



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Scott Walker, Governor
Cathy Stepp, Secretary

Ashland Service Center
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Ashland, Wisconsin 54806
Telephone 715-685-2900
FAX 715-685-2909

August 17, 2017

MR RICHARD CARLSON
TERMINAL SUPERINTENDENT
CHS INC – SUPERIOR GRAIN ELEVATORS
41 DOCK ST
PO BOX 518
SUPERIOR WI 54880

Subject: Sediment Contamination in Howards Bay and Hughitt Avenue Slip
Superior, Wisconsin

Dear Mr. Carlson:

I am writing you today to extend an invitation to meet with staff from the Department of Natural Resources (DNR) to provide you with an update on the Howards Bay contaminated sediment project.

As you might recall, DNR Hydrogeologist Erin Endsley wrote to you in August 2014 to inquire about potential sources of tributyltin and mercury in the vicinity of Hughitt Avenue Slip. This included the parcels owned by CHS Inc. While Ms. Endsley's letter explained what information the DNR was looking for at the time, it does not appear that she provided much by way of background information for her request in that letter.

For the past 4 years, DNR has been working in partnership with the US Environmental Protection Agency, Fraser Shipyards and the City of Superior to address a large area of contaminated sediments found in Howards Bay and the adjacent slips (i.e., Hughitt Avenue Slip, Cummings Avenue Slip and Fraser Slip). The contaminants include lead, polynuclear aromatic hydrocarbons, tributyltin and mercury. Because of the widespread nature of the contamination and the various potential contaminant sources, we are attempting to combine public and private funding to complete the project.

The project proposes to remove approximately 83,000 cubic yards of contaminated sediments and dispose of that material at a landfill. A concurrent dredging project in the navigation channel will remove additional contaminated sediments while also maintaining the depths necessary for shipping in Howards Bay. If the final funding can be secured this fall, dredging will commence in the summer of 2018. I have attached a preliminary map showing some of the proposed dredge units, along with a fact sheet that provides basic project information.

Because the project will include dredging activities in Hughitt Avenue Slip, we wanted to make sure that you are aware of the project and to discuss with you any potential disruptions to operations at the CHS Inc. facility that you might foresee from dredging in this area. And because we are also trying to finalize the western boundaries of the dredging project, we would like to share with you the results of sediment samples collected in Hughitt Avenue Slip and at the north end of the CHS Inc. dock, and discuss with you any interest that CHS Inc. might have in participating in the project.

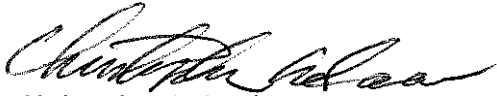
Mr. Richard Carlson – August 17, 2017
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As I stated above, DNR staff (Water Resources Management Specialist Joe Graham and myself) would like to meet with you at your convenience to discuss the project. Please let us know when you would be available to meet, and we will schedule a meeting time and place.

Please note, too, that I will be unavailable during the week of August 21-25, and will have limited availability the following week, although I should have access to my voice messages and email. If you have any questions, feel free to write or call me at 715-685-2920. I can also be reached by e-mail at Christopher.Saari@Wisconsin.gov. If I am unavailable, you can contact Mr. Graham at 715-635-4057 or by email at Joseph.Graham@Wisconsin.gov.

We look forward to hearing from you. Thank you for your cooperation.

Sincerely,



Christopher A. Saari
Hydrogeologist

attach.

cc: Joe Graham – DNR Spooner

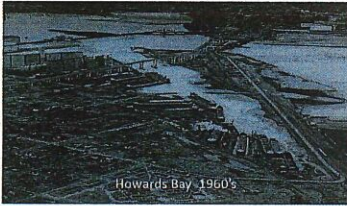
Cleaning Up Legacy Contamination in Howards Bay through Public-Private Partnership

Joe Graham¹, Darienne McNamara², Sean Smith³, and Bill Murray⁴

¹ Wisconsin Department of Natural Resources, ² City of Superior, ³ Fraser Shipyards, ⁴ U.S. EPA Great Lakes National Program

Overview

Howards Bay is an industrial embayment that is important for Lake Superior commerce. The bay has been the home to shipyards, grain terminals, commercial fishing operations and other industries for well over 100 years. This history of industrial use has polluted sediments in the bay. Dredging is needed to remove contamination and to provide a deep enough channel for vessels entering the shipyard. To reduce costs, the City of Superior, Wisconsin DNR, EPA, and Fraser Shipyards, Inc. are collaborating in order to address environmental problems and meet maritime needs with a single project. The US Army Corps of Engineers is also participating in project design and implementation. Once cleaned up, the bay can continue to serve commerce while providing important habitat for fish like musky and northern pike as well as migratory waterfowl.

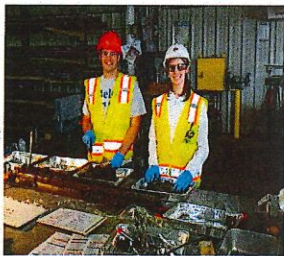


Howards Bay Project

- Located within the St. Louis River Area of Concern
- Priority area for cleanup due to contaminated sediment
- Elevated Polynuclear Aromatic Hydrocarbons (PAHs), Lead, Mercury and Tributyltin
- Cleanup action needed to address contamination and related restrictions on dredging
- Dredging of the shipping channel for navigation
- Supports local business and workers
- Economic and environmental benefits achieved thru public-private partnership

Collaborative Effort

- Great Lakes Restoration Initiative
- US Army Corps conducting strategic navigation dredging
- Great Lakes Legacy Act Project for cleanup action
- Project Partners include US EPA, Fraser Shipyards, City of Superior and DNR
- US Army Corps of Engineers also serves as EPA's contractor on the cleanup project



What's in Howards Bay Sediments?

- Lead**
 - Paint (sand blasting ship hulls)
 - Leaded Gasoline
- PAHs**
 - Combustion
 - Road Runoff
 - Spills
 - Treated Wood
- Mercury**
 - Many Industrial Uses
 - Coal Combustion
- Tributyltin**
 - Antifouling Agent in Marine Paint



Feasibility Study

- Evaluated data and potential sources
- Established cleanup goals and identified areas needing cleanup
- Identified and screened possible cleanup technologies
- Developed cleanup options and evaluation criteria
 - Sediment Removal (i.e. dredging) (4 Options)
 - Sediment Removal and Capping (3 Options)
 - Dredged Sediment Management (9 Options)
- Selected a cleanup option that best meets the cleanup goals and evaluation criteria
- Combination of dredging and enhanced natural recovery (leave in place and cap) is the best option based on long-term effectiveness, costs, and ability to implement.

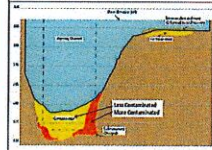


Project Design & Implementation

Selected Cleanup Alternative ~\$14,000,000

Action	Clean-up Area (Acres)	Approximate Volume (Cubic Yards)
Navigation Dredging	6.7	40,000
Clean-Up Dredging	5.78	83,800
Enhanced Natural Recovery	1.5	N/A

Illustration of Alternative



Dredged Material Management

- Strategic Navigation Dredging - Erie Pier Processing and Reuse Facility
- Cleanup Dredged Material
- Use to Improve cap/cover at Wisconsin Point Landfill

Wisconsin Point Landfill

Existing Cap Issues

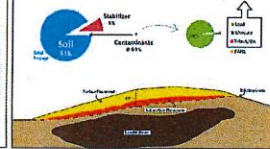
Used for stockpiling recently

- greater volume of waste
- improved drainage
- reduced leaching
- increased vegetation
- additional future maintenance

Recreational Improvements



What about contamination?



Site-Specific Protective Standards for Recreation

- Developed based on recreational use identified in Wisconsin Point Management Plan
- Protective of human health and the environment
- Limited recreational uses
 - e.g. hiking trails, off leash dog exercise area
- Realistic Exposure Assumptions
 - Frequency and exposure times reduced in comparison to non-industrial/residential exposure
- Placement Criteria for the Chemical Present
 - Lead, Mercury and Tributyltin—Same as non-industrial site (e.g. residential)
 - PAHs—Less stringent for some compounds, but comparable to urban background
- Recreational Uses Allowed at Similar Sites
 - Recreation trails on former railroad corridors with similar contaminants
 - Dog parks and other uses on closed landfills
- Standards for Recreation Higher than Sediment Cleanup Targets
 - Aquatic organisms tend to be more sensitive to contamination than people or organisms that live on land, standards to protect aquatic life are often much lower than protective levels for receptors on land.



Recreational Improvements

Plans and design determined by community

Improvements funded by EPA, DNR and Fraser

Address objectives in Wisconsin Point Management Plan (2012) which calls for:

- "improvements to the park"
- "recreation"
- "improvement of trails" with focus on recreation
- "land management" with focus on recreation
- "development of new trails"

Limitations based on landfill characteristics and placement criteria for dredge material

Design to be the focus of community feedback, input



What about leaching and runoff?

Recent work with the Wisconsin Point Management Plan (2012) which calls for:

Runoff management Plan will be designed to meet the objectives of the Wisconsin Point Management Plan

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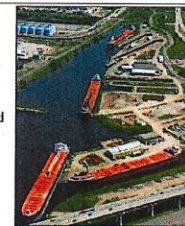
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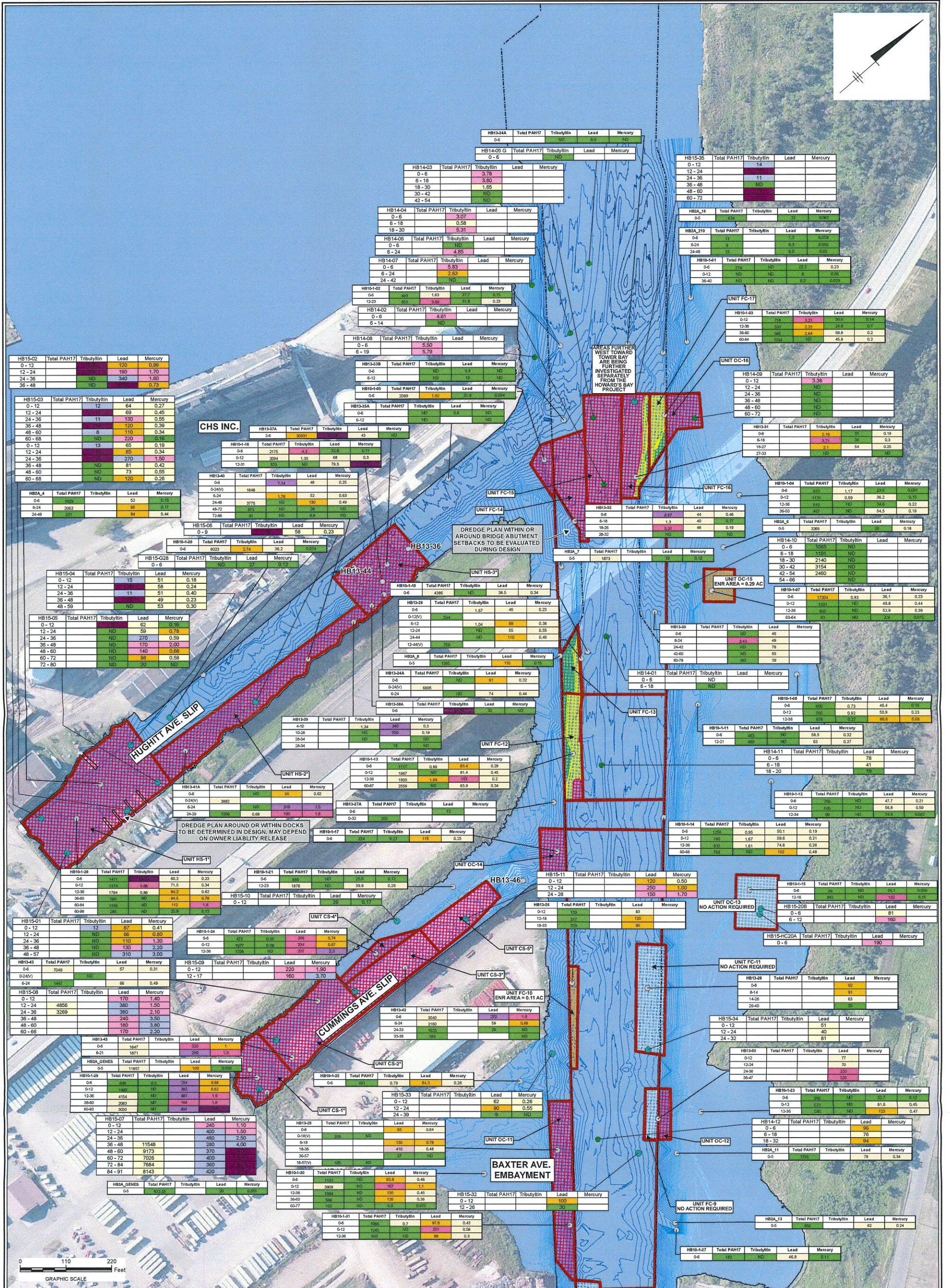
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Project Benefits

- Addresses contamination in Howards Bay
- Restores navigation depths in Howards Bay
- Beneficial use of dredged material
- Improve landfill cap, help protect environment around landfill
- New recreation area in Superior
- Supports local business and workers
- Takes advantage of available funding
 - Cash from shipyard and Wisconsin's sediment bonding authority
 - Placement site provides City's portion of cost share (no cash needed from City)





LEGEND

- 2007, 2010, OR 2013 SAMPLE LOCATION
- 2014 SEDIMENT SAMPLE LOCATION
- 2015 SAMPLE LOCATION
- SHORELINE (APPROXIMATE)
- FEDERAL CHANNEL
- SEDIMENT MANAGEMENT UNIT
- ADDITIONAL CLEAN-UP DREDGE AREA
- STRATEGIC NAVIGATION DREDGE AREA
- OVERLAPPING CLEAN-UP DREDGE AREA
- STRATEGIC NAVIGATION DREDGE AREA
- NO ACTION
- ENHANCED NATURAL RECOVERY (ENR)

NOTES:

1. JULY 6, 2011 IMAGERY PROVIDED BY ESRI IMAGE SERVICE.
2. SAMPLE INFORMATION FROM DATABASES PROVIDED BY WNDR ON MAY 23, 2013 AND 2014 AND 2015 DATA FROM WNDR.
3. CHANNEL BOUNDARY PROVIDED BY THE US ARMY CORPS OF ENGINEERS - DETROIT DISTRICT HTTP://WWW.LRE.USACE.ARMY.MIL
4. TOTAL PAHS WERE CALCULATED BY SUM OF 17 PAHS. THE ASSOCIATE VALUE TO NON-DETECT IS 1/4 REPORTING LIMIT.
5. ORGANIC RESULTS WERE NORMALIZED TO TOC CONTENT PRIOR TO COMPARISON TO THE CRITERIA FOR SAMPLES WITH DETECTED TOC CONTENT GREATER THAN 2 G/KG.
6. 17 TOTAL PAHS WERE CALCULATED BY SUM OF THE FOLLOWING 17 PAHS: 2-METHYLNAPHTHALENE, ACENAPHTHENE, BENZO(A)ANTHRACENE, BENZO(B)FLUORANTHENE, BENZO(G,H)PERYLENE, BENZO(K)FLUORANTHENE, BENZO(A)PYRENE, CHRYSENE, DIBENZO(A,H)ANTHRACENE, FLUORANTHENE, FLUORENE, INDENO(1,2,3-CD)PYRENE, NAPHTHALENE, PHENANTHRENE, AND PYRENE.
7. ALL DREDGE BOUNDARIES AND ESTIMATED REMOVAL DEPTHS ARE SUBJECT TO REVISION DURING THE DESIGN PHASE AND WILL ACCOUNT FOR STRUCTURAL SETBACKS AS NEEDED.

B. AC = ACRES
CY = CUBIC YARDS
FT = FEET
ND = NON-DETECT
V = VERTICALLY COMPOSITE
R = REPLICATE
A = SECOND LOCATION ATTEMPT
B = THIRD LOCATION ATTEMPT
TEC = THRESHOLD EFFECT CONCENTRATION
MEC = MIDPOINT EFFECT CONCENTRATION
PEC = PROBABLE EFFECT CONCENTRATION
µG/KG-OC = MICROGRAM PER KILOGRAM OF SEDIMENT ORGANIC CARBON AT 1 PERCENT
TOC = TOTAL ORGANIC CARBON
PAH = POLYCYCLIC AROMATIC HYDROCARBONS
* = FINAL REMOVAL DEPTH TO BE DETERMINED DURING DESIGN OR BASED ON FIELD CONDITIONS

Location ID	Total PAH17 (µg/kg-OC)	Tributyltin (µg/kg-OC)	Lead (µg/kg)	Mercury (µg/kg)
0-6	NA	NA	NA	NA
6-18	NA	NA	NA	NA
18-30	NA	NA	NA	NA
30-42	NA	NA	NA	NA
42-54	NA	NA	NA	NA
54-66	NA	NA	NA	NA
66-72	NA	NA	NA	NA
72-84	NA	NA	NA	NA
84-96	NA	NA	NA	NA
96-108	NA	NA	NA	NA
108-120	NA	NA	NA	NA
120-132	NA	NA	NA	NA
132-144	NA	NA	NA	NA
144-156	NA	NA	NA	NA
156-168	NA	NA	NA	NA
168-180	NA	NA	NA	NA
180-192	NA	NA	NA	NA
192-204	NA	NA	NA	NA
204-216	NA	NA	NA	NA
216-228	NA	NA	NA	NA
228-240	NA	NA	NA	NA
240-252	NA	NA	NA	NA
252-264	NA	NA	NA	NA
264-276	NA	NA	NA	NA
276-288	NA	NA	NA	NA
288-300	NA	NA	NA	NA

**HOWARDS BAY
SUPERIOR, WISCONSIN
DESIGN DOCUMENT REPORT**

**SUMMARY OF ANALYTICAL DATA -
AREA 1**

FIGURE
3

ARCADIS Design & Consultancy
for natural and built assets