UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

NOV 14 2017

REPLY TO THE ATTENTION OF

Jon W. Allan, Director
Office of the Great Lakes
Michigan Department of Environmental Quality
525 West Allegan Street
P.O. Box 30473
Lansing, Michigan 48909-7973

Dear Mr. Allan:

Thank you for your September 7, 2017, request to remove the "Restrictions on Dredging Activities" Beneficial Use Impairment (BUI) at the binational St. Marys River Area of Concern (AOC) located on the border of Sault Ste. Marie, MI and Sault Ste. Marie, Ontario. As you know, we share your desire to restore all of the Great Lakes AOCs and to formally delist them.

Based upon a review of your submittal and the supporting data, the U.S. Environmental Protection Agency (EPA) hereby approves your request to remove this BUI from the St. Marys River AOC. Since the St. Marys River is a binational AOC, EPA also requested a review of the submittal by Environment Canada and Climate Change (ECCC) and Ontario Ministry of the Environment (OMEC) through the binational Four Agency Management Committee. EPA will notify the International Joint Commission (IJC) of this significant positive environmental change at this AOC.

We congratulate you and your staff as well as the many federal, state and local partners who have worked so hard and been instrumental in achieving this important environmental improvement. Removal of this BUI will benefit not only the people who live and work in the St. Marys River AOC, but all residents of Michigan, Ontario and the Great Lakes Basin as well.

We look forward to the continuation of this important and productive relationship with your agency and the Binational Public Advisory Committee (BPAC) as we work together to delist this AOC in the years to come. If you have any further questions, please contact me at (312) 886-9296, or your staff can contact John Perrecone at (312) 353-1149.

Sincerely,

Tinka G. Hyde, Director
Great Lakes National Program Office

cc: Rick Hobrla, MDEQ
John Riley, MDEQ
Raj Bejankiwar, IJC
Jon Gee, ECCC
Lee Orphan, OMEC
John Perrecone, EPA, GLNPO
Marc Tuchman, EPA, GLNPO
Mike Ripley, BPAC co-chair
Ron Prickett, BPAC co-chair

STATE OF MICHIGAN
OFFICE OF THE GREAT LAKES
LANSING

RICK SNYDER
GOVERNOR

JON W. ALLAN
DIRECTOR

September 7, 2017

Ms. Tinka Hyde, Director
Great Lakes National Program Office
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard (G-17J)
Chicago, Illinois 60604-3507

Dear Ms. Hyde:

I am writing to request the United States Environmental Protection Agency (USEPA), Great Lakes National Program Office's (GLNPO) concurrence with the removal of the Restrictions on Dredging Activities Beneficial Use Impairment (BUI) from the U.S. side of the St. Marys River Area of Concern (AOC). The Michigan Department of Environmental Quality (MDEQ), Office of the Great Lakes (OGL) has assessed the status of this BUI in accordance with the state's *Guidance for Delisting Michigan's Great Lakes Areas of Concern*, and recommends that the BUI be removed from the list of impairments in the St. Marys River AOC.

Enclosed please find documentation to support this recommendation, including the BUI Removal Recommendation prepared by OGL staff. The St. Marys River Binational Public Advisory Council provided a letter of support for this action, dated June 28, 2017. A copy is included as one of the appendices of the removal recommendation.

Please note that a public comment period was held from July 24, to August 22, 2017. No input was received during the 30-day comment period.

We value our continuing partnership in the AOC Program and look forward to continuing to work with GLNPO in the removal of other BUIs and the delisting of AOCs. If you need further information concerning this request, please contact Mr. John Riley at 517-284-5045, or you may contact me.

Sincerely,

Rick Hobrla (acting)

Jon W. Allan, Director
Office of the Great Lakes
517-284-5035

Enclosure
cc/enc: Mr. Marc Tuchman, USEPA
Mr. John Perrecone, USEPA
Mr. Rick Hobrla, MDEQ
Mr. John Riley, MDEQ

Removal Recommendation
Restrictions on Dredging Activities Beneficial Use Impairment
St. Marys River Area of Concern

Issue

The Michigan Department of Environmental Quality (MDEQ), Office of the Great Lakes (OGL), Areas of Concern (AOC) program recommends the removal of the Restrictions on Dredging Activities Beneficial Use Impairment (BUI) from the United States (U.S.). side of the St. Marys River AOC, based on the review of relevant documentation and in accordance with the process and criteria set forth in the *Guidance for Delisting Michigan's Great Lakes Areas of Concern* (*Guidance*) (MDEQ, 2015). This recommendation is made with the support of the St. Marys River Binational Public Advisory Council (BPAC) and staff from the United States Environmental Protection Agency (U.S. EPA), Great Lakes National Program Office.

Background

The St. Marys River is a binational AOC, shared jointly between the U.S. and Canada. To date, four BUIs have been restored on the U.S. side of the St. Marys River AOC: Degradation of Aesthetics, in January 2014; Bird or Animal Deformities or Reproductive Problems, in March 2014; Beach Closings, in July 2016; and Eutrophication or Undesirable Algae, in December 2016. This Removal Recommendation pertains only to the Restrictions on Dredging Activities BUI. Five other beneficial uses remain impaired on the U.S. side of the AOC, including: Restrictions on Fish and Wildlife Consumption, Fish Tumors or Other Deformities, Degradation of Benthos, Degradation of Fish and Wildlife Populations, and Loss of Fish and Wildlife Habitat.

The 1992 Stage 1 Remedial Action Plan (RAP) for the St. Marys River, prepared jointly by the Ontario Ministry of the Environment and the Michigan Department of Natural Resources (OMOE and MDNR, 1992), provides the following rationale for assessing which BUIs were assigned to the AOC:

> *A determination as to whether a specific use impairment exists in the St. Marys River AOC was made using the Listing/Delisting Guidelines for Great Lakes Areas of Concern in conjunction with applicable standards, guidelines, and objectives, where available. In the absence of standards, guidelines, or objectives, impairment status is based on best professional judgement from the evidence available.*

The Guidelines mentioned above refer to listing and delisting recommendations developed by the International Joint Commission in 1991, to help establish a consistent set of measures to apply across the Great Lakes Basin (IJC, 1991). More specifically, the Stage 1 RAP provided an overview of the Restrictions on Dredging BUI by explicitly listing several locations of known sediment contamination, including: the Algoma Slip, Little Lake George, Lake George, Lake Nicolet, and the Cannelton Industries site. The document also listed a number of specific contaminants that were known to be associated with those locations, including metals, PCBs, polycyclic aromatic hydrocarbons (PAHs) and others. Each of these areas is located outside the federally-maintained navigation channel and will be discussed later in this document.

Michigan's Restoration Criteria

Michigan's 2015 statewide restoration criteria for the Restrictions on Dredging Activities BUI reads in part as follows (*Guidance*, Appendix A):
This BUI will be considered restored when:

- *During the most recent routine dredging in the U.S. Army Corps of Engineers (COE) designated navigational channel, use of a confined disposal facility or TSCA-level landfill for dredge spoils was not required due to chemical contamination.*

The St. Marys River BPAC is a binational organization of citizens, academics, and agency personnel that serve in an advisory role to the federal, state, and provincial agencies on issues pertinent to the Area of Concern. At the BPAC's March 2016 meeting, Michigan's revised restoration criteria for the Restrictions on Dredging BUI were unanimously accepted.

Michigan's restoration criteria only apply to the federally-maintained commercial navigation channel. The channel does not include marinas, boat slips, public access areas, or shoreline areas. Some of those areas may continue to require restrictions on placement of dredged materials due to chemical contamination. There are no known ongoing point sources of chemical contaminants into the St. Marys River from the U.S. side of the AOC, notwithstanding National Pollutant Discharge Elimination System regulated facilities.

Proposed dredge projects are evaluated under federal and state authorities. Any special circumstances, including contamination, are addressed in the permitting process that regulates pre-dredge analyses and disposal of dredge spoils. These programs apply throughout Michigan waters, not just in AOCs. Dredge projects outside of the federally-maintained navigation channel in the St. Marys River were not considered in the evaluation of this BUI.

Open water disposal of contaminated dredge spoils in the Great Lakes or connecting waterways is not permitted in Michigan. As a result, use of disposal options other than open water (e.g., confined disposal facility) is not automatically a restriction on dredging. Any actual restrictions are determined by analytical results to characterize contaminant concentrations in dredge spoils.

Part of the foundation of Michigan's restoration criteria for this BUI is the recognition that it is not feasible to sample the entire geographic extent of a river system as expansive as the St. Marys River. Sampling results (see Appendix C) from the most recent navigation channel dredge project, implemented in 2014 and 2015, are viewed as being representative of the system as a whole, even though the area that was dredged is a portion of the entire navigation channel.

From Lake Superior at the northern end of the river to Lake Huron at the southern end, the federally-maintained navigation channel passes through the Soo Locks and continues through Lake Nicolet on the west side of Sugar Island. It does not pass through the Lake George Channel, Lake George or Little Lake George. See Figure 2 in Appendix B. The channel splits at the north end of Neebish Island and extends along both the east and west sides of the island. At the south end of the island, the navigation channel proceeds downstream from Munuscong Lake to the Detour Passage, and splits again into upbound and downbound lanes, near Drummond Island at Lake Huron. The navigation channel is primarily located on the U.S. side of the border, but also includes areas within Canadian waters.

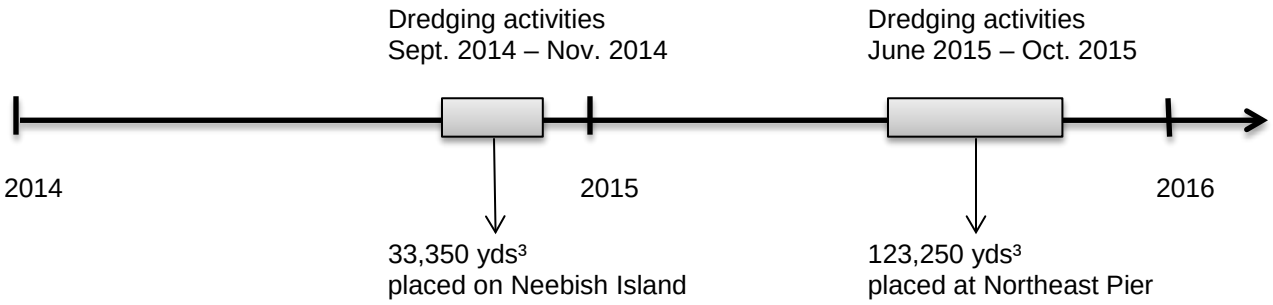
Description of Sediment Data Collection and Maintenance Dredging Locations

The COE sampled 30 sites in the St. Marys River to assess chemical contaminant levels for determination of appropriate disposal options for the dredge spoils (sample ID numbers: SM-14-01 through SM-14-30). See Figure 3 in Appendix B for locations, and data tables in Appendix C for analytical results. The sample sites are located downstream of Sault Ste. Marie, on the west side of Sugar Island through Nicolet Lake, on the west side of Neebish Island, and near Moon Island at the north end of Munuscong Lake.

In 2014 and 2015, contractors for the COE dredged sections of the navigation channel to ensure the established project depth (up to 30 feet) was maintained to accommodate safe and efficient passage of the freighters and cargo that is vital to the Great Lakes regional economy. Sections experiencing the most sediment deposition received priority for material removal. This project specifically addressed areas downstream of Sault Ste. Marie as described above, and as indicated in Figures 3, 4, and 6 in Appendix B.

Between September 17 and November 29, 2014, a total of approximately 33,350 yds³ of material was removed from the channel and placed at the Neebish Island disposal site, as indicated in Figures 4 and 5 in Appendix B. Dredging resumed in 2015 to complete the project, deepening the navigation channel in the remainder of the area where sediment sampling occurred. Between June 20 and October 13, 2015, approximately 123,250 yds³ of material were removed from the navigation channel and placed at the Northeast Pier, adjacent to the Soo Locks. See Figures 6 and 7 in Appendix B. In total, approximately 156,600 yds³ of material was disposed of between the two locations.

2014 - 2015 St. Marys River Dredging Timeline



MDEQ's Contaminant Assessment Criteria

Several sets of criteria may be employed by the State of Michigan when assessing analytical results and determining the most appropriate disposal location for dredged sediments, pursuant to Part 115, Solid Waste Management, and Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended:

- First, the MDEQ's Dredge Sediment Review procedure (Policy and Procedure Number 9-018) outlines the permitting process, identifies when proposed dredging requires testing, and specifies the minimum number of samples required for analysis, based on volume: *(The link provided was broken and has been removed)*. This document also provides regional background levels for arsenic.

- Review Criteria and Detection Limits for Metals, PNAs (PAHs), and PCBs provides method detection limits and review criteria for certain contaminants: *(The link provided was broken and has been removed)*. The laboratory that performed the contaminant analyses for sediment samples collected in the St. Marys River provided results for a considerable number of compounds, some of which were not required or reviewed by the MDEQ for disposal purposes.

- Table 1, Groundwater: Residential and Non-Residential Part 201 Generic Cleanup Criteria and Screening Levels/Part 213 Risk Based Screening Levels come into play when contaminant concentrations exceed method detection limits, statewide default background or regional background levels: *(The link provided was broken and has been removed)*

- Table 2, Soil: Residential Part 201, Generic Cleanup Criteria and Screening Levels/Part 213 Risk-Based Screening Levels provides direct contact limits for pesticides, herbicides, metals and PAHs: https://www.michigan.gov/-/media/Project/Websites/egle/Documents/Programs/RRD/Remediation/Rules---Criteria/table-2-soil-residential-pdf.pdf. Materials containing contaminant concentrations exceeding residential direct contact criteria would require restrictions on the disposal location.

The residential direct contact limits are the most conservative standards that the MDEQ applies. These numbers assume that at some point in time, people may end up living near the dredged materials and have repeated exposure to them. These limits are based on the potential health risks associated with such exposure. However, the disposal locations utilized by the COE are isolated areas that are expected to have little, if any, direct human contact.

Based on a review of the St. Marys River sediment data, if contaminant concentrations found in sediment samples collected from the navigation channel dredge areas are below the limits indicated in the appropriate criteria listed above, then dredge spoils from those areas are eligible for unrestricted upland disposal. If contaminants in the sediment samples exceed the appropriate criteria, then placement options may include capping and deed restrictions, placement in a confined disposal facility, or placement in a TSCA-level hazardous waste landfill.

Analysis

The 30 sediment samples were analyzed for metals, semi-volatile organic compounds/PAHs, PCBs and organochlorine pesticides. See tables in Appendix C for analytical results. The data tables were excerpted from a 436 page final report by the COE's contract lab (RTI Laboratories, Inc., Livonia, MI) that contains narrative information, revisions, grain size analyses and quality assurance information. The full report is available upon request or on the BPAC website: http://bpac.algomau.ca/wp-content/uploads/2017/04/Federal-Navigation-Report_John-Riley.pdf.

MDEQ staff from the Waste Management and Radiological Protection Division reviewed all of the analytical results in accordance with the contaminant assessment criteria described above for the St. Marys River sediment samples and had the following comments:

- Pesticide and herbicide concentrations were less than the limit of detection and were therefore below residential direct contact criteria.

- PCB concentrations were less than the limit of detection and were therefore below residential direct contact criteria of 1,000 ug/kg.
- While semi-volatile organic compounds (PAHs) were detected, they were all below Part 201 generic residential screening criteria.
- The sediments were predominantly sand (i.e., less than 8% fines). [Some contaminants tend to accumulate with fine soil particles.]
- In some samples, metals were detected above statewide default background (i.e., barium, chromium, iron, manganese, and nickel), but when those concentrations were statistically evaluated across the volume of material, they were found to be below Part 201 generic residential soils direct contact criteria.

Based on analytical data provided to MDEQ by the COE, the sediments associated with the most recent St. Marys River dredging project described above are considered to be uncontaminated. Therefore, upland placement of these sediments was not regulated, pursuant to Part 115, Solid Waste Management of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

Known Sites of Sediment Contamination Outside the Federally Maintained Navigation Channel

As discussed previously, in Michigan the Restrictions on Dredging Activities BUI applies only to the navigation channel that is routinely maintained by the COE. However, contaminated sediments remain in other areas in the St. Marys River. Some of the areas identified in the 1992 RAP document have been cleaned up, others are not yet complete. This section summarizes the status of those locations.

The 75-acre Cannelton Industries Superfund site is located adjacent to the St. Marys River in Sault Ste. Marie, Michigan, see Figure 8 in Appendix B. From 1900 to 1958, the site was an animal hide processing and tannery facility that contaminated soils, sediments, and the river with heavy metals from its waste disposal practices. The site's long-term remedy included the excavation and consolidation of contaminated waste material, soils and river sediments into an on-site landfill, collection and treatment of groundwater, groundwater monitoring, and land use restrictions for the landfilled area. Construction of the remedy took place in 1999. In 2006 and 2007, additional dredging operations removed 40,000 cubic yards of contaminated sediment, about 500,000 pounds of chromium, and 25 pounds of mercury from Tannery Bay and nearby wetlands, according to the U.S. EPA website: https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0502931. Post-remedial monitoring is set to occur in 2017, to support removal of the site from the National Priorities List.

The Algoma Slip is located entirely in Canadian waters and does not coincide with the federally maintained navigation channel. It was dredged in 1998 and 2006, but PAHs continue to persist. Little Lake George and Lake George are located on the north and east sides of Sugar Island respectively, while the navigation channel runs down the west side of the island, through Lake Nicolet. These areas were not sampled or dredged during the COE's 2014-2015 effort.

Contaminated sediment data for metals and PAHs in the Lake George Channel, Little Lake George, and Lake George was collected over a ten-year period by Environment and Climate Change Canada and the Ontario Ministry of the Environment and Climate Change. Data were collected from about 100 sites, primarily on the Canadian side of the border, and are available in two series of maps, one for metals: http://bpac.algomau.ca/wp-content/uploads/2015/10/SMR-sediment-maps-Metals-April-2015.pdf, the other for PAHs: http://bpac.algomau.ca/wp-content/uploads/2015/10/SMR-sediment-maps-Total-PAH-April-2015.pdf. Based on those data, staff of MDEQ's Water Resources Division

concluded that concentrations on the U.S. side of the border are lower than the Probable Effect Concentrations that would warrant sediment remediation (personal communication with M. Alexander, 2015).

In 2011, Keller et al. published a paper titled, “Sediment Quality at Select Sites in the St. Marys River Area of Concern.” The document evaluated metals in surficial sediments collected in 2003 and 2005 from the main channel of the St. Marys River, from the Little Rapids area, from Munuscong Lake, and from nine coastal marsh sites. Study conclusions noted that elevated concentrations of some metals, including chromium and nickel, persist at a number of sites in the river system. However, in comparison to results from a 1985 study, concentrations of metals in St. Marys River sediments “are either declining and/or similar to regional background levels, suggesting that sediment conditions in the river are generally improving, and in much of the river, are no longer a problem” (Keller et al., 2011). The majority of sample locations evaluated by Keller et al. were not in the federally-maintained navigation channel.

There is no dispute that data confirms varying levels of remaining sediment contamination in areas outside the navigation channel in the St. Marys River. Efforts to remediate these locations should continue, regardless of the status of the BUI.

Recommendation

According to the sediment chemistry analyses completed by MDEQ and the resulting determination that navigation channel sediments did not require use of a confined disposal facility or TSCA-level landfill, the State’s restoration criteria for the Restrictions on Dredging Activities BUI have been met.

The proposed BUI removal was public noticed via listing in the MDEQ Calendar from July 24 through August 22, 2017. Supporting documents were posted on the MDEQ’s AOC program web page for public review and comment. No written comments were received during the public notice period.

Consistent with the consultation requirements under the Four Agency Letter of Commitment, this Removal Recommendation was reviewed by Environment and Climate Change Canada, and the Ontario Ministry of Environment and Climate change. Both agencies responded supportively to the removal of the Restrictions on Dredging Activities BUI on the U.S. side of the AOC.

The recommendation to remove the Restrictions on Dredging BUI from the U.S. side of the AOC was discussed with the St. Marys River BPAC at its April and June 2017 meetings, where support was expressed for removal of the BUI. The BPAC submitted a formal letter of support for removal of the BUI, dated June 28, 2017 (Attachment D).

Based on review of existing data, technical input from the MDEQ Waste Management and Radiological Protection Division, U.S. EPA’s Great Lakes National Program Office, and the St. Marys River BPAC, Michigan’s OGL recommends removal of the Restrictions on Dredging Activities BUI from the U.S. side of the St. Marys River AOC.

Prepared by: John Riley, St. Marys River AOC Coordinator
Great Lakes Management Unit
Office of the Great Lakes
Michigan Department of Environmental Quality
August 2017

Appendices

A – Restrictions on Dredging Activities; pages 30-31 of the *Guidance for Delisting Michigan's Great Lakes Areas of Concern*

B – Maps and Figures

C – Analytical Results

D – St. Marys River BPAC letter supporting BUI removal, June 28, 2017

References

International Joint Commission. 1991. Guidelines for Recommending the Listing and Delisting of Great Lakes Areas of Concern. http://www.ijc.org/rel/focus/listdelist/lidemain.html

Keller et al. 2011.Sediment Quality at Select Sties in the St. Marys River Area of Concern. Journal of Great Lakes Research 37 (2011) 12-20.

Michigan Department of Environmental Quality. 2013. MDEQ Policy and Procedure Number 09-018. Dredge Sediment Review. *(The link provided was broken and has been removed)*

Michigan Department of Environmental Quality. 2013. Table 1. Groundwater: Residential and Non-Residential Part 201 Generic Cleanup Criteria and Screening Levels/Part 213 Risk-Based Screening Levels. *(The link provided was broken and has been removed)*

Michigan Department of Environmental Quality. 2013. Table 2. Soil: Residential Part 201 Generic Cleanup Criteria and Screening Levels/Part 213 Risk-Based Screening Levels. https://www.michigan.gov/-/media/Project/Websites/egle/Documents/Programs/RRD/Remediation/Rules---Criteria/table-2-soil-residential-pdf.pd

Michigan Department of Environmental Quality. 2015. Review Criteria and Detection Limits for Metals, and Review Criteria and Detection Limits for PNAs and PCBs.
(The link provided was broken and has been removed)

Michigan Department of Environmental Quality. 2015. Guidance for Delisting Michigan's Great Lakes Areas of Concern. Report OGL-002. https://www.michigan.gov/-/media/Project/Websites/egle/Documents/Programs/WRD/AOC/delisting-guidance.pdf

Ontario Ministry of the Environment & Michigan Department of Natural Resources. 1992. The St. Marys River Area of Concern Stage 1 Remedial Action Plan, *Environmental Conditions and Problem Definitions.* http://bpac.algomau.ca/wp-content/uploads/2015/09/The-St.-Marys-River-Area-of-Concern-Stage-1-Remedial-Action-Plan-Report-on-Environmental-Conditions-and-Problem-Definitions-1992.pdf

Appendix A
DRAFT
Restrictions on Dredging Activities Restoration Criteria from the 2015
Guidance for Delisting Michigan's Great Lakes Areas of Concern

Significance in Michigan's Areas of Concern

Originally twelve AOCs in Michigan identified restrictions on dredging as impaired or potentially impaired (all except Deer Lake and Torch Lake). This BUI addresses the requirement for special handling or disposal of commercial or recreational navigation channel dredge spoils due to chemical contamination of sediments. This BUI was originally identified for some AOCs based on the existence of contaminated sediments, not on whether there were actual restrictions on dredging in the AOC. The AOC program tracking table with current information about which BUIs have been restored in each AOC can be found at: www.michigan.gov/aocprogram.

Michigan Restoration Criteria and Assessment

This BUI will be considered restored when:

- During the most recent routine dredging in the U.S. Army Corps of Engineers (COE) designated navigational channel, use of a confined disposal facility or TSCA-level landfill for dredge spoils was not required due to chemical contamination.

Rationale

Practical Application in Michigan

Dredging sediments in the Great Lakes and connected waterways requires state and federal approvals that regulate the extent of dredging, disposal of dredge spoils, and pre-dredge studies. Restrictions on dredging is defined as special handling for dredge spoils requiring use of a confined disposal facility or Toxic Substances Control Act level landfill due to chemical contamination. Open water disposal of any clean or contaminated dredge spoils in the Great Lakes or connected waterways is not routinely permitted in Michigan. As a result, use of disposal options (e.g., confined disposal facility) other than open water is not automatically a restriction on dredging. This restoration criterion applies only to the commercial and recreational navigational channels in the Great Lakes and connected waterways that are maintained by the COE.

1991 IJC General Delisting Guideline

When contaminants in sediments do not exceed standards, criteria, or guidelines such that there are restrictions on dredging or disposal activities.

The IJC general delisting guideline for the BUI is presented here for reference. The Practical Application in Michigan subsection above describes application of specific criteria for restoration based on existing Michigan programs and authorities.

State of Michigan Programs/Authorities

As part of existing planning and regulatory requirements, the MDEQ and the COE evaluate the environmental impacts associated with any proposed navigational dredging and disposal projects.

In assessing restoration of this BUI, the State, in consultation with the COE and the PAC, will conduct an evaluation of the most recent navigational dredging projects in an AOC to determine whether there have been restrictions on the dredging requiring confined disposal due to sediment contamination.

Some local AOC communities also have programs for monitoring water quality and related parameters which may be applicable to this BUI. If an AOC chooses to use local monitoring data for the assessment of BUI restoration, the data can be submitted to the MDEQ for review. If the MDEQ determines that the data appropriately address the restoration criteria and meet quality assurance and control requirements, they may be used to demonstrate restoration success.

All non-navigational channel dredging is evaluated under federal and state authorities and any special circumstances are addressed in the permit process, including contamination. These programs apply across the state, not just in AOCs, and as such are not included in the BUI.

Appendix B

Maps and Sediment Sampling Locations

Figure 1. Overview of St. Marys River dredging vicinity 2014-2015.

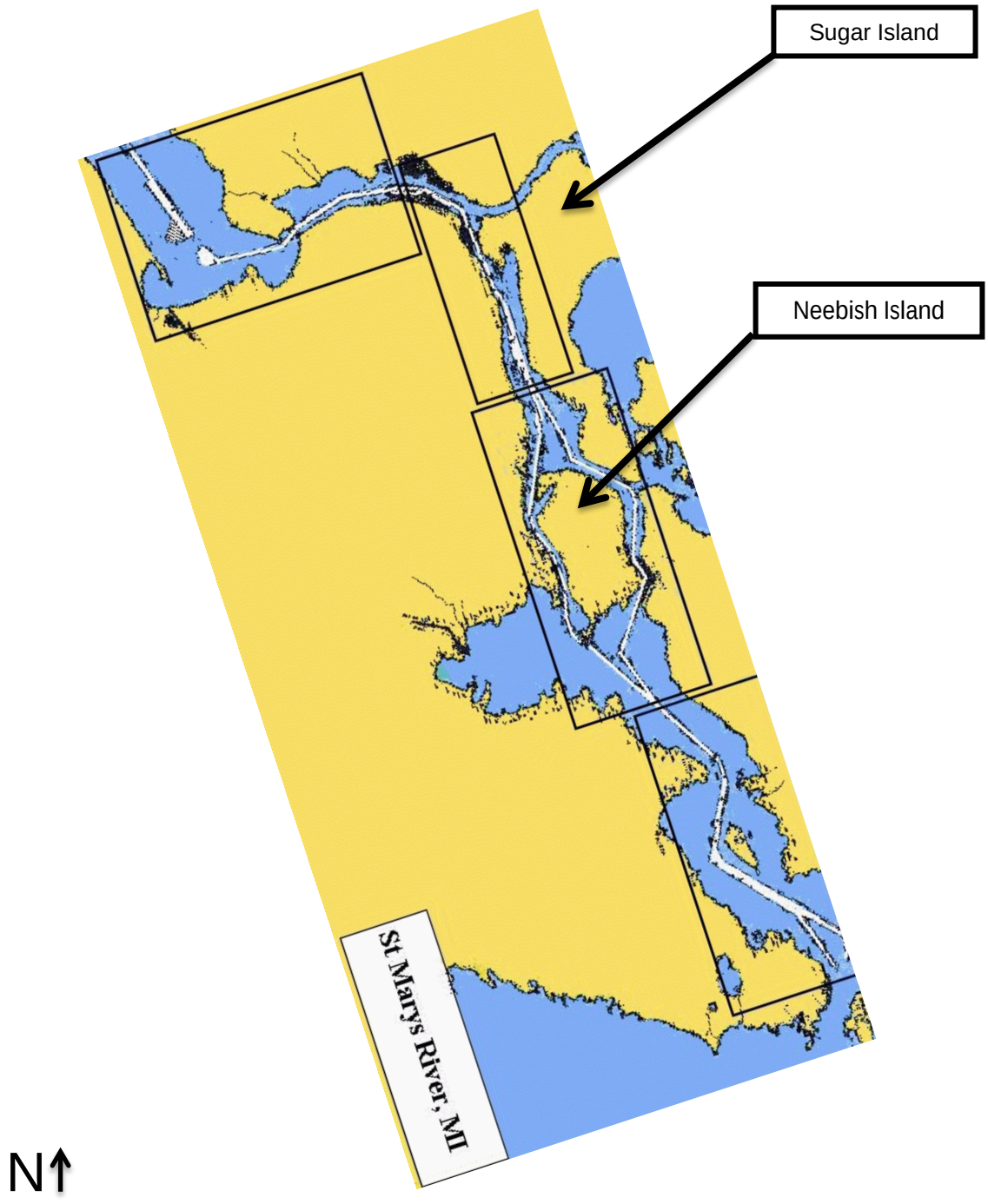


Figure 2. U.S. Army Corps of Engineers St. Marys River project map, with navigation channel outlined. Note that the channel follows the west (U.S.) side of Sugar Island only, but runs along both sides of Neebish Island.

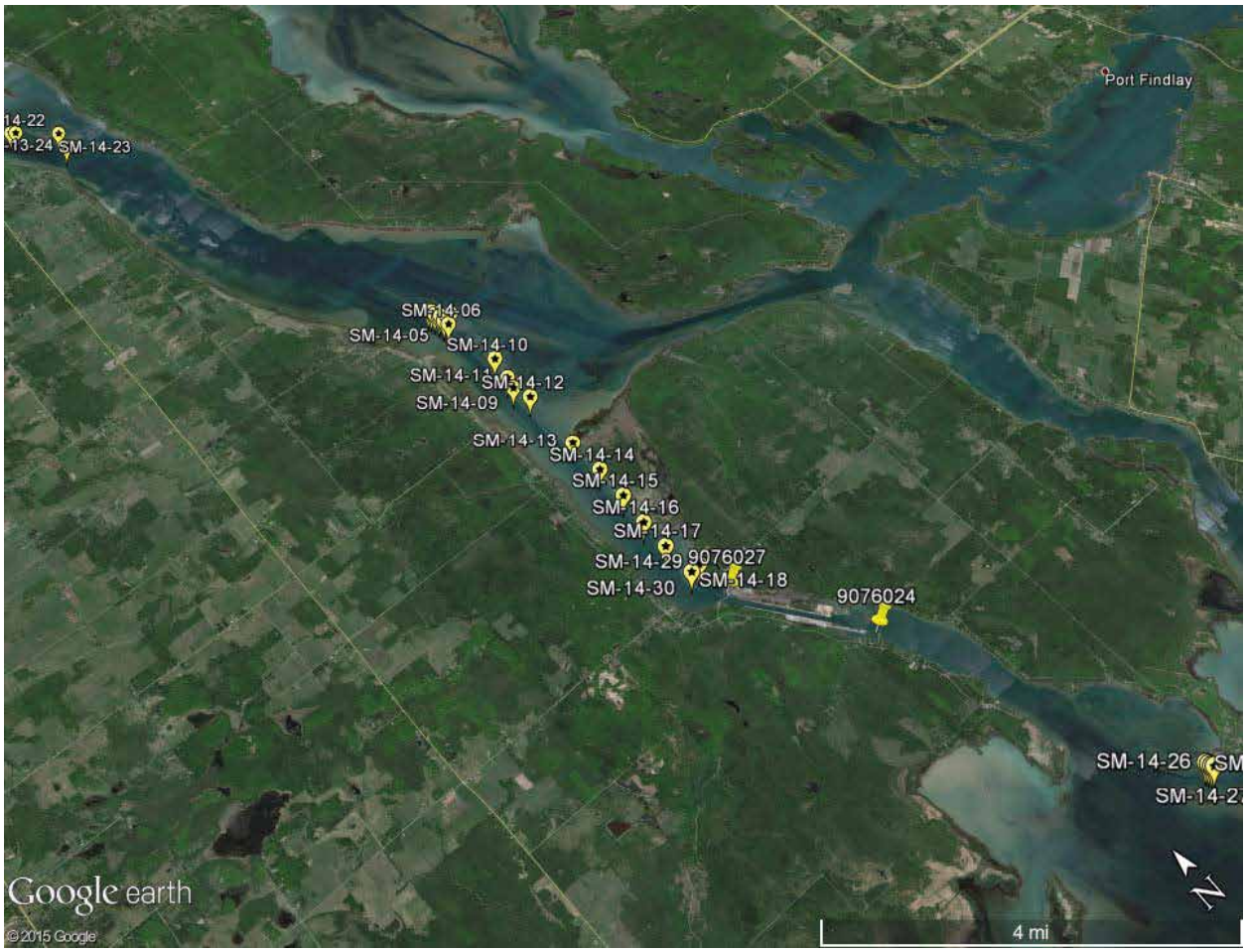


Figure 3. St. Marys River dredge project sediment sampling area overview. Thirty individual sediment samples collected in 2014 are indicated with place markers. This image shows the southern portion of Sugar Island and Neebish Island.

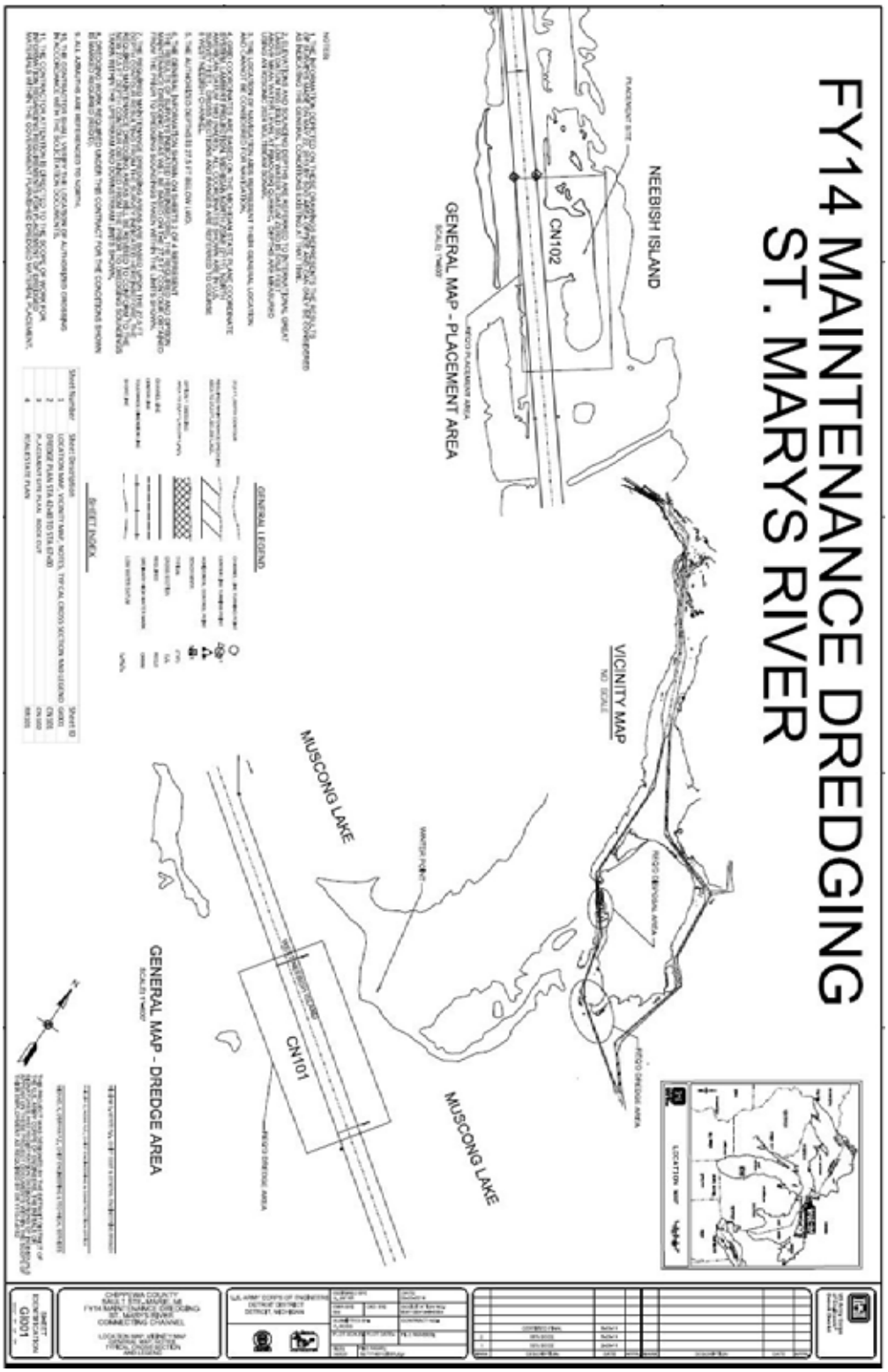


Figure 4. U.S. Army Corps of Engineers dredging vicinity map for work completed near the south end of Neebish Island in 2014.

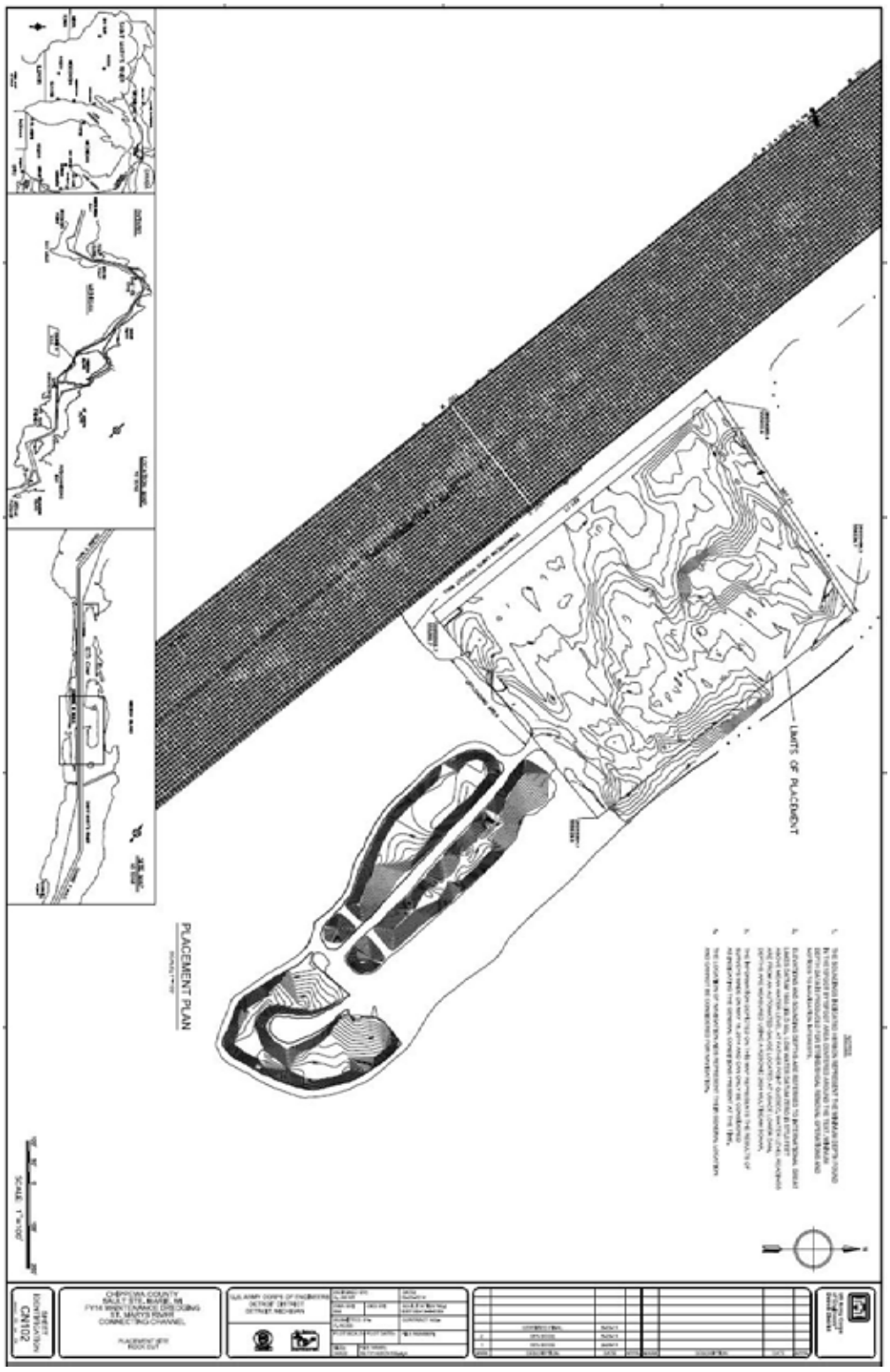


Figure 5. U.S. Army Corps of Engineers dredge material placement site on Neebish Island, adjacent to the Rock Cut, for work completed in 2014.

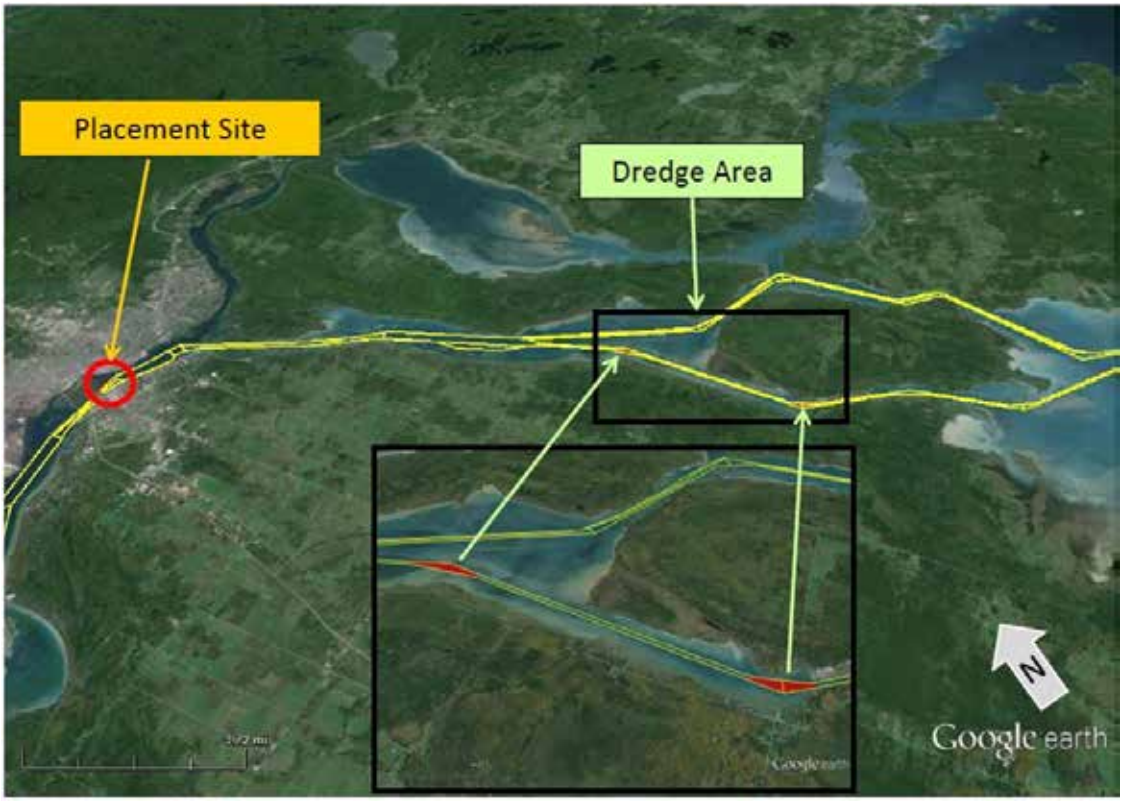


Figure 6. St. Marys River maintenance dredging and disposal area for 2015.

A

Figure 7. The Northeast Pier adjacent to the Soo Locks served as the dredge spoils placement site for work completed in 2015.

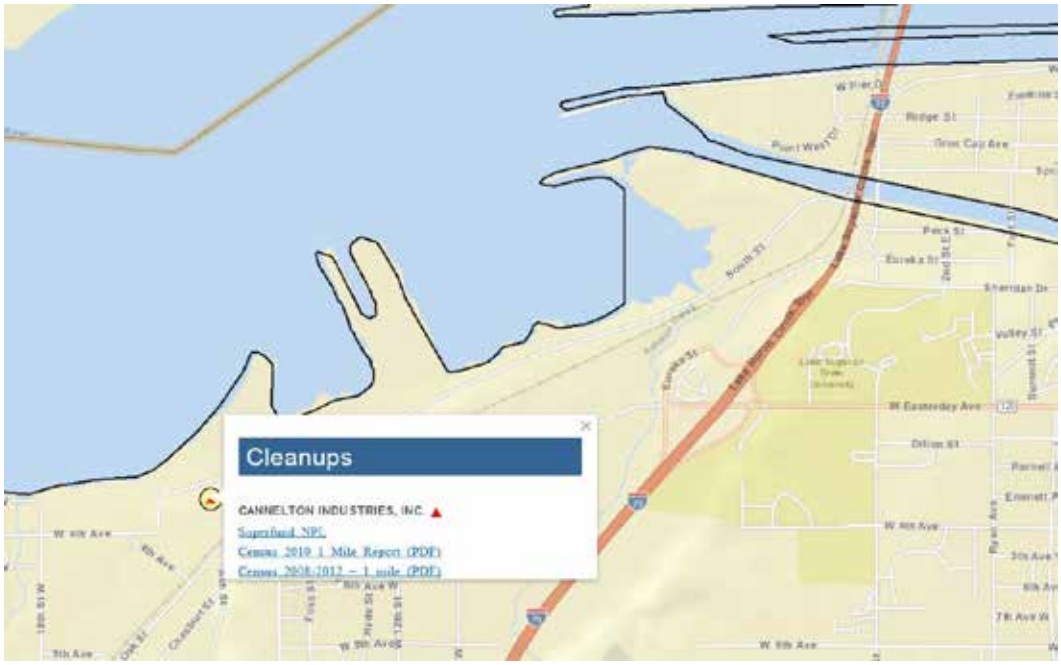


Figure 8. Location of former Cannelton Industries site in Sault Ste. Marie, MI. Tannery Bay is the embayment just northeast of the location marker.

Appendix C
Data Tables

TABLE 1: ST. MARYS SOIL ANALYTICAL RESULTS

Parameter	Sample ID		SM-14-01	SM-14-02 (0-21)	SM-14-02 (21-41)	SM-14-03	SM-14-04	SM-14-05
	Lab ID		1411615-001	1505725-001	1505725-002	1505725-003	1505725-004	1505725-005
	Date Collected		11/11/2014	5/20/2015	5/20/2015	5/20/2015	5/20/2015	5/20/2015
Physical Kit	**Method**	**Units**						
Density		20C	**24.3**	**17.6**	**16.8**	**20.6**	**18.8**	**18.1**
Specific Density		Cu Ft	**2.91**	**2.12**	**2.01**	**2.47**	**2.26**	**2.18**
% Moisture	ASTM D2216	% by Wt.	**23**	**24**	**41**	**23**	**25**	**25**
% Solids *	ASTM D2216	% by Wt.	**77**	**76**	**59**	**77**	**75**	**75**
Nutrients Kit								
Phosphorus, total	SM 4500 P-F	mg/Kg dry	**63**	**86**	**130**	**66**	**84**	**210**
Nitrogen, Ammonia	EPA 350.1	mg/Kg dry	**17**	**140**	**250**	**240**	**170**	**130**
Nitrogen, Kjeldahl, total	EPA 351.2	mg/Kg dry	**86**	**220**	**610**	**500**	**410**	**280**
Organic Indicators Kit								
Oil & Grease, total	SW 9071	mg/Kg dry	<130	<130	<160	<130	<130	<130
Cyanide, total	SW 9012	mg/Kg dry	<0.66	<0.58	<0.88	1.1	<0.55	<0.61
Chemical Oxygen Demand	EPA 410.4	mg/Kg dry	390	**1,400**	**1,300**	310	**1,700**	**630**
Total Volatile Solids	SM 2540 G	% by Wt	**0.17**	**0.27**	**2.2**	**0.17**	**0.73**	**0.14**
Total Organic Carbon	SW 9060	mg/Kg dry	<1,400	1,300	**2,800**	<1,500	920	<1,600
PCBs	**Method**	**Units**						
Aroclor-1016	SW 8082	µg/kg dry	<8.5	<8.6	<11	<8.6	<8.8	<8.7
Aroclor-1221	SW 8082	µg/kg dry	<3.8	<8.6	<11	<8.6	<8.8	<8.7
Aroclor-1232	SW 8082	µg/kg dry	<5.7	<8.6	<11	<8.6	<8.8	<8.7
Aroclor-1242	SW 8082	µg/kg dry	<4.7	<8.6	<11	<8.6	<8.8	<8.7
Aroclor-1248	SW 8082	µg/kg dry	<4.5	<8.6	<11	<8.6	<8.8	<8.7
Aroclor-1254	SW 8082	µg/kg dry	<5.4	<8.6	<11	<8.6	<8.8	<8.7
Aroclor-1260	SW 8082	µg/kg dry	<8.5	<8.6	<11	<8.6	<8.8	<8.7
Aroclor-1262	SW 8082	µg/kg dry	<5.0	<8.6	<11	<8.6	<8.8	<8.7
Total PCBs	SW 8082	µg/kg dry	<3.7	<8.6	<11	<8.6	<8.8	<8.7
Organochlorine Pesticides	**Method**	**Units**						
4,4'-DDD	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
4,4'-DDE	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
4,4'-DDT	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
Aldrin	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
alpha-BHC	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
alpha-Chlordane	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
beta-BHC	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
Chlordane (Technical)	SW8081	µg/kg dry	<17	<17	<22	<17	<18	<17
delta-BHC	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
Dieldrin	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
Endosulfan I	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88

Non-detected results = "<" Limit of Quantitation
results with "J" qualifier reported as estimated number
Bold type = results above LOQ

* % Solids calculated from % Moisture

TABLE 1: ST. MARYS SOIL ANALYTICAL RESULTS

Parameter	Sample ID		SM-14-01	SM-14-02 (0-21)	SM-14-02 (21-41)	SM-14-03	SM-14-04	SM-14-05
	Lab ID		1411615-001	1505725-001	1505725-002	1505725-003	1505725-004	1505725-005
	Date Collected		11/11/2014	5/20/2015	5/20/2015	5/20/2015	5/20/2015	5/20/2015
Endosulfan II	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
Endosulfan sulfate	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
Endrin	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
Endrin aldehyde	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
Endrin ketone	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
gamma-BHC	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
gamma-Chlordane	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
Heptachlor	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
Heptachlor epoxide	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
Methoxychlor	SW8081	µg/kg dry	<0.85	<0.87	<1.1	<0.86	<0.88	<0.88
Toxaphene	SW8081	µg/kg dry	<17	<17	<22	<17	<18	<17
Metals Kit	**Method**	**Units**						
Arsenic	SW 6010	µg/kg dry	1,100	<980	<1,600	<1,200	1,200	<980
Barium	SW 6010	µg/kg dry	7,200	**11,000**	**230,000**	9,000	9,400	8,700
Cadmium	SW 6010	µg/kg dry	67	<49	<81	<62	<63	<49
Chromium	SW 6010	µg/kg dry	**3,300**	**13,000**	**61,000**	**3,400**	**4,000**	**4,100**
Copper	SW 6010	µg/kg dry	1,500	4,300	**33,000**	2,100	2,000	1,800
Iron	SW 6010	µg/kg dry	**3,300,000**	**5,500,000**	**36,000,000**	**3,100,000**	**3,400,000**	**3,700,000**
Lead	SW 6010	µg/kg dry	750	1,300	**8,400**	1,000	1,300	1,200
Manganese	SW 6010	µg/kg dry	**33,000**	**58,000**	**590,000**	**36,000**	**41,000**	**47,000**
Mercury	SW 7471A	µg/kg dry	<5.8	6.0	17	4.6	3.7	3.3
Nickel	SW 6010	µg/kg dry	**2,000**	**4,400**	**48,000**	1,700	2,100	1,900
Selenium	SW 6010	µg/kg dry	<1,200	<1,500	<2,400	<1,900	<1,900	<1,500
Silver	SW 6010	µg/kg dry	<200	83	250	<310	110	110
Zinc	SW 6010	µg/kg dry	**4,800**	**6,500**	**47,000**	3,600	4,600	4,100
Semi-Volatile Organic Compounds/PAH	**Method**	**Units**						
2-Methylnaphthalene	SW 8270	µg/kg dry	<21	<22	<28	<21	<22	<22
Acenaphthene	SW 8270	µg/kg dry	<21	<22	<28	<21	<22	<22
Acenaphthylene	SW 8270	µg/kg dry	<21	<22	<28	<21	<22	<22
Anthracene	SW 8270	µg/kg dry	<21	<22	<28	<21	<22	<22
Benzo(a)anthracene	SW 8270	µg/kg dry	<21	<22	<28	<21	<22	<22
Benzo(a)pyrene	SW 8270	µg/kg dry	<21	<22	<28	<21	<22	<22
Benzo(b)fluoranthene	SW 8270	µg/kg dry	<21	<22	<28	<21	<22	<22
Benzo(g,h,i)perylene	SW 8270	µg/kg dry	<21	<22	<28	<21	<22	<22
Benzo(k)fluoranthene	SW 8270	µg/kg dry	<43	<43	<56	<43	<44	<44
Chrysene	SW 8270	µg/kg dry	<21	<22	<28	<21	<22	<22
Dibenzo (a,h) anthracene	SW 8270	µg/kg dry	43	<43	<56	<43	<44	<44

Non-detected results = "<" Limit of Quantitation
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Bold type = results above LOQ

* % Solids calculated from % Moisture

TABLE 1: ST. MARYS SOIL ANALYTICAL RESULTS

Parameter	Sample ID		SM-14-01	SM-14-02 (0-21)	SM-14-02 (21-41)	SM-14-03	SM-14-04	SM-14-05
	Lab ID		1411615-001	1505725-001	1505725-002	1505725-003	1505725-004	1505725-005
	Date Collected		11/11/2014	5/20/2015	5/20/2015	5/20/2015	5/20/2015	5/20/2015
Fluoranthene	SW 8270	µg/kg dry	<21	<22	<28	<21	<22	<22
Fluorene	SW 8270	µg/kg dry	<21	<22	<28	<21	<22	<22
Indeno(1,2,3-cd)pyrene	SW 8270	µg/kg dry	<43	<43	<56	<43	<44	<44
Naphthalene	SW 8270	µg/kg dry	<21	<22	<28	<21	<22	<22
Phenanthrene	SW 8270	µg/kg dry	<21	<22	<28	<21	<22	<22
Pyrene	SW 8270	µg/kg dry	<21	<22	<28	<21	<22	<22

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* % Solids calculated from % Moisture

TABLE 1: ST. MARYS SOIL ANALYTICAL RESULTS

Parameter	Sample ID		SM-14-06	SM-14-07	SM-14-08	SM-14-09	SM-14-10	SM-14-11	SM-14-12
	Lab ID		1505725-006	1410A92-001	1410A92-002	1505725-007	1410A92-003	1410A92-004	1410A92-005
	Date Collected		5/20/2015	10/22/2014	10/22/2014	5/20/2015	10/22/2014	10/22/2014	10/22/2014
Physical Kit	**Method**	**Units**							
Density		20C	**20.3**	**23.2**	**23.6**	**21.4**	**24.9**	**26.3**	**22.3**
Specific Density		Cu Ft	**2.44**	**2.79**	**2.83**	**2.57**	**3.00**	**3.16**	**2.67**
% Moisture	ASTM D2216	% by Wt.	**21**	**26**	**18**	**23**	**23**	**19**	**27**
% Solids *	ASTM D2216	% by Wt.	**79**	**74**	**82**	**77**	**77**	**81**	**73**
Nutrients Kit									
Phosphorus, total	SM 4500 P-F	mg/Kg dry	**170**	**150**	**32**	**210**	**31**	**38**	**46**
Nitrogen, Ammonia	EPA 350.1	mg/Kg dry	**64**	**16**	**15**	**63**	**11**	**12**	**16**
Nitrogen, Kjeldahl, total	EPA 351.2	mg/Kg dry	**200**	**61**	**63**	**240**	**32**	**31**	**80**
Organic Indicators Kit									
Oil & Grease, total	SW 9071	mg/Kg dry	<130	<130	<120	<130	<130	<120	<140
Cyanide, total	SW 9012	mg/Kg dry	<0.48	<0.67	<0.62	<0.59	**1.5**	<0.62	1.1
Chemical Oxygen Demand	EPA 410.4	mg/Kg dry	**1,000**	**1,400**	**2,000**	**1,100**	**1,600**	**520**	**4,200**
Total Volatile Solids	SM 2540 G	% by Wt	**0.28**	**0.26**	**0.46**	**0.76**	**0.27**	**0.24**	**0.95**
Total Organic Carbon	SW 9060	mg/Kg dry	1,100	<1,600	<1,400	1,400	<1,700	<1,500	<2,500
PCBs	**Method**	**Units**							
Aroclor-1016	SW 8082	µg/kg dry	<8.4	<8.8	<8.0	<8.6	<8.5	<8.0	<9.0
Aroclor-1221	SW 8082	µg/kg dry	<8.4	<3.9	<3.6	<8.6	<3.8	<3.6	<4.0
Aroclor-1232	SW 8082	µg/kg dry	<8.4	<5.9	<5.4	<8.6	<5.7	<5.4	<6.1
Aroclor-1242	SW 8082	µg/kg dry	<8.4	<4.9	<4.4	<8.6	<4.7	<4.5	<5.0
Aroclor-1248	SW 8082	µg/kg dry	<8.4	<4.6	<4.2	<8.6	<4.5	<4.2	<4.8
Aroclor-1254	SW 8082	µg/kg dry	<8.4	<5.5	<5.0	<8.6	<5.4	<5.1	<5.7
Aroclor-1260	SW 8082	µg/kg dry	<8.4	<8.8	<8.0	<8.6	<8.5	<8.0	<9.0
Aroclor-1262	SW 8082	µg/kg dry	<8.4	<5.2	<4.7	<8.6	<5.0	<4.8	<5.4
Total PCBs	SW 8082	µg/kg dry	<8.4	<3.8	<3.5	<8.6	<3.7	<3.5	<4.0
Organochlorine Pesticides	**Method**	**Units**							
4,4'-DDD	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
4,4'-DDE	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
4,4'-DDT	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
Aldrin	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
alpha-BHC	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
alpha-Chlordane	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
beta-BHC	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
Chlordane (Technical)	SW8081	µg/kg dry	<17	<17	<16	<17	<17	<16	<18
delta-BHC	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
Dieldrin	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
Endosulfan I	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91

Non-detected results = "<" Limit of Quantitation
results with "J" qualifier reported as estimated number
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* % Solids calculated from % Moisture

TABLE 1: ST. MARYS SOIL ANALYTICAL RESULTS

Parameter	Sample ID		SM-14-06	SM-14-07	SM-14-08	SM-14-09	SM-14-10	SM-14-11	SM-14-12
	Lab ID		1505725-006	1410A92-001	1410A92-002	1505725-007	1410A92-003	1410A92-004	1410A92-005
	Date Collected		5/20/2015	10/22/2014	10/22/2014	5/20/2015	10/22/2014	10/22/2014	10/22/2014
Endosulfan II	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
Endosulfan sulfate	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
Endrin	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
Endrin aldehyde	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
Endrin ketone	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
gamma-BHC	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
gamma-Chlordane	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
Heptachlor	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
Heptachlor epoxide	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
Methoxychlor	SW8081	µg/kg dry	<0.85	<0.88	<0.80	<0.87	<0.85	<0.81	<0.91
Toxaphene	SW8081	µg/kg dry	<17	<17	<16	<17	<17	<16	<18
Metals Kit	**Method**	**Units**							
Arsenic	SW 6010	µg/kg dry	870	1,100	1,200	<1,000	970	**2,000**	**1,700**
Barium	SW 6010	µg/kg dry	**15,000**	**12,000**	**12,000**	**12,000**	**9,600**	6,200	**54,000**
Cadmium	SW 6010	µg/kg dry	<49	34	49	<51	100	60	150
Chromium	SW 6010	µg/kg dry	**13,000**	**5,300**	**6,400**	**7,800**	**5,100**	**3,500**	**18,000**
Copper	SW 6010	µg/kg dry	4,700	**5,200**	**5,700**	3,100	**4,800**	**4,900**	**10,000**
Iron	SW 6010	µg/kg dry	**4,900,000**	**4,200,000**	**5,000,000**	**4,300,000**	**4,700,000**	**3,200,000**	**15,000,000**
Lead	SW 6010	µg/kg dry	3,200	1,200	1,700	2,200	1,500	1,300	3,500
Manganese	SW 6010	µg/kg dry	**67,000**	**64,000**	**67,000**	**62,000**	**66,000**	**54,000**	**210,000**
Mercury	SW 7471A	µg/kg dry	5.7	1.2	2.1	6.1	1.6	1.2	4.4
Nickel	SW 6010	µg/kg dry	3,900	3,600	**4,000**	2,900	3,400	2,600	**12,000**
Selenium	SW 6010	µg/kg dry	<1,500	<1,300	<1,100	<1,500	<1,000	<1,300	<1,100
Silver	SW 6010	µg/kg dry	100	<220	<190	100	<170	<210	<180
Zinc	SW 6010	µg/kg dry	**10,000**	**7,200**	**9,100**	**7,500**	**6,600**	**4,200**	**24,000**
Semi-Volatile Organic Compounds/PAH	**Method**	**Units**							
2-Methylnaphthalene	SW 8270	µg/kg dry	<21	<22	<20	<21	<21	<20	<23
Acenaphthene	SW 8270	µg/kg dry	<21	<22	<20	<21	<21	<20	<23
Acenaphthylene	SW 8270	µg/kg dry	<21	<22	<20	<21	<21	<20	<23
Anthracene	SW 8270	µg/kg dry	<21	<22	<20	<21	<21	<20	<23
Benzo(a)anthracene	SW 8270	µg/kg dry	<21	<22	<20	<21	<21	<20	<23
Benzo(a)pyrene	SW 8270	µg/kg dry	<21	<22	<20	13	<21	<20	<23
Benzo(b)fluoranthene	SW 8270	µg/kg dry	<21	<22	<20	16	<21	<20	<23
Benzo(g,h,i)perylene	SW 8270	µg/kg dry	<21	<22	<20	<21	<21	<20	<23
Benzo(k)fluoranthene	SW 8270	µg/kg dry	<42	<44	<40	<42	<42	<40	<45
Chrysene	SW 8270	µg/kg dry	<21	<22	<20	<21	<21	<20	<23
Dibenzo (a,h) anthracene	SW 8270	µg/kg dry	<42	<44	<40	<42	<42	<40	<45

Non-detected results = "<" Limit of Quantitation
results with "J" qualifier reported as estimated number
Bold type = results above LOQ

* % Solids calculated from % Moisture

TABLE 1: ST. MARYS SOIL ANALYTICAL RESULTS

Parameter	Sample ID		SM-14-06	SM-14-07	SM-14-08	SM-14-09	SM-14-10	SM-14-11	SM-14-12
	Lab ID		1505725-006	1410A92-001	1410A92-002	1505725-007	1410A92-003	1410A92-004	1410A92-005
	Date Collected		5/20/2015	10/22/2014	10/22/2014	5/20/2015	10/22/2014	10/22/2014	10/22/2014
Fluoranthene	SW 8270	µg/kg dry	<21	<22	<20	<21	<21	<20	<23
Fluorene	SW 8270	µg/kg dry	<21	<22	<20	<21	<21	<20	<23
Indeno(1,2,3-cd)pyrene	SW 8270	µg/kg dry	<42	<44	<40	<42	<42	<40	<45
Naphthalene	SW 8270	µg/kg dry	<21	<22	<20	<21	<21	<20	<23
Phenanthrene	SW 8270	µg/kg dry	<21	<22	<20	<21	<21	<20	<23
Pyrene	SW 8270	µg/kg dry	<21	<22	<20	14	<21	<20	<23

Non-detected results = "<" Limit of Quantitation
results with "J" qualifier reported as estimated number
Bold type = results above LOQ

* % Solids calculated from % Moisture

TABLE 1: ST. MARYS SOIL ANALYTICAL RESULTS

Parameter	Sample ID		SM-14-13	SM-14-14	SM-14-15	SM-14-16	SM-14-17	SM-14-18
	Lab ID		1410A92-006	1410A92-007	1410A92-008	1410A92-009	1410A92-010	1410A92-011
	Date Collected		10/21/2014	10/22/2014	10/21/2014	10/21/2014	10/21/2014	10/21/2014
Physical Kit	**Method**	**Units**						
Density		20C	**19.2**	**24.6**	**16.9**	**25.1**	**20.5**	**21.3**
Specific Density		Cu Ft	**2.31**	**2.96**	**2.03**	**3.01**	**2.47**	**2.56**
% Moisture	ASTM D2216	% by Wt.	**34**	**23**	**45**	**22**	**25**	**26**
% Solids *	ASTM D2216	% by Wt.	**66**	**77**	**55**	**78**	**75**	**74**
Nutrients Kit								
Phosphorus, total	SM 4500 P-F	mg/Kg dry	**110**	**22**	**200**	**36**	**40**	**64**
Nitrogen, Ammonia	EPA 350.1	mg/Kg dry	**26**	**11**	**23**	**11**	**18**	**25**
Nitrogen, Kjeldahl, total	EPA 351.2	mg/Kg dry	**160**	**36**	**130**	**52**	**76**	**180**
Organic Indicators Kit								
Oil & Grease, total	SW 9071	mg/Kg dry	<150	<130	<180	<130	<130	<130
Cyanide, total	SW 9012	mg/Kg dry	0.66	0.82	<0.89	<0.63	<0.67	<0.68
Chemical Oxygen Demand	EPA 410.4	mg/Kg dry	**3,800**	360	**3,900**	**730**	**1,600**	**2,300**
Total Volatile Solids	SM 2540 G	% by Wt	**1.7**	<0.10	**1.7**	**0.20**	**0.50**	**0.82**
Total Organic Carbon	SW 9060	mg/Kg dry	<2,400	<1,300	<2,500	<1,600	<1,600	**2,600**
PCBs	**Method**	**Units**						
Aroclor-1016	SW 8082	µg/kg dry	<9.9	<8.5	<12	<8.4	<8.8	<9.0
Aroclor-1221	SW 8082	µg/kg dry	<4.4	<3.8	<5.4	<3.8	<4.0	<4.0
Aroclor-1232	SW 8082	µg/kg dry	<6.6	<5.8	<8.1	<5.7	<5.9	<6.0
Aroclor-1242	SW 8082	µg/kg dry	<5.5	<4.8	<6.7	<4.7	<4.9	<5.0
Aroclor-1248	SW 8082	µg/kg dry	<5.2	<4.5	<6.3	<4.4	<4.6	<4.7
Aroclor-1254	SW 8082	µg/kg dry	<6.3	<5.4	<7.6	<5.3	<5.6	<5.7
Aroclor-1260	SW 8082	µg/kg dry	<9.9	<8.5	<12	<8.4	<8.8	<9.0
Aroclor-1262	SW 8082	µg/kg dry	<5.9	<5.1	<7.1	<5.0	<5.2	<5.3
Total PCBs	SW 8082	µg/kg dry	<4.3	<3.7	<5.3	<3.7	<3.9	<3.9
Organochlorine Pesticides	**Method**	**Units**						
4,4'-DDD	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
4,4'-DDE	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
4,4'-DDT	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
Aldrin	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
alpha-BHC	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
alpha-Chlordane	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
beta-BHC	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
Chlordane (Technical)	SW8081	µg/kg dry	<20	<17	<24	<17	<18	<18
delta-BHC	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
Dieldrin	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
Endosulfan I	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90

Non-detected results = "<" Limit of Quantitation
results with "J" qualifier reported as estimated number
Bold type = results above LOQ

* % Solids calculated from % Moisture

TABLE 1: ST. MARYS SOIL ANALYTICAL RESULTS

Parameter	Sample ID		SM-14-13	SM-14-14	SM-14-15	SM-14-16	SM-14-17	SM-14-18
	Lab ID		1410A92-006	1410A92-007	1410A92-008	1410A92-009	1410A92-010	1410A92-011
	Date Collected		10/21/2014	10/22/2014	10/21/2014	10/21/2014	10/21/2014	10/21/2014
Endosulfan II	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
Endosulfan sulfate	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
Endrin	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
Endrin aldehyde	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
Endrin ketone	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
gamma-BHC	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
gamma-Chlordane	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
Heptachlor	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
Heptachlor epoxide	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
Methoxychlor	SW8081	µg/kg dry	<0.99	<0.86	<1.2	<0.85	<0.89	<0.90
Toxaphene	SW8081	µg/kg dry	<20	<17	<24	<17	<18	<18
Metals Kit	Method	Units						
Arsenic	SW 6010	µg/kg dry	**3,800**	1,400	**5,500**	**1,800**	**1,600**	**1,600**
Barium	SW 6010	µg/kg dry	**100,000**	4,300	**150,000**	7,600	**24,000**	**17,000**
Cadmium	SW 6010	µg/kg dry	280	68	190	100	140	150
Chromium	SW 6010	µg/kg dry	**36,000**	**2,000**	**36,000**	**3,800**	**11,000**	**9,200**
Copper	SW 6010	µg/kg dry	**21,000**	**5,100**	**28,000**	3,700	**6,700**	**7,100**
Iron	SW 6010	µg/kg dry	**23,000,000**	**1,800,000**	**23,000,000**	**3,400,000**	**7,500,000**	**6,600,000**
Lead	SW 6010	µg/kg dry	4,800	910	5,900	1,400	**3,300**	2,400
Manganese	SW 6010	µg/kg dry	**420,000**	**32,000**	**440,000**	**51,000**	**100,000**	**93,000**
Mercury	SW 7471A	µg/kg dry	11	1.9	10	1.3	4.0	5.4
Nickel	SW 6010	µg/kg dry	**27,000**	1,400	**28,000**	2,800	**7,200**	**5,900**
Selenium	SW 6010	µg/kg dry	<1,700	<1,300	<2,100	<1,300	<930	<1,100
Silver	SW 6010	µg/kg dry	<280	<210	<360	<220	<160	<180
Zinc	SW 6010	µg/kg dry	**32,000**	3,200	**41,000**	**5,000**	**12,000**	**10,000**
Semi-Volatile Organic Compounds/PAH	Method	Units						
2-Methylnaphthalene	SW 8270	µg/kg dry	<25	<21	<30	<21	<22	<22
Acenaphthene	SW 8270	µg/kg dry	<25	<21	<30	<21	<22	<22
Acenaphthylene	SW 8270	µg/kg dry	<25	<21	<30	<21	<22	<22
Anthracene	SW 8270	µg/kg dry	<25	<21	<30	<21	<22	<22
Benzo(a)anthracene	SW 8270	µg/kg dry	<25	<21	<30	<21	<22	<22
Benzo(a)pyrene	SW 8270	µg/kg dry	23	<21	<30	<21	<22	<22
Benzo(b)fluoranthene	SW 8270	µg/kg dry	<25	<21	<30	<21	<22	<22
Benzo(g,h,i)perylene	SW 8270	µg/kg dry	<25	<21	<30	<21	<22	<22
Benzo(k)fluoranthene	SW 8270	µg/kg dry	<49	<43	<60	<42	<44	<45
Chrysene	SW 8270	µg/kg dry	<25	<21	<30	<21	<22	<22
Dibenzo (a,h) anthracene	SW 8270	µg/kg dry	<49	<43	<60	<42	<44	<45

Non-detected results = "<" Limit of Quantitation
results with "J" qualifier reported as estimated number
Bold type = results above LOQ

* % Solids calculated from % Moisture

TABLE 1: ST. MARYS SOIL ANALYTICAL RESULTS

Parameter	Sample ID		SM-14-13	SM-14-14	SM-14-15	SM-14-16	SM-14-17	SM-14-18
	Lab ID		1410A92-006	1410A92-007	1410A92-008	1410A92-009	1410A92-010	1410A92-011
	Date Collected		10/21/2014	10/22/2014	10/21/2014	10/21/2014	10/21/2014	10/21/2014
Fluoranthene	SW 8270	µg/kg dry	<25	<21	<30	<21	<22	<22
Fluorene	SW 8270	µg/kg dry	<25	<21	<30	<21	<22	<22
Indeno(1,2,3-cd)pyrene	SW 8270	µg/kg dry	<49	<43	<60	<42	<44	<45
Naphthalene	SW 8270	µg/kg dry	<25	<21	<30	<21	<22	<22
Phenanthrene	SW 8270	µg/kg dry	<25	<21	<30	<21	<22	<22
Pyrene	SW 8270	µg/kg dry	<25	<21	<30	<21	<22	<22

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* % Solids calculated from % Moisture

TABLE 1: ST. MARYS SOIL ANALYTICAL RESULTS

Parameter	Sample ID		SM-14-19	SM-14-20	SM-14-21	SM-14-22	SM-14-23	SM-14-24
	Lab ID		1410A92-012	1410A92-013	1410A92-014	1410A92-015	1410A92-016	1410A92-017
	Date Collected		10/21/2014	10/21/2014	10/21/2014	10/21/2014	10/21/2014	10/21/2014
Physical Kit	**Method**	**Units**						
Density		20C	**17.9**	**18.4**	**17.1**	**16.6**	**34.1**	**25.0**
Specific Density		Cu Ft	**2.15**	**2.21**	**2.05**	**2.00**	**4.09**	**3.01**
% Moisture	ASTM D2216	% by Wt.	**38**	**27**	**33**	**43**	**24**	**18**
% Solids *	ASTM D2216	% by Wt.	**62**	**73**	**67**	**57**	**76**	**82**
Nutrients Kit								
Phosphorus, total	SM 4500 P-F	mg/Kg dry	**140**	**120**	**110**	**170**	**20**	**24**
Nitrogen, Ammonia	EPA 350.1	mg/Kg dry	**31**	**20**	**19**	**31**	**15**	**13**
Nitrogen, Kjeldahl, total	EPA 351.2	mg/Kg dry	**290**	**180**	**150**	**180**	**140**	**76**
Organic Indicators Kit								
Oil & Grease, total	SW 9071	mg/Kg dry	<160	<130	<150	<170	<130	<120
Cyanide, total	SW 9012	mg/Kg dry	<0.79	<0.67	<0.75	1.0	<0.65	<0.61
Chemical Oxygen Demand	EPA 410.4	mg/Kg dry	**6,200**	**3,400**	**4,300**	**5,000**	**2,500**	**1,400**
Total Volatile Solids	SM 2540 G	% by Wt	**2.0**	**1.5**	**1.1**	**2.1**	**1.1**	**0.23**
Total Organic Carbon	SW 9060	mg/Kg dry	1,800	<2,600	<2,300	<2,400	**5,400**	<1,600
PCBs	**Method**	**Units**						
Aroclor-1016	SW 8082	µg/kg dry	<11	<8.9	<9.7	<11	<8.6	<8.1
Aroclor-1221	SW 8082	µg/kg dry	<4.8	<4.0	<4.4	<5.1	<3.9	<3.6
Aroclor-1232	SW 8082	µg/kg dry	<7.1	<6.0	<6.5	<7.7	<5.8	<5.4
Aroclor-1242	SW 8082	µg/kg dry	<5.9	<5.0	<5.4	<6.4	<4.8	<4.5
Aroclor-1248	SW 8082	µg/kg dry	<5.6	<4.7	<5.1	<6.0	<4.5	<4.3
Aroclor-1254	SW 8082	µg/kg dry	<6.7	<5.7	<6.2	<7.3	<5.4	<5.1
Aroclor-1260	SW 8082	µg/kg dry	<11	<8.9	<9.7	<11	<8.6	<8.1
Aroclor-1262	SW 8082	µg/kg dry	<6.3	<5.3	<5.8	<6.8	<5.1	<4.8
Total PCBs	SW 8082	µg/kg dry	<4.6	<3.9	<4.3	<5.0	<3.8	<3.5
Organochlorine Pesticides	**Method**	**Units**						
4,4'-DDD	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
4,4'-DDE	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
4,4'-DDT	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
Aldrin	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
alpha-BHC	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
alpha-Chlordane	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
beta-BHC	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
Chlordane (Technical)	SW8081	µg/kg dry	<21	<18	<19	<23	<17	<16
delta-BHC	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
Dieldrin	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
Endosulfan I	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81

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TABLE 1: ST. MARYS SOIL ANALYTICAL RESULTS

Parameter	Sample ID		SM-14-19	SM-14-20	SM-14-21	SM-14-22	SM-14-23	SM-14-24
	Lab ID		1410A92-012	1410A92-013	1410A92-014	1410A92-015	1410A92-016	1410A92-017
	Date Collected		10/21/2014	10/21/2014	10/21/2014	10/21/2014	10/21/2014	10/21/2014
Endosulfan II	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
Endosulfan sulfate	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
Endrin	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
Endrin aldehyde	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
Endrin ketone	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
gamma-BHC	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
gamma-Chlordane	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
Heptachlor	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
Heptachlor epoxide	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
Methoxychlor	SW8081	µg/kg dry	<1.1	<0.90	<0.98	<1.2	<0.86	<0.81
Toxaphene	SW8081	µg/kg dry	<21	<18	<19	<23	<17	<16
Metals Kit	Method	Units						
Arsenic	SW 6010	µg/kg dry	**5,400**	**2,800**	**4,300**	**6,500**	1,400	1,400
Barium	SW 6010	µg/kg dry	**220,000**	**86,000**	**170,000**	**270,000**	**21,000**	**11,000**
Cadmium	SW 6010	µg/kg dry	**330**	220	**290**	**410**	160	110
Chromium	SW 6010	µg/kg dry	**73,000**	**32,000**	**54,000**	**78,000**	**12,000**	**5,700**
Copper	SW 6010	µg/kg dry	**46,000**	**19,000**	**34,000**	**49,000**	**8,700**	**4,200**
Iron	SW 6010	µg/kg dry	**41,000,000**	**20,000,000**	**30,000,000**	**41,000,000**	**9,200,000**	**4,400,000**
Lead	SW 6010	µg/kg dry	**9,500**	4,200	**7,500**	**10,000**	**5,400**	2,500
Manganese	SW 6010	µg/kg dry	**740,000**	**440,000**	**560,000**	**740,000**	**110,000**	**110,000**
Mercury	SW 7471A	µg/kg dry	**26**	12	16	**22**	**21**	4.0
Nickel	SW 6010	µg/kg dry	**57,000**	**25,000**	**40,000**	**60,000**	**6,700**	**3,700**
Selenium	SW 6010	µg/kg dry	<1,600	<1,300	<1,600	<1,800	<1,200	<1,100
Silver	SW 6010	µg/kg dry	<270	<220	<270	<300	<200	<180
Zinc	SW 6010	µg/kg dry	**82,000**	**30,000**	**68,000**	**81,000**	**20,000**	**7,400**
Semi-Volatile Organic Compounds/PAH	Method	Units						
2-Methylnaphthalene	SW 8270	µg/kg dry	<27	<22	<25	<29	13	<20
Acenaphthene	SW 8270	µg/kg dry	<27	<22	<25	<29	<21	<20
Acenaphthylene	SW 8270	µg/kg dry	<27	<22	<25	<29	<21	<20
Anthracene	SW 8270	µg/kg dry	<27	<22	<25	<29	16	<20
Benzo(a)anthracene	SW 8270	µg/kg dry	<27	<22	<25	<29	52	<20
Benzo(a)pyrene	SW 8270	µg/kg dry	<27	<22	<25	<29	46	<20
Benzo(b)fluoranthene	SW 8270	µg/kg dry	<27	<22	<25	<29	57	<20
Benzo(g,h,i)perylene	SW 8270	µg/kg dry	<27	<22	<25	<29	35	<20
Benzo(k)fluoranthene	SW 8270	µg/kg dry	<53	<45	<50	<58	28	<40
Chrysene	SW 8270	µg/kg dry	<27	<22	<25	<29	55	<20
Dibenzo (a,h) anthracene	SW 8270	µg/kg dry	<53	<45	<50	<58	<43	<40

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Bold type = results above LOQ

* % Solids calculated from % Moisture

TABLE 1: ST. MARYS SOIL ANALYTICAL RESULTS

Parameter	Sample ID		SM-14-19	SM-14-20	SM-14-21	SM-14-22	SM-14-23	SM-14-24
	Lab ID		1410A92-012	1410A92-013	1410A92-014	1410A92-015	1410A92-016	1410A92-017
	Date Collected		10/21/2014	10/21/2014	10/21/2014	10/21/2014	10/21/2014	10/21/2014
Fluoranthene	SW 8270	µg/kg dry	<27	<22	<25	<29	96	<20
Fluorene	SW 8270	µg/kg dry	<27	<22	<25	<29	<21	<20
Indeno(1,2,3-cd)pyrene	SW 8270	µg/kg dry	<53	<45	<50	<58	28	<40
Naphthalene	SW 8270	µg/kg dry	<27	<22	<25	<29	65	<20
Phenanthrene	SW 8270	µg/kg dry	<27	<22	<25	<29	61	<20
Pyrene	SW 8270	µg/kg dry	<27	<22	<25	<29	78	<20

Non-detected results = "<" Limit of Quantitation
results with "J" qualifier reported as estimated number
Bold type = results above LOQ

* % Solids calculated from % Moisture

TABLE 1: ST. MARYS SOIL ANALYTICAL RESULTS

Parameter	Sample ID		SM-14-25	SM-14-26	SM-14-27	SM-14-28	SM-14-29	SM-14-30
	Lab ID		1505725-009	1505725-010	1505725-011	1505725-012	1411615-002	1505725-008
	Date Collected		5/20/2015	5/20/2015	5/20/2015	5/20/2015	11/11/2014	5/20/2015
Physical Kit	**Method**	**Units**						
Density		20C	**15.6**	**15.8**	**15.8**	**15.1**	**20.8**	**17.5**
Specific Density		Cu Ft	**1.87**	**1.89**	**1.90**	**1.81**	**2.50**	**2.10**
% Moisture	ASTM D2216	% by Wt.	**39**	**24**	**24**	**29**	**23**	**35**
% Solids *	ASTM D2216	% by Wt.	**61**	**76**	**76**	**71**	**77**	**65**
Nutrients Kit								
Phosphorus, total	SM 4500 P-F	mg/Kg dry	**200**	**200**	**170**	**180**	**130**	**230**
Nitrogen, Ammonia	EPA 350.1	mg/Kg dry	**110**	**56**	**55**	**48**	**36**	**130**
Nitrogen, Kjeldahl, total	EPA 351.2	mg/Kg dry	**360**	**180**	**270**	**160**	**270**	**380**
Organic Indicators Kit								
Oil & Grease, total	SW 9071	mg/Kg dry	<160	<130	<130	<140	<130	<150
Cyanide, total	SW 9012	mg/Kg dry	<0.78	<0.60	<0.60	<0.53	<.65	<0.55
Chemical Oxygen Demand	EPA 410.4	mg/Kg dry	**1,000**	**980**	**290**	430	**3,100**	<340
Total Volatile Solids	SM 2540 G	% by Wt	**2.1**	**2.0**	**2.3**	**1.6**	**0.99**	**1.6**
Total Organic Carbon	SW 9060	mg/Kg dry	**5,400**	**9,100**	<3,400	2,700	**3,800**	**7,400**
PCBs	**Method**	**Units**						
Aroclor-1016	SW 8082	µg/kg dry	<11	<8.8	<8.5	<9.1	<8.4	<10
Aroclor-1221	SW 8082	µg/kg dry	<11	<8.8	<8.5	<9.1	<3.8	<10
Aroclor-1232	SW 8082	µg/kg dry	<11	<8.8	<8.5	<9.1	<5.7	<10
Aroclor-1242	SW 8082	µg/kg dry	<11	<8.8	<8.5	<9.1	<4.7	<10
Aroclor-1248	SW 8082	µg/kg dry	<11	<8.8	<8.5	<9.1	<4.4	<10
Aroclor-1254	SW 8082	µg/kg dry	<11	<8.8	<8.5	<9.1	<5.3	<10
Aroclor-1260	SW 8082	µg/kg dry	<11	<8.8	<8.5	<9.1	<8.4	<10
Aroclor-1262	SW 8082	µg/kg dry	<11	<8.8	<8.5	<9.1	<5.0	<10
Total PCBs	SW 8082	µg/kg dry	<11	<8.8	<8.5	<9.1	<3.7	<10
Organochlorine Pesticides	**Method**	**Units**						
4,4'-DDD	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
4,4'-DDE	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
4,4'-DDT	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
Aldrin	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
alpha-BHC	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
alpha-Chlordane	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
beta-BHC	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
Chlordane (Technical)	SW8081	µg/kg dry	<21	<18	<17	<18	<17	<20
delta-BHC	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
Dieldrin	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
Endosulfan I	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0

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* % Solids calculated from % Moisture

TABLE 1: ST. MARYS SOIL ANALYTICAL RESULTS

Parameter	Sample ID		SM-14-25	SM-14-26	SM-14-27	SM-14-28	SM-14-29	SM-14-30
	Lab ID		1505725-009	1505725-010	1505725-011	1505725-012	1411615-002	1505725-008
	Date Collected		5/20/2015	5/20/2015	5/20/2015	5/20/2015	11/11/2014	5/20/2015
Endosulfan II	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
Endosulfan sulfate	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
Endrin	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
Endrin aldehyde	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
Endrin ketone	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
gamma-BHC	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
gamma-Chlordane	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
Heptachlor	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
Heptachlor epoxide	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
Methoxychlor	SW8081	µg/kg dry	<1.1	<0.89	<0.85	<0.91	<0.85	<1.0
Toxaphene	SW8081	µg/kg dry	<21	<18	<17	<18	<17	<20
Metals Kit	**Method**	**Units**						
Arsenic	SW 6010	µg/kg dry	1,800	1,200	1,300	<1,100	**1,800**	<1,200
Barium	SW 6010	µg/kg dry	**210,000**	**190,000**	**180,000**	**140,000**	**21,000**	**49,000**
Cadmium	SW 6010	µg/kg dry	<69	<56	<52	<55	160	<61
Chromium	SW 6010	µg/kg dry	**65,000**	**61,000**	**54,000**	**46,000**	**11,000**	**23,000**
Copper	SW 6010	µg/kg dry	**32,000**	**31,000**	**32,000**	**24,000**	**5,800**	**14,000**
Iron	SW 6010	µg/kg dry	**36,000,000**	**34,000,000**	**33,000,000**	**26,000,000**	**8,700,000**	**14,000,000**
Lead	SW 6010	µg/kg dry	**7,200**	**7,500**	**7,100**	**5,800**	2,600	4,700
Manganese	SW 6010	µg/kg dry	**650,000**	**630,000**	**570,000**	**500,000**	**88,000**	**180,000**
Mercury	SW 7471A	µg/kg dry	**24**	**17**	**13**	**24**	8.4	**17**
Nickel	SW 6010	µg/kg dry	**48,000**	**46,000**	**41,000**	**34,000**	**6,500**	**13,000**
Selenium	SW 6010	µg/kg dry	<2,100	<1,700	<1,600	<1,600	<1,200	<1,800
Silver	SW 6010	µg/kg dry	220	140	130	120	<190	130
Zinc	SW 6010	µg/kg dry	**47,000**	**42,000**	**38,000**	**32,000**	**12,000**	**20,000**
Semi-Volatile Organic Compounds/PAH	**Method**	**Units**						
2-Methylnaphthalene	SW 8270	µg/kg dry	<27	<22	<21	<23	<21	<25
Acenaphthene	SW 8270	µg/kg dry	<27	<22	<21	<23	<21	<25
Acenaphthylene	SW 8270	µg/kg dry	<27	<22	<21	<23	<21	<25
Anthracene	SW 8270	µg/kg dry	<27	<22	<21	<23	<21	<25
Benzo(a)anthracene	SW 8270	µg/kg dry	<27	<22	<21	<23	16	<25
Benzo(a)pyrene	SW 8270	µg/kg dry	<27	<22	<21	<23	<21	<25
Benzo(b)fluoranthene	SW 8270	µg/kg dry	<27	<22	<21	<23	17	16
Benzo(g,h,i)perylene	SW 8270	µg/kg dry	<27	<22	<21	<23	<21	<25
Benzo(k)fluoranthene	SW 8270	µg/kg dry	<54	<44	<43	<47	<43	<51
Chrysene	SW 8270	µg/kg dry	<27	<22	<21	<23	14	<25
Dibenzo (a,h) anthracene	SW 8270	µg/kg dry	<54	<44	<43	<47	<43	<51

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Parameter	Sample ID		SM-14-25	SM-14-26	SM-14-27	SM-14-28	SM-14-29	SM-14-30
	Lab ID		1505725-009	1505725-010	1505725-011	1505725-012	1411615-002	1505725-008
	Date Collected		5/20/2015	5/20/2015	5/20/2015	5/20/2015	11/11/2014	5/20/2015
Fluoranthene	SW 8270	µg/kg dry	<27	<22	<21	<23	24	<25
Fluorene	SW 8270	µg/kg dry	<27	<22	<21	<23	<21	<25
Indeno(1,2,3-cd)pyrene	SW 8270	µg/kg dry	<54	<44	<43	<47	<43	<51
Naphthalene	SW 8270	µg/kg dry	<27	<22	<21	<23	<21	<25
Phenanthrene	SW 8270	µg/kg dry	<27	<22	<21	<23	15	<25
Pyrene	SW 8270	µg/kg dry	<27	<22	<21	<23	21	<25

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Appendix D
St. Marys River Binational Public Advisory Council
Letter of Support for the Removal of the
Restrictions on Dredging Activities Beneficial Use Impairment

ST. MARYS RIVER
BINATIONAL PUBLIC ADVISORY COUNCIL

June 28, 2017

Mr. Rick Hobrla
Office of the Great Lakes
Michigan Department of Environmental Quality
P.O. Box 30473
Lansing, Michigan, 48909-7973

RE: Restrictions on Dredging Activities Beneficial Use Impairment for the St. Marys River Area of Concern, Sault Ste. Marie, Michigan

Dear Mr. Hobrla,

On behalf of the Binational Public Advisory Council (BPAC) for the St. Marys River Area of Concern (AOC), we are writing to convey agreement regarding the removal of the Restrictions on Dredging Activities Beneficial Use Impairment from the Michigan side of the AOC.

Michigan's 2015 statewide restoration criteria states that this beneficial use will be considered restored when: "during the most recent routine dredging in the U.S. Army Corps of Engineers designated navigational channel, use of a confined disposal facility or TSCA-level landfill for dredge spoils was not required due to chemical contamination".

In April 2017, removal recommendations were shared with the BPAC. The report summarized the St. Marys River Federal Navigation Channel Sediment Sampling and Analysis Report submitted to MDEQ by the U.S. Army Corps of Engineers (2015). It was concluded that the sediments associated with the most recent St. Marys River dredging of the Federal Navigation Channel in 2014 and 2015 were considered to be uncontaminated. As such, placement of these sediments was not regulated. Moreover, at the request of the BPAC, additional data was provided in the form of a report by Altech Environmental Services entitled: "Sediment Sampling, Lower St. Marys River, Sault Sainte Marie, Michigan" (2002). This report also concluded that sediment samples analyzed in 2001 were suitable for unrestricted upland disposal.

As data from these studies revealed that sediments collected during recent routine dredging in the designated navigational channel did not require the use of a confined disposal facility or TSCA-level landfill, the restoration criteria appears to have been met. BPAC supports MDEQ's recommendation to delist the Restrictions on Dredging Activities BUI from the U.S. side of the St. Marys River AOC.

Sincerely,

Mike Ripley
U.S. BPAC Chair

Ron Prickett
Canadian Vice-Chair