60-96	8	2	6	75.0	0.9	2.7	1.8	0.99	12	3	--	5	--
CALCIUM	0-12	16	16	0	0.0	4760.0	24100.0	11471.9	NL	--	NL	--	NL	--
	0-6	34	34	0	0.0	4450.0	19500.0	10977.9	NL	--	NL	--	NL	--
	12-36	19	19	0	0.0	3770.0	20200.0	12826.3	NL	--	NL	--	NL	--
	36-60	7	7	0	0.0	3730.0	18000.0	11354.3	NL	--	NL	--	NL	--
	60-96	8	8	0	0.0	6260.0	15300.0	11407.5	NL	--	NL	--	NL	--
CHROMIUM	0-12	16	16	0	0.0	23.4	117.0	36.6	43	19	76.5	6	110	6
	0-6	34	34	0	0.0	10.1	85.0	28.3	43	6	76.5	3	110	--
	12-36	19	19	0	0.0	14.0	97.6	33.7	43	11	76.5	5	110	--
	36-60	7	7	0	0.0	19.7	41.2	29.0	43	--	76.5	--	110	--
	60-96	8	8	0	0.0	11.3	36.4	26.1	43	--	76.5	--	110	--
COBALT	0-12	16	14	2	12.5	8.3	13.6	10.6	NL	--	NL	--	NL	--
	0-6	34	28	6	17.6	3.7	14.0	9.4	NL	--	NL	--	NL	--
	12-36	19	18	1	5.3	5.3	16.0	10.1	NL	--	NL	--	NL	--
	36-60	7	5	2	28.6	8.8	13.4	10.9	NL	--	NL	--	NL	--
	60-96	8	6	2	25.0	5.3	11.8	9.3	NL	--	NL	--	NL	--
COPPER	0-12	16	16	0	0.0	24.5	178.0	56.6	32	81	91	12	150	6
	0-6	34	34	0	0.0	10.6	145.0	40.9	32	56	91	6	150	--
	12-36	19	19	0	0.0	20.2	321.0	63.4	32	79	91	11	150	5
	36-60	7	7	0	0.0	19.4	114.0	48.6	32	57	91	14	150	--
	60-96	8	8	0	0.0	8.0	179.0	54.3	32	88	91	12	150	12
IRON	0-12	16	16	0	0.0	13400.0	41400.0	25443.8	20000	81	30000	25	40000	6
	0-6	34	34	0	0.0	11200.0	37000.0	23335.3	20000	76	30000	12	40000	--
	12-36	19	19	0	0.0	11100.0	36500.0	24773.7	20000	84	30000	11	40000	--
	36-60	7	7	0	0.0	13900.0	35400.0	21971.4	20000	43	30000	29	40000	--
	60-96	8	8	0	0.0	10400.0	29800.0	20337.5	20000	62	30000		40000	--
LEAD	0-12	16	16	0	0.0	8.0	382.0	104.5	36	88	83	25	130	25
	0-6	34	34	0	0.0	22.3	294.0	63.4	36	62	83	26	130	6
	12-36	19	19	0	0.0	24.8	481.0	104.8	36	79	83	47	130	21
	36-60	7	7	0	0.0	6.2	188.0	82.8	36	86	83	43	130	14
	60-96	8	8	0	0.0	2.9	308.0	84.6	36	62	83	38	130	12
MAGNESIUM	0-12	16	16	0	0.0	5380.0	12500.0	9264.4	NL	--	NL	--	NL	--
	0-6	34	34	0	0.0	2640.0	12600.0	8369.1	NL	--	NL	--	NL	--
	12-36	19	19	0	0.0	3350.0	16100.0	9567.9	NL	--	NL	--	NL	--
	36-60	7	7	0	0.0	3450.0	14900.0	9232.9	NL	--	NL	--	NL	--
	60-96	8	8	0	0.0	4050.0	11800.0	8162.5	NL	--	NL	--	NL	--
MANGANESE	0-12	16	16	0	0.0	234.0	891.0	465.6	460	50	780	6	1100	--
	0-6	34	34	0	0.0	153.0	827.0	508.4	460	62	780	3	1100	--
	12-36	19	19	0	0.0	149.0	652.0	445.4	460	42	780	--	1100	--
	36-60	7	7	0	0.0	188.0	521.0	351.9	460	43	780	--	1100	--
	60-96	8	8	0	0.0	175.0	437.0	337.6	460	--	780	--	1100	--
MERCURY	0-12	16	16	0	0.0	0.1	1.1	0.4	0.18	81	0.64	19	1.1	--
	0-6	34	34	0	0.0	0.1	0.9	0.2	0.18	53	0.64	9	1.1	--
	12-36	19	19	0	0.0	0.1	58.0	3.6	0.18	84	0.64	21	1.1	16
	36-60	7	7	0	0.0	0.0	1.8	0.5	0.18	86	0.64	29	1.1	14
	60-96	8	8	0	0.0	0.0	5.9	1.1	0.18	62	0.64	25	1.1	25
NICKEL	0-12	16	16	0	0.0	13.3	44.4	27.1	23	50	36	19	49	--
	0-6	34	34	0	0.0	9.0	35.5	23.1	23	44	36	--	49	--
	12-36	19	19	0	0.0	12.4	40.9	26.5	23	68	36	11	49	--
	36-60	7	7	0	0.0	16.0	35.9	24.2	23	43	36	--	49	--
	60-96	8	8	0	0.0	10.9	30.5	22.8	23	50	36	--	49	--

Table 3-1b
Summary of Area 1 Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
POTASSIUM	0-12	16	16	0	0.0	625.0	1850.0	1258.4	NL	--	NL	--	NL	--
	0-6	34	31	3	8.8	506.0	2110.0	1238.2	NL	--	NL	--	NL	--
	12-36	19	16	3	15.8	610.0	2400.0	1346.3	NL	--	NL	--	NL	--
	36-60	7	6	1	14.3	719.0	1880.0	1318.2	NL	--	NL	--	NL	--
	60-96	8	6	2	25.0	872.0	1560.0	1258.7	NL	--	NL	--	NL	--
SELENIUM	0-12	16	0	16	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	34	0	34	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	19	1	18	94.7	1.8	1.8	1.8	NL	--	NL	--	NL	--
	36-60	7	0	7	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--
SILVER	0-12	16	2	14	87.5	0.2	0.5	0.3	1.6	--	1.9	--	2.2	--
	0-6	34	4	30	88.2	0.1	1.3	0.5	1.6	--	1.9	--	2.2	--
	12-36	19	5	14	73.7	0.0	1.8	0.7	1.6	5	1.9	--	2.2	--
	36-60	7	2	5	71.4	0.1	1.2	0.7	1.6	--	1.9	--	2.2	--
	60-96	8	3	5	62.5	0.0	1.7	0.7	1.6	12	1.9	--	2.2	--
SODIUM	0-12	16	1	15	93.8	2630.0	2630.0	2630.0	NL	--	NL	--	NL	--
	0-6	34	1	33	97.1	1190.0	1190.0	1190.0	NL	--	NL	--	NL	--
	12-36	19	1	18	94.7	3560.0	3560.0	3560.0	NL	--	NL	--	NL	--
	36-60	7	1	6	85.7	2370.0	2370.0	2370.0	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--
THALLIUM	0-12	16	4	12	75.0	1.2	1.9	1.5	NL	--	NL	--	NL	--
	0-6	34	5	29	85.3	0.7	1.7	1.3	NL	--	NL	--	NL	--
	12-36	19	5	14	73.7	1.2	2.2	1.7	NL	--	NL	--	NL	--
	36-60	7	1	6	85.7	0.9	0.9	0.9	NL	--	NL	--	NL	--
	60-96	8	3	5	62.5	0.9	1.0	0.9	NL	--	NL	--	NL	--
VANADIUM	0-12	16	16	0	0.0	25.3	68.8	42.7	NL	--	NL	--	NL	--
	0-6	34	34	0	0.0	19.2	59.1	39.0	NL	--	NL	--	NL	--
	12-36	19	19	0	0.0	23.5	59.8	40.8	NL	--	NL	--	NL	--
	36-60	7	7	0	0.0	25.4	50.2	37.8	NL	--	NL	--	NL	--
	60-96	8	8	0	0.0	23.0	44.1	35.7	NL	--	NL	--	NL	--
ZINC	0-12	16	16	0	0.0	86.4	605.0	209.8	120	81	290	19	460	6
	0-6	34	34	0	0.0	44.2	487.0	141.7	120	41	290	6	460	3
	12-36	19	19	0	0.0	71.4	945.0	229.4	120	74	290	11	460	11
	36-60	7	7	0	0.0	72.2	656.0	230.6	120	71	290	29	460	14
	60-96	8	8	0	0.0	24.4	810.0	212.9	120	62	290	12	460	12
PCB Aroclors (µg/kg)														
AROCLOR-1016, OCN	0-12	3	0	3	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	17	0	17	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	4	0	4	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1221, OCN	0-12	3	0	3	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	17	0	17	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	4	0	4	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1232, OCN	0-12	3	0	3	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	17	0	17	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	4	0	4	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1242, OCN	0-12	3	0	3	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	17	0	17	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	4	0	4	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1248, OCN	0-12	3	0	3	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	17	0	17	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	4	0	4	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1254, OCN	0-12	3	2	1	33.3	13.9	21.5	17.7	NL	--	NL	--	NL	--
	0-6	17	4	13	76.5	4.6	21.6	14.4	NL	--	NL	--	NL	--
	12-36	4	3	1	25.0	16.8	88.9	42.7	NL	--	NL	--	NL	--
	36-60	1	1	0	0.0	5.1	5.1	5.1	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1260, OCN	0-12	3	2	1	33.3	11.3	19.7	15.5	NL	--	NL	--	NL	--
	0-6	17	6	11	64.7	9.8	271.3	58.8	NL	--	NL	--	NL	--
	12-36	4	2	2	50.0	16.8	81.5	49.1	NL	--	NL	--	NL	--
	36-60	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--

Table 3-1b
Summary of Area 1 Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
AROCOR-1262, OCN	0-12	3	0	3	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	17	0	17	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	4	0	4	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
AROCOR-1268, OCN	0-12	3	0	3	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	17	0	17	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	4	0	4	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	1	0	1	100.0	--	--	--	NL	--	NL	--	NL	--
TOTAL PCBs, OCN	0-12	3	2	1	33.3	25.2	41.3	33.3	60	--	368	--	676	--
	0-6	17	7	10	58.8	4.6	271.3	58.6	60	6	368	--	676	--
	12-36	4	3	1	25.0	22.4	170.4	75.4	60	25	368	--	676	--
	36-60	1	1	0	0.0	5.1	5.1	5.1	60	--	368	--	676	--
	60-96	1	0	1	100.0	--	--	--	60	--	368	--	676	--
TCL Pesticides (µg/kg)														
4,4'-DDD, OCN	0-12	16	2	14	87.5	1.1	2.7	1.9	4.9	--	16.5	--	28	--
	0-6	34	1	33	97.1	1.4	1.4	1.4	4.9	--	16.5	--	28	--
	12-36	19	1	18	94.7	8.5	8.5	8.5	4.9	5	16.5	--	28	--
	36-60	7	1	6	85.7	2.2	2.2	2.2	4.9	--	16.5	--	28	--
	60-96	8	2	6	75.0	1.8	3.6	2.7	4.9	--	16.5	--	28	--
4,4'-DDE, OCN	0-12	16	1	15	93.8	0.9	0.9	0.9	3.2	--	17	--	31	--
	0-6	34	1	33	97.1	2.3	2.3	2.3	3.2	--	17	--	31	--
	12-36	19	0	19	100.0	--	--	--	3.2	--	17	--	31	--
	36-60	7	1	6	85.7	2.2	2.2	2.2	3.2	--	17	--	31	--
	60-96	8	1	7	87.5	1.6	1.6	1.6	3.2	--	17	--	31	--
4,4'-DDT, OCN	0-12	16	5	11	68.8	1.0	6.9	2.9	4.2	6	33.6	--	63	--
	0-6	34	3	31	91.2	2.6	77.3	28.2	4.2	6	33.6	3	63	3
	12-36	19	4	15	78.9	1.1	47.3	14.4	4.2	11	33.6	5	63	--
	36-60	7	1	6	85.7	3.2	3.2	3.2	4.2	--	33.6	--	63	--
	60-96	8	1	7	87.5	2.6	2.6	2.6	4.2	--	33.6	--	63	--
ALDRIN, OCN	0-12	16	2	14	87.5	1.1	1.6	1.4	2	--	41	--	80	--
	0-6	34	3	31	91.2	0.5	1.4	1.0	2	--	41	--	80	--
	12-36	19	0	19	100.0	--	--	--	2	--	41	--	80	--
	36-60	7	0	7	100.0	--	--	--	2	--	41	--	80	--
	60-96	8	0	8	100.0	--	--	--	2	--	41	--	80	--
ALPHA-BHC, OCN	0-12	16	0	16	100.0	--	--	--	6	--	53	--	100	--
	0-6	34	0	34	100.0	--	--	--	6	--	53	--	100	--
	12-36	19	0	19	100.0	--	--	--	6	--	53	--	100	--
	36-60	7	0	7	100.0	--	--	--	6	--	53	--	100	--
	60-96	8	1	7	87.5	0.1	0.1	0.1	6	--	53	--	100	--
ALPHA-CHLORDANE, OCN	0-12	16	0	16	100.0	--	--	--	3.2	--	10.6	--	18	--
	0-6	34	0	34	100.0	--	--	--	3.2	--	10.6	--	18	--
	12-36	19	0	19	100.0	--	--	--	3.2	--	10.6	--	18	--
	36-60	7	0	7	100.0	--	--	--	3.2	--	10.6	--	18	--
	60-96	8	0	8	100.0	--	--	--	3.2	--	10.6	--	18	--
BETA-BHC, OCN	0-12	16	1	15	93.8	1.3	1.3	1.3	5	--	108	--	210	--
	0-6	34	1	33	97.1	11.0	11.0	11.0	5	3	108	--	210	--
	12-36	19	0	19	100.0	--	--	--	5	--	108	--	210	--
	36-60	7	0	7	100.0	--	--	--	5	--	108	--	210	--
	60-96	8	0	8	100.0	--	--	--	5	--	108	--	210	--
DELTA-BHC, OCN	0-12	16	0	16	100.0	--	--	--	3	--	62	--	120	--
	0-6	34	1	33	97.1	0.2	0.2	0.2	3	--	62	--	120	--
	12-36	19	1	18	94.7	0.3	0.3	0.3	3	--	62	--	120	--
	36-60	7	1	6	85.7	0.2	0.2	0.2	3	--	62	--	120	--
	60-96	8	0	8	100.0	--	--	--	3	--	62	--	120	--
DIELDRIN, OCN	0-12	16	0	16	100.0	--	--	--	1.9	--	32	--	62	--
	0-6	34	0	34	100.0	--	--	--	1.9	--	32	--	62	--
	12-36	19	0	19	100.0	--	--	--	1.9	--	32	--	62	--
	36-60	7	0	7	100.0	--	--	--	1.9	--	32	--	62	--
	60-96	8	0	8	100.0	--	--	--	1.9	--	32	--	62	--
ENDOSULFAN I, OCN	0-12	16	2	14	87.5	0.9	1.1	1.0	NL	--	NL	--	NL	--
	0-6	34	0	34	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	19	0	19	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	7	0	7	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--
ENDOSULFAN II, OCN	0-12	16	0	16	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	34	0	34	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	19	0	19	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	7	0	7	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--

Table 3-1b
Summary of Area 1 Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
ENDOSULFAN SULFATE, OCN	0-12	16	0	16	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	34	2	32	94.1	0.9	3.4	2.2	NL	--	NL	--	NL	--
	12-36	19	1	18	94.7	1.7	1.7	1.7	NL	--	NL	--	NL	--
	36-60	7	0	7	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--
ENDRIN, OCN	0-12	16	1	15	93.8	2.0	2.0	2.0	2.2	--	104.6	--	207	--
	0-6	34	2	32	94.1	1.8	5.5	3.7	2.2	3	104.6	--	207	--
	12-36	19	2	17	89.5	1.7	2.7	2.2	2.2	5	104.6	--	207	--
	36-60	7	1	6	85.7	1.1	1.1	1.1	2.2	--	104.6	--	207	--
	60-96	8	0	8	100.0	--	--	--	2.2	--	104.6	--	207	--
ENDRIN ALDEHYDE, OCN	0-12	16	2	14	87.5	0.9	0.9	0.9	NL	--	NL	--	NL	--
	0-6	34	4	30	88.2	1.1	4.1	2.3	NL	--	NL	--	NL	--
	12-36	19	1	18	94.7	1.0	1.0	1.0	NL	--	NL	--	NL	--
	36-60	7	0	7	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--
ENDRIN KETONE, OCN	0-12	16	1	15	93.8	1.4	1.4	1.4	NL	--	NL	--	NL	--
	0-6	34	0	34	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	19	1	18	94.7	1.5	1.5	1.5	NL	--	NL	--	NL	--
	36-60	7	1	6	85.7	1.1	1.1	1.1	NL	--	NL	--	NL	--
	60-96	8	1	7	87.5	0.9	0.9	0.9	NL	--	NL	--	NL	--
GAMMA-BHC (LINDANE), OCN	0-12	16	0	16	100.0	--	--	--	3	--	4	--	5	--
	0-6	34	0	34	100.0	--	--	--	3	--	4	--	5	--
	12-36	19	1	18	94.7	0.6	0.6	0.6	3	--	4	--	5	--
	36-60	7	1	6	85.7	0.4	0.4	0.4	3	--	4	--	5	--
	60-96	8	0	8	100.0	--	--	--	3	--	4	--	5	--
GAMMA-CHLORDANE, OCN	0-12	16	0	16	100.0	--	--	--	3.2	--	10.6	--	18	--
	0-6	34	0	34	100.0	--	--	--	3.2	--	10.6	--	18	--
	12-36	19	0	19	100.0	--	--	--	3.2	--	10.6	--	18	--
	36-60	7	0	7	100.0	--	--	--	3.2	--	10.6	--	18	--
	60-96	8	0	8	100.0	--	--	--	3.2	--	10.6	--	18	--
HEPTACHLOR, OCN	0-12	16	0	16	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	34	0	34	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	19	0	19	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	7	0	7	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--
HEPTACHLOR EPOXIDE, OCN	0-12	16	2	14	87.5	1.0	3.8	2.4	2.5	6	9.3	--	16	--
	0-6	34	2	32	94.1	2.8	38.7	20.7	2.5	6	9.3	3	16	3
	12-36	19	1	18	94.7	3.0	3.0	3.0	2.5	5	9.3	--	16	--
	36-60	7	2	5	71.4	0.3	2.2	1.2	2.5	--	9.3	--	16	--
	60-96	8	0	8	100.0	--	--	--	2.5	--	9.3	--	16	--
METHOXYCLOR, OCN	0-12	16	0	16	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	34	1	33	97.1	5.9	5.9	5.9	NL	--	NL	--	NL	--
	12-36	19	0	19	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	7	0	7	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	1	7	87.5	5.0	5.0	5.0	NL	--	NL	--	NL	--
TOXAPHENE, OCN	0-12	16	0	16	100.0	--	--	--	1	--	1.5	--	2	--
	0-6	34	0	34	100.0	--	--	--	1	--	1.5	--	2	--
	12-36	19	0	19	100.0	--	--	--	1	--	1.5	--	2	--
	36-60	7	0	7	100.0	--	--	--	1	--	1.5	--	2	--
	60-96	8	0	8	100.0	--	--	--	1	--	1.5	--	2	--
TPH (mg/kg)														
DRO	0-12	16	16	0	0.0	16.0	350.0	148.6	NL	--	NL	--	NL	--
	0-6	34	34	0	0.0	26.0	400.0	108.1	NL	--	NL	--	NL	--
	12-36	19	19	0	0.0	32.0	540.0	164.7	NL	--	NL	--	NL	--
	36-60	7	6	1	14.3	57.0	230.0	103.0	NL	--	NL	--	NL	--
	60-96	8	8	0	0.0	11.0	730.0	202.8	NL	--	NL	--	NL	--
ORO	0-12	16	16	0	0.0	19.0	650.0	212.1	NL	--	NL	--	NL	--
	0-6	34	34	0	0.0	24.0	700.0	157.6	NL	--	NL	--	NL	--
	12-36	19	19	0	0.0	40.0	850.0	218.6	NL	--	NL	--	NL	--
	36-60	7	7	0	0.0	11.0	260.0	112.3	NL	--	NL	--	NL	--
	60-96	8	8	0	0.0	17.0	710.0	249.5	NL	--	NL	--	NL	--
Organotin (µg/kg)														
DIBUTYLtin, OCN	0-12	16	5	11	68.8	0.8	1.1	0.9	NL	--	NL	--	NL	--
	0-6	34	12	22	64.7	0.2	7.7	1.5	NL	--	NL	--	NL	--
	12-36	19	4	15	78.9	0.4	0.9	0.7	NL	--	NL	--	NL	--
	36-60	7	1	6	85.7	1.0	1.0	1.0	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--
MONOBUTYLtin, OCN	0-12	16	0	16	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	34	0	34	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	19	0	19	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	7	0	7	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--

Table 3-1b
Summary of Area 1 Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
TETRABUTYLtin, OCN	0-12	16	0	16	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	34	0	34	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	19	0	19	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	7	0	7	100.0	--	--	--	NL	--	NL	--	NL	--
	60-96	8	0	8	100.0	--	--	--	NL	--	NL	--	NL	--
TRIBUTYLtin, OCN	0-12	16	8	8	50.0	0.4	5.7	2.1	0.52	44	1.73	19	2.94	19
	0-6	34	22	12	35.3	0.3	64.6	5.0	0.52	56	1.73	18	2.94	12
	12-36	19	6	13	68.4	0.3	3.7	1.8	0.52	26	1.73	16	2.94	5
	36-60	7	1	6	85.7	2.8	2.8	2.8	0.52	14	1.73	14	2.94	--
	60-96	8	0	8	100.0	--	--	--	0.52	--	1.73	--	2.94	--

Notes:
 % - Percent
 "--" - Not Applicable
 bss - below sediment surface
 DRO - Diesel Range Organic
 MEC - Median Effects Concentration
 mg/kg - Milligram per kilogram
 ND - Non-Detect
 NL - Not Listed
 OCN - Organic Carbon Normalized
 ORO - Oil Range Organic
 PAH - Polycyclic Aromatic Hydrocarbon
 PCB - Polychlorinated Biphenyls
 PEC - Probable Effect Concentration
 RL - Reporting Limit
 SQG - Sediment Quality Guidelines
 TAL - Target Analyte List
 TCL - Target Compound List
 TEC - Threshold Effects Concentration
 TOC - Total Organic Carbon
 TPH - Total Petroleum Hydrocarbon
 µg/kg - Microgram per kilogram
 WDNR - Wisconsin Department of Natural Resources

TOTAL PAHs 17/34 - Calculated by WESTON (sum of detections plus 1/2 RL for NDs)
Italic = Analytes used for Total PAH 17 calculation
Underline = Analytes not used for Total PAH 34 calculation, all other analytes listed under PAHs used

TOTAL PCBs - Calculated by WESTON (sum of detections)

¹ WDNR Consensus-Based SQGs
² It should be noted that CHRYSENE is sometimes referred to as 1,2-BENZPHENANTHRACENE

Table 3-1c
Summary of Area 2 Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
PAHs (17 and 34 list) (µg/kg)														
<i>2-METHYLNAPHTHALENE, OCN</i>	0-12	6	6	0	0.0	5.0	28.8	11.9	20.2	17	111	--	201	--
	0-6	21	17	4	19.0	1.8	49.6	14.2	20.2	14	111	--	201	--
	12-36	11	8	3	27.3	8.2	38.3	19.8	20.2	27	111	--	201	--
	36-60	2	1	1	50.0	39.7	39.7	39.7	20.2	50	111	--	201	--
<i>ACENAPHTHENE, OCN</i>	0-12	6	5	1	16.7	2.0	62.5	16.3	6.7	33	48	17	89	--
	0-6	21	18	3	14.3	1.3	90.7	14.0	6.7	38	48	10	89	5
	12-36	11	8	3	27.3	3.2	20.4	12.4	6.7	64	48	--	89	--
	36-60	2	1	1	50.0	37.2	37.2	37.2	6.7	50	48	--	89	--
<i>ACENAPHTHYLENE, OCN</i>	0-12	6	6	0	0.0	2.5	14.9	5.7	5.9	17	67	--	128	--
	0-6	21	18	3	14.3	1.2	19.4	7.0	5.9	43	67	--	128	--
	12-36	11	9	2	18.2	1.9	18.5	7.3	5.9	55	67	--	128	--
	36-60	2	1	1	50.0	9.7	9.7	9.7	5.9	50	67	--	128	--
<i>ANTHRACENE, OCN</i>	0-12	6	6	0	0.0	7.0	153.8	39.1	57.2	17	451	--	845	--
	0-6	21	21	0	0.0	2.6	472.8	51.8	57.2	10	451	5	845	--
	12-36	11	10	1	9.1	2.1	80.5	34.0	57.2	9	451	--	845	--
	36-60	2	1	1	50.0	106.7	106.7	106.7	57.2	50	451	--	845	--
<i>BENZO(A)ANTHRACENE, OCN</i>	0-12	6	6	0	0.0	32.8	220.2	114.4	108	50	579	--	1050	--
	0-6	21	20	1	4.8	11.5	591.0	94.3	108	19	579	5	1050	--
	12-36	11	10	1	9.1	17.1	195.4	100.1	108	18	579	--	1050	--
	36-60	2	1	1	50.0	397.0	397.0	397.0	108	50	579	--	1050	--
<i>BENZO(A)PYRENE, OCN</i>	0-12	6	6	0	0.0	38.2	261.9	119.3	150	17	800	--	1450	--
	0-6	20	20	0	0.0	13.4	496.5	96.8	150	10	800	--	1450	--
	12-36	11	10	1	9.1	21.6	216.0	108.0	150	18	800	--	1450	--
	36-60	2	1	1	50.0	297.8	297.8	297.8	150	50	800	--	1450	--
<i>BENZO(B)FLUORANTHENE, OCN</i>	0-12	6	6	0	0.0	40.2	208.3	121.0	240	--	6820	--	13400	--
	0-6	20	19	1	5.0	16.4	193.2	91.1	240	--	6820	--	13400	--
	12-36	11	10	1	9.1	27.0	200.6	122.0	240	--	6820	--	13400	--
	36-60	2	1	1	50.0	347.4	347.4	347.4	240	50	6820	--	13400	--
<i>BENZO(G,H,I)PERYLENE, OCN</i>	0-12	6	6	0	0.0	25.6	160.7	82.4	170	--	1685	--	3200	--
	0-6	21	19	2	9.5	7.4	142.5	59.5	170	--	1685	--	3200	--
	12-36	11	10	1	9.1	17.1	185.2	80.3	170	9	1685	--	3200	--
	36-60	2	1	1	50.0	186.1	186.1	186.1	170	50	1685	--	3200	--
<i>BENZO(K)FLUORANTHENE, OCN</i>	0-12	6	6	0	0.0	20.1	148.8	74.4	240	--	6820	--	13400	--
	0-6	21	20	1	4.8	5.1	139.6	53.7	240	--	6820	--	13400	--
	12-36	11	10	1	9.1	11.7	153.3	74.5	240	--	6820	--	13400	--
	36-60	2	1	1	50.0	163.8	163.8	163.8	240	--	6820	--	13400	--
<i>1,2-BENZPHENANTHRACENE, OCN²</i>	0-12	6	6	0	0.0	36.9	196.4	110.9	166	33	728	--	1290	--
	0-6	21	21	0	0.0	7.1	567.4	94.0	166	10	728	--	1290	--
	12-36	11	10	1	9.1	18.0	206.9	116.6	166	18	728	--	1290	--
	36-60	2	1	1	50.0	421.8	421.8	421.8	166	50	728	--	1290	--
<i>DIBENZ(A,H)ANTHRACENE, OCN</i>	0-12	6	6	0	0.0	6.0	47.0	20.6	33	17	84	--	135	--
	0-6	21	21	0	0.0	1.9	85.1	18.2	33	10	84	5	135	--
	12-36	11	10	1	9.1	4.1	43.2	21.4	33	9	84	--	135	--
	36-60	2	1	1	50.0	57.1	57.1	57.1	33	50	84	--	135	--
<i>FLUORANTHENE, OCN</i>	0-12	6	6	0	0.0	53.3	528.8	221.6	423	17	1327	--	2230	--
	0-6	20	20	0	0.0	26.8	1560.3	215.7	423	10	1327	5	2230	--
	12-36	11	10	1	9.1	29.7	401.2	228.0	423	--	1327	--	2230	--
	36-60	2	1	1	50.0	744.4	744.4	744.4	423	50	1327	--	2230	--
<i>FLUORENE, OCN</i>	0-12	6	6	0	0.0	3.5	79.8	19.6	77.4	17	307	--	536	--
	0-6	21	18	3	14.3	1.9	81.7	13.5	77.4	5	307	--	536	--
	12-36	11	9	2	18.2	7.2	36.0	20.5	77.4	--	307	--	536	--
	36-60	2	1	1	50.0	47.1	47.1	47.1	77.4	--	307	--	536	--
<i>INDENO(1,2,3-CD)PYRENE, OCN</i>	0-12	6	6	0	0.0	20.1	148.8	70.8	200	--	1700	--	3200	--
	0-6	21	19	2	9.5	7.2	119.7	52.7	200	--	1700	--	3200	--
	12-36	11	10	1	9.1	13.5	135.8	67.9	200	--	1700	--	3200	--
	36-60	2	1	1	50.0	173.7	173.7	173.7	200	--	1700	--	3200	--
<i>NAPHTHALENE, OCN</i>	0-12	6	6	0	0.0	4.0	55.8	14.8	176	--	369	--	561	--
	0-6	21	19	2	9.5	1.9	1044.0	66.8	176	5	369	5	561	5
	12-36	11	9	2	18.2	1.1	23.7	14.6	176	--	369	--	561	--
	36-60	2	1	1	50.0	34.7	34.7	34.7	176	--	369	--	561	--
<i>PHENANTHRENE, OCN</i>	0-12	6	6	0	0.0	21.3	528.8	137.2	204	17	687	--	1170	--
	0-6	20	20	0	0.0	7.9	1513.0	154.3	204	10	687	5	1170	5
	12-36	11	10	1	9.1	12.6	314.9	139.7	204	18	687	--	1170	--
	36-60	2	1	1	50.0	620.3	620.3	620.3	204	50	687	--	1170	--
<i>PYRENE, OCN</i>	0-12	6	6	0	0.0	57.4	384.6	194.3	195	33	858	--	1520	--
	0-6	20	20	0	0.0	24.6	1016.5	172.2	195	20	858	5	1520	--
	12-36	11	10	1	9.1	35.1	432.1	222.6	195	45	858	--	1520	--
	36-60	2	1	1	50.0	719.6	719.6	719.6	195	50	858	--	1520	--
TOTAL PAHs 17, OCN	0-12	6	6	0	0.0	405.2	2781.6	1371.7	1610	33	12205	--	22800	--
	0-6	21	21	0	0.0	161.8	7910.6	1276.2	1610	19	12205	--	22800	--
	12-36	11	11	0	0.0	42.5	2463.6	1259.0	1610	27	12205	--	22800	--
	36-60	2	2	0	0.0	31.2	4404.2	2217.7	1610	50	12205	--	22800	--
<i>BENZO(E)PYRENE, OCN</i>	0-6	8	6	2	25.0	8.7	104.0	49.0	150	--	800	--	1450	--

Table 3-1c
Summary of Area 2 Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
C1-CHRYSENES, OCN	0-6	9	9	0	0.0	6.4	378.3	93.1	NL	--	NL	--	NL	--
C1-FLUORANTHENES/ PYRENES, OCN	0-6	9	9	0	0.0	11.9	898.3	202.5	NL	--	NL	--	NL	--
C1-FLUORENES, OCN	0-6	9	9	0	0.0	1.1	78.0	17.1	NL	--	NL	--	NL	--
C1-NAPHTHALENES, OCN	0-6	9	9	0	0.0	1.9	54.4	17.1	NL	--	NL	--	NL	--
C1-PHENANTHRENE/ ANTHRACENES, OCN	0-6	9	9	0	0.0	7.6	638.3	137.7	NL	--	NL	--	NL	--
C2-CHRYSENES, OCN	0-6	9	9	0	0.0	4.5	146.6	59.3	NL	--	NL	--	NL	--
C2-FLUORENES, OCN	0-6	9	9	0	0.0	2.3	56.7	22.2	NL	--	NL	--	NL	--
C2-NAPHTHALENES, OCN	0-6	9	9	0	0.0	3.2	94.6	30.4	NL	--	NL	--	NL	--
C2-PHENANTHRENE/ ANTHRACENES, OCN	0-6	9	9	0	0.0	7.4	283.7	101.1	NL	--	NL	--	NL	--
C3-CHRYSENES, OCN	0-6	9	9	0	0.0	4.5	113.5	59.3	NL	--	NL	--	NL	--
C3-FLUORENES, OCN	0-6	9	8	1	11.1	3.6	59.6	32.5	NL	--	NL	--	NL	--
C3-NAPHTHALENES, OCN	0-6	9	9	0	0.0	3.6	70.9	29.2	NL	--	NL	--	NL	--
C3-PHENANTHRENE/ ANTHRACENES, OCN	0-6	9	9	0	0.0	6.6	161.6	72.4	NL	--	NL	--	NL	--
C4-CHRYSENES, OCN	0-6	9	8	1	11.1	2.6	70.2	32.3	NL	--	NL	--	NL	--
C4-NAPHTHALENES, OCN	0-6	9	9	0	0.0	2.3	40.4	22.1	NL	--	NL	--	NL	--
C4-PHENANTHRENE/ ANTHRACENES, OCN	0-6	9	9	0	0.0	4.0	101.0	44.7	NL	--	NL	--	NL	--
PERYLENE, OCN	0-6	9	7	2	22.2	2.6	77.1	34.2	NL	--	NL	--	NL	--
TOTAL PAHs 34, OCN	0-6	9	9	0	0.0	244.8	11520.6	2810.1	1610	44	12205	--	22800	--
1-METHYLNAPHTHALENE, OCN	0-6	9	9	0	0.0	1.3	44.9	13.0	NL	--	NL	--	NL	--
C2-FLUORANTHENES/ PYRENES, OCN	0-6	9	9	0	0.0	7.4	307.3	97.2	NL	--	NL	--	NL	--
C3-FLUORANTHENES/ PYRENES, OCN	0-6	9	9	0	0.0	4.9	153.7	63.2	NL	--	NL	--	NL	--
TAL Metals (mg/kg)														
ALUMINUM	0-12	6	6	0	0.0	6490.0	11100.0	8676.7	NL	--	NL	--	NL	--
	0-6	21	21	0	0.0	2710.0	17900.0	11042.4	NL	--	NL	--	NL	--
	12-36	11	11	0	0.0	3610.0	26500.0	10547.3	NL	--	NL	--	NL	--
	36-60	2	2	0	0.0	6270.0	14500.0	10385.0	NL	--	NL	--	NL	--
ANTIMONY	0-12	6	6	0	0.0	0.8	1.6	1.2	2	--	13.5	--	25	--
	0-6	21	21	0	0.0	0.4	2.2	1.5	2	10	13.5	--	25	--
	12-36	11	11	0	0.0	0.7	2.3	1.4	2	9	13.5	--	25	--
	36-60	2	2	0	0.0	0.7	1.5	1.1	2	--	13.5	--	25	--
ARSENIC	0-12	6	6	0	0.0	2.7	6.4	4.2	9.8	--	21.4	--	33	--
	0-6	21	21	0	0.0	1.8	8.8	5.5	9.8	--	21.4	--	33	--
	12-36	11	11	0	0.0	2.3	5.7	4.5	9.8	--	21.4	--	33	--
	36-60	2	2	0	0.0	2.3	5.0	3.7	9.8	--	21.4	--	33	--
BARIUM	0-12	6	6	0	0.0	49.9	130.0	77.5	NL	--	NL	--	NL	--
	0-6	21	21	0	0.0	16.2	285.0	126.3	NL	--	NL	--	NL	--
	12-36	11	11	0	0.0	27.1	190.0	93.6	NL	--	NL	--	NL	--
	36-60	2	2	0	0.0	43.8	136.0	89.9	NL	--	NL	--	NL	--
BERYLLIUM	0-12	6	6	0	0.0	0.4	0.7	0.5	NL	--	NL	--	NL	--
	0-6	21	20	1	4.8	0.2	1.0	0.6	NL	--	NL	--	NL	--
	12-36	11	10	1	9.1	0.3	1.2	0.6	NL	--	NL	--	NL	--
	36-60	2	2	0	0.0	0.3	0.8	0.5	NL	--	NL	--	NL	--
CADMIUM	0-12	6	1	5	83.3	0.7	0.7	0.7	0.99	--	3	--	5	--
	0-6	21	1	20	95.2	1.1	1.1	1.1	0.99	5	3	--	5	--
	12-36	11	3	8	72.7	0.6	0.8	0.7	0.99	--	3	--	5	--
	36-60	2	0	2	100.0	--	--	--	0.99	--	3	--	5	--
CALCIUM	0-12	6	6	0	0.0	3980.0	11900.0	7095.0	NL	--	NL	--	NL	--
	0-6	21	21	0	0.0	1230.0	22900.0	11005.2	NL	--	NL	--	NL	--
	12-36	11	11	0	0.0	3560.0	14800.0	7824.5	NL	--	NL	--	NL	--
	36-60	2	2	0	0.0	9860.0	25400.0	17630.0	NL	--	NL	--	NL	--
CHROMIUM	0-12	6	6	0	0.0	16.3	27.0	20.9	43	--	76.5	--	110	--
	0-6	21	21	0	0.0	6.8	46.8	28.9	43	14	76.5	--	110	--
	12-36	11	11	0	0.0	10.2	50.5	26.4	43	9	76.5	--	110	--
	36-60	2	2	0	0.0	16.0	25.7	20.9	43	--	76.5	--	110	--
COBALT	0-12	6	6	0	0.0	5.7	8.6	7.2	NL	--	NL	--	NL	--
	0-6	21	20	1	4.8	3.2	12.9	9.2	NL	--	NL	--	NL	--
	12-36	11	10	1	9.1	5.9	17.1	8.6	NL	--	NL	--	NL	--
	36-60	2	2	0	0.0	6.4	10.1	8.3	NL	--	NL	--	NL	--
COPPER	0-12	6	6	0	0.0	16.4	67.2	32.9	32	50	91	--	150	--
	0-6	21	21	0	0.0	6.3	74.3	43.1	32	67	91	--	150	--
	12-36	11	11	0	0.0	9.9	60.2	33.9	32	64	91	--	150	--
	36-60	2	2	0	0.0	10.5	44.5	27.5	32	50	91	--	150	--
IRON	0-12	6	6	0	0.0	13900.0	24800.0	18283.3	20000	33	30000	--	40000	--
	0-6	21	21	0	0.0	7460.0	38000.0	25038.6	20000	71	30000	43	40000	--
	12-36	11	11	0	0.0	9780.0	34600.0	20916.4	20000	45	30000	9	40000	--
	36-60	2	2	0	0.0	12700.0	25800.0	19250.0	20000	50	30000	--	40000	--

Table 3-1c
Summary of Area 2 Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
LEAD	0-12	6	6	0	0.0	31.8	251.0	107.9	36	83	83	50	130	33
	0-6	21	21	0	0.0	14.0	1140.0	145.6	36	76	83	57	130	33
	12-36	11	11	0	0.0	4.6	186.0	77.8	36	82	83	36	130	9
	36-60	2	2	0	0.0	2.8	51.1	27.0	36	50	83	--	130	--
MAGNESIUM	0-12	6	6	0	0.0	4270.0	7960.0	5635.0	NL	--	NL	--	NL	--
	0-6	21	21	0	0.0	1500.0	13200.0	7357.6	NL	--	NL	--	NL	--
	12-36	11	11	0	0.0	2150.0	13100.0	6316.4	NL	--	NL	--	NL	--
	36-60	2	2	0	0.0	6970.0	13800.0	10385.0	NL	--	NL	--	NL	--
MANGANESE	0-12	6	6	0	0.0	191.0	495.0	321.0	460	17	780	--	1100	--
	0-6	21	21	0	0.0	79.5	1250.0	581.7	460	57	780	33	1100	10
	12-36	11	11	0	0.0	138.0	1040.0	391.0	460	27	780	9	1100	--
	36-60	2	2	0	0.0	281.0	486.0	383.5	460	50	780	--	1100	--
MERCURY	0-12	6	6	0	0.0	0.0	0.6	0.3	0.18	67	0.64	--	1.1	--
	0-6	21	21	0	0.0	0.0	0.7	0.3	0.18	67	0.64	5	1.1	--
	12-36	11	11	0	0.0	0.0	0.5	0.2	0.18	45	0.64	--	1.1	--
	36-60	2	2	0	0.0	0.0	0.4	0.2	0.18	50	0.64	--	1.1	--
NICKEL	0-12	6	6	0	0.0	13.7	23.2	17.8	23	17	36	--	49	--
	0-6	21	21	0	0.0	6.2	35.7	24.4	23	71	36	--	49	--
	12-36	11	11	0	0.0	8.2	42.8	21.4	23	45	36	9	49	--
	36-60	2	2	0	0.0	14.3	26.2	20.3	23	50	36	--	49	--
POTASSIUM	0-12	6	5	1	16.7	661.0	1090.0	837.0	NL	--	NL	--	NL	--
	0-6	21	14	7	33.3	721.0	2050.0	1507.9	NL	--	NL	--	NL	--
	12-36	11	6	5	45.5	630.0	2450.0	1206.7	NL	--	NL	--	NL	--
	36-60	2	2	0	0.0	584.0	1810.0	1197.0	NL	--	NL	--	NL	--
SELENIUM	0-12	6	0	6	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	21	0	21	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	11	0	11	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	2	0	2	100.0	--	--	--	NL	--	NL	--	NL	--
SILVER	0-12	6	1	5	83.3	0.0	0.0	0.0	1.6	--	1.9	--	2.2	--
	0-6	21	1	20	95.2	0.1	0.1	0.1	1.6	--	1.9	--	2.2	--
	12-36	11	2	9	81.8	0.1	0.1	0.1	1.6	--	1.9	--	2.2	--
	36-60	2	0	2	100.0	--	--	--	1.6	--	1.9	--	2.2	--
SODIUM	0-12	6	0	6	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	21	0	21	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	11	0	11	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	2	0	2	100.0	--	--	--	NL	--	NL	--	NL	--
THALLIUM	0-12	6	1	5	83.3	1.3	1.3	1.3	NL	--	NL	--	NL	--
	0-6	21	1	20	95.2	0.4	0.4	0.4	NL	--	NL	--	NL	--
	12-36	11	2	9	81.8	1.0	1.7	1.3	NL	--	NL	--	NL	--
	36-60	2	0	2	100.0	--	--	--	NL	--	NL	--	NL	--
VANADIUM	0-12	6	6	0	0.0	25.4	40.8	31.1	NL	--	NL	--	NL	--
	0-6	21	21	0	0.0	15.3	87.2	47.4	NL	--	NL	--	NL	--
	12-36	11	11	0	0.0	19.3	65.2	36.6	NL	--	NL	--	NL	--
	36-60	2	2	0	0.0	25.7	38.2	32.0	NL	--	NL	--	NL	--
ZINC	0-12	6	6	0	0.0	62.9	317.0	141.5	120	33	290	17	460	--
	0-6	21	21	0	0.0	33.1	442.0	165.7	120	76	290	10	460	--
	12-36	11	11	0	0.0	36.8	249.0	145.8	120	64	290	--	460	--
	36-60	2	2	0	0.0	40.1	130.0	85.1	120	50	290	--	460	--
PCB Aroclors (µg/kg)														
AROCLOR-1016, OCN	0-6	9	0	9	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1221, OCN	0-6	9	0	9	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1232, OCN	0-6	9	0	9	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1242, OCN	0-6	9	0	9	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1248, OCN	0-6	9	0	9	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1254, OCN	0-6	9	2	7	77.8	9.1	20.6	14.9	NL	--	NL	--	NL	--
AROCLOR-1260, OCN	0-6	9	2	7	77.8	8.2	18.6	13.4	NL	--	NL	--	NL	--
AROCLOR-1262, OCN	0-6	9	0	9	100.0	--	--	--	NL	--	NL	--	NL	--
AROCLOR-1268, OCN	0-6	9	0	9	100.0	--	--	--	NL	--	NL	--	NL	--
TOTAL PCBs, OCN	0-6	9	2	7	77.8	17.2	39.2	28.2	60	--	368	--	676	--
TCL Pesticides (µg/kg)														
4,4'-DDD, OCN	0-12	6	1	5	83.3	0.7	0.7	0.7	4.9	--	16.5	--	28	--
	0-6	21	1	20	95.2	0.6	0.6	0.6	4.9	--	16.5	--	28	--
	12-36	11	0	11	100.0	--	--	--	4.9	--	16.5	--	28	--
	36-60	2	0	2	100.0	--	--	--	4.9	--	16.5	--	28	--
4,4'-DDE, OCN	0-12	6	0	6	100.0	--	--	--	3.2	--	17	--	31	--
	0-6	21	0	21	100.0	--	--	--	3.2	--	17	--	31	--
	12-36	11	0	11	100.0	--	--	--	3.2	--	17	--	31	--
	36-60	2	0	2	100.0	--	--	--	3.2	--	17	--	31	--
4,4'-DDT, OCN	0-12	6	0	6	100.0	--	--	--	4.2	--	33.6	--	63	--
	0-6	21	1	20	95.2	0.6	0.6	0.6	4.2	--	33.6	--	63	--
	12-36	11	0	11	100.0	--	--	--	4.2	--	33.6	--	63	--
	36-60	2	0	2	100.0	--	--	--	4.2	--	33.6	--	63	--

Table 3-1c
Summary of Area 2 Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
ALDRIN, OCN	0-12	6	3	3	50.0	0.5	14.6	5.5	2	17	41	--	80	--
	0-6	21	1	20	95.2	0.9	0.9	0.9	2	--	41	--	80	--
	12-36	11	1	10	90.9	0.8	0.8	0.8	2	--	41	--	80	--
	36-60	2	1	1	50.0	0.6	0.6	0.6	2	--	41	--	80	--
ALPHA-BHC, OCN	0-12	6	2	4	66.7	0.2	1.2	0.7	6	--	53	--	100	--
	0-6	21	0	21	100.0	--	--	--	6	--	53	--	100	--
	12-36	11	0	11	100.0	--	--	--	6	--	53	--	100	--
	36-60	2	0	2	100.0	--	--	--	6	--	53	--	100	--
ALPHA-CHLORDANE, OCN	0-12	6	0	6	100.0	--	--	--	3.2	--	10.6	--	18	--
	0-6	21	0	21	100.0	--	--	--	3.2	--	10.6	--	18	--
	12-36	11	0	11	100.0	--	--	--	3.2	--	10.6	--	18	--
	36-60	2	0	2	100.0	--	--	--	3.2	--	10.6	--	18	--
BETA-BHC, OCN	0-12	6	0	6	100.0	--	--	--	5	--	108	--	210	--
	0-6	21	0	21	100.0	--	--	--	5	--	108	--	210	--
	12-36	11	0	11	100.0	--	--	--	5	--	108	--	210	--
	36-60	2	0	2	100.0	--	--	--	5	--	108	--	210	--
DELTA-BHC, OCN	0-12	6	0	6	100.0	--	--	--	3	--	62	--	120	--
	0-6	21	1	20	95.2	0.2	0.2	0.2	3	--	62	--	120	--
	12-36	11	0	11	100.0	--	--	--	3	--	62	--	120	--
	36-60	2	0	2	100.0	--	--	--	3	--	62	--	120	--
DIELDRIN, OCN	0-12	6	0	6	100.0	--	--	--	1.9	--	32	--	62	--
	0-6	21	1	20	95.2	0.7	0.7	0.7	1.9	--	32	--	62	--
	12-36	11	0	11	100.0	--	--	--	1.9	--	32	--	62	--
	36-60	2	0	2	100.0	--	--	--	1.9	--	32	--	62	--
ENDOSULFAN I, OCN	0-12	6	2	4	66.7	0.5	0.8	0.7	NL	--	NL	--	NL	--
	0-6	21	0	21	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	11	1	10	90.9	0.4	0.4	0.4	NL	--	NL	--	NL	--
	36-60	2	0	2	100.0	--	--	--	NL	--	NL	--	NL	--
ENDOSULFAN II, OCN	0-12	6	0	6	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	21	0	21	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	11	0	11	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	2	0	2	100.0	--	--	--	NL	--	NL	--	NL	--
ENDOSULFAN SULFATE, OCN	0-12	6	1	5	83.3	0.5	0.5	0.5	NL	--	NL	--	NL	--
	0-6	21	1	20	95.2	5.5	5.5	5.5	NL	--	NL	--	NL	--
	12-36	11	1	10	90.9	0.8	0.8	0.8	NL	--	NL	--	NL	--
	36-60	2	0	2	100.0	--	--	--	NL	--	NL	--	NL	--
ENDRIN, OCN	0-12	6	0	6	100.0	--	--	--	2.2	--	104.6	--	207	--
	0-6	21	2	19	90.5	0.6	1.7	1.2	2.2	--	104.6	--	207	--
	12-36	11	0	11	100.0	--	--	--	2.2	--	104.6	--	207	--
	36-60	2	0	2	100.0	--	--	--	2.2	--	104.6	--	207	--
ENDRIN ALDEHYDE, OCN	0-12	6	0	6	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	21	0	21	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	11	0	11	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	2	0	2	100.0	--	--	--	NL	--	NL	--	NL	--
ENDRIN KETONE, OCN	0-12	6	1	5	83.3	0.4	0.4	0.4	NL	--	NL	--	NL	--
	0-6	21	0	21	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	11	2	9	81.8	0.5	1.1	0.8	NL	--	NL	--	NL	--
	36-60	2	0	2	100.0	--	--	--	NL	--	NL	--	NL	--
GAMMA-BHC (LINDANE), OCN	0-12	6	0	6	100.0	--	--	--	3	--	4	--	5	--
	0-6	21	0	21	100.0	--	--	--	3	--	4	--	5	--
	12-36	11	0	11	100.0	--	--	--	3	--	4	--	5	--
	36-60	2	0	2	100.0	--	--	--	3	--	4	--	5	--
GAMMA-CHLORDANE, OCN	0-12	6	1	5	83.3	19.7	19.7	19.7	3.2	17	10.6	17	18	17
	0-6	21	0	21	100.0	--	--	--	3.2	--	10.6	--	18	--
	12-36	11	0	11	100.0	--	--	--	3.2	--	10.6	--	18	--
	36-60	2	0	2	100.0	--	--	--	3.2	--	10.6	--	18	--
HEPTACHLOR, OCN	0-12	6	1	5	83.3	0.6	0.6	0.6	NL	--	NL	--	NL	--
	0-6	21	0	21	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	11	0	11	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	2	0	2	100.0	--	--	--	NL	--	NL	--	NL	--
HEPTACHLOR EPOXIDE, OCN	0-12	6	0	6	100.0	--	--	--	2.5	--	9.3	--	16	--
	0-6	21	2	19	90.5	0.6	0.9	0.8	2.5	--	9.3	--	16	--
	12-36	11	0	11	100.0	--	--	--	2.5	--	9.3	--	16	--
	36-60	2	0	2	100.0	--	--	--	2.5	--	9.3	--	16	--
METHOXYCLOR, OCN	0-12	6	0	6	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	21	0	21	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	11	0	11	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	2	0	2	100.0	--	--	--	NL	--	NL	--	NL	--
TOXAPHENE, OCN	0-12	6	0	6	100.0	--	--	--	1	--	1.5	--	2	--
	0-6	21	0	21	100.0	--	--	--	1	--	1.5	--	2	--
	12-36	11	0	11	100.0	--	--	--	1	--	1.5	--	2	--
	36-60	2	0	2	100.0	--	--	--	1	--	1.5	--	2	--

Table 3-1c
Summary of Area 2 Sediment Samples
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Analyte	Depth (inches bss)	No. of Results	No. of Detects	No. of Non- Detects	% Non- Detect	Minimum Detection	Maximum Detection	Average Detection	TEC ¹	% Above TEC	MEC ¹	% Above MEC	PEC ¹	% Above PEC
TPH (mg/kg)														
DRO	0-12	6	6	0	0.0	32.0	430.0	162.2	NL	--	NL	--	NL	--
	0-6	21	21	0	0.0	28.0	450.0	148.0	NL	--	NL	--	NL	--
	12-36	11	11	0	0.0	4.0	340.0	163.2	NL	--	NL	--	NL	--
	36-60	2	2	0	0.0	5.0	190.0	97.5	NL	--	NL	--	NL	--
ORO	0-12	6	6	0	0.0	40.0	500.0	223.3	NL	--	NL	--	NL	--
	0-6	21	21	0	0.0	52.0	540.0	215.8	NL	--	NL	--	NL	--
	12-36	11	10	1	9.1	28.0	610.0	235.6	NL	--	NL	--	NL	--
	36-60	2	1	1	50.0	140.0	140.0	140.0	NL	--	NL	--	NL	--
Organotin (µg/kg)														
DIBUTYLTIN, OCN	0-12	6	1	5	83.3	0.6	0.6	0.6	NL	--	NL	--	NL	--
	0-6	21	5	16	76.2	0.5	1.1	0.7	NL	--	NL	--	NL	--
	12-36	11	0	11	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	2	0	2	100.0	--	--	--	NL	--	NL	--	NL	--
MONOBUTYLTIN, OCN	0-12	6	0	6	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	21	0	21	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	11	0	11	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	2	0	2	100.0	--	--	--	NL	--	NL	--	NL	--
TETRABUTYLTIN, OCN	0-12	6	0	6	100.0	--	--	--	NL	--	NL	--	NL	--
	0-6	21	0	21	100.0	--	--	--	NL	--	NL	--	NL	--
	12-36	11	0	11	100.0	--	--	--	NL	--	NL	--	NL	--
	36-60	2	0	2	100.0	--	--	--	NL	--	NL	--	NL	--
TRIBUTYLTIN, OCN	0-12	6	1	5	83.3	0.8	0.8	0.8	0.52	17	1.73	--	2.94	--
	0-6	21	8	13	61.9	0.5	2.6	1.2	0.52	33	1.73	5	2.94	--
	12-36	11	0	11	100.0	--	--	--	0.52	--	1.73	--	2.94	--
	36-60	2	0	2	100.0	--	--	--	0.52	--	1.73	--	2.94	--

Notes:

% - Percent
"--" - Not Applicable
bss - below sediment surface
DRO - Diesel Range Organic
MEC - Median Effects Concentration
mg/kg - Milligram per kilogram
ND - Non-Detect
NL - Not Listed
OCN - Organic Carbon Normalized
ORO - Oil Range Organic
PAH - Polycyclic Aromatic Hydrocarbon
PCB - Polychlorinated Biphenyls
PEC - Probable Effect Concentration
RL - Reporting Limit
SQG - Sediment Quality Guidelines
TAL - Target Analyte List
TCL - Target Compound List
TEC - Threshold Effects Concentration
TOC - Total Organic Carbon
TPH - Total Petroleum Hydrocarbon
µg/kg - Microgram per kilogram
WDNR - Wisconsin Department of Natural Resources

TOTAL PAHs 17/34 - Calculated by WESTON (sum of detections plus 1/2 RL for NDs)

Italic = Analytes used for Total PAH 17 calculation

Underline = Analytes not used for Total PAH 34 calculation, all other analytes listed under PAHs used

TOTAL PCBs - Calculated by WESTON (sum of detections)

¹ WDNR Consensus-Based SQGs

² It should be noted that CHRYSENE is sometimes referred to as 1,2-BENZPHENANTHRACENE

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-01		HB10-1-01		HB10-1-01		HB10-1-02		HB10-1-02	
				Field Sample ID	HB10-1-01-06		HB10-1-01-12		HB10-1-01-40		HB10-1-02-06		HB10-1-02-06DP	
				Sample Date	10/16/2010		10/16/2010		10/16/2010		10/16/2010		10/16/2010	
				Depth Interval	0- 6		0- 12		36- 40		0- 6		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	28	12.96	7.1 U	7.1 U	5.1 U	5.1 U	14 J	5.69	11 J	5.02
ACENAPHTHENE	6.7	48	89	µg/kg	17	7.87	7.1 U	7.1 U	5.1 U	5.1 U	7 U	7 U	9 J	4.11
ACENAPHTHYLENE	5.9	67	128	µg/kg	9	4.17	7.1 U	7.1 U	5.1 U	5.1 U	11	4.47	11 J	5.02
ANTHRACENE	57.2	451	845	µg/kg	46	21.30	7.1 U	7.1 U	5.1 U	5.1 U	35 J	14.23	37 J	16.89
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	110	50.93	7.1 U	7.1 U	5.1 U	5.1 U	110	44.72	110	50.23
BENZO(A)PYRENE	150	800	1450	µg/kg	97	44.91	7.1 U	7.1 U	5.1 U	5.1 U	59	23.98	59	26.94
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	120 J	55.56	7.1 U	7.1 U	5.1 U	5.1 U	130 J	52.85	110 J	50.23
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	74	34.26	7.1 U	7.1 U	5.1 U	5.1 U	13	5.28	11	5.02
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	49 J	22.69	7.1 U	7.1 U	5.1 U	5.1 U	36	14.63	36	16.44
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	130	60.19	7.1 U	7.1 U	5.1 U	5.1 U	120	48.78	120	54.79
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	18	8.33	7.1 U	7.1 U	5.1 U	5.1 U	11	4.47	11	5.02
FLUORANTHENE	423	1327	2230	µg/kg	340	157.41	7.1 U	7.1 U	5.1 U	5.1 U	220	89.43	230	105.02
FLUORENE	77.4	307	536	µg/kg	22	10.19	7.1 U	7.1 U	5.1 U	5.1 U	10	4.07	12 J	5.48
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	63	29.17	7.1 U	7.1 U	5.1 U	5.1 U	39	15.85	37	16.89
NAPHTHALENE	176	369	561	µg/kg	29	13.43	7.1 U	7.1 U	5.1 U	5.1 U	16 J	6.50	15 J	6.85
PHENANTHRENE	204	687	1170	µg/kg	270	125.00	7.1 U	7.1 U	5.1 U	5.1 U	86	34.96	110	50.23
PYRENE	195	858	1520	µg/kg	240	111.11	7.1 U	7.1 U	5.1 U	5.1 U	170	69.11	180	82.19
TOTAL PAHs 17	1610	12205	22800	µg/kg	1662	769.44	60.35	11.37	43.35	23.43	1083.5	440.45	1109	506.39
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C4-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PERYLENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--	--	--	--	--	--	--	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOC	NL	NL	NL	%	2.16		5.31		1.85		2.46		2.19	

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-02		HB10-1-03		HB10-1-03		HB10-1-03		HB10-1-03	
				Field Sample ID	HB10-1-02-23		HB10-1-03-06		HB10-1-03-12		HB10-1-03-36		HB10-1-03-60	
				Sample Date	10/16/2010		10/16/2010		10/16/2010		10/16/2010		10/16/2010	
				Depth Interval	12- 23		0- 6		0- 12		12- 36		36- 60	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	10 J	4.50	28	154.70	12	7.55	12	6.09	38	14.79
ACENAPHTHENE	6.7	48	89	µg/kg	6	2.70	12	66.30	7	4.40	7	3.55	24	9.34
ACENAPHTHYLENE	5.9	67	128	µg/kg	7	3.15	19	104.97	8	5.03	8	4.06	17	6.61
ANTHRACENE	57.2	451	845	µg/kg	30 J	13.51	59	325.97	32	20.13	29	14.72	76	29.57
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	100	45.05	210	1160.22	97	61.01	93	47.21	200	77.82
BENZO(A)PYRENE	150	800	1450	µg/kg	56	25.23	200	1104.97	88	55.35	85	43.15	190	73.93
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	140 J	63.06	290 J	1602.21	100 J	62.89	110 J	55.84	240 J	93.39
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	43	19.37	170	939.23	51	32.08	44	22.34	150	58.37
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	34	15.32	110 J	607.73	37	23.27	42	21.32	97 J	37.74
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	110	49.55	240	1325.97	110	69.18	100	50.76	230	89.49
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	10	4.50	26	143.65	12	7.55	11	5.58	25	9.73
FLUORANTHENE	423	1327	2230	µg/kg	220	99.10	420	2320.44	230	144.65	190	96.45	450	175.10
FLUORENE	77.4	307	536	µg/kg	10	4.50	23	127.07	13	8.18	12	6.09	32	12.45
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	37	16.67	150	828.73	43	27.04	37	18.78	130	50.58
NAPHTHALENE	176	369	561	µg/kg	12 J	5.41	49	270.72	12	7.55	16	8.12	43	16.73
PHENANTHRENE	204	687	1170	µg/kg	92	41.44	170	939.23	110	69.18	88	44.67	250	97.28
PYRENE	195	858	1520	µg/kg	200	90.09	370	2044.20	180	113.21	160	81.22	510	198.44
TOTAL PAHs 17	1610	12205	22800	µg/kg	1117	503.15	2546	14066.30	1142	718.24	1044	529.95	2702	1051.36
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C4-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PERYLENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--	--	--	--	--	--	--	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOC	NL	NL	NL	%	2.22		0.181		1.59		1.97		2.57	

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-03		HB10-1-04		HB10-1-04		HB10-1-04		HB10-1-04	
				Field Sample ID	HB10-1-03-84		HB10-1-04-06		HB10-1-04-12		HB10-1-04-36		HB10-1-04-50	
				Sample Date	10/16/2010		10/17/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	60- 84		0- 6		0- 12		12- 36		36- 50	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	38	19.59	8.2	4.36	34	13.44	27	8.18	24	5.17
ACENAPHTHENE	6.7	48	89	µg/kg	15	7.73	11	5.85	29	11.46	34	10.30	11	2.37
ACENAPHTHYLENE	5.9	67	128	µg/kg	19	9.79	5.8	3.09	9.1	3.60	12	3.64	11	2.37
ANTHRACENE	57.2	451	845	µg/kg	61	31.44	28	14.89	88	34.78	36	10.91	78	16.81
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	210	108.25	140	74.47	240	94.86	130	39.39	150	32.33
BENZO(A)PYRENE	150	800	1450	µg/kg	210	108.25	150	79.79	220	86.96	130	39.39	130	28.02
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	260 J	134.02	180	95.74	220	86.96	150	45.45	150	32.33
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	160	82.47	83	44.15	140	55.34	95	28.79	90	19.40
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	110 J	56.70	42	22.34	150 J	59.29	64 J	19.39	45	9.70
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	240	123.71	140	74.47	260	102.77	140	42.42	160	34.48
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	23	11.86	16	8.51	26	10.28	16	4.85	14	3.02
FLUORANTHENE	423	1327	2230	µg/kg	460	237.11	330	175.53	990	391.30	290	87.88	420	90.52
FLUORENE	77.4	307	536	µg/kg	26	13.40	15	7.98	31	12.25	23	6.97	22	4.74
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	130	67.01	77	40.96	120	47.43	53	16.06	51	10.99
NAPHTHALENE	176	369	561	µg/kg	36	18.56	9.6	5.11	85	33.60	29	8.79	150	32.33
PHENANTHRENE	204	687	1170	µg/kg	210	108.25	180	95.74	280	110.67	180	54.55	250	53.88
PYRENE	195	858	1520	µg/kg	380	195.88	300	159.57	840	332.02	280	84.85	410	88.36
TOTAL PAHs 17	1610	12205	22800	µg/kg	2588	1334.02	1715.6	912.55	3762.1	1487.00	1689	511.82	2166	466.81
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA	98	52.13	NA	NA	NA	NA	NA	NA
C1-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	62 J	32.98	NA	NA	NA	NA	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	120 J	63.83	NA	NA	NA	NA	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA	9.5 J	5.05	NA	NA	NA	NA	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	8.7 J	4.63	NA	NA	NA	NA	NA	NA
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	77 J	40.96	NA	NA	NA	NA	NA	NA
C2-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	52 J	27.66	NA	NA	NA	NA	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA	17 J	9.04	NA	NA	NA	NA	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	17 J	9.04	NA	NA	NA	NA	NA	NA
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	73 J	38.83	NA	NA	NA	NA	NA	NA
C3-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	51 J	27.13	NA	NA	NA	NA	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA	30 J	15.96	NA	NA	NA	NA	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	19 J	10.11	NA	NA	NA	NA	NA	NA
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	66 J	35.11	NA	NA	NA	NA	NA	NA
C4-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	32 J	17.02	NA	NA	NA	NA	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	17 J	9.04	NA	NA	NA	NA	NA	NA
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	55 J	29.26	NA	NA	NA	NA	NA	NA
PERYLENE	NL	NL	NL	µg/kg	NA	NA	70	37.23	NA	NA	NA	NA	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--	2581.6	1373.19	--	--	--	--	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA	6.2	3.30	NA	NA	NA	NA	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	92 J	48.94	NA	NA	NA	NA	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	67 J	35.64	NA	NA	NA	NA	NA	NA
TOC	NL	NL	NL	%	1.94		1.88		2.53		3.3		4.64	

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-05		HB10-1-05		HB10-1-06		HB10-1-06		HB10-1-06	
				Field Sample ID	HB10-1-05-06		HB10-1-05-06DP		HB10-1-06-06		HB10-1-06-06DP		HB10-1-06-12	
				Sample Date	10/16/2010		10/16/2010		10/16/2010		10/16/2010		10/16/2010	
				Depth Interval	0- 6		0- 6		0- 6		0- 6		0- 12	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	13	6.10	9.4	4.80	12	5.19	19 J	7.85	22 J	11.17
ACENAPHTHENE	6.7	48	89	µg/kg	24	11.27	12	6.12	7	3.03	23	9.50	15	7.61
ACENAPHTHYLENE	5.9	67	128	µg/kg	13	6.10	7.8	3.98	11	4.76	11	4.55	12	6.09
ANTHRACENE	57.2	451	845	µg/kg	120	56.34	44	22.45	44	19.05	83	34.30	54 J	27.41
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	330	154.93	120	61.22	200	86.58	140	57.85	160	81.22
BENZO(A)PYRENE	150	800	1450	µg/kg	370	173.71	130	66.33	170	73.59	120	49.59	150	76.14
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	430	201.88	150	76.53	240 J	103.90	150 J	61.98	190 J	96.45
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	220	103.29	79	40.31	66	28.57	26	10.74	110	55.84
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	200	93.90	53	27.04	59	25.54	59	24.38	73 J	37.06
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	340	159.62	120	61.22	220	95.24	150	61.98	180	91.37
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	38	17.84	17	8.67	17	7.36	18	7.44	22	11.17
FLUORANTHENE	423	1327	2230	µg/kg	970	455.40	320	163.27	380	164.50	350	144.63	360	182.74
FLUORENE	77.4	307	536	µg/kg	31	14.55	16	8.16	12	5.19	37	15.29	19	9.64
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	190	89.20	70	35.71	57	24.68	64	26.45	96	48.73
NAPHTHALENE	176	369	561	µg/kg	21	9.86	16	8.16	13	5.63	21 J	8.68	23 J	11.68
PHENANTHRENE	204	687	1170	µg/kg	480	225.35	170	86.73	130	56.28	320	132.23	170	86.29
PYRENE	195	858	1520	µg/kg	660	309.86	240	122.45	310	134.20	270	111.57	450	228.43
TOTAL PAHs 17	1610	12205	22800	µg/kg	4450	2089.20	1574.2	803.16	1948	843.29	1861	769.01	2106	1069.04
BENZO(E)PYRENE	150	800	1450	µg/kg	230	107.98	86	43.88	NA	NA	NA	NA	NA	NA
C1-CHRYSENES	NL	NL	NL	µg/kg	93 J	43.66	53 J	27.04	NA	NA	NA	NA	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	200 J	93.90	100 J	51.02	NA	NA	NA	NA	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	10 J	4.69	7 J	3.57	NA	NA	NA	NA	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	14 J	6.57	10 J	5.10	NA	NA	NA	NA	NA	NA
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	97 J	45.54	58 J	29.59	NA	NA	NA	NA	NA	NA
C2-CHRYSENES	NL	NL	NL	µg/kg	44 J	20.66	28 J	14.29	NA	NA	NA	NA	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	12 J	5.63	7.3 J	3.72	NA	NA	NA	NA	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	17 J	7.98	13 J	6.63	NA	NA	NA	NA	NA	NA
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	62 J	29.11	39 J	19.90	NA	NA	NA	NA	NA	NA
C3-CHRYSENES	NL	NL	NL	µg/kg	41 J	19.25	26 J	13.27	NA	NA	NA	NA	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	6.1 U	6.1 U	5.9 U	5.9 U	NA	NA	NA	NA	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	15 J	7.04	12 J	6.12	NA	NA	NA	NA	NA	NA
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	34 J	15.96	24 J	12.24	NA	NA	NA	NA	NA	NA
C4-CHRYSENES	NL	NL	NL	µg/kg	29 J	13.62	12 J	6.12	NA	NA	NA	NA	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	12 J	5.63	8.4 J	4.29	NA	NA	NA	NA	NA	NA
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	30 J	14.08	22 J	11.22	NA	NA	NA	NA	NA	NA
PERYLENE	NL	NL	NL	µg/kg	120 U	120 U	33	16.84	NA	NA	NA	NA	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	5440.05	2554.01	2106.45	1074.72	--	--	--	--	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	9.3	4.37	7.2	3.67	NA	NA	NA	NA	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	97 J	45.54	55 J	28.06	NA	NA	NA	NA	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	47 J	22.07	30 J	15.31	NA	NA	NA	NA	NA	NA
TOC	NL	NL	NL	%	2.13		1.96		2.31		2.42		1.97	

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-06		HB10-1-06		HB10-1-07		HB10-1-07		HB10-1-07	
				Field Sample ID	HB10-1-06-36		HB10-1-06-51		HB10-1-07-06		HB10-1-07-12		HB10-1-07-36	
				Sample Date	10/16/2010		10/16/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	12- 36		36- 51		0- 6		0- 12		12- 36	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	21	4.79	17 J	5.41	440	192.98	45	16.30	23	7.21
ACENAPHTHENE	6.7	48	89	µg/kg	11	2.51	7	2.23	810	355.26	18	6.52	11	3.45
ACENAPHTHYLENE	5.9	67	128	µg/kg	14	3.20	9	2.87	110 U	110 U	24	8.70	16	5.02
ANTHRACENE	57.2	451	845	µg/kg	42	9.59	28	8.92	2100	921.05	93	33.70	54	16.93
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	150	34.25	110	35.03	2800	1228.07	270	97.83	270	84.64
BENZO(A)PYRENE	150	800	1450	µg/kg	160	36.53	96	30.57	2300	1008.77	260	94.20	240	75.24
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	210 J	47.95	130 J	41.40	2300	1008.77	270	97.83	270	84.64
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	56	12.79	25	7.96	930	407.89	180	65.22	170	53.29
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	83 J	18.95	53	16.88	1100	482.46	170	61.59	180	56.43
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	170	38.81	130	41.40	2600	1140.35	300	108.70	260	81.50
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	21	4.79	16	5.10	300	131.58	33	11.96	28	8.78
FLUORANTHENE	423	1327	2230	µg/kg	290	66.21	220	70.06	7300	3201.75	550	199.28	540	169.28
FLUORENE	77.4	307	536	µg/kg	16	3.65	13	4.14	1400	614.04	26	9.42	22	6.90
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	110	25.11	49	15.61	920	403.51	160	57.97	160	50.16
NAPHTHALENE	176	369	561	µg/kg	17	3.88	17 J	5.41	570	250.00	45	16.30	28	8.78
PHENANTHRENE	204	687	1170	µg/kg	140	31.96	96	30.57	8300	3640.35	280	101.45	220	68.97
PYRENE	195	858	1520	µg/kg	280	63.93	180	57.32	5000	2192.98	590	213.77	540	169.28
TOTAL PAHs 17	1610	12205	22800	µg/kg	1791	408.90	1196	380.89	39225	17203.95	3314	1200.72	3032	950.47
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA	NA	NA	1100	482.46	NA	NA	NA	NA
C1-CHRYSENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	1300 J	570.18	NA	NA	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	3400 J	1491.23	NA	NA	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	350 J	153.51	NA	NA	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	460 J	201.75	NA	NA	NA	NA
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	2800 J	1228.07	NA	NA	NA	NA
C2-CHRYSENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	450 J	197.37	NA	NA	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	190 J	83.33	NA	NA	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	440 J	192.98	NA	NA	NA	NA
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	1000 J	438.60	NA	NA	NA	NA
C3-CHRYSENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	370 J	162.28	NA	NA	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	110 U	110 U	NA	NA	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	270 J	118.42	NA	NA	NA	NA
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	400 J	175.44	NA	NA	NA	NA
C4-CHRYSENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	110 U	110 U	NA	NA	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	120 J	52.63	NA	NA	NA	NA
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	180 J	78.95	NA	NA	NA	NA
PERYLENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	480	210.53	NA	NA	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--	--	--	52205	22896.93	--	--	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	350	153.51	NA	NA	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	1300 J	570.18	NA	NA	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	550 J	241.23	NA	NA	NA	NA
TOC	NL	NL	NL	%	4.38		3.14		2.28		2.76		3.19	

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-07		HB10-1-08		HB10-1-08		HB10-1-08		HB10-1-10	
				Field Sample ID	HB10-1-07-64		HB10-1-08-06		HB10-1-08-12		HB10-1-08-36		HB10-1-10-06	
				Sample Date	10/17/2010		10/17/2010		10/17/2010		10/17/2010		10/18/2010	
				Depth Interval	60- 64		0- 6		0- 12		12- 36		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	4 U	4 U	27	7.01	26	6.48	84	15.25	63 U	63 U
ACENAPHTHENE	6.7	48	89	µg/kg	4 U	4 U	20 J	5.19	14	3.49	29	5.26	220	61.28
ACENAPHTHYLENE	5.9	67	128	µg/kg	4 U	4 U	20 J	5.19	12	2.99	25	4.54	63 U	63 U
ANTHRACENE	57.2	451	845	µg/kg	4 U	4 U	71 U	71 U	52	12.97	85	15.43	910	253.48
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	4	3.54	160	41.56	210	52.37	290	52.63	970	270.19
BENZO(A)PYRENE	150	800	1450	µg/kg	4 U	4 U	190	49.35	200	49.88	290	52.63	930	259.05
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	4 U	4 U	240	62.34	240	59.85	330	59.89	1000	278.55
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	4 U	4 U	120	31.17	140	34.91	210	38.11	420	116.99
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	4 UJ	4 U	95	24.68	65	16.21	180	32.67	480	133.70
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	4	3.54	170	44.16	230	57.36	340	61.71	1200	334.26
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	4 U	4 U	43	11.17	25	6.23	33	5.99	100	27.86
FLUORANTHENE	423	1327	2230	µg/kg	12	10.62	460	119.48	410	102.24	900	163.34	3900	1086.35
FLUORENE	77.4	307	536	µg/kg	4 U	4 U	35 J	9.09	20	4.99	42	7.62	200	55.71
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	4 U	4 U	120	31.17	120	29.93	170	30.85	420	116.99
NAPHTHALENE	176	369	561	µg/kg	4 U	4 U	25	6.49	37	9.23	110	19.96	63 U	63 U
PHENANTHRENE	204	687	1170	µg/kg	6	5.31	190	49.35	190	47.38	290	52.63	2300	640.67
PYRENE	195	858	1520	µg/kg	10	8.85	360	93.51	400	99.75	940	170.60	2600	724.23
TOTAL PAHs 17	1610	12205	22800	µg/kg	60	53.10	2310.5	600.13	2391	596.26	4348	789.11	15744.5	4385.65
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA	130	33.77	NA	NA	NA	NA	540	150.42
C1-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	180 J	46.75	NA	NA	NA	NA	420 J	116.99
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	350 J	90.91	NA	NA	NA	NA	1200 J	334.26
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA	20 J	5.19	NA	NA	NA	NA	69 J	19.22
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	30 J	7.79	NA	NA	NA	NA	63 U	63 U
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	170 J	44.16	NA	NA	NA	NA	680 J	189.42
C2-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	130 J	33.77	NA	NA	NA	NA	180 J	50.14
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA	47 J	12.21	NA	NA	NA	NA	88 J	24.51
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	68 J	17.66	NA	NA	NA	NA	79 J	22.01
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	160 J	41.56	NA	NA	NA	NA	390 J	108.64
C3-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	130 J	33.77	NA	NA	NA	NA	130 J	36.21
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA	73 J	18.96	NA	NA	NA	NA	120 J	33.43
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	60 J	15.58	NA	NA	NA	NA	78 J	21.73
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	150 J	38.96	NA	NA	NA	NA	210 J	58.50
C4-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	72 J	18.70	NA	NA	NA	NA	63 U	63 U
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	51 J	13.25	NA	NA	NA	NA	63 U	63 U
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	210 J	54.55	NA	NA	NA	NA	120 J	33.43
PERYLENE	NL	NL	NL	µg/kg	NA	NA	110	28.57	NA	NA	NA	NA	240	66.85
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--	4424.5	--	--	--	--	--	20351.5	5668.94
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA	20	5.19	NA	NA	NA	NA	63 U	63 U
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	220 J	57.14	NA	NA	NA	NA	380 J	105.85
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	150 J	38.96	NA	NA	NA	NA	210 J	58.50
TOC	NL	NL	NL	%	1.13		3.85		4.01		5.51		3.59	

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-11		HB10-1-11		HB10-1-12		HB10-1-12		HB10-1-12	
				Field Sample ID	HB10-1-11-06		HB10-1-11-21		HB10-1-12-06		HB10-1-12-12		HB10-1-12-34	
				Sample Date	10/16/2010		10/16/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	0- 6		12- 21		0- 6		0- 12		12- 34	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	18	5.70	30 J	7.92	24	7.06	65	14.64	16	0.99
ACENAPHTHENE	6.7	48	89	µg/kg	9.8	3.10	13 J	3.43	14	4.12	18	4.05	9 U	9 U
ACENAPHTHYLENE	5.9	67	128	µg/kg	8.7	2.75	15 J	3.96	15	4.41	24	5.41	10	0.62
ANTHRACENE	57.2	451	845	µg/kg	35	11.08	42 J	11.08	56	16.47	69	15.54	41	2.53
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	120 J	37.97	160	42.22	190	55.88	230	51.80	97	5.99
BENZO(A)PYRENE	150	800	1450	µg/kg	130 J	41.14	150	39.58	220	64.71	260	58.56	98	6.05
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	160 J	50.63	200 J	52.77	280	82.35	290	65.32	170	10.49
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	81 J	25.63	44	11.61	130	38.24	180	40.54	200	12.35
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	61	19.30	75 J	19.79	120	35.29	150	33.78	45 J	2.78
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	120 J	37.97	170	44.85	220	64.71	260	58.56	130	8.02
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	20	6.33	24	6.33	38	11.18	27	6.08	35	2.16
FLUORANTHENE	423	1327	2230	µg/kg	250 J	79.11	370 J	97.63	520	152.94	440	99.10	270	16.67
FLUORENE	77.4	307	536	µg/kg	16	5.06	18 J	4.75	24	7.06	32	7.21	14	0.86
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	80 J	25.32	93	24.54	120	35.29	150	33.78	69	4.26
NAPHTHALENE	176	369	561	µg/kg	20	6.33	28 J	7.39	23	6.76	96	21.62	20	1.23
PHENANTHRENE	204	687	1170	µg/kg	100 J	31.65	150	39.58	210	61.76	180	40.54	150	9.26
PYRENE	195	858	1520	µg/kg	240 J	75.95	320 J	84.43	410	120.59	500	112.61	240	14.81
TOTAL PAHs 17	1610	12205	22800	µg/kg	1469.5	465.03	1902	501.85	2614	768.82	2971	669.14	1609.5	99.35
BENZO(E)PYRENE	150	800	1450	µg/kg	90 J	28.48	NA	NA	150	44.12	NA	NA	NA	NA
C1-CHRYSENEs	NL	NL	NL	µg/kg	76 J	24.05	NA	NA	140 J	41.18	NA	NA	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	150 J	47.47	NA	NA	270 J	79.41	NA	NA	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	11 J	3.48	NA	NA	15 J	4.41	NA	NA	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	19 J	6.01	NA	NA	25 J	7.35	NA	NA	NA	NA
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	78 J	24.68	NA	NA	120 J	35.29	NA	NA	NA	NA
C2-CHRYSENEs	NL	NL	NL	µg/kg	59 J	18.67	NA	NA	100 J	29.41	NA	NA	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	23 J	7.28	NA	NA	34 J	10.00	NA	NA	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	30 J	9.49	NA	NA	43 J	12.65	NA	NA	NA	NA
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	88 J	27.85	NA	NA	110 J	32.35	NA	NA	NA	NA
C3-CHRYSENEs	NL	NL	NL	µg/kg	57 J	18.04	NA	NA	100 J	29.41	NA	NA	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	46 J	14.56	NA	NA	57 J	16.76	NA	NA	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	33 J	10.44	NA	NA	44 J	12.94	NA	NA	NA	NA
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	76 J	24.05	NA	NA	100 J	29.41	NA	NA	NA	NA
C4-CHRYSENEs	NL	NL	NL	µg/kg	35 J	11.08	NA	NA	54 J	15.88	NA	NA	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	27 J	8.54	NA	NA	33 J	9.71	NA	NA	NA	NA
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	57 J	18.04	NA	NA	78 J	22.94	NA	NA	NA	NA
PERYLENE	NL	NL	NL	µg/kg	66 J	20.89	NA	NA	110	32.35	NA	NA	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	2472.5	782.44	--	--	4173	1227.35	--	--	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	13	4.11	NA	NA	17	5.00	NA	NA	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	110 J	34.81	NA	NA	170 J	50.00	NA	NA	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	75 J	23.73	NA	NA	120 J	35.29	NA	NA	NA	NA
TOC	NL	NL	NL	%	3.16		3.79		3.4		4.44		16.2	

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-13		HB10-1-13		HB10-1-13		HB10-1-13		HB10-1-14	
				Field Sample ID	HB10-1-13-06		HB10-1-13-12		HB10-1-13-36		HB10-1-13-67		HB10-1-14-06	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/17/2010	
				Depth Interval	0- 6		0- 12		12- 36		60- 67		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	50	14.88	48	17.45	24	11.94	48	21.43	19	6.69
ACENAPHTHENE	6.7	48	89	µg/kg	46	13.69	32	11.64	38	18.91	50	22.32	21	7.39
ACENAPHTHYLENE	5.9	67	128	µg/kg	29	8.63	25	9.09	16	7.96	24	10.71	13	4.58
ANTHRACENE	57.2	451	845	µg/kg	110	32.74	110	40.00	110	54.73	150	66.96	98	34.51
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	230	68.45	430	156.36	280	139.30	360	160.71	300	105.63
BENZO(A)PYRENE	150	800	1450	µg/kg	300	89.29	530	192.73	340	169.15	510	227.68	310	109.15
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	320	95.24	430	156.36	380	189.05	430	191.96	370	130.28
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	200	59.52	400	145.45	240	119.40	360	160.71	160	56.34
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	160	47.62	330	120.00	310	154.23	430	191.96	170	59.86
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	300	89.29	430	156.36	270	134.33	440	196.43	280	98.59
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	49	14.58	110	40.00	69	34.33	100	44.64	34	11.97
FLUORANTHENE	423	1327	2230	µg/kg	750	223.21	820	298.18	450	223.88	950	424.11	660	232.39
FLUORENE	77.4	307	536	µg/kg	57	16.96	45	16.36	48	23.88	99	44.20	27	9.51
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	200	59.52	330	120.00	200	99.50	300	133.93	160	56.34
NAPHTHALENE	176	369	561	µg/kg	53	15.77	40	14.55	24	11.94	42	18.75	18	6.34
PHENANTHRENE	204	687	1170	µg/kg	360	107.14	410	149.09	350	174.13	670	299.11	280	98.59
PYRENE	195	858	1520	µg/kg	540	160.71	750	272.73	470	233.83	870	388.39	630	221.83
TOTAL PAHs 17	1610	12205	22800	µg/kg	3754	1117.26	5270	1916.36	3619	1800.50	5833	2604.02	3550	1250.00
BENZO(E)PYRENE	150	800	1450	µg/kg	200	59.52	NA	NA	NA	NA	NA	NA	200	70.42
C1-CHRYSENES	NL	NL	NL	µg/kg	200 J	59.52	NA	NA	NA	NA	NA	NA	140 J	49.30
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	380 J	113.10	NA	NA	NA	NA	NA	NA	250 J	88.03
C1-FLUORENES	NL	NL	NL	µg/kg	35 J	10.42	NA	NA	NA	NA	NA	NA	16 J	5.63
C1-NAPHTHALENES	NL	NL	NL	µg/kg	52 J	15.48	NA	NA	NA	NA	NA	NA	21 J	7.39
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	240 J	71.43	NA	NA	NA	NA	NA	NA	150 J	52.82
C2-CHRYSENES	NL	NL	NL	µg/kg	170 J	50.60	NA	NA	NA	NA	NA	NA	84 J	29.58
C2-FLUORENES	NL	NL	NL	µg/kg	81 J	24.11	NA	NA	NA	NA	NA	NA	33 J	11.62
C2-NAPHTHALENES	NL	NL	NL	µg/kg	100 J	29.76	NA	NA	NA	NA	NA	NA	37 J	13.03
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	280 J	83.33	NA	NA	NA	NA	NA	NA	140 J	49.30
C3-CHRYSENES	NL	NL	NL	µg/kg	160 J	47.62	NA	NA	NA	NA	NA	NA	82 J	28.87
C3-FLUORENES	NL	NL	NL	µg/kg	130 J	38.69	NA	NA	NA	NA	NA	NA	57 J	20.07
C3-NAPHTHALENES	NL	NL	NL	µg/kg	140 J	41.67	NA	NA	NA	NA	NA	NA	41 J	14.44
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	320 J	95.24	NA	NA	NA	NA	NA	NA	90 J	31.69
C4-CHRYSENES	NL	NL	NL	µg/kg	92 J	27.38	NA	NA	NA	NA	NA	NA	41 J	14.44
C4-NAPHTHALENES	NL	NL	NL	µg/kg	120 J	35.71	NA	NA	NA	NA	NA	NA	34 J	11.97
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	160 J	47.62	NA	NA	NA	NA	NA	NA	80 J	28.17
PERYLENE	NL	NL	NL	µg/kg	120	35.71	NA	NA	NA	NA	NA	NA	140	49.30
TOTAL PAHs 34	1610	12205	22800	µg/kg	6684	1989.29	--	--	--	--	--	--	5167	1819.37
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	32	9.52	NA	NA	NA	NA	NA	NA	15	5.28
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	280 J	83.33	NA	NA	NA	NA	NA	NA	160 J	56.34
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	200 J	59.52	NA	NA	NA	NA	NA	NA	86 J	30.28
TOC	NL	NL	NL	%	3.36		2.75		2.01		2.24		2.84	

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Chemical Name				Location ID	HB10-1-14		HB10-1-14		HB10-1-14		HB10-1-15		HB10-1-15	
				Field Sample ID	HB10-1-14-12		HB10-1-14-36		HB10-1-14-66		HB10-1-15-06		HB10-1-15-16	
				Sample Date	10/17/2010		10/17/2010		10/17/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 12		12- 36		60- 66		0- 6		12- 16	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	27	9.82	43	10.80	54	12.22	4.3 U	4.3 U	33	3.00
ACENAPHTHENE	6.7	48	89	µg/kg	12 J	4.36	20	5.03	25	5.66	4.3 U	4.3 U	28	2.55
ACENAPHTHYLENE	5.9	67	128	µg/kg	9.8	3.56	21	5.28	18	4.07	4.3 U	4.3 U	24	2.18
ANTHRACENE	57.2	451	845	µg/kg	48	17.45	72	18.09	94	21.27	4.3 U	4.3 U	89 J	8.09
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	200	72.73	260	65.33	280	63.35	10	5.81	260	23.64
BENZO(A)PYRENE	150	800	1450	µg/kg	190	69.09	310	77.89	270	61.09	10	5.81	300	27.27
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	230	83.64	380	95.48	320	72.40	13	7.56	340	30.91
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	130	47.27	230	57.79	180	40.72	6.6	3.84	320	29.09
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	52	18.91	160	40.20	130	29.41	5.6	3.26	240	21.82
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	190	69.09	260	65.33	280	63.35	9.9	5.76	260	23.64
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	18	6.55	33	8.29	27 J	6.11	4.3 U	4.3 U	37	3.36
FLUORANTHENE	423	1327	2230	µg/kg	370	134.55	560	140.70	900	203.62	27	15.70	570	51.82
FLUORENE	77.4	307	536	µg/kg	18	6.55	28	7.04	34	7.69	4.3 U	4.3 U	41	3.73
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	120	43.64	200	50.25	160	36.20	6.1	3.55	170	15.45
NAPHTHALENE	176	369	561	µg/kg	35	12.73	36	9.05	50	11.31	4.3 U	4.3 U	33	3.00
PHENANTHRENE	204	687	1170	µg/kg	160	58.18	240	60.30	320	72.40	11	6.40	340 J	30.91
PYRENE	195	858	1520	µg/kg	350	127.27	460	115.58	720	162.90	21	12.21	510	46.36
TOTAL PAHs 17	1610	12205	22800	µg/kg	2159.8	785.38	3313	832.41	3862	873.76	135.25	78.63	3595	326.82
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA	NA	NA	NA	NA	7.7	4.48	NA	NA
C1-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	7.7 J	4.48	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	18 J	10.47	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	4.3 U	4.3 U	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	4.3 U	4.3 U	NA	NA
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	7.7 J	4.48	NA	NA
C2-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	6.6 J	3.84	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	4.3 U	4.3 U	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	4.3 U	4.3 U	NA	NA
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	8.5 J	4.94	NA	NA
C3-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	4.3 U	4.3 U	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	4.3 U	4.3 U	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	4.3 U	4.3 U	NA	NA
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	20 J	11.63	NA	NA
C4-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	4.3 U	4.3 U	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	4.3 U	4.3 U	NA	NA
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	46 J	26.74	NA	NA
PERYLENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	5.6	3.26		NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--	--	--	--	--	280.25	162.94	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	4.3 U	4.3 U	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	12 J	6.98	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	9 J	5.23	NA	NA
TOC	NL	NL	NL	%	2.75		3.98		4.42		1.72		11	

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-16		HB10-1-16		HB10-1-16		HB10-1-17		HB10-1-20	
				Field Sample ID	HB10-1-16-06		HB10-1-16-12		HB10-1-16-31		HB10-1-17-06		HB10-1-20-06	
				Sample Date	10/17/2010		10/17/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	0- 6		0- 12		12- 31		0- 6		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	12	5.61	340 U	340 U	49	6.01	28	3.42	49	23.56
ACENAPHTHENE	6.7	48	89	µg/kg	30	14.02	340 U	340 U	56	6.87	16 J	1.95	140	67.31
ACENAPHTHYLENE	5.9	67	128	µg/kg	11	5.14	340 U	340 U	47	5.77	19 J	2.32	120	57.69
ANTHRACENE	57.2	451	845	µg/kg	120	56.07	340 U	340 U	160 U	160 U	61	7.45	610	293.27
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	330	154.21	620	139.33	340	41.72	140	17.09	1400	673.08
BENZO(A)PYRENE	150	800	1450	µg/kg	400	186.92	680	152.81	340	41.72	160	19.54	1400	673.08
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	480	224.30	680	152.81	390	47.85	200	24.42	1200	576.92
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	230	107.48	360	80.90	200	24.54	100	12.21	700	336.54
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	200	93.46	340 J	76.40	190	23.31	91	11.11	640	307.69
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	400	186.92	700	157.30	320	39.26	150	18.32	1400	673.08
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	120 U	120 U	340 U	340 U	160 U	160 U	39	4.76	160	76.92
FLUORANTHENE	423	1327	2230	µg/kg	1000	467.29	1700	382.02	870	106.75	350	42.74	3300	1586.54
FLUORENE	77.4	307	536	µg/kg	47	21.96	340 U	340 U	160 U	160 U	28 J	3.42	160	76.92
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	220	102.80	350	78.65	190	23.31	100	12.21	740	355.77
NAPHTHALENE	176	369	561	µg/kg	15	7.01	340 U	340 U	56	6.87	26	3.17	68	32.69
PHENANTHRENE	204	687	1170	µg/kg	430	200.93	1200	269.66	370	45.40	130	15.87	1800	865.38
PYRENE	195	858	1520	µg/kg	670	313.08	1500	337.08	690	84.66	280	34.19	2800	1346.15
TOTAL PAHs 17	1610	12205	22800	µg/kg	4655	2175.23	9320	2094.38	4348	533.50	1918	234.19	16687	8022.60
BENZO(E)PYRENE	150	800	1450	µg/kg	250	116.82	380	85.39	220	26.99	120	14.65	760	365.38
C1-CHRYSENES	NL	NL	NL	µg/kg	130 J	60.75	750 J	168.54	440 J	53.99	160 J	19.54	550 J	264.42
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	310 J	144.86	1600 J	359.55	850 J	104.29	260 J	31.75	1500 J	721.15
C1-FLUORENES	NL	NL	NL	µg/kg	19 J	8.88	130 J	29.21	59 J	7.24	16 J	1.95	67 J	32.21
C1-NAPHTHALENES	NL	NL	NL	µg/kg	12 J	5.61	140 J	31.46	53 J	6.50	29 J	3.54	51 J	24.52
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	140 J	65.42	1100 J	247.19	460 J	56.44	140 J	17.09	910 J	437.50
C2-CHRYSENES	NL	NL	NL	µg/kg	66 J	30.84	470 J	105.62	370 J	45.40	110 J	13.43	210 J	100.96
C2-FLUORENES	NL	NL	NL	µg/kg	21 J	9.81	210 J	47.19	140 J	17.18	44 J	5.37	67 J	32.21
C2-NAPHTHALENES	NL	NL	NL	µg/kg	21 J	9.81	220 J	49.44	110 J	13.50	57 J	6.96	59 J	28.37
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	93 J	43.46	1100 J	247.19	680 J	83.44	150 J	18.32	510 J	245.19
C3-CHRYSENES	NL	NL	NL	µg/kg	59 J	27.57	400 J	89.89	330 J	40.49	110 J	13.43	160 J	76.92
C3-FLUORENES	NL	NL	NL	µg/kg	38 J	17.76	390 J	87.64	280 J	34.36	67 J	8.18	47 U	47 U
C3-NAPHTHALENES	NL	NL	NL	µg/kg	20 J	9.35	240 J	53.93	130 J	15.95	58 J	7.08	67 J	32.21
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	60 J	28.04	890 J	200.00	720 J	88.34	140 J	17.09	220 J	105.77
C4-CHRYSENES	NL	NL	NL	µg/kg	25 J	11.68	210 J	47.19	160 J	19.63	68 J	8.30	47 U	47 U
C4-NAPHTHALENES	NL	NL	NL	µg/kg	14 J	6.54	200 J	44.94	140 J	17.18	48 J	5.86	46 J	22.12
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	57 J	26.64	810 J	182.02	640 J	78.53	140 J	17.09	95 J	45.67
PERYLENE	NL	NL	NL	µg/kg	120	56.07	340 U	340 U	200	24.54	86	10.50	280	134.62
TOTAL PAHs 34	1610	12205	22800	µg/kg	6098	2849.53	18560	4170.79	10281	1261.47	3693	450.92	22237	10690.87
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	8.2	3.83	340 U	340 U	36	4.42	21	2.56	47 U	47 U
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	130 J	60.75	850 J	191.01	570 J	69.94	180 J	21.98	540 J	259.62
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	69 J	32.24	560 J	125.84	470 J	57.67	120 J	14.65	210 J	100.96
TOC	NL	NL	NL	%	2.14		4.45		8.15		8.19		2.08	

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-21		HB10-1-21		HB10-1-23		HB10-1-23		HB10-1-23	
				Field Sample ID	HB10-1-21-06		HB10-1-21-23		HB10-1-23-06		HB10-1-23-06DP		HB10-1-23-12	
				Sample Date	10/18/2010		10/18/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	0- 6		12- 23		0- 6		0- 6		0- 12	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	6.3 J	7.42	23 J	17.04	19	4.20	21	4.85	49	9.09
ACENAPHTHENE	6.7	48	89	µg/kg	7.8 J	9.19	27 J	20.00	8	1.77	10	2.31	19	3.53
ACENAPHTHYLENE	5.9	67	128	µg/kg	6.9 J	8.13	23 R		12	2.65	12	2.77	20	3.71
ANTHRACENE	57.2	451	845	µg/kg	27 J	31.80	110 J	81.48	46	10.18	46	10.62	120	22.26
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	54	63.60	180	133.33	170	37.61	170	39.26	260	48.24
BENZO(A)PYRENE	150	800	1450	µg/kg	62	73.03	210	155.56	160	35.40	150	34.64	240	44.53
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	79	93.05	240	177.78	170	37.61	190	43.88	270	50.09
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	44	51.83	160 J	118.52	100	22.12	100	23.09	160	29.68
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	42 U	42 U	130 J	96.30	54 J	11.95	59 J	13.63	140	25.97
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	63	74.20	180	133.33	170	37.61	180	41.57	270	50.09
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	14 J	16.49	40 J	29.63	19	4.20	18	4.16	29	5.38
FLUORANTHENE	423	1327	2230	µg/kg	150	176.68	470	348.15	290	64.16	300	69.28	530	98.33
FLUORENE	77.4	307	536	µg/kg	11 J	12.96	32 J	23.70	13	2.88	15	3.46	26	4.82
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	42 U	42 U	150 J	111.11	65	14.38	120	27.71	140	25.97
NAPHTHALENE	176	369	561	µg/kg	6.6 J	7.77	23 R		18	3.98	18	4.16	41	7.61
PHENANTHRENE	204	687	1170	µg/kg	61	71.85	210	155.56	160	35.40	170	39.26	220	40.82
PYRENE	195	858	1520	µg/kg	120	141.34	370	274.07	310	68.58	330	76.21	550	102.04
TOTAL PAHs 17	1610	12205	22800	µg/kg	754.6	888.81	2532	1875.56	1784	394.69	1909	440.88	3084	572.17
BENZO(E)PYRENE	150	800	1450	µg/kg	45	53.00	180 J	133.33	NA	NA	NA	NA	NA	NA
C1-CHRYSENES	NL	NL	NL	µg/kg	67 J	78.92	170 J	125.93	NA	NA	NA	NA	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	120 J	141.34	340 J	251.85	NA	NA	NA	NA	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	8 J	9.42	27 J	20.00	NA	NA	NA	NA	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	6.7 J	7.89	24 J	17.78	NA	NA	NA	NA	NA	NA
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	58 J	68.32	170 J	125.93	NA	NA	NA	NA	NA	NA
C2-CHRYSENES	NL	NL	NL	µg/kg	55 J	64.78	150 J	111.11	NA	NA	NA	NA	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	22 J	25.91	64 J	47.41	NA	NA	NA	NA	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	16 J	18.85	50 J	37.04	NA	NA	NA	NA	NA	NA
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	75 J	88.34	230 J	170.37	NA	NA	NA	NA	NA	NA
C3-CHRYSENES	NL	NL	NL	µg/kg	52 J	61.25	130 J	96.30	NA	NA	NA	NA	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	34 J	40.05	130 J	96.30	NA	NA	NA	NA	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	25 J	29.45	77 J	57.04	NA	NA	NA	NA	NA	NA
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	83 J	97.76	270 J	200.00	NA	NA	NA	NA	NA	NA
C4-CHRYSENES	NL	NL	NL	µg/kg	32 J	37.69	81 J	60.00	NA	NA	NA	NA	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	23 J	27.09	88 J	65.19	NA	NA	NA	NA	NA	NA
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	55 J	64.78	150 J	111.11	NA	NA	NA	NA	NA	NA
PERYLENE	NL	NL	NL	µg/kg	36 J	42.40	100 J	74.07	NA	NA	NA	NA	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	1561	1838.63	4940	3659.26	--	--	--	--	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	4.4 J	5.18	23 R		NA	NA	NA	NA	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	83 J	97.76	250 J	185.19	NA	NA	NA	NA	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	63 J	74.20	180 J	133.33	NA	NA	NA	NA	NA	NA
TOC	NL	NL	NL	%	0.849		1.35		4.52		4.33		5.39	

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-23		HB10-1-24		HB10-1-24		HB10-1-24		HB10-1-25	
				Field Sample ID	HB10-1-23-36		HB10-1-24-06		HB10-1-24-12		HB10-1-24-36		HB10-1-25-06	
				Sample Date	10/17/2010		10/18/2010		10/18/2010		10/18/2010		10/17/2010	
				Depth Interval	12- 36		0- 6		0- 12		12- 36		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	92	12.53	22	3.96	86	15.44	88	14.74	23	5.85
ACENAPHTHENE	6.7	48	89	µg/kg	26	3.54	37 J	6.67	40	7.18	67	11.22	11	2.80
ACENAPHTHYLENE	5.9	67	128	µg/kg	37	5.04	12 J	2.16	32	5.75	37	6.20	9.4	2.39
ANTHRACENE	57.2	451	845	µg/kg	110	14.99	92	16.58	130	23.34	260	43.55	47	11.96
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	300	40.87	160	28.83	420	75.40	550	92.13	140	35.62
BENZO(A)PYRENE	150	800	1450	µg/kg	310	42.23	200	36.04	520	93.36	660	110.55	130	33.08
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	350	47.68	200	36.04	550	98.74	670	112.23	160	40.71
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	230	31.34	120	21.62	330	59.25	370	61.98	71	18.07
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	230	31.34	120	21.62	260	46.68	330	55.28	50	12.72
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	330	44.96	200	36.04	490	87.97	680	113.90	140	35.62
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	33	4.50	38 J	6.85	84	15.08	120	20.10	17	4.33
FLUORANTHENE	423	1327	2230	µg/kg	680	92.64	550	99.10	1200	215.44	1600	268.01	260	66.16
FLUORENE	77.4	307	536	µg/kg	44	5.99	46 J	8.29	54	9.69	82	13.74	16	4.07
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	210	28.61	110	19.82	340	61.04	410	68.68	60	15.27
NAPHTHALENE	176	369	561	µg/kg	140	19.07	28	5.05	92	16.52	82	13.74	31	7.89
PHENANTHRENE	204	687	1170	µg/kg	370	50.41	310	55.86	470	84.38	720	120.60	130	33.08
PYRENE	195	858	1520	µg/kg	660	89.92	380	68.47	900	161.58	1200	201.01	280	71.25
TOTAL PAHs 17	1610	12205	22800	µg/kg	4152	565.67	2625	472.97	5998	1076.84	7926	1327.64	1575.4	400.87
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA	110	19.82	330	59.25	420	70.35	NA	NA
C1-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	110 J	19.82	320 J	57.45	420 J	70.35	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	230 J	41.44	660 J	118.49	850 J	142.38	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA	16 J	2.88	40 J	7.18	64 J	10.72	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	24 J	4.32	81 J	14.54	81 J	13.57	NA	NA
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	150 J	27.03	360 J	64.63	590 J	98.83	NA	NA
C2-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	54 J	9.73	240 J	43.09	250 J	41.88	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA	26 J	4.68	140 J	25.13	190 J	31.83	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	29 J	5.23	150 J	26.93	180 J	30.15	NA	NA
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	90 J	16.22	570 J	102.33	760 J	127.30	NA	NA
C3-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	42 J	7.57	230 J	41.29	230 J	38.53	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA	35 J	6.31	270 J	48.47	390 J	65.33	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	30 J	5.41	220 J	39.50	380 J	63.65	NA	NA
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	52 J	9.37	590 J	105.92	620 J	103.85	NA	NA
C4-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	22 J	3.96	110 J	19.75	110 J	18.43	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	25 J	4.50	290 J	52.06	430 J	72.03	NA	NA
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	29 J	5.23	320 J	57.45	330 J	55.28	NA	NA
PERYLENE	NL	NL	NL	µg/kg	NA	NA	64 J	11.53	130	23.34	230 U	230 U	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--	3741	674.05	10963	1968.22	14248	2386.60	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA	16	2.88	51	9.16	53	8.88	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	120 J	21.62	490 J	87.97	560 J	93.80	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	55 J	9.91	340 J	61.04	410 J	68.68	NA	NA
TOC	NL	NL	NL	%	7.34		5.55		5.57		5.97		3.93	

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-25		HB10-1-27		HB10-1-27		HB10-1-28		HB10-1-28	
				Field Sample ID	HB10-1-25-06DP		HB10-1-27-06		HB10-1-27-06DP		HB10-1-28-06		HB10-1-28-12	
				Sample Date	10/17/2010		10/18/2010		10/18/2010		10/17/2010		10/17/2010	
				Depth Interval	0- 6		0- 6		0- 6		0- 6		0- 12	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	23	6.20	8.9 U	8.9 U	9.1 U	9.1 U	39	9.33	40	9.43
ACENAPHTHENE	6.7	48	89	µg/kg	16	4.31	8.9 U	8.9 U	9.1 U	9.1 U	43	10.29	44	10.38
ACENAPHTHYLENE	5.9	67	128	µg/kg	13	3.50	8.9 U	8.9 U	9.4	1.18	39	9.33	34	8.02
ANTHRACENE	57.2	451	845	µg/kg	62	16.71	17	3.20	20	2.52	110	26.32	96	22.64
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	190	51.21	81	15.23	110	13.85	460	110.05	380	89.62
BENZO(A)PYRENE	150	800	1450	µg/kg	180	48.52	98	18.42	160	20.15	510	122.01	440	103.77
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	210	56.60	100	18.80	180	22.67	740	177.03	620	146.23
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	130	35.04	82	15.41	130	16.37	400	95.69	340	80.19
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	100	26.95	57	10.71	130	16.37	310	74.16	250	58.96
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	200	53.91	79	14.85	110	13.85	540	129.19	430	101.42
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	25	6.74	23	4.32	37	4.66	61	14.59	89 J	20.99
FLUORANTHENE	423	1327	2230	µg/kg	350	94.34	150	28.20	160	20.15	910	217.70	970 J	228.77
FLUORENE	77.4	307	536	µg/kg	23	6.20	8.9 U	8.9 U	9.1 U	9.1 U	55	13.16	59	13.92
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	110	29.65	62	11.65	110	13.85	330 J	78.95	280 J	66.04
NAPHTHALENE	176	369	561	µg/kg	22	5.93	8.9 U	8.9 U	9.1 U	9.1 U	42	10.05	36	8.49
PHENANTHRENE	204	687	1170	µg/kg	200	53.91	56	10.53	63	7.93	480	114.83	430	101.42
PYRENE	195	858	1520	µg/kg	390	105.12	140	26.32	180	22.67	860	205.74	690 J	162.74
TOTAL PAHs 17	1610	12205	22800	µg/kg	2244	604.85	967.25	181.81	1417.6	178.54	5929	1418.42	5228	1233.02
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C4-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PERYLENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--	--	--	--	--	--	--	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOC	NL	NL	NL	%	3.71		5.32		7.94		4.18		4.24	

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-28		HB10-1-28		HB10-1-28		HB10-1-28		HB10-1-29	
				Field Sample ID	HB10-1-28-36		HB10-1-28-60		HB10-1-28-84		HB10-1-28-96		HB10-1-29-06	
				Sample Date	10/17/2010		10/17/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	12- 36		36- 60		60- 84		60- 96		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	42	9.79	57	9.95	97	16.99	18	4.38	72 U	72 U
ACENAPHTHENE	6.7	48	89	µg/kg	68	15.85	29	5.06	91	15.94	15	3.65	81	7.94
ACENAPHTHYLENE	5.9	67	128	µg/kg	31	7.23	27	4.71	58	10.16	15	3.65	72 U	72 U
ANTHRACENE	57.2	451	845	µg/kg	190	44.29	64	11.17	160	28.02	27	6.57	240	23.53
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	600	139.86	250 J	43.63	440	77.06	83 J	20.19	450	44.12
BENZO(A)PYRENE	150	800	1450	µg/kg	600	139.86	280 J	48.87	500	87.57	96 J	23.36	460	45.10
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	640	149.18	330 J	57.59	530	92.82	110 J	26.76	560	54.90
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	440	102.56	200 J	34.90	390	68.30	53	12.90	250	24.51
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	350	81.59	230 J	40.14	410	71.80	53 J	12.90	250	24.51
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	760 J	177.16	270 J	47.12	490	85.81	90 J	21.90	480	47.06
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	120 J	27.97	58 J	10.12	100 J	17.51	13	3.16	72 U	72 U
FLUORANTHENE	423	1327	2230	µg/kg	1500 J	349.65	510 J	89.01	1100 J	192.64	180 J	43.80	1500	147.06
FLUORENE	77.4	307	536	µg/kg	89	20.75	47	8.20	120	21.02	16	3.89	96	9.41
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	370 J	86.25	160 J	27.92	310 J	54.29	41	9.98	240	23.53
NAPHTHALENE	176	369	561	µg/kg	36	8.39	53	9.25	110	19.26	24	5.84	98	9.61
PHENANTHRENE	204	687	1170	µg/kg	810	188.81	290 J	50.61	790	138.35	140 J	34.06	940	92.16
PYRENE	195	858	1520	µg/kg	1100 J	256.41	430 J	75.04	920 J	161.12	200 J	48.66	980	96.08
TOTAL PAHs 17	1610	12205	22800	µg/kg	7746	1805.59	3285	573.30	6616	1158.67	1174	285.64	6733	660.10
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	290	28.43
C1-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	230 J	22.55
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	510 J	50.00
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	72 U	72 U
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	72 U	72 U
C1-PHENANTHRENE/ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	350 J	34.31
C2-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	130 J	12.75
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	95 J	9.31
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	88 J	8.63
C2-PHENANTHRENE/ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	280 J	27.45
C3-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	72 U	72 U
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	140 J	13.73
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	130 J	12.75
C3-PHENANTHRENE/ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	210 J	20.59
C4-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	72 U	72 U
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	120 J	11.76
C4-PHENANTHRENE/ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	220 J	21.57
PERYLENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	110	10.78
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--	--	--	--	--	--	--	9744	955.29
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	72 U	72 U
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	270 J	26.47
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	140 J	13.73
TOC	NL	NL	NL	%	4.29		5.73		5.71		4.11		10.2	

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-29		HB10-1-29		HB10-1-29		HB10-1-29		HB10-1-30	
				Field Sample ID	HB10-1-29-12		HB10-1-29-36		HB10-1-29-60		HB10-1-29-93		HB10-1-30-06	
				Sample Date	10/17/2010		10/17/2010		10/17/2010		10/17/2010		10/18/2010	
				Depth Interval	0- 12		12- 36		36- 60		60- 93		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	75	6.52	500	30.30	170	11.33	260	18.44	54	11.23
ACENAPHTHENE	6.7	48	89	µg/kg	190	16.52	850	51.52	360	24.00	570	40.43	23	4.78
ACENAPHTHYLENE	5.9	67	128	µg/kg	72 U	72 U	190	11.52	110	7.33	130	9.22	31	6.44
ANTHRACENE	57.2	451	845	µg/kg	610	53.04	2000	121.21	1400 U	1400 U	1900	134.75	110	22.87
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	1000	86.96	5000	303.03	2400	160.00	3000	212.77	380	79.00
BENZO(A)PYRENE	150	800	1450	µg/kg	1300	113.04	5000	303.03	2500	166.67	2700	191.49	560	116.42
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	1400	121.74	5400	327.27	2600	173.33	3200	226.95	560	116.42
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	670	58.26	2700	163.64	1400 U	1400 U	1600 U	1600 U	410	85.24
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	610	53.04	2700	163.64	1400 U	1400 U	1500 J	106.38	460	95.63
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	1400	121.74	4800	290.91	2600	173.33	3300	234.04	450	93.56
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	170	14.78	630	38.18	350	23.33	370	26.24	120	24.95
FLUORANTHENE	423	1327	2230	µg/kg	3800	330.43	14000	848.48	6500	433.33	8700	617.02	830	172.56
FLUORENE	77.4	307	536	µg/kg	240	20.87	1800 U	1800 U	500	33.33	740	52.48	42	8.73
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	640	55.65	2500	151.52	1400 J	93.33	1500 J	106.38	350	72.77
NAPHTHALENE	176	369	561	µg/kg	74	6.43	570	34.55	260	17.33	350	24.82	43	8.94
PHENANTHRENE	204	687	1170	µg/kg	2200	191.30	9800	593.94	4200	280.00	6500	460.99	340	70.69
PYRENE	195	858	1520	µg/kg	2600	226.09	11000	666.67	5200	346.67	7200	510.64	820	170.48
TOTAL PAHs 17	1610	12205	22800	µg/kg	17015	1479.57	68540	4153.94	31250	2083.33	42720	3029.79	5583	1160.71
BENZO(E)PYRENE	150	800	1450	µg/kg	810	70.43	2800	169.70	1400 J	93.33	1700	120.57	NA	NA
C1-CHRYSENEs	NL	NL	NL	µg/kg	750 J	65.22	2300 J	139.39	1400 J	93.33	1600 J	113.48	NA	NA
C1-FLUORANTHENEs/PYRENEs	NL	NL	NL	µg/kg	1400 J	121.74	4500 J	272.73	2600 J	173.33	3400 J	241.13	NA	NA
C1-FLUORENEs	NL	NL	NL	µg/kg	130 J	11.30	550 J	33.33	270 J	18.00	310 J	21.99	NA	NA
C1-NAPHTHALENEs	NL	NL	NL	µg/kg	90 J	7.83	560 J	33.94	200 J	13.33	310 J	21.99	NA	NA
C1-PHENANTHRENEs/ ANTHRACENEs	NL	NL	NL	µg/kg	1100 J	95.65	3700 J	224.24	2100 J	140.00	2600 J	184.40	NA	NA
C2-CHRYSENEs	NL	NL	NL	µg/kg	400 J	34.78	950 J	57.58	610 J	40.67	670 J	47.52	NA	NA
C2-FLUORENEs	NL	NL	NL	µg/kg	340 J	29.57	900 J	54.55	420 J	28.00	340 J	24.11	NA	NA
C2-NAPHTHALENEs	NL	NL	NL	µg/kg	290 J	25.22	1200 J	72.73	630 J	42.00	720 J	51.06	NA	NA
C2-PHENANTHRENEs/ ANTHRACENEs	NL	NL	NL	µg/kg	1000 J	86.96	2800 J	169.70	1600 J	106.67	1600 J	113.48	NA	NA
C3-CHRYSENEs	NL	NL	NL	µg/kg	280 J	24.35	850 J	51.52	560 J	37.33	580 J	41.13	NA	NA
C3-FLUORENEs	NL	NL	NL	µg/kg	550 J	47.83	1500 J	90.91	760 J	50.67	670 J	47.52	NA	NA
C3-NAPHTHALENEs	NL	NL	NL	µg/kg	510 J	44.35	2000 J	121.21	1100 J	73.33	880 J	62.41	NA	NA
C3-PHENANTHRENEs/ ANTHRACENEs	NL	NL	NL	µg/kg	770 J	66.96	1500 J	90.91	1200 J	80.00	980 J	69.50	NA	NA
C4-CHRYSENEs	NL	NL	NL	µg/kg	180 J	15.65	420 J	25.45	270 J	18.00	230 J	16.31	NA	NA
C4-NAPHTHALENEs	NL	NL	NL	µg/kg	530 J	46.09	1700 J	103.03	840 J	56.00	570 J	40.43	NA	NA
C4-PHENANTHRENEs/ ANTHRACENEs	NL	NL	NL	µg/kg	410 J	35.65	800 J	48.48	730 J	48.67	740 J	52.48	NA	NA
PERYLENE	NL	NL	NL	µg/kg	300	26.09	1800 U	1800 U	550	36.67	660	46.81	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	26780	2328.70	97970	5937.58	48320	3221.33	61020	4327.66	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	72 U	72 U	420	25.45	160	10.67	240	17.02	NA	NA
C2-FLUORANTHENEs/PYRENEs	NL	NL	NL	µg/kg	760 J	66.09	2400 J	145.45	1400 J	93.33	1600 J	113.48	NA	NA
C3-FLUORANTHENEs/PYRENEs	NL	NL	NL	µg/kg	450 J	39.13	1200 J	72.73	760 J	50.67	740 J	52.48	NA	NA
TOC	NL	NL	NL	%	11.5		16.5		15		14.1		4.81	

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

Chemical Name				Location ID	HB10-1-30		HB10-1-30		HB10-1-30		HB10-1-30		HB10-1-30	
				Field Sample ID	HB10-1-30-06DP		HB10-1-30-12		HB10-1-30-36		HB10-1-30-60		HB10-1-30-77	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 6		0- 12		12- 36		36- 60		60- 77	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
TEC ¹	MEC ¹	PEC ¹	Unit											
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	54	9.82	110	24.77	65	7.27	28	3.50	53	1.50
ACENAPHTHENE	6.7	48	89	µg/kg	31 J	5.64	130	29.28	93	10.40	24	3.00	19	0.54
ACENAPHTHYLENE	5.9	67	128	µg/kg	33	6.00	94	21.17	49	5.48	25	3.13	25	0.71
ANTHRACENE	57.2	451	845	µg/kg	160	29.09	500	112.61	240	26.85	84	10.51	63	1.78
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	510	92.73	1300	292.79	680	76.06	310	38.80	250	7.08
BENZO(A)PYRENE	150	800	1450	µg/kg	510	92.73	1100	247.75	810	90.60	370	46.31	340	9.63
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	620	112.73	1300	292.79	1000	111.86	420	52.57	390	11.05
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	490	89.09	720	162.16	660	73.83	290	36.30	310	8.78
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	600	109.09	640	144.14	460	51.45	310	38.80	300	8.50
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	610	110.91	1400	315.32	1000	111.86	310	38.80	300	8.50
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	140	25.45	320	72.07	170	19.02	85 U	85 U	80	2.27
FLUORANTHENE	423	1327	2230	µg/kg	1100	200.00	2600	585.59	2100	234.90	600	75.09	450	12.75
FLUORENE	77.4	307	536	µg/kg	50	9.09	200	45.05	110	12.30	35	4.38	35	0.99
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	440	80.00	660	148.65	520	58.17	250	31.29	250	7.08
NAPHTHALENE	176	369	561	µg/kg	44	8.00	110	24.77	74	8.28	37	4.63	40	1.13
PHENANTHRENE	204	687	1170	µg/kg	460	83.64	1400	315.32	1400	156.60	340	42.55	220	6.23
PYRENE	195	858	1520	µg/kg	1000 J	181.82	2600	585.59	1800	201.34	570	71.34	470	13.31
TOTAL PAHs 17	1610	12205	22800	µg/kg	6852	1245.82	15184	3419.82	11231	1256.26	4045.5	506.32	3595	101.84
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C4-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PERYLENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--	--	--	--	--	--	--	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOC	NL	NL	NL	%	5.5		4.44		8.94		7.99		35.3	

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-31		HB10-1-31		HB10-1-31	
				Field Sample ID	HB10-1-31-06		HB10-1-31-06DP		HB10-1-31-12	
				Sample Date	10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 6		0- 6		0- 12	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit						
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	57	12.05	76	17.80	82	15.95
ACENAPHTHENE	6.7	48	89	µg/kg	24	5.07	38	8.90	28	5.45
ACENAPHTHYLENE	5.9	67	128	µg/kg	28	5.92	33	7.73	30	5.84
ANTHRACENE	57.2	451	845	µg/kg	100	21.14	220	51.52	100	19.46
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	390	82.45	650	152.22	470	91.44
BENZO(A)PYRENE	150	800	1450	µg/kg	530	112.05	750	175.64	650	126.46
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	690	145.88	810	189.70	590	114.79
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	330	69.77	310	72.60	500	97.28
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	370	78.22	530	124.12	450	87.55
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	440	93.02	650	152.22	520	101.17
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	110	23.26	160	37.47	150	29.18
FLUORANTHENE	423	1327	2230	µg/kg	590	124.74	1400	327.87	910	177.04
FLUORENE	77.4	307	536	µg/kg	39	8.25	65	15.22	60	11.67
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	340	71.88	420	98.36	430	83.66
NAPHTHALENE	176	369	561	µg/kg	44	9.30	58	13.58	60	11.67
PHENANTHRENE	204	687	1170	µg/kg	300	63.42	590	138.17	410	79.77
PYRENE	195	858	1520	µg/kg	660	139.53	1300	304.45	890	173.15
TOTAL PAHs 17	1610	12205	22800	µg/kg	5042	1065.96	8060	1887.59	6330	1231.52
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA	NA	NA	NA	NA
C1-CHRYSENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
C1-FLUORANTHENEs/PYRENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
C1-FLUORENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
C1-NAPHTHALENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
C1-PHENANTHRENEs/ ANTHRACENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
C2-CHRYSENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
C2-FLUORENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
C2-NAPHTHALENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
C2-PHENANTHRENEs/ ANTHRACENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
C3-CHRYSENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
C3-FLUORENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
C3-NAPHTHALENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
C3-PHENANTHRENEs/ ANTHRACENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
C4-CHRYSENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
C4-NAPHTHALENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
C4-PHENANTHRENEs/ ANTHRACENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
PERYLENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--	--	--	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
C2-FLUORANTHENEs/PYRENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
C3-FLUORANTHENEs/PYRENEs	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA
TOC	NL	NL	NL	%	4.73		4.27		5.14	

Table 3-2a
Area 1 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-31	
				Field Sample ID	HB10-1-31-36	
				Sample Date	10/18/2010	
				Depth Interval	12- 36	
				Concentration	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit		
<u>2-METHYLNAPHTHALENE</u>	20.2	111	201	µg/kg	35	7.29
ACENAPHTHENE	6.7	48	89	µg/kg	18 J	3.75
ACENAPHTHYLENE	5.9	67	128	µg/kg	29	6.04
ANTHRACENE	57.2	451	845	µg/kg	76	15.83
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	290	60.42
BENZO(A)PYRENE	150	800	1450	µg/kg	350	72.92
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	410	85.42
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	290	60.42
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	290	60.42
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	320	66.67
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	79	16.46
FLUORANTHENE	423	1327	2230	µg/kg	540	112.50
FLUORENE	77.4	307	536	µg/kg	33	6.88
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	240	50.00
NAPHTHALENE	176	369	561	µg/kg	31	6.46
PHENANTHRENE	204	687	1170	µg/kg	300	62.50
PYRENE	195	858	1520	µg/kg	520	108.33
TOTAL PAHs 17	1610	12205	22800	µg/kg	3851	802.29
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA
C1-CHRYSENES	NL	NL	NL	µg/kg	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA
C2-CHRYSENES	NL	NL	NL	µg/kg	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA
C3-CHRYSENES	NL	NL	NL	µg/kg	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA
C4-CHRYSENES	NL	NL	NL	µg/kg	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA
PERYLENE	NL	NL	NL	µg/kg	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA
TOC	NL	NL	NL	%	4.8	

Notes:

Level II Concern: >TEC and ≤MEC

Level III Concern: >MEC and ≤PEC

Level IV Concern: >PEC

"--" - Not Applicable

DP - Duplicate

ID - Identification

J - Estimated value

MEC - Median Effects Concentration

NA - Not Analyzed

NL - Not Listed

Norm. - Normalized to 1% TOC

PAH - Polycyclic Aromatic Hydrocarbon

PEC - Probable Effect Concentration

SQG - Sediment Quality Guidelines

SS Conc. - Study Site Concentration

TEC - Threshold Effects Concentration

TOC - Total Organic Carbon

U - Not detected

µg/kg - Microgram per kilogram

WDNR - Wisconsin Department of Natural Resources

*TOC not analyzed, used result for investigative sample

TOTAL PAHs 17/34 - Calculated by WESTON (sum of detections plus 1/2 RL for NDs)

Italic = Analytes used for Total PAH 17 calculation

Underline = Analytes not used for Total PAH 34 calculation, all other analytes listed under PAHs used

¹ WDNR Consensus-Based SQGs

² It should be noted that 1,2-BENZPHENANTHRACENE is sometimes referred to as CHRYSENE

Table 3-2b
Area 2 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-18		HB10-2-18		HB10-2-26		HB10-2-26		HB10-2-32	
				Field Sample ID	HB10-2-18-06		HB10-2-18-06DP		HB10-2-26-06		HB10-2-26-17		HB10-2-32-06	
				Sample Date	10/18/2010		10/18/2010		10/16/2010		10/16/2010		10/18/2010	
				Depth Interval	0- 6		0- 6		0- 6		12- 17		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	51	18.82	7.3 U	7.3 U	9.5	1.80	24 J	13.41	7.9 UJ	7.9 U
ACENAPHTHENE	6.7	48	89	µg/kg	14	5.17	7.3 U	7.3 U	6.9	1.30	18	10.06	330	90.66
ACENAPHTHYLENE	5.9	67	128	µg/kg	20	7.38	32	8.99	4.7 U	4.7 U	6	3.35	17 J	4.67
ANTHRACENE	57.2	451	845	µg/kg	52	19.19	32	8.99	14	2.65	47	26.26	59 J	16.21
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	310	114.39	260	73.03	61 J	11.53	130	72.63	210	57.69
BENZO(A)PYRENE	150	800	1450	µg/kg	390	143.91	340	95.51	71 J	13.42	120	67.04	220	60.44
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	450	166.05	440	123.60	97 J	18.34	160 J	89.39	310	85.16
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	320	118.08	280	78.65	39	7.37	40	22.35	160	43.96
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	340 J	125.46	210 J	58.99	27	5.10	63 J	35.20	130	35.71
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	330	121.77	270	75.84	69 J	13.04	150	83.80	170	46.70
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	63	23.25	46	12.92	10	1.89	18	10.06	58	15.93
FLUORANTHENE	423	1327	2230	µg/kg	450	166.05	400	112.36	170 J	32.14	350	195.53	350	96.15
FLUORENE	77.4	307	536	µg/kg	31	11.44	7.3 U	7.3 U	11	2.08	24	13.41	37 J	10.16
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	280	103.32	230	64.61	38	7.18	75	41.90	140	38.46
NAPHTHALENE	176	369	561	µg/kg	41	15.13	7.3 U	7.3 U	10	1.89	23 J	12.85	3800	1043.96
PHENANTHRENE	204	687	1170	µg/kg	260	95.94	28	7.87	90 J	17.01	140	78.21	150	41.21
PYRENE	195	858	1520	µg/kg	460	169.74	390	109.55	130 J	24.57	290	162.01	340	93.41
TOTAL PAHs 17	1610	12205	22800	µg/kg	3862	1425.09	2972.6	835.00	855.75	161.77	1678	937.43	6488.9	1782.66
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA	NA	NA	46	8.70	NA	NA	NA	NA
C1-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	34 J	6.43	NA	NA	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	63 J	11.91	NA	NA	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	5.7 J	1.08	NA	NA	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	10 J	1.89	NA	NA	NA	NA
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	40 J	7.56	NA	NA	NA	NA
C2-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	24 J	4.54	NA	NA	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	12 J	2.27	NA	NA	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	17 J	3.21	NA	NA	NA	NA
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	39 J	7.37	NA	NA	NA	NA
C3-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	24 J	4.54	NA	NA	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	19 J	3.59	NA	NA	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	19 J	3.59	NA	NA	NA	NA
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	35 J	6.62	NA	NA	NA	NA
C4-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	14 J	2.65	NA	NA	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	12 J	2.27	NA	NA	NA	NA
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	21 J	3.97	NA	NA	NA	NA
PERYLENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	14	2.65	NA	NA	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--	--	--	1294.95	244.79	--	--	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	7	1.32	NA	NA	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	39 J	7.37	NA	NA	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	26 J	4.91	NA	NA	NA	NA
TOC	NL	NL	NL	%	2.71		3.56		5.29		1.79		3.64	

Table 3-2b
Area 2 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-32		HB10-2-33		HB10-2-33		HB10-2-34		HB10-2-34	
				Field Sample ID	HB10-2-32-06DP		HB10-2-33-06		HB10-2-33-22		HB10-2-34-06		HB10-2-34-06DP	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 6		0- 6		12- 22		0- 6		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	25	7.35	10	10.10	31	8.22	43	10.44	43	13.23
ACENAPHTHENE	6.7	48	89	µg/kg	18	5.29	4.8	4.85	12	3.18	20	4.85	21	6.46
ACENAPHTHYLENE	5.9	67	128	µg/kg	18	5.29	6.1	6.16	28	7.43	18	4.37	18	5.54
ANTHRACENE	57.2	451	845	µg/kg	53	15.59	18	18.18	52	13.79	49	11.89	51	15.69
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	230	67.65	45 J	45.45	290	76.92	180	43.69	190	58.46
BENZO(A)PYRENE	150	800	1450	µg/kg	300	88.24	54 J	54.55	420	111.41	230	55.83	230	70.77
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	360	105.88	59 J	59.60	500	132.63	270	65.53	270	83.08
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	220	64.71	35 J	35.35	300	79.58	200	48.54	200	61.54
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	240	70.59	34	34.34	300	79.58	210	50.97	210	64.62
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	240	70.59	55 J	55.56	330	87.53	220	53.40	230	70.77
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	60	17.65	13	13.13	80	21.22	30	7.28	29	8.92
FLUORANTHENE	423	1327	2230	µg/kg	400	117.65	110 J	111.11	500	132.63	330	80.10	330	101.54
FLUORENE	77.4	307	536	µg/kg	27	7.94	8.2	8.28	27	7.16	35	8.50	37	11.38
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	180	52.94	38 J	38.38	260	68.97	160 J	38.83	150 J	46.15
NAPHTHALENE	176	369	561	µg/kg	46	13.53	9.4	9.49	28	7.43	32	7.77	32	9.85
PHENANTHRENE	204	687	1170	µg/kg	230	67.65	44 J	44.44	210	55.70	180	43.69	190	58.46
PYRENE	195	858	1520	µg/kg	410	120.59	89 J	89.90	710	188.33	340	82.52	370	113.85
TOTAL PAHs 17	1610	12205	22800	µg/kg	3057	899.12	632.5	638.89	4078	1081.70	2547	618.20	2601	800.31
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA	36 J	36.36	NA	NA	NA	NA	NA	NA
C1-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	66 J	66.67	NA	NA	NA	NA	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	110 J	111.11	NA	NA	NA	NA	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA	8.1 J	8.18	NA	NA	NA	NA	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	11 J	11.11	NA	NA	NA	NA	NA	NA
C1-PHENANTHRENE/ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	55 J	55.56	NA	NA	NA	NA	NA	NA
C2-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	76 J	76.77	NA	NA	NA	NA	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA	30 J	30.30	NA	NA	NA	NA	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	19 J	19.19	NA	NA	NA	NA	NA	NA
C2-PHENANTHRENE/ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	140 J	141.41	NA	NA	NA	NA	NA	NA
C3-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	84 J	84.85	NA	NA	NA	NA	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA	59 J	59.60	NA	NA	NA	NA	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	25 J	25.25	NA	NA	NA	NA	NA	NA
C3-PHENANTHRENE/ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	160 J	161.62	NA	NA	NA	NA	NA	NA
C4-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	39 J	39.39	NA	NA	NA	NA	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	40 J	40.40	NA	NA	NA	NA	NA	NA
C4-PHENANTHRENE/ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	100 J	101.01	NA	NA	NA	NA	NA	NA
PERYLENE	NL	NL	NL	µg/kg	NA	NA	28	28.28	NA	NA	NA	NA	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--	1708.6	1725.86	--	--	--	--	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA	7	7.07	NA	NA	NA	NA	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	110 J	111.11	NA	NA	NA	NA	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	100 J	101.01	NA	NA	NA	NA	NA	NA
TOC	NL	NL	NL	%	3.4		0.99		3.77		4.12		3.25	

Table 3-2b
Area 2 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-35		HB10-2-35		HB10-2-35		HB10-2-36		HB10-2-36	
				Field Sample ID	HB10-2-35-06		HB10-2-35-12		HB10-2-35-30		HB10-2-36-06		HB10-2-36-06DP	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 6		0- 12		12- 30		0- 6		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	9.2	13.11	21	14.58	53	17.21	56	18.36	57 J	3.52
ACENAPHTHENE	6.7	48	89	µg/kg	5.6	7.98	9.1	6.32	51	16.56	23 J	7.54	21 J	1.30
ACENAPHTHYLENE	5.9	67	128	µg/kg	5.1	7.26	7.9	5.49	24	7.79	24	7.87	19 J	1.17
ANTHRACENE	57.2	451	845	µg/kg	14	19.94	30	20.83	120	38.96	49	16.07	48 J	2.96
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	32 J	45.58	170	118.06	270	87.66	290	95.08	230	14.20
BENZO(A)PYRENE	150	800	1450	µg/kg	39 J	55.56	210	145.83	260	84.42	390	127.87	390	24.07
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	50 J	71.23	220	152.78	260	84.42	490	160.66	590 J	36.42
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	30 J	42.74	170	118.06	210	68.18	300	98.36	280	17.28
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	27	38.46	160	111.11	180	58.44	260 J	85.25	220	13.58
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	36 J	51.28	170	118.06	330	107.14	350	114.75	340	20.99
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	9.7	13.82	29	20.14	59 J	19.16	100	32.79	70	4.32
FLUORANTHENE	423	1327	2230	µg/kg	89 J	126.78	240	166.67	400	129.87	500	163.93	450	27.78
FLUORENE	77.4	307	536	µg/kg	9.9	14.10	16	11.11	99	32.14	46	15.08	31 J	1.91
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	41	58.40	140 J	97.22	150 J	48.70	250	81.97	220	13.58
NAPHTHALENE	176	369	561	µg/kg	9.3	13.25	13	9.03	45	14.61	37	12.13	39 J	2.41
PHENANTHRENE	204	687	1170	µg/kg	45 J	64.10	93	64.58	970	314.94	320	104.92	280	17.28
PYRENE	195	858	1520	µg/kg	70 J	99.72	240	166.67	710 J	230.52	540	177.05	490 J	30.25
TOTAL PAHs 17	1610	12205	22800	µg/kg	521.8	743.30	1939	1346.53	4191	1360.71	4025	1319.67	3775	233.02
BENZO(E)PYRENE	150	800	1450	µg/kg	30 J	42.74	NA	NA	NA	NA	NA	NA	NA	NA
C1-CHRYSENES	NL	NL	NL	µg/kg	40 J	56.98	NA	NA	NA	NA	NA	NA	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	61 J	86.89	NA	NA	NA	NA	NA	NA	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	4.6 J	6.55	NA	NA	NA	NA	NA	NA	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	8.9 J	12.68	NA	NA	NA	NA	NA	NA	NA	NA
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	35 J	49.86	NA	NA	NA	NA	NA	NA	NA	NA
C2-CHRYSENES	NL	NL	NL	µg/kg	34 J	48.43	NA	NA	NA	NA	NA	NA	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	10 J	14.25	NA	NA	NA	NA	NA	NA	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	19 J	27.07	NA	NA	NA	NA	NA	NA	NA	NA
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	36 J	51.28	NA	NA	NA	NA	NA	NA	NA	NA
C3-CHRYSENES	NL	NL	NL	µg/kg	32 J	45.58	NA	NA	NA	NA	NA	NA	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	13 J	18.52	NA	NA	NA	NA	NA	NA	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	15 J	21.37	NA	NA	NA	NA	NA	NA	NA	NA
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	36 J	51.28	NA	NA	NA	NA	NA	NA	NA	NA
C4-CHRYSENES	NL	NL	NL	µg/kg	16 J	22.79	NA	NA	NA	NA	NA	NA	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	11 J	15.67	NA	NA	NA	NA	NA	NA	NA	NA
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	31 J	44.16	NA	NA	NA	NA	NA	NA	NA	NA
PERYLENE	NL	NL	NL	µg/kg	35	49.86	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	980.1	1396.15	--	--	--	--	--	--	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	5.8	8.26	NA	NA	NA	NA	NA	NA	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	49 J	69.80	NA	NA	NA	NA	NA	NA	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	33 J	47.01	NA	NA	NA	NA	NA	NA	NA	NA
TOC	NL	NL	NL	%	0.702		1.44		3.08		3.05		16.2	

Table 3-2b
Area 2 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-37		HB10-2-37		HB10-2-38		HB10-2-38		HB10-2-38	
				Field Sample ID	HB10-2-37-06		HB10-2-37-23		HB10-2-38-06		HB10-2-38-06DP		HB10-2-38-12	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 6		12- 23		0- 6		0- 6		0- 12	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	21	49.65	9.3	14.35	7.6 U	7.6 U	74 U	74 U	34	10.24
ACENAPHTHENE	6.7	48	89	µg/kg	210 U	210 U	5.1	7.87	7.6 U	7.6 U	23	4.11	23 J	6.93
ACENAPHTHYLENE	5.9	67	128	µg/kg	8.2 J	19.39	12	18.52	7.6 U	7.6 U	28	5.00	16 J	4.82
ANTHRACENE	57.2	451	845	µg/kg	200 J	472.81	35	54.01	19	3.39	94	16.79	74	22.29
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	250	591.02	120	185.19	76 U	76 U	360	64.29	250	75.30
BENZO(A)PYRENE	150	800	1450	µg/kg	210 J	496.45	140	216.05	91	16.25	450	80.36	300	90.36
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	210 U	210 U	130	200.62	92	16.43	550	98.21	340	102.41
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	210 U	210 U	120	185.19	73	13.04	400	71.43	250	75.30
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	210 U	210 U	96	148.15	52	9.29	360	64.29	230	69.28
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	240	567.38	130	200.62	76	13.57	400	7.14	280	84.34
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	36 J	85.11	28	43.21	23	4.11	110	19.64	65	19.58
FLUORANTHENE	423	1327	2230	µg/kg	660	1560.28	260	401.23	150	26.79	630	112.50	470	141.57
FLUORENE	77.4	307	536	µg/kg	210 U	210 U	10	15.43	7.6 U	7.6 U	40	7.14	33 J	9.94
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	210 U	210 U	88 J	135.80	72	12.86	330	58.93	200	60.24
NAPHTHALENE	176	369	561	µg/kg	21	49.65	13	20.06	7.6 U	7.6 U	52	9.29	29	8.73
PHENANTHRENE	204	687	1170	µg/kg	640	1513.00	120	185.19	77	13.75	310	55.36	260	78.31
PYRENE	195	858	1520	µg/kg	430	1016.55	280	432.10	140	25.00	630	112.50	490	147.59
TOTAL PAHs 17	1610	12205	22800	µg/kg	3346.2	7910.64	1596.4		922	164.64	4804	857.86	3344	1007.23
BENZO(E)PYRENE	150	800	1450	µg/kg	210 U	210 U	NA	NA	NA	NA	NA	NA	NA	NA
C1-CHRYSENES	NL	NL	NL	µg/kg	160 J	378.25	NA	NA	NA	NA	NA	NA	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	380 J	898.35	NA	NA	NA	NA	NA	NA	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	33 J	78.01	NA	NA	NA	NA	NA	NA	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	23 J	54.37	NA	NA	NA	NA	NA	NA	NA	NA
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	270 J	638.30	NA	NA	NA	NA	NA	NA	NA	NA
C2-CHRYSENES	NL	NL	NL	µg/kg	62 J	146.57	NA	NA	NA	NA	NA	NA	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	24 J	56.74	NA	NA	NA	NA	NA	NA	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	40 J	94.56	NA	NA	NA	NA	NA	NA	NA	NA
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	120 J	283.69	NA	NA	NA	NA	NA	NA	NA	NA
C3-CHRYSENES	NL	NL	NL	µg/kg	48 J	113.48	NA	NA	NA	NA	NA	NA	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	25 J	59.10	NA	NA	NA	NA	NA	NA	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	30 J	70.92	NA	NA	NA	NA	NA	NA	NA	NA
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	55 J	130.02	NA	NA	NA	NA	NA	NA	NA	NA
C4-CHRYSENES	NL	NL	NL	µg/kg	22 J	52.01	NA	NA	NA	NA	NA	NA	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	16 J	37.83	NA	NA	NA	NA	NA	NA	NA	NA
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	30 J	70.92	NA	NA	NA	NA	NA	NA	NA	NA
PERYLENE	NL	NL	NL	µg/kg	210 U	210 U	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	4873.2	11520.57	--	--	--	--	--	--	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	19	44.92	NA	NA	NA	NA	NA	NA	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	130 J	307.33	NA	NA	NA	NA	NA	NA	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	65 J	153.66	NA	NA	NA	NA	NA	NA	NA	NA
TOC	NL	NL	NL	%	0.423		0.648		5.6		5.6*		3.32	

Table 3-2b
Area 2 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-38		HB10-2-39		HB10-2-39		HB10-2-39		HB10-2-40	
				Field Sample ID	HB10-2-38-38		HB10-2-39-06		HB10-2-39-12		HB10-2-39-28		HB10-2-40-06	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	36- 38		0- 6		0- 12		12- 28		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	160	39.70	7.3 J	14.43	11	6.55	8.8 U	8.8 U	33	9.73
ACENAPHTHENE	6.7	48	89	µg/kg	150	37.22	5.7 J	11.26	6.7	3.99	8.8 U	8.8 U	25	7.37
ACENAPHTHYLENE	5.9	67	128	µg/kg	39	9.68	8.8 J	17.39	25	14.88	21	1.89	19	5.60
ANTHRACENE	57.2	451	845	µg/kg	430	106.70	23	45.45	37	22.02	23	2.07	140	41.30
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	1600	397.02	46 J	90.91	370	220.24	190	17.12	220	64.90
BENZO(A)PYRENE	150	800	1450	µg/kg	1200	297.77	55 J	108.70	440	261.90	240	21.62	160	47.20
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	1400	347.39	66 J	130.43	350	208.33	300	27.03	190	56.05
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	750	186.10	36 J	71.15	270	160.71	190	17.12	150 U	150 U
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	660	163.77	37 J	73.12	250	148.81	130	11.71	130	38.35
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	1700	421.84	57 J	112.65	330	196.43	200	18.02	350	103.24
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	230	57.07	12 J	23.72	79	47.02	45	4.05	39	11.50
FLUORANTHENE	423	1327	2230	µg/kg	3000	744.42	130 J	256.92	620	369.05	330	29.73	570	168.14
FLUORENE	77.4	307	536	µg/kg	190	47.15	10 J	19.76	15	8.93	8.8 U	8.8 U	33	9.73
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	700	173.70	39 J	77.08	250	148.81	150	13.51	150 U	150 U
NAPHTHALENE	176	369	561	µg/kg	140	34.74	6.3 J	12.45	12	7.14	12	1.08	30	8.85
PHENANTHRENE	204	687	1170	µg/kg	2500	620.35	53 J	104.74	180	107.14	140	12.61	190	56.05
PYRENE	195	858	1520	µg/kg	2900	719.60	100 J	197.63	570	339.29	390	35.14	390	115.04
TOTAL PAHs 17	1610	12205	22800	µg/kg	17749	4404.22	692.1	1367.79	3815.7	2271.25	2374.2	213.89	2669	787.32
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA	38 J	75.10	NA	NA	NA	NA	150 U	150 U
C1-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	64 J	126.48	NA	NA	NA	NA	160 J	47.20
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	110 J	217.39	NA	NA	NA	NA	530 J	156.34
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA	7.7 J	15.22	NA	NA	NA	NA	22 J	6.49
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	8 J	15.81	NA	NA	NA	NA	34 J	10.03
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	65 J	128.46	NA	NA	NA	NA	270 J	79.65
C2-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	49 J	96.84	NA	NA	NA	NA	93 J	27.43
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA	17 J	33.60	NA	NA	NA	NA	41 J	12.09
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	18 J	35.57	NA	NA	NA	NA	55 J	16.22
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	73 J	144.27	NA	NA	NA	NA	210 J	61.95
C3-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	50 J	98.81	NA	NA	NA	NA	79 J	23.30
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA	27 J	53.36	NA	NA	NA	NA	61 J	17.99
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	24 J	47.43	NA	NA	NA	NA	59 J	17.40
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	67 J	132.41	NA	NA	NA	NA	130 J	38.35
C4-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	28 J	55.34	NA	NA	NA	NA	35 J	10.32
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	20 J	39.53	NA	NA	NA	NA	44 J	12.98
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	41 J	81.03	NA	NA	NA	NA	73 J	21.53
PERYLENE	NL	NL	NL	µg/kg	NA	NA	39 J	77.08	NA	NA	NA	NA	150 U	150 U
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--	1430.5	2827.08	--	--	--	--	4682	1381.12
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA	6.2 J	12.25	NA	NA	NA	NA	24	7.08
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	76 J	150.20	NA	NA	NA	NA	190 J	56.05
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	57 J	112.65	NA	NA	NA	NA	100 J	29.50
TOC	NL	NL	NL	%	4.03		0.506		1.68		11.1		3.39	

Table 3-2b
Area 2 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-40		HB10-2-40		HB10-2-40		HB10-2-41		HB10-2-41	
				Field Sample ID	HB10-2-40-12		HB10-2-40-36		HB10-2-40-48		HB10-2-41-06		HB10-2-41-12	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 12		12- 36		36- 48		0- 6		0- 12	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	15	6.15	4.4 U	4.4 U	4.3 U	4.3 U	190	28.23	10	5.03
ACENAPHTHENE	6.7	48	89	µg/kg	5.2 U	5.2 U	4.4 U	4.4 U	4.3 U	4.3 U	480	71.32	4	2.01
ACENAPHTHYLENE	5.9	67	128	µg/kg	6.2	2.54	4.4 U	4.4 U	4.3 U	4.3 U	47 J	6.98	5	2.51
ANTHRACENE	57.2	451	845	µg/kg	17	6.97	4.4 U	4.4 U	4.3 U	4.3 U	2000	297.18	17	8.54
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	80	32.79	4.4 U	4.4 U	4.3 U	4.3 U	1500	222.88	76	38.19
BENZO(A)PYRENE	150	800	1450	µg/kg	110	45.08	4.4 U	4.4 U	4.3 U	4.3 U	1300	193.16	76	38.19
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	120	49.18	4.4 U	4.4 U	4.3 U	4.3 U	1300	193.16	80	40.20
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	92	37.70	4.4 U	4.4 U	4.3 U	4.3 U	720	106.98	51	25.63
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	49	20.08	4.4 U	4.4 U	4.3 U	4.3 U	610	90.64	44 J	22.11
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	90	36.89	4.4 U	4.4 U	4.3 U	4.3 U	1400	208.02	74	37.19
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	16	6.56	4.4 U	4.4 U	4.3 U	4.3 U	170	25.26	12	6.03
FLUORANTHENE	423	1327	2230	µg/kg	130	53.28	4.4 U	4.4 U	4.3 U	4.3 U	4400	653.79	140	70.35
FLUORENE	77.4	307	536	µg/kg	9.9	4.06	4.4 U	4.4 U	4.3 U	4.3 U	550	81.72	7	3.52
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	49	20.08	4.4 U	4.4 U	4.3 U	4.3 U	670	99.55	43	21.61
NAPHTHALENE	176	369	561	µg/kg	9.9	4.06	4.4 U	4.4 U	4.3 U	4.3 U	210	31.20	8	4.02
PHENANTHRENE	204	687	1170	µg/kg	52	21.31	4.4 U	4.4 U	4.3 U	4.3 U	4000	594.35	46	23.12
PYRENE	195	858	1520	µg/kg	140	57.38	4.4 U	4.4 U	4.3 U	4.3 U	3300	490.34	140	70.35
TOTAL PAHs 17	1610	12205	22800	µg/kg	988.6	405.16	37.4	42.50	36.55	31.24	22847	3394.80	833	418.59
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA	NA	NA	NA	NA	700	104.01	NA	NA
C1-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	620 J	92.12	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	1700 J	252.60	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	180 J	26.75	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	220 J	32.69	NA	NA
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	1400 J	208.02	NA	NA
C2-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	340 J	50.52	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	130 J	19.32	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	300 J	44.58	NA	NA
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	760 J	112.93	NA	NA
C3-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	320 J	47.55	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	86 U	86 U	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	250 J	37.15	NA	NA
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	360 J	53.49	NA	NA
C4-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	86 U	86 U	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	130 J	19.32	NA	NA
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	190 J	28.23	NA	NA
PERYLENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	390	57.95	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--	--	--	--	--	30733	4566.57	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	170	25.26	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	640 J	95.10	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	330 J	49.03	NA	NA
TOC	NL	NL	NL	%	2.44		0.886		1.17		6.73		1.99	

Table 3-2b
Area 2 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-41		HB10-2-42		HB10-2-42		HB10-2-42		HB10-2-43	
				Field Sample ID	HB10-2-41-31		HB10-2-42-06		HB10-2-42-12		HB10-2-42-30		HB10-2-43-06	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/17/2010	
				Depth Interval	12- 31		0- 6		0- 12		12- 30		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	8 U	8 U	35	3.96	300	28.85	71	25.36	8	10.22
ACENAPHTHENE	6.7	48	89	µg/kg	8 U	8 U	29	3.28	650	62.50	37	13.21	6.5	8.30
ACENAPHTHYLENE	5.9	67	128	µg/kg	8 U	8 U	16	1.81	39	3.75	20	7.14	3.9 U	3.9 U
ANTHRACENE	57.2	451	845	µg/kg	20	17.86	70	7.92	1600	153.85	70	25.00	9.9	12.64
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	75 J	66.96	240	27.15	2100	201.92	240	85.71	31	39.59
BENZO(A)PYRENE	150	800	1450	µg/kg	86	76.79	300	33.94	1400	134.62	290	103.57	19 R	
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	100 J	89.29	370	41.86	1800	173.08	340	121.43	19 R	
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	56	50.00	200	22.62	800	76.92	240	85.71	39	49.81
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	45	40.18	170	19.23	780	75.00	260	92.86	19	24.27
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	78 J	69.64	300	33.94	2000	192.31	270	96.43	37	47.25
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	14	12.50	46	5.20	250 J	24.04	62	22.14	8.6	10.98
FLUORANTHENE	423	1327	2230	µg/kg	210 J	187.50	620	70.14	5500	528.85	710	253.57	19 R	
FLUORENE	77.4	307	536	µg/kg	12	10.71	42	4.75	830	79.81	60	21.43	8.2	10.47
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	49	43.75	220	24.89	800	76.92	190	67.86	28	35.76
NAPHTHALENE	176	369	561	µg/kg	8 U	8 U	24	2.71	580	55.77	45	16.07	7.1	9.07
PHENANTHRENE	204	687	1170	µg/kg	58	51.79	270	30.54	5500	528.85	270	96.43	19 R	
PYRENE	195	858	1520	µg/kg	170 J	151.79	480	54.30	4000	384.62	430	153.57	19 R	
TOTAL PAHs 17	1610	12205	22800	µg/kg	989	883.04	3432	388.24	28929	2781.63	3605	1287.50	204.25	260.86
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA	240	27.15	NA	NA	NA	NA	19 R	
C1-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	160 J	18.10	NA	NA	NA	NA	36 J	45.98
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	300 J	33.94	NA	NA	NA	NA	42 J	53.64
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA	23 J	2.60	NA	NA	NA	NA	6.8 J	8.68
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	35 J	3.96	NA	NA	NA	NA	8.9 J	11.37
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	160 J	18.10	NA	NA	NA	NA	42 J	53.64
C2-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	110 J	12.44	NA	NA	NA	NA	55 J	70.24
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA	49 J	5.54	NA	NA	NA	NA	20 J	25.54
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	90 J	10.18	NA	NA	NA	NA	18 J	22.99
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	190 J	21.49	NA	NA	NA	NA	67 J	85.57
C3-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	120 J	13.57	NA	NA	NA	NA	80 J	102.17
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA	74 J	8.37	NA	NA	NA	NA	31 J	39.59
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	90 J	10.18	NA	NA	NA	NA	23 J	29.37
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	170 J	19.23	NA	NA	NA	NA	46 J	58.75
C4-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	52 J	5.88	NA	NA	NA	NA	55 J	70.24
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	67 J	7.58	NA	NA	NA	NA	18 J	22.99
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	160 J	18.10	NA	NA	NA	NA	26 J	33.21
PERYLENE	NL	NL	NL	µg/kg	NA	NA	75	8.48	NA	NA	NA	NA	12	15.33
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--	5562	629.19	--	--	--	--	782.95	999.94
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA	27	3.05	NA	NA	NA	NA	6.3	8.05
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	190 J	21.49	NA	NA	NA	NA	44 J	56.19
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	140 J	15.84	NA	NA	NA	NA	43 J	54.92
TOC	NL	NL	NL	%	1.12		8.84		10.4		2.8		0.783	

Table 3-2b
Area 2 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-43		HB10-2-44		HB10-2-44		HB10-2-45	
				Field Sample ID	HB10-2-43-22		HB10-2-44-06		HB10-2-44-16		HB10-2-45-06	
				Sample Date	10/17/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	12- 22		0- 6		12- 16		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	110	23.66	74	21.08	89	18.13	29	6.53
ACENAPHTHENE	6.7	48	89	µg/kg	95	20.43	25	7.12	51	10.39	14	3.15
ACENAPHTHYLENE	5.9	67	128	µg/kg	26	5.59	30	8.55	29	5.91	9.9	2.23
ANTHRACENE	57.2	451	845	µg/kg	210	45.16	110	31.34	180	36.66	48	10.81
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	490	105.38	440	125.36	530	107.94	150	33.78
BENZO(A)PYRENE	150	800	1450	µg/kg	520	111.83	460	131.05	490	99.80	170	38.29
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	830	178.49	620	176.64	610	124.24	190	42.79
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	420	90.32	500	142.45	480	97.76	160	36.04
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	320	68.82	490	139.60	280	57.03	140	31.53
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	750	161.29	530	151.00	660	134.42	160	36.04
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	100	21.51	140	39.89	140	28.51	21	4.73
FLUORANTHENE	423	1327	2230	µg/kg	1500	322.58	930	264.96	1200	244.40	290	65.32
FLUORENE	77.4	307	536	µg/kg	120	25.81	46	13.11	110	22.40	24	5.41
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	370	79.57	420	119.66	410	83.50	130 J	29.28
NAPHTHALENE	176	369	561	µg/kg	110	23.66	46	13.11	62	12.63	18	4.05
PHENANTHRENE	204	687	1170	µg/kg	910	195.70	410	116.81	790	160.90	170	38.29
PYRENE	195	858	1520	µg/kg	1300	279.57	930	264.96	1200	244.40	250	56.31
TOTAL PAHs 17	1610	12205	22800	µg/kg	8181	1759.35	6201	1766.67	7311	1489.00	1973.9	444.57
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C1-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C1-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C1-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C2-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C2-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C3-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C3-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C4-CHRYSENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C4-PHENANTHRENES/ ANTHRACENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
PERYLENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--	--	--	--	--	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C2-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
C3-FLUORANTHENES/PYRENES	NL	NL	NL	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
TOC	NL	NL	NL	%	4.65		3.51		4.91		4.44	

Table 3-2b
Area 2 Sediment Sample Analytical Results - PAHs
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-45	
				Field Sample ID	HB10-2-45-19	
				Sample Date	10/18/2010	
				Depth Interval	12- 19	
				Concentration	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit		
2-METHYLNAPHTHALENE	20.2	111	201	µg/kg	100	38.31
ACENAPHTHENE	6.7	48	89	µg/kg	45	17.24
ACENAPHTHYLENE	5.9	67	128	µg/kg	22	8.43
ANTHRACENE	57.2	451	845	µg/kg	210	80.46
BENZO(A)ANTHRACENE	108	579	1050	µg/kg	510	195.40
BENZO(A)PYRENE	150	800	1450	µg/kg	490	187.74
BENZO(B)FLUORANTHENE	240	6820	13400	µg/kg	450	172.41
BENZO(G,H,I)PERYLENE	170	1685	3200	µg/kg	280	107.28
BENZO(K)FLUORANTHENE	240	6820	13400	µg/kg	400	153.26
1,2-BENZPHENANTHRACENE	166	728	1290	µg/kg	540	206.90
DIBENZ(A,H)ANTHRACENE	33	84	135	µg/kg	82	31.42
FLUORANTHENE	423	1327	2230	µg/kg	1000	383.14
FLUORENE	77.4	307	536	µg/kg	94	36.02
INDENO(1,2,3-CD)PYRENE	200	1700	3200	µg/kg	250	95.79
NAPHTHALENE	176	369	561	µg/kg	59	22.61
PHENANTHRENE	204	687	1170	µg/kg	640	245.21
PYRENE	195	858	1520	µg/kg	910	348.66
TOTAL PAHs 17	1610	12205	22800	µg/kg	6082	2330.27
BENZO(E)PYRENE	150	800	1450	µg/kg	NA	NA
C1-CHRYSENES	NL	NL	NL	µg/kg	NA	NA
C1-FLUORANTHENE/PYRENE	NL	NL	NL	µg/kg	NA	NA
C1-FLUORENES	NL	NL	NL	µg/kg	NA	NA
C1-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA
C1-PHENANTHRENE/PYRENE	NL	NL	NL	µg/kg	NA	NA
C2-CHRYSENES	NL	NL	NL	µg/kg	NA	NA
C2-FLUORENES	NL	NL	NL	µg/kg	NA	NA
C2-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA
C2-PHENANTHRENE/PYRENE	NL	NL	NL	µg/kg	NA	NA
C3-CHRYSENES	NL	NL	NL	µg/kg	NA	NA
C3-FLUORENES	NL	NL	NL	µg/kg	NA	NA
C3-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA
C3-PHENANTHRENE/PYRENE	NL	NL	NL	µg/kg	NA	NA
C4-CHRYSENES	NL	NL	NL	µg/kg	NA	NA
C4-NAPHTHALENES	NL	NL	NL	µg/kg	NA	NA
C4-PHENANTHRENE/PYRENE	NL	NL	NL	µg/kg	NA	NA
PERYLENE	NL	NL	NL	µg/kg	NA	NA
TOTAL PAHs 34	1610	12205	22800	µg/kg	--	--
1-METHYLNAPHTHALENE	NL	NL	NL	µg/kg	NA	NA
C2-FLUORANTHENE/PYRENE	NL	NL	NL	µg/kg	NA	NA
C3-FLUORANTHENE/PYRENE	NL	NL	NL	µg/kg	NA	NA
TOC	NL	NL	NL	%	2.61	

Notes:

Level II Concern: >TEC and ≤MEC

Level III Concern: >MEC and ≤PEC

Level IV Concern: >PEC

"--" - Not Applicable

DP - Duplicate

ID - Identification

J - Estimated value

MEC - Median Effects Concentration

NA - Not Analyzed

NL - Not Listed

Norm. - Normalized to 1% TOC

PAH - Polycyclic Aromatic Hydrocarbon

PEC - Probable Effect Concentration

SQG - Sediment Quality Guidelines

SS Conc. - Study Site Concentration

TEC - Threshold Effects Concentration

TOC - Total Organic Carbon

U - Not detected

µg/kg - Microgram per kilogram

WDNR - Wisconsin Department of Natural Resources

*TOC not analyzed, used result for investigative sample

TOTAL PAHs 17/34 - Calculated by WESTON (sum of detections plus 1/2 RL for NDs)

Italic = Analytes used for Total PAH 17 calculation

Underline = Analytes not used for Total PAH 34 calculation, all other analytes listed under PAHs used

¹ WDNR Consensus-Based SQGs

² It should be noted that 1,2-BENZPHENANTHRACENE is sometimes referred to as CHRYSENE

Table 3-3a
Area 1 Sediment Sample Analytical Results - TAL Metals
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-01	HB10-1-01	HB10-1-01	HB10-1-02	HB10-1-02	HB10-1-02	HB10-1-03	HB10-1-03
				Field Sample ID	HB10-1-01-06	HB10-1-01-12	HB10-1-01-40	HB10-1-02-06	HB10-1-02-06DP	HB10-1-02-23	HB10-1-03-06	HB10-1-03-12
				Sample Date	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/16/2010
				Depth Interval	0- 6	0- 12	36- 40	0- 6	0- 6	12- 23	0- 6	0- 12
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
ALUMINUM	NL	NL	NL	mg/kg	14200	19400	14400	11100	12300	10300	9990	9640
ANTIMONY	2	13.5	25	mg/kg	1.4 J	1.5 J	1.1 J	1.5 J	1.5 J	1.4 J	1.1 J	1.2 J
ARSENIC	9.8	21.4	33	mg/kg	3.8	2.9	2.6	4.7	4.8	4.2	4.2	4.4
BARIUM	NL	NL	NL	mg/kg	94.3	122	91	84.1	94.3	78.9	81.6	79.6
BERYLLIUM	NL	NL	NL	mg/kg	0.65 J	0.85 J	0.69 J	0.84 U	0.56 J	0.51 J	0.79 U	0.69 U
CADMIUM	0.99	3	5	mg/kg	0.86 U	1.1 U	0.7 U	0.84 U	0.81 U	0.75 U	0.79 U	0.69 U
CALCIUM	NL	NL	NL	mg/kg	7540	4760	3730	11800	14000	13000	11100	12300
CHROMIUM	43	76.5	110	mg/kg	29.1	34.9	28.4	26.4	28.4	23.5	23.4	23.4
COBALT	NL	NL	NL	mg/kg	10.6	13	10.6	8.7	9.2	8.1	8.3	8.3
COPPER	32	91	150	mg/kg	26.4 J	24.5 J	19.4 J	31.7 J	30.9 J	27 J	26.3 J	25.7 J
IRON	20000	30000	40000	mg/kg	21700	21900	18100	25000	24800	21300	21200	21000
LEAD	36	83	130	mg/kg	22.3	8	6.2	27.7	31.4	31.9	30.3	30.6
MAGNESIUM	NL	NL	NL	mg/kg	7840	7800	6530	9750	11200	10100	9110	9490
MANGANESE	460	780	1100	mg/kg	334	247	188	652	687	640	637	714
MERCURY	0.18	0.64	1.1	mg/kg	0.23	0.06 J	0.028 J	0.15 J	0.12 J	0.23	0.12 J	0.14 J
NICKEL	23	36	49	mg/kg	24.7	28.4	22.2	20.6	22.7	19.8	20	20.7
POTASSIUM	NL	NL	NL	mg/kg	1290	1410	1020	1250	1340	1100	1110	1030
SELENIUM	NL	NL	NL	mg/kg	6 U	7.4 U	4.9 U	5.9 U	5.7 U	5.3 U	5.5 U	4.8 U
SILVER	1.6	1.9	2.2	mg/kg	1.7 U	2.1 U	1.4 U	1.7 U	1.6 U	1.5 U	1.6 U	1.4 U
SODIUM	NL	NL	NL	mg/kg	862 U	1050 U	703 U	836 U	810 U	750 U	789 U	688 U
THALLIUM	NL	NL	NL	mg/kg	4.3 U	5.3 U	3.5 U	4.2 U	4.1 U	3.8 U	3.9 U	3.4 U
VANADIUM	NL	NL	NL	mg/kg	37.2	46.8	40.5	54.4	38.4	34.7	32.1	35.2
ZINC	120	290	460	mg/kg	113	105	72.2	120	116	108	103	94.6

Table 3-3a
Area 1 Sediment Sample Analytical Results - TAL Metals
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-03	HB10-1-03	HB10-1-03	HB10-1-04	HB10-1-04	HB10-1-04	HB10-1-04	HB10-1-05
				Field Sample ID	HB10-1-03-36	HB10-1-03-60	HB10-1-03-84	HB10-1-04-06	HB10-1-04-12	HB10-1-04-36	HB10-1-04-50	HB10-1-05-06
				Sample Date	10/16/2010	10/16/2010	10/16/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/16/2010
				Depth Interval	12- 36	36- 60	60- 84	0- 6	0- 12	12- 36	36- 50	0- 6
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
ALUMINUM	NL	NL	NL	mg/kg	10700	11100	12500	5710	6320	13500	8480	13000
ANTIMONY	2	13.5	25	mg/kg	1.5 J	1.4 J	1.5 J	0.74 J	0.83 J	1.4 J	0.77 J	1.5 J
ARSENIC	9.8	21.4	33	mg/kg	4.7	4.3	4.8	2.8	2.8	4.4	2.4	5.1
BARIUM	NL	NL	NL	mg/kg	78.7	88.7	104	38.7	45.6	105	57.6	103
BERYLLIUM	NL	NL	NL	mg/kg	0.53 J	0.55 J	0.62 J	0.34 J	0.43 J	1.1	0.48 J	0.68 J
CADMIUM	0.99	3	5	mg/kg	0.62 U	0.73 U	0.72 U	0.63 U	0.62 U	0.71 U	0.69 U	0.75 U
CALCIUM	NL	NL	NL	mg/kg	14700	16700	15300	7280	8030	15000	6310	16600
CHROMIUM	43	76.5	110	mg/kg	24.5	26.6	30.1	14.8	24.6	24.9	19.7	27.8
COBALT	NL	NL	NL	mg/kg	9	8.8	9.3	6.3 U	6.2 U	9.4	6.9 U	10.1
COPPER	32	91	150	mg/kg	50.6 J	30.9 J	38.3 J	17.6	27.9	37.6	23.2	44.5
IRON	20000	30000	40000	mg/kg	23000	21400	23400	14300	13400	22500	13900	26000
LEAD	36	83	130	mg/kg	24.8	59.8	45.8	23.6	36.2	34.6	54.5	31.8
MAGNESIUM	NL	NL	NL	mg/kg	10900	12000	11600	5360	5380	7470	5710	11300
MANGANESE	460	780	1100	mg/kg	652	496	406	244	234	462	219	619
MERCURY	0.18	0.64	1.1	mg/kg	0.1 J	0.2	0.2	0.061 J	0.15	0.22	0.19	0.094 J
NICKEL	23	36	49	mg/kg	22.8	22.1	24.4	12.9	13.3	22.4	16	25.7
POTASSIUM	NL	NL	NL	mg/kg	1170	1210	1310	632 U	625	1120	719	1570
SELENIUM	NL	NL	NL	mg/kg	4.3 U	5.1 U	5.1 U	4.4 U	4.4 U	5 U	4.8 U	5.3 U
SILVER	1.6	1.9	2.2	mg/kg	1.2 U	1.5 U	0.21 J	1.3 U	1.2 U	1.4 U	1.4 U	1.5 U
SODIUM	NL	NL	NL	mg/kg	616 U	728 U	724 U	632 U	623 U	710 U	689 U	751 UJ
THALLIUM	NL	NL	NL	mg/kg	3.1 U	3.6 U	3.6 U	0.67 J	3.1 U	3.6 U	3.4 U	3.8 U
VANADIUM	NL	NL	NL	mg/kg	35.7	35.8	37.7	24.1	25.3	38.2	30.4	39.9
ZINC	120	290	460	mg/kg	101	137	149	84.7 J	86.4 J	103 J	75.2 J	117

Table 3-3a
Area 1 Sediment Sample Analytical Results - TAL Metals
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-05	HB10-1-06	HB10-1-06	HB10-1-06	HB10-1-06	HB10-1-06	HB10-1-07	HB10-1-07
				Field Sample ID	HB10-1-05-06DP	HB10-1-06-06	HB10-1-06-06DP	HB10-1-06-12	HB10-1-06-36	HB10-1-06-51	HB10-1-07-06	HB10-1-07-12
				Sample Date	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/17/2010	10/17/2010
				Depth Interval	0- 6	0- 6	0- 6	0- 12	12- 36	36- 51	0- 6	0- 12
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
ALUMINUM	NL	NL	NL	mg/kg	12900	11000	11500	10900	13400	17200	8030	11900
ANTIMONY	2	13.5	25	mg/kg	1.3 J	1.4 J	1.6 J	1.4 J	1.8 J	2 J	0.93 J	1.4 J
ARSENIC	9.8	21.4	33	mg/kg	5.2	4.4	4.9	4.2	5.1	5.8	3.7	5.3
BARIUM	NL	NL	NL	mg/kg	105	86.2	91.8	83.2	106	126	60.8	95.7
BERYLLIUM	NL	NL	NL	mg/kg	0.68	0.52 J	0.54 J	0.54 J	0.69	0.82	0.69 U	0.69 J
CADMIUM	0.99	3	5	mg/kg	0.64 U	0.87 U	0.83 U	0.68 U	0.71	0.79 U	0.69 U	0.79 U
CALCIUM	NL	NL	NL	mg/kg	16700	9450	9840	12100	14300	16600	8560	12400
CHROMIUM	43	76.5	110	mg/kg	27.1	25.3	27.5	25.1	33.9	37.5	19.8	26.4
COBALT	NL	NL	NL	mg/kg	10.1	8.7 U	9.3	8.8	10.3	12.4	6.9 U	9.1
COPPER	32	91	150	mg/kg	39.8	28.4 J	31 J	48.2 J	44.7 J	51.4 J	23.3	38.3
IRON	20000	30000	40000	mg/kg	26400	22600	24300	21300	25900	31100	16700	22600
LEAD	36	83	130	mg/kg	30.6	33.9	72.5	44.3	58.9	60.8	36.1	49.8
MAGNESIUM	NL	NL	NL	mg/kg	11700	8400	9070	10000	12100	14400	7110	9220
MANGANESE	460	780	1100	mg/kg	607	649	744	497	447	516	365	395
MERCURY	0.18	0.64	1.1	mg/kg	0.16 J	0.14 J	0.2	0.2	0.34	0.46	0.23	0.44
NICKEL	23	36	49	mg/kg	25.2	20.9	22.1	21.5	26.5	31.3	17.4	23.3
POTASSIUM	NL	NL	NL	mg/kg	1540	1170	1200	1180	1380	1780	812	1170
SELENIUM	NL	NL	NL	mg/kg	4.5 U	6.1 U	5.8 U	4.7 U	4.4 U	5.5 U	4.8 U	5.5 U
SILVER	1.6	1.9	2.2	mg/kg	1.3 U	1.7 U	1.7 U	1.4 U	0.21 J	0.13 J	1.4 U	1.6 U
SODIUM	NL	NL	NL	mg/kg	643 UJ	868 U	833 U	677 U	621 U	791 U	689 UJ	792 UJ
THALLIUM	NL	NL	NL	mg/kg	3.2 U	4.3 U	4.2 U	3.4 U	3.1 U	4 U	3.4 U	4 U
VANADIUM	NL	NL	NL	mg/kg	38.2	36.5	38.4	34.2	38.1	48.2	28.4	35.1
ZINC	120	290	460	mg/kg	108	110	119	122	198	202	103	177

Table 3-3a
Area 1 Sediment Sample Analytical Results - TAL Metals
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-07	HB10-1-07	HB10-1-08	HB10-1-08	HB10-1-08	HB10-1-10	HB10-1-11	HB10-1-11
				Field Sample ID	HB10-1-07-36	HB10-1-07-64	HB10-1-08-06	HB10-1-08-12	HB10-1-08-36	HB10-1-10-06	HB10-1-11-06	HB10-1-11-21
				Sample Date	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/18/2010	10/16/2010	10/16/2010
				Depth Interval	12- 36	60- 64	0- 6	0- 12	12- 36	0- 6	0- 6	12- 21
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
ALUMINUM	NL	NL	NL	mg/kg	11600	4700	10100	10900	15800	10300 J-	11800	14000
ANTIMONY	2	13.5	25	mg/kg	1.1 J	0.41 J	1.1 J	1.3 J	1.9 J	1.1 J-	1.6 J	1.7 J
ARSENIC	9.8	21.4	33	mg/kg	4.4	2.1	3.9	4	5.7	5.7 J-	4.9	5.2
BARIUM	NL	NL	NL	mg/kg	83.6	28.8	75.2	81.5	117	91.8 J-	87.8	107
BERYLLIUM	NL	NL	NL	mg/kg	0.6 J	0.59 U	0.51 J	0.53 J	0.83	0.53 J-	0.61 J	0.73 J
CADMIUM	0.99	3	5	mg/kg	0.75 U	0.59 U	0.92 U	0.91 U	0.9	1 U	0.84 U	0.8 U
CALCIUM	NL	NL	NL	mg/kg	12100	6260	9900	9980	11800	9030 J-	8910	11000
CHROMIUM	43	76.5	110	mg/kg	24.3	11.3	24.7	26.5	36.4	23.1 J-	27.6	35
COBALT	NL	NL	NL	mg/kg	9.2	5.9 U	9.2 U	9.1 U	11.6	8.1 J-	9.3	10.5
COPPER	32	91	150	mg/kg	34.6	8	32	41.4	57.6	30.4 J-	33.7 J	45.5 J
IRON	20000	30000	40000	mg/kg	20300	10400	20500	21200	27400	22500 J-	23000	25200
LEAD	36	83	130	mg/kg	52.9	2.9	46.4	50.9	88.6	38.5 J-	58.5	63
MAGNESIUM	NL	NL	NL	mg/kg	9840	4290	8600	9010	12000	7520 J-	8690	10600
MANGANESE	460	780	1100	mg/kg	343	175	301	311	391	827 J-	510	391
MERCURY	0.18	0.64	1.1	mg/kg	0.39	0.015 J	0.16 J	0.23	0.68	0.34 J-	0.32	0.37
NICKEL	23	36	49	mg/kg	23.2	10.9	20.4	21.9	30.4	20.9 J-	22.7	26.8
POTASSIUM	NL	NL	NL	mg/kg	1070	586 U	1070	1160	1610	1120 J-	1180	1300
SELENIUM	NL	NL	NL	mg/kg	5.3 U	4.1 U	6.4 U	6.4 U	5.1 U	7.1 R	5.9 U	5.6 U
SILVER	1.6	1.9	2.2	mg/kg	1.5 U	1.2 U	1.8 U	1.8 U	1.5 U	2 R	1.7 U	0.089 J
SODIUM	NL	NL	NL	mg/kg	754 UJ	586 UJ	921 U	909 U	733 U	1010 UJ	842 U	798 U
THALLIUM	NL	NL	NL	mg/kg	3.8 U	2.9 U	4.6 U	4.5 U	3.7 U	5.1 U	4.2 U	4 U
VANADIUM	NL	NL	NL	mg/kg	35.2	23	34.2	35.3	44.5	34.3 J-	39.6	41.8
ZINC	120	290	460	mg/kg	142	24.4	125 J	131 J	244 J	125 J-	137	192

Table 3-3a
Area 1 Sediment Sample Analytical Results - TAL Metals
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-12	HB10-1-12	HB10-1-12	HB10-1-13	HB10-1-13	HB10-1-13	HB10-1-13	HB10-1-14
				Field Sample ID	HB10-1-12-06	HB10-1-12-12	HB10-1-12-34	HB10-1-13-06	HB10-1-13-12	HB10-1-13-36	HB10-1-13-67	HB10-1-14-06
				Sample Date	10/17/2010	10/17/2010	10/17/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/17/2010
				Depth Interval	0- 6	0- 12	12- 34	0- 6	0- 12	12- 36	60- 67	0- 6
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
ALUMINUM	NL	NL	NL	mg/kg	8470	11100	10300	14600 J-	14700 J-	12300 J-	10900 J-	9940
ANTIMONY	2	13.5	25	mg/kg	0.93 J	1.3 J	18.6 UJ	2 J-	1.8 J-	1.7 J-	1.5 J-	1.2 J
ARSENIC	9.8	21.4	33	mg/kg	3.5	4.6	3.4	7.9 J-	8.2 J-	5.9 J-	6.1 J-	3.7
BARIUM	NL	NL	NL	mg/kg	57.4	83.3	70.9	121 J-	123 J-	99.6 J-	89.3 J-	81.4
BERYLLIUM	NL	NL	NL	mg/kg	0.45 J	0.62 J	0.54 J	0.9 J-	0.82 J-	0.72 J-	0.7 J-	0.5 J
CADMIUM	0.99	3	5	mg/kg	0.65 U	0.88 U	1.6 U	0.88 U	0.8 U	0.68 U	0.56 U	0.77 U
CALCIUM	NL	NL	NL	mg/kg	6890	9340	9450	17400 J-	13000 J-	12800 J-	12900 J-	8490
CHROMIUM	43	76.5	110	mg/kg	20.7	26.2	22.6	32.3 J-	35.9 J-	31.1 J-	25.4 J-	24.3
COBALT	NL	NL	NL	mg/kg	7	9	8.5 J	10.5 J-	11 J-	9.7 J-	8.2 J-	7.9
COPPER	32	91	150	mg/kg	26.6	40.2	28.8 J	44.2 J-	48.3 J-	36.7 J-	35.2 J-	33.2
IRON	20000	30000	40000	mg/kg	16600	19700	15700	27000 J-	28600 J-	27100 J-	21100 J-	20800
LEAD	36	83	130	mg/kg	47.7	56.8	34.6 J	83.4 J-	81.4 J-	163 J-	63.9 J-	50.1
MAGNESIUM	NL	NL	NL	mg/kg	6340	8430	7290	9730 J-	10300 J-	8620 J-	7740 J-	7330
MANGANESE	460	780	1100	mg/kg	222	304	342	702 J-	537 J-	607 J-	379 J-	502
MERCURY	0.18	0.64	1.1	mg/kg	0.21	0.59	0.062 J-	0.29 J-	0.45 J-	0.2 J-	0.34 J-	0.19 J
NICKEL	23	36	49	mg/kg	17.3	22.4	20.4	28.5 J-	34.9 J-	26 J-	22.1 J-	20.6
POTASSIUM	NL	NL	NL	mg/kg	860	1090	1550 U	1470 J-	1490 J-	1220 J-	1030 J-	1080
SELENIUM	NL	NL	NL	mg/kg	4.5 U	6.2 U	10.9 U	6.2 R	5.6 R	4.8 R	3.9 R	5.4 U
SILVER	1.6	1.9	2.2	mg/kg	1.3 U	1.8 U	3.1 U	0.058 J-	0.2 J-	0.047 J-	0.044 J-	1.5 U
SODIUM	NL	NL	NL	mg/kg	649 U	881 U	1550 UJ	880 U	795 U	684 U	558 U	769 U
THALLIUM	NL	NL	NL	mg/kg	3.2 U	4.4 U	7.8 U	1.4 J-	1.2 J-	1.2 J-	0.85 J-	0.92 J
VANADIUM	NL	NL	NL	mg/kg	30.9	34.5	38.4	48.2 J-	68.8 J-	45.1 J-	35.5 J-	35.3
ZINC	120	290	460	mg/kg	108 J	175 J	109	191 J-	202 J-	154 J-	142 J-	116 J

Table 3-3a
Area 1 Sediment Sample Analytical Results - TAL Metals
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-14	HB10-1-14	HB10-1-14	HB10-1-15	HB10-1-15	HB10-1-16	HB10-1-16	HB10-1-16
				Field Sample ID	HB10-1-14-12	HB10-1-14-36	HB10-1-14-66	HB10-1-15-06	HB10-1-15-16	HB10-1-16-06	HB10-1-16-12	HB10-1-16-31
				Sample Date	10/17/2010	10/17/2010	10/17/2010	10/18/2010	10/18/2010	10/17/2010	10/17/2010	10/17/2010
				Depth Interval	0- 12	12- 36	60- 66	0- 6	12- 16	0- 6	0- 12	12- 31
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
ALUMINUM	NL	NL	NL	mg/kg	12800	11600	12300	4340	5900	8710	11600	16100
ANTIMONY	2	13.5	25	mg/kg	1.3 J	1.3 J	1.4 J	0.59 J	0.9 J	1.1 J	1.1 J	1.8 J
ARSENIC	9.8	21.4	33	mg/kg	5.1	5.1	5.7	2.2	3.2	3.5	4.3	5.6
BARIUM	NL	NL	NL	mg/kg	100	92.5	100	29.1	45.6	68.8	81.7	124
BERYLLIUM	NL	NL	NL	mg/kg	0.63 J	0.61 J	0.69 J	0.24 J	0.36 J	0.59	0.7 J	0.96
CADMIUM	0.99	3	5	mg/kg	0.96 U	0.74 U	0.78 U	0.49 U	0.76 U	0.53 U	0.85 U	0.7 U
CALCIUM	NL	NL	NL	mg/kg	10000	10600	13200	4450	3770	15700	9120	11800
CHROMIUM	43	76.5	110	mg/kg	29.8	27.7	30.8	10.7	14	18.7	23.4	29.5
COBALT	NL	NL	NL	mg/kg	10	9	9.5	4.3 J	5.3 J	6.9	8.9	11.7
COPPER	32	91	150	mg/kg	37	40.1	48.7	10.6 J	20.2 J	32.7 J	40.8 J	63.1 J
IRON	20000	30000	40000	mg/kg	25800	22900	22900	11200	11100	22700	23500	27600
LEAD	36	83	130	mg/kg	59.6	74.6	102	24.1 J	132 J	32.8 J	68 J	79.5 J
MAGNESIUM	NL	NL	NL	mg/kg	9430	8860	10000	2640	3350	7060	7450	10200
MANGANESE	460	780	1100	mg/kg	635	471	362	153	149	372	329	411
MERCURY	0.18	0.64	1.1	mg/kg	0.21	0.26	0.48	0.059 J	0.15 J	0.11 J	0.3	58
NICKEL	23	36	49	mg/kg	25.8	23.4	24.6	9.4	12.4	16.3	21.7	29.2
POTASSIUM	NL	NL	NL	mg/kg	1330	1160	1220	488 U	761 U	911	1010	1360
SELENIUM	NL	NL	NL	mg/kg	6.7 U	5.2 U	5.5 U	3.4 U	5.3 U	3.7 U	5.9 U	4.9 U
SILVER	1.6	1.9	2.2	mg/kg	1.9 U	1.5 U	1.6 U	0.98 U	1.5 U	1.1 U	1.7 U	1.4 U
SODIUM	NL	NL	NL	mg/kg	956 U	742 U	780 U	488 UJ	761 UJ	527 UJ	849 UJ	699 UJ
THALLIUM	NL	NL	NL	mg/kg	1.3 J	1.3 J	1 J	2.4 U	3.8 U	2.6 U	4.2 U	3.5 U
VANADIUM	NL	NL	NL	mg/kg	41.9	36.9	38.8	22.3	23.5	28.5	34.9	44.4
ZINC	120	290	460	mg/kg	140 J	141 J	173 J	48.8	127	81.1	168	243

Table 3-3a
Area 1 Sediment Sample Analytical Results - TAL Metals
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-17	HB10-1-20	HB10-1-21	HB10-1-21	HB10-1-23	HB10-1-23	HB10-1-23	HB10-1-23
				Field Sample ID	HB10-1-17-06	HB10-1-20-06	HB10-1-21-06	HB10-1-21-23	HB10-1-23-06	HB10-1-23-06DP	HB10-1-23-12	HB10-1-23-36
				Sample Date	10/17/2010	10/17/2010	10/18/2010	10/18/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010
				Depth Interval	0- 6	0- 6	0- 6	12- 23	0- 6	0- 6	0- 12	12- 36
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
ALUMINUM	NL	NL	NL	mg/kg	10900	8180	6960	8340	7130	8530	10900	15800
ANTIMONY	2	13.5	25	mg/kg	1.4 J	1 J	0.83 J	1.2 J	1 J	0.63 J	0.92 J	1.7 J
ARSENIC	9.8	21.4	33	mg/kg	4.4	3.9	3.9	3.8	3.7	5.2	4.4	5.1
BARIUM	NL	NL	NL	mg/kg	92.7	64.4	52	60.8	51.8	60.7	83.2	129
BERYLLIUM	NL	NL	NL	mg/kg	0.6 J	0.49 J	0.78	0.71	0.83 U	0.81 U	0.6 J	0.82 J
CADMIUM	0.99	3	5	mg/kg	0.78 U	0.55 U	0.48 U	0.48 U	0.83 U	0.81 U	0.85 U	0.85
CALCIUM	NL	NL	NL	mg/kg	9520	14900	12400	12700	5730	6790	7320	8780
CHROMIUM	43	76.5	110	mg/kg	27.2	18.3	10.1	15.4	17.5	20.5	26.2	33
COBALT	NL	NL	NL	mg/kg	8.9	6.5	3.7 J	5.8	8.3 U	8.1 U	8.9	11.2
COPPER	32	91	150	mg/kg	34.1	27.3 J	89.2 J	23 J	21.7	26.8	39.6	53 J
IRON	20000	30000	40000	mg/kg	23700	18200	13400	16400	14800	17200	19300	26700
LEAD	36	83	130	mg/kg	115	36.2 J	25.6 J	39.9 J	32.7	58.7	81.6	123 J
MAGNESIUM	NL	NL	NL	mg/kg	7480	7730	2780	4020	5200	5970	7410	9730
MANGANESE	460	780	1100	mg/kg	693	397	331	383	233	252	276	348
MERCURY	0.18	0.64	1.1	mg/kg	0.25	0.074 J	0.12 J	0.29	0.12 J	0.13 J	0.45	0.47
NICKEL	23	36	49	mg/kg	24.7	16.3	9	14.8	15.5	18	22.2	28.5
POTASSIUM	NL	NL	NL	mg/kg	1060	793	506	610	825 U	842	1120	1460
SELENIUM	NL	NL	NL	mg/kg	5.5 U	3.8 U	3.3 U	3.4 U	5.8 U	5.7 U	5.9 U	5.9 U
SILVER	1.6	1.9	2.2	mg/kg	1.6 U	1.1 U	0.95 U	0.97 U	1.7 U	1.6 U	1.7 U	1.7 U
SODIUM	NL	NL	NL	mg/kg	785 U	546 UJ	477 UJ	483 UJ	825 UJ	810 UJ	845 U	842 UJ
THALLIUM	NL	NL	NL	mg/kg	3.9 U	2.7 U	2.4 U	2.4 U	4.1 U	4 U	4.2 U	4.2 U
VANADIUM	NL	NL	NL	mg/kg	47.9	31.6	19.2	27.8	26.4	31.1	34.7	42.2
ZINC	120	290	460	mg/kg	129 J	96.4	44.2	71.4	84.7	101	154 J	238

Table 3-3a
Area 1 Sediment Sample Analytical Results - TAL Metals
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-24	HB10-1-24	HB10-1-24	HB10-1-25	HB10-1-25	HB10-1-27	HB10-1-27	HB10-1-28
				Field Sample ID	HB10-1-24-06	HB10-1-24-12	HB10-1-24-36	HB10-1-25-06	HB10-1-25-06DP	HB10-1-27-06	HB10-1-27-06DP	HB10-1-28-06
				Sample Date	10/18/2010	10/18/2010	10/18/2010	10/17/2010	10/17/2010	10/18/2010	10/18/2010	10/17/2010
				Depth Interval	0- 6	0- 12	12- 36	0- 6	0- 6	0- 6	0- 6	0- 6
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
ALUMINUM	NL	NL	NL	mg/kg	15700 J-	17800 J-	16200 J-	13800	15300	18700 J-	19100 J-	10600
ANTIMONY	2	13.5	25	mg/kg	3.2 J-	4.1 J-	38.5 J-	1.3 J	1.8 J	1.6 J-	1.9 J-	1.1 J
ARSENIC	9.8	21.4	33	mg/kg	8.5 J-	9.1 J-	8.6 J-	5.7	6.3	5.2 J-	4.7 J-	4.2
BARIUM	NL	NL	NL	mg/kg	169 J-	189 J-	221 J-	114	124	178 J-	155 J-	89.8
BERYLLIUM	NL	NL	NL	mg/kg	1 J-	1.1 J-	1.2 J-	0.68 J	0.74 J	0.91 J-	0.96 J-	0.54 J
CADMIUM	0.99	3	5	mg/kg	1.3 J-	1.3 J-	1.8 J-	0.99 U	1.1 U	0.93 U	0.82 U	0.76 U
CALCIUM	NL	NL	NL	mg/kg	11100 J-	10300 J-	13000 J-	10400	11000	14500 J-	12600 J-	15500
CHROMIUM	43	76.5	110	mg/kg	55.5 J-	58.6 J-	57.9 J-	34.8	37.8	37 J-	37.7 J-	25.3
COBALT	NL	NL	NL	mg/kg	12.3 J-	13.6 J-	11.5 J-	11.2	12.1	14 J-	13.9 J-	8
COPPER	32	91	150	mg/kg	102 J-	115 J-	144 J-	45.2 J	51.4 J	37.7 J-	38.7 J-	40.2
IRON	20000	30000	40000	mg/kg	36900 J-	39300 J-	29500 J-	30600	33100	27500 J-	29200 J-	21800
LEAD	36	83	130	mg/kg	208 J-	234 J-	207 J-	84.3 J	89.4 J	46.8 J-	26.4 J-	60.3
MAGNESIUM	NL	NL	NL	mg/kg	9420 J-	10100 J-	8940 J-	10000	10900	11300 J-	12600 J-	9320
MANGANESE	460	780	1100	mg/kg	603 J-	619 J-	441 J-	708	759	480 J-	522 J-	385
MERCURY	0.18	0.64	1.1	mg/kg	0.74 J-	0.67 J-	2.5 J-	0.26	0.28	0.11 J-	0.075 J-	0.23
NICKEL	23	36	49	mg/kg	34.4 J-	37 J-	32.9 J-	30.1	32.2	35.2 J-	35.5 J-	21.1
POTASSIUM	NL	NL	NL	mg/kg	1480 J-	1710 J-	1460 J-	1440	1540	1980 J-	2110 J-	1090
SELENIUM	NL	NL	NL	mg/kg	6.7 R	6.2 R	5.7 R	6.9 U	7.5 U	6.5 R	5.8 R	5.4 U
SILVER	1.6	1.9	2.2	mg/kg	0.4 J-	0.46 J-	1.6 J-	2 U	2.1 U	1.9 R	1.6 R	1.5 U
SODIUM	NL	NL	NL	mg/kg	957 U	882 U	816 U	989 UJ	1060 UJ	934 UJ	824 UJ	765 UJ
THALLIUM	NL	NL	NL	mg/kg	1.7 J-	1.6 J-	1.7 J-	4.9 U	5.3 U	4.7 U	4.1 U	3.8 U
VANADIUM	NL	NL	NL	mg/kg	57.4 J-	56.2 J-	45.9 J-	58.1	59.1	48.8 J-	49.3 J-	31.1
ZINC	120	290	460	mg/kg	366 J-	424 J-	553 J-	181	186	103 J-	91.2 J-	190

Table 3-3a
Area 1 Sediment Sample Analytical Results - TAL Metals
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-28	HB10-1-28	HB10-1-28	HB10-1-28	HB10-1-28	HB10-1-29	HB10-1-29	HB10-1-29
				Field Sample ID	HB10-1-28-12	HB10-1-28-36	HB10-1-28-60	HB10-1-28-84	HB10-1-28-96	HB10-1-29-06	HB10-1-29-12	HB10-1-29-36
				Sample Date	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010
				Depth Interval	0- 12	12- 36	36- 60	60- 84	60- 96	0- 6	0- 12	12- 36
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
ALUMINUM	NL	NL	NL	mg/kg	10500	14500	18800	16800	17300	13100	14400	12400
ANTIMONY	2	13.5	25	mg/kg	1.3 J	1.8 J	2.3 J	2.3 J	1.3 J	3.1 J	3.5 J	3.5 J
ARSENIC	9.8	21.4	33	mg/kg	4.9	6.4	8.6	7.3	5.2	8.4	9.1	12.4
BARIUM	NL	NL	NL	mg/kg	91.7	118	153	144	120	223	245	335
BERYLLIUM	NL	NL	NL	mg/kg	0.57 J	0.77 J	0.97	0.88	0.79	0.99	1 J	1.4 J
CADMIUM	0.99	3	5	mg/kg	0.71 U	0.91 U	1.1	0.93	0.78 U	1.7	2.3	3.7
CALCIUM	NL	NL	NL	mg/kg	18000	20200	18000	13800	8640	19500	24100	16700
CHROMIUM	43	76.5	110	mg/kg	27.3	35.2	41.2	36.4	31.5	85	117	97.6
COBALT	NL	NL	NL	mg/kg	8.3	11.2	13.4	11.5	11.8	11.1	12.6	13.9 U
COPPER	32	91	150	mg/kg	44.9	57.2	67	56	37.3	145	178	321
IRON	20000	30000	40000	mg/kg	21500	29000	35400	29800	26200	37000	41400	33400
LEAD	36	83	130	mg/kg	71.5	84.2	84.5	112	35.9	294	382	481
MAGNESIUM	NL	NL	NL	mg/kg	11100	13900	14900	11800	10200	8320	9410	6370
MANGANESE	460	780	1100	mg/kg	373	464	521	374	336	717	891	578
MERCURY	0.18	0.64	1.1	mg/kg	0.34	0.62	0.78	1.8	0.13 J	0.88	0.82	1.9
NICKEL	23	36	49	mg/kg	22.1	30.2	35.9	30.5	29.4	34.5	44.4	38.8
POTASSIUM	NL	NL	NL	mg/kg	1070	1490	1880	1560	1560	1140	1230	1390 U
SELENIUM	NL	NL	NL	mg/kg	5 U	6.4 U	6.6 U	5.4 U	5.5 U	5.5 U	8.5 U	1.8 J
SILVER	1.6	1.9	2.2	mg/kg	1.4 U	1.8 U	1.9 U	1.5 U	1.6 U	1.6 U	2.4 U	1.8 J
SODIUM	NL	NL	NL	mg/kg	715 UJ	908 UJ	947 UJ	772 UJ	785 UJ	1190	2630	3560
THALLIUM	NL	NL	NL	mg/kg	3.6 U	4.5 U	4.7 U	3.9 U	3.9 U	1.6 J	1.9 J	1.9 J
VANADIUM	NL	NL	NL	mg/kg	33.1	43.8	50.2	43.8	44.1	56.8	63.9	59.8
ZINC	120	290	460	mg/kg	203	259	344	270	98.2	487 J	605 J	945 J

Table 3-3a
Area 1 Sediment Sample Analytical Results - TAL Metals
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-29	HB10-1-29	HB10-1-30	HB10-1-30	HB10-1-30	HB10-1-30	HB10-1-30	HB10-1-30
				Field Sample ID	HB10-1-29-60	HB10-1-29-93	HB10-1-30-06	HB10-1-30-06DP	HB10-1-30-12	HB10-1-30-36	HB10-1-30-60	HB10-1-30-77
				Sample Date	10/17/2010	10/17/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
				Depth Interval	36- 60	60- 93	0- 6	0- 6	0- 12	12- 36	36- 60	60- 77
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
ALUMINUM	NL	NL	NL	mg/kg	7020	10200	12600 J-	13600 J-	16600 J-	16900 J-	14200 J-	10800 J-
ANTIMONY	2	13.5	25	mg/kg	5.3 J	2 J	1.7 J-	1.9 J-	2.2 J-	2.1 J-	1.3 J-	29.2 R
ARSENIC	9.8	21.4	33	mg/kg	5.1	4.8	7.7 J-	7.6 J-	7.2 J-	6.2 J-	4 J-	2.6 J-
BARIUM	NL	NL	NL	mg/kg	303 J	280	101 J-	116 J-	147 J-	141 J-	99.8 J-	90.5 J-
BERYLLIUM	NL	NL	NL	mg/kg	0.64 J	0.74 J	0.73 J-	0.78 J-	1 J-	1 J-	0.68 J-	0.61 J-
CADMIUM	0.99	3	5	mg/kg	2	2.7	1.1 J-	0.8 U	0.83 J-	0.69 U	0.64 U	2.4 U
CALCIUM	NL	NL	NL	mg/kg	10600	8960	8170 J-	8770 J-	10400 J-	12600 J-	7540 J-	12200 J-
CHROMIUM	43	76.5	110	mg/kg	22.5	25.5	30.4 J-	32.4 J-	34.9 J-	35.1 J-	27.1 J-	17.9 J-
COBALT	NL	NL	NL	mg/kg	12.2 U	8.6 U	10.7 J-	11.6 J-	13.5 J-	13.3 J-	9.2 J-	5.3 J-
COPPER	32	91	150	mg/kg	114	179	45.2 J-	55.3 J-	69.8 J-	58.5 J-	34.3 J-	32.2 J-
IRON	20000	30000	40000	mg/kg	14000	18500	25400 J-	27600 J-	31400 J-	29200 J-	19900 J-	10400 J-
LEAD	36	83	130	mg/kg	188	308	93.8 J-	98.6 J-	167 J-	130 J-	126 J-	6.5 J-
MAGNESIUM	NL	NL	NL	mg/kg	3450	5620	8560 J-	9040 J-	11200 J-	11400 J-	7640 J-	4050 J-
MANGANESE	460	780	1100	mg/kg	230	232	467 J-	610 J-	498 J-	429 J-	293 J-	437 J-
MERCURY	0.18	0.64	1.1	mg/kg	1.8 J	5.9	0.46 J-	0.65 J-	1.1 J-	0.45 J-	0.36 J-	0.075 J-
NICKEL	23	36	49	mg/kg	16.8	22.4	27.6 J-	31.6 J-	35 J-	33.9 J-	24.9 J-	18.4 J-
POTASSIUM	NL	NL	NL	mg/kg	1220 U	872	1340 J-	1490 J-	1660 J-	1630 J-	1300 J-	2430 U
SELENIUM	NL	NL	NL	mg/kg	8.5 U	6 U	4.6 R	5.6 R	5.6 R	4.8 R	4.5 R	17 R
SILVER	1.6	1.9	2.2	mg/kg	1.2 J	1.7 J	1.3 J-	0.058 J-	1.6 R	1.4 R	1.3 R	4.9 R
SODIUM	NL	NL	NL	mg/kg	2370	860 U	656 UJ	797 UJ	794 UJ	690 UJ	645 UJ	2430 UJ
THALLIUM	NL	NL	NL	mg/kg	0.89 J	0.89 J	3.3 U	4 U	4 U	3.5 U	3.2 U	12.2 U
VANADIUM	NL	NL	NL	mg/kg	25.4	33.6	41.1 J-	44.3 J-	49.8 J-	47 J-	33.8 J-	28.8 J-
ZINC	120	290	460	mg/kg	656 J	810 J	190 J-	195 J-	260 J-	224 J-	128 J-	36.9 J-

Table 3-3a
Area 1 Sediment Sample Analytical Results - TAL Metals
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-31	HB10-1-31	HB10-1-31	HB10-1-31
				Field Sample ID	HB10-1-31-06	HB10-1-31-06DP	HB10-1-31-12	HB10-1-31-36
				Sample Date	10/18/2010	10/18/2010	10/18/2010	10/18/2010
				Depth Interval	0- 6	0- 6	0- 12	12- 36
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit				
ALUMINUM	NL	NL	NL	mg/kg	11700 J-	12600 J-	18300 J-	20700 J-
ANTIMONY	2	13.5	25	mg/kg	1.4 J-	1.3 J-	2.2 J-	2.1 J-
ARSENIC	9.8	21.4	33	mg/kg	7.6 J-	5.8 J-	9.9 J-	8.8 J-
BARIUM	NL	NL	NL	mg/kg	109 J-	100 J-	159 J-	185 J-
BERYLLIUM	NL	NL	NL	mg/kg	0.72 J-	0.61 J-	0.98 J-	1.1 J-
CADMIUM	0.99	3	5	mg/kg	0.61 J-	0.93 U	1 J-	0.52 J-
CALCIUM	NL	NL	NL	mg/kg	9820 J-	8910 J-	12400 J-	19400 J-
CHROMIUM	43	76.5	110	mg/kg	29.8 J-	29.9 J-	45.5 J-	39.5 J-
COBALT	NL	NL	NL	mg/kg	9.7 J-	9.7 J-	13.6 J-	16 J-
COPPER	32	91	150	mg/kg	44 J-	42 J-	85.3 J-	61.7 J-
IRON	20000	30000	40000	mg/kg	24400 J-	25300 J-	35200 J-	36500 J-
LEAD	36	83	130	mg/kg	97.6 J-	64.8 J-	251 J-	88 J-
MAGNESIUM	NL	NL	NL	mg/kg	8550 J-	8630 J-	12500 J-	16100 J-
MANGANESE	460	780	1100	mg/kg	446 J-	557 J-	589 J-	514 J-
MERCURY	0.18	0.64	1.1	mg/kg	0.43 J-	0.37 J-	0.58 J-	0.3 J-
NICKEL	23	36	49	mg/kg	25.7 J-	27.2 J-	38.3 J-	40.9 J-
POTASSIUM	NL	NL	NL	mg/kg	1260 J-	1340 J-	1850 J-	2400 J-
SELENIUM	NL	NL	NL	mg/kg	7.7 R	6.5 R	6.5 R	6.7 R
SILVER	1.6	1.9	2.2	mg/kg	2.2 U	1.9 U	1.9 U	1.9 R
SODIUM	NL	NL	NL	mg/kg	1100 UJ	927 UJ	935 UJ	957 UJ
THALLIUM	NL	NL	NL	mg/kg	5.5 U	4.6 U	4.7 U	2.2 J-
VANADIUM	NL	NL	NL	mg/kg	38.5 J-	45.4 J-	53.8 J-	53.1 J-
ZINC	120	290	460	mg/kg	193 J-	156 J-	309 J-	206 J-

Notes:

Level II Concern: >TEC and ≤MEC

Level III Concern: >MEC and ≤PEC

Level IV Concern: >PEC

DP - Duplicate

ID - Identification

J - Estimated value

J- - Estimated value low

MEC - Median Effects Concentration

mg/kg - Milligram per kilogram

NL - Not Listed

PEC - Probable Effect Concentration

R - Not detected

SQG - Sediment Quality Guidelines

TAL - Target Analyte List

TEC - Threshold Effects Concentration

U - Not detected

UJ - Not detected, Estimated value

WDNR - Wisconsin Department of Natural Resources

¹ WDNR Consensus-Based SQGs

Table 3-3b
Area 2 Sediment Sample Analytical Results - TAL Metals
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-18	HB10-2-18	HB10-2-26	HB10-2-26	HB10-2-32	HB10-2-32	HB10-2-33	HB10-2-33
				Field Sample ID	HB10-2-18-06	HB10-2-18-06DP	HB10-2-26-06	HB10-2-26-17	HB10-2-32-06	HB10-2-32-06DP	HB10-2-33-06	HB10-2-33-22
				Sample Date	10/18/2010	10/18/2010	10/16/2010	10/16/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
				Depth Interval	0- 6	0- 6	0- 6	12- 17	0- 6	0- 6	0- 6	12- 22
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
ALUMINUM	NL	NL	NL	mg/kg	12700 J-	12200 J-	5380	3610	16400 J-	15400 J-	4040 J-	13400 J-
ANTIMONY	2	13.5	25	mg/kg	1.8 J-	1.3 J-	1 J	0.76 J	1.8 J-	1.8 J-	0.54 J-	1.6 J-
ARSENIC	9.8	21.4	33	mg/kg	6.5 J-	5.5 J-	3	2.3	7 J-	6.5 J-	2.6 J-	5.7 J-
BARIUM	NL	NL	NL	mg/kg	179 J-	187 J-	59.2	27.1	142 J-	146 J-	25.8 J-	104 J-
BERYLLIUM	NL	NL	NL	mg/kg	0.59 J-	0.59 J-	0.63 U	0.6 U	0.81 J-	0.77 J-	0.22 J-	0.72 J-
CADMIUM	0.99	3	5	mg/kg	0.92 U	0.74 U	0.63 U	0.6 U	1.1 U	1.2 U	0.47 U	0.66 U
CALCIUM	NL	NL	NL	mg/kg	8960 J-	9990 J-	10100 J	3560	13700 J-	12400 J-	1920 J-	6990 J-
CHROMIUM	43	76.5	110	mg/kg	28.6 J-	28.2 J-	20.4	10.2	35.4 J-	34.2 J-	9.6 J-	28 J-
COBALT	NL	NL	NL	mg/kg	10.1 J-	9.3 J-	6.3 U	6 U	12.4 J-	12 J-	4.4 J-	10.2 J-
COPPER	32	91	150	mg/kg	52.1 J-	63.1 J-	29.2 J	11.9 J	46.7 J-	45.9 J-	12.1 J-	40.7 J-
IRON	20000	30000	40000	mg/kg	29600 J-	26700 J-	16100	9780	32600 J-	30900 J-	9460 J-	22300 J-
LEAD	36	83	130	mg/kg	91 J-	106 J-	54.5	57.1	57.3 J-	61.3 J-	31.1 J-	78.5 J-
MAGNESIUM	NL	NL	NL	mg/kg	7490 J-	7220 J-	3390	2150	11700 J-	11200 J-	2330 J-	8340 J-
MANGANESE	460	780	1100	mg/kg	1010 J-	666 J-	349	138	1250 J-	1130 J-	111 J-	304 J-
MERCURY	0.18	0.64	1.1	mg/kg	0.25 J-	0.31 J-	0.21	0.048 J	0.22 J-	0.21 J-	0.086 J-	0.45 J-
NICKEL	23	36	49	mg/kg	27 J-	26.4 J-	12	8.2	32.2 J-	32.5 J-	9 J-	24.5 J-
POTASSIUM	NL	NL	NL	mg/kg	1230 J-	1140 J-	629 U	605 U	1980 J-	1810 J-	472 U	1380 J-
SELENIUM	NL	NL	NL	mg/kg	6.4 R	5.2 R	4.4 U	4.2 U	7.4 R	8.3 R	3.3 R	4.6 R
SILVER	1.6	1.9	2.2	mg/kg	1.8 R	1.5 R	1.3 U	1.2 U	2.1 R	2.4 R	0.94 R	1.3 R
SODIUM	NL	NL	NL	mg/kg	919 UJ	745 UJ	629 U	605 U	1050 UJ	1180 UJ	472 U	660 U
THALLIUM	NL	NL	NL	mg/kg	4.6 U	3.7 U	3.1 U	3 U	5.3 U	5.9 U	0.39 J-	0.98 J-
VANADIUM	NL	NL	NL	mg/kg	53.5 J-	55.4 J-	23.8	19.3	52.5 J-	53 J-	18 J-	36.9 J-
ZINC	120	290	460	mg/kg	147 J-	153 J-	131	69.7	177 J-	155 J-	51.1 J-	168 J-

Table 3-3b
Area 2 Sediment Sample Analytical Results - TAL Metals
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-34	HB10-2-34	HB10-2-35	HB10-2-35	HB10-2-35	HB10-2-36	HB10-2-36	HB10-2-37
				Field Sample ID	HB10-2-34-06	HB10-2-34-06DP	HB10-2-35-06	HB10-2-35-12	HB10-2-35-30	HB10-2-36-06	HB10-2-36-06DP	HB10-2-37-06
				Sample Date	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
				Depth Interval	0- 6	0- 6	0- 6	0- 12	12- 30	0- 6	0- 6	0- 6
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
ALUMINUM	NL	NL	NL	mg/kg	17900	16100	3010 J-	6490 J-	11700 J-	12400 J-	17000 J-	2710 J-
ANTIMONY	2	13.5	25	mg/kg	2.2 J	1.9 J	0.43 J-	0.8 J-	1.4 J-	1.5 J-	2.1 J-	0.39 J-
ARSENIC	9.8	21.4	33	mg/kg	7.1	7.5	2 J-	3.5 J-	5.4 J-	6 J-	8.8 J-	1.8 J-
BARIUM	NL	NL	NL	mg/kg	140	134	25 J-	49.9 J-	104 J-	109 J-	155 J-	16.2 J-
BERYLLIUM	NL	NL	NL	mg/kg	0.94 J	0.84 J	0.17 J-	0.36 J-	0.69 J-	0.67 J-	0.96 J-	0.16 J-
CADMIUM	0.99	3	5	mg/kg	1 U	0.89 U	0.5 U	0.49 U	0.71 J-	0.63 U	1.1 J-	0.44 U
CALCIUM	NL	NL	NL	mg/kg	18500	12400	1810 J-	3980 J-	8030 J-	11100 J-	14100 J-	1230 J-
CHROMIUM	43	76.5	110	mg/kg	44.9	37.8	7.7 J-	16.3 J-	26.1 J-	30.4 J-	46.8 J-	6.8 J-
COBALT	NL	NL	NL	mg/kg	12.9	12.2	3.2 J-	5.7 J-	9.2 J-	9.3 J-	12.9 J-	3.2 J-
COPPER	32	91	150	mg/kg	60.6 J	55.9 J	7.9 J-	21.8 J-	47.9 J-	49.3 J-	74.3 J-	6.3 J-
IRON	20000	30000	40000	mg/kg	33600	31300	7890 J-	13900 J-	21300 J-	24800 J-	33700 J-	7460 J-
LEAD	36	83	130	mg/kg	148 J	96.9 J	17.1 J-	45 J-	95.6 J-	121 J-	180 J-	14 J-
MAGNESIUM	NL	NL	NL	mg/kg	12300	11200	1750 J-	4270 J-	8070 J-	9570 J-	13200 J-	1500 J-
MANGANESE	460	780	1100	mg/kg	858	648	124 J-	191 J-	283 J-	398 J-	529 J-	79.5 J-
MERCURY	0.18	0.64	1.1	mg/kg	0.29	0.36	0.035 J-	0.15 J-	0.41 J-	0.4 J-	0.74 J-	0.02 J-
NICKEL	23	36	49	mg/kg	35.7	34.1	6.8 J-	13.7 J-	22.9 J-	25.1 J-	35.2 J-	6.2 J-
POTASSIUM	NL	NL	NL	mg/kg	2050	1800	501 U	690 J-	1240 J-	1340 J-	1890 J-	439 U
SELENIUM	NL	NL	NL	mg/kg	7 U	6.2 U	3.5 R	3.4 R	4 R	4.4 R	6.8 R	3.1 R
SILVER	1.6	1.9	2.2	mg/kg	2 U	1.8 U	1 R	0.97 R	0.1 J-	0.1 J-	1.9 U	0.88 R
SODIUM	NL	NL	NL	mg/kg	1000 UJ	893 UJ	501 U	486 U	573 U	632 UJ	970 UJ	439 U
THALLIUM	NL	NL	NL	mg/kg	5 U	4.5 U	2.5 U	2.4 U	2.9 U	3.2 U	4.9 U	2.2 U
VANADIUM	NL	NL	NL	mg/kg	63.4	62.8	15.3 J-	25.4 J-	34.1 J-	37.7 J-	50.8 J-	17.3 J-
ZINC	120	290	460	mg/kg	180	183	36.3 J-	81.1 J-	211 J-	442 J-	421 J-	33.1 J-

Table 3-3b
Area 2 Sediment Sample Analytical Results - TAL Metals
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-37	HB10-2-38	HB10-2-38	HB10-2-38	HB10-2-38	HB10-2-39	HB10-2-39	HB10-2-39
				Field Sample ID	HB10-2-37-23	HB10-2-38-06	HB10-2-38-06DP	HB10-2-38-12	HB10-2-38-38	HB10-2-39-06	HB10-2-39-12	HB10-2-39-28
				Sample Date	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
				Depth Interval	12- 23	0- 6	0- 6	0- 12	36- 38	0- 6	0- 12	12- 28
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
ALUMINUM	NL	NL	NL	mg/kg	15400 J-	14900 J-	15400 J-	11100 J-	14500 J-	4210 J-	7440 J-	26500 J-
ANTIMONY	2	13.5	25	mg/kg	1.8 J-	1.8 J-	2 J-	1.6 J-	1.5 J-	0.7 J-	0.88 J-	2.3 J-
ARSENIC	9.8	21.4	33	mg/kg	5.1 J-	6.8 J-	7 J-	6.4 J-	5 J-	2.5 J-	2.7 J-	5.6 J-
BARIUM	NL	NL	NL	mg/kg	146 J-	182 J-	230 J-	130 J-	136 J-	29.6 J-	56.6 J-	190 J-
BERYLLIUM	NL	NL	NL	mg/kg	0.72 J-	0.75 J-	0.78 J-	0.67 J-	0.79 J-	0.23 J-	0.38 J-	1.2 J-
CADMIUM	0.99	3	5	mg/kg	1.6 U	0.94 U	0.93 U	0.66 J-	0.53 U	0.44 U	0.53 U	1.4 U
CALCIUM	NL	NL	NL	mg/kg	10500 J-	10500 J-	11100 J-	8950 J-	25400 J-	2140 J-	5670 J-	11100 J-
CHROMIUM	43	76.5	110	mg/kg	30.1 J-	36.9 J-	38.6 J-	24.7 J-	25.7 J-	11 J-	16.4 J-	50.5 J-
COBALT	NL	NL	NL	mg/kg	8.9 J-	11.9 J-	12.8 J-	8.6 J-	10.1 J-	4.4 J-	6.5 J-	17.1 J-
COPPER	32	91	150	mg/kg	34.8 J-	58 J-	60.9 J-	67.2 J-	44.5 J-	12.2 J-	16.4 J-	48.3 J-
IRON	20000	30000	40000	mg/kg	29200 J-	32400 J-	33300 J-	24800 J-	25800 J-	11300 J-	14000 J-	34600 J-
LEAD	36	83	130	mg/kg	20.9 J-	111 J-	133 J-	179 J-	51.1 J-	28.8 J-	31.8 J-	65.4 J-
MAGNESIUM	NL	NL	NL	mg/kg	6600 J-	9910 J-	10500 J-	7960 J-	13800 J-	2570 J-	5290 J-	13100 J-
MANGANESE	460	780	1100	mg/kg	1040 J-	889 J-	880 J-	495 J-	486 J-	139 J-	208 J-	486 J-
MERCURY	0.18	0.64	1.1	mg/kg	0.13 J-	0.4 J-	0.38 J-	0.61 J-	0.42 J-	0.082 J-	0.27 J-	0.17 J-
NICKEL	23	36	49	mg/kg	25.3 J-	33.2 J-	34.5 J-	23.2 J-	26.2 J-	10.1 J-	15 J-	42.8 J-
POTASSIUM	NL	NL	NL	mg/kg	1580 U	1660 J-	1690 J-	1090 J-	1810 J-	440 U	661 J-	2450 J-
SELENIUM	NL	NL	NL	mg/kg	11 R	6.5 R	6.5 R	4.1 R	3.7 R	3.1 R	3.7 R	10 R
SILVER	1.6	1.9	2.2	mg/kg	3.2 R	1.9 R	1.9 R	1.2 U	1.1 U	0.88 R	1.1 R	2.9 R
SODIUM	NL	NL	NL	mg/kg	1580 U	935 UJ	928 UJ	581 UJ	528 UJ	440 U	527 U	1430 U
THALLIUM	NL	NL	NL	mg/kg	7.9 U	4.7 U	4.6 U	1.3 J-	2.6 U	2.2 U	2.6 U	1.7 J-
VANADIUM	NL	NL	NL	mg/kg	51.2 J-	59.6 J-	59.5 J-	35.8 J-	38.2 J-	25.4 J-	26.6 J-	65.2 J-
ZINC	120	290	460	mg/kg	86.7 J-	190 J-	198 J-	317 J-	130 J-	62.1 J-	62.9 J-	141 J-

Table 3-3b
Area 2 Sediment Sample Analytical Results - TAL Metals
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-40	HB10-2-40	HB10-2-40	HB10-2-40	HB10-2-41	HB10-2-41	HB10-2-41	HB10-2-42
				Field Sample ID	HB10-2-40-06	HB10-2-40-12	HB10-2-40-36	HB10-2-40-48	HB10-2-41-06	HB10-2-41-12	HB10-2-41-31	HB10-2-42-06
				Sample Date	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
				Depth Interval	0- 6	0- 12	12- 36	36- 48	0- 6	0- 12	12- 31	0- 6
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
ALUMINUM	NL	NL	NL	mg/kg	12900 J-	10100 J-	5810 J-	6270 J-	14200	7810	6500	5600 J-
ANTIMONY	2	13.5	25	mg/kg	1.7 J-	1.5 J-	0.68 J-	0.71 J-	2 J	1.1 J	0.86 J	1 J-
ARSENIC	9.8	21.4	33	mg/kg	6.1 J-	4.4 J-	2.5 J-	2.3 J-	7.1	3.6	3.3	3.9 J-
BARIUM	NL	NL	NL	mg/kg	166 J-	92.1 J-	37.1 J-	43.8 J-	166	56.1	42.5	52.3 J-
BERYLLIUM	NL	NL	NL	mg/kg	0.62 J-	0.46 J-	0.25 J-	0.26 J-	0.73 J	0.4 J	0.32 J	0.41 J-
CADMIUM	0.99	3	5	mg/kg	1 U	0.89 U	0.63 U	0.51 U	1.2 U	0.64 U	0.63 U	0.56 U
CALCIUM	NL	NL	NL	mg/kg	8460 J-	6920 J-	7090 J-	9860 J-	10500	5150	4440	16700 J-
CHROMIUM	43	76.5	110	mg/kg	31.6 J-	27 J-	15.2 J-	16 J-	36.4	18.5	18.1	15.4 J-
COBALT	NL	NL	NL	mg/kg	10.3 J-	8.5 J-	5.9 J-	6.4 J-	11.2 J	7.1	6.5	5.2 J-
COPPER	32	91	150	mg/kg	60.5 J-	36.8 J-	9.9 J-	10.5 J-	54.1 J	19 J	15.3 J	28.3 J-
IRON	20000	30000	40000	mg/kg	29400 J-	21200 J-	12400 J-	12700 J-	33000	17800	15500	13900 J-
LEAD	36	83	130	mg/kg	147 J-	104 J-	4.6 J-	2.8 J-	148 J	36.5 J	41 J	47 J-
MAGNESIUM	NL	NL	NL	mg/kg	7870 J-	6570 J-	5410 J-	6970 J-	8440	5180	4640	3060 J-
MANGANESE	460	780	1100	mg/kg	469 J-	346 J-	219 J-	281 J-	492	269	224	240 J-
MERCURY	0.18	0.64	1.1	mg/kg	0.43 J-	0.52 J-	0.014 J-	0.0085 J-	0.33	0.048 J	0.098 J	0.18 J-
NICKEL	23	36	49	mg/kg	29 J-	22.5 J-	13.2 J-	14.3 J-	29.7	16.5	14.8	11.9 J-
POTASSIUM	NL	NL	NL	mg/kg	1330 J-	1020 J-	634 U	584 J-	1440	640 U	633 U	564 U
SELENIUM	NL	NL	NL	mg/kg	7.2 R	6.2 R	4.4 R	3.6 R	8.2 U	4.5 U	4.4 U	3.9 R
SILVER	1.6	1.9	2.2	mg/kg	2.1 R	1.8 R	1.3 R	1 R	2.3 U	1.3 U	1.3 U	1.1 R
SODIUM	NL	NL	NL	mg/kg	1030 UJ	891 UJ	634 UJ	511 UJ	1170 UJ	640 UJ	633 UJ	564 U
THALLIUM	NL	NL	NL	mg/kg	5.2 U	4.5 U	3.2 U	2.6 U	5.9 U	3.2 U	3.2 U	2.8 U
VANADIUM	NL	NL	NL	mg/kg	58.3 J-	40.8 J-	26 J-	25.7 J-	60.8	31	28.3	21.7 J-
ZINC	120	290	460	mg/kg	167 J-	119 J-	36.8 J-	40.1 J-	204	81.7	66.1	106 J-

Table 3-3b
Area 2 Sediment Sample Analytical Results - TAL Metals
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-42	HB10-2-42	HB10-2-43	HB10-2-43	HB10-2-44	HB10-2-44	HB10-2-45	HB10-2-45
				Field Sample ID	HB10-2-42-12	HB10-2-42-30	HB10-2-43-06	HB10-2-43-22	HB10-2-44-06	HB10-2-44-16	HB10-2-45-06	HB10-2-45-19
				Sample Date	10/18/2010	10/18/2010	10/17/2010	10/17/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
				Depth Interval	0- 12	12- 30	0- 6	12- 22	0- 6	12- 16	0- 6	12- 19
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
ALUMINUM	NL	NL	NL	mg/kg	9120 J-	8170 J-	9040	8490	10400 J-	9120 J-	10000	7320
ANTIMONY	2	13.5	25	mg/kg	1.4 J-	1.3 J-	1.8 J	1.6 J	1.5 J-	1.3 J-	1.6 J	1.4 J
ARSENIC	9.8	21.4	33	mg/kg	4.6 J-	4.5 J-	6.1	5	7.3 J-	5.2 J-	5	4.7
BARIUM	NL	NL	NL	mg/kg	80.3 J-	112 J-	57	109	166 J-	75 J-	285	83.1
BERYLLIUM	NL	NL	NL	mg/kg	0.58 J-	0.5 J-	0.53 J	0.5 J	0.54 J-	0.51 J-	0.68	0.47 J
CADMIUM	0.99	3	5	mg/kg	0.71 U	0.64 U	0.97 U	0.79	0.66 U	0.61 J-	0.54 U	0.58 U
CALCIUM	NL	NL	NL	mg/kg	11900 J-	7040 J-	11600	14800	21000 J-	6650 J-	22900	5870
CHROMIUM	43	76.5	110	mg/kg	22.7 J-	24.5 J-	43.9	35.4	27.3 J-	25.1 J-	35.2	26.7
COBALT	NL	NL	NL	mg/kg	6.9 J-	6.7 J-	11.9	7.4 J	8.7 J-	8 J-	6.4	6.4
COPPER	32	91	150	mg/kg	35.9 J-	36.4 J-	57.1	60.2 J	39.7 J-	38.6 J-	30.2 J	29.2 J
IRON	20000	30000	40000	mg/kg	18000 J-	18800 J-	38000	27800	28200 J-	19500 J-	22200	18900
LEAD	36	83	130	mg/kg	251 J-	74.5 J-	27.1	114 J	298 J-	118 J-	1140 J	186 J
MAGNESIUM	NL	NL	NL	mg/kg	4540 J-	4720 J-	8010	5740	6560 J-	6290 J-	4740	4420
MANGANESE	460	780	1100	mg/kg	417 J-	312 J-	1070	728	432 J-	274 J-	453	293
MERCURY	0.18	0.64	1.1	mg/kg	0.32 J-	0.35 J-	0.037 J	0.17	0.26 J-	0.41 J-	0.13 J	0.26
NICKEL	23	36	49	mg/kg	16 J-	18.5 J-	29.3	23.7	26.3 J-	25.6 J-	25.4	16.1
POTASSIUM	NL	NL	NL	mg/kg	724 J-	667 J-	975 U	751 U	1030 J-	873 J-	721	630
SELENIUM	NL	NL	NL	mg/kg	5 R	4.5 R	6.8 U	5.3 U	4.6 R	3.9 R	3.8 U	4.1 U
SILVER	1.6	1.9	2.2	mg/kg	0.045 J-	1.3 R	1.9 U	1.5 U	1.3 R	0.055 J-	1.1 U	1.2 U
SODIUM	NL	NL	NL	mg/kg	709 U	637 U	975 UJ	751 UJ	656 UJ	550 UJ	536 UJ	581 UJ
THALLIUM	NL	NL	NL	mg/kg	3.5 U	3.2 U	4.9 U	3.8 U	3.3 U	2.8 U	2.7 U	2.9 U
VANADIUM	NL	NL	NL	mg/kg	27 J-	38.3 J-	66.1	38.6	53.6 J-	34.4 J-	87.2	30
ZINC	120	290	460	mg/kg	187 J-	165 J-	139	232	150 J-	178 J-	154	249

Notes:

Level II Concern: >TEC and ≤MEC

Level III Concern: >MEC and ≤PEC

Level IV Concern: >PEC

DP - Duplicate

ID - Identification

J - Estimated value

J- - Estimated value low

MEC - Median Effects Concentration

mg/kg - Milligram per kilogram

NL - Not Listed

PEC - Probable Effect Concentration

R - Not detected

SQG - Sediment Quality Guidelines

TAL - Target Analyte List

TEC - Threshold Effects Concentration

U - Not detected

U - Not detected

UJ - Not detected, Estimated value

WDNR - Wisconsin Department of

Natural Resources

¹ WDNR Consensus-Based SQGs

Table 3-4a
Area 1 Sediment Sample Analytical Results - PCB Aroclors
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-04		HB10-1-05		HB10-1-05		HB10-1-07		HB10-1-08	
				Field Sample ID	HB10-1-04-06		HB10-1-05-06		HB10-1-05-06DP		HB10-1-07-06		HB10-1-08-06	
				Sample Date	10/17/2010		10/16/2010		10/16/2010		10/17/2010		10/17/2010	
				Depth Interval	0- 6		0- 6		0- 6		0- 6		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
AROCLOR-1016	NL	NL	NL	µg/kg	45 U	45 U	57 U	57 U	58 U	58 U	53 U	53 U	75 U	75 U
AROCLOR-1221	NL	NL	NL	µg/kg	45 U	45 U	57 U	57 U	58 U	58 U	53 U	53 U	75 U	75 U
AROCLOR-1232	NL	NL	NL	µg/kg	45 U	45 U	57 U	57 U	58 U	58 U	53 U	53 U	75 U	75 U
AROCLOR-1242	NL	NL	NL	µg/kg	45 U	45 U	57 U	57 U	58 U	58 U	53 U	53 U	75 U	75 U
AROCLOR-1248	NL	NL	NL	µg/kg	45 U	45 U	57 U	57 U	58 U	58 U	53 U	53 U	75 U	75 U
AROCLOR-1254	NL	NL	NL	µg/kg	45 U	45 U	57 U	57 U	58 U	58 U	53 U	53 U	75 U	75 U
AROCLOR-1260	NL	NL	NL	µg/kg	510	271	57 U	57 U	58 U	58 U	38 J	16.7	75 U	75 U
AROCLOR-1262	NL	NL	NL	µg/kg	45 U	45 U	57 U	57 U	58 U	58 U	53 U	53 U	75 U	75 U
AROCLOR-1268	NL	NL	NL	µg/kg	45 U	45 U	57 U	57 U	58 U	58 U	53 U	53 U	75 U	75 U
TOTAL PCBs	60	368	676	µg/kg	510	271	0 U	0 U	0 U	0 U	38	16.7	0 U	0 U
TOC	NL	NL	NL	%	1.88		2.13		1.96		2.28		3.85	

Table 3-4a
Area 1 Sediment Sample Analytical Results - PCB Aroclors
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-10		HB10-1-11		HB10-1-12		HB10-1-13		HB10-1-14	
				Field Sample ID	HB10-1-10-06		HB10-1-11-06		HB10-1-12-06		HB10-1-13-06		HB10-1-14-06	
				Sample Date	10/18/2010		10/16/2010		10/17/2010		10/18/2010		10/17/2010	
				Depth Interval	0- 6		0- 6		0- 6		0- 6		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
AROCLOR-1016	NL	NL	NL	µg/kg	69 U	69 U	65 U	65 U	54 U	54 U	66 U	66 U	65 U	65 U
AROCLOR-1221	NL	NL	NL	µg/kg	69 U	69 U	65 U	65 U	54 U	54 U	66 U	66 U	65 U	65 U
AROCLOR-1232	NL	NL	NL	µg/kg	69 U	69 U	65 U	65 U	54 U	54 U	66 U	66 U	65 U	65 U
AROCLOR-1242	NL	NL	NL	µg/kg	69 U	69 U	65 U	65 U	54 U	54 U	66 U	66 U	65 U	65 U
AROCLOR-1248	NL	NL	NL	µg/kg	69 U	69 U	65 U	65 U	54 U	54 U	66 U	66 U	65 U	65 U
AROCLOR-1254	NL	NL	NL	µg/kg	69 U	69 U	65 U	65 U	55 U	55 U	72 J	21.4	64 U	64 U
AROCLOR-1260	NL	NL	NL	µg/kg	69 U	69 U	65 U	65 U	54 U	54 U	61 J	18.2	65 U	65 U
AROCLOR-1262	NL	NL	NL	µg/kg	69 U	69 U	65 U	65 U	54 U	54 U	66 U	66 U	65 U	65 U
AROCLOR-1268	NL	NL	NL	µg/kg	69 U	69 U	65 U	65 U	54 U	54 U	66 U	66 U	65 U	65 U
TOTAL PCBs	60	368	676	µg/kg	0 U	0 U	0 U	0 U	0 U	0 U	133	39.6	0 U	0 U
TOC	NL	NL	NL	%	3.59		3.16		3.4		3.36		2.84	

Table 3-4a
Area 1 Sediment Sample Analytical Results - PCB Aroclors
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-15		HB10-1-16		HB10-1-16		HB10-1-16		HB10-1-17	
				Field Sample ID	HB10-1-15-06		HB10-1-16-06		HB10-1-16-12		HB10-1-16-31		HB10-1-17-06	
				Sample Date	10/18/2010		10/17/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	0- 6		0- 6		0- 6		12- 31		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
AROCLOR-1016	NL	NL	NL	µg/kg	46 U	46 U	47 U	47 U	56 U	56 U	63 U	63 U	66 U	66 U
AROCLOR-1221	NL	NL	NL	µg/kg	46 U	46 U	47 U	47 U	56 U	56 U	63 U	63 U	66 U	66 U
AROCLOR-1232	NL	NL	NL	µg/kg	46 U	46 U	47 U	47 U	56 U	56 U	63 U	63 U	66 U	66 U
AROCLOR-1242	NL	NL	NL	µg/kg	46 U	46 U	47 U	47 U	56 U	56 U	63 U	63 U	66 U	66 U
AROCLOR-1248	NL	NL	NL	µg/kg	46 U	46 U	47 U	47 U	56 U	56 U	63 U	63 U	66 U	66 U
AROCLOR-1254	NL	NL	NL	µg/kg	46 U	46 U	47 U	47 U	56 U	56 U	63 U	63 U	38 J	4.6
AROCLOR-1260	NL	NL	NL	µg/kg	46 U	46 U	47 U	47 U	56 U	56 U	63 U	63 U	66 U	66 U
AROCLOR-1262	NL	NL	NL	µg/kg	46 U	46 U	47 U	47 U	56 U	56 U	63 U	63 U	66 U	66 U
AROCLOR-1268	NL	NL	NL	µg/kg	46 U	46 U	47 U	47 U	56 U	56 U	63 U	63 U	66 U	66 U
TOTAL PCBs	60	368	676	µg/kg	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	38	4.6
TOC	NL	NL	NL	%	1.72		2.14		4.45		8.15		8.19	

Table 3-4a
Area 1 Sediment Sample Analytical Results - PCB Aroclors
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-20		HB10-1-21		HB10-1-21		HB10-1-24		HB10-1-24	
				Field Sample ID	HB10-1-20-06		HB10-1-21-06		HB10-1-21-23		HB10-1-24-06		HB10-1-24-12	
				Sample Date	10/17/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 6		0- 6		12- 23		0- 6		0- 12	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
AROCLOR-1016	NL	NL	NL	µg/kg	49 U	49 U	40 U	40 U	50 U	50 U	74 U	74 U	78 U	78 U
AROCLOR-1221	NL	NL	NL	µg/kg	49 U	49 U	40 U	40 U	50 U	50 U	74 U	74 U	78 U	78 U
AROCLOR-1232	NL	NL	NL	µg/kg	49 U	49 U	40 U	40 U	50 U	50 U	74 U	74 U	78 U	78 U
AROCLOR-1242	NL	NL	NL	µg/kg	49 U	49 U	40 U	40 U	50 U	50 U	74 U	74 U	78 U	78 U
AROCLOR-1248	NL	NL	NL	µg/kg	49 U	49 U	40 U	40 U	50 U	50 U	74 U	74 U	78 U	78 U
AROCLOR-1254	NL	NL	NL	µg/kg	48 U	48 U	40 U	40 U	120	88.9	120	21.6	120	21.5
AROCLOR-1260	NL	NL	NL	µg/kg	39 J	18.8	40 U	40 U	110	81.5	100 J	18.0	110 J	19.7
AROCLOR-1262	NL	NL	NL	µg/kg	49 U	49 U	40 U	40 U	50 U	50 U	74 U	74 U	78 U	78 U
AROCLOR-1268	NL	NL	NL	µg/kg	49 U	49 U	40 U	40 U	50 U	50 U	74 U	74 U	78 U	78 U
TOTAL PCBs	60	368	676	µg/kg	39	18.8	0 U	0 U	230	170.4	220	39.6	230	41.3
TOC	NL	NL	NL	%	2.08		0.849		1.35		5.55		5.57	

Table 3-4a
Area 1 Sediment Sample Analytical Results - PCB Aroclors
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-24		HB10-1-29		HB10-1-29		HB10-1-29		HB10-1-29	
				Field Sample ID	HB10-1-24-36		HB10-1-29-06		HB10-1-29-12		HB10-1-29-36		HB10-1-29-60	
				Sample Date	10/18/2010		10/17/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	12- 36		0- 6		0- 12		12- 36		36- 60	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
AROCLOR-1016	NL	NL	NL	µg/kg	68 U	68 U	71 U	71 U	80 U	80 U	97 U	97 U	78 U	78 U
AROCLOR-1221	NL	NL	NL	µg/kg	68 U	68 U	71 U	71 U	80 U	80 U	97 U	97 U	78 U	78 U
AROCLOR-1232	NL	NL	NL	µg/kg	68 U	68 U	71 U	71 U	80 U	80 U	97 U	97 U	78 U	78 U
AROCLOR-1242	NL	NL	NL	µg/kg	68 U	68 U	71 U	71 U	80 U	80 U	97 U	97 U	78 U	78 U
AROCLOR-1248	NL	NL	NL	µg/kg	68 U	68 U	71 U	71 U	80 U	80 U	97 U	97 U	78 U	78 U
AROCLOR-1254	NL	NL	NL	µg/kg	100	16.8	100	9.8	160	13.9	370	22.4	77 J	5.1
AROCLOR-1260	NL	NL	NL	µg/kg	100 J	16.8	100	9.8	130	11.3	97 U	97 U	78 U	78 U
AROCLOR-1262	NL	NL	NL	µg/kg	68 U	68 U	71 U	71 U	80 U	80 U	97 U	97 U	78 U	78 U
AROCLOR-1268	NL	NL	NL	µg/kg	68 U	68 U	71 U	71 U	80 U	80 U	97 U	97 U	78 U	78 U
TOTAL PCBs	60	368	676	µg/kg	200	33.5	200	19.6	290	25.2	370	22.4	77	5.1
TOC	NL	NL	NL	%	5.97		10.2		11.5		16.5		15	

Table 3-4a
Area 1 Sediment Sample Analytical Results - PCB Aroclors
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-29	
				Field Sample ID	HB10-1-29-93	
				Sample Date	10/17/2010	
				Depth Interval	60- 93	
				Concentration	SS Conc.	Norm. 1% TOC
Chemical Name	TEC¹	MEC¹	PEC¹	Unit		
AROCLOR-1016	NL	NL	NL	µg/kg	75 U	75 U
AROCLOR-1221	NL	NL	NL	µg/kg	75 U	75 U
AROCLOR-1232	NL	NL	NL	µg/kg	75 U	75 U
AROCLOR-1242	NL	NL	NL	µg/kg	75 U	75 U
AROCLOR-1248	NL	NL	NL	µg/kg	75 U	75 U
AROCLOR-1254	NL	NL	NL	µg/kg	75 U	75 U
AROCLOR-1260	NL	NL	NL	µg/kg	75 U	75 U
AROCLOR-1262	NL	NL	NL	µg/kg	75 U	75 U
AROCLOR-1268	NL	NL	NL	µg/kg	75 U	75 U
TOTAL PCBs	60	368	676	µg/kg	0 U	0 U
TOC	NL	NL	NL	%	14.1	

Notes:

Level II Concern: >TEC and ≤MEC

Level III Concern: >MEC and ≤PEC

Level IV Concern: >PEC

DP - Duplicate

ID - Identification

J - Estimated value

MEC - Median Effects Concentration

NL - Not Listed

Norm. - Normalized to 1% TOC

PCB - Polychlorinated Biphenyl

PEC - Probable Effect Concentration

SS Conc. - Study Site Concentration

TEC - Threshold Effects Concentration

TOC - Total Organic Carbon

U - Not detected

µg/kg - Microgram per kilogram

WDNR - Wisconsin Department of Natural Resources

TOTAL PCBs - Calculated by WESTON (sum of detections)

¹ WDNR Consensus-Based SQGs

Table 3-4b
Area 2 Sediment Sample Analytical Results - PCB Aroclors
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-26		HB10-2-33		HB10-2-35		HB10-2-37		HB10-2-39	
				Field Sample ID	HB10-2-26-06		HB10-2-33-06		HB10-2-35-06		HB10-2-37-06		HB10-2-39-06	
				Sample Date	10/16/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 6		0- 6		0- 6		0- 6		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
AROCLOR-1016	NL	NL	NL	µg/kg	49 U	49 U	47 U	47 U	43 U	43 U	42 U	42 U	40 U	40 U
AROCLOR-1221	NL	NL	NL	µg/kg	49 U	49 U	47 U	47 U	43 U	43 U	42 U	42 U	40 U	40 U
AROCLOR-1232	NL	NL	NL	µg/kg	49 U	49 U	47 U	47 U	43 U	43 U	42 U	42 U	40 U	40 U
AROCLOR-1242	NL	NL	NL	µg/kg	49 U	49 U	47 U	47 U	43 U	43 U	42 U	42 U	40 U	40 U
AROCLOR-1248	NL	NL	NL	µg/kg	49 U	49 U	47 U	47 U	43 U	43 U	42 U	42 U	40 U	40 U
AROCLOR-1254	NL	NL	NL	µg/kg	49 U	49 U	47 U	47 U	43 U	43 U	42 U	42 U	40 U	40 U
AROCLOR-1260	NL	NL	NL	µg/kg	49 U	49 U	47 U	47 U	43 U	43 U	42 U	42 U	40 U	40 U
AROCLOR-1262	NL	NL	NL	µg/kg	49 U	49 U	47 U	47 U	43 U	43 U	42 U	42 U	40 U	40 U
AROCLOR-1268	NL	NL	NL	µg/kg	49 U	49 U	47 U	47 U	43 U	43 U	42 U	42 U	40 U	40 U
TOTAL PCBs	60	368	676	µg/kg	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
TOC	NL	NL	NL	%	5.29		0.99		0.702		0.423		0.506	

Table 3-4b
Area 2 Sediment Sample Analytical Results - PCB Aroclors
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-40		HB10-2-41		HB10-2-42		HB10-2-43	
				Field Sample ID	HB10-2-40-06		HB10-2-41-06		HB10-2-42-06		HB10-2-43-06	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/17/2010	
				Depth Interval	0- 6		0- 6		0- 6		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
AROCLOR-1016	NL	NL	NL	µg/kg	72 U	72 U	89 U	89 U	44 U	44 U	41 U	41 U
AROCLOR-1221	NL	NL	NL	µg/kg	72 U	72 U	89 U	89 U	44 U	44 U	41 U	41 U
AROCLOR-1232	NL	NL	NL	µg/kg	72 U	72 U	89 U	89 U	44 U	44 U	41 U	41 U
AROCLOR-1242	NL	NL	NL	µg/kg	72 U	72 U	89 U	89 U	44 U	44 U	41 U	41 U
AROCLOR-1248	NL	NL	NL	µg/kg	72 U	72 U	89 U	89 U	44 U	44 U	41 U	41 U
AROCLOR-1254	NL	NL	NL	µg/kg	70 J	20.6	61 J	9.1	44 U	44 U	41 U	41 U
AROCLOR-1260	NL	NL	NL	µg/kg	63 J	18.6	55 J	8.2	44 U	44 U	41 U	41 U
AROCLOR-1262	NL	NL	NL	µg/kg	72 U	72 U	89 U	89 U	44 U	44 U	41 U	41 U
AROCLOR-1268	NL	NL	NL	µg/kg	72 U	72 U	89 U	89 U	44 U	44 U	41 U	41 U
TOTAL PCBs	60	368	676	µg/kg	133	39.2	116	17.2	0 U	0 U	0 U	0 U
TOC	NL	NL	NL	%	3.39		6.73		8.84		0.783	

Notes:

Level II Concern: >TEC and ≤MEC

Level III Concern: >MEC and ≤PEC

Level IV Concern: >PEC

DP - Duplicate

ID - Identification

J - Estimated value

MEC - Median Effects Concentration

NL - Not Listed

Norm. - Normalized to 1% TOC

PCB - Polychlorinated Biphenyl

PEC - Probable Effect Concentration

SS Conc. - Study Site Concentration

TEC - Threshold Effects Concentration

TOC - Total Organic Carbon

U - Not detected

µg/kg - Microgram per kilogram

WDNR - Wisconsin Department of Natural Resources

TOTAL PCBs - Calculated by WESTON (sum of detections)

¹ WDNR Consensus-Based SQGs

Table 3-5a
Area 1 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-01		HB10-1-01		HB10-1-01		HB10-1-02		HB10-1-02	
				Field Sample ID	HB10-1-01-06		HB10-1-01-12		HB10-1-01-40		HB10-1-02-06		HB10-1-02-06DP	
				Sample Date	10/16/2010		10/16/2010		10/16/2010		10/16/2010		10/16/2010	
				Depth Interval	0- 6		0- 12		36- 40		0- 6		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	6.6 U	6.6 U	6 J	1.1	4 J	2.2	7 U	7 U	7 U	7 U
4,4'-DDE	3.2	17	31	µg/kg	5 J	2.3	5 J	0.94	4 J	2.2	7 U	7 U	7 U	7 U
4,4'-DDT	4.2	33.6	63	µg/kg	10 J	4.6	9 J	1.7	6 J	3.2	7 U	7 U	7 U	7 U
ALDRIN	2	41	80	µg/kg	3.4 U	3.4 U	3.6 U	3.6 U	2.7 U	2.7 U	3.6 U	3.6 U	3.6 U	3.6 U
ALPHA-BHC	6	53	100	µg/kg	3.4 U	3.4 U	3.6 U	3.6 U	2.7 U	2.7 U	3.6 U	3.6 U	3.6 U	3.6 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	3.4 U	3.4 U	3.6 U	3.6 U	2.7 U	2.7 U	3.6 U	3.6 U	3.6 U	3.6 U
BETA-BHC	5	108	210	µg/kg	3.4 U	3.4 U	3.6 U	3.6 U	2.7 U	2.7 U	3.6 U	3.6 U	3.6 U	3.6 U
DELTA-BHC	3	62	120	µg/kg	3.4 U	3.4 U	3.6 U	3.6 U	2.7 U	2.7 U	3.6 U	3.6 U	3.6 U	3.6 U
DIELDRIN	1.9	32	62	µg/kg	6.6 U	6.6 U	7.1 U	7.1 U	5.2 U	5.2 U	7 U	7 U	7 U	7 U
ENDOSULFAN I	NL	NL	NL	µg/kg	3.4 U	3.4 U	3.6 U	3.6 U	2.7 U	2.7 U	3.6 U	3.6 U	3.6 U	3.6 U
ENDOSULFAN II	NL	NL	NL	µg/kg	6.6 U	6.6 U	7.1 U	7.1 U	5.2 U	5.2 U	7 U	7 U	7 U	7 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	6.6 U	6.6 U	7.1 U	7.1 U	5.2 U	5.2 U	7 U	7 U	7 U	7 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	4 J	1.9	5 J	0.94	5.2 U	5.2 U	7 U	7 U	7 U	7 U
ENDRIN KETONE	NL	NL	NL	µg/kg	6.6 U	6.6 U	7.1 U	7.1 U	5.2 U	5.2 U	7 U	7 U	7 U	7 U
ENDRIN	2.2	104.6	207	µg/kg	6.6 U	6.6 U	7.1 U	7.1 U	5.2 U	5.2 U	7 U	7 U	7 U	7 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	3.4 U	3.4 U	3.6 U	3.6 U	2.7 U	2.7 U	3.6 U	3.6 U	3.6 U	3.6 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	3.4 U	3.4 U	3.6 U	3.6 U	2.7 U	2.7 U	3.6 U	3.6 U	3.6 R	3.6 R
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	6 NJ	2.8	3.6 R	3.6 R	4 J	2.2	3.6 U	3.6 U	3.6 U	3.6 U
HEPTACHLOR	NL	NL	NL	µg/kg	3.4 U	3.4 U	3.6 U	3.6 U	2.7 U	2.7 U	3.6 U	3.6 U	3.6 U	3.6 U
METHOXYCLOR	NL	NL	NL	µg/kg	34 U	34 U	36 U	36 U	27 U	27 U	36 U	36 U	36 U	36 U
TOXAPHENE	1	1.5	2	µg/kg	340 U	340 U	360 U	360 U	270 U	270 U	360 U	360 U	360 U	360 U
TOC	NL	NL	NL	%	2.16		5.31		1.85		2.46		2.19	

Table 3-5a
Area 1 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-02		HB10-1-03		HB10-1-03		HB10-1-03		HB10-1-03	
				Field Sample ID	HB10-1-02-23		HB10-1-03-06		HB10-1-03-12		HB10-1-03-36		HB10-1-03-60	
				Sample Date	10/16/2010		10/16/2010		10/16/2010		10/16/2010		10/16/2010	
				Depth Interval	12- 23		0- 6		0- 12		12- 36		36- 60	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	5.7 U	5.7 U	7.6 U	7.6 U	6.1 U	6.1 U	5.9 U	5.9 U	5.5 UJ	5.5 UJ
4,4'-DDE	3.2	17	31	µg/kg	5.7 U	5.7 U	7.6 U	7.6 U	6.1 U	6.1 U	5.9 U	5.9 U	5.5 UJ	5.5 UJ
4,4'-DDT	4.2	33.6	63	µg/kg	5.7 U	5.7 U	14 J	77.3	11 J	6.9	12 J	6.1	5.5 UJ	5.5 UJ
ALDRIN	2	41	80	µg/kg	2.9 U	2.9 U	3.9 U	3.9 U	3.1 U	3.1 U	3 U	3 U	2.8 UJ	2.8 UJ
ALPHA-BHC	6	53	100	µg/kg	2.9 U	2.9 U	3.9 U	3.9 U	3.1 U	3.1 U	3 U	3 U	2.8 UJ	2.8 UJ
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	2.9 U	2.9 U	3.9 U	3.9 U	3.1 U	3.1 U	3 U	3 U	2.8 UJ	2.8 UJ
BETA-BHC	5	108	210	µg/kg	2.9 U	2.9 U	2 J	11.0	2 J	1.3	3 U	3 U	2.8 UJ	2.8 UJ
DELTA-BHC	3	62	120	µg/kg	2.9 U	2.9 U	3.9 U	3.9 U	3.1 U	3.1 U	3 U	3 U	2.8 UJ	2.8 UJ
DIELDRIN	1.9	32	62	µg/kg	5.7 U	5.7 U	7.6 U	7.6 U	6.1 U	6.1 U	5.9 UJ	5.9 UJ	5.5 UJ	5.5 UJ
ENDOSULFAN I	NL	NL	NL	µg/kg	2.9 U	2.9 U	3.9 U	3.9 U	3.1 U	3.1 U	3 U	3 U	2.8 UJ	2.8 UJ
ENDOSULFAN II	NL	NL	NL	µg/kg	5.7 U	5.7 U	7.6 U	7.6 U	6.1 U	6.1 U	5.9 U	5.9 U	5.5 UJ	5.5 UJ
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	5.7 U	5.7 U	7.6 U	7.6 U	6.1 U	6.1 U	5.9 U	5.9 U	5.5 UJ	5.5 UJ
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	5.7 U	5.7 U	7.6 U	7.6 U	6.1 U	6.1 U	5.9 U	5.9 U	5.5 UJ	5.5 UJ
ENDRIN KETONE	NL	NL	NL	µg/kg	5.7 U	5.7 U	7.6 U	7.6 U	6.1 U	6.1 U	5.9 U	5.9 U	5.5 UJ	5.5 UJ
ENDRIN	2.2	104.6	207	µg/kg	5.7 U	5.7 U	7.6 U	7.6 U	6.1 U	6.1 U	5.9 U	5.9 U	5.5 UJ	5.5 UJ
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	2.9 U	2.9 U	3.9 U	3.9 U	3.1 U	3.1 U	3 U	3 U	2.8 UJ	2.8 UJ
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	2.9 U	2.9 U	3.9 R	3.9 R	3.1 R	3.1 R	3 R	3 R	2.8 UJ	2.8 UJ
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	2.9 U	2.9 U	7	38.7	6	3.8	6 J	3.0	2.8 UJ	2.8 UJ
HEPTACHLOR	NL	NL	NL	µg/kg	2.9 U	2.9 U	3.9 U	3.9 U	3.1 U	3.1 U	3 U	3 U	2.8 UJ	2.8 UJ
METHOXYCLOR	NL	NL	NL	µg/kg	29 U	29 U	39 U	39 U	31 U	31 U	30 U	30 U	28 UJ	28 UJ
TOXAPHENE	1	1.5	2	µg/kg	290 U	290 U	390 U	390 U	310 U	310 U	300 U	300 U	280 UJ	280 UJ
TOC	NL	NL	NL	%	2.22		0.181		1.59		1.97		2.57	

Table 3-5a
Area 1 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-03		HB10-1-04		HB10-1-04		HB10-1-04		HB10-1-04	
				Field Sample ID	HB10-1-03-84		HB10-1-04-06		HB10-1-04-12		HB10-1-04-36		HB10-1-04-50	
				Sample Date	10/16/2010		10/17/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	60- 84		0- 6		0- 12		12- 36		36- 50	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	7 J	3.6	4.5 U	4.5 U	5.4 U	5.4 U	5.4 U	5.4 U	5.2 U	5.2 U
4,4'-DDE	3.2	17	31	µg/kg	4.9 U	4.9 U	4.5 U	4.5 U	5.4 U	5.4 U	5.4 U	5.4 U	5.2 U	5.2 U
4,4'-DDT	4.2	33.6	63	µg/kg	5 NJ	2.6	4.5 U	4.5 U	5.4 U	5.4 U	5.4 U	5.4 U	5.2 U	5.2 U
ALDRIN	2	41	80	µg/kg	2.5 U	2.5 U	2.7 NJ	1.4	2.8 NJ	1.1	2.8 U	2.8 U	2.7 U	2.7 U
ALPHA-BHC	6	53	100	µg/kg	2.5 U	2.5 U	2.3 U	2.3 U	2.8 U	2.8 U	2.8 U	2.8 U	2.7 U	2.7 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	2.5 U	2.5 U	2.3 U	2.3 U	2.8 U	2.8 U	2.8 U	2.8 U	2.7 U	2.7 U
BETA-BHC	5	108	210	µg/kg	2.5 U	2.5 U	2.3 U	2.3 U	2.8 U	2.8 U	2.8 U	2.8 U	2.7 U	2.7 U
DELTA-BHC	3	62	120	µg/kg	2.5 U	2.5 U	2.3 U	2.3 U	2.8 U	2.8 U	2.8 U	2.8 U	2.7 U	2.7 U
DIELDRIN	1.9	32	62	µg/kg	4.9 U	4.9 U	4.5 U	4.5 U	5.4 U	5.4 U	5.4 U	5.4 U	5.2 U	5.2 U
ENDOSULFAN I	NL	NL	NL	µg/kg	2.5 U	2.5 U	2.3 U	2.3 U	2.8 U	2.8 U	2.8 U	2.8 U	2.7 U	2.7 U
ENDOSULFAN II	NL	NL	NL	µg/kg	4.9 U	4.9 U	4.5 U	4.5 U	5.4 U	5.4 U	5.4 U	5.4 U	5.2 U	5.2 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	4.9 U	4.9 U	4.5 U	4.5 U	5.4 U	5.4 U	5.4 U	5.4 U	5.2 U	5.2 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	4.9 U	4.9 U	4.5 U	4.5 U	5.4 U	5.4 U	5.4 U	5.4 U	5.2 U	5.2 U
ENDRIN KETONE	NL	NL	NL	µg/kg	4.9 U	4.9 U	4.5 U	4.5 U	5.4 U	5.4 U	5.4 U	5.4 U	5.2 U	5.2 U
ENDRIN	2.2	104.6	207	µg/kg	4.9 U	4.9 U	4.5 U	4.5 U	5.4 U	5.4 U	5.4 U	5.4 U	5.2 U	5.2 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	2.5 U	2.5 U	2.3 U	2.3 U	2.8 U	2.8 U	2.8 U	2.8 U	2.7 U	2.7 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	2.5 U	2.5 U	2.3 U	2.3 U	2.8 U	2.8 U	2.8 U	2.8 U	2.7 U	2.7 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	2.5 U	2.5 U	2.3 U	2.3 U	2.8 U	2.8 U	2.8 U	2.8 U	2.7 U	2.7 U
HEPTACHLOR	NL	NL	NL	µg/kg	2.5 U	2.5 U	2.3 U	2.3 U	2.8 U	2.8 U	2.8 U	2.8 U	2.7 U	2.7 U
METHOXYCLOR	NL	NL	NL	µg/kg	25 U	25 U	23 UJ	23 UJ	28 UJ	28 UJ	28 UJ	28 UJ	27 UJ	27 UJ
TOXAPHENE	1	1.5	2	µg/kg	250 U	250 U	230 U	230 U	280 U	280 U	280 U	280 U	270 U	270 U
TOC	NL	NL	NL	%	1.94		1.88		2.53		3.3		4.64	

Table 3-5a
Area 1 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-05		HB10-1-05		HB10-1-06		HB10-1-06		HB10-1-06	
				Field Sample ID	HB10-1-05-06		HB10-1-05-06DP		HB10-1-06-06		HB10-1-06-06DP		HB10-1-06-12	
				Sample Date	10/16/2010		10/16/2010		10/16/2010		10/16/2010		10/16/2010	
				Depth Interval	0- 6		0- 6		0- 6		0- 6		0- 12	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	5 U	5 U	5 U	5 U	6.6 U	6.6 U	6.9 U	6.9 U	5.7 U	5.7 U
4,4'-DDE	3.2	17	31	µg/kg	5 U	5 U	5 U	5 U	6.6 U	6.6 U	6.9 U	6.9 U	5.7 U	5.7 U
4,4'-DDT	4.2	33.6	63	µg/kg	5 U	5 U	5 U	5 U	6 J	2.6	6.9 U	6.9 U	4 J	2.0
ALDRIN	2	41	80	µg/kg	2 U	2 U	3 U	3 U	3.4 U	3.4 U	3.6 U	3.6 U	2.9 U	2.9 U
ALPHA-BHC	6	53	100	µg/kg	2 U	2 U	3 U	3 U	3.4 U	3.4 U	3.6 U	3.6 U	2.9 U	2.9 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	2 U	2 U	3 U	3 U	3.4 U	3.4 U	3.6 U	3.6 U	2.9 U	2.9 U
BETA-BHC	5	108	210	µg/kg	2 U	2 U	3 U	3 U	3.4 U	3.4 U	3.6 U	3.6 U	2.9 U	2.9 U
DELTA-BHC	3	62	120	µg/kg	2 U	2 U	3 U	3 U	3.4 U	3.4 U	3.6 U	3.6 U	2.9 U	2.9 U
DIELDRIN	1.9	32	62	µg/kg	5 U	5 U	5 U	5 U	6.6 U	6.6 U	6.9 U	6.9 U	5.7 U	5.7 U
ENDOSULFAN I	NL	NL	NL	µg/kg	2 U	2 U	3 U	3 U	3.4 U	3.4 U	3.6 U	3.6 U	2.9 U	2.9 U
ENDOSULFAN II	NL	NL	NL	µg/kg	5 U	5 U	5 U	5 U	6.6 U	6.6 U	6.9 U	6.9 U	5.7 U	5.7 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	5 U	5 U	5 U	5 U	6.6 U	6.6 U	6.9 U	6.9 U	5.7 U	5.7 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	5 U	5 U	5 U	5 U	6.6 U	6.6 U	6.9 U	6.9 U	5.7 U	5.7 U
ENDRIN KETONE	NL	NL	NL	µg/kg	5 U	5 U	5 U	5 U	6.6 U	6.6 U	6.9 U	6.9 U	5.7 U	5.7 U
ENDRIN	2.2	104.6	207	µg/kg	5 U	5 U	5 U	5 U	6.6 U	6.6 U	6.9 U	6.9 U	5.7 U	5.7 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	2 U	2 U	3 U	3 U	3.4 U	3.4 U	3.6 U	3.6 U	2.9 U	2.9 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	2 R	2 R	3 U	3 U	3.4 U	3.4 U	3.6 U	3.6 U	2.9 U	2.9 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	2 U	2 U	3 U	3 U	3.4 U	3.4 U	3.6 U	3.6 U	2.9 U	2.9 U
HEPTACHLOR	NL	NL	NL	µg/kg	2 U	2 U	3 U	3 U	3.4 U	3.4 U	3.6 U	3.6 U	2.9 U	2.9 U
METHOXYCLOR	NL	NL	NL	µg/kg	29 U	29 U	30 U	30 U	34 U	34 U	36 U	36 U	29 U	29 U
TOXAPHENE	1	1.5	2	µg/kg	290 U	290 U	300 U	300 U	340 U	340 U	360 U	360 U	290 U	290 U
TOC	NL	NL	NL	%	2.13		1.96		2.31		2.42		1.97	

Table 3-5a
Area 1 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-06		HB10-1-06		HB10-1-07		HB10-1-07		HB10-1-07	
				Field Sample ID	HB10-1-06-36		HB10-1-06-51		HB10-1-07-06		HB10-1-07-12		HB10-1-07-36	
				Sample Date	10/16/2010		10/16/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	12- 36		36- 51		0- 6		0- 12		12- 36	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	5.6 U	5.6 U	5.8 U	5.8 U	5 U	5 U	5 U	5 U	5 U	5 U
4,4'-DDE	3.2	17	31	µg/kg	5.6 U	5.6 U	5.8 U	5.8 U	5 U	5 U	5 U	5 U	5 U	5 U
4,4'-DDT	4.2	33.6	63	µg/kg	5 J	1.1	5.8 U	5.8 U	5 U	5 U	5 U	5 U	5 U	5 U
ALDRIN	2	41	80	µg/kg	2.9 U	2.9 U	3 U	3 U	2 U	2 U	3 U	3 U	3 U	3 U
ALPHA-BHC	6	53	100	µg/kg	2.9 U	2.9 U	3 U	3 U	2 U	2 U	3 U	3 U	3 U	3 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	2.9 U	2.9 U	3 U	3 U	2 U	2 U	3 U	3 U	3 U	3 U
BETA-BHC	5	108	210	µg/kg	2.9 U	2.9 U	3 U	3 U	2 U	2 U	3 U	3 U	3 U	3 U
DELTA-BHC	3	62	120	µg/kg	2.9 U	2.9 U	3 U	3 U	2 U	2 U	3 U	3 U	3 U	3 U
DIELDRIN	1.9	32	62	µg/kg	5.6 U	5.6 U	5.8 U	5.8 U	5 U	5 U	5 U	5 U	5 U	5 U
ENDOSULFAN I	NL	NL	NL	µg/kg	2.9 U	2.9 U	3 U	3 U	2 U	2 U	3 U	3 U	3 U	3 U
ENDOSULFAN II	NL	NL	NL	µg/kg	5.6 U	5.6 U	5.8 U	5.8 U	5 U	5 U	5 U	5 U	5 U	5 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	5.6 U	5.6 U	5.8 U	5.8 U	5 U	5 U	5 U	5 U	5 U	5 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	5.6 U	5.6 U	5.8 U	5.8 U	5 U	5 U	5 U	5 U	5 U	5 U
ENDRIN KETONE	NL	NL	NL	µg/kg	5.6 U	5.6 U	5.8 U	5.8 U	5 U	5 U	5 U	5 U	5 U	5 U
ENDRIN	2.2	104.6	207	µg/kg	5.6 U	5.6 U	5.8 U	5.8 U	5 U	5 U	5 U	5 U	5 U	5 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	2.9 U	2.9 U	3 U	3 U	2 U	2 U	3 U	3 U	3 U	3 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	2.9 U	2.9 U	3 U	3 U	2 U	2 U	3 U	3 U	3 U	3 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	2.9 U	2.9 U	1 J	0.32	2 U	2 U	3 U	3 U	3 U	3 U
HEPTACHLOR	NL	NL	NL	µg/kg	2.9 U	2.9 U	3 U	3 U	2 U	2 U	3 U	3 U	3 U	3 U
METHOXYCLOR	NL	NL	NL	µg/kg	29 U	29 U	30 U	30 U	27 U	27 U	30 U	30 U	30 U	30 U
TOXAPHENE	1	1.5	2	µg/kg	290 U	290 U	300 U	300 U	270 U	270 U	300 U	300 U	300 U	300 U
TOC	NL	NL	NL	%	4.38		3.14		2.28		2.76		3.19	

Table 3-5a
Area 1 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-07		HB10-1-08		HB10-1-08		HB10-1-08		HB10-1-10	
				Field Sample ID	HB10-1-07-64		HB10-1-08-06		HB10-1-08-12		HB10-1-08-36		HB10-1-10-06	
				Sample Date	10/17/2010		10/17/2010		10/17/2010		10/17/2010		10/18/2010	
				Depth Interval	60- 64		0- 6		0- 12		12- 36		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	4 U	4 U	7.4 U	7.4 U	7.1 U	7.1 U	6.2 UJ	6.2 UJ	6.9 U	6.9 U
4,4'-DDE	3.2	17	31	µg/kg	4 U	4 U	7.4 U	7.4 U	7.1 U	7.1 U	6.2 UJ	6.2 UJ	6.9 U	6.9 U
4,4'-DDT	4.2	33.6	63	µg/kg	4 U	4 U	7.4 U	7.4 U	4 J	1.0	6.2 UJ	6.2 UJ	6.9 U	6.9 U
ALDRIN	2	41	80	µg/kg	2 U	2 U	3.8 U	3.8 U	6.5 J	1.6	3.2 UJ	3.2 UJ	3.5 R	3.5 R
ALPHA-BHC	6	53	100	µg/kg	2 U	2 U	3.8 U	3.8 U	3.7 U	3.7 U	3.2 UJ	3.2 UJ	3.5 U	3.5 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	2 U	2 U	3.8 U	3.8 U	3.7 U	3.7 U	3.2 UJ	3.2 UJ	3.5 U	3.5 U
BETA-BHC	5	108	210	µg/kg	2 U	2 U	3.8 U	3.8 U	3.7 U	3.7 U	3.2 UJ	3.2 UJ	3.5 U	3.5 U
DELTA-BHC	3	62	120	µg/kg	2 U	2 U	3.8 U	3.8 U	3.7 U	3.7 U	3.2 UJ	3.2 UJ	3.5 U	3.5 U
DIELDRIN	1.9	32	62	µg/kg	4 U	4 U	7.4 U	7.4 U	7.1 U	7.1 U	6.2 UJ	6.2 UJ	6.9 U	6.9 U
ENDOSULFAN I	NL	NL	NL	µg/kg	2 U	2 U	3.8 U	3.8 U	3.7 U	3.7 U	3.2 UJ	3.2 UJ	3.5 U	3.5 U
ENDOSULFAN II	NL	NL	NL	µg/kg	4 U	4 U	7.4 U	7.4 U	7.1 U	7.1 U	6.2 UJ	6.2 UJ	6.9 U	6.9 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	4 U	4 U	13 NJ	3.4	7.1 U	7.1 U	6.2 UJ	6.2 UJ	6.9 U	6.9 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	4 U	4 U	8.1	2.1	7.1 U	7.1 U	6.2 UJ	6.2 UJ	6.9 U	6.9 U
ENDRIN KETONE	NL	NL	NL	µg/kg	4 U	4 U	7.4 U	7.4 U	7.1 U	7.1 U	6.2 UJ	6.2 UJ	6.9 U	6.9 U
ENDRIN	2.2	104.6	207	µg/kg	4 U	4 U	7.4 U	7.4 U	7.1 U	7.1 U	6.2 UJ	6.2 UJ	6.9 U	6.9 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	2 U	2 U	3.8 U	3.8 U	3.7 U	3.7 U	3.2 UJ	3.2 UJ	3.5 U	3.5 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	2 U	2 U	3.8 U	3.8 U	3.7 U	3.7 U	3.2 UJ	3.2 UJ	3.5 U	3.5 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	2 U	2 U	3.8 U	3.8 U	3.7 U	3.7 U	3.2 UJ	3.2 UJ	3.5 U	3.5 U
HEPTACHLOR	NL	NL	NL	µg/kg	2 U	2 U	3.8 U	3.8 U	3.7 U	3.7 U	3.2 UJ	3.2 UJ	3.5 U	3.5 U
METHOXYCLOR	NL	NL	NL	µg/kg	21 U	21 U	38 UJ	38 UJ	37 UJ	37 UJ	32 UJ	32 UJ	35 UJ	35 UJ
TOXAPHENE	1	1.5	2	µg/kg	210 U	210 U	380 U	380 U	370 U	370 U	320 UJ	320 UJ	350 U	350 U
TOC	NL	NL	NL	%	1.13		3.85		4.01		5.51		3.59	

Table 3-5a
Area 1 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-11		HB10-1-11		HB10-1-12		HB10-1-12		HB10-1-12	
				Field Sample ID	HB10-1-11-06		HB10-1-11-21		HB10-1-12-06		HB10-1-12-12		HB10-1-12-34	
				Sample Date	10/16/2010		10/16/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	0- 6		12- 21		0- 6		0- 12		12- 34	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	6.5 U	6.5 U	6 U	6 U	5.3 U	5.3 U	6.1 UJ	6.1 UJ	9 U	9 U
4,4'-DDE	3.2	17	31	µg/kg	6.5 U	6.5 U	6 U	6 U	5.3 U	5.3 U	6.1 UJ	6.1 UJ	9 U	9 U
4,4'-DDT	4.2	33.6	63	µg/kg	6.5 U	6.5 U	6 U	6 U	5.3 U	5.3 U	6.1 UJ	6.1 UJ	9 U	9 U
ALDRIN	2	41	80	µg/kg	3.3 U	3.3 U	3.1 U	3.1 U	2.8 U	2.8 U	3.2 UJ	3.2 UJ	5 U	5 U
ALPHA-BHC	6	53	100	µg/kg	3.3 U	3.3 U	3.1 U	3.1 U	2.8 U	2.8 U	3.2 UJ	3.2 UJ	5 U	5 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	3.3 U	3.3 U	3.1 U	3.1 U	2.8 U	2.8 U	3.2 UJ	3.2 UJ	5 U	5 U
BETA-BHC	5	108	210	µg/kg	3.3 U	3.3 U	3.1 U	3.1 U	2.8 U	2.8 U	3.2 UJ	3.2 UJ	5 U	5 U
DELTA-BHC	3	62	120	µg/kg	3.3 U	3.3 U	3.1 U	3.1 U	2.8 U	2.8 U	3.2 UJ	3.2 UJ	5 U	5 U
DIELDRIN	1.9	32	62	µg/kg	6.5 U	6.5 U	6 U	6 U	5.3 U	5.3 U	6.1 UJ	6.1 UJ	9 U	9 U
ENDOSULFAN I	NL	NL	NL	µg/kg	3.3 U	3.3 U	3.1 U	3.1 U	2.8 U	2.8 U	3.2 UJ	3.2 UJ	5 U	5 U
ENDOSULFAN II	NL	NL	NL	µg/kg	6.5 U	6.5 U	6 U	6 U	5.3 U	5.3 U	6.1 UJ	6.1 UJ	9 U	9 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	6.5 U	6.5 U	6 U	6 U	5.3 U	5.3 U	6.1 UJ	6.1 UJ	9 U	9 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	6.5 U	6.5 U	6 U	6 U	5.3 U	5.3 U	6.1 UJ	6.1 UJ	9 U	9 U
ENDRIN KETONE	NL	NL	NL	µg/kg	6.5 U	6.5 U	6 U	6 U	5.3 U	5.3 U	6.1 UJ	6.1 UJ	9 U	9 U
ENDRIN	2.2	104.6	207	µg/kg	6.5 U	6.5 U	6 U	6 U	5.3 U	5.3 U	6.1 UJ	6.1 UJ	9 U	9 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	3.3 U	3.3 U	3.1 U	3.1 U	2.8 U	2.8 U	3.2 UJ	3.2 UJ	5 U	5 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	3.3 U	3.3 U	3.1 U	3.1 U	2.8 U	2.8 U	3.2 UJ	3.2 UJ	5 U	5 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	3.3 U	3.3 U	3.1 U	3.1 U	2.8 U	2.8 U	3.2 UJ	3.2 UJ	5 U	5 U
HEPTACHLOR	NL	NL	NL	µg/kg	3.3 U	3.3 U	3.1 U	3.1 U	2.8 U	2.8 U	3.2 UJ	3.2 UJ	5 U	5 U
METHOXYCLOR	NL	NL	NL	µg/kg	33 U	33 U	31 U	31 U	28 UJ	28 UJ	32 UJ	32 UJ	50 U	50 U
TOXAPHENE	1	1.5	2	µg/kg	330 U	330 U	310 U	310 U	280 U	280 U	320 UJ	320 UJ	500 U	500 U
TOC	NL	NL	NL	%	3.16		3.79		3.4		4.44		16.2	

Table 3-5a
Area 1 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-13		HB10-1-13		HB10-1-13		HB10-1-13		HB10-1-14	
				Field Sample ID	HB10-1-13-06		HB10-1-13-12		HB10-1-13-36		HB10-1-13-67		HB10-1-14-06	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/17/2010	
				Depth Interval	0- 6		0- 12		12- 36		60- 67		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	6.7 U	6.7 U	6.6 U	6.6 U	5.3 U	5.3 U	4.9 U	4.9 U	6.5 U	6.5 U
4,4'-DDE	3.2	17	31	µg/kg	6.7 U	6.7 U	6.6 U	6.6 U	5.3 U	5.3 U	4.9 U	4.9 U	6.5 U	6.5 U
4,4'-DDT	4.2	33.6	63	µg/kg	6.7 U	6.7 U	6.6 U	6.6 U	5.3 U	5.3 U	4.9 U	4.9 U	6.5 U	6.5 U
ALDRIN	2	41	80	µg/kg	3.5 U	3.5 U	3.4 U	3.4 U	2.7 U	2.7 U	2.5 U	2.5 U	3.3 U	3.3 U
ALPHA-BHC	6	53	100	µg/kg	3.5 U	3.5 U	3.4 U	3.4 U	2.7 U	2.7 U	2.5 U	2.5 U	3.3 U	3.3 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	3.5 U	3.5 U	3.4 U	3.4 U	2.7 U	2.7 U	2.5 U	2.5 U	3.3 U	3.3 U
BETA-BHC	5	108	210	µg/kg	3.5 U	3.5 U	3.4 U	3.4 U	2.7 U	2.7 U	2.5 U	2.5 U	3.3 U	3.3 U
DELTA-BHC	3	62	120	µg/kg	3.5 U	3.5 U	3.4 U	3.4 U	2.7 U	2.7 U	2.5 U	2.5 U	3.3 U	3.3 U
DIELDRIN	1.9	32	62	µg/kg	6.7 U	6.7 U	6.6 U	6.6 U	5.3 U	5.3 U	4.9 U	4.9 U	6.5 U	6.5 U
ENDOSULFAN I	NL	NL	NL	µg/kg	3.5 U	3.5 U	3.4 U	3.4 U	2.7 U	2.7 U	2.5 U	2.5 U	3.3 U	3.3 U
ENDOSULFAN II	NL	NL	NL	µg/kg	6.7 U	6.7 U	6.6 U	6.6 U	5.3 U	5.3 U	4.9 U	4.9 U	6.5 U	6.5 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	6.7 U	6.7 U	6.6 U	6.6 U	5.3 U	5.3 U	4.9 U	4.9 U	6.5 U	6.5 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	6.7 U	6.7 U	6.6 U	6.6 U	5.3 U	5.3 U	4.9 U	4.9 U	6.5 U	6.5 U
ENDRIN KETONE	NL	NL	NL	µg/kg	6.7 U	6.7 U	6.6 U	6.6 U	5.3 U	5.3 U	4.9 U	4.9 U	6.5 U	6.5 U
ENDRIN	2.2	104.6	207	µg/kg	6.7 U	6.7 U	6.6 U	6.6 U	5.3 U	5.3 U	4.9 U	4.9 U	6.5 U	6.5 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	3.5 U	3.5 U	3.4 U	3.4 U	2.7 U	2.7 U	2.5 U	2.5 U	3.3 U	3.3 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	3.5 U	3.5 U	3.4 U	3.4 U	2.7 U	2.7 U	2.5 U	2.5 U	3.3 U	3.3 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	3.5 U	3.5 U	3.4 U	3.4 U	2.7 U	2.7 U	2.5 U	2.5 U	3.3 U	3.3 U
HEPTACHLOR	NL	NL	NL	µg/kg	3.5 U	3.5 U	3.4 U	3.4 U	2.7 U	2.7 U	2.5 U	2.5 U	3.3 U	3.3 U
METHOXYCLOR	NL	NL	NL	µg/kg	35 UJ	35 UJ	34 UJ	34 UJ	27 UJ	27 UJ	25 UJ	25 UJ	33 UJ	33 UJ
TOXAPHENE	1	1.5	2	µg/kg	350 U	350 U	340 U	340 U	270 U	270 U	250 U	250 U	330 U	330 U
TOC	NL	NL	NL	%	3.36		2.75		2.01		2.24		2.84	

Table 3-5a
Area 1 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-14		HB10-1-14		HB10-1-14		HB10-1-15		HB10-1-15	
				Field Sample ID	HB10-1-14-12		HB10-1-14-36		HB10-1-14-66		HB10-1-15-06		HB10-1-15-16	
				Sample Date	10/17/2010		10/17/2010		10/17/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 12		12- 36		60- 66		0- 6		12- 16	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	6.1 U	6.1 U	5.9 U	5.9 U	6 U	6 U	4 U	4 U	7 U	7 U
4,4'-DDE	3.2	17	31	µg/kg	6.1 U	6.1 U	5.9 U	5.9 U	6 U	6 U	4 U	4 U	7 U	7 U
4,4'-DDT	4.2	33.6	63	µg/kg	6.1 U	6.1 U	5.9 U	5.9 U	6 U	6 U	4 U	4 U	7 U	7 U
ALDRIN	2	41	80	µg/kg	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	2 U	2 U	3.6 U	3.6 U
ALPHA-BHC	6	53	100	µg/kg	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	2 U	2 U	3.6 U	3.6 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	2 U	2 U	3.6 U	3.6 U
BETA-BHC	5	108	210	µg/kg	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	2 U	2 U	3.6 U	3.6 U
DELTA-BHC	3	62	120	µg/kg	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	2 U	2 U	3.6 U	3.6 U
DIELDRIN	1.9	32	62	µg/kg	6.1 U	6.1 U	5.9 U	5.9 U	6 U	6 U	4 U	4 U	7 U	7 U
ENDOSULFAN I	NL	NL	NL	µg/kg	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	2 U	2 U	3.6 U	3.6 U
ENDOSULFAN II	NL	NL	NL	µg/kg	6.1 U	6.1 U	5.9 U	5.9 U	6 U	6 U	4 U	4 U	7 U	7 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	6.1 U	6.1 U	5.9 U	5.9 U	6 U	6 U	4 U	4 U	19 J	1.7
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	6.1 U	6.1 U	5.9 U	5.9 U	6 U	6 U	4 U	4 U	7 U	7 U
ENDRIN KETONE	NL	NL	NL	µg/kg	6.1 U	6.1 U	5.9 U	5.9 U	6 U	6 U	4 U	4 U	7 U	7 U
ENDRIN	2.2	104.6	207	µg/kg	6.1 U	6.1 U	6.9	1.7	6 U	6 U	4 U	4 U	7 U	7 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	2 U	2 U	3.6 U	3.6 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	3.1 U	3.1 U	3.1 R	3.1 R	3.1 U	3.1 U	2 U	2 U	3.6 U	3.6 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	2 U	2 U	3.6 U	3.6 U
HEPTACHLOR	NL	NL	NL	µg/kg	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	2 U	2 U	3.6 U	3.6 U
METHOXYCLOR	NL	NL	NL	µg/kg	31 UJ	31 UJ	31 UJ	31 UJ	31 UJ	31 UJ	24 U	24 U	36 UJ	36 UJ
TOXAPHENE	1	1.5	2	µg/kg	310 U	310 U	310 U	310 U	310 U	310 U	240 U	240 U	360 U	360 U
TOC	NL	NL	NL	%	2.75		3.98		4.42		1.72		11	

Table 3-5a
Area 1 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-16		HB10-1-16		HB10-1-16		HB10-1-17		HB10-1-20	
				Field Sample ID	HB10-1-16-06		HB10-1-16-12		HB10-1-16-31		HB10-1-17-06		HB10-1-20-06	
				Sample Date	10/17/2010		10/17/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	0- 6		0- 12		12- 31		0- 6		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	4 U	4 U	5 U	5 U	6 U	6 U	6.7 U	6.7 U	4 U	4 U
4,4'-DDE	3.2	17	31	µg/kg	4 U	4 U	5 U	5 U	6 U	6 U	6.7 U	6.7 U	4 U	4 U
4,4'-DDT	4.2	33.6	63	µg/kg	4 U	4 U	5 U	5 U	6 U	6 U	6.7 U	6.7 U	4 U	4 U
ALDRIN	2	41	80	µg/kg	2 U	2 U	2 U	2 U	3 U	3 U	3.4 U	3.4 U	2 U	2 U
ALPHA-BHC	6	53	100	µg/kg	2 U	2 U	2 U	2 U	3 U	3 U	3.4 U	3.4 U	2 U	2 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	2 U	2 U	2 U	2 U	3 U	3 U	3.4 U	3.4 U	2 U	2 U
BETA-BHC	5	108	210	µg/kg	2 U	2 U	2 U	2 U	3 U	3 U	3.4 U	3.4 U	2 U	2 U
DELTA-BHC	3	62	120	µg/kg	2 U	2 U	2 U	2 U	3 U	3 U	3.4 U	3.4 U	2 U	2 U
DIELDRIN	1.9	32	62	µg/kg	4 U	4 U	5 U	5 U	6 U	6 U	6.7 U	6.7 U	4 U	4 U
ENDOSULFAN I	NL	NL	NL	µg/kg	2 U	2 U	2 U	2 U	3 U	3 U	3.4 U	3.4 U	2 U	2 U
ENDOSULFAN II	NL	NL	NL	µg/kg	4 U	4 U	5 U	5 U	6 U	6 U	6.7 U	6.7 U	4 U	4 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	4 U	4 U	5 U	5 U	6 U	6 U	6.7 U	6.7 U	4 U	4 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	4 U	4 U	5 U	5 U	6 U	6 U	6.7 U	6.7 U	4 U	4 U
ENDRIN KETONE	NL	NL	NL	µg/kg	4 U	4 U	5 U	5 U	6 U	6 U	6.7 U	6.7 U	4 U	4 U
ENDRIN	2.2	104.6	207	µg/kg	4 U	4 U	5 U	5 U	6 U	6 U	6.7 U	6.7 U	4 U	4 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	2 U	2 U	2 U	2 U	3 U	3 U	3.4 U	3.4 U	2 U	2 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	2 U	2 U	2 U	2 U	3 U	3 U	3.4 U	3.4 U	2 U	2 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	2 U	2 U	2 U	2 U	3 U	3 U	3.4 U	3.4 U	2 U	2 U
HEPTACHLOR	NL	NL	NL	µg/kg	2 U	2 U	2 U	2 U	3 U	3 U	3.4 U	3.4 U	2 U	2 U
METHOXYCLOR	NL	NL	NL	µg/kg	24 U	24 U	29 U	29 U	32 U	32 U	34 UJ	34 UJ	25 U	25 U
TOXAPHENE	1	1.5	2	µg/kg	240 U	240 U	290 U	290 U	320 U	320 U	340 U	340 U	250 U	250 U
TOC	NL	NL	NL	%	2.14		4.45		8.15		8.19		2.08	

Table 3-5a
Area 1 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-21		HB10-1-21		HB10-1-23		HB10-1-23		HB10-1-23	
				Field Sample ID	HB10-1-21-06		HB10-1-21-23		HB10-1-23-06		HB10-1-23-06DP		HB10-1-23-12	
				Sample Date	10/18/2010		10/18/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	0- 6		12- 23		0- 6		0- 6		0- 12	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	4 U	4 U	5.1 U	5.1 U	6 U	6 U	6 U	6 U	6.1 U	6.1 U
4,4'-DDE	3.2	17	31	µg/kg	4 U	4 U	5.1 U	5.1 U	6 U	6 U	6 U	6 U	6.1 U	6.1 U
4,4'-DDT	4.2	33.6	63	µg/kg	4 U	4 U	5.1 U	5.1 U	6 U	6 U	6 U	6 U	6.1 U	6.1 U
ALDRIN	2	41	80	µg/kg	2.1 U	2.1 U	2.6 U	2.6 U	4 J	0.88	3 U	3 U	3.1 U	3.1 U
ALPHA-BHC	6	53	100	µg/kg	2.1 U	2.1 U	2.6 U	2.6 U	3 U	3 U	3 U	3 U	3.1 U	3.1 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	2.1 U	2.1 U	2.6 U	2.6 U	3 U	3 U	3 U	3 U	3.1 U	3.1 U
BETA-BHC	5	108	210	µg/kg	2.1 U	2.1 U	2.6 U	2.6 U	3 U	3 U	3 U	3 U	3.1 U	3.1 U
DELTA-BHC	3	62	120	µg/kg	2.1 U	2.1 U	2.6 U	2.6 U	1 J	0.22	3 U	3 U	3.1 U	3.1 U
DIELDRIN	1.9	32	62	µg/kg	4 U	4 U	5.1 U	5.1 U	6 U	6 U	6 U	6 U	6.1 U	6.1 U
ENDOSULFAN I	NL	NL	NL	µg/kg	2.1 U	2.1 U	2.6 U	2.6 U	3 U	3 U	3 U	3 U	3.1 U	3.1 U
ENDOSULFAN II	NL	NL	NL	µg/kg	4 U	4 U	5.1 U	5.1 U	6 U	6 U	6 U	6 U	6.1 U	6.1 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	4 U	4 U	5.1 U	5.1 U	6 U	6 U	4 J	0.92	6.1 U	6.1 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	4 U	4 U	5.1 U	5.1 U	6 U	6 U	6 U	6 U	6.1 U	6.1 U
ENDRIN KETONE	NL	NL	NL	µg/kg	4 U	4 U	5.1 U	5.1 U	6 U	6 U	6 U	6 U	6.1 U	6.1 U
ENDRIN	2.2	104.6	207	µg/kg	4 U	4 U	5.1 U	5.1 U	6 U	6 U	6 U	6 U	6.1 U	6.1 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	2.1 U	2.1 U	2.6 U	2.6 U	3 U	3 U	3 U	3 U	3.1 U	3.1 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	2.1 U	2.1 U	2.6 U	2.6 U	3 U	3 U	3 U	3 U	3.1 U	3.1 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	2.1 U	2.1 U	2.6 U	2.6 U	3 U	3 U	3 U	3 U	3.1 U	3.1 U
HEPTACHLOR	NL	NL	NL	µg/kg	2.1 U	2.1 U	2.6 U	2.6 U	3 U	3 U	3 U	3 U	3.1 U	3.1 U
METHOXYCLOR	NL	NL	NL	µg/kg	21 UJ	21 UJ	26 UJ	26 UJ	33 U	33 U	32 U	32 U	31 UJ	31 UJ
TOXAPHENE	1	1.5	2	µg/kg	210 U	210 U	260 U	260 U	330 U	330 U	320 U	320 U	310 U	310 U
TOC	NL	NL	NL	%	0.849		1.35		4.52		4.33		5.39	

Table 3-5a
Area 1 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-23		HB10-1-24		HB10-1-24		HB10-1-24		HB10-1-25	
				Field Sample ID	HB10-1-23-36		HB10-1-24-06		HB10-1-24-12		HB10-1-24-36		HB10-1-25-06	
				Sample Date	10/17/2010		10/18/2010		10/18/2010		10/18/2010		10/17/2010	
				Depth Interval	12- 36		0- 6		0- 12		12- 36		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	6 U	6 U	7.6 NJ	1.4	7.7 R	7.7 R	6.9 R	6.9 R	7.3 R	7.3 R
4,4'-DDE	3.2	17	31	µg/kg	6 U	6 U	7.5 U	7.5 U	7.7 U	7.7 U	6.9 U	6.9 U	7.3 R	7.3 R
4,4'-DDT	4.2	33.6	63	µg/kg	6 U	6 U	7.5 U	7.5 U	7.7 R	7.7 R	6.9 U	6.9 U	7.3 R	7.3 R
ALDRIN	2	41	80	µg/kg	3 U	3 U	3.9 U	3.9 U	4 U	4 U	3.5 U	3.5 U	3.8 U	3.8 U
ALPHA-BHC	6	53	100	µg/kg	3 U	3 U	3.9 U	3.9 U	4 U	4 U	3.5 U	3.5 U	3.8 U	3.8 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	3 U	3 U	3.9 U	3.9 U	4 U	4 U	3.5 U	3.5 U	3.8 R	3.8 R
BETA-BHC	5	108	210	µg/kg	3 U	3 U	3.9 U	3.9 U	4 U	4 U	3.5 U	3.5 U	3.8 R	3.8 R
DELTA-BHC	3	62	120	µg/kg	3 U	3 U	3.9 U	3.9 U	4 U	4 U	3.5 U	3.5 U	3.8 U	3.8 U
DIELDRIN	1.9	32	62	µg/kg	6 U	6 U	7.5 U	7.5 U	7.7 U	7.7 U	6.9 U	6.9 U	7.3 R	7.3 R
ENDOSULFAN I	NL	NL	NL	µg/kg	3 U	3 U	3.9 U	3.9 U	6.1 NJ	1.1	3.5 U	3.5 U	3.8 R	3.8 R
ENDOSULFAN II	NL	NL	NL	µg/kg	6 U	6 U	7.5 U	7.5 U	7.7 U	7.7 U	6.9 U	6.9 U	7.3 R	7.3 R
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	6 U	6 U	7.5 U	7.5 U	7.7 U	7.7 U	6.9 U	6.9 U	7.3 U	7.3 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	6 U	6 U	7.5 U	7.5 U	7.7 U	7.7 U	6.9 U	6.9 U	16 NJ	4.1
ENDRIN KETONE	NL	NL	NL	µg/kg	6 U	6 U	7.5 U	7.5 U	7.6 J	1.4	8.7	1.4573	7.3 U	7.3 U
ENDRIN	2.2	104.6	207	µg/kg	6 U	6 U	7.5 U	7.5 U	11 J	2.0	16	2.7	7.3 R	7.3 R
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	3 U	3 U	3.9 U	3.9 U	4 U	4 U	3.5 U	3.5 U	3.8 U	3.8 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	3 U	3 U	3.9 U	3.9 U	4 U	4 U	3.5 R	3.5 R	3.8 R	3.8 R
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	3 U	3 U	3.9 U	3.9 U	4 U	4 U	3.5 U	3.5 U	3.8 U	3.8 U
HEPTACHLOR	NL	NL	NL	µg/kg	3 U	3 U	3.9 U	3.9 U	4 U	4 U	3.5 U	3.5 U	3.8 U	3.8 U
METHOXYCLOR	NL	NL	NL	µg/kg	35 U	35 U	39 UJ	39 UJ	40 UJ	40 UJ	35 UJ	35 UJ	38 UJ	38 UJ
TOXAPHENE	1	1.5	2	µg/kg	350 U	350 U	390 U	390 U	400 U	400 U	350 U	350 U	380 U	380 U
TOC	NL	NL	NL	%	7.34		5.55		5.57		5.97		3.93	

Table 3-5a
Area 1 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-25		HB10-1-27		HB10-1-27		HB10-1-28		HB10-1-28	
				Field Sample ID	HB10-1-25-06DP		HB10-1-27-06		HB10-1-27-06DP		HB10-1-28-06		HB10-1-28-12	
				Sample Date	10/17/2010		10/18/2010		10/18/2010		10/17/2010		10/17/2010	
				Depth Interval	0- 6		0- 6		0- 6		0- 6		0- 12	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	7.4 U	7.4 U	8.9 U	8.9 U	9.2 U	9.2 U	7.6 U	7.6 U	6.3 U	6.3 U
4,4'-DDE	3.2	17	31	µg/kg	7.4 U	7.4 U	8.9 U	8.9 U	9.2 U	9.2 U	7.6 U	7.6 U	6.3 U	6.3 U
4,4'-DDT	4.2	33.6	63	µg/kg	7.4 U	7.4 U	8.9 U	8.9 U	9.2 U	9.2 U	7.6 U	7.6 U	6.3 U	6.3 U
ALDRIN	2	41	80	µg/kg	2 J	0.54	4.6 U	4.6 U	4.7 U	4.7 U	3.9 R	3.9 R	3.2 U	3.2 U
ALPHA-BHC	6	53	100	µg/kg	3.8 U	3.8 U	4.6 U	4.6 U	4.7 U	4.7 U	3.9 U	3.9 U	3.2 U	3.2 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	3.8 U	3.8 U	4.6 U	4.6 U	4.7 U	4.7 U	3.9 U	3.9 U	3.2 U	3.2 U
BETA-BHC	5	108	210	µg/kg	3.8 U	3.8 U	4.6 U	4.6 U	4.7 U	4.7 U	3.9 R	3.9 R	3.2 U	3.2 U
DELTA-BHC	3	62	120	µg/kg	3.8 U	3.8 U	4.6 U	4.6 U	4.7 U	4.7 U	3.9 R	3.9 R	3.2 U	3.2 U
DIELDRIN	1.9	32	62	µg/kg	7.4 U	7.4 U	8.9 U	8.9 U	9.2 U	9.2 U	7.6 U	7.6 U	6.3 U	6.3 U
ENDOSULFAN I	NL	NL	NL	µg/kg	3.8 U	3.8 U	4.6 U	4.6 U	4.7 U	4.7 U	3.9 U	3.9 U	3.2 U	3.2 U
ENDOSULFAN II	NL	NL	NL	µg/kg	7.4 U	7.4 U	8.9 U	8.9 U	9.2 U	9.2 U	7.6 U	7.6 U	6.3 U	6.3 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	7.4 U	7.4 U	8.9 U	8.9 U	9.2 U	9.2 U	7.6 U	7.6 U	6.3 U	6.3 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	7.4 U	7.4 U	8.9 U	8.9 U	9.2 U	9.2 U	7.6 U	7.6 U	6.3 U	6.3 U
ENDRIN KETONE	NL	NL	NL	µg/kg	7.4 U	7.4 U	8.9 U	8.9 U	9.2 U	9.2 U	7.6 U	7.6 U	6.3 U	6.3 U
ENDRIN	2.2	104.6	207	µg/kg	7.4 U	7.4 U	8.9 U	8.9 U	9.2 U	9.2 U	7.6 J	1.8	6.3 U	6.3 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	3.8 U	3.8 U	4.6 U	4.6 U	4.7 U	4.7 U	3.9 U	3.9 U	3.2 U	3.2 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	3.8 U	3.8 U	4.6 U	4.6 U	4.7 U	4.7 U	3.9 U	3.9 U	3.2 U	3.2 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	3.8 U	3.8 U	4.6 U	4.6 U	4.7 U	4.7 U	3.9 U	3.9 U	3.2 U	3.2 U
HEPTACHLOR	NL	NL	NL	µg/kg	3.8 U	3.8 U	4.6 U	4.6 U	4.7 U	4.7 U	3.9 U	3.9 U	3.2 U	3.2 U
METHOXYCLOR	NL	NL	NL	µg/kg	38 UJ	38 UJ	46 U	46 U	47 U	47 U	39 UJ	39 UJ	32 UJ	32 UJ
TOXAPHENE	1	1.5	2	µg/kg	380 U	380 U	460 U	460 U	470 U	470 U	390 U	390 U	320 U	320 U
TOC	NL	NL	NL	%	3.71		5.32		7.94		4.18		4.24	

Table 3-5a
Area 1 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-28		HB10-1-28		HB10-1-28		HB10-1-28		HB10-1-29	
				Field Sample ID	HB10-1-28-36		HB10-1-28-60		HB10-1-28-84		HB10-1-28-96		HB10-1-29-06	
				Sample Date	10/17/2010		10/17/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	12- 36		36- 60		60- 84		60- 96		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	6.2 U	6.2 U	6.6 R	6.6 R	10	1.8	5.9 U	5.9 U	7.2 R	7.2 R
4,4'-DDE	3.2	17	31	µg/kg	6.2 U	6.2 U	6.6 U	6.6 U	9.3 J	1.6	5.9 U	5.9 U	7.2 R	7.2 R
4,4'-DDT	4.2	33.6	63	µg/kg	13 J	3.0	6.6 U	6.6 U	6.6 U	6.6 U	5.9 U	5.9 U	7.2 R	7.2 R
ALDRIN	2	41	80	µg/kg	3.2 U	3.2 U	3.4 R	3.4 R	3.4 U	3.4 U	3 U	3 U	3.7 U	3.7 U
ALPHA-BHC	6	53	100	µg/kg	3.2 U	3.2 U	3.4 U	3.4 U	3.4 U	3.4 U	3 U	3 U	3.7 U	3.7 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	3.2 U	3.2 U	3.4 U	3.4 U	3.4 U	3.4 U	3 U	3 U	3.7 U	3.7 U
BETA-BHC	5	108	210	µg/kg	3.2 U	3.2 U	3.4 U	3.4 U	3.4 U	3.4 U	3 U	3 U	3.7 U	3.7 U
DELTA-BHC	3	62	120	µg/kg	3.2 U	3.2 U	3.4 U	3.4 U	3.4 U	3.4 U	3 U	3 U	3.7 U	3.7 U
DIELDRIN	1.9	32	62	µg/kg	6.2 U	6.2 U	6.6 U	6.6 U	6.6 U	6.6 U	5.9 U	5.9 U	7.2 R	7.2 R
ENDOSULFAN I	NL	NL	NL	µg/kg	3.2 U	3.2 U	3.4 U	3.4 U	3.4 U	3.4 U	3 U	3 U	3.7 R	3.7 R
ENDOSULFAN II	NL	NL	NL	µg/kg	6.2 U	6.2 U	6.6 U	6.6 U	6.6 U	6.6 U	5.9 U	5.9 U	7.2 R	7.2 R
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	6.2 U	6.2 U	6.6 U	6.6 U	6.6 U	6.6 U	5.9 U	5.9 U	7.2 U	7.2 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	4.4 J	1.0	6.6 U	6.6 U	6.6 U	6.6 U	5.9 U	5.9 U	11 NJ	1.1
ENDRIN KETONE	NL	NL	NL	µg/kg	6.2 U	6.2 U	6.6 U	6.6 U	6.6 U	6.6 U	5.9 U	5.9 U	7.2 U	7.2 U
ENDRIN	2.2	104.6	207	µg/kg	6.2 U	6.2 U	6.3 J	1.1	6.6 U	6.6 U	5.9 U	5.9 U	56 J	5.5
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	3.2 U	3.2 U	3.4 U	3.4 U	3.4 U	3.4 U	3 U	3 U	3.7 U	3.7 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	3.2 R	3.2 R	3.4 U	3.4 U	3.4 R	3.4 R	3 U	3 U	3.7 R	3.7 R
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	3.2 U	3.2 U	3.4 U	3.4 U	3.4 U	3.4 U	3 U	3 U	3.7 U	3.7 U
HEPTACHLOR	NL	NL	NL	µg/kg	3.2 U	3.2 U	3.4 U	3.4 U	3.4 U	3.4 U	3 U	3 U	3.7 U	3.7 U
METHOXYCLOR	NL	NL	NL	µg/kg	32 UJ	32 UJ	34 UJ	34 UJ	34 UJ	34 UJ	30 UJ	30 UJ	60 J	5.8824
TOXAPHENE	1	1.5	2	µg/kg	320 U	320 U	340 U	340 U	340 U	340 U	300 U	300 U	370 U	370 U
TOC	NL	NL	NL	%	4.29		5.73		5.71		4.11		10.2	

Table 3-5a
Area 1 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-29		HB10-1-29		HB10-1-29		HB10-1-29		HB10-1-30	
				Field Sample ID	HB10-1-29-12		HB10-1-29-36		HB10-1-29-60		HB10-1-29-93		HB10-1-30-06	
				Sample Date	10/17/2010		10/17/2010		10/17/2010		10/17/2010		10/18/2010	
				Depth Interval	0- 12		12- 36		36- 60		60- 93		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	31	2.7	140 NJ	8.5	7.8 R	7.8 R	7.5 R	7.5 R	6.1 U	6.1 U
4,4'-DDE	3.2	17	31	µg/kg	7.8 R	7.8 R	19 R	19 R	7.8 U	7.8 U	7.5 R	7.5 R	6.1 U	6.1 U
4,4'-DDT	4.2	33.6	63	µg/kg	35	3.0	780	47.3	7.8 R	7.8 R	7.5 R	7.5 R	6.1 U	6.1 U
ALDRIN	2	41	80	µg/kg	4 U	4 U	9.9 U	9.9 U	4 UJ	4 UJ	3.9 U	3.9 U	3.1 U	3.1 U
ALPHA-BHC	6	53	100	µg/kg	4 U	4 U	9.9 U	9.9 U	4 U	4 U	2.1 J	0.15	3.1 U	3.1 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	4 U	4 U	9.9 U	9.9 U	4 U	4 U	3.9 U	3.9 U	3.1 U	3.1 U
BETA-BHC	5	108	210	µg/kg	4 U	4 U	9.9 U	9.9 U	4 U	4 U	3.9 U	3.9 U	3.1 U	3.1 U
DELTA-BHC	3	62	120	µg/kg	4 U	4 U	5.1 J	0.31	2.3 J	0.15	3.9 U	3.9 U	3.1 U	3.1 U
DIELDRIN	1.9	32	62	µg/kg	7.8 R	7.8 R	19 U	19 U	7.8 U	7.8 U	7.5 R	7.5 R	6.1 U	6.1 U
ENDOSULFAN I	NL	NL	NL	µg/kg	10 NJ	0.87	9.9 U	9.9 U	4 U	4 U	3.9 R	3.9 R	3.1 U	3.1 U
ENDOSULFAN II	NL	NL	NL	µg/kg	7.8 U	7.8 U	19 U	19 U	7.8 U	7.8 U	7.5 UJ	7.5 UJ	6.1 U	6.1 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	7.8 U	7.8 U	19 U	19 U	7.8 R	7.8 R	7.5 R	7.5 R	6.1 U	6.1 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	10 J	0.87	19 U	19 U	7.8 U	7.8 U	7.5 UJ	7.5 UJ	6.1 U	6.1 U
ENDRIN KETONE	NL	NL	NL	µg/kg	7.8 U	7.8 U	19 U	19 U	16	1.07	13 NJ	0.92	6.1 U	6.1 U
ENDRIN	2.2	104.6	207	µg/kg	7.8 U	7.8 U	19 U	19 U	7.8 UJ	7.8 UJ	7.5 R	7.5 R	6.1 U	6.1 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	4 U	4 U	10	0.61	5.7 J	0.38	3.9 U	3.9 U	3.1 U	3.1 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	4 R	4 R	99 U	99 U	4 U	4 U	3.9 R	3.9 R	3.1 U	3.1 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	4 U	4 U	9.9 U	9.9 U	4 U	4 U	3.9 U	3.9 U	3.1 U	3.1 U
HEPTACHLOR	NL	NL	NL	µg/kg	4 U	4 U	9.9 U	9.9 U	4 U	4 U	3.9 U	3.9 U	3.1 U	3.1 U
METHOXYCLOR	NL	NL	NL	µg/kg	40 UJ	40 UJ	99 U	99 U	40 UJ	40 UJ	71 NJ	5.0	31 UJ	31 UJ
TOXAPHENE	1	1.5	2	µg/kg	400 U	400 U	990 U	990 U	400 U	400 U	390 U	390 U	310 U	310 U
TOC	NL	NL	NL	%	11.5		16.5		15		14.1		4.81	

Table 3-5a
Area 1 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-30		HB10-1-30		HB10-1-30		HB10-1-30		HB10-1-30	
				Field Sample ID	HB10-1-30-06DP		HB10-1-30-12		HB10-1-30-36		HB10-1-30-60		HB10-1-30-77	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 6		0- 12		12- 36		36- 60		60- 77	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	6.1 U	6.1 U	6.3 U	6.3 U	6.6 U	6.6 U	8.7 U	8.7 U	7.1 U	7.1 U
4,4'-DDE	3.2	17	31	µg/kg	6.1 U	6.1 U	6.3 U	6.3 U	6.6 U	6.6 U	8.7 U	8.7 U	7.1 U	7.1 U
4,4'-DDT	4.2	33.6	63	µg/kg	6.1 U	6.1 U	6.3 U	6.3 U	6.6 U	6.6 U	8.7 U	8.7 U	7.1 U	7.1 U
ALDRIN	2	41	80	µg/kg	3.1 U	3.1 U	3.2 U	3.2 U	3.4 U	3.4 U	4.5 U	4.5 U	3.7 U	3.7 U
ALPHA-BHC	6	53	100	µg/kg	3.1 U	3.1 U	3.2 U	3.2 U	3.4 U	3.4 U	4.5 U	4.5 U	3.7 U	3.7 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	3.1 U	3.1 U	3.2 U	3.2 U	3.4 U	3.4 U	4.5 U	4.5 U	3.7 U	3.7 U
BETA-BHC	5	108	210	µg/kg	3.1 U	3.1 U	3.2 U	3.2 U	3.4 U	3.4 U	4.5 U	4.5 U	3.7 U	3.7 U
DELTA-BHC	3	62	120	µg/kg	3.1 U	3.1 U	3.2 U	3.2 U	3.4 U	3.4 U	4.5 U	4.5 U	3.7 U	3.7 U
DIELDRIN	1.9	32	62	µg/kg	6.1 U	6.1 U	6.3 U	6.3 U	6.6 U	6.6 U	8.7 U	8.7 U	7.1 U	7.1 U
ENDOSULFAN I	NL	NL	NL	µg/kg	3.1 U	3.1 U	3.2 U	3.2 U	3.4 U	3.4 U	4.5 U	4.5 U	3.7 U	3.7 U
ENDOSULFAN II	NL	NL	NL	µg/kg	6.1 U	6.1 U	6.3 U	6.3 U	6.6 U	6.6 U	8.7 U	8.7 U	7.1 U	7.1 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	6.1 U	6.1 U	6.3 U	6.3 U	6.6 U	6.6 U	8.7 U	8.7 U	7.1 U	7.1 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	6.1 U	6.1 U	6.3 U	6.3 U	6.6 U	6.6 U	8.7 U	8.7 U	7.1 U	7.1 U
ENDRIN KETONE	NL	NL	NL	µg/kg	6.1 U	6.1 U	6.3 U	6.3 U	6.6 U	6.6 U	8.7 U	8.7 U	7.1 U	7.1 U
ENDRIN	2.2	104.6	207	µg/kg	6.1 U	6.1 U	6.3 U	6.3 U	6.6 U	6.6 U	8.7 U	8.7 U	7.1 U	7.1 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	3.1 U	3.1 U	3.2 U	3.2 U	3.4 U	3.4 U	4.5 U	4.5 U	3.7 U	3.7 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	3.1 U	3.1 U	3.2 U	3.2 U	3.4 U	3.4 U	4.5 U	4.5 U	3.7 U	3.7 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	3.1 U	3.1 U	3.2 U	3.2 U	3.4 U	3.4 U	4.5 U	4.5 U	3.7 U	3.7 U
HEPTACHLOR	NL	NL	NL	µg/kg	3.1 U	3.1 U	3.2 U	3.2 U	3.4 U	3.4 U	4.5 U	4.5 U	3.7 U	3.7 U
METHOXYCLOR	NL	NL	NL	µg/kg	31 UJ	31 UJ	32 UJ	32 UJ	34 U	34 U	45 U	45 U	37 U	37 U
TOXAPHENE	1	1.5	2	µg/kg	310 U	310 U	320 U	320 U	340 U	340 U	450 U	450 U	370 U	370 U
TOC	NL	NL	NL	%	5.5		4.44		8.94		7.99		35.3	

Table 3-5a
Area 1 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-31		HB10-1-31		HB10-1-31		HB10-1-31	
				Field Sample ID	HB10-1-31-06		HB10-1-31-06DP		HB10-1-31-12		HB10-1-31-36	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 6		0- 6		0- 12		12- 36	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
4,4'-DDD	4.9	16.5	28	µg/kg	7.7 U	7.7 U	7.6 U	7.6 U	6.9 U	6.9 U	6 U	6 U
4,4'-DDE	3.2	17	31	µg/kg	7.7 U	7.7 U	7.6 U	7.6 U	6.9 U	6.9 U	6 U	6 U
4,4'-DDT	4.2	33.6	63	µg/kg	7.7 U	7.7 U	7.6 U	7.6 U	6.9 U	6.9 U	6 U	6 U
ALDRIN	2	41	80	µg/kg	4 U	4 U	3.9 U	3.9 U	3.5 U	3.5 U	3.1 U	3.1 U
ALPHA-BHC	6	53	100	µg/kg	4 U	4 U	3.9 U	3.9 U	3.5 U	3.5 U	3.1 U	3.1 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	4 U	4 U	3.9 U	3.9 U	3.5 U	3.5 U	3.1 U	3.1 U
BETA-BHC	5	108	210	µg/kg	4 U	4 U	3.9 U	3.9 U	3.5 U	3.5 U	3.1 U	3.1 U
DELTA-BHC	3	62	120	µg/kg	4 U	4 U	3.9 U	3.9 U	3.5 U	3.5 U	3.1 U	3.1 U
DIELDRIN	1.9	32	62	µg/kg	7.7 U	7.7 U	7.6 U	7.6 U	6.9 U	6.9 U	6 U	6 U
ENDOSULFAN I	NL	NL	NL	µg/kg	4 U	4 U	3.9 U	3.9 U	3.5 U	3.5 U	3.1 U	3.1 U
ENDOSULFAN II	NL	NL	NL	µg/kg	7.7 U	7.7 U	7.6 U	7.6 U	6.9 U	6.9 U	6 U	6 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	7.7 U	7.7 U	7.6 U	7.6 U	6.9 U	6.9 U	6 U	6 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	7.7 U	7.7 U	7.6 U	7.6 U	6.9 U	6.9 U	6 U	6 U
ENDRIN KETONE	NL	NL	NL	µg/kg	7.7 U	7.7 U	7.6 U	7.6 U	6.9 U	6.9 U	6 U	6 U
ENDRIN	2.2	104.6	207	µg/kg	7.7 U	7.7 U	7.6 U	7.6 U	6.9 U	6.9 U	6 U	6 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	4 U	4 U	3.9 U	3.9 U	3.5 U	3.5 U	3.1 U	3.1 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	4 U	4 U	3.9 U	3.9 U	3.5 U	3.5 U	3.1 U	3.1 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	4 U	4 U	3.9 U	3.9 U	5.2	1.01	3.1 U	3.1 U
HEPTACHLOR	NL	NL	NL	µg/kg	4 U	4 U	3.9 U	3.9 U	3.5 U	3.5 U	3.1 U	3.1 U
METHOXYCLOR	NL	NL	NL	µg/kg	40 UJ	40 UJ	39 UJ	39 UJ	35 UJ	35 UJ	31 U	31 U
TOXAPHENE	1	1.5	2	µg/kg	400 U	400 U	390 U	390 U	350 U	350 U	310 U	310 U
TOC	NL	NL	NL	%	4.73		4.27		5.14		4.8	

Notes:

Level II Concern: >TEC and ≤MEC

Level III Concern: >MEC and ≤PEC

Level IV Concern: >PEC

DP - Duplicate

ID - Identification

J - Estimated value

MEC - Median Effects Concentration

N - Evidence of compound

NL - Not Listed

Norm. - Normalized to 1% TOC

PEC - Probable Effect Concentration

R - Not detected

SQG - Sediment Quality Guidelines

SS Conc. - Study Site Concentration

TEC - Threshold Effects Concentration

TCL - Target Compound List

TOC - Total Organic Carbon

U - Not detected

µg/kg - Microgram per kilogram

WDNR - Wisconsin Department of Natural Resources

¹ WDNR Consensus-Based SQGs

Table 3-5b
Area 2 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-18		HB10-2-18		HB10-2-26		HB10-2-26		HB10-2-32	
				Field Sample ID	HB10-2-18-06		HB10-2-18-06DP		HB10-2-26-06		HB10-2-26-17		HB10-2-32-06	
				Sample Date	10/18/2010		10/18/2010		10/16/2010		10/16/2010		10/18/2010	
				Depth Interval	0- 6		0- 6		0- 6		12- 17		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	7.5 U	7.5 U	7.2 U	7.2 U	4.8 U	4.8 U	4.2 U	4.2 U	8 U	8 U
4,4'-DDE	3.2	17	31	µg/kg	7.5 U	7.5 U	7.2 U	7.2 U	4.8 U	4.8 U	4.2 U	4.2 U	8 U	8 U
4,4'-DDT	4.2	33.6	63	µg/kg	7.5 U	7.5 U	7.2 U	7.2 U	3 J	0.57	4.2 U	4.2 U	8 U	8 U
ALDRIN	2	41	80	µg/kg	3.9 U	3.9 U	3.7 U	3.7 U	2.5 U	2.5 U	2.2 U	2.2 U	4.1 U	4.1 U
ALPHA-BHC	6	53	100	µg/kg	3.9 U	3.9 U	3.7 U	3.7 U	2.5 U	2.5 U	2.2 U	2.2 U	4.1 U	4.1 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	3.9 U	3.9 U	3.7 U	3.7 U	2.5 U	2.5 U	2.2 U	2.2 U	4.1 U	4.1 U
BETA-BHC	5	108	210	µg/kg	3.9 U	3.9 U	3.7 U	3.7 U	2.5 U	2.5 U	2.2 U	2.2 U	4.1 U	4.1 U
DELTA-BHC	3	62	120	µg/kg	3.9 U	3.9 U	3.7 U	3.7 U	1 J	0.19	2.2 U	2.2 U	4.1 U	4.1 U
DIELDRIN	1.9	32	62	µg/kg	7.5 U	7.5 U	7.2 U	7.2 U	4.8 U	4.8 U	4.2 U	4.2 U	8 U	8 U
ENDOSULFAN I	NL	NL	NL	µg/kg	3.9 U	3.9 U	3.7 U	3.7 U	2.5 U	2.5 U	2.2 U	2.2 U	4.1 U	4.1 U
ENDOSULFAN II	NL	NL	NL	µg/kg	7.5 U	7.5 U	7.2 U	7.2 U	4.8 U	4.8 U	4.2 U	4.2 U	8 U	8 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	7.5 U	7.5 U	7.2 U	7.2 U	4.8 U	4.8 U	4.2 U	4.2 U	8 U	8 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	7.5 U	7.5 U	7.2 U	7.2 U	4.8 U	4.8 U	4.2 U	4.2 U	8 U	8 U
ENDRIN KETONE	NL	NL	NL	µg/kg	7.5 U	7.5 U	7.2 U	7.2 U	4.8 U	4.8 U	2 J	1.12	8 U	8 U
ENDRIN	2.2	104.6	207	µg/kg	7.5 U	7.5 U	7.2 U	7.2 U	4.8 U	4.8 U	4.2 U	4.2 U	8 U	8 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	3.9 U	3.9 U	3.7 U	3.7 U	2.5 U	2.5 U	2.2 U	2.2 U	4.1 U	4.1 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	3.9 U	3.9 U	3.7 U	3.7 U	2.5 U	2.5 U	2.2 U	2.2 U	4.1 U	4.1 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	2.4 J	0.89	3.7 U	3.7 U	2.5 U	2.5 U	2.2 U	2.2 U	4.1 U	4.1 U
HEPTACHLOR	NL	NL	NL	µg/kg	3.9 U	3.9 U	3.7 U	3.7 U	2.5 U	2.5 U	2.2 U	2.2 U	4.1 U	4.1 U
METHOXYCLOR	NL	NL	NL	µg/kg	39 U	39 U	37 U	37 U	25 U	25 U	22 U	22 U	41 U	41 U
TOXAPHENE	1	1.5	2	µg/kg	390 U	390 U	370 U	370 U	250 U	250 U	220 U	220 U	410 U	410 U
TOC	NL	NL	NL	%	2.71		3.56		5.29		1.79		3.64	

Table 3-5b
Area 2 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-32		HB10-2-33		HB10-2-33		HB10-2-34		HB10-2-34	
				Field Sample ID	HB10-2-32-06DP		HB10-2-33-06		HB10-2-33-22		HB10-2-34-06		HB10-2-34-06DP	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 6		0- 6		12- 22		0- 6		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	7.6 U	7.6 U	4.7 U	4.7 U	5.3 U	5.3 U	6.6 U	6.6 U	7 U	7 U
4,4'-DDE	3.2	17	31	µg/kg	7.6 U	7.6 U	4.7 U	4.7 U	5.3 U	5.3 U	6.6 U	6.6 U	7 U	7 U
4,4'-DDT	4.2	33.6	63	µg/kg	7.6 U	7.6 U	4.7 U	4.7 U	5.3 U	5.3 U	6.6 U	6.6 U	7 U	7 U
ALDRIN	2	41	80	µg/kg	3.9 U	3.9 U	2.4 U	2.4 U	2.7 U	2.7 U	3.4 U	3.4 U	3.6 U	3.6 U
ALPHA-BHC	6	53	100	µg/kg	3.9 U	3.9 U	2.4 U	2.4 U	2.7 U	2.7 U	3.4 U	3.4 U	3.6 U	3.6 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	3.9 U	3.9 U	2.4 U	2.4 U	2.7 U	2.7 U	3.4 U	3.4 U	3.6 U	3.6 U
BETA-BHC	5	108	210	µg/kg	3.9 U	3.9 U	2.4 U	2.4 U	2.7 U	2.7 U	3.4 U	3.4 U	3.6 U	3.6 U
DELTA-BHC	3	62	120	µg/kg	3.9 U	3.9 U	2.4 U	2.4 U	2.7 U	2.7 U	3.4 U	3.4 U	3.6 U	3.6 U
DIELDRIN	1.9	32	62	µg/kg	7.6 U	7.6 U	4.7 U	4.7 U	5.3 U	5.3 U	6.6 U	6.6 U	7 U	7 U
ENDOSULFAN I	NL	NL	NL	µg/kg	3.9 U	3.9 U	2.4 U	2.4 U	2.7 U	2.7 U	3.4 U	3.4 U	3.6 U	3.6 U
ENDOSULFAN II	NL	NL	NL	µg/kg	7.6 U	7.6 U	4.7 U	4.7 U	5.3 U	5.3 U	6.6 U	6.6 U	7 U	7 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	7.6 U	7.6 U	4.7 U	4.7 U	5.3 U	5.3 U	6.6 U	6.6 U	7 U	7 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	7.6 U	7.6 U	4.7 U	4.7 U	5.3 U	5.3 U	6.6 U	6.6 U	7 U	7 U
ENDRIN KETONE	NL	NL	NL	µg/kg	7.6 U	7.6 U	4.7 U	4.7 U	5.3 U	5.3 U	6.6 U	6.6 U	7 U	7 U
ENDRIN	2.2	104.6	207	µg/kg	7.6 U	7.6 U	4.7 U	4.7 U	5.3 U	5.3 U	7.2	1.7	7 U	7 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	3.9 U	3.9 U	2.4 U	2.4 U	2.7 U	2.7 U	3.4 U	3.4 U	3.6 U	3.6 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	3.9 U	3.9 U	2.4 U	2.4 U	2.7 U	2.7 U	3.4 U	3.4 U	3.6 U	3.6 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	3.9 U	3.9 U	2.4 U	2.4 U	2.7 U	2.7 U	3.4 U	3.4 U	3.6 U	3.6 U
HEPTACHLOR	NL	NL	NL	µg/kg	3.9 U	3.9 U	2.4 U	2.4 U	2.7 U	2.7 U	3.4 U	3.4 U	3.6 U	3.6 U
METHOXYCLOR	NL	NL	NL	µg/kg	39 U	39 U	24 UJ	24 UJ	27 UJ	27 UJ	34 UJ	34 UJ	36 UJ	36 UJ
TOXAPHENE	1	1.5	2	µg/kg	390 U	390 U	240 U	240 U	270 U	270 U	340 U	340 U	360 U	360 U
TOC	NL	NL	NL	%	3.4		0.99		3.77		4.12		3.25	

Table 3-5b
Area 2 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-35		HB10-2-35		HB10-2-35		HB10-2-36		HB10-2-36	
				Field Sample ID	HB10-2-35-06		HB10-2-35-12		HB10-2-35-30		HB10-2-36-06		HB10-2-36-06DP	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 6		0- 12		12- 30		0- 6		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	4.2 U	4.2 U	4.7 U	4.7 U	5 U	5 U	6.1 U	6.1 U	7.1 U	7.1 U
4,4'-DDE	3.2	17	31	µg/kg	4.2 U	4.2 U	4.7 U	4.7 U	5 U	5 U	6.1 U	6.1 U	7.1 U	7.1 U
4,4'-DDT	4.2	33.6	63	µg/kg	4.2 U	4.2 U	4.7 U	4.7 U	5 U	5 U	6.1 U	6.1 U	7.1 U	7.1 U
ALDRIN	2	41	80	µg/kg	2.2 U	2.2 U	2.1	14.6	2.6 J	0.84	3.2 U	3.2 U	3.7 U	3.7 U
ALPHA-BHC	6	53	100	µg/kg	2.2 U	2.2 U	2.4 U	2.4 U	2.6 U	2.6 U	3.2 U	3.2 U	3.7 U	3.7 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	2.2 U	2.2 U	2.4 U	2.4 U	2.6 U	2.6 U	3.2 U	3.2 U	3.7 U	3.7 U
BETA-BHC	5	108	210	µg/kg	2.2 U	2.2 U	2.4 U	2.4 U	2.6 U	2.6 U	3.2 U	3.2 U	3.7 U	3.7 U
DELTA-BHC	3	62	120	µg/kg	2.2 U	2.2 U	2.4 U	2.4 U	2.6 U	2.6 U	3.2 U	3.2 U	3.7 U	3.7 U
DIELDRIN	1.9	32	62	µg/kg	4.2 U	4.2 U	4.7 U	4.7 U	5 U	5 U	6.1 U	6.1 U	7.1 U	7.1 U
ENDOSULFAN I	NL	NL	NL	µg/kg	2.2 U	2.2 U	2.4 U	2.4 U	1.3 J	0.42	3.2 U	3.2 U	3.7 U	3.7 U
ENDOSULFAN II	NL	NL	NL	µg/kg	4.2 U	4.2 U	4.7 U	4.7 U	5 U	5 U	6.1 U	6.1 U	7.1 U	7.1 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	4.2 U	4.2 U	4.7 U	4.7 U	5 U	5 U	6.1 U	6.1 U	7.1 U	7.1 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	4.2 U	4.2 U	4.7 U	4.7 U	5 U	5 U	6.1 U	6.1 U	7.1 U	7.1 U
ENDRIN KETONE	NL	NL	NL	µg/kg	4.2 U	4.2 U	4.7 U	4.7 U	5 U	5 U	6.1 U	6.1 U	7.1 U	7.1 U
ENDRIN	2.2	104.6	207	µg/kg	4.2 U	4.2 U	4.7 U	4.7 U	5 U	5 U	6.1 U	6.1 U	7.1 U	7.1 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	2.2 U	2.2 U	2.4 U	2.4 U	2.6 U	2.6 U	3.2 U	3.2 U	3.7 U	3.7 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	2.2 U	2.2 U	2.4 U	2.4 U	2.6 U	2.6 U	3.2 U	3.2 U	3.7 U	3.7 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	2.2 U	2.2 U	2.4 U	2.4 U	2.6 U	2.6 U	3.2 U	3.2 U	3.7 U	3.7 U
HEPTACHLOR	NL	NL	NL	µg/kg	2.2 U	2.2 U	2.4 U	2.4 U	2.6 U	2.6 U	3.2 U	3.2 U	3.7 U	3.7 U
METHOXYCLOR	NL	NL	NL	µg/kg	22 UJ	22 UJ	24 UJ	24 UJ	26 UJ	26 UJ	32 U	32 U	37 U	37 U
TOXAPHENE	1	1.5	2	µg/kg	220 U	220 U	240 U	240 U	260 U	260 U	320 U	320 U	370 U	370 U
TOC	NL	NL	NL	%	0.702		1.44		3.08		3.05		16.2	

Table 3-5b
Area 2 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-37		HB10-2-37		HB10-2-38		HB10-2-38		HB10-2-38	
				Field Sample ID	HB10-2-37-06		HB10-2-37-23		HB10-2-38-06		HB10-2-38-06DP		HB10-2-38-12	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 6		12- 23		0- 6		0- 6		0- 12	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	4.1 U	4.1 U	4.3 R	4.3 R	7.5 U	7.5 U	7.5 U	7.5 U	5.6 U	5.6 U
4,4'-DDE	3.2	17	31	µg/kg	4.1 U	4.1 U	4.3 U	4.3 U	7.5 U	7.5 U	7.5 U	7.5 U	5.6 U	5.6 U
4,4'-DDT	4.2	33.6	63	µg/kg	4.1 U	4.1 U	4.3 U	4.3 U	7.5 U	7.5 U	7.5 U	7.5 U	5.6 U	5.6 U
ALDRIN	2	41	80	µg/kg	2.1 U	2.1 U	2.2 R	2.2 R	3.9 U	3.9 U	3.8 U	3.8 U	2.9 U	2.9 U
ALPHA-BHC	6	53	100	µg/kg	2.1 U	2.1 U	2.2 U	2.2 U	3.9 U	3.9 U	3.8 U	3.8 U	2.9 U	2.9 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	2.1 U	2.1 U	2.2 U	2.2 U	3.9 U	3.9 U	3.8 U	3.8 U	2.9 U	2.9 U
BETA-BHC	5	108	210	µg/kg	2.1 U	2.1 U	2.2 U	2.2 U	3.9 U	3.9 U	3.8 U	3.8 U	2.9 U	2.9 U
DELTA-BHC	3	62	120	µg/kg	2.1 U	2.1 U	2.2 U	2.2 U	3.9 U	3.9 U	3.8 U	3.8 U	2.9 U	2.9 U
DIELDRIN	1.9	32	62	µg/kg	4.1 U	4.1 U	4.3 U	4.3 U	7.5 U	7.5 U	7.5 U	7.5 U	5.6 U	5.6 U
ENDOSULFAN I	NL	NL	NL	µg/kg	2.1 U	2.1 U	2.2 U	2.2 U	3.9 U	3.9 U	3.8 U	3.8 U	2.9 U	2.9 U
ENDOSULFAN II	NL	NL	NL	µg/kg	4.1 U	4.1 U	4.3 U	4.3 U	7.5 U	7.5 U	7.5 U	7.5 U	5.6 U	5.6 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	4.1 U	4.1 U	4.3 U	4.3 U	7.5 U	7.5 U	7.5 U	7.5 U	5.6 U	5.6 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	4.1 U	4.1 U	4.3 U	4.3 U	7.5 U	7.5 U	7.5 U	7.5 U	5.6 U	5.6 U
ENDRIN KETONE	NL	NL	NL	µg/kg	4.1 U	4.1 U	4.3 U	4.3 U	7.5 U	7.5 U	7.5 U	7.5 U	5.6 U	5.6 U
ENDRIN	2.2	104.6	207	µg/kg	4.1 U	4.1 U	4.3 U	4.3 U	7.5 U	7.5 U	7.5 U	7.5 U	5.6 U	5.6 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	2.1 U	2.1 U	2.2 U	2.2 U	3.9 U	3.9 U	3.8 U	3.8 U	2.9 U	2.9 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	2.1 U	2.1 U	2.2 U	2.2 U	3.9 U	3.9 U	3.8 U	3.8 U	2.9 U	2.9 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	2.1 U	2.1 U	2.2 U	2.2 U	3.9 U	3.9 U	3.8 U	3.8 U	2.9 U	2.9 U
HEPTACHLOR	NL	NL	NL	µg/kg	2.1 U	2.1 U	2.2 U	2.2 U	3.9 U	3.9 U	3.8 U	3.8 U	2.9 U	2.9 U
METHOXYCLOR	NL	NL	NL	µg/kg	21 UJ	21 UJ	22 UJ	22 UJ	39 U	39 U	38 U	38 U	29 U	29 U
TOXAPHENE	1	1.5	2	µg/kg	210 U	210 U	220 U	220 U	390 U	390 U	380 U	380 U	290 U	290 U
TOC	NL	NL	NL	%	0.423		0.648		5.6		5.6*		3.32	

Table 3-5b
Area 2 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-38		HB10-2-39		HB10-2-39		HB10-2-39		HB10-2-40	
				Field Sample ID	HB10-2-38-38		HB10-2-39-06		HB10-2-39-12		HB10-2-39-28		HB10-2-40-06	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	36- 38		0- 6		0- 12		12- 28		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	5 U	5 U	4 U	4 U	4.4 U	4.4 U	8.8 U	8.8 U	7.2 U	7.2 U
4,4'-DDE	3.2	17	31	µg/kg	5 U	5 U	4 U	4 U	4.4 U	4.4 U	8.8 U	8.8 U	7.2 U	7.2 U
4,4'-DDT	4.2	33.6	63	µg/kg	5 U	5 U	4 U	4 U	4.4 U	4.4 U	8.8 U	8.8 U	7.2 U	7.2 U
ALDRIN	2	41	80	µg/kg	2.6 J	0.65	2.1 U	2.1 U	2.3 U	2.3 U	4.5 U	4.5 U	3.7 U	3.7 U
ALPHA-BHC	6	53	100	µg/kg	2.6 U	2.6 U	2.1 U	2.1 U	2.3 U	2.3 U	4.5 U	4.5 U	3.7 U	3.7 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	2.6 U	2.6 U	2.1 U	2.1 U	2.3 U	2.3 U	4.5 U	4.5 U	3.7 U	3.7 U
BETA-BHC	5	108	210	µg/kg	2.6 U	2.6 U	2.1 U	2.1 U	2.3 U	2.3 U	4.5 U	4.5 U	3.7 U	3.7 U
DELTA-BHC	3	62	120	µg/kg	2.6 U	2.6 U	2.1 U	2.1 U	2.3 U	2.3 U	4.5 U	4.5 U	3.7 U	3.7 U
DIELDRIN	1.9	32	62	µg/kg	5 U	5 U	4 U	4 U	4.4 U	4.4 U	8.8 U	8.8 U	7.2 U	7.2 U
ENDOSULFAN I	NL	NL	NL	µg/kg	2.6 U	2.6 U	2.1 U	2.1 U	2.3 U	2.3 U	4.5 U	4.5 U	3.7 U	3.7 U
ENDOSULFAN II	NL	NL	NL	µg/kg	5 U	5 U	4 U	4 U	4.4 U	4.4 U	8.8 U	8.8 U	7.2 U	7.2 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	5 U	5 U	2.8 J	5.5	4.4 U	4.4 U	8.8 U	8.8 U	7.2 U	7.2 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	5 U	5 U	4 U	4 U	4.4 U	4.4 U	8.8 U	8.8 U	7.2 U	7.2 U
ENDRIN KETONE	NL	NL	NL	µg/kg	5 U	5 U	4 U	4 U	4.4 U	4.4 U	8.8 U	8.8 U	7.2 U	7.2 U
ENDRIN	2.2	104.6	207	µg/kg	5 U	5 U	4 U	4 U	4.4 U	4.4 U	8.8 U	8.8 U	7.2 U	7.2 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	2.6 U	2.6 U	2.1 U	2.1 U	2.3 U	2.3 U	4.5 U	4.5 U	3.7 U	3.7 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	2.6 U	2.6 U	2.1 U	2.1 U	2.3 U	2.3 U	4.5 U	4.5 U	3.7 U	3.7 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	2.6 U	2.6 U	2.1 U	2.1 U	2.3 U	2.3 U	4.5 U	4.5 U	2.1 J	0.62
HEPTACHLOR	NL	NL	NL	µg/kg	2.6 U	2.6 U	2.1 U	2.1 U	2.3 U	2.3 U	4.5 U	4.5 U	3.7 U	3.7 U
METHOXYCLOR	NL	NL	NL	µg/kg	26 U	26 U	21 U	21 U	23 UJ	23 UJ	45 UJ	45 UJ	37 U	37 U
TOXAPHENE	1	1.5	2	µg/kg	260 U	260 U	210 U	210 U	230 U	230 U	450 U	450 U	370 U	370 U
TOC	NL	NL	NL	%	4.03		0.506		1.68		11.1		3.39	

Table 3-5b
Area 2 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-40		HB10-2-40		HB10-2-40		HB10-2-41		HB10-2-41	
				Field Sample ID	HB10-2-40-12		HB10-2-40-36		HB10-2-40-48		HB10-2-41-06		HB10-2-41-12	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 12		12- 36		36- 48		0- 6		0- 12	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	5.3 U	5.3 U	4.4 U	4.4 U	4.4 U	4.4 U	8 U	8 U	4 U	4 U
4,4'-DDE	3.2	17	31	µg/kg	5.3 U	5.3 U	4.4 U	4.4 U	4.4 U	4.4 U	8 U	8 U	4 U	4 U
4,4'-DDT	4.2	33.6	63	µg/kg	5.3 U	5.3 U	4.4 U	4.4 U	4.4 U	4.4 U	8 U	8 U	4 U	4 U
ALDRIN	2	41	80	µg/kg	2.7 U	2.7 U	2.3 U	2.3 U	2.2 U	2.2 U	4 U	4 U	3	1.5
ALPHA-BHC	6	53	100	µg/kg	2.9 J	1.2	2.3 U	2.3 U	2.2 U	2.2 U	4 U	4 U	2 U	2 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	2.7 U	2.7 U	2.3 U	2.3 U	2.2 U	2.2 U	4 U	4 U	2 U	2 U
BETA-BHC	5	108	210	µg/kg	2.7 U	2.7 U	2.3 U	2.3 U	2.2 U	2.2 U	4 U	4 U	2 U	2 U
DELTA-BHC	3	62	120	µg/kg	2.7 U	2.7 U	2.3 U	2.3 U	2.2 U	2.2 U	4 U	4 U	2 U	2 U
DIELDRIN	1.9	32	62	µg/kg	5.3 U	5.3 U	4.4 U	4.4 U	4.4 U	4.4 U	8 U	8 U	4 U	4 U
ENDOSULFAN I	NL	NL	NL	µg/kg	2.7 U	2.7 U	2.3 U	2.3 U	2.2 U	2.2 U	4 U	4 U	1 J	0.50
ENDOSULFAN II	NL	NL	NL	µg/kg	5.3 U	5.3 U	4.4 U	4.4 U	4.4 U	4.4 U	8 U	8 U	4 U	4 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	5.3 U	5.3 U	4.4 U	4.4 U	4.4 U	4.4 U	8 U	8 U	4 U	4 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	5.3 U	5.3 U	4.4 U	4.4 U	4.4 U	4.4 U	8 U	8 U	4 U	4 U
ENDRIN KETONE	NL	NL	NL	µg/kg	5.3 U	5.3 U	4.4 U	4.4 U	4.4 U	4.4 U	8 U	8 U	4 U	4 U
ENDRIN	2.2	104.6	207	µg/kg	5.3 U	5.3 U	4.4 U	4.4 U	4.4 U	4.4 U	4 J	0.59	4 U	4 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	2.7 U	2.7 U	2.3 U	2.3 U	2.2 U	2.2 U	4 U	4 U	2 U	2 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	48 J	19.7	2.3 U	2.3 U	2.2 U	2.2 U	4 U	4 U	2 U	2 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	2.7 U	2.7 U	2.3 U	2.3 U	2.2 U	2.2 U	4 U	4 U	2 U	2 U
HEPTACHLOR	NL	NL	NL	µg/kg	2.7 U	2.7 U	2.3 U	2.3 U	2.2 U	2.2 U	4 U	4 U	2 U	2 U
METHOXYCLOR	NL	NL	NL	µg/kg	27 U	27 U	23 U	23 U	22 U	22 U	45 U	45 U	24 U	24 U
TOXAPHENE	1	1.5	2	µg/kg	270 U	270 U	230 U	230 U	220 U	220 U	450 U	450 U	240 U	240 U
TOC	NL	NL	NL	%	2.44		0.886		1.17		6.73		1.99	

Table 3-5b
Area 2 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-41		HB10-2-42		HB10-2-42		HB10-2-42		HB10-2-43	
				Field Sample ID	HB10-2-41-31		HB10-2-42-06		HB10-2-42-12		HB10-2-42-30		HB10-2-43-06	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/17/2010	
				Depth Interval	12- 31		0- 6		0- 12		12- 30		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	4 U	4 U	4.3 U	4.3 U	6.8 J	0.65	4.4 U	4.4 U	4 U	4 U
4,4'-DDE	3.2	17	31	µg/kg	4 U	4 U	4.3 U	4.3 U	4.8 R	4.8 R	4.4 U	4.4 U	4 U	4 U
4,4'-DDT	4.2	33.6	63	µg/kg	4 U	4 U	4.3 U	4.3 U	4.8 U	4.8 U	4.4 U	4.4 U	4 U	4 U
ALDRIN	2	41	80	µg/kg	2 U	2 U	2.2 U	2.2 U	5.3 J	0.51	2.2 U	2.2 U	2 U	2 U
ALPHA-BHC	6	53	100	µg/kg	2 U	2 U	2.2 U	2.2 U	2.2 J	0.21	2.2 U	2.2 U	2 U	2 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	2 U	2 U	2.2 U	2.2 U	2.5 U	2.5 U	2.2 U	2.2 U	2 U	2 U
BETA-BHC	5	108	210	µg/kg	2 U	2 U	2.2 U	2.2 U	2.5 R	2.5 R	2.2 U	2.2 U	2 U	2 U
DELTA-BHC	3	62	120	µg/kg	2 U	2 U	2.2 U	2.2 U	2.5 R	2.5 R	2.2 U	2.2 U	2 U	2 U
DIELDRIN	1.9	32	62	µg/kg	4 U	4 U	4.3 U	4.3 U	4.8 U	4.8 U	4.4 U	4.4 U	4 U	4 U
ENDOSULFAN I	NL	NL	NL	µg/kg	2 U	2 U	2.2 U	2.2 U	8.6	0.83	2.2 U	2.2 U	2 U	2 U
ENDOSULFAN II	NL	NL	NL	µg/kg	4 U	4 U	4.3 U	4.3 U	4.8 U	4.8 U	4.4 U	4.4 U	4 U	4 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	4 U	4 U	4.3 U	4.3 U	5.3 NJ	0.51	4.4 U	4.4 U	4 U	4 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	4 U	4 U	4.3 U	4.3 U	4.8 U	4.8 U	4.4 U	4.4 U	4 U	4 U
ENDRIN KETONE	NL	NL	NL	µg/kg	4 U	4 U	4.3 U	4.3 U	4.1 J	0.39	4.4 U	4.4 U	4 U	4 U
ENDRIN	2.2	104.6	207	µg/kg	4 U	4 U	4.3 U	4.3 U	4.8 R	4.8 R	4.4 U	4.4 U	4 U	4 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	2 U	2 U	2.2 U	2.2 U	2.5 R	2.5 R	2.2 U	2.2 U	2 U	2 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	2 U	2 U	2.2 U	2.2 U	2.5 R	2.5 R	2.2 U	2.2 U	2 U	2 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	2 U	2 U	2.2 U	2.2 U	2.5 R	2.5 R	2.2 U	2.2 U	2 U	2 U
HEPTACHLOR	NL	NL	NL	µg/kg	2 U	2 U	2.2 U	2.2 U	6	0.58	2.2 U	2.2 U	2 U	2 U
METHOXYCLOR	NL	NL	NL	µg/kg	22 U	22 U	22 U	22 U	25 U	25 U	22 U	22 U	21 U	21 U
TOXAPHENE	1	1.5	2	µg/kg	220 U	220 U	220 U	220 U	250 U	250 U	220 U	220 U	210 U	210 U
TOC	NL	NL	NL	%	1.12		8.84		10.4		2.8		0.783	

Table 3-5b
Area 2 Sediment Sample Analytical Results - TCL Pesticides
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-43		HB10-2-44		HB10-2-44		HB10-2-45		HB10-2-45	
				Field Sample ID	HB10-2-43-22		HB10-2-44-06		HB10-2-44-16		HB10-2-45-06		HB10-2-45-19	
				Sample Date	10/17/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	12- 22		0- 6		12- 16		0- 6		12- 19	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
4,4'-DDD	4.9	16.5	28	µg/kg	5 U	5 U	6.3 U	6.3 U	5.4 U	5.4 U	2.5 J	0.56	5.2 U	5.2 U
4,4'-DDE	3.2	17	31	µg/kg	5 U	5 U	6.3 U	6.3 U	5.4 U	5.4 U	4.5 U	4.5 U	5.2 U	5.2 U
4,4'-DDT	4.2	33.6	63	µg/kg	5 U	5 U	6.3 U	6.3 U	5.4 U	5.4 U	4.5 U	4.5 U	5.2 U	5.2 U
ALDRIN	2	41	80	µg/kg	2 R	2 R	3.2 U	3.2 U	2.8 U	2.8 U	3.8	0.86	2.7 U	2.7 U
ALPHA-BHC	6	53	100	µg/kg	2 U	2 U	3.2 U	3.2 U	2.8 U	2.8 U	2.3 U	2.3 U	2.7 U	2.7 U
ALPHA-CHLORDANE	3.2	10.6	18	µg/kg	2 U	2 U	3.2 U	3.2 U	2.8 U	2.8 U	2.3 U	2.3 U	2.7 U	2.7 U
BETA-BHC	5	108	210	µg/kg	2 U	2 U	3.2 U	3.2 U	2.8 U	2.8 U	2.3 U	2.3 U	2.7 U	2.7 U
DELTA-BHC	3	62	120	µg/kg	2 U	2 U	3.2 U	3.2 U	2.8 U	2.8 U	2.3 U	2.3 U	2.7 U	2.7 U
DIELDRIN	1.9	32	62	µg/kg	5 U	5 U	6.3 U	6.3 U	5.4 U	5.4 U	3.1 J	0.70	5.2 U	5.2 U
ENDOSULFAN I	NL	NL	NL	µg/kg	2 U	2 U	3.2 U	3.2 U	2.8 U	2.8 U	2.3 U	2.3 U	2.7 U	2.7 U
ENDOSULFAN II	NL	NL	NL	µg/kg	5 U	5 U	6.3 U	6.3 U	5.4 U	5.4 U	4.5 U	4.5 U	5.2 U	5.2 U
ENDOSULFAN SULFATE	NL	NL	NL	µg/kg	5 U	5 U	6.3 U	6.3 U	3.9 J	0.79	4.5 U	4.5 U	5.2 U	5.2 U
ENDRIN ALDEHYDE	NL	NL	NL	µg/kg	5 U	5 U	6.3 U	6.3 U	5.4 U	5.4 U	4.5 U	4.5 U	5.2 U	5.2 U
ENDRIN KETONE	NL	NL	NL	µg/kg	5 U	5 U	6.3 U	6.3 U	2.7 J	0.55	4.5 U	4.5 U	5.2 U	5.2 U
ENDRIN	2.2	104.6	207	µg/kg	5 U	5 U	6.3 U	6.3 U	5.4 U	5.4 U	4.5 U	4.5 U	5.2 U	5.2 U
GAMMA-BHC (LINDANE)	3	4	5	µg/kg	2 U	2 U	3.2 U	3.2 U	2.8 U	2.8 U	2.3 U	2.3 U	2.7 U	2.7 U
GAMMA-CHLORDANE	3.2	10.6	18	µg/kg	2 U	2 U	3.2 U	3.2 U	2.8 R	2.8 R	2.3 R	2.3 R	2.7 U	2.7 U
HEPTACHLOR EPOXIDE	2.5	9.3	16	µg/kg	2 U	2 U	3.2 U	3.2 U	2.8 U	2.8 U	2.3 U	2.3 U	2.7 U	2.7 U
HEPTACHLOR	NL	NL	NL	µg/kg	2 U	2 U	3.2 U	3.2 U	2.8 U	2.8 U	2.3 U	2.3 U	2.7 U	2.7 U
METHOXYCLOR	NL	NL	NL	µg/kg	28 U	28 U	32 UJ	32 UJ	28 UJ	28 UJ	23 UJ	23 UJ	27 UJ	27 UJ
TOXAPHENE	1	1.5	2	µg/kg	280 U	280 U	320 U	320 U	280 U	280 U	230 U	230 U	270 U	270 U
TOC	NL	NL	NL	%	4.65		3.51		4.91		4.44		2.61	

Notes:

Level II Concern: >TEC and ≤MEC

Level III Concern: >MEC and ≤PEC

Level IV Concern: >PEC

DP - Duplicate

ID - Identification

J - Estimated value

MEC - Median Effects Concentration

N - Evidence of compound

NL - Not Listed

Norm. - Normalized to 1% TOC

PEC - Probable Effect Concentration

R - Not detected

SQG - Sediment Quality Guidelines

SS Conc. - Study Site Concentration

TEC - Threshold Effects Concentration

TCL - Target Compound List

TOC - Total Organic Carbon

U - Not detected

µg/kg - Microgram per kilogram

WDNR - Wisconsin Department of Natural Resources

*TOC not analyzed, used result for investigative sample

¹ WDNR Consensus-Based SQGs

Table 3-6a
Area 1 Sediment Sample Analytical Results - TPH
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-01	HB10-1-01	HB10-1-01	HB10-1-02	HB10-1-02	HB10-1-02	HB10-1-03	HB10-1-03	HB10-1-03
	Field Sample ID	HB10-1-01-06	HB10-1-01-12	HB10-1-01-40	HB10-1-02-06	HB10-1-02-06DP	HB10-1-02-23	HB10-1-03-06	HB10-1-03-12	HB10-1-03-36
	Sample Date	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/16/2010
	Depth Interval	0- 6	0- 12	36- 40	0- 6	0- 6	12- 23	0- 6	0- 12	12- 36
Chemical Name	Unit									
DRO	mg/kg	50	16	9.2 UJ	47	81	57	57	32	66
ORO	mg/kg	56	19 J	11 J	67	120	72	95	44	87

Table 3-6a
Area 1 Sediment Sample Analytical Results - TPH
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-03	HB10-1-03	HB10-1-04	HB10-1-04	HB10-1-04	HB10-1-04	HB10-1-05	HB10-1-05	HB10-1-06
	Field Sample ID	HB10-1-03-60	HB10-1-03-84	HB10-1-04-06	HB10-1-04-12	HB10-1-04-36	HB10-1-04-50	HB10-1-05-06	HB10-1-05-06DP	HB10-1-06-06
	Sample Date	10/16/2010	10/16/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/16/2010	10/16/2010	10/16/2010
	Depth Interval	36- 60	60- 84	0- 6	0- 12	12- 36	36- 50	0- 6	0- 6	0- 6
Chemical Name	Unit									
DRO	mg/kg	61	61	29	92	76	81	37	52	48
ORO	mg/kg	69	81	46	150	100	100	72	75	64

Table 3-6a
Area 1 Sediment Sample Analytical Results - TPH
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-06	HB10-1-06	HB10-1-06	HB10-1-06	HB10-1-07	HB10-1-07	HB10-1-07	HB10-1-07	HB10-1-08
	Field Sample ID	HB10-1-06-06DP	HB10-1-06-12	HB10-1-06-36	HB10-1-06-51	HB10-1-07-06	HB10-1-07-12	HB10-1-07-36	HB10-1-07-64	HB10-1-08-06
	Sample Date	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010
	Depth Interval	0- 6	0- 12	12- 36	36- 51	0- 6	0- 12	12- 36	60- 64	0- 6
Chemical Name	Unit									
DRO	mg/kg	66	64	130	96	73	160	32	11	65
ORO	mg/kg	110	110	150	110	99	180	40	17	110

Table 3-6a
Area 1 Sediment Sample Analytical Results - TPH
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-08	HB10-1-08	HB10-1-10	HB10-1-11	HB10-1-11	HB10-1-12	HB10-1-12	HB10-1-12	HB10-1-13
	Field Sample ID	HB10-1-08-12	HB10-1-08-36	HB10-1-10-06	HB10-1-11-06	HB10-1-11-21	HB10-1-12-06	HB10-1-12-12	HB10-1-12-34	HB10-1-13-06
	Sample Date	10/17/2010	10/17/2010	10/18/2010	10/16/2010	10/16/2010	10/17/2010	10/17/2010	10/17/2010	10/18/2010
	Depth Interval	0- 12	12- 36	0- 6	0- 6	12- 21	0- 6	0- 12	12- 34	0- 6
Chemical Name	Unit									
DRO	mg/kg	83	430	130	140	340	98	270	220	110
ORO	mg/kg	140	650	230	170	430	180	310	250	130

Table 3-6a
Area 1 Sediment Sample Analytical Results - TPH
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-13	HB10-1-13	HB10-1-13	HB10-1-14	HB10-1-14	HB10-1-14	HB10-1-14	HB10-1-15	HB10-1-15
	Field Sample ID	HB10-1-13-12	HB10-1-13-36	HB10-1-13-67	HB10-1-14-06	HB10-1-14-12	HB10-1-14-36	HB10-1-14-66	HB10-1-15-06	HB10-1-15-16
	Sample Date	10/18/2010	10/18/2010	10/18/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/18/2010	10/18/2010
	Depth Interval	0- 12	12- 36	60- 67	0- 6	0- 12	12- 36	60- 66	0- 6	12- 16
Chemical Name	Unit									
DRO	mg/kg	350	78	180	67	110	70	160	39	180 B
ORO	mg/kg	650	94	200	90	150	91	210	51	230

Table 3-6a
Area 1 Sediment Sample Analytical Results - TPH
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-16	HB10-1-16	HB10-1-16	HB10-1-17	HB10-1-20	HB10-1-21	HB10-1-21	HB10-1-23	HB10-1-23
	Field Sample ID	HB10-1-16-06	HB10-1-16-12	HB10-1-16-31	HB10-1-17-06	HB10-1-20-06	HB10-1-21-06	HB10-1-21-23	HB10-1-23-06	HB10-1-23-06DP
	Sample Date	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/18/2010	10/18/2010	10/17/2010	10/17/2010
	Depth Interval	0- 6	0- 12	12- 31	0- 6	0- 6	0- 6	12- 23	0- 6	0- 6
Chemical Name	Unit									
DRO	mg/kg	83 B	120 B	100 B	110	130 B	92 B	120 B	59	81
ORO	mg/kg	94	140	110	160	190	110	160	86	110

Table 3-6a
Area 1 Sediment Sample Analytical Results - TPH
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-23	HB10-1-23	HB10-1-24	HB10-1-24	HB10-1-24	HB10-1-25	HB10-1-25	HB10-1-27	HB10-1-28
	Field Sample ID	HB10-1-23-12	HB10-1-23-36	HB10-1-24-06	HB10-1-24-12	HB10-1-24-36	HB10-1-25-06	HB10-1-25-06DP	HB10-1-27-06DP	HB10-1-28-06
	Sample Date	10/17/2010	10/17/2010	10/18/2010	10/18/2010	10/18/2010	10/17/2010	10/17/2010	10/18/2010	10/17/2010
	Depth Interval	0- 12	12- 36	0- 6	0- 12	12- 36	0- 6	0- 6	0- 6	0- 6
Chemical Name	Unit									
DRO	mg/kg	170	140	400	170	540	160	99	26	160
ORO	mg/kg	220	150	520	300	850	240	150	31	230

Table 3-6a
Area 1 Sediment Sample Analytical Results - TPH
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-28	HB10-1-28	HB10-1-28	HB10-1-28	HB10-1-28	HB10-1-29	HB10-1-29	HB10-1-29	HB10-1-29
	Field Sample ID	HB10-1-28-12	HB10-1-28-36	HB10-1-28-60	HB10-1-28-84	HB10-1-28-96	HB10-1-29-06	HB10-1-29-12	HB10-1-29-36	HB10-1-29-60
	Sample Date	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010
	Depth Interval	0- 12	12- 36	36- 60	60- 84	60- 96	0- 6	0- 12	12- 36	36- 60
Chemical Name	Unit									
DRO	mg/kg	350	180	230	170	60	110	100	100	93
ORO	mg/kg	460	250	260	17 J	71	140	150	120	160

Table 3-6a
Area 1 Sediment Sample Analytical Results - TPH
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-29	HB10-1-30	HB10-1-30	HB10-1-30	HB10-1-30	HB10-1-30	HB10-1-30	HB10-1-31	HB10-1-31
	Field Sample ID	HB10-1-29-93	HB10-1-30-06	HB10-1-30-06DP	HB10-1-30-12	HB10-1-30-36	HB10-1-30-60	HB10-1-30-77	HB10-1-31-06	HB10-1-31-06DP
	Sample Date	10/17/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
	Depth Interval	60- 93	0- 6	0- 6	0- 12	12- 36	36- 60	60- 77	0- 6	0- 6
Chemical Name	Unit									
DRO	mg/kg	730	130	240 J	140	170	57	250	200	380
ORO	mg/kg	690	190	380	180	210	76	710	240	700

Table 3-6a
Area 1 Sediment Sample Analytical Results - TPH
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-31	HB10-1-31
	Field Sample ID	HB10-1-31-12	HB10-1-31-36
	Sample Date	10/18/2010	10/18/2010
	Depth Interval	0- 12	12- 36
Chemical Name	Unit		
DRO	mg/kg	150	100 J
ORO	mg/kg	190	110

Notes:

B - Analyte found in method blank
DRO - Diesel Range Organic
ID - Identification
J - Estimated value
mg/kg - Milligram per kilogram
NL - Not Listed
ORO - Oil Range Organic
TPH - Total Petroleum Hydrocarbon
U - Not detected

Table 3-6b
Area 2 Sediment Sample Analytical Results - TPH
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-2-18	HB10-2-18	HB10-2-26	HB10-2-26	HB10-2-32	HB10-2-32	HB10-2-33	HB10-2-33	HB10-2-34
	Field Sample ID	HB10-2-18-06	HB10-2-18-06DP	HB10-2-26-06	HB10-2-26-17	HB10-2-32-06	HB10-2-32-06DP	HB10-2-33-06	HB10-2-33-22	HB10-2-34-06
	Sample Date	10/18/2010	10/18/2010	10/16/2010	10/16/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
	Depth Interval	0- 6	0- 6	0- 6	12- 17	0- 6	0- 6	0- 6	12- 22	0- 6
Chemical Name	Unit									
DRO	mg/kg	140	220	200 J	200	120 B	70 B	43	76	120 B
ORO	mg/kg	230	380	350	290	160	97	52	89	150

Table 3-6b
Area 2 Sediment Sample Analytical Results - TPH
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-2-34	HB10-2-35	HB10-2-35	HB10-2-35	HB10-2-36	HB10-2-36	HB10-2-37	HB10-2-37	HB10-2-38
	Field Sample ID	HB10-2-34-06DP	HB10-2-35-06	HB10-2-35-12	HB10-2-35-30	HB10-2-36-06	HB10-2-36-06DP	HB10-2-37-06	HB10-2-37-23	HB10-2-38-06
	Sample Date	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
	Depth Interval	0- 6	0- 6	0- 12	12- 30	0- 6	0- 6	0- 6	12- 23	0- 6
Chemical Name	Unit									
DRO	mg/kg	260 B	28	94	160	390	450	47	60	73
ORO	mg/kg	340	54	140	68	500	540	96	81	100

Table 3-6b
Area 2 Sediment Sample Analytical Results - TPH
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-2-38	HB10-2-38	HB10-2-38	HB10-2-39	HB10-2-39	HB10-2-39	HB10-2-40	HB10-2-40	HB10-2-40
	Field Sample ID	HB10-2-38-06DP	HB10-2-38-12	HB10-2-38-38	HB10-2-39-06	HB10-2-39-12	HB10-2-39-28	HB10-2-40-06	HB10-2-40-12	HB10-2-40-36
	Sample Date	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
	Depth Interval	0- 6	0- 12	36- 38	0- 6	0- 12	12- 28	0- 6	0- 12	12- 36
Chemical Name	Unit									
DRO	mg/kg	150	430 B	190 B	44	32	25	50	91	4 J
ORO	mg/kg	220	500	140	63	40	28	80	140	13 U

Table 3-6b
Area 2 Sediment Sample Analytical Results - TPH
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-2-40	HB10-2-41	HB10-2-41	HB10-2-41	HB10-2-42	HB10-2-42	HB10-2-42	HB10-2-43	HB10-2-43
	Field Sample ID	HB10-2-40-48	HB10-2-41-06	HB10-2-41-12	HB10-2-41-31	HB10-2-42-06	HB10-2-42-12	HB10-2-42-30	HB10-2-43-06	HB10-2-43-22
	Sample Date	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/17/2010	10/17/2010
	Depth Interval	36- 48	0- 6	0- 12	12- 31	0- 6	0- 12	12- 30	0- 6	12- 22
Chemical Name	Unit									
DRO	mg/kg	5 J	250 B	66 B	110 B	72	260	190	130	340 B
ORO	mg/kg	13 U	380	100	140	140	420	270	270	610

Table 3-6b
Area 2 Sediment Sample Analytical Results - TPH
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-2-44	HB10-2-44	HB10-2-45	HB10-2-45
	Field Sample ID	HB10-2-44-06	HB10-2-44-16	HB10-2-45-06	HB10-2-45-19
	Sample Date	10/18/2010	10/18/2010	10/18/2010	10/18/2010
	Depth Interval	0- 6	12- 16	0- 6	12- 19
Chemical Name	Unit				
DRO	mg/kg	120	340	130 B	290 B
ORO	mg/kg	160	420	170	360

Notes:

B - Analyte found in method blank
DRO - Diesel Range Organic
ID - Identification
J - Estimated value
mg/kg - Milligram per kilogram
NL - Not Listed
ORO - Oil Range Organic
TPH - Total Petroleum Hydrocarbon
U - Not detected

Table 3-7a
Area 1 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-01		HB10-1-01		HB10-1-01		HB10-1-02		HB10-1-02	
				Field Sample ID	HB10-1-01-06		HB10-1-01-12		HB10-1-01-40		HB10-1-02-06		HB10-1-02-06DP	
				Sample Date	10/16/2010		10/16/2010		10/16/2010		10/16/2010		10/16/2010	
				Depth Interval	0- 6		0- 12		36- 40		0- 6		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	2.5 U	2.5 U	2.6 U	2.6 U	2.2 U	2.2 U	2.7 U	2.7 U	2.8 U	2.8 U
MONOBUTYLTIN	NL	NL	NL	µg/kg	9.6 UJ	9.6 UJ	10 UJ	10 UJ	8.3 UJ	8.3 UJ	11 UJ	11 UJ	11 UJ	11 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	3.3 U	3.3 U	3.4 U	3.4 U	2.8 U	2.8 U	3.6 U	3.6 U	3.7 U	3.7 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	2.9 U	2.9 U	3 U	3 U	2.5 U	2.5 U	4	1.63	2.8 J	1.28
TOC	NL	NL	NL	%	2.16		5.31		1.85		2.46		2.19	

Table 3-7a
Area 1 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-02		HB10-1-03		HB10-1-03		HB10-1-03		HB10-1-03	
				Field Sample ID	HB10-1-02-23		HB10-1-03-06		HB10-1-03-12		HB10-1-03-36		HB10-1-03-60	
				Sample Date	10/16/2010		10/16/2010		10/16/2010		10/16/2010		10/16/2010	
				Depth Interval	12- 23		0- 6		0- 12		12- 36		36- 60	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	1.7 J	0.77	1.4 J	7.7	1.4 J	0.88	1.2 J	0.61	2.5	0.97
MONOBUTYLTIN	NL	NL	NL	µg/kg	9.0 UJ	9.0 UJ	10 UJ	10 UJ	8.5 UJ	8.5 UJ	8.6 UJ	8.6 UJ	8.4 UJ	8.4 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	3.1 U	3.1 U	3.5 U	3.5 U	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	8.2	3.7	3.7	20.4	5.1	3.2	4.4	2.2	7.3	2.8
TOC	NL	NL	NL	%	2.22		0.181		1.59		1.97		2.57	

Table 3-7a
Area 1 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-03		HB10-1-04		HB10-1-04		HB10-1-04		HB10-1-04	
				Field Sample ID	HB10-1-03-84		HB10-1-04-06		HB10-1-04-12		HB10-1-04-36		HB10-1-04-50	
				Sample Date	10/16/2010		10/17/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	60- 84		0- 6		0- 12		12- 36		36- 50	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	1.9 U	1.9 U	1.9 U	1.9 U	2.1 U	2.1 U	2.3 U	2.3 U	1.9 U	1.9 U
MONOBUTYLTIN	NL	NL	NL	µg/kg	7.5 UJ	7.5 UJ	7.4 UJ	7.4 UJ	7.9 UJ	7.9 UJ	8.8 UJ	8.8 UJ	7.2 UJ	7.2 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	2.5 U	2.5 U	2.5 U	2.5 U	2.7 U	2.7 U	3 U	3 U	2.5 U	2.5 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	2.2 U	2.2 U	2.2	1.2	1.5 J	0.59	2.6 U	2.6 U	2.2 U	2.2 U
TOC	NL	NL	NL	%	1.94		1.88		2.53		3.3		4.64	

Table 3-7a
Area 1 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-05		HB10-1-05		HB10-1-06		HB10-1-06		HB10-1-06	
				Field Sample ID	HB10-1-05-06		HB10-1-05-06DP		HB10-1-06-06		HB10-1-06-06DP		HB10-1-06-12	
				Sample Date	10/16/2010		10/16/2010		10/16/2010		10/16/2010		10/16/2010	
				Depth Interval	0- 6		0- 6		0- 6		0- 6		0- 12	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	1.6 J	0.75	1.7 J	0.87	2.7 U	2.7 U	1.5 J	0.62	2.2 J	1.1
MONOBUTYLTIN	NL	NL	NL	µg/kg	10 UJ	10 UJ	9.8 UJ	9.8 UJ	10 UJ	10 UJ	10 UJ	10 UJ	9.6 UJ	9.6 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	3.4 U	3.4 U	3.3 U	3.3 U	3.5 U	3.5 U	3.4 U	3.4 U	3.3 U	3.3 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	4.1	1.9	6.8	3.5	2.1 J	0.91	2.3 J	0.95	6.4	3.2
TOC	NL	NL	NL	%	2.13		1.96		2.31		2.42		1.97	

Table 3-7a
Area 1 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-06		HB10-1-06		HB10-1-07		HB10-1-07		HB10-1-07	
				Field Sample ID	HB10-1-06-36		HB10-1-06-51		HB10-1-07-06		HB10-1-07-12		HB10-1-07-36	
				Sample Date	10/16/2010		10/16/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	12- 36		36- 51		0- 6		0- 12		12- 36	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	2.1 U	2.1 U	2.3 U	2.3 U	1.2 J	0.53	2.2 U	2.2 U	2.2 U	2.2 U
MONOBUTYLTIN	NL	NL	NL	µg/kg	8.1 UJ	8.1 UJ	8.8 UJ	8.8 UJ	8.3 UJ	8.3 UJ	8.5 UJ	8.5 UJ	8.3 UJ	8.3 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	2.7 U	2.7 U	3 U	3 U	2.8 U	2.8 U	2.9 U	2.9 U	2.8 U	2.8 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	2.4 U	2.4 U	2.7 U	2.7 U	1.9 J	0.83	2.6 U	2.6 U	2.5 U	2.5 U
TOC	NL	NL	NL	%	4.38		3.14		2.28		2.76		3.19	

Table 3-7a
Area 1 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-07		HB10-1-08		HB10-1-08		HB10-1-08		HB10-1-10	
				Field Sample ID	HB10-1-07-64		HB10-1-08-06		HB10-1-08-12		HB10-1-08-36		HB10-1-10-06	
				Sample Date	10/17/2010		10/17/2010		10/17/2010		10/17/2010		10/18/2010	
				Depth Interval	60- 64		0- 6		0- 12		12- 36		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	1.6 U	1.6 U	2.6 J	0.68	3.1 B	0.77	2.7 U	2.7 U	2.9 U	2.9 U
MONOBUTYLTIN	NL	NL	NL	µg/kg	6.0 UJ	6.0 UJ	13 UJ	13 UJ	9.9 UJ	9.9 UJ	10 UJ	10 UJ	11 UJ	11 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	2.1 U	2.1 U	4.5 U	4.5 U	3.4 U	3.4 U	3.5 U	3.5 U	3.8 U	3.8 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	1.8 U	1.8 U	2.8 J	0.73	3.7	0.92	1.5 J	0.27	3.4 U	3.4 U
TOC	NL	NL	NL	%	1.13		3.85		4.01		5.51		3.59	

Table 3-7a
Area 1 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-11		HB10-1-11		HB10-1-12		HB10-1-12		HB10-1-12	
				Field Sample ID	HB10-1-11-06		HB10-1-11-21		HB10-1-12-06		HB10-1-12-12		HB10-1-12-34	
				Sample Date	10/16/2010		10/16/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	0- 6		12- 21		0- 6		0- 12		12- 34	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	2.6 U	2.6 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	3.3 U	3.3 U
MONOBUTYLTIN	NL	NL	NL	µg/kg	10 UJ	10 UJ	9.0 UJ	9.0 UJ	8.9 UJ	8.9 UJ	8.8 UJ	8.8 UJ	13 UJ	13 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	3.4 U	3.4 U	3.1 U	3.1 U	3 U	3 U	3 U	3 U	4.3 U	4.3 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	3 U	3 U	2.7 U	2.7 U	2.7 U	2.7 U	2.6 U	2.6 U	3.8 UJ	3.8 UJ
TOC	NL	NL	NL	%	3.16		3.79		3.4		4.44		16.2	

Table 3-7a
Area 1 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-13		HB10-1-13		HB10-1-13		HB10-1-13		HB10-1-14	
				Field Sample ID	HB10-1-13-06		HB10-1-13-12		HB10-1-13-36		HB10-1-13-67		HB10-1-14-06	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/17/2010	
				Depth Interval	0- 6		0- 12		12- 36		60- 67		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	2.8 U	2.8 U	2.5 U	2.5 U	2.3 U	2.3 U	2.2 U	2.2 U	2.7 UJ	2.7 UJ
MONOBUTYLTIN	NL	NL	NL	µg/kg	11 UJ	11 UJ	9.7 UJ	9.7 UJ	8.9 UJ	8.9 UJ	8.6 UJ	8.6 UJ	10 UJ	10 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	3.7 U	3.7 U	3.3 U	3.3 U	3 U	3 U	2.9 U	2.9 U	3.5 U	3.5 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	3 J	0.89	2.9 U	2.9 U	3.8	1.9	2.6 U	2.6 U	2.7 J	0.95
TOC	NL	NL	NL	%	3.36		2.75		2.01		2.24		2.84	

Table 3-7a
Area 1 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-14		HB10-1-14		HB10-1-14		HB10-1-15		HB10-1-15	
				Field Sample ID	HB10-1-14-12		HB10-1-14-36		HB10-1-14-66		HB10-1-15-06		HB10-1-15-16	
				Sample Date	10/17/2010		10/17/2010		10/17/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 12		12- 36		60- 66		0- 6		12- 16	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	2.1 J	0.76	3.7 B	0.93	2.3 U	2.3 U	1.8 J	1.0	3.3 U	3.3 U
MONOBUTYLTIN	NL	NL	NL	µg/kg	9.4 UJ	9.4 UJ	9.1 UJ	9.1 UJ	8.8 UJ	8.8 UJ	7.6 UJ	7.6 UJ	13 UJ	13 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	3.2 U	3.2 U	3.1 U	3.1 U	3 U	3 U	2.6 U	2.6 U	4.3 U	4.3 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	4.6	1.7	6.4	1.6	2.6 U	2.6 U	2.3 U	2.3 U	3.8 U	3.8 U
TOC	NL	NL	NL	%	2.75		3.98		4.42		1.72		11	

Table 3-7a
Area 1 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-16		HB10-1-16		HB10-1-16		HB10-1-17		HB10-1-20	
				Field Sample ID	HB10-1-16-06		HB10-1-16-12		HB10-1-16-31		HB10-1-17-06		HB10-1-20-06	
				Sample Date	10/17/2010		10/17/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	0- 6		0- 12		12- 31		0- 6		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	2	0.93	2.3 U	2.3 U	2.5 U	2.5 U	1.4 J	0.17	2.1	1.0
MONOBUTYLTIN	NL	NL	NL	µg/kg	7.3 UJ	7.3 UJ	8.8 UJ	8.8 UJ	9.7 UJ	9.7 UJ	11 UJ	11 UJ	8.0 UJ	8.0 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	2.5 U	2.5 U	3 U	3 U	3.3 U	3.3 U	3.7 U	3.7 U	2.7 U	2.7 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	9.2	4.3	6	1.3	2.9 U	2.9 U	2.2 J	0.27	5.7	2.7
TOC	NL	NL	NL	%	2.14		4.45		8.15		8.19		2.08	

Table 3-7a
Area 1 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-21		HB10-1-21		HB10-1-23		HB10-1-23		HB10-1-23	
				Field Sample ID	HB10-1-21-06		HB10-1-21-23		HB10-1-23-06		HB10-1-23-06DP		HB10-1-23-12	
				Sample Date	10/18/2010		10/18/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	0- 6		12- 23		0- 6		0- 6		0- 12	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	1.6 U	1.6 U	1.6 U	1.6 U	2.8 U	2.8 U	2.8 U	2.8 U	2.5 U	2.5 U
MONOBUTYLTIN	NL	NL	NL	µg/kg	6.2 UJ	6.2 UJ	6.3 UJ	6.3 UJ	11 UJ	11 UJ	11 UJ	11 UJ	9.4 UJ	9.4 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	2.1 U	2.1 U	2.1 U	2.1 U	3.7 U	3.7 U	3.6 U	3.6 U	3.2 U	3.2 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	1.9 U	1.9 U	1.9 U	1.9 U	3.3 U	3.3 U	3.2 U	3.2 U	2.8 U	2.8 U
TOC	NL	NL	NL	%	0.849		1.35		4.52		4.33		5.39	

Table 3-7a
Area 1 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-23		HB10-1-24		HB10-1-24		HB10-1-24		HB10-1-25	
				Field Sample ID	HB10-1-23-36		HB10-1-24-06		HB10-1-24-12		HB10-1-24-36		HB10-1-25-06	
				Sample Date	10/17/2010		10/18/2010		10/18/2010		10/18/2010		10/17/2010	
				Depth Interval	12- 36		0- 6		0- 12		12- 36		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	2.7 U	2.7 U	3 U	3 U
MONOBUTYLTIN	NL	NL	NL	µg/kg	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	10 UJ	10 UJ	11 UJ	11 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	4.1 U	4.1 U	4 U	4 U	4 U	4 U	3.5 U	3.5 U	3.9 U	3.9 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	3.6 U	3.6 U	2.0 J	0.36	2.0 J	0.36	3.1 U	3.1 U	3.1 J	0.79
TOC	NL	NL	NL	%	7.34		5.55		5.57		5.97		3.93	

Table 3-7a
Area 1 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-25		HB10-1-27		HB10-1-27		HB10-1-28		HB10-1-28	
				Field Sample ID	HB10-1-25-06DP		HB10-1-27-06		HB10-1-27-06DP		HB10-1-28-06		HB10-1-28-12	
				Sample Date	10/17/2010		10/18/2010		10/18/2010		10/17/2010		10/17/2010	
				Depth Interval	0- 6		0- 6		0- 6		0- 6		0- 12	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	2.9 U	2.9 U	3.6 U	3.6 U	3.3 U	3.3 U	14	3.3	4.6	1.1
MONOBUTYLTIN	NL	NL	NL	µg/kg	11 UJ	11 UJ	14 UJ	14 UJ	13 UJ	13 UJ	51 UJ	51 UJ	10 UJ	10 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	3.8 U	3.8 U	4.7 U	4.7 U	4.3 U	4.3 U	17 U	17 U	3.5 U	3.5 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	2.6 J	0.70	4.1 U	4.1 U	3.8 U	3.8 U	270	64.6	24	5.7
TOC	NL	NL	NL	%	3.71		5.32		7.94		4.18		4.24	

Table 3-7a
Area 1 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-28		HB10-1-28		HB10-1-28		HB10-1-28		HB10-1-29	
				Field Sample ID	HB10-1-28-36		HB10-1-28-60		HB10-1-28-84		HB10-1-28-96		HB10-1-29-06	
				Sample Date	10/17/2010		10/17/2010		10/17/2010		10/17/2010		10/17/2010	
				Depth Interval	12- 36		36- 60		60- 84		60- 96		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	1.6 J	0.37	2.7 U	2.7 U	2.5 U	2.5 U	2.3 U	2.3 U	2.5 J	0.25
MONOBUTYLTIN	NL	NL	NL	µg/kg	9.4 UJ	9.4 UJ	10 UJ	10 UJ	9.8 UJ	9.8 UJ	8.8 UJ	8.8 UJ	13 UJ	13 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	3.2 U	3.2 U	3.5 U	3.5 U	3.3 U	3.3 U	3 U	3 U	4.4 U	4.4 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	3.8	0.89	3.1 U	3.1 U	2.9 U	2.9 U	2.7 U	2.7 U	3.1 J	0.30
TOC	NL	NL	NL	%	4.29		5.73		5.71		4.11		10.2	

Table 3-7a
Area 1 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-29		HB10-1-29		HB10-1-29		HB10-1-29		HB10-1-30	
				Field Sample ID	HB10-1-29-12		HB10-1-29-36		HB10-1-29-60		HB10-1-29-93		HB10-1-30-06	
				Sample Date	10/17/2010		10/17/2010		10/17/2010		10/17/2010		10/18/2010	
				Depth Interval	0- 12		12- 36		36- 60		60- 93		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	3.1 U	3.1 U	3.5 U	3.5 U	3.1 UJ	3.1 UJ	3.2 U	3.2 U	2.6 U	2.6 U
MONOBUTYLTIN	NL	NL	NL	µg/kg	12 UJ	12 UJ	14 UJ	14 UJ	12 UJ	12 UJ	12 UJ	12 UJ	10 UJ	10 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	4.1 U	4.1 U	4.6 U	4.6 U	4.1 UJ	4.1 UJ	4.2 U	4.2 U	3.4 U	3.4 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	3.6 U	3.6 U	4.1 U	4.1 U	3.6 UJ	3.6 UJ	3.7 U	3.7 U	3 U	3 U
TOC	NL	NL	NL	%	11.5		16.5		15		14.1		4.81	

Table 3-7a
Area 1 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-30		HB10-1-30		HB10-1-30		HB10-1-30		HB10-1-30	
				Field Sample ID	HB10-1-30-06DP		HB10-1-30-12		HB10-1-30-36		HB10-1-30-60		HB10-1-30-77	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 6		0- 12		12- 36		36- 60		60- 77	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	2.5 U	2.5 U	2.8 U	2.8 U	2.5 U	2.5 U	4.3 U	4.3 U	8.6 U	8.6 U
MONOBUTYLTIN	NL	NL	NL	µg/kg	9.7 UJ	9.7 UJ	11 UJ	11 UJ	9.5 UJ	9.5 UJ	16 UJ	16 UJ	33 UJ	33 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	3.3 U	3.3 U	3.7 U	3.7 U	3.2 U	3.2 U	5.6 U	5.6 U	11 U	11 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	2.9 U	2.9 U	3.3 U	3.3 U	2.9 U	2.9 U	4.9 U	4.9 U	9.9 U	9.9 U
TOC	NL	NL	NL	%	5.5		4.44		8.94		7.99		35.3	

Table 3-7a
Area 1 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-1-31		HB10-1-31		HB10-1-31		HB10-1-31	
				Field Sample ID	HB10-1-31-06		HB10-1-31-06DP		HB10-1-31-12		HB10-1-31-36	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 6		0- 6		0- 12		12- 36	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit								
DIBUTYLTIN	NL	NL	NL	µg/kg	3.3 U	3.3 U	3.3 U	3.3 U	2.6 U	2.6 U	2.5 U	2.5 U
MONOBUTYLTIN	NL	NL	NL	µg/kg	13 UJ	13 UJ	13 UJ	13 UJ	10 UJ	10 UJ	9.6 UJ	9.6 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	4.3 U	4.3 U	4.4 U	4.4 U	3.4 U	3.4 U	3.2 U	3.2 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	3.3 J	0.70	3.7 J	0.87	3 U	3 U	2.9 U	2.9 U
TOC	NL	NL	NL	%	4.73		4.27		5.14		4.8	

Notes:

Level II Concern: >TEC and ≤MEC

Level III Concern: >MEC and ≤PEC

Level IV Concern: >PEC

B - Analyte found in method blank

DP - Duplicate

ID - Identification

J - Estimated value

MEC - Median Effects Concentration

NL - Not Listed

Norm. - Normalized to 1% TOC

PEC - Probable Effect Concentration

SQG - Sediment Quality Guidelines

SS Conc. - Study Site Concentration

TEC - Threshold Effects Concentration

TOC - Total Organic Carbon

U - Not detected

µg/kg - Microgram per kilogram

WDNR - Wisconsin Department of Natural Resources

¹ WDNR Consensus-Based SQGs

Table 3-7b
Area 2 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-18		HB10-2-18		HB10-2-26		HB10-2-26		HB10-2-32	
				Field Sample ID	HB10-2-18-06		HB10-2-18-06DP		HB10-2-26-06		HB10-2-26-17		HB10-2-32-06	
				Sample Date	10/18/2010		10/18/2010		10/16/2010		10/16/2010		10/18/2010	
				Depth Interval	0- 6		0- 6		0- 6		12- 17		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	3.1 J	1.1	2.6 U	2.6 U	2.1 U	2.1 U	1.7 U	1.7 U	3.2 U	3.2 U
MONOBUTYLTIN	NL	NL	NL	µg/kg	19 UJ	19 UJ	10 UJ	10 UJ	7.9 UJ	7.9 UJ	6.6 UJ	6.6 UJ	12 UJ	12 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	6.3 U	6.3 U	3.4 U	3.4 U	2.7 U	2.7 U	2.2 U	2.2 U	4.2 U	4.2 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	4.2 J	1.5	3.1	0.87	2.4 U	2.4 U	2 U	2 U	3.7 U	3.7 U
TOC	NL	NL	NL	%	2.71		3.56		5.29		1.79		3.64	

Table 3-7b
Area 2 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-32		HB10-2-33		HB10-2-33		HB10-2-34		HB10-2-34	
				Field Sample ID	HB10-2-32-06DP		HB10-2-33-06		HB10-2-33-22		HB10-2-34-06		HB10-2-34-06DP	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 6		0- 6		12- 22		0- 6		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	3.6 U	3.6 U	1.9 U	1.9 U	2.1 U	2.1 U	2.7 U	2.7 U	1.6 J	0.49
MONOBUTYLTIN	NL	NL	NL	µg/kg	14 UJ	14 UJ	7.3 UJ	7.3 UJ	7.9 UJ	7.9 UJ	10 UJ	10 UJ	9.5 UJ	9.5 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	4.7 U	4.7 U	2.5 U	2.5 U	2.7 U	2.7 U	3.5 U	3.5 U	3.2 U	3.2 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	4.1 U	4.1 U	2.2 U	2.2 U	2.4 U	2.4 U	2.9 J	0.70	3.8	1.2
TOC	NL	NL	NL	%	3.4		0.99		3.77		4.12		3.25	

Table 3-7b
Area 2 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-35		HB10-2-35		HB10-2-35		HB10-2-36		HB10-2-36	
				Field Sample ID	HB10-2-35-06		HB10-2-35-12		HB10-2-35-30		HB10-2-36-06		HB10-2-36-06DP	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 6		0- 12		12- 30		0- 6		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	1.8 U	1.8 U	1.9 U	1.9 U	2 U	2 U	2.7 U	2.7 U	2.7 U	2.7 U
MONOBUTYLTIN	NL	NL	NL	µg/kg	7.1 UJ	7.1 UJ	7.5 UJ	7.5 UJ	7.8 UJ	7.8 UJ	10 UJ	10 UJ	10 UJ	10 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	2.4 U	2.4 U	2.5 U	2.5 U	2.6 U	2.6 U	3.5 U	3.5 U	3.6 U	3.6 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	2.1 U	2.1 U	2.2 U	2.2 U	2.3 U	2.3 U	3.1 U	3.1 U	3.1 U	3.1 U
TOC	NL	NL	NL	%	0.702		1.44		3.08		3.05		16.2	

Table 3-7b
Area 2 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-37		HB10-2-37		HB10-2-38		HB10-2-38		HB10-2-38	
				Field Sample ID	HB10-2-37-06		HB10-2-37-23		HB10-2-38-06		HB10-2-38-06DP		HB10-2-38-12	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 6		12- 23		0- 6		0- 6		0- 12	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	1.7 U	1.7 U	1.8 U	1.8 U	2.7 J	0.48	3.2 U	3.2 U	2.3 U	2.3 U
MONOBUTYLTIN	NL	NL	NL	µg/kg	6.4 UJ	6.4 UJ	7.0 UJ	7.0 UJ	12 UJ	12 UJ	12 UJ	12 UJ	8.8 UJ	8.8 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	2.2 U	2.2 U	2.4 U	2.4 U	4.2 U	4.2 U	4.1 U	4.1 U	3 U	3 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	1.9 U	1.9 U	2.1 U	2.1 U	4.2	0.75	2.9 J	0.52	2.6 U	2.6 U
TOC	NL	NL	NL	%	0.423		0.648		5.6		5.6*		3.32	

Table 3-7b
Area 2 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-38		HB10-2-39		HB10-2-39		HB10-2-39		HB10-2-40	
				Field Sample ID	HB10-2-38-38		HB10-2-39-06		HB10-2-39-12		HB10-2-39-28		HB10-2-40-06	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	36- 38		0- 6		0- 12		12- 28		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	1.9 U	1.9 U	1.7 U	1.7 U	1.9 U	1.9 U	3 U	3 U	2.4 J	2.4 J
MONOBUTYLTIN	NL	NL	NL	µg/kg	7.3 UJ	7.3 UJ	6.6 UJ	6.6 UJ	7.1 UJ	7.1 UJ	11 UJ	11 UJ	11 UJ	11 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	2.5 U	2.5 U	2.3 U	2.3 U	2.4 U	2.4 U	3.9 U	3.9 U	3.9 U	3.9 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	2.2 U	2.2 U	2 U	2 U	2.1 U	2.1 U	3.4 U	3.4 U	3.8	1.1
TOC	NL	NL	NL	%	4.03		0.506		1.68		11.1		3.39	

Table 3-7b
Area 2 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-40		HB10-2-40		HB10-2-40		HB10-2-41		HB10-2-41	
				Field Sample ID	HB10-2-40-12		HB10-2-40-36		HB10-2-40-48		HB10-2-41-06		HB10-2-41-12	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	0- 12		12- 36		36- 48		0- 6		0- 12	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	1.4 J	0.57	1.8 U	1.8 U	2.1 U	2.1 U	3.7 U	3.7 U	1.8 U	1.8 U
MONOBUTYLTIN	NL	NL	NL	µg/kg	8.2 UJ	8.2 UJ	6.9 UJ	6.9 UJ	7.9 UJ	7.9 UJ	14 UJ	14 UJ	7.1 UJ	7.1 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	2.8 U	2.8 U	2.4 U	2.4 U	2.7 U	2.7 U	4.8 U	4.8 U	2.4 U	2.4 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	1.9 J	0.78	2.1 U	2.1 U	2.4 U	2.4 U	4.2 U	4.2 U	2.1 U	2.1 U
TOC	NL	NL	NL	%	2.44		0.886		1.17		6.73		1.99	

Table 3-7b
Area 2 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-41		HB10-2-42		HB10-2-42		HB10-2-42		HB10-2-43	
				Field Sample ID	HB10-2-41-31		HB10-2-42-06		HB10-2-42-12		HB10-2-42-30		HB10-2-43-06	
				Sample Date	10/18/2010		10/18/2010		10/18/2010		10/18/2010		10/17/2010	
				Depth Interval	12- 31		0- 6		0- 12		12- 30		0- 6	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	1.7 U	1.7 U	1.9 U	1.9 U	2 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U
MONOBUTYLTIN	NL	NL	NL	µg/kg	6.6 UJ	6.6 UJ	7.4 UJ	7.4 UJ	7.8 UJ	7.8 UJ	7.3 UJ	7.3 UJ	7.1 UJ	7.1 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	2.2 U	2.2 U	2.5 U	2.5 U	2.7 U	2.7 U	2.5 U	2.5 U	2.4 U	2.4 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	2 U	2 U	2.2 U	2.2 U	2.3 U	2.3 U	2.2 U	2.2 U	2.1 U	2.1 U
TOC	NL	NL	NL	%	1.12		8.84		10.4		2.8		0.783	

Table 3-7b
Area 2 Sediment Sample Analytical Results - Organotins
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

				Location ID	HB10-2-43		HB10-2-44		HB10-2-44		HB10-2-45		HB10-2-45	
				Field Sample ID	HB10-2-43-22		HB10-2-44-06		HB10-2-44-16		HB10-2-45-06		HB10-2-45-19	
				Sample Date	10/17/2010		10/18/2010		10/18/2010		10/18/2010		10/18/2010	
				Depth Interval	12- 22		0- 6		12- 16		0- 6		12- 19	
				Concentration	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC	SS Conc.	Norm. 1% TOC
Chemical Name	TEC ¹	MEC ¹	PEC ¹	Unit										
DIBUTYLTIN	NL	NL	NL	µg/kg	2.1 U	2.1 U	3.1	0.88	2 U	2 U	2.2 U	2.2 U	1.9 U	1.9 U
MONOBUTYLTIN	NL	NL	NL	µg/kg	8.0 UJ	8.0 UJ	11 UJ	11 UJ	7.9 UJ	7.9 UJ	8.4 UJ	8.4 UJ	7.3 UJ	7.3 UJ
TETRABUTYLTIN	NL	NL	NL	µg/kg	2.7 U	2.7 U	3.6 U	3.6 U	2.7 U	2.7 U	2.9 U	2.9 U	2.5 U	2.5 U
TRIBUTYLTIN	0.52	1.73	2.94	µg/kg	2.4 U	2.4 U	9.1	2.6	2.4 U	2.4 U	2.5 U	2.5 U	2.2 U	2.2 U
TOC	NL	NL	NL	%	4.65		3.51		4.91		4.44		2.61	

Notes:

Level II Concern: >TEC and ≤MEC

Level III Concern: >MEC and ≤PEC

Level IV Concern: >PEC

B - Analyte found in method blank

DP - Duplicate

ID - Identification

J - Estimated value

MEC - Median Effects Concentration

NL - Not Listed

Norm. - Normalized to 1% TOC

PEC - Probable Effect Concentration

SQG - Sediment Quality Guidelines

SS Conc. - Study Site Concentration

TEC - Threshold Effects Concentration

TOC - Total Organic Carbon

U - Not detected

µg/kg - Microgram per kilogram

WDNR - Wisconsin Department of Natural Resources

*TOC not analyzed, used result for investigative sample

¹ WDNR Consensus-Based SQGs

Table 3-8a
Area 1 Sediment Sample Analytical Results - AVS/SEM
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-04	HB10-1-05	HB10-1-05	HB10-1-07	HB10-1-08	HB10-1-10	HB10-1-11	HB10-1-12	HB10-1-13
	Field Sample ID	HB10-1-04-06	HB10-1-05-06	HB10-1-05-06DP	HB10-1-07-06	HB10-1-08-06	HB10-1-10-06	HB10-1-11-06	HB10-1-12-06	HB10-1-13-06
	Sample Date	10/17/2010	10/16/2010	10/16/2010	10/17/2010	10/17/2010	10/18/2010	10/16/2010	10/17/2010	10/18/2010
	Depth Interval	0- 6	0- 6	0- 6	0- 6	0- 6	0- 6	0- 6	0- 6	0- 6
Chemical Name	Unit									
CADMIUM	μmole/g	0.00068	0.0018	0.0018	0.0025	0.0013	0.0016	0.0022	0.0017	0.0024
COPPER	μmole/g	0.0082	0.0443	0.0485	0.0226	0.0128	0.0363	0.0505	0.0256	0.0528
LEAD	μmole/g	0.037	0.057	0.064	0.076	0.039	0.059	0.084	0.061	0.105
NICKEL	μmole/g	0.012	0.031	0.027	0.029	0.015	0.024	0.032	0.018	0.036
SILVER	μmole/g	0.0013 U	0.0026 U	0.0023 U	0.002 U	0.0021 U	0.0029 U	0.0025 U	0.0016 U	0.0026 U
SULFIDE	μmole/g	2.79	4.23	3.75	1.71	3.55	1.81	1.63	0.75	3.55
ZINC	μmole/g	0.301	0.488	0.447	0.624	0.327	0.434	0.598	0.393	0.675
Ratio of SEM/AVS	S.U.	0.128630824	0.147068558	0.15688	0.440994152	0.111295775	0.306574586	0.470368098	0.665733333	0.245408451
SEM - AVS	μmole/g	-2.43112	-3.6079	-3.1617	-0.9559	-3.1549	-1.2551	-0.8633	-0.2507	-2.6788
Sum SEM	μmole/g	0.35888	0.6221	0.5883	0.7541	0.3951	0.5549	0.7667	0.4993	0.8712
(Sum SEM - AVS)/f _{oc}	μmole/g _{oc}	-45.95689981	-169.3849765	-161.3112245	-41.9254386	-81.94545455	-34.96100279	-27.31962025	-7.373529412	-79.72619048

Table 3-8a
Area 1 Sediment Sample Analytical Results - AVS/SEM
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-14	HB10-1-15	HB10-1-16	HB10-1-16	HB10-1-16	HB10-1-17	HB10-1-20	HB10-1-21	HB10-1-21
	Field Sample ID	HB10-1-14-06	HB10-1-15-06	HB10-1-16-06	HB10-1-16-12	HB10-1-16-31	HB10-1-17-06	HB10-1-20-06	HB10-1-21-06	HB10-1-21-23
	Sample Date	10/17/2010	10/18/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/18/2010	10/18/2010
	Depth Interval	0- 6	0- 6	0- 6	0- 12	12- 31	0- 6	0- 6	0- 6	12- 23
Chemical Name	Unit									
CADMIUM	μmole/g	0.00093 U	0.0006 U	0.00079 U	0.0023 U	0.003 U	0.0013	0.00095 U	0.00049 U	0.00082 U
COPPER	μmole/g	0.0183	0.005 J	0.0152 J	0.0411 J	0.101 J	0.0318	0.0145 J	0.0189 J	0.0235 J
LEAD	μmole/g	0.039	0.012 J	0.026 J	0.103 J	0.138 J	0.056	0.027 J	0.036 J	0.047 J
NICKEL	μmole/g	0.016	0.005 U	0.014	0.031	0.04	0.02	0.012	0.007	0.012
SILVER	μmole/g	0.002 U	0.0013 U	0.0013 U	0.0023 U	0.0026 U	0.0019 U	0.0013 U	0.001 U	0.0013 U
SULFIDE	μmole/g	1.11	0.285	3.74	3.22	2.02	1.1	1.65	2.3	2.17
ZINC	μmole/g	0.287	0.0843	0.224	0.868	1.18	0.355	0.253	0.127	0.312
Ratio of SEM/AVS	S.U.	0.324594595	0.355438596	0.074652406	0.323944099	0.722277228	0.421909091	0.185757576	0.082130435	0.181797235
SEM - AVS	μmole/g	-0.7497	-0.1837	-3.4608	-2.1769	-0.561	-0.6359	-1.3435	-2.1111	-1.7755
Sum SEM	μmole/g	0.3603	0.1013	0.2792	1.0431	1.459	0.4641	0.3065	0.1889	0.3945
(Sum SEM - AVS)/f _{oc}	μmole/g _{oc}	-26.39788732	-10.68023256	-161.7196262	-48.91910112	-6.883435583	-7.764346764	-64.59134615	-248.6572438	-131.5185185

Table 3-8a
Area 1 Sediment Sample Analytical Results - AVS/SEM
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-24	HB10-1-24	HB10-1-24	HB10-1-29	HB10-1-29	HB10-1-29	HB10-1-29	HB10-1-29
	Field Sample ID	HB10-1-24-06	HB10-1-24-12	HB10-1-24-36	HB10-1-29-06	HB10-1-29-12	HB10-1-29-36	HB10-1-29-60	HB10-1-29-93
	Sample Date	10/18/2010	10/18/2010	10/18/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010
	Depth Interval	0- 6	0- 12	12- 36	0- 6	0- 12	12- 36	36- 60	60- 93
Chemical Name	Unit								
CADMIUM	µmole/g	0.0033	0.0015	0.0055	0.0068	0.009	0.0106	0.0097	0.0017
COPPER	µmole/g	0.0437	0.0878	0.0701	0.125	0.0804	0.0163	0.0313	0.0237
LEAD	µmole/g	0.172	0.113	0.288	0.309	0.561	0.35	0.442	0.083
NICKEL	µmole/g	0.045	0.013	0.044	0.054	0.084	0.042	0.045	0.01
SILVER	µmole/g	0.003 U	0.0032 U	0.0027 U	0.0032 U	0.0031 U	0.0038 U	0.0032 U	0.0021 U
SULFIDE	µmole/g	5.1	0.626	9.42	7.5	23	23.6	18.2	5.81
ZINC	µmole/g	1.28	0.57	2.24	2.19	3.18	4.9	4.82	1.18
Ratio of SEM/AVS	S.U.	0.302745098	1.254472843	0.281061571	0.357973333	0.170191304	0.225377119	0.293846154	0.223476764
SEM - AVS	µmole/g	-3.556	0.1593	-6.7724	-4.8152	-19.0856	-18.2811	-12.852	-4.5116
Sum SEM	µmole/g	1.544	0.7853	2.6476	2.6848	3.9144	5.3189	5.348	1.2984
(Sum SEM - AVS)/f _{oc}	µmole/g _{oc}	-64.07207207	2.859964093	-113.440536	-47.20784314	-165.9617391	-110.7945455	-85.68	-31.99716312

Notes:

AVS/SEM - Acid Volatile Sulfide/Simultaneously Extracted Metal

DP - Duplicate

f_{oc} - Fraction of organic carbon

g_{oc} - Gram of organic carbon

S.U. - Standard Unit

U - Not detected

µmole/g - Micromole per gram

Table 3-8b
Area 2 Sediment Sample Analytical Results - AVS/SEM
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-2-26	HB10-2-33	HB10-2-35	HB10-2-37	HB10-2-39	HB10-2-40	HB10-2-41	HB10-2-42	HB10-2-43
	Field Sample ID	HB10-2-26-06	HB10-2-33-06	HB10-2-35-06	HB10-2-37-06	HB10-2-39-06	HB10-2-40-06	HB10-2-41-06	HB10-2-42-06	HB10-2-43-06
	Sample Date	10/16/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/17/2010
	Depth Interval	0- 6	0- 6	0- 6	0- 6	0- 6	0- 6	0- 6	0- 6	0- 6
Chemical Name	Unit									
CADMIUM	μmole/g	0.0019	0.00076 U	0.00058 U	0.00054 U	0.00057 U	0.002	0.0012 U	0.0014	0.00092
COPPER	μmole/g	0.0481 J	0.0094	0.0082	0.0134	0.0191	0.0541	0.0274 J	0.0335	0.0594
LEAD	μmole/g	0.098 J	0.027	0.019	0.028	0.041	0.152	0.058 J	0.08	0.021
NICKEL	μmole/g	0.015	0.008	0.005	0.004 U	0.005	0.041	0.014	0.014	0.013
SILVER	μmole/g	0.0021 U	0.0016 U	0.0012 U	0.0011 U	0.0012 U	0.0028 U	0.0026 U	0.0024 U	0.0011 U
SULFIDE	μmole/g	5.38	1.48	1.46	0.02 U	0.114	2.41	2	4.87	0.62
ZINC	μmole/g	0.661	0.207	0.0992	0.0905	0.16	0.727	0.352	0.584	0.27
Ratio of SEM/AVS	S.U.	0.153159851	0.169864865	0.09	13.19	1.974561404	0.405020747	0.2257	0.146386037	0.587612903
SEM - AVS	μmole/g	-4.556	-1.2286	-1.3286	0.1219	0.1111	-1.4339	-1.5486	-4.1571	-0.25568
Sum SEM	μmole/g	0.824	0.2514	0.1314	0.1319	0.2251	0.9761	0.4514	0.7129	0.36432
(Sum SEM - AVS)/f _{oc}	μmole/g _{oc}	-86.12476371	-124.1010101	-189.2592593	28.8179669	21.95652174	-42.2979351	-23.01040119	-47.0260181	-32.65389527

Notes:

AVS/SEM - Acid Volatile Sulfide/Simultaneously Extracted Metal

DP - Duplicate

f_{oc} - Fraction of organic carbon

g_{oc} - Gram of organic carbon

S.U. - Standard Unit

U - Not detected

μmole/g - Micromole per gram

Table 3-9a
Area 1 Sediment Sample Analytical Results - Physical Properties
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-01	HB10-1-01	HB10-1-01	HB10-1-02	HB10-1-02	HB10-1-02	HB10-1-03
	Field Sample ID	HB10-1-01-06	HB10-1-01-12	HB10-1-01-40	HB10-1-02-06	HB10-1-02-06DP	HB10-1-02-23	HB10-1-03-06
	Sample Date	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/16/2010
	Depth Interval	0- 6	0- 12	36- 40	0- 6	0- 6	12- 23	0- 6
Chemical Name	Unit							
Grain Size								
GRAVEL	%	6	3.7	0.5	0	NA	0	2.5
SAND	%	35.1	12.9	40.2	24.4	NA	26.8	25.5
SILT	%	36.3	50.8	26.3	52.7	NA	55	53.4
CLAY	%	22.6	32.6	33	22.9	NA	18.2	18.6
COARSE SAND	%	2.6	0.3	1.2	0	NA	0	0.3
MEDIUM SAND	%	13.9	1	11.5	1.1	NA	1.3	0.6
FINE SAND	%	18.6	11.6	27.5	23.3	NA	25.5	24.6
SIEVE SIZE 3 INCH - % FINER	% PASSED	100	100	100	100	NA	100	100
SIEVE SIZE 2 INCH - % FINER	% PASSED	100	100	100	100	NA	100	100
SIEVE SIZE 1.5 INCH - % FINER	% PASSED	100	100	100	100	NA	100	100
SIEVE SIZE 1 INCH - % FINER	% PASSED	100	100	100	100	NA	100	100
SIEVE SIZE 0.75 INCH - % FINER	% PASSED	100	100	100	100	NA	100	100
SIEVE SIZE 0.375 INCH - % FINER	% PASSED	95.1	100	100	100	NA	100	98.9
SIEVE SIZE #4 - % FINER	% PASSED	94	96.3	99.5	100	NA	100	97.5
SIEVE SIZE #10 - % FINER	% PASSED	91.4	96	98.3	100	NA	100	97.2
SIEVE SIZE #20 - % FINER	% PASSED	86.3	95.6	94.9	99.5	NA	99.4	97.1
SIEVE SIZE #40 - % FINER	% PASSED	77.5	95	86.8	98.9	NA	98.7	96.6
SIEVE SIZE #60 - % FINER	% PASSED	68.8	93.9	74.9	97.9	NA	97.5	93.7
SIEVE SIZE #80 - % FINER	% PASSED	64.2	92.8	69.3	94	NA	92.6	88.7
SIEVE SIZE #100 - % FINER	% PASSED	62.9	91.9	67.1	92.5	NA	90.9	86.2
SIEVE SIZE #200 - % FINER	% PASSED	58.9	83.4	59.3	75.6	NA	73.2	72
HYDROMETER READING 1 - % FINER	% PASSED	43.8	50.9	46.9	44.3	NA	43.4	39.8
HYDROMETER READING 2 - % FINER	% PASSED	39.2	47.3	44.3	38.2	NA	35	34.2
HYDROMETER READING 3 - % FINER	% PASSED	33.2	41.9	40.6	32.1	NA	28	27.1
HYDROMETER READING 4 - % FINER	% PASSED	27.2	38.3	36.8	26	NA	23.8	21.4
HYDROMETER READING 5 - % FINER	% PASSED	22.6	32.6	33	22.9	NA	18.2	18.6
HYDROMETER READING 6 - % FINER	% PASSED	16.9	25.6	26.7	17	NA	15.6	14.4
HYDROMETER READING 7 - % FINER	% PASSED	10.6	18.1	18.9	12.5	NA	12.8	9.9
TOC								
TOC	%	2.16	5.31	1.85	2.46	2.19	2.22	0.181

Table 3-9a
Area 1 Sediment Sample Analytical Results - Physical Properties
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-03	HB10-1-03	HB10-1-03	HB10-1-03	HB10-1-04	HB10-1-04	HB10-1-04	HB10-1-04
	Field Sample ID	HB10-1-03-12	HB10-1-03-36	HB10-1-03-60	HB10-1-03-84	HB10-1-04-06	HB10-1-04-12	HB10-1-04-36	HB10-1-04-50
	Sample Date	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010
	Depth Interval	0- 12	12- 36	36- 60	60- 84	0- 6	0- 12	12- 36	36- 50
Chemical Name	Unit								
Grain Size									
GRAVEL	%	0.5	0	0	0.2	1.3	5.8	3	2.2
SAND	%	35.9	30.9	21.3	34	64.1	56	53.6	56.1
SILT	%	43.4	49.7	49.2	43.4	29.1	30.8	26.4	19.7
CLAY	%	20.2	19.4	29.5	22.4	5.5	7.4	17	22
COARSE SAND	%	0.2	0	0	0.4	1.4	4.2	3.4	2.6
MEDIUM SAND	%	1.2	1.5	0.6	4.2	6.4	8.7	10.6	13.1
FINE SAND	%	34.5	29.4	20.7	29.4	56.3	43.1	39.6	40.4
SIEVE SIZE 3 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 2 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 1.5 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 1 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 0.75 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 0.375 INCH - % FINER	% PASSED	100	100	100	99.8	100	97.9	99	98.3
SIEVE SIZE #4 - % FINER	% PASSED	99.5	100	100	99.8	98.7	94.2	97	97.8
SIEVE SIZE #10 - % FINER	% PASSED	99.3	100	100	99.4	97.3	90	93.6	95.2
SIEVE SIZE #20 - % FINER	% PASSED	99.1	99.8	100	98.4	95.2	86.1	89.7	90.5
SIEVE SIZE #40 - % FINER	% PASSED	98.1	98.5	99.4	95.2	90.9	81.3	83	82.1
SIEVE SIZE #60 - % FINER	% PASSED	95.3	95.8	98.2	91.3	81.4	71.4	69.1	66.8
SIEVE SIZE #80 - % FINER	% PASSED	84.9	88.5	94.5	84.1	68.6	60.7	58	55.6
SIEVE SIZE #100 - % FINER	% PASSED	81.7	86.5	93.2	82.4	61.6	55.9	53.8	51.6
SIEVE SIZE #200 - % FINER	% PASSED	63.6	69.1	78.7	65.8	34.6	38.2	43.4	41.7
HYDROMETER READING 1 - % FINER	% PASSED	47.2	37.7	54.4	39.6	13.1	15.7	30.4	34.5
HYDROMETER READING 2 - % FINER	% PASSED	36.4	32	45	34.3	10.1	13.8	25.9	30.4
HYDROMETER READING 3 - % FINER	% PASSED	28.3	26.3	37.3	27.7	7	10.2	22.6	26.2
HYDROMETER READING 4 - % FINER	% PASSED	22.9	21.7	32.6	23.7	5.5	8.4	19.2	24.1
HYDROMETER READING 5 - % FINER	% PASSED	20.2	19.4	29.5	22.4	5.5	7.4	17	22
HYDROMETER READING 6 - % FINER	% PASSED	15	15.1	22	17.4	3.2	4.7	12.5	15.6
HYDROMETER READING 7 - % FINER	% PASSED	12.4	10.5	14.2	12.1	2.4	2.9	8	10.6
TOC									
TOC	%	1.59	1.97	2.57	1.94	1.88	2.53	3.3	4.64

Table 3-9a
Area 1 Sediment Sample Analytical Results - Physical Properties
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-05	HB10-1-05	HB10-1-06	HB10-1-06	HB10-1-06	HB10-1-06	HB10-1-06	HB10-1-07
	Field Sample ID	HB10-1-05-06	HB10-1-05-06DP	HB10-1-06-06	HB10-1-06-06DP	HB10-1-06-12	HB10-1-06-36	HB10-1-06-51	HB10-1-07-06
	Sample Date	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/16/2010	10/17/2010
	Depth Interval	0- 6	0- 6	0- 6	0- 6	0- 12	12- 36	36- 51	0- 6
Chemical Name	Unit								
Grain Size									
GRAVEL	%	12.3	NA	0.1	NA	0	3.4	0	0.4
SAND	%	32.3	NA	36.4	NA	25.5	18.9	10.8	41.2
SILT	%	29.1	NA	40.1	NA	46.3	50.5	48.5	38.4
CLAY	%	26.3	NA	23.4	NA	28.2	27.2	40.7	20
COARSE SAND	%	1.1	NA	0.6	NA	0.7	1.5	0	1.5
MEDIUM SAND	%	5.9	NA	1	NA	3.9	1.3	0.3	7.4
FINE SAND	%	25.3	NA	34.8	NA	20.9	16.1	10.5	32.3
SIEVE SIZE 3 INCH - % FINER	% PASSED	100	NA	100	NA	100	100	100	100
SIEVE SIZE 2 INCH - % FINER	% PASSED	100	NA	100	NA	100	100	100	100
SIEVE SIZE 1.5 INCH - % FINER	% PASSED	100	NA	100	NA	100	100	100	100
SIEVE SIZE 1 INCH - % FINER	% PASSED	100	NA	100	NA	100	100	100	100
SIEVE SIZE 0.75 INCH - % FINER	% PASSED	100	NA	100	NA	100	100	100	100
SIEVE SIZE 0.375 INCH - % FINER	% PASSED	87.8	NA	100	NA	100	100	100	100
SIEVE SIZE #4 - % FINER	% PASSED	87.7	NA	99.9	NA	100	96.6	100	99.6
SIEVE SIZE #10 - % FINER	% PASSED	86.6	NA	99.3	NA	99.3	95.1	100	98.1
SIEVE SIZE #20 - % FINER	% PASSED	84.8	NA	99.1	NA	97.9	94.5	100	95.5
SIEVE SIZE #40 - % FINER	% PASSED	80.7	NA	98.3	NA	95.4	93.8	99.7	90.7
SIEVE SIZE #60 - % FINER	% PASSED	74.6	NA	95.4	NA	92.9	93	99.1	83.2
SIEVE SIZE #80 - % FINER	% PASSED	68.3	NA	79.6	NA	87.4	90.6	96.7	73.8
SIEVE SIZE #100 - % FINER	% PASSED	65.8	NA	76	NA	86	89.6	95.9	70.2
SIEVE SIZE #200 - % FINER	% PASSED	55.4	NA	63.5	NA	74.5	77.7	89.2	58.4
HYDROMETER READING 1 - % FINER	% PASSED	39.5	NA	42.2	NA	46.5	50.5	67.4	39
HYDROMETER READING 2 - % FINER	% PASSED	36.3	NA	36.7	NA	40.7	42.7	57.3	32.1
HYDROMETER READING 3 - % FINER	% PASSED	33	NA	29.9	NA	33.9	35	52.2	28.1
HYDROMETER READING 4 - % FINER	% PASSED	29.7	NA	25.9	NA	30.5	29.8	45.8	23
HYDROMETER READING 5 - % FINER	% PASSED	26.3	NA	23.4	NA	28.2	27.2	40.7	20
HYDROMETER READING 6 - % FINER	% PASSED	20.7	NA	19.3	NA	25	20.9	32	15.1
HYDROMETER READING 7 - % FINER	% PASSED	15.2	NA	13.8	NA	17.1	14.5	24.4	10.1
TOC									
TOC	%	2.13	1.96	2.31	2.42	1.97	4.38	3.14	2.28

Table 3-9a
Area 1 Sediment Sample Analytical Results - Physical Properties
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-07	HB10-1-07	HB10-1-07	HB10-1-08	HB10-1-08	HB10-1-08	HB10-1-10	HB10-1-11
	Field Sample ID	HB10-1-07-12	HB10-1-07-36	HB10-1-07-64	HB10-1-08-06	HB10-1-08-12	HB10-1-08-36	HB10-1-10-06	HB10-1-11-06
	Sample Date	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/18/2010	10/16/2010
	Depth Interval	0- 12	12- 36	60- 64	0- 6	0- 12	12- 36	0- 6	0- 6
Chemical Name	Unit								
Grain Size									
GRAVEL	%	0.9	0	0	0	0.1	0	1.3	0
SAND	%	33.6	30.7	58.3	26.7	16.6	23.7	44.3	38
SILT	%	39.8	52.7	36.7	58.1	64.1	45.2	38.7	34.8
CLAY	%	25.7	16.6	5	15.2	19.2	31.1	15.7	27.2
COARSE SAND	%	0.4	0.2	0	0.2	0.1	0.1	0.6	0
MEDIUM SAND	%	6	1.6	0.5	1.7	1.2	3	2.7	3.4
FINE SAND	%	27.2	28.9	57.8	24.8	15.3	20.6	41	34.6
SIEVE SIZE 3 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 2 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 1.5 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 1 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 0.75 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 0.375 INCH - % FINER	% PASSED	100	100	100	100	99.9	100	99.4	100
SIEVE SIZE #4 - % FINER	% PASSED	99.1	100	100	100	99.9	100	98.7	100
SIEVE SIZE #10 - % FINER	% PASSED	98.7	99.8	100	99.8	99.8	99.9	98.1	100
SIEVE SIZE #20 - % FINER	% PASSED	97.2	99.5	99.9	99.2	99.2	98.9	97.5	99.2
SIEVE SIZE #40 - % FINER	% PASSED	92.7	98.2	99.5	98.1	98.6	96.9	95.4	96.6
SIEVE SIZE #60 - % FINER	% PASSED	85.5	95.9	94.9	95.5	97	93.1	83.6	90.5
SIEVE SIZE #80 - % FINER	% PASSED	77.6	89.1	80.6	91	94.6	88.6	67.3	76.3
SIEVE SIZE #100 - % FINER	% PASSED	74.9	85.7	70.3	88.8	93.4	86.4	62.6	72.9
SIEVE SIZE #200 - % FINER	% PASSED	65.5	69.3	41.7	73.3	83.3	76.3	54.4	62
HYDROMETER READING 1 - % FINER	% PASSED	47.3	39	15.9	28.9	39.4	53.5	39.2	47.3
HYDROMETER READING 2 - % FINER	% PASSED	41.9	31.3	10.4	23.4	31.8	46.5	33.7	41.6
HYDROMETER READING 3 - % FINER	% PASSED	36.6	24.5	7.7	18	25.5	39.5	25.3	33
HYDROMETER READING 4 - % FINER	% PASSED	31.2	19.7	6.4	16.6	21.7	35.3	19.8	30.1
HYDROMETER READING 5 - % FINER	% PASSED	25.7	16.6	5	15.2	19.2	31.1	15.7	27.2
HYDROMETER READING 6 - % FINER	% PASSED	20.3	12.7	3.5	9.5	13.9	23.8	12.7	21.7
HYDROMETER READING 7 - % FINER	% PASSED	13.6	8.9	2.8	4.3	9.1	15.6	8.6	16
TOC									
TOC	%	2.76	3.19	1.13	3.85	4.01	5.51	3.59	3.16

Table 3-9a
Area 1 Sediment Sample Analytical Results - Physical Properties
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-11	HB10-1-12	HB10-1-12	HB10-1-12	HB10-1-13	HB10-1-13	HB10-1-13	HB10-1-13
	Field Sample ID	HB10-1-11-21	HB10-1-12-06	HB10-1-12-12	HB10-1-12-34	HB10-1-13-06	HB10-1-13-12	HB10-1-13-36	HB10-1-13-67
	Sample Date	10/16/2010	10/17/2010	10/17/2010	10/17/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
	Depth Interval	12- 21	0- 6	0- 12	12- 34	0- 6	0- 12	12- 36	60- 67
Chemical Name	Unit								
Grain Size									
GRAVEL	%	0.2	0	0	17.2	2.3	2.5	0	0.2
SAND	%	23.5	41	29.3	23.6	40.8	32.6	46	46.2
SILT	%	44	42.4	46.7	31.9	32.7	35.4	33	34.7
CLAY	%	32.3	16.6	24	27.3	24.2	29.5	21	18.9
COARSE SAND	%	0.5	0.3	0.3	3.3	1	2.3	0.5	0.5
MEDIUM SAND	%	2.5	2.2	1.9	3.1	5.8	4.3	3.3	3.7
FINE SAND	%	20.5	38.5	27.1	17.2	34	26	42.2	42
SIEVE SIZE 3 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 2 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 1.5 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 1 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 0.75 INCH - % FINER	% PASSED	100	100	100	94.7	100	100	100	100
SIEVE SIZE 0.375 INCH - % FINER	% PASSED	100	100	100	87.5	98.2	100	100	100
SIEVE SIZE #4 - % FINER	% PASSED	99.8	100	100	82.8	97.7	97.5	100	99.8
SIEVE SIZE #10 - % FINER	% PASSED	99.3	99.7	99.7	79.5	96.7	95.2	99.5	99.3
SIEVE SIZE #20 - % FINER	% PASSED	98.6	98.7	98.8	78.3	95.4	94.3	98.9	98.7
SIEVE SIZE #40 - % FINER	% PASSED	96.8	97.5	97.8	76.4	90.9	90.9	96.2	95.6
SIEVE SIZE #60 - % FINER	% PASSED	93.7	90	93.5	73.2	78.2	81.5	82.7	80.3
SIEVE SIZE #80 - % FINER	% PASSED	86.3	80.3	87.6	70.3	66.3	72.6	67.5	65.1
SIEVE SIZE #100 - % FINER	% PASSED	84.4	75.4	84.6	68.7	62.9	70.2	62.9	61
SIEVE SIZE #200 - % FINER	% PASSED	76.3	59	70.7	59.2	56.9	64.9	54	53.6
HYDROMETER READING 1 - % FINER	% PASSED	56.6	30.2	40.6	47.3	42.6	48.5	39.1	35.6
HYDROMETER READING 2 - % FINER	% PASSED	50.1	26.3	34.4	41.9	38.3	44.7	35.5	32.7
HYDROMETER READING 3 - % FINER	% PASSED	40.4	22.4	30.2	36.4	31.8	39.6	28.2	26.8
HYDROMETER READING 4 - % FINER	% PASSED	37.2	20.5	27.1	31	26.4	34.6	24.6	21.8
HYDROMETER READING 5 - % FINER	% PASSED	32.3	16.6	24	27.3	24.2	29.5	21	18.9
HYDROMETER READING 6 - % FINER	% PASSED	26.1	12.6	17.6	20.3	18.8	21.7	15.9	14.9
HYDROMETER READING 7 - % FINER	% PASSED	18	8.9	11.6	13.1	12.3	15.6	11.1	10
TOC									
TOC	%	3.79	3.4	4.44	16.2	3.36	2.75	2.01	2.24

Table 3-9a
Area 1 Sediment Sample Analytical Results - Physical Properties
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-14	HB10-1-14	HB10-1-14	HB10-1-14	HB10-1-15	HB10-1-15	HB10-1-16	HB10-1-16
	Field Sample ID	HB10-1-14-06	HB10-1-14-12	HB10-1-14-36	HB10-1-14-66	HB10-1-15-06	HB10-1-15-16	HB10-1-16-06	HB10-1-16-12
	Sample Date	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/18/2010	10/18/2010	10/17/2010	10/17/2010
	Depth Interval	0- 6	0- 12	12- 36	60- 66	0- 6	12- 16	0- 6	0- 12
Chemical Name	Unit								
Grain Size									
GRAVEL	%	0.1	0	1.7	0	2.7	7.6	3.9	4.7
SAND	%	43.8	36	41.5	27.8	79.7	62.1	61.3	48.8
SILT	%	40.8	41.2	36.9	42.6	14.1	14.7	25.7	26.7
CLAY	%	15.3	22.8	19.9	29.6	3.5	15.6	9.1	19.8
COARSE SAND	%	0.3	0.2	0.4	0.1	1.7	8.2	3.2	5.7
MEDIUM SAND	%	0.8	0.8	2.2	1.2	5.7	9.1	9.1	7.2
FINE SAND	%	42.7	35	38.9	26.5	72.3	44.8	49	35.9
SIEVE SIZE 3 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 2 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 1.5 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 1 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 0.75 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 0.375 INCH - % FINER	% PASSED	100	100	98.8	100	98.7	96.3	99.4	100
SIEVE SIZE #4 - % FINER	% PASSED	99.9	100	98.3	100	97.3	92.4	96.1	95.3
SIEVE SIZE #10 - % FINER	% PASSED	99.6	99.8	97.9	99.9	95.6	84.2	92.9	89.6
SIEVE SIZE #20 - % FINER	% PASSED	99.6	99.7	97.6	99.7	94.4	80.8	89.9	86
SIEVE SIZE #40 - % FINER	% PASSED	98.8	99	95.7	98.7	89.9	75.1	83.8	82.4
SIEVE SIZE #60 - % FINER	% PASSED	91.6	92.5	83.8	93.1	66	61.7	72.3	71.8
SIEVE SIZE #80 - % FINER	% PASSED	77.1	81	70	85.4	45.3	46.3	59.4	58.7
SIEVE SIZE #100 - % FINER	% PASSED	70.5	76.2	65.3	82.2	35.9	40.7	53.4	54.4
SIEVE SIZE #200 - % FINER	% PASSED	56.1	64	56.8	72.2	17.6	30.3	34.8	46.5
HYDROMETER READING 1 - % FINER	% PASSED	32.5	47.9	40.8	51.3	6.9	23.8	15.6	34
HYDROMETER READING 2 - % FINER	% PASSED	28.2	42.9	36.4	42.6	6.2	21	14	30.7
HYDROMETER READING 3 - % FINER	% PASSED	23.9	32.8	29.8	36.1	5.6	18.3	11.5	26.3
HYDROMETER READING 4 - % FINER	% PASSED	17.4	27.8	24.3	31.7	4.9	16.9	9.9	23.1
HYDROMETER READING 5 - % FINER	% PASSED	15.3	22.8	19.9	29.6	3.5	15.6	9.1	19.8
HYDROMETER READING 6 - % FINER	% PASSED	11	16.5	15.5	21.8	2.8	12.8	6.6	14.3
HYDROMETER READING 7 - % FINER	% PASSED	8.8	12.8	11.2	14.3	2.3	9.8	5.2	11.1
TOC									
TOC	%	2.84	2.75	3.98	4.42	1.72	11	2.14	4.45

Table 3-9a
Area 1 Sediment Sample Analytical Results - Physical Properties
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-16	HB10-1-17	HB10-1-20	HB10-1-21	HB10-1-21	HB10-1-23	HB10-1-23	HB10-1-23
	Field Sample ID	HB10-1-16-31	HB10-1-17-06	HB10-1-20-06	HB10-1-21-06	HB10-1-21-23	HB10-1-23-06	HB10-1-23-06DP	HB10-1-23-12
	Sample Date	10/17/2010	10/17/2010	10/17/2010	10/18/2010	10/18/2010	10/17/2010	10/17/2010	10/17/2010
	Depth Interval	12- 31	0- 6	0- 6	0- 6	12- 23	0- 6	0- 6	0- 12
Chemical Name	Unit								
Grain Size									
GRAVEL	%	2.8	1.5	1.5	14.1	14.6	0.2	NA	1.6
SAND	%	29.4	49.9	60.3	78.4	68.6	47.8	NA	37.3
SILT	%	42	31.4	26	3.5	6.3	40.6	NA	34.4
CLAY	%	25.8	17.2	12.2	4	10.5	11.4	NA	26.7
COARSE SAND	%	3.2	0.6	0.6	7.2	4	0.4	NA	0.9
MEDIUM SAND	%	3.6	5.3	3	20.6	12.4	4	NA	9.2
FINE SAND	%	22.6	44	56.7	50.6	52.2	43.4	NA	27.2
SIEVE SIZE 3 INCH - % FINER	% PASSED	100	100	100	100	100	100	NA	100
SIEVE SIZE 2 INCH - % FINER	% PASSED	100	100	100	100	100	100	NA	100
SIEVE SIZE 1.5 INCH - % FINER	% PASSED	100	100	100	100	100	100	NA	100
SIEVE SIZE 1 INCH - % FINER	% PASSED	100	100	100	100	100	100	NA	100
SIEVE SIZE 0.75 INCH - % FINER	% PASSED	100	100	100	100	93.6	100	NA	100
SIEVE SIZE 0.375 INCH - % FINER	% PASSED	100	98.6	99.1	93.1	87.6	100	NA	100
SIEVE SIZE #4 - % FINER	% PASSED	97.2	98.5	98.5	85.9	85.4	99.8	NA	98.4
SIEVE SIZE #10 - % FINER	% PASSED	94	97.9	97.9	78.7	81.4	99.4	NA	97.5
SIEVE SIZE #20 - % FINER	% PASSED	92.5	96.3	96.7	70.5	76.7	98.9	NA	94.1
SIEVE SIZE #40 - % FINER	% PASSED	90.4	92.6	94.9	58.1	69	95.4	NA	88.3
SIEVE SIZE #60 - % FINER	% PASSED	85.2	75.6	84.8	34	47.6	82.7	NA	78.3
SIEVE SIZE #80 - % FINER	% PASSED	77.3	61.4	68	15.9	28.6	72.5	NA	71.7
SIEVE SIZE #100 - % FINER	% PASSED	74.5	57	60.3	11.5	23.4	68.2	NA	69.5
SIEVE SIZE #200 - % FINER	% PASSED	67.8	48.6	38.2	7.4	16.8	52	NA	61.1
HYDROMETER READING 1 - % FINER	% PASSED	45.4	33.2	21.4	6.1	15.6	21.3	NA	42.8
HYDROMETER READING 2 - % FINER	% PASSED	40.5	28.2	18.7	5.6	14.1	19.1	NA	35.9
HYDROMETER READING 3 - % FINER	% PASSED	34.4	24.2	15	4.5	14.1	14.7	NA	31.3
HYDROMETER READING 4 - % FINER	% PASSED	29.5	21.2	14	4	11.2	12.5	NA	29
HYDROMETER READING 5 - % FINER	% PASSED	25.8	17.2	12.2	4	10.5	11.4	NA	26.7
HYDROMETER READING 6 - % FINER	% PASSED	18.5	13	8.5	2.8	8.2	9	NA	20.9
HYDROMETER READING 7 - % FINER	% PASSED	13.6	9.2	6.8	2.2	6	5.7	NA	14
TOC									
TOC	%	8.15	8.19	2.08	0.849	1.35	4.52	4.33	5.39

Table 3-9a
Area 1 Sediment Sample Analytical Results - Physical Properties
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-23	HB10-1-24	HB10-1-24	HB10-1-24	HB10-1-25	HB10-1-25	HB10-1-27	HB10-1-27
	Field Sample ID	HB10-1-23-36	HB10-1-24-06	HB10-1-24-12	HB10-1-24-36	HB10-1-25-06	HB10-1-25-06DP	HB10-1-27-06	HB10-1-27-06DP
	Sample Date	10/17/2010	10/18/2010	10/18/2010	10/18/2010	10/17/2010	10/17/2010	10/18/2010	10/18/2010
	Depth Interval	12- 36	0- 6	0- 12	12- 36	0- 6	0- 6	0- 6	0- 6
Chemical Name	Unit								
Grain Size									
GRAVEL	%	0.2	1.9	0.5	0.5	0	NA	0.8	NA
SAND	%	26.2	39.1	25.5	39.6	31.8	NA	12.9	NA
SILT	%	40.6	44.1	45.3	35.3	43.7	NA	36.3	NA
CLAY	%	33	14.9	28.7	24.6	24.5	NA	50	NA
COARSE SAND	%	0.4	0.5	0.5	0.3	0.4	NA	0.7	NA
MEDIUM SAND	%	1.7	1.7	1.5	1.5	3.1	NA	1.6	NA
FINE SAND	%	24.1	36.9	23.5	37.8	28.3	NA	10.6	NA
SIEVE SIZE 3 INCH - % FINER	% PASSED	100	100	100	100	100	NA	100	NA
SIEVE SIZE 2 INCH - % FINER	% PASSED	100	100	100	100	100	NA	100	NA
SIEVE SIZE 1.5 INCH - % FINER	% PASSED	100	100	100	100	100	NA	100	NA
SIEVE SIZE 1 INCH - % FINER	% PASSED	100	100	100	100	100	NA	100	NA
SIEVE SIZE 0.75 INCH - % FINER	% PASSED	100	100	100	100	100	NA	100	NA
SIEVE SIZE 0.375 INCH - % FINER	% PASSED	100	98.1	100	100	100	NA	100	NA
SIEVE SIZE #4 - % FINER	% PASSED	99.8	98.1	99.5	99.5	100	NA	99.2	NA
SIEVE SIZE #10 - % FINER	% PASSED	99.4	97.6	99	99.2	99.6	NA	98.5	NA
SIEVE SIZE #20 - % FINER	% PASSED	98.9	97.3	98.6	98.9	98.9	NA	98	NA
SIEVE SIZE #40 - % FINER	% PASSED	97.7	95.9	97.5	97.7	96.5	NA	96.9	NA
SIEVE SIZE #60 - % FINER	% PASSED	91.2	89.8	93.3	89.8	89.8	NA	94.2	NA
SIEVE SIZE #80 - % FINER	% PASSED	82.4	78.6	86	77.6	81.7	NA	92.2	NA
SIEVE SIZE #100 - % FINER	% PASSED	79.6	73.1	82.9	72.6	78.5	NA	91.3	NA
SIEVE SIZE #200 - % FINER	% PASSED	73.6	59	74	59.9	68.2	NA	86.3	NA
HYDROMETER READING 1 - % FINER	% PASSED	54.4	41.2	58.4	46	43.4	NA	69.3	NA
HYDROMETER READING 2 - % FINER	% PASSED	49.4	34.6	52.4	41.1	40.7	NA	65.5	NA
HYDROMETER READING 3 - % FINER	% PASSED	43.1	24.1	43.5	33.5	34	NA	61.7	NA
HYDROMETER READING 4 - % FINER	% PASSED	38	18.8	36.1	28.4	29.9	NA	57.9	NA
HYDROMETER READING 5 - % FINER	% PASSED	33	14.9	28.7	24.6	24.5	NA	50	NA
HYDROMETER READING 6 - % FINER	% PASSED	25.4	9.6	21	16.9	19.1	NA	38.6	NA
HYDROMETER READING 7 - % FINER	% PASSED	18.1	7	13.6	11.9	13.9	NA	23.4	NA
TOC									
TOC	%	7.34	5.55	5.57	5.97	3.93	3.71	5.32	7.94

Table 3-9a
Area 1 Sediment Sample Analytical Results - Physical Properties
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-28	HB10-1-28	HB10-1-28	HB10-1-28	HB10-1-28	HB10-1-28	HB10-1-29	HB10-1-29
	Field Sample ID	HB10-1-28-06	HB10-1-28-12	HB10-1-28-36	HB10-1-28-60	HB10-1-28-84	HB10-1-28-96	HB10-1-29-06	HB10-1-29-12
	Sample Date	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010	10/17/2010
	Depth Interval	0- 6	0- 12	12- 36	36- 60	60- 84	60- 96	0- 6	0- 12
Chemical Name	Unit								
Grain Size									
GRAVEL	%	0	0	0	0.9	0.6	0	0.8	2.3
SAND	%	20	19.7	19.4	8.3	15.9	33.3	47.2	40
SILT	%	56.6	59.3	52.3	58.3	42.7	24	39.5	42.4
CLAY	%	23.4	21	28.3	32.5	40.8	42.7	12.5	15.3
COARSE SAND	%	0	0	0	0.1	0	0.4	0.7	3.6
MEDIUM SAND	%	1.9	1.2	1.6	0.9	1.6	1.5	4.9	6.5
FINE SAND	%	18.1	18.5	17.8	7.3	14.3	31.4	41.6	29.9
SIEVE SIZE 3 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 2 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 1.5 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 1 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 0.75 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 0.375 INCH - % FINER	% PASSED	100	100	100	99.1	100	100	99.7	100
SIEVE SIZE #4 - % FINER	% PASSED	100	100	100	99.1	99.4	100	99.2	97.7
SIEVE SIZE #10 - % FINER	% PASSED	100	100	100	99	99.4	99.6	98.5	94.1
SIEVE SIZE #20 - % FINER	% PASSED	99.4	99.7	99.3	98.7	98.9	99	96.8	92.4
SIEVE SIZE #40 - % FINER	% PASSED	98.1	98.8	98.4	98.1	97.8	98.1	93.6	87.6
SIEVE SIZE #60 - % FINER	% PASSED	94.6	96.7	96.1	97	95.5	92.9	84.9	79.2
SIEVE SIZE #80 - % FINER	% PASSED	91.3	94.1	93.3	95.9	93.2	81.5	74.2	72.1
SIEVE SIZE #100 - % FINER	% PASSED	89.9	92.7	91.8	95.4	92.1	76.8	69	69.1
SIEVE SIZE #200 - % FINER	% PASSED	80	80.3	80.6	90.8	83.5	66.7	52	57.7
HYDROMETER READING 1 - % FINER	% PASSED	49.1	45	54.9	58	67.2	58.7	27.1	31.6
HYDROMETER READING 2 - % FINER	% PASSED	45.1	38.1	47.3	52.5	61	55.5	26	26.2
HYDROMETER READING 3 - % FINER	% PASSED	34.2	29	37.2	43.6	51.7	50.8	18.2	20.7
HYDROMETER READING 4 - % FINER	% PASSED	28.8	24.4	32.1	37	45.5	46.1	14.7	16.6
HYDROMETER READING 5 - % FINER	% PASSED	23.4	21	28.3	32.5	40.8	42.7	12.5	15.3
HYDROMETER READING 6 - % FINER	% PASSED	17.8	16.2	21.7	24.6	32.8	34.8	9.1	9.8
HYDROMETER READING 7 - % FINER	% PASSED	12.4	10.5	14.1	16.8	22	23.8	5.8	7.1
TOC									
TOC	%	4.18	4.24	4.29	5.73	5.71	4.11	10.2	11.5

Table 3-9a
Area 1 Sediment Sample Analytical Results - Physical Properties
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-29	HB10-1-29	HB10-1-29	HB10-1-30	HB10-1-30	HB10-1-30	HB10-1-30	HB10-1-30
	Field Sample ID	HB10-1-29-36	HB10-1-29-60	HB10-1-29-93	HB10-1-30-06	HB10-1-30-06DP	HB10-1-30-12	HB10-1-30-36	HB10-1-30-60
	Sample Date	10/17/2010	10/17/2010	10/17/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
	Depth Interval	12- 36	36- 60	60- 93	0- 6	0- 6	0- 12	12- 36	36- 60
Chemical Name	Unit								
Grain Size									
GRAVEL	%	3.6	2.2	1.6	0.5	NA	1.4	0	0
SAND	%	30.5	49	49.4	40.7	NA	36.4	24.3	17.9
SILT	%	48.2	39	36.4	35.9	NA	41	46.2	44.9
CLAY	%	17.7	9.8	12.6	22.9	NA	21.2	29.5	37.2
COARSE SAND	%	1.4	3.5	4.8	1	NA	1	0.6	1.1
MEDIUM SAND	%	4.5	5.6	6.4	3.2	NA	2.6	1.5	2.7
FINE SAND	%	24.6	39.9	38.2	36.5	NA	32.8	22.2	14.1
SIEVE SIZE 3 INCH - % FINER	% PASSED	100	100	100	100	NA	100	100	100
SIEVE SIZE 2 INCH - % FINER	% PASSED	100	100	100	100	NA	100	100	100
SIEVE SIZE 1.5 INCH - % FINER	% PASSED	100	100	100	100	NA	100	100	100
SIEVE SIZE 1 INCH - % FINER	% PASSED	100	100	100	100	NA	100	100	100
SIEVE SIZE 0.75 INCH - % FINER	% PASSED	100	100	100	100	NA	100	100	100
SIEVE SIZE 0.375 INCH - % FINER	% PASSED	97.2	100	100	100	NA	100	100	100
SIEVE SIZE #4 - % FINER	% PASSED	96.4	97.8	98.4	99.5	NA	98.6	100	100
SIEVE SIZE #10 - % FINER	% PASSED	95	94.3	93.6	98.5	NA	97.6	99.4	98.9
SIEVE SIZE #20 - % FINER	% PASSED	93.8	93.1	92.1	97.6	NA	96.7	99	98.3
SIEVE SIZE #40 - % FINER	% PASSED	90.5	88.7	87.2	95.3	NA	95	97.9	96.2
SIEVE SIZE #60 - % FINER	% PASSED	84.8	79.3	77.1	86.1	NA	88.2	94.8	92.8
SIEVE SIZE #80 - % FINER	% PASSED	79.6	68.5	66.6	74.3	NA	78.2	88.5	89.5
SIEVE SIZE #100 - % FINER	% PASSED	77.2	63.5	62.2	69.7	NA	73.9	85.5	88.2
SIEVE SIZE #200 - % FINER	% PASSED	65.9	48.8	49	58.8	NA	62.2	75.7	82.1
HYDROMETER READING 1 - % FINER	% PASSED	40.6	24.2	26.5	36.6	NA	36	50.4	58.9
HYDROMETER READING 2 - % FINER	% PASSED	32.6	19.4	21.8	33.2	NA	32.9	44.9	51.7
HYDROMETER READING 3 - % FINER	% PASSED	25.8	16.2	17.2	29.8	NA	27.6	39.4	48
HYDROMETER READING 4 - % FINER	% PASSED	21.8	13	15.7	25.3	NA	23.5	33.9	40.8
HYDROMETER READING 5 - % FINER	% PASSED	17.7	9.8	12.6	22.9	NA	21.2	29.5	37.2
HYDROMETER READING 6 - % FINER	% PASSED	12.4	8	9.2	18.4	NA	17	22.6	29.6
HYDROMETER READING 7 - % FINER	% PASSED	8.3	4.8	6.2	12.8	NA	11.8	15.7	22.4
TOC									
TOC	%	16.5	15	14.1	4.81	5.5	4.44	8.94	7.99

Table 3-9a
Area 1 Sediment Sample Analytical Results - Physical Properties
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-1-30	HB10-1-31	HB10-1-31	HB10-1-31	HB10-1-31
	Field Sample ID	HB10-1-30-77	HB10-1-31-06	HB10-1-31-06DP	HB10-1-31-12	HB10-1-31-36
	Sample Date	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
	Depth Interval	60- 77	0- 6	0- 6	0- 12	12- 36
Chemical Name	Unit					
Grain Size						
GRAVEL	%	25.6	0.9	NA	0.2	0.6
SAND	%	31.4	18.7	NA	19.4	13.3
SILT	%	41.7	52.5	NA	40.7	40.5
CLAY	%	1.3	27.9	NA	39.7	45.6
COARSE SAND	%	16.1	0.7	NA	0.6	0.8
MEDIUM SAND	%	4.1	1.3	NA	2.1	2
FINE SAND	%	11.2	16.7	NA	16.7	10.5
SIEVE SIZE 3 INCH - % FINER	% PASSED	100	100	NA	100	100
SIEVE SIZE 2 INCH - % FINER	% PASSED	100	100	NA	100	100
SIEVE SIZE 1.5 INCH - % FINER	% PASSED	100	100	NA	100	100
SIEVE SIZE 1 INCH - % FINER	% PASSED	100	100	NA	100	100
SIEVE SIZE 0.75 INCH - % FINER	% PASSED	100	100	NA	100	100
SIEVE SIZE 0.375 INCH - % FINER	% PASSED	100	99.3	NA	100	100
SIEVE SIZE #4 - % FINER	% PASSED	74.4	99.1	NA	99.8	99.4
SIEVE SIZE #10 - % FINER	% PASSED	58.3	98.4	NA	99.2	98.6
SIEVE SIZE #20 - % FINER	% PASSED	57.8	98	NA	98.4	97.7
SIEVE SIZE #40 - % FINER	% PASSED	54.2	97.1	NA	97.1	96.6
SIEVE SIZE #60 - % FINER	% PASSED	50.6	94.8	NA	93.5	94.5
SIEVE SIZE #80 - % FINER	% PASSED	48.5	90.8	NA	89.3	92
SIEVE SIZE #100 - % FINER	% PASSED	47.5	88.9	NA	87.5	90.9
SIEVE SIZE #200 - % FINER	% PASSED	43	80.4	NA	80.4	86.1
HYDROMETER READING 1 - % FINER	% PASSED	25	53.9	NA	65.6	70.7
HYDROMETER READING 2 - % FINER	% PASSED	9.6	47.4	NA	58.8	63.4
HYDROMETER READING 3 - % FINER	% PASSED	9.6	39.3	NA	50.6	56.2
HYDROMETER READING 4 - % FINER	% PASSED	9.6	32.8	NA	43.8	52.6
HYDROMETER READING 5 - % FINER	% PASSED	1.3	27.9	NA	39.7	45.6
HYDROMETER READING 6 - % FINER	% PASSED	-2.6	19.8	NA	30.2	36.6
HYDROMETER READING 7 - % FINER	% PASSED	-6.4	14.9	NA	23.4	31.1
TOC						
TOC	%	35.3	4.73	4.27	5.14	4.8

Notes:
 % - Percent
 DP - Duplicate
 NA - Not Analyzed
 TOC - Total Organic Carbon

Table 3-9b
Area 2 Sediment Sample Analytical Results - Physical Properties
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-2-18	HB10-2-18	HB10-2-26	HB10-2-26	HB10-2-32	HB10-2-32	HB10-2-33	HB10-2-33
	Field Sample ID	HB10-2-18-06	HB10-2-18-06DP	HB10-2-26-06	HB10-2-26-17	HB10-2-32-06	HB10-2-32-06DP	HB10-2-33-06	HB10-2-33-22
	Sample Date	10/18/2010	10/18/2010	10/16/2010	10/16/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
	Depth Interval	0- 6	0- 6	0- 6	12- 17	0- 6	0- 6	0- 6	12- 22
Chemical Name	Unit								
Grain Size									
GRAVEL	%	8	NA	4.1	0.1	1.1	NA	0	0.1
SAND	%	47	NA	80.3	84	30.6	NA	87.8	18
SILT	%	29.1	NA	9.9	9.5	43.9	NA	6.4	36.3
CLAY	%	15.9	NA	5.7	6.4	24.4	NA	5.8	45.6
COARSE SAND	%	1.8	NA	2.5	0.4	3.4	NA	0.2	0.5
MEDIUM SAND	%	5.4	NA	10.9	2.4	2.2	NA	3.4	1.6
FINE SAND	%	39.8	NA	66.9	81.2	25	NA	84.2	15.9
SIEVE SIZE 3 INCH - % FINER	% PASSED	100	NA	100	100	100	NA	100	100
SIEVE SIZE 2 INCH - % FINER	% PASSED	100	NA	100	100	100	NA	100	100
SIEVE SIZE 1.5 INCH - % FINER	% PASSED	100	NA	100	100	100	NA	100	100
SIEVE SIZE 1 INCH - % FINER	% PASSED	100	NA	100	100	100	NA	100	100
SIEVE SIZE 0.75 INCH - % FINER	% PASSED	100	NA	100	100	100	NA	100	100
SIEVE SIZE 0.375 INCH - % FINER	% PASSED	95	NA	96.9	100	100	NA	100	100
SIEVE SIZE #4 - % FINER	% PASSED	92	NA	95.9	99.9	98.9	NA	100	99.9
SIEVE SIZE #10 - % FINER	% PASSED	90.2	NA	93.4	99.5	95.5	NA	99.8	99.4
SIEVE SIZE #20 - % FINER	% PASSED	88.1	NA	89.6	98.4	95.1	NA	99.3	98.8
SIEVE SIZE #40 - % FINER	% PASSED	84.8	NA	82.5	97.1	93.3	NA	96.4	97.8
SIEVE SIZE #60 - % FINER	% PASSED	76.2	NA	63.2	85.6	89.3	NA	68.3	93.5
SIEVE SIZE #80 - % FINER	% PASSED	64.3	NA	40.4	56.2	82.3	NA	32.5	88.4
SIEVE SIZE #100 - % FINER	% PASSED	58.9	NA	30.4	39.6	79	NA	20.7	86.6
SIEVE SIZE #200 - % FINER	% PASSED	45	NA	15.6	15.9	68.3	NA	12.2	81.9
HYDROMETER READING 1 - % FINER	% PASSED	31.4	NA	11.3	10.8	37.6	NA	9.5	69.4
HYDROMETER READING 2 - % FINER	% PASSED	28.8	NA	9.4	9.9	35.2	NA	8.3	65.1
HYDROMETER READING 3 - % FINER	% PASSED	23.5	NA	9.4	9	32.8	NA	7.6	58.7
HYDROMETER READING 4 - % FINER	% PASSED	19.7	NA	7.6	7.3	28	NA	6.4	50.2
HYDROMETER READING 5 - % FINER	% PASSED	15.9	NA	5.7	6.4	24.4	NA	5.8	45.6
HYDROMETER READING 6 - % FINER	% PASSED	13.2	NA	3.8	5.5	18.3	NA	4.5	34.9
HYDROMETER READING 7 - % FINER	% PASSED	8.1	NA	2.9	3.7	13.5	NA	3.2	26.3
TOC									
TOC	%	2.71	3.56	5.29	1.79	3.64	3.4	0.99	3.77

Table 3-9b
Area 2 Sediment Sample Analytical Results - Physical Properties
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-2-34	HB10-2-34	HB10-2-35	HB10-2-35	HB10-2-35	HB10-2-36	HB10-2-36	HB10-2-37
	Field Sample ID	HB10-2-34-06	HB10-2-34-06DP	HB10-2-35-06	HB10-2-35-12	HB10-2-35-30	HB10-2-36-06	HB10-2-36-06DP	HB10-2-37-06
	Sample Date	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
	Depth Interval	0- 6	0- 6	0- 6	0- 12	12- 30	0- 6	0- 6	0- 6
Chemical Name	Unit								
Grain Size									
GRAVEL	%	0.6	NA	0	0.3	0	0.2	NA	0
SAND	%	30.9	NA	89.1	72.9	35.3	28.7	NA	96.2
SILT	%	38.8	NA	6	14.5	35.9	39.6	NA	2.2
CLAY	%	29.7	NA	4.9	12.3	28.8	31.5	NA	1.6
COARSE SAND	%	0.5	NA	0.6	0.6	0.3	0.7	NA	0.8
MEDIUM SAND	%	3.2	NA	7.2	5	1.9	2.1	NA	5.8
FINE SAND	%	27.2	NA	81.3	67.3	33.1	25.9	NA	89.6
SIEVE SIZE 3 INCH - % FINER	% PASSED	100	NA	100	100	100	100	NA	100
SIEVE SIZE 2 INCH - % FINER	% PASSED	100	NA	100	100	100	100	NA	100
SIEVE SIZE 1.5 INCH - % FINER	% PASSED	100	NA	100	100	100	100	NA	100
SIEVE SIZE 1 INCH - % FINER	% PASSED	100	NA	100	100	100	100	NA	100
SIEVE SIZE 0.75 INCH - % FINER	% PASSED	100	NA	100	100	100	100	NA	100
SIEVE SIZE 0.375 INCH - % FINER	% PASSED	100	NA	100	100	100	100	NA	100
SIEVE SIZE #4 - % FINER	% PASSED	99.4	NA	100	99.7	100	99.8	NA	100
SIEVE SIZE #10 - % FINER	% PASSED	98.9	NA	99.4	99.1	99.7	99.1	NA	99.2
SIEVE SIZE #20 - % FINER	% PASSED	97.9	NA	98.6	98.6	99.1	98.4	NA	98.1
SIEVE SIZE #40 - % FINER	% PASSED	95.7	NA	92.2	94.1	97.8	97	NA	93.4
SIEVE SIZE #60 - % FINER	% PASSED	89.3	NA	58.2	71.1	89.8	92.4	NA	65.3
SIEVE SIZE #80 - % FINER	% PASSED	80.1	NA	25.2	43.9	75.3	84.4	NA	25.8
SIEVE SIZE #100 - % FINER	% PASSED	76.8	NA	16.6	35	70.8	81.3	NA	12.8
SIEVE SIZE #200 - % FINER	% PASSED	68.5	NA	10.9	26.8	64.7	71.1	NA	3.8
HYDROMETER READING 1 - % FINER	% PASSED	50.1	NA	6.9	20	48.8	55.6	NA	2.6
HYDROMETER READING 2 - % FINER	% PASSED	42.5	NA	6.2	18.3	42.1	48.6	NA	2.1
HYDROMETER READING 3 - % FINER	% PASSED	37.4	NA	6.2	16.6	37.1	42.7	NA	2.1
HYDROMETER READING 4 - % FINER	% PASSED	32.3	NA	4.9	13.1	32.1	35.7	NA	2.1
HYDROMETER READING 5 - % FINER	% PASSED	29.7	NA	4.9	12.3	28.8	31.5	NA	1.6
HYDROMETER READING 6 - % FINER	% PASSED	23.4	NA	3.5	9.6	21.9	25.7	NA	1.1
HYDROMETER READING 7 - % FINER	% PASSED	16.8	NA	2.1	7	15.2	17.3	NA	0.6
TOC									
TOC	%	4.12	3.25	0.702	1.44	3.08	3.05	16.2	0.423

Table 3-9b
Area 2 Sediment Sample Analytical Results - Physical Properties
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-2-37	HB10-2-38	HB10-2-38	HB10-2-38	HB10-2-38	HB10-2-39	HB10-2-39	HB10-2-39
	Field Sample ID	HB10-2-37-23	HB10-2-38-06	HB10-2-38-06DP	HB10-2-38-12	HB10-2-38-38	HB10-2-39-06	HB10-2-39-12	HB10-2-39-28
	Sample Date	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
	Depth Interval	12- 23	0- 6	0- 6	0- 12	36- 38	0- 6	0- 12	12- 28
Chemical Name	Unit								
Grain Size									
GRAVEL	%	3.3	0.2	NA	0.4	1.6	0	0.4	0.2
SAND	%	53.4	30	NA	43.1	30.2	95.9	53.7	16.5
SILT	%	31.4	46.2	NA	36.2	41	2.5	34.9	47.6
CLAY	%	11.9	23.6	NA	20.3	27.2	1.6	11	35.7
COARSE SAND	%	1.3	0.7	NA	1.3	0.7	1	0.6	1.3
MEDIUM SAND	%	2.4	1.8	NA	4.1	3.9	16.6	4.1	0.8
FINE SAND	%	49.7	27.5	NA	37.7	25.6	78.3	49	14.4
SIEVE SIZE 3 INCH - % FINER	% PASSED	100	100	NA	100	100	100	100	100
SIEVE SIZE 2 INCH - % FINER	% PASSED	100	100	NA	100	100	100	100	100
SIEVE SIZE 1.5 INCH - % FINER	% PASSED	100	100	NA	100	100	100	100	100
SIEVE SIZE 1 INCH - % FINER	% PASSED	100	100	NA	100	100	100	100	100
SIEVE SIZE 0.75 INCH - % FINER	% PASSED	100	100	NA	100	100	100	100	100
SIEVE SIZE 0.375 INCH - % FINER	% PASSED	98.2	100	NA	100	100	100	100	100
SIEVE SIZE #4 - % FINER	% PASSED	96.7	99.8	NA	99.6	98.4	100	99.6	99.8
SIEVE SIZE #10 - % FINER	% PASSED	95.4	99.1	NA	98.3	97.7	99	99	98.5
SIEVE SIZE #20 - % FINER	% PASSED	94.5	98.3	NA	97.1	97	96.5	98.4	98.4
SIEVE SIZE #40 - % FINER	% PASSED	93	97.3	NA	94.2	93.8	82.4	94.9	97.7
SIEVE SIZE #60 - % FINER	% PASSED	85.6	93.7	NA	86.2	86.3	25.7	76.3	94.4
SIEVE SIZE #80 - % FINER	% PASSED	67.8	86.6	NA	74.6	76.3	8.9	63.3	91.2
SIEVE SIZE #100 - % FINER	% PASSED	58.5	83.1	NA	69.6	73.3	6.1	58.1	89.8
SIEVE SIZE #200 - % FINER	% PASSED	43.3	69.8	NA	56.5	68.2	4.1	45.9	83.3
HYDROMETER READING 1 - % FINER	% PASSED	21.3	45.6	NA	40.4	49.5	2.6	25.5	56.5
HYDROMETER READING 2 - % FINER	% PASSED	18.2	40.4	NA	34.5	44.7	2.6	20.9	50.1
HYDROMETER READING 3 - % FINER	% PASSED	14.4	33.9	NA	27.4	36.8	2.6	16.3	45.3
HYDROMETER READING 4 - % FINER	% PASSED	13.8	27.5	NA	22.7	30.4	2.6	13.3	40.5
HYDROMETER READING 5 - % FINER	% PASSED	11.9	23.6	NA	20.3	27.2	1.6	11	35.7
HYDROMETER READING 6 - % FINER	% PASSED	8.8	17.1	NA	15.6	20.9	0.6	8.7	29.1
HYDROMETER READING 7 - % FINER	% PASSED	5.7	14.5	NA	13.2	16.1	0.6	5.6	19.7
TOC									
TOC	%	0.648	5.6		3.32	4.03	0.506	1.68	11.1

Table 3-9b
Area 2 Sediment Sample Analytical Results - Physical Properties
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-2-40	HB10-2-40	HB10-2-40	HB10-2-40	HB10-2-41	HB10-2-41	HB10-2-41	HB10-2-42
	Field Sample ID	HB10-2-40-06	HB10-2-40-12	HB10-2-40-36	HB10-2-40-48	HB10-2-41-06	HB10-2-41-12	HB10-2-41-31	HB10-2-42-06
	Sample Date	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
	Depth Interval	0- 6	0- 12	12- 36	36- 48	0- 6	0- 12	12- 31	0- 6
Chemical Name	Unit								
Grain Size									
GRAVEL	%	0	0	0.3	0	0	1.1	0.5	8.6
SAND	%	36.4	32.3	26.4	28.8	24.3	65.1	65.6	78.5
SILT	%	45.3	48.8	61.2	59.3	48.1	25.2	25.3	8.1
CLAY	%	18.3	18.9	12.1	11.9	27.6	8.6	8.6	4.8
COARSE SAND	%	0.2	0.1	0.1	0.2	0.5	5.8	2.9	7.5
MEDIUM SAND	%	2.3	1.9	0.3	0.5	2.1	29.5	24.4	17.9
FINE SAND	%	33.9	30.3	26	28.1	21.7	29.8	38.3	53.1
SIEVE SIZE 3 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 2 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 1.5 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 1 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 0.75 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 0.375 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	94.5
SIEVE SIZE #4 - % FINER	% PASSED	100	100	99.7	100	100	98.9	99.5	91.4
SIEVE SIZE #10 - % FINER	% PASSED	99.8	99.9	99.6	99.8	99.5	93.1	96.6	83.9
SIEVE SIZE #20 - % FINER	% PASSED	98.9	99.4	99.4	99.7	99	80.4	87.6	77
SIEVE SIZE #40 - % FINER	% PASSED	97.5	98	99.3	99.3	97.4	63.6	72.2	66
SIEVE SIZE #60 - % FINER	% PASSED	89.5	93.5	99	98.8	93.7	53.7	61.3	45
SIEVE SIZE #80 - % FINER	% PASSED	79.5	85.9	97.1	97.4	88.3	47.6	53.6	28.4
SIEVE SIZE #100 - % FINER	% PASSED	75.7	82.2	94.6	95.4	85.4	44.6	49.6	21.4
SIEVE SIZE #200 - % FINER	% PASSED	63.6	67.7	73.3	71.2	75.7	33.8	33.9	12.9
HYDROMETER READING 1 - % FINER	% PASSED	37.6	43	38	38.3	44.9	21.7	22.9	8.9
HYDROMETER READING 2 - % FINER	% PASSED	35.2	37	29.9	26.5	39.2	17.1	17	8.3
HYDROMETER READING 3 - % FINER	% PASSED	27.9	27.1	20.3	19.2	34.8	12.5	12.8	6.6
HYDROMETER READING 4 - % FINER	% PASSED	23.1	23.1	17	15.6	32	10.2	9.5	6
HYDROMETER READING 5 - % FINER	% PASSED	18.3	18.9	12.1	11.9	27.6	8.6	8.6	4.8
HYDROMETER READING 6 - % FINER	% PASSED	13.5	14.1	8.2	8.3	20.4	5.5	6	3
HYDROMETER READING 7 - % FINER	% PASSED	11.1	11.1	5.8	6.5	13.5	4.1	4.3	1.3
TOC									
TOC	%	3.39	2.44	0.886	1.17	6.73	1.99	1.12	8.84

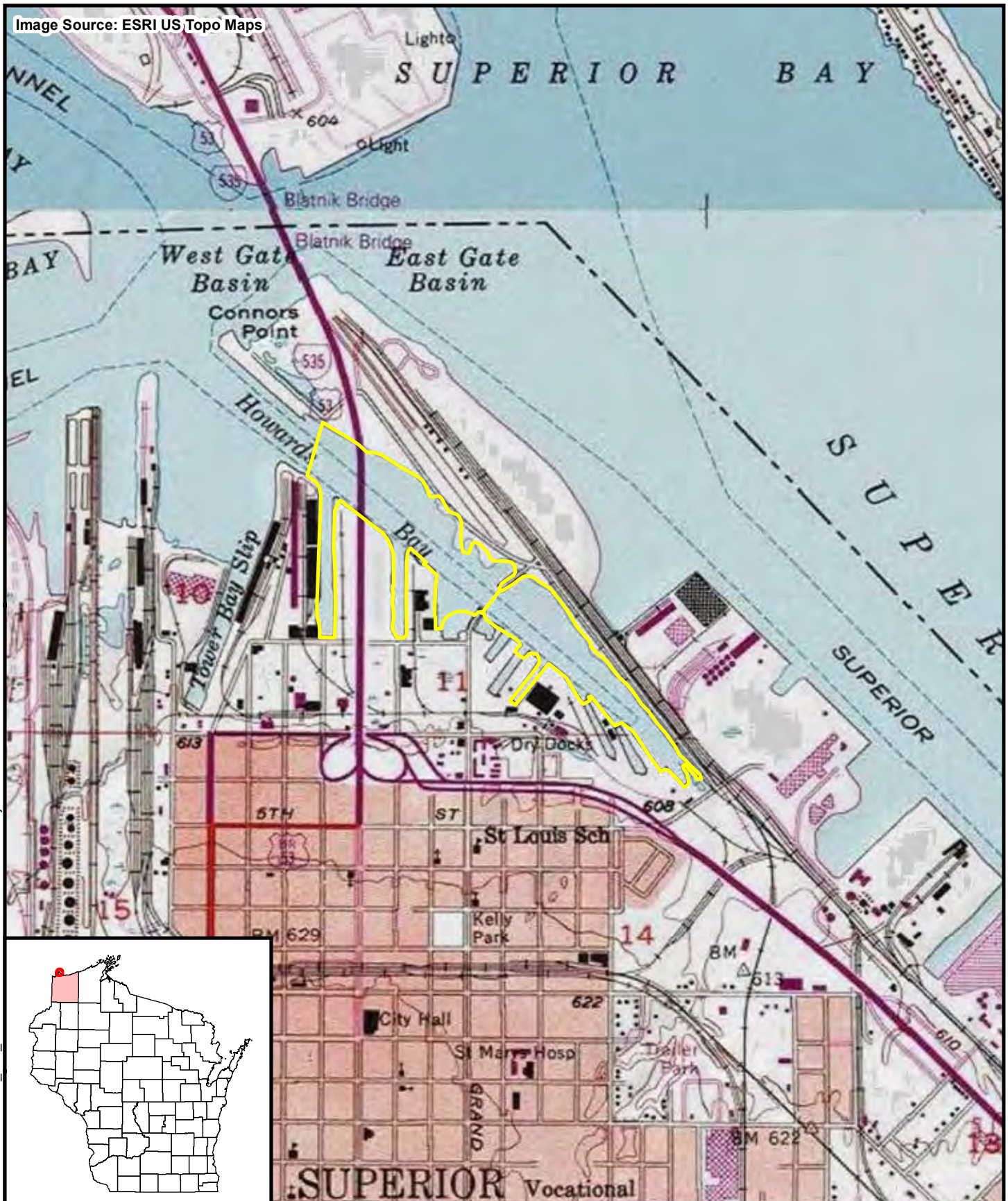
Table 3-9b
Area 2 Sediment Sample Analytical Results - Physical Properties
Howard's Bay-St. Louis River AOC
Superior, Douglas County, Wisconsin

	Location ID	HB10-2-42	HB10-2-42	HB10-2-43	HB10-2-43	HB10-2-44	HB10-2-44	HB10-2-45	HB10-2-45
	Field Sample ID	HB10-2-42-12	HB10-2-42-30	HB10-2-43-06	HB10-2-43-22	HB10-2-44-06	HB10-2-44-16	HB10-2-45-06	HB10-2-45-19
	Sample Date	10/18/2010	10/18/2010	10/17/2010	10/17/2010	10/18/2010	10/18/2010	10/18/2010	10/18/2010
	Depth Interval	0- 12	12- 30	0- 6	12- 22	0- 6	12- 16	0- 6	12- 19
Chemical Name	Unit								
Grain Size									
GRAVEL	%	3.1	12.1	17.5	4.3	2.7	4.8	24.9	6.5
SAND	%	74.7	65	80.5	71.4	49.9	47.1	55.6	64.3
SILT	%	15.2	13	1.5	10.6	28.6	29.7	14.6	18.2
CLAY	%	7	9.9	0.5	13.7	18.8	18.4	4.9	11
COARSE SAND	%	5.3	14.4	11.2	4.9	2.6	0.9	19.9	5.6
MEDIUM SAND	%	7.3	20.5	45.7	18.3	9.5	6.7	18.4	9.4
FINE SAND	%	62.1	30.1	23.6	48.2	37.8	39.5	17.3	49.3
SIEVE SIZE 3 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 2 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 1.5 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 1 INCH - % FINER	% PASSED	100	100	100	100	100	100	100	100
SIEVE SIZE 0.75 INCH - % FINER	% PASSED	100	100	91.7	100	100	100	97.2	100
SIEVE SIZE 0.375 INCH - % FINER	% PASSED	99.2	97.2	87.7	99.4	100	95.4	88.5	96
SIEVE SIZE #4 - % FINER	% PASSED	96.9	87.9	82.5	95.7	97.3	95.2	75.1	93.5
SIEVE SIZE #10 - % FINER	% PASSED	91.6	73.5	71.3	90.8	94.7	94.3	55.2	87.9
SIEVE SIZE #20 - % FINER	% PASSED	89	64.2	51	82.8	91.4	92.9	45.8	84.4
SIEVE SIZE #40 - % FINER	% PASSED	84.3	53	25.6	72.5	85.2	87.6	36.8	78.5
SIEVE SIZE #60 - % FINER	% PASSED	69.1	42.7	9.9	56.8	75.6	78	29.4	68.7
SIEVE SIZE #80 - % FINER	% PASSED	51.2	35.2	4.6	42.6	64.9	67.3	24.6	54.4
SIEVE SIZE #100 - % FINER	% PASSED	41	31.5	3.4	37.2	59	61.5	22.8	45.8
SIEVE SIZE #200 - % FINER	% PASSED	22.2	22.9	2	24.3	47.4	48.1	19.5	29.2
HYDROMETER READING 1 - % FINER	% PASSED	14.5	18.1	1.3	23.4	33.1	32.8	9.1	19.3
HYDROMETER READING 2 - % FINER	% PASSED	12.3	15.9	1.3	20.5	31	26.9	8	17.6
HYDROMETER READING 3 - % FINER	% PASSED	10	12.9	1.3	17.6	24.9	24.3	6.5	14.3
HYDROMETER READING 4 - % FINER	% PASSED	8.5	11.4	0.5	16.6	21.9	19.6	6	12.7
HYDROMETER READING 5 - % FINER	% PASSED	7	9.9	0.5	13.7	18.8	18.4	4.9	11
HYDROMETER READING 6 - % FINER	% PASSED	4.8	7.7	0.5	10.8	15.6	14.6	3.8	8.4
HYDROMETER READING 7 - % FINER	% PASSED	3.2	5.4	0.5	7.1	10.5	9.9	2.7	5.9
TOC									
TOC	%	10.4	2.8	0.783	4.65	3.51	4.91	4.44	2.61

Notes:
 % - Percent
 DP - Duplicate
 NA - Not Analyzed
 TOC - Total Organic Carbon

FIGURES

Image Source: ESRI US Topo Maps



Legend

 Project Area

0 2,000
Feet



Prepared for:
U.S. EPA REGION V

Contract No.: EP-S5-06-04
TDD: S05-0008-1004-032
DCN: 1023-2A-AUGH



Prepared By:
**WESTON
SOLUTIONS, INC**

20 North Wacker Drive
Suite 1210
Chicago, IL 60606

Figure 1-1
Site Location Map
Howard's Bay
Superior, Douglas County, Wisconsin

Image Source: ESRI Bing Maps



Legend

Area 1

Area 2

Shipping Fairways

0 1,000
Feet



Prepared for:
U.S. EPA REGION V

Contract No.: EP-S5-06-04
TDD: S05-0008-1004-032
DCN: 1023-2A-AUGH



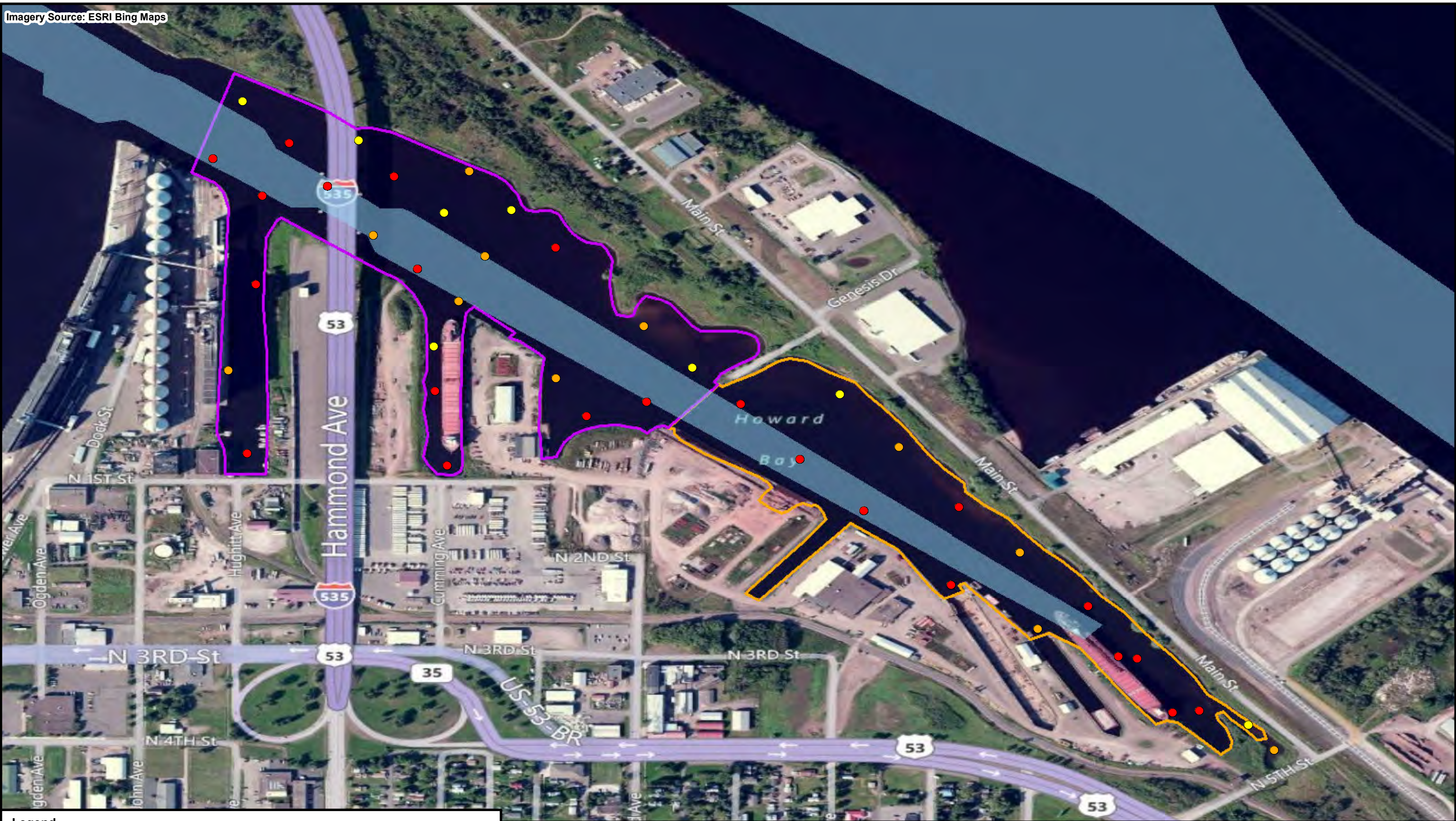
Prepared By:
**WESTON
SOLUTIONS, INC**

20 North Wacker Drive
Suite 1210
Chicago, IL 60606

Figure 1-2
Site Features Map
Howard's Bay
Superior, Douglas County, Wisconsin



FILE: D:\Howards_Bay\mxd\SAR\rev1\F2-1_Sampling_Locations.mxd 2/21/2012 2:51:28 PM wojdakon



Legend

- Level IV Concern: >PEC
- Level III Concern: >MEC and <=PEC
- Level II Concern: >TEC and <=MEC
- Level I Concern: <=TEC
- Shipping Fairways
- Area 1
- Area 2



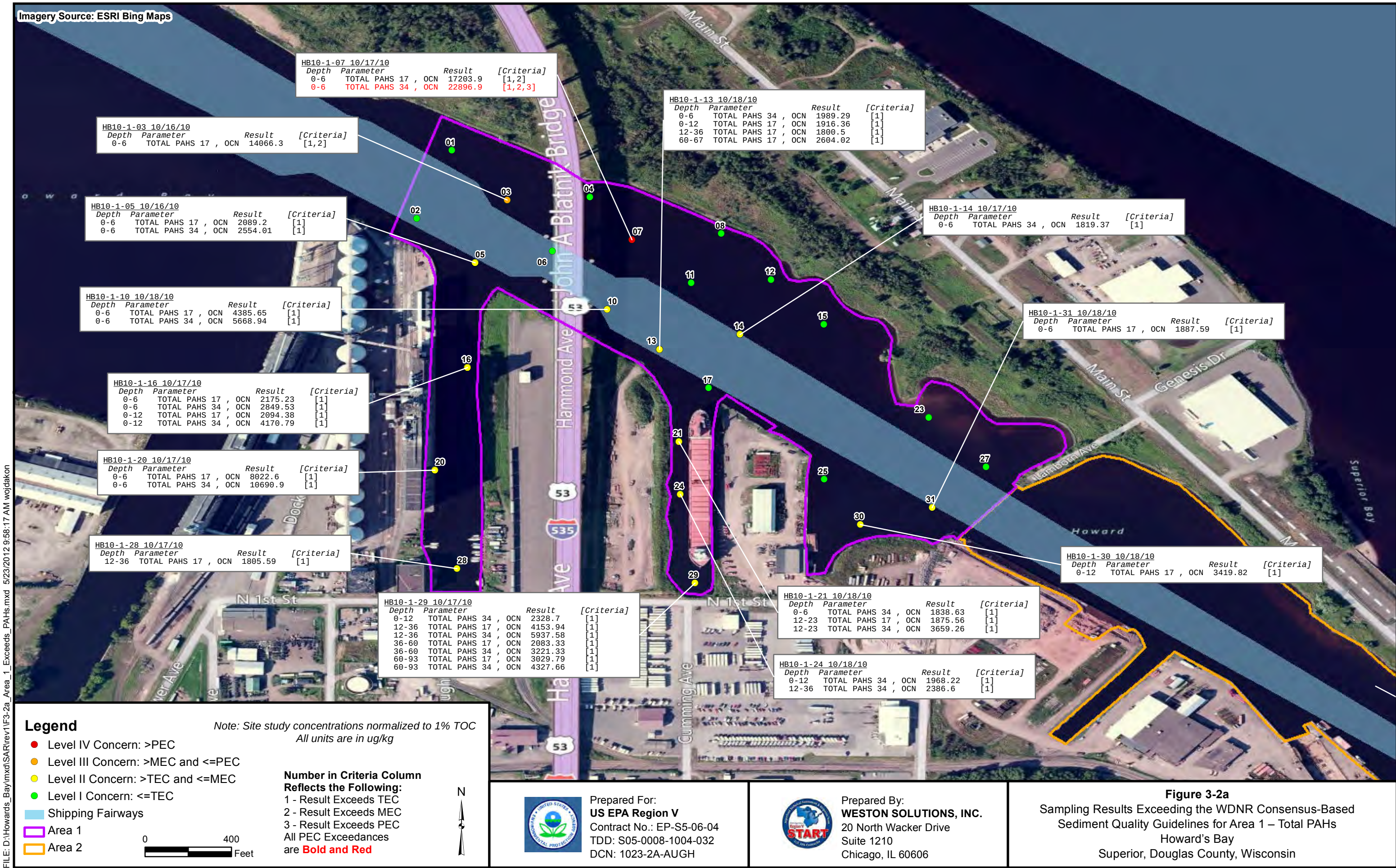
Prepared For:
US EPA Region V
Contract No.: EP-S5-06-04
TDD: S05-0008-1004-032
DCN: 1023-2A-AUGH



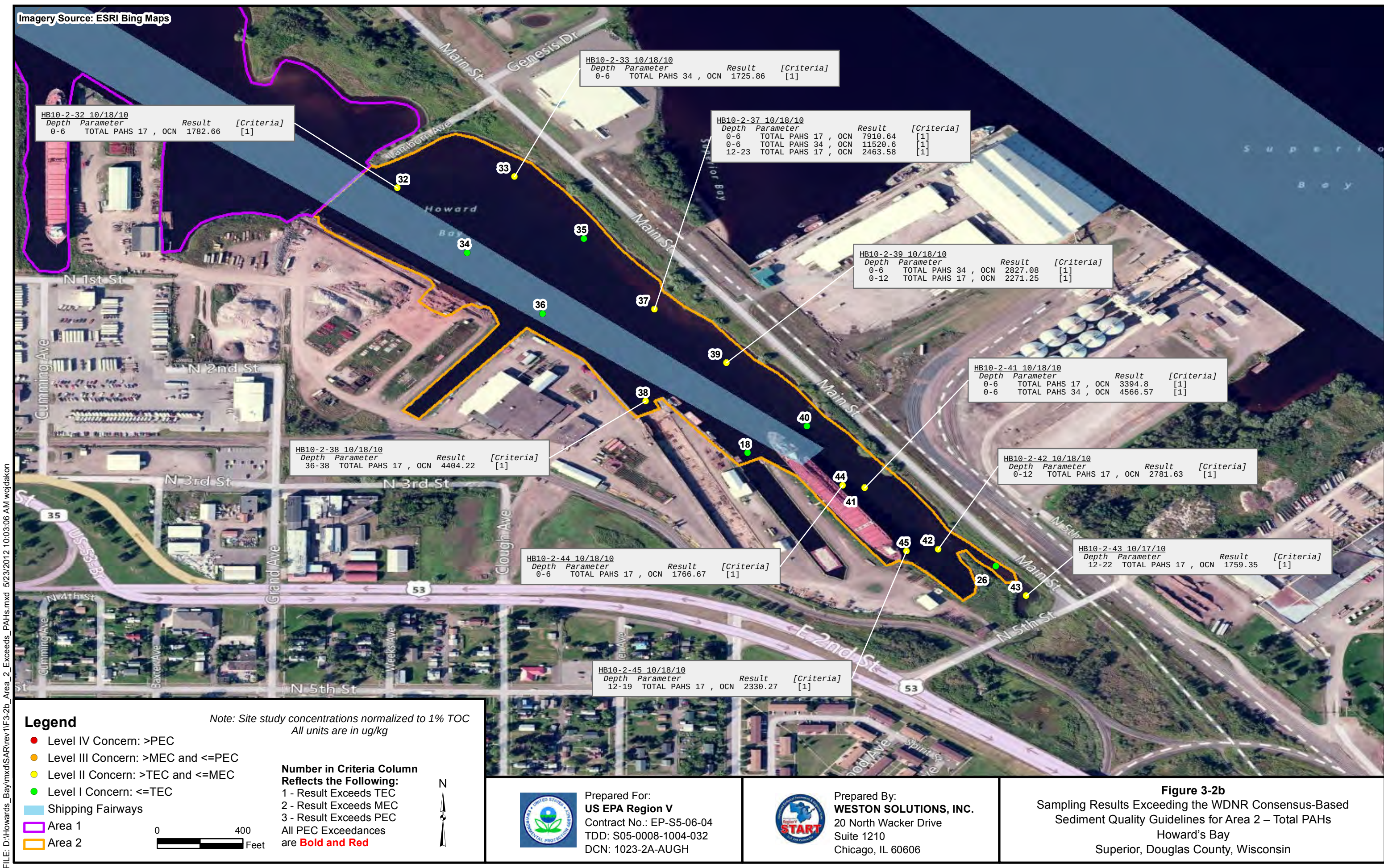
Prepared By:
WESTON SOLUTIONS, INC.
20 North Wacker Drive
Suite 1210
Chicago, IL 60606

Figure 3-1
Sampling Results Exceeding the
WDNR Consensus-Based Sediment Quality Guidelines
Howard's Bay
Superior, Douglas County, Wisconsin

FILE: D:\Howards_Bay\mxd\SAR\rev1\F3-2a_Area_1_Exceeds_PAHs.mxd 5/23/2012 9:58:17 AM wojdakon



FILE: D:\Howards_Bay\mxd\SAR\rev1\F3-2b_Area_2_Exceeds_PAHs.mxd 5/23/2012 10:03:06 AM wojdakon



Imagery Source: ESRI

Legend

- Level IV Concern: >PEC
- Level III Concern: >MEC and <=PEC
- Level II Concern: >TEC and <=MEC
- Level I Concern: <=TEC
- Shipping Fairways
- Area 1
- Area 2

0 500 Feet

All units are in mg/kg

Number in Criteria Column Reflects the Following:
1 - Result Exceeds TEC
2 - Result Exceeds MEC
3 - Result Exceeds PEC
All PEC Exceedances are **Bold and Red**

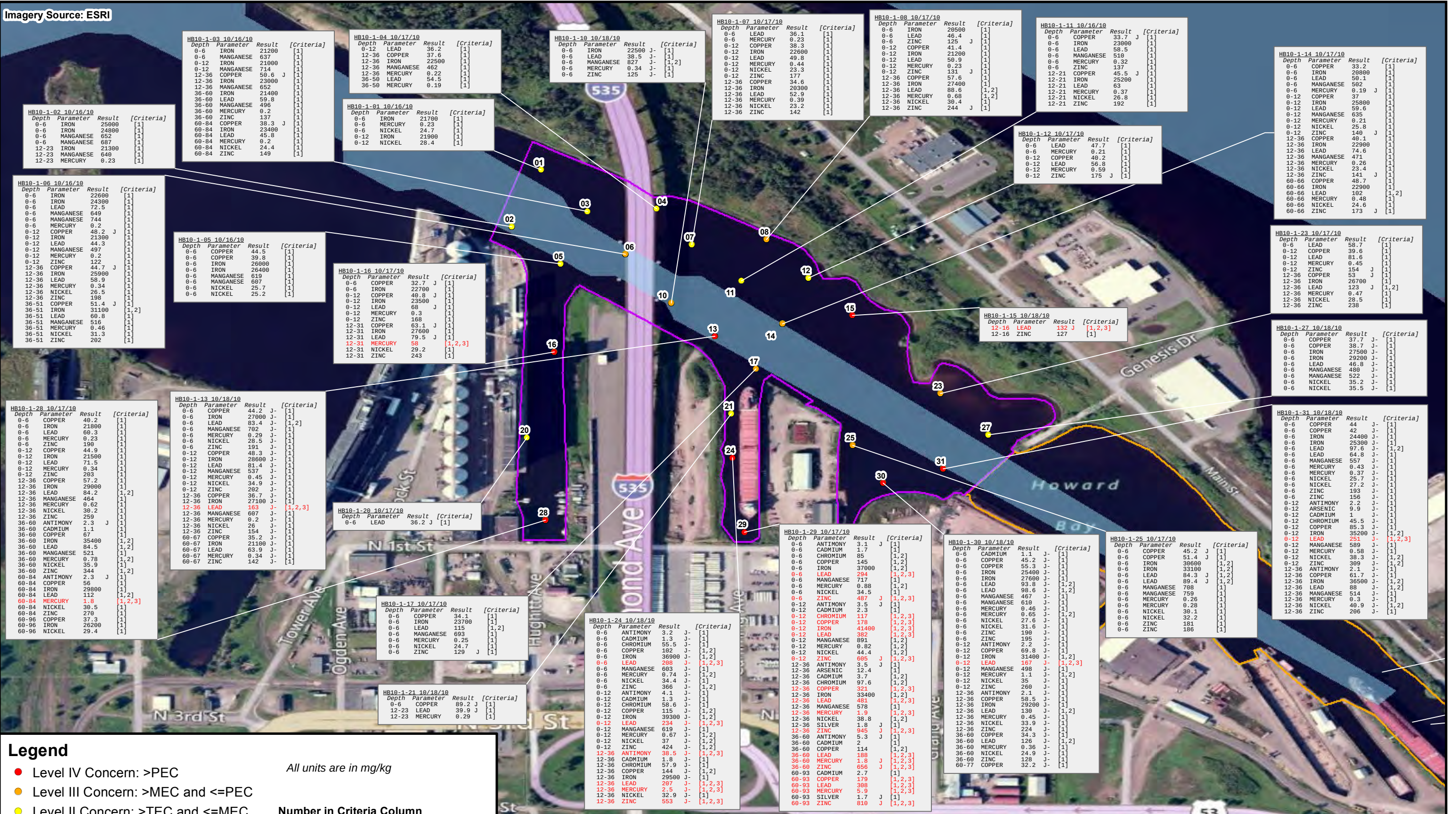


Prepared For:
US EPA Region V
Contract No.: EP-S5-06-04
TDD: S05-0008-1004-032
DCN: 1023-2A-AUGH

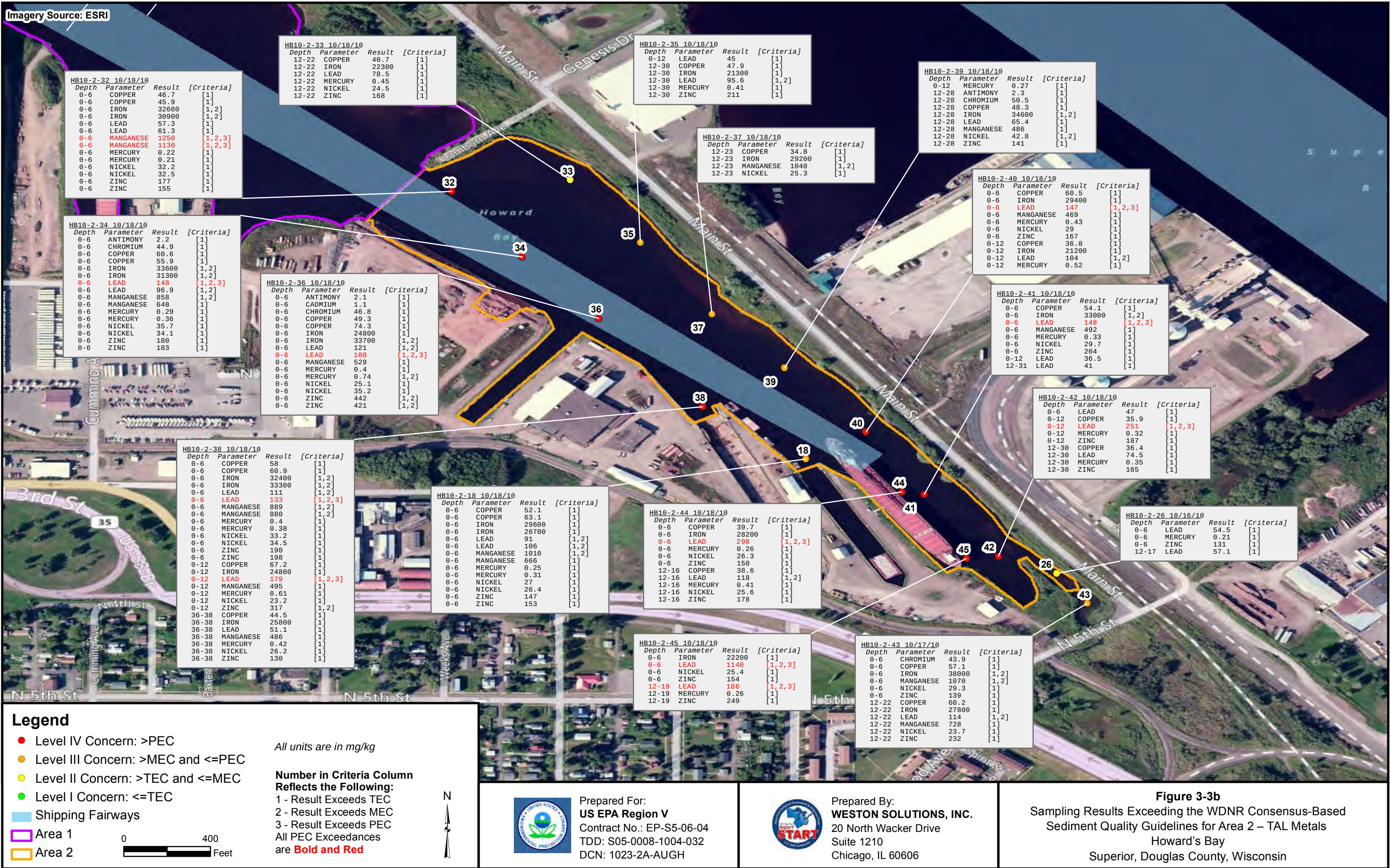


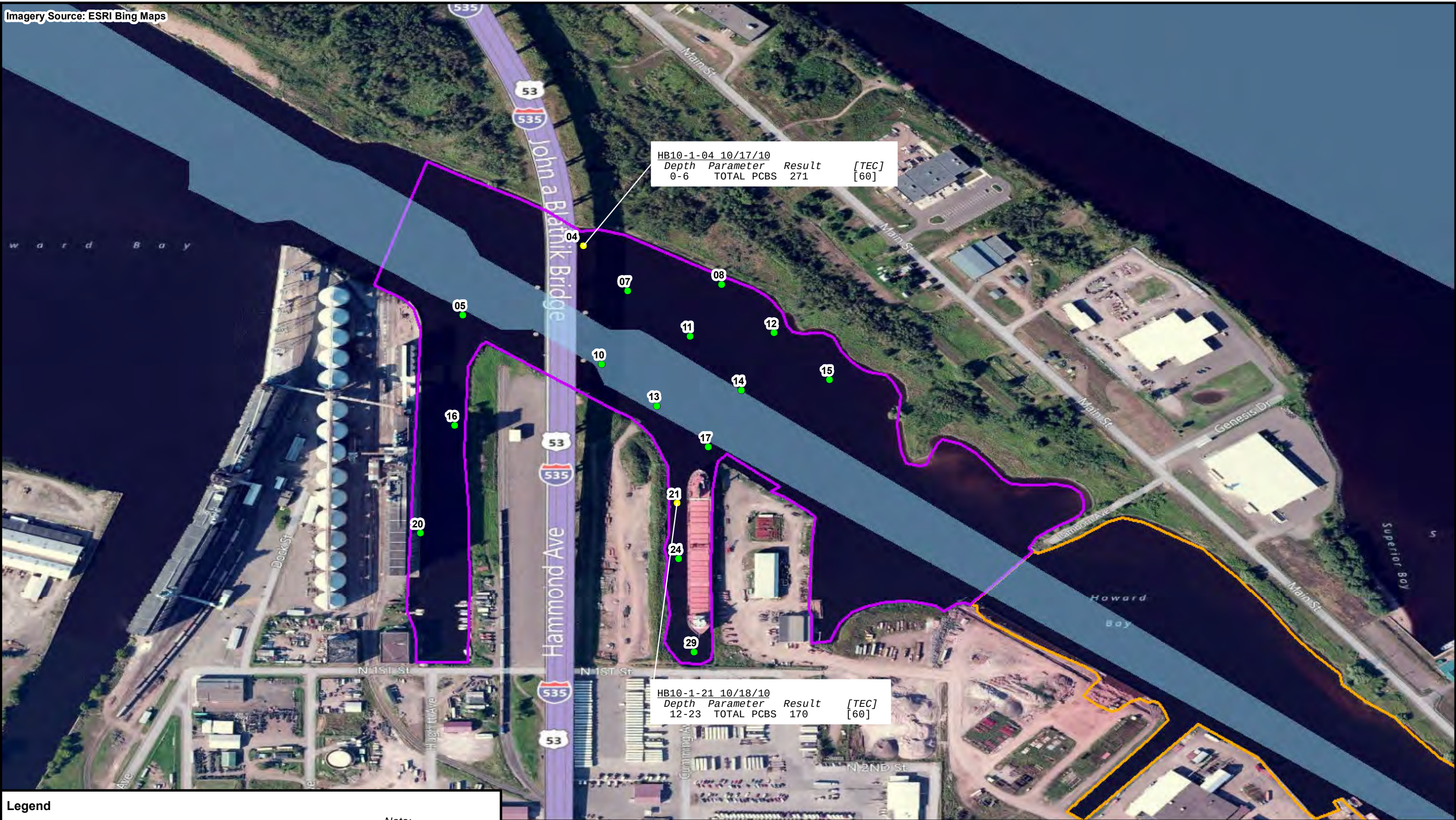
Prepared By:
WESTON SOLUTIONS, INC.
20 North Wacker Drive
Suite 1210
Chicago, IL 60606

Figure 3-3a
Sampling Results Exceeding the WDNR Consensus-Based Sediment Quality Guidelines for Area 1 – TAL Metals
Howard's Bay
Superior, Douglas County, Wisconsin



FILE: D:\Howards_Bay\mxd\SARrev1\F3-3b_Area_2_Exceeds_Metals.mxd 5/23/2012 10:06:17 AM wojdakon





Legend

- Level IV Concern: >PEC
- Level III Concern: >MEC and <=PEC
- Level II Concern: >TEC and <=MEC
- Level I Concern: <=TEC
- Shipping Fairways

- Area 1
- Area 2

0 400 Feet

Note:
Site study concentrations
normalized to 1% TOC
All units are in ug/kg



Prepared For:
US EPA Region V
Contract No.: EP-S5-06-04
TDD: S05-0008-1004-032
DCN: 1023-2A-AUGH



Prepared By:
WESTON SOLUTIONS, INC.
20 North Wacker Drive
Suite 1210
Chicago, IL 60606

Figure 3-4a

Sampling Results Exceeding the WDNR Consensus-Based
Sediment Quality Guidelines for Area 1 – Total PCBs
Howard's Bay
Superior, Douglas County, Wisconsin



Legend

- Level IV Concern: >PEC
- Level III Concern: >MEC and <=PEC
- Level II Concern: >TEC and <=MEC
- Level I Concern: <=TEC

Shipping Fairways

Area 1

Area 2

0 400 Feet



Prepared For:
US EPA Region V
Contract No.: EP-S5-06-04
TDD: S05-0008-1004-032
DCN: 1023-2A-AUGH

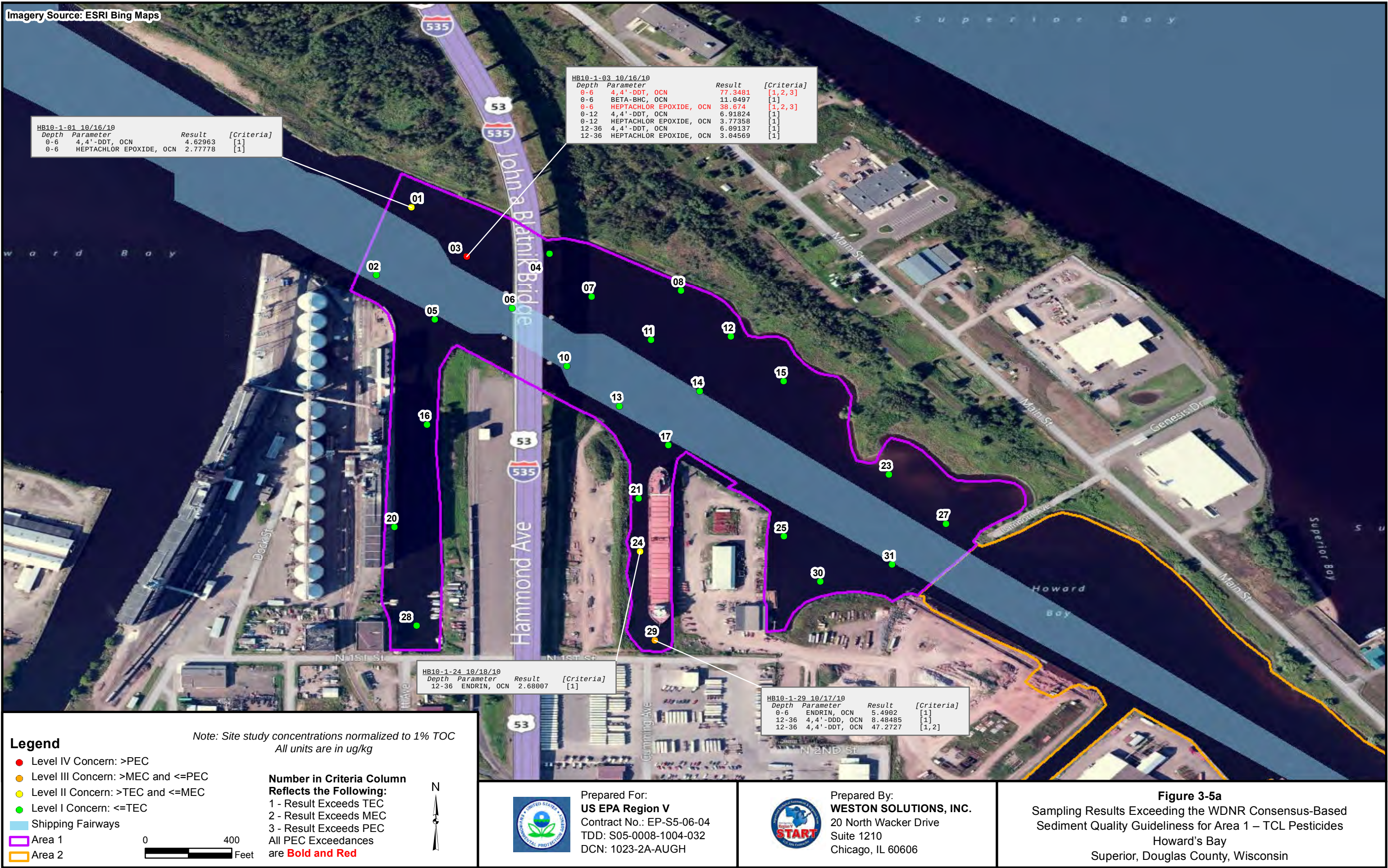


Prepared By:
WESTON SOLUTIONS, INC.
20 North Wacker Drive
Suite 1210
Chicago, IL 60606

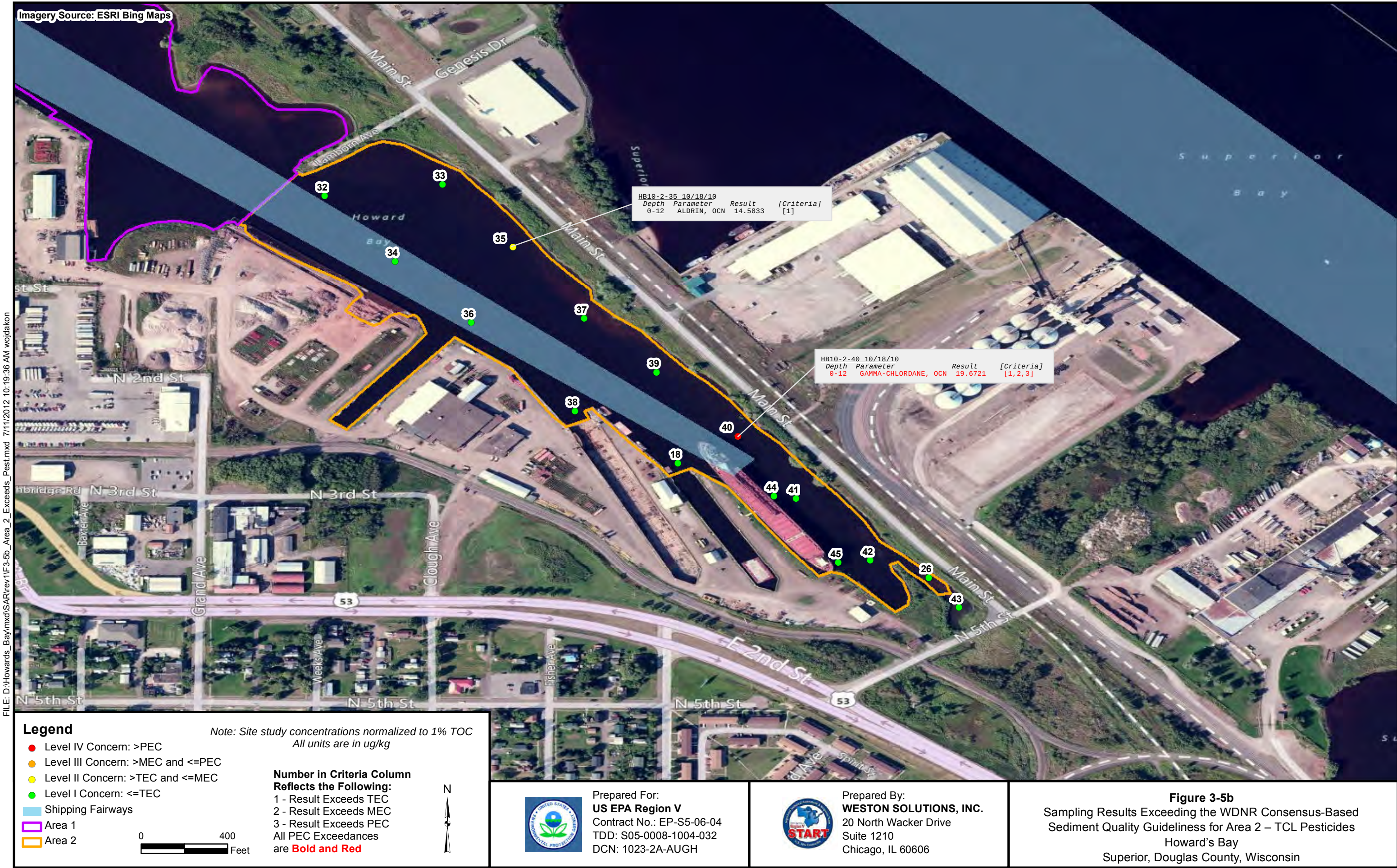
Figure 3-4b

Sampling Results Exceeding the WDNR Consensus-Based
Sediment Quality Guidelines for Area 2 – Total PCBs
Howard's Bay
Superior, Douglas County, Wisconsin

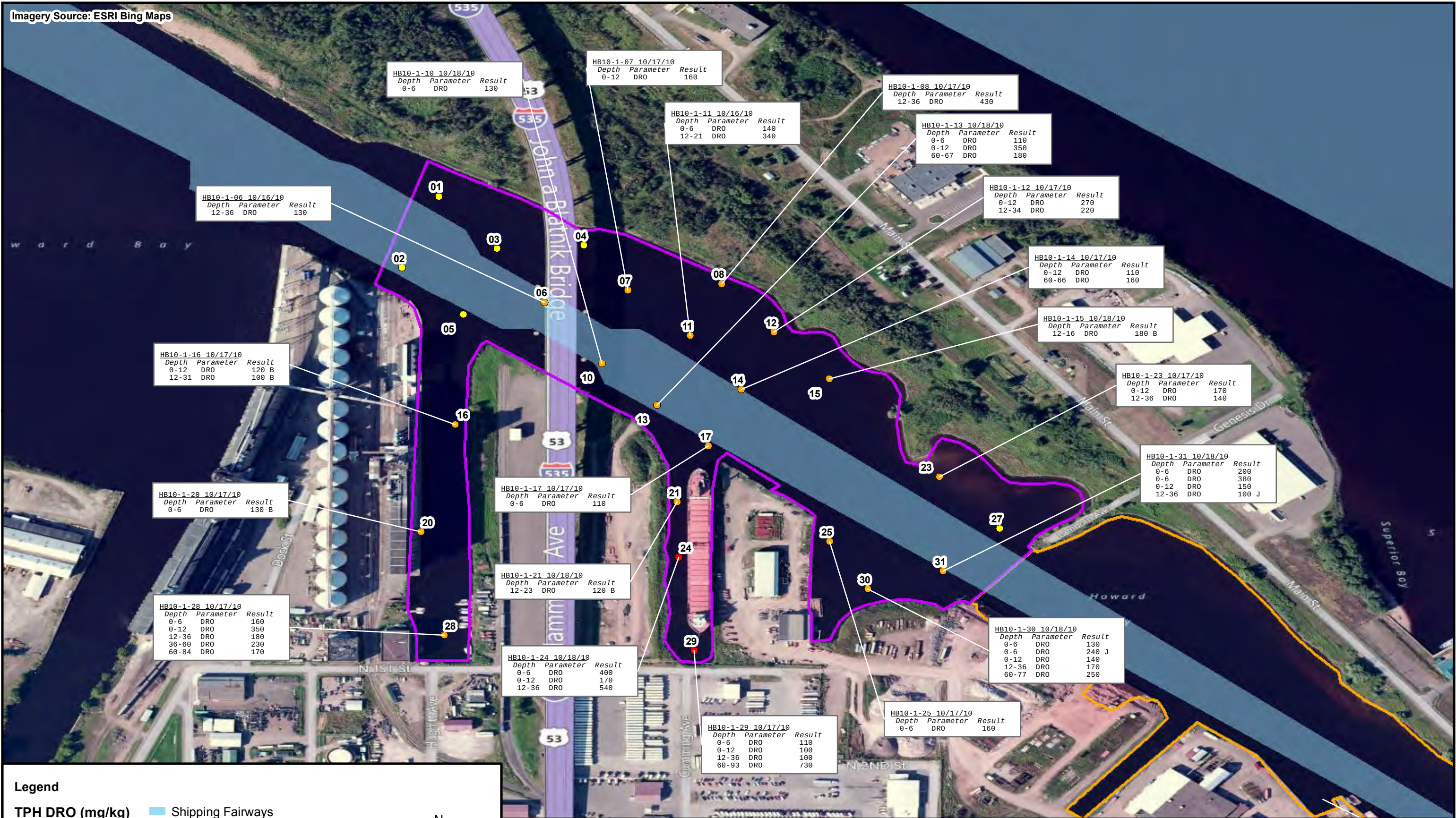
FILE: D:\Howards_Bay\mxd\SAR\rev1\F3-5a_Area_1_Exceeds_Pest.mxd 2/21/2012 2:58:31 PM wojdakon



FILE: D:\Howards_Bay\mxd\ISARrev1\F3-5b_Area_2_Exceeds_Pest.mxd 7/11/2012 10:19:36 AM wojdakon



Imagery Source: ESRI Bing Maps



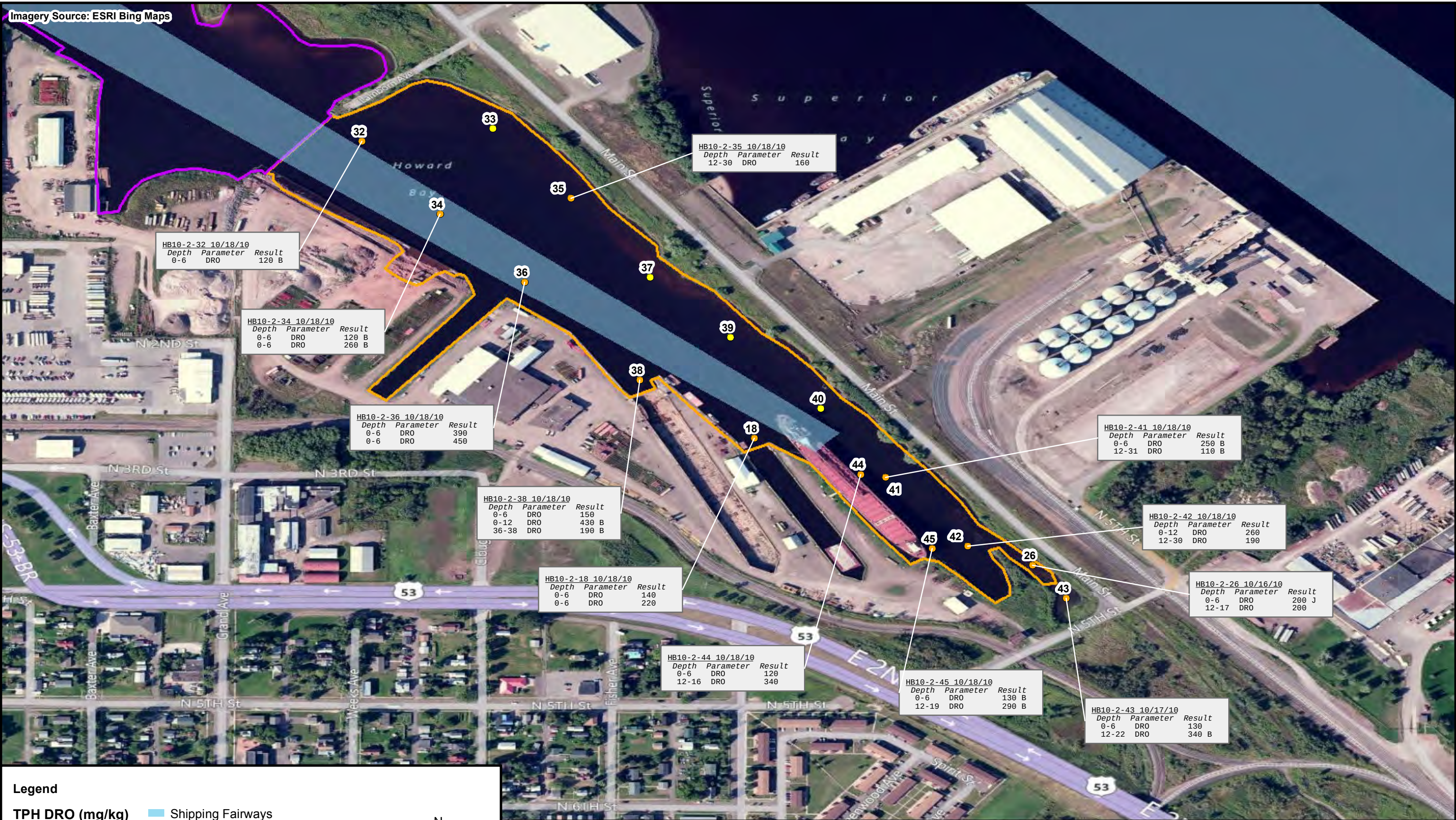
Prepared For:
US EPA Region V
Contract No.: EP-S5-06-04
TDD: S05-0008-1004-032
DCN: 1023-2A-AUGH



Prepared By:
WESTON SOLUTIONS, INC.
20 North Wacker Drive
Suite 1210
Chicago, IL 60606

Figure 3-6a
Sampling Results for Area 1 – TPH DRO
Howard's Bay
Superior, Douglas County, Wisconsin

FILE: D:\Howards_Bay\mxd\SAR\rev1\F3-6b_Area_2_TPH_DRO.mxd 2/21/2012 3:05:16 PM wojdakon



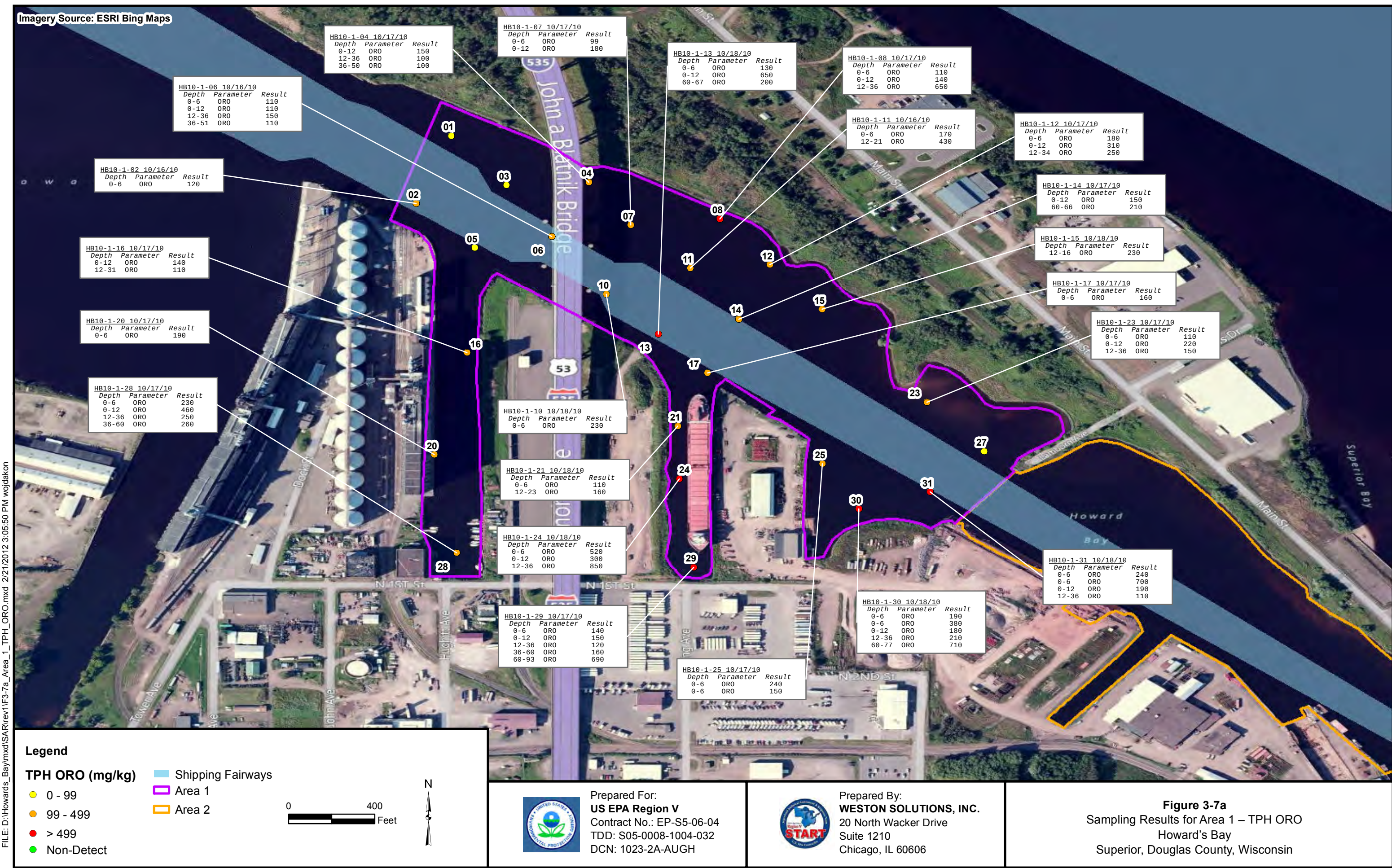
Prepared For:
US EPA Region V
Contract No.: EP-S5-06-04
TDD: S05-0008-1004-032
DCN: 1023-2A-AUGH



Prepared By:
WESTON SOLUTIONS, INC.
20 North Wacker Drive
Suite 1210
Chicago, IL 60606

Figure 3-6b
Sampling Results for Area 2 – TPH DRO
Howard's Bay
Superior, Douglas County, Wisconsin

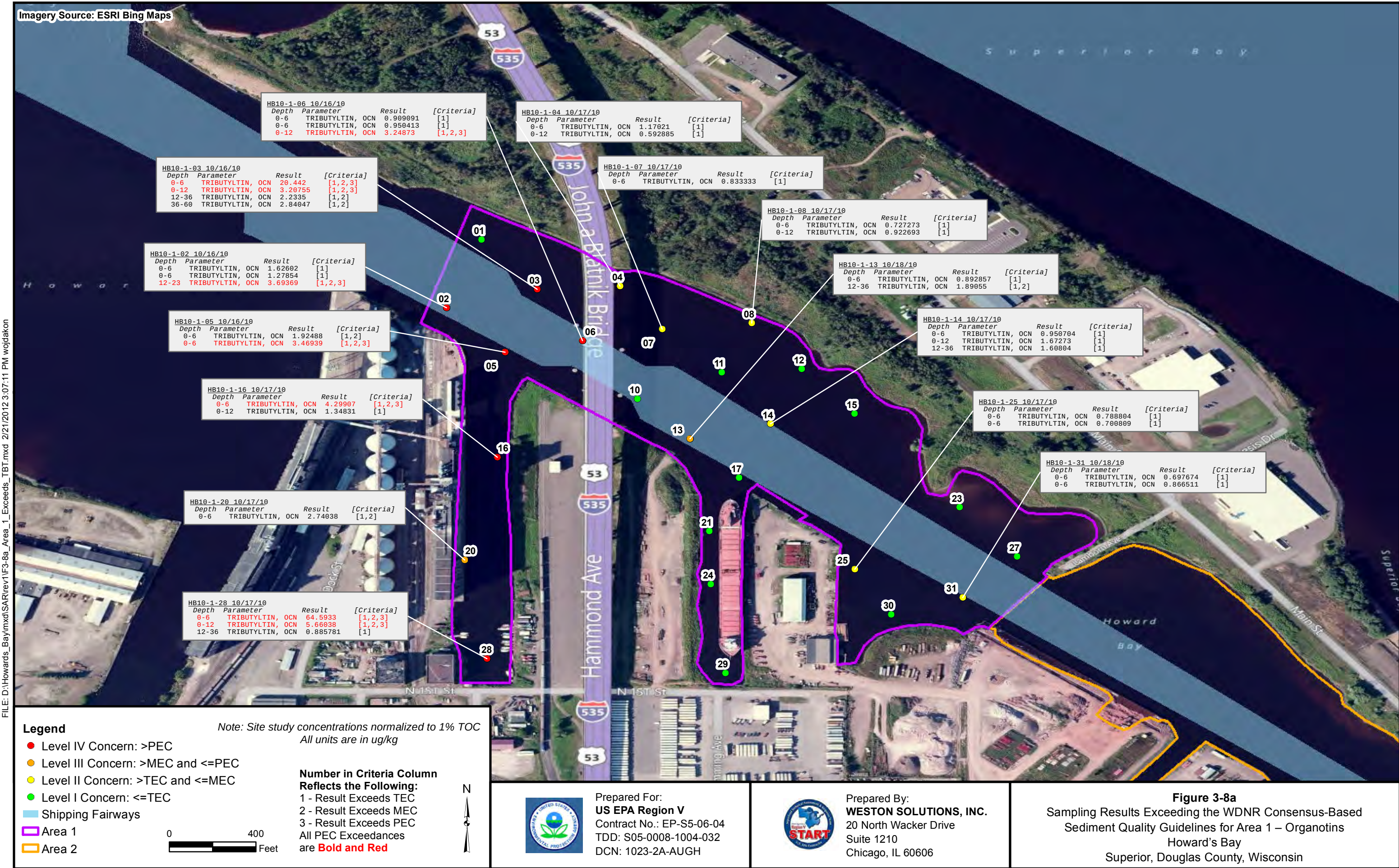
FILE: D:\Howards_Bay\mxd\SAR\rev1\F3-7a_Area_1_TPH_ORO.mxd 2/21/2012 3:05:50 PM wojdakon



FILE: D:\Howards_Bay\mxd\SAR\rev1\F3-7b_Area_2_TPH_ORO.mxd 2/21/2012 3:06:20 PM wojdakon



FILE: D:\Howards_Bay\mxd\SAR\rev1\F3-8a_Area_1_Exceeds_TBT.mxd 2/21/2012 3:07:11 PM wojdakon



FILE: D:\Howards_Bay\mxd\SAR\rev1\F3-8b_Area_2_Exceeds_TBT.mxd 2/21/2012 3:07:55 PM wojdakon



APPENDIX A
PHOTOGRAPHIC LOG



Site: Howard's Bay Site
Photograph No.: 1
Direction: Southeast
Subject: Howard's Bay Core Location HB-19.

Date: 10/17/10
Photographer: Tim Walls



Site: Howard's Bay Site
Photograph No.: 2
Direction: Southeast
Subject: Howard's Bay Core Location HB-19.

Date: 10/17/10
Photographer: Tim Walls



Site: Howard's Bay Site

Photograph No.: 3

Direction: Not Applicable (NA)

Subject: Howard's Bay Core Location HB-29.

Date: 10/17/10

Photographer: Tyler Ziebell



Site: Howard's Bay Site

Photograph No.: 4

Direction: NA

Subject: Howard's Bay Core Location HB-29.

Date: 10/17/10

Photographer: Tyler Ziebell



Site: Howard's Bay Site

Photograph No.: 5

Direction: NA

Subject: Howard's Bay Core Location HB-9.

Date: 10/17/10

Photographer: Tim Walls



Site: Howard's Bay Site

Photograph No.: 6

Direction: NA

Subject: Howard's Bay Core Location HB-9; note taconite pellets.

Date: 10/17/10

Photographer: Tim Walls



Site: Howard's Bay Site

Photograph No.: 7

Direction: NA

Subject: Howard's Bay Core Location HB-30.

Date: 10/18/10

Photographer: Jon Colomb



Site: Howard's Bay Site

Photograph No.: 8

Direction: NA

Subject: Howard's Bay Core Location HB-30; note wood fragments.

Date: 10/18/10

Photographer: Jon Colomb



Site: Howard's Bay Site

Photograph No.: 9

Direction: NA

Subject: Howard's Bay Core Location HB-13.

Date: 10/18/10

Photographer: Jon Colomb



Site: Howard's Bay Site

Photograph No.: 10

Direction: NA

Subject: Howard's Bay Core Location HB-13.

Date: 10/18/10

Photographer: Jon Colomb



Site: Howard's Bay Site

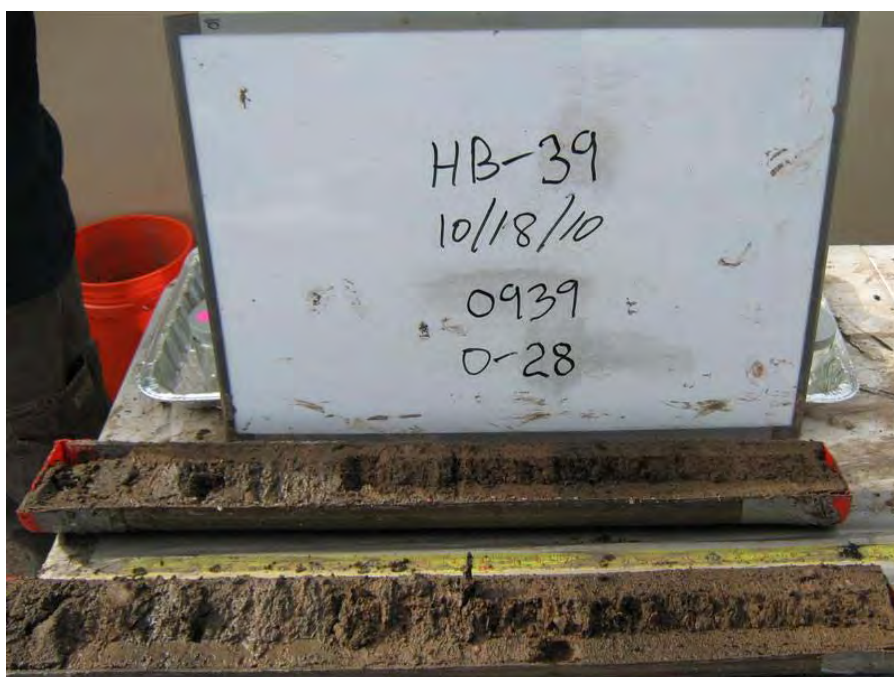
Photograph No.: 11

Direction: NA

Subject: Howard's Bay Core Location HB-43.

Date: 10/18/10

Photographer: Jon Colomb



Site: Howard's Bay Site

Photograph No.: 12

Direction: NA

Subject: Howard's Bay Core Location HB-39.

Date: 10/18/10

Photographer: Jon Colomb