Final Focused Feasibility Study Report

Lower River and Inner Harbor of the Sheboygan River

Sheboygan River Area of Concern

Sheboygan, Wisconsin

WA No. 123-RICO-1507 / Contract No. EP-S5-06-01

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CH2MHILL®

Executive Summary

This focused feasibility study (FS) report presents the remedial action objectives (RAOs), technology screening, and alternatives development and evaluation completed for a specific reach of the Sheboygan River and Inner Harbor Area of Concern (AOC), in Sheboygan, Wisconsin. The objective of the FS is to develop a list of remedial alternatives for the Sheboygan Lower River and Inner Harbor site such that the U.S. Environmental Protection Agency Great Lakes National Program Office (USEPA GLNPO), in consultation with the Wisconsin Department of Natural Resources (WDNR), City of Sheboygan, and Sheboygan County, can select a remedial action to eliminate, reduce, or control risks to human health and the environment and move forward with delisting beneficial use impairments (BUIs) in the Sheboygan River AOC.

Sediment RAOs were developed for the media of concern to protect human health and the environment based on the nature and extent of the contamination, resources that are currently and potentially threatened, potential to meet or contribute to delisting criteria, and potential for human and environmental exposure as determined by the human health and ecological exposure and toxicity evaluations. A model was used to run various sediment removal scenarios using isosurface concentrations for the contaminants of concern, polychlorinated biphenyls (PCBs) and polynuclear aromatic hydrocarbons (PAHs). The scenario chosen by the project stakeholders as providing the most benefit for the available funding was model scenario 10:

- Removal of sediment with concentrations greater than 1 milligram per kilogram (mg/kg) total PCBs and 18 mg/kg total PAHs to elevation 568.0 (-10 feet low water datum [LWD]), sediment below elevation 568.0 with concentrations greater than 5 mg/kg total PCBs to any elevation, sediment with concentrations of total PAHs greater than 18 mg/kg from 500 feet upstream and 1,000 feet downstream of Boat Island to any elevation, and remaining sediment within the 60-foot-wide channel to elevation 570.0 (-8 feet LWD) from Pennsylvania Avenue Bridge up to the 14th Street Bridge.

Consistent with the RAOs, remedial technologies and process options were identified and screened. Remedial technologies and process options that remained following screening were assembled into a range of alternatives.

Based on available staging/processing areas, observations from the two 2011 Sheboygan River sediment cleanup projects, professional judgment, and the remaining remedial technologies and process options available after completion of the screening, the following three alternatives were assembled and then evaluated against six criteria:

- Alternative 1—No Action
- Alternative 2—Mechanical Dredging
- Alternative 3—Combination of Mechanical Dredging and Cover

Each alternative, with the exception of Alternative 1 (No Action) which is a mandatory alternative by regulation to establish baseline, passes criteria evaluation. Alternative 3 (Combination of Mechanical Dredging and Cover) ranks highest in comparison to other alternatives for long-term benefits because placement of a cover material will result in a lower surface-weighted average concentration (SWAC) for total PCBs. The benefits of this alternative support the overall protection of human health and the environment, faster removal of BUIs within the Sheboygan River and Inner Harbor AOC, and eventual delisting of the AOC. In addition, Alternative 3 is most beneficial in minimizing residual risk and the transport of contaminated sediment downstream.

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Acronyms and Abbreviations

AOC	Area of Concern
BSAF	biota-to-sediment accumulation factor
BUI	beneficial use impairment
CFR	Code of Federal Regulations
COC	contaminant of concern
CWA	Clean Water Act
FS	feasibility study
GL	Uniform Great Lakes Fish Consumption Advisory
GLLA	Great Lakes Legacy Act
GLNPO	Great Lakes National Program Office
GPS	global positioning system
HDPE	high-density polyethylene
LDR	land disposal restriction
LWD	low water datum
µg/L	microgram per liter
mg/kg	milligram per kilogram
MGP	manufactured gas plant
MNR	monitored natural recovery
MVS	Mining Visualization System
NAPL	nonaqueous phase liquid
NDPES	National Pollutant Discharge Elimination System
NRT	Natural Resources Technology
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
ppm	parts per million
PRS	Pollution Risk Services
RAO	remedial action objective
RATM	remedial alternatives technical memorandum
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
SHPO	State Historic Preservation Officer
SOW	statement of work
SWAC	surface weighted average concentration
TSCA	Toxic Substances Control Act
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
WA	work assignment
WDNR	Wisconsin Department of Natural Resources
WEPA	Wisconsin Environmental Policy Act
WPDES	Wisconsin Pollutant Discharge Elimination System
WPSC	Wisconsin Public Service Corporation
yd^3	cubic yards

SECTION 1

Introduction

1.1 Purpose

This focused feasibility study (FS) report presents the RAOs, results of the technology screening, alternatives development and evaluation completed for contaminated sediment remediation at the Sheboygan Lower River and Inner Harbor site from 0.25 mile upstream of the 14th Street Bridge to the 8th Street Bridge, Sheboygan River AOC, in Sheboygan, Wisconsin. It is being submitted pursuant to the U.S. Environmental Protection Agency (USEPA) Statement of Work (SOW) dated March 15, 2011. The work is being conducted in accordance with Work Assignment (WA) No. 123-RICO-1507 under Contract No. EP-S5-06-01.

The objective of the focused FS is to develop a list of remedial alternatives for the Great Lakes Legacy Act (GLLA) project within the Sheboygan Lower River and Inner Harbor Site such that USEPA Great Lakes National Program Office (GLNPO) in consultation with the WDNR, City of Sheboygan, and Sheboygan County can select a remedial action to eliminate, reduce, or control risks to human health and the environment and alleviate the AOC beneficial use impairments (BUIs)

1.2 Report Organization

This document consists of the following five sections:

- Section 1 provides an introduction and summarizes background information, such as site physical description and nature and extent of contamination.
- Section 2 identifies applicable regulatory requirements and discusses the development of the RAOs, and includes the use of a model to run various removal scenarios.
- Section 3 contains information about the general response actions that address the RAOs and introduces the identification and screening of the technology types and process options. Remedial technologies are screened to focus the detailed analysis on only those technologies most applicable to the site.
- Section 4 summarizes the development of the alternatives.
- Section 5 presents the evaluation of the alternatives individually and to one another with respect to six criteria.
- Section 6 consists of references.

1.3 Project Background

The Lower River and Inner Harbor segments of the Sheboygan River are within the Sheboygan River AOC in Sheboygan, Wisconsin. Historical waste practices associated with the former Tecumseh Plant in Sheboygan Falls and the former Wisconsin Public Service Corporation (WPSC) Campmarina Manufactured Gas Plant (MGP) Site in Sheboygan have resulted in sediment contaminated with PCBs (Tecumseh) and PAHs (WPSC) in the Sheboygan River. Sediment characterization and remediation associated with the Sheboygan River Superfund Site has been progressing in phases, as performed by Pollution Risk Services (PRS) through a liability transfer agreement with Tecumseh, since 2003. PRS is expected to remove approximately 50,000 cubic yards of PCB-contaminated sediment from the Lower River and Inner Harbor in 2011 and through mid-2012. WPSC is expected to remove approximately 27,000 cubic yards of PAH and nonaqueous phase liquid (NAPL)-contaminated sediment and shoreline from the Campmarina Site in 2011.

The Superfund program projects focus on addressing human and ecological risk threats. PCB- and PAH-contaminated sediment will remain in the Sheboygan River following removal of material required by the Superfund authority. However, the sediment contamination also affects several BUIs in the Sheboygan River AOC,

including restrictions on fish and wildlife consumption, degradation of benthos, and restrictions on dredging activities. Under the auspices of the Great Lakes Restoration Initiative, GLNPO's goal is to take action that leads to delisting BUIs.

Specifically, this FS focuses on sediment remaining in place following PRS and Campmarina actions from a stretch of the Sheboygan River extending from 0.25 mile upstream of the 14th Street Bridge to the 8th Street Bridge (Figure 1). Sediment below the 8th Street Bridge to the end of the Inner Harbor is under consideration for a U.S. Army Corps of Engineers (USACE) strategic dredging project.

A remedial investigation conducted in 2010–2011 (CH2M HILL 2011) augmented existing characterization data collected by PRS and Natural Resources Technology (NRT) for WPSC, particularly the vertical extent of contamination. For more details on site background, history, or remedial investigation results, reference the final RI report (CH2M HILL 2011).

A Mining Visualization System (MVS) three-dimensional model was constructed with sediment thickness and analytical data to visualize the contamination and calculate sediment volumes. The model was used in the focused FS process to determine preliminary removal volumes for various remedial scenarios.

SECTION 2

Applicable Regulatory Requirements and Remedial Action Objectives

2.1 Applicable Regulatory Requirements

Applicable regulatory requirements were evaluated with respect to risk exposure pathways and receptors. The primary pathway of concern is human health with respect to ingestion of fish tissue. Other human receptor exposure pathways include dermal and ingestion through incidental contact with PCB-contaminated sediment. Standards also were evaluated with respect to federal and state permitting requirements for implementing remedial operations at the site. Applicable regulatory requirements identified to address these considerations and establish RAOs were grouped into three types: chemical-specific, location-specific, and action-specific and are discussed below.

2.1.1 Chemical-specific Requirements

Chemical-specific requirements include laws and requirements that establish health- or risk-based numerical values or methodologies for environmental contaminant concentrations or discharge.

2.1.1.1 Resource Conservation and Recovery Act

Sediment to be excavated and disposed offsite should be classified according to its Resource Conservation and Recovery Act (RCRA) status to determine whether RCRA requirements apply. RCRA is not a requirement for contaminated sediment if the sediment is remediated under the Clean Water Act (CWA) Section 404. RCRA specifically excludes sediment managed under a Section 404 permit as follows: "*40 CFR 261(g). Dredged material that is not a hazardous waste. Dredged material that is subject to the requirements of a permit that has been issued under 404 of the Federal Water Pollution Control Act (33 U.S.C. 1344) or Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972 (33 U.S.C. 1413) is not a hazardous waste*." Land disposal restrictions (LDRs) apply to hazardous wastes that are intended for land disposal. Because the sediment is not hazardous waste, LDRs do not apply and are not requirements for the sediment.

2.1.1.2 Clean Water Act

The CWA provides regulations for the discharge of pollutants into the waters of the United States. It required USEPA to set water quality standards for all contaminants in surface waters and that permits are obtained for discharge of pollutants from a point source into navigable waters.

A federal program called the Great Lakes Water Quality Initiative began in 1989 to develop uniform water quality criteria for the Great Lakes Basin and resulted in the publication of criteria and methodologies for developing water quality criteria. These criteria were promulgated in the Great Lakes Critical Programs Act of 1990 and are incorporated in 40 *Code of Federal Regulations* (CFR) Part 132. WDNR holds effluent permitting authority in Wisconsin and has set a Wisconsin Pollutant Discharge Elimination System (WPDES) monthly average limit for total PCBs of 0.8 microgram per liter (µg/L) for the Campmarina Former MGP Site and nondetectable for the PRS Sheboygan River Superfund Site. WPDES permit criteria also have been established for six individual PAH constituents (WPDES Permit No. WI-0062936-01-1). Discharge values similar to these values are expected under a WPDES permit for this project.

2.1.2 Action-specific Requirements

Action-specific requirements are requirements that define acceptable treatment and disposal procedures. They generally set performance, design, or other similar action-specific controls or restrictions on particular kinds of activities related to managing hazardous substances or pollutants. These requirements are triggered by the remedial activities selected to accomplish a remedy. Since there are usually several alternative actions for any

remedial site, different requirements may apply. The action-specific requirements do not solely determine the remedial alternative, but can indicate how or to what level treatment or cleanup will be achieved.

2.1.2.1 Toxic Substances Control Act

TSCA regulates the remediation of soil contaminated with PCBs under 40 CFR 761.61(a) (self-implementing onsite cleanup and disposal of PCB remediation waste); however, the section specifically excludes remediation of sediment from the self-implementing rules. As a result, the TSCA self-implementing rules are not requirements for the Sheboygan Lower River and Inner Harbor Site.

TSCA will have an effect on this project as it will control where sediment can be disposed. TSCA requires sediment contaminated with PCBs at concentrations of 50 mg/kg or greater to be disposed of at either a hazardous waste landfill permitted under RCRA that is specifically authorized to accept materials with this level of PCBs, or a chemical waste landfill permitted under TSCA. Currently, it is estimated that 13,000 cubic yards of sediment exceed 50 mg/kg in sediment under consideration for the GLLA project within the Sheboygan Lower River and Inner Harbor Site. Therefore, the chemical waste landfill requirements under 40 CFR 761.75 need to be met for excavated sediment with an in situ total PCB concentration at 50 mg/kg or above. For sediment with an in situ total PCB concentration below 50 mg/kg, an approved Subtitle D landfill or permitted confined disposal facility (CDF) are acceptable disposal options. Confined disposal facilities were eliminated from consideration during the FS.

GLNPO and the USEPA Region 5 TSCA Remedial Program are operating under a draft Memorandum of Understanding on TSCA approvals for dredging and disposal of sediment containing PCBs for projects conducted under GLLA. A Risk-Based Disposal Approval application/memorandum for review by the TSCA Remedial Program is being prepared by WDNR. The memorandum presents the risk evaluation to define PCB risk-based concentrations for sediment for the Sheboygan River AOC that are protective of human health and the environment and are consistent with a risk-based cleanup approach as required by the TSCA “Mega Rule” (40 CFR 761.61[c]). The ultimate goal for the risk-based concentrations calculation for sediment is to provide a range of target sediment cleanup levels for the Sheboygan River that will achieve the RAOs of protecting human and ecological health and that will satisfy the TSCA risk-based cleanup requirements.

2.1.2.2 Clean Water Act

Contaminated sediment is addressed under 40 CFR 761.61(b)(3), *Performance-based cleanup.* This section specifically requires that sediment dredged or excavated from waters of the United States, including wetlands, be managed in accordance with a permit issued by USACE under Section 404 of the CWA. It requires USEPA to set water quality standards for all contaminants in surface waters, and requires that permits be obtained for discharging pollutants from a point source into navigable waters such as the Sheboygan River. The CWA also regulates dredged and fill discharges. The CWA also will regulate discharges of water from the project, including treated contact water, dewatering, and stormwater as delegated by USEPA to WDNR.

2.1.2.3 WDNR Chapter 30 Permit (Section 401 Water Quality Certification)

The WDNR Chapter 30 permit covers removal of materials from the bed of a river or wetlands and the placement of structures (such as fill material, steel sheet pilings, and coffer dams) on the bed of a river or wetlands. This permit complies with Wisconsin state statutes 281.14, 30.20, and 30.12(1) as well as Section 401 of the CWA. The Chapter 30 permitting also refers to NR 347 for sediment sampling and analysis, monitoring and disposal criteria for dredging projects, and NR 27, NR29, and State Statute 29.604 for endangered and threatened species.

2.1.2.4 WDNR NR 216 Permit

The WDNR NR 216 permit addresses requirements for construction site stormwater runoff under the WPDES.

2.1.2.5 Wisconsin Environmental Policy Act

The WDNR NR 150 requirements for environmental review will have to be met for the dredging activities conducted by this project. The Wisconsin Environmental Policy Act (WEPA) process is expected to result in an environmental assessment document summarizing the environmental impacts of the project.

2.1.3 Location-specific Requirements

Location-specific requirements relate to the geographical position of the site. State and federal laws and regulations that apply to the protection of wetlands, construction in floodplains, and protection of endangered species in streams or rivers are examples of location-specific requirements. The location-specific requirements for the GLLA project within the Sheboygan Lower River and Inner Harbor Site are the following:

- **Fish and Wildlife Coordination Act—**Enacted to protect fish and wildlife when actions result in the control or structural modification of a natural stream or body of water. The statute requires that any action taken involve consideration of the effect that water-related projects would have on fish and wildlife, and that preventative actions are made to prevent loss or damage to these resources.
- **River and Harbors Act—**Section 10, administered by USACE as part of a Section 404 permit, prohibits the creation of obstructions to the capacity of, or excavation or fill within the limits of, the navigable waters of the United States. Typical requirements of dredging permits include measures to minimize resuspension of sediment and erosion of sediment and stream banks during excavation. In Wisconsin, WDNR coordinates obtaining USACE approval (St. Paul District) as part of the Chapter 30 process.
- **WDNR NR 116 Floodplain Management—**The WDNR floodplain regulations apply to the site for any change in floodplain water surface elevation. The floodplain management review will be incorporated into the WDNR Chapter 30 permitting process if the selected remedy alters the floodplain or if installation of structures such as mooring piles and temporary dams could alter flood elevations.
- **WDNR Natural Heritage Inventory—**WDNR requires a review of state listed threatened, endangered, or species of concern for projects that require a Chapter 30 permit.
- **Section 106 Cultural Resources Review—**The State Historic Preservation Officer (SHPO) requires a review of procedures for preserving scientific, historical, and archaeological data that might be destroyed through alteration of terrain as a result of a federal construction project or a federally licensed activity or program. If scientific, historical, or archaeological artifacts are discovered at the Sheboygan Lower River and Inner Harbor site, work that could impact discovered artifacts will be halted pending completion of any data recovery and preservation activities required pursuant to the National Historic Preservation Act. Coordination with SHPO is ongoing.
- **Endangered Species Act of 1973—**Requires federal agencies ensure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any threatened or endangered species (for example, piping plover) and will not destroy or adversely modify critical habitat.
- **Notice to Mariners—**Once the final dredging schedule is determined, a Notice to Mariners will be issued through the U. S. Coast Guard. The dredging contractor will coordinate with the U. S. Coast Guard once the dredging contract is awarded.
- **Local Ordinances—**These would address local city and county permitting requirements for heavy equipment operation, construction traffic, noise, operational hours, and other environmental controls during performance of remedial operations. The City of Sheboygan has a noise ordinance that restricts construction working hours from 7 a.m. to 11 p.m.; however, a variance has been obtained from the City Council for the GLNPO project.

2.2 Remedial Action Objectives, Preliminary Removal Levels, and Cleanup Goals

RAOs are requirements that remedial alternatives should achieve to provide adequate protection of human health and the environment, make improvements to the AOC such that BUIs can be lifted, while also meeting requirements or complying with permits.

General remedial objectives relate to specific contaminated media such as sediment, potential exposure routes, and identification of target cleanup goals and the removal levels necessary to meet the cleanup goals. This analysis is focused on contaminated sediment at the Sheboygan Lower River and Inner Harbor site.

2.2.1 Remedial Action Objectives

The following RAOs were established for assessing remedial alternatives:

- Support removal of BUIs within the Sheboygan River AOC
  - Fish and wildlife consumption advisories
  - Degradation of benthos
  - Restrictions on dredging
  - Degradation of fish and wildlife habitat
- Minimize potential human health and environmental risks associated with remedial activities, to the extent practical
- Upon completion of remedial activities, improve habitat of the site through restoration efforts (this is a separate project under the direction of WDNR and is not discussed further in this report)

2.2.2 Cleanup Goals

The two BUIs in the Sheboygan River that most directly affect setting numeric cleanup goals are restrictions on fish consumption (PCBs) and degradation of benthos (PAHs). For PCBs, a bioaccumulative contaminant, the cleanup goal (CUG) was based on how the PCBs in sediment move up the food chain into fish, where humans and various ecological receptors (for example, mink), can be exposed when they consume the contaminated fish. For PAHs, a CUG was selected to be protective of direct toxicity to benthic organisms.

Two PCB CUGs were chosen, one for the short term that can be technically achieved following remediation, and a long term CUG that represents what the site-wide goal should be to meet AOC goals. Note that because the PCB CUGs are based on reducing concentrations in fish, the CUGs represent the sediment Surface Weighted Average Concentration (SWAC), or the average contaminant concentrations to which the fish can be exposed. The CUGs do not represent a removal level or dredge cut level.

USEPA risk assessment methodology was used to calculate target fish tissue concentrations considered to be protective of human health. Both cancer and non-cancer endpoints were considered as well as two types of exposure scenarios (average and reasonable maximum exposure). For ecological receptors, target fish tissue concentrations were calculated to be protective of the fish themselves, as well as fish-eating wildlife, mink, and the belted kingfisher. Target sediment concentrations for PCBs were calculated from the target fish tissue concentrations and biota-sediment-accumulation factors (BSAFs). The BSAFs were either calculated from site-specific data or taken from the literature. A range of target sediment concentrations were calculated to capture varying exposure potential, toxicity of PCBs and uncertainty in the risk estimates. A short-term and long-term CUG was selected based on the range of target sediment concentrations (USEPA 2011).

A short-term CUG of 0.5 mg/kg total PCBs is proposed. If a post-remediation SWAC of 0.5 ppm total PCBs is achieved adverse effects to ecological receptors is not expected and human health will be protected under average consumption scenarios (USEPA 2011).

A long-term CUG of 0.1 mg/kg total PCBs is proposed. For the long-term CUG, the BUI for restrictions on fish and wildlife consumption was considered. For delisting and BUI removal, a tributary should at least meet the open lake fish consumption guidelines. If a long-term SWAC of 0.1 ppm is achieved, the open lake consumption guidelines should be met (USEPA 2011).

Sediment CUGs for total PAHs are based on the benthic toxicity sampling and risk assessment conducted at the Campmarina Site by NRT and Exponent (NRT 2009) for WPSC. A removal limit of 18 mg/kg has been chosen.

2.2.3 MVS Model Removal Scenario Runs

2.2.3.1 MVS Modeling

The physical and chemical site characterization data were evaluated and input into a 3D model. The 3D interpolation method was used to visualize the total PCB and PAH distributions within the sediment and evaluate

concentration data in relation to the PRS and Campmarina remedial actions. The computer application MVS v9.22 by CTECH was used to present and interpolate total PCB and PAH concentration data. The interpolated model data was used to assist in determining extent of removal for the remedial design. The data sets, procedures, and analyses associated with the MVS modeling effort are described in detail in the remedial investigation report (CH2M HILL 2011).

2.2.3.2 MVS Results

The MVS 3D model was used to produce estimated dredge removal quantities and extents within the project area (0.25 mile upstream of the 14th Street Bridge to the 8th Street Bridge) using several analytical isosurfaces and geologic surfaces developed from the total PCB and PAH model results, as well as bathymetric and sediment thickness data. A 60-foot-wide channel to facilitate boat and barge traffic between Pennsylvania Avenue and 14th Street bridges was also incorporated into the model scenarios. A description of the each model scenario is as follows:

- Scenario 1: Removal of sediment with concentrations greater than 1 mg/kg total PCBs to any elevation, sediment with concentrations greater than 18 mg/kg total PAHs to any elevation, and to elevation 568.0, which is -10 feet low water datum (LWD) within the 60-foot-wide channel up to the 14th Street Bridge.
- Scenario 2: Removal of sediment with concentrations greater than 1 mg/kg total PCBs to any elevation, and sediment with concentrations greater than 45 mg/kg total PAHs to any elevation, and remaining sediment within the 60-foot-wide channel to elevation 568.0 (-10 feet LWD) up to the 14th Street Bridge.
- Scenario 3: Removal of sediment with concentrations greater than 1 mg/kg total PCBs to any elevation, sediment with concentrations greater than 18 mg/kg total PAHs to elevation 568.0 (-10 feet LWD), sediment with concentrations greater than 45 mg/kg total PAHs below elevation 568.0, and remaining sediment within the 60-foot-wide channel to elevation 568.0 (-10 feet LWD) up to the 14th Street Bridge.
- Scenario 4: Removal of sediment with concentrations greater than 3 mg/kg total PCBs to any elevation, sediment with concentrations greater than 18 mg/kg total PAHs to elevation 568.0 (-10 feet LWD), sediment with concentrations greater than 45 mg/kg total PAHs below elevation 568.0, and remaining sediment within the 60-foot-wide channel to elevation 568.0 (-10 feet LWD) up to the 14th Street Bridge.
- Scenario 5: Removal of sediment with concentrations greater than 5 mg/kg total PCBs to any elevation, sediment with concentrations greater than 18 mg/kg total PAHs to elevation 568.0 (-10 feet LWD), sediment with concentrations greater than 45 mg/kg total PAHs below elevation 568.0, and remaining sediment within the 60-foot-wide channel to elevation 568.0 (-10 feet LWD) up to the 14th Street Bridge.
- Scenario 6: Removal of sediment with concentrations greater than 1 mg/kg total PCBs, sediment with concentrations greater than 18 mg/kg total PAHs to elevation 568.0 (-10 feet LWD), sediment with TSCA-level PCBS to any elevation, and remaining sediment within the 60-foot-wide channel to elevation 568.0 (-10 feet LWD) up to the 14th Street Bridge.
- Scenario 7: Removal of sediment with concentrations greater than 1 mg/kg total PCBs, 18 mg/kg total PAHs to elevation 568.0 (-10 feet LWD), sediment with total PCB concentrations greater than 26 mg/kg to any elevation, total PAHs greater than 45 mg/kg 500 feet upstream and 1,000 feet downstream of Boat Island (Figure 2), and remaining sediment within the 60-foot-wide channel to elevation 568.0 (-10 feet LWD) up to the 14th Street Bridge.
- Scenario 8: Removal of sediment with concentrations greater than 1 mg/kg total PCBs and 18 mg/kg total PAHs to elevation 568.0 (-10 feet LWD), sediment below elevation 568.0 with concentrations greater than 10 mg/kg total PCBs to any elevation, removal of sediment with concentrations of total PAHs greater than 45 mg/kg from 500 feet upstream and 1,000 feet downstream of Boat Island to any elevation, and remaining sediment within the 60-foot-wide channel to elevation 568.0 (-10 feet LWD) up to the 14th Street Bridge.
- Scenario 9: Removal of sediment with concentrations greater than 1 mg/kg total PCBs and 18 mg/kg total PAHs to elevation 568.0 (-10 feet LWD), sediment below elevation 568.0 with concentrations greater than 5 mg/kg total PCBs to any elevation, removal of sediment with concentrations of total PAHs greater than

45 mg/kg from 500 feet upstream and 1,000 feet downstream of Boat Island to any elevation, and remaining sediment within the 60-foot-wide channel to elevation 568.0 (-10 feet LWD) up to the 14th Street Bridge.

- Scenario 10: Removal of sediment with concentrations greater than 1 mg/kg total PCBs and 18 mg/kg total PAHs to elevation 568.0 (-10 feet LWD), sediment below elevation 568.0 with concentrations greater than 5 mg/kg total PCBs to any elevation, sediment with concentrations of total PAHs greater than 18 mg/kg from 500 feet upstream and 1,000 feet downstream of Boat Island to any elevation, and remaining sediment within the 60-foot-wide channel to elevation 570.0 (-8 feet LWD) up to the 14th Street Bridge.

SWACs were calculated for several of these scenarios, and are reported in a memorandum in Appendix A. GLLA project post-dredge SWACs ranged from 2.03 to 3.99 mg/kg for total PCBs and 28 to 118 mg/kg for total PAHs.

Model neatline sediment volumes were estimated with overburden and 10-foot setbacks from shorelines, but do not account for setbacks from critical structures (such as docks and sheet piling), dredging side slopes, or dredging over allowance. Setback distances from the shoreline and critical structures for stability purposes will be refined during the remedial design, but at this time, a standard 10-foot setback was applied to illustrate the volume represented by setbacks. Scenario volumes ranged from 224,300 to 114,200 cubic yards (yd^3). An estimated reduction of 25,900 to 12,000 yd^3 from the neatline model bank-to-bank estimated volumes is attributed to the implemented 10-foot shoreline setback (Table 1).

Scenario 10 accounts for approximately 183,500 yd^3 of non-TSCA sediments and 12,800 yd^3 of TSCA sediment for a total of 196,300 total yd^3. Based on the model scenario runs and the post-dredge SWAC estimates, natural sedimentation of clean material covering the dredged area over time or applying a post-dredge residual cover over portions of the remedial area will likely be required to meet both the short-term and long-term CUGs.

2.2.4 Removal Level

The scenario chosen by the project stakeholders as providing the most benefit for the available funding was model scenario 10. Graphical output from the MVS modeling is included in Appendix B.

TABLE 1
Model Scenario Volumes for GLLA Project Upstream of 8th Street Bridge
Sheboygan Lower River and Inner Harbor Site, Sheboygan River, WI

Scenario	Description*	GLNPO Subtotal from NRT & PRS neatline (yd^3)	PRS and NRT over allowance & side slope (yd^3)	10 ft Shoreline Offset (yd^3)	60 ft Channel (yd^3)	GLNPO Total (yd^3)
1	>1 mg/kg total PCB >18 mg/kg total PAH	270,756	-25,293	-25,920	4,710	224,253
2	>1 mg/kg total PCB >45 mg/kg total PAH	260,109	-25,293	-25,440	4,710	214,086
3	>1 mg/kg total PCB 18 mg/kg total PAH > Elev 568.0 ft < 45 mg/kg total PAH	262,866	-25,293	-25,440	4,710	216,843
4	>3 mg/kg total PCB 18 mg/kg total PAH > Elev 568.0 ft < 45 mg/kg total PAH	248,579	-25,293	-24,000	4,710	203,996
5	>5 mg/kg total PCB 18 mg/kg total PAH > Elev 568.0 ft < 45 mg/kg total PAH	240,690	-25,293	-23,520	4,710	196,587
6	>1 mg/kg total PCB & > 18 mg/kg total PAH to Elev 568.0 ft All TSCA removed	146,795	-25,293	-12,000	4,710	114,212
7	>1 mg/kg total PCB & >18 mg/kg total PAH > Elev 568.0 ft >26 mg/kg total PCB any elev >45 mg/kg total PAH Boat Island any elev	183,476	-25,293	-14,400	4,710	148,493
8	>1 mg/kg total PCB & > 18 mg/kg total PAH > Elev 568.0 ft >10 mg/kg total PCB any elev >45 mg/kg total PAH Boat Island any elev	220,999	-25,293	-17,760	4,710	182,656
9	>1 mg/kg total PCB & > 18 mg/kg total PAH > Elev 568.0 ft >5 mg/kg total PCB any elev >45 mg/kg total PAH Boat Island any elev	233,343	-25,293	-18,720	4,710	194,040
10	>1 mg/kg total PCB & > 18 mg/kg total PAH > Elev 568.0 ft >5 mg/kg total PCB any elev >18 mg/kg total PAH Boat Island any elev	236,997	-25,293	-19,200	3,835	196,339

Notes: 1. Scenarios 1-9 incorporate a 60-foot-wide channel to -10 feet LWD for boat and barge traffic from Pennsylvania Avenue Bridge to the 14th Street Bridge.

2. Scenario 10 incorporates a 60-foot-wide channel to -10 feet LWD from 8th Street Bridge to Roy's Outboard Marine and -8 LWD from ROM to 14th Street Bridge.

3. 10-ft Setback Volume = Linear shoreline distance (12,960) × offset (10) × avg dredge cut of env portion (2.5-5.4)

SECTION 3

Identification and Screening of Technologies

Section 3 describes the identification and screening of available remedial technologies and process options based on the remedial objectives applicable to Sheboygan Lower River and Inner Harbor Site identified in Section 2. The first step in the process is to identify general remedial alternatives that can meet the RAOs. Remedial technology alternatives are broad categories that alone or in conjunction with other alternatives can be used to meet the site remedial objectives. Within each remedial alternative, technologies and their associated process options were identified. For each remedial alternative, several remedial technologies may exist, each of which may be subdivided according to process options for screening purposes.

Those technologies and process options identified for screening are presented in Table 2. The process options were combined into complete alternatives in Section 4. Some of the process options such as institutional controls, effectiveness monitoring, and monitored natural recovery (MNR) could apply to all alternatives, except the no action alternative, for some aspect of the project.

General remedial alternatives that may be applicable to the project include the following:

- No action
- Sediment removal (dredging, dewatering, and offsite disposal)
  - Hydraulic dredging with geotextile tube dewatering
  - Mechanical dredging with stabilization-enhanced gravimetric drying
- Combination of sediment removal and cover/cap

The screening process of remedial alternatives is based on the following criteria:

- Technical and logistical feasibility (implementability)
- Environmental risk (effectiveness)
- Relative cost

Specific considerations for each of these criteria consist of the following:

- **Effectiveness:** Key considerations include (1) the extent the remedial option would be protective of human health and the environment and in meeting BUIs; (2) the level of treatment/removal that could be achieved; and (3) the extent to which the remedial option has been demonstrated at other similar sites. Protection of human health and the environment refers to both the construction and implementation (short-term) and operation and maintenance (long-term) considerations for reducing the toxicity and mobility or meeting BUIs. Level of treatment/removal refers to the degree to which the technology reduces contaminant mass.
- **Implementability:** Implementability refers to the feasibility and/or availability of a given process remedial option for the site. Feasibility is further delineated based on technical and/or administrative considerations. Technical feasibility refers to the ability of the remedial option to adequately treat/remove the constituents of concern given site-specific conditions. Certain options may be able to address the constituents but cannot be implemented because of such factors as space limitations and unacceptable subsurface conditions. Administrative feasibility refers to the ability of the remedial option to meet such factors as local and state permitting requirements and regulatory reviews for approval. Availability refers to such factors as the geographic location of the site and the extent to which the remedial option is commercially available.
- **Relative Costs:** For comparative purposes, the initial screening table presents relative differentials in cost magnitude (low, moderate, and high) taking into consideration anticipated capital and operation and maintenance costs for each technology. As such, cost considerations are provided for general assessment and were not used singly as a screening tool unless substantial cost differentials were identified that would immediately preclude the technology from further consideration.

TABLE 2
Remedial Technologies Screening Summary
Sheboygan Lower River and Inner Harbor Site, Sheboygan, Wisconsin

Remedial Technologies	Process Options	Descriptions	Screening Criteria			Screening Comment
			Effectiveness	Implementability	Relative Cost	
No Action						
	None	No further actions to address contaminated sediment.	Some natural attenuation will occur as PCBs and PAHs slowly biodegrade over time and sediment are redistributed and buried.	None.	None	Required for comparison.
Natural Recovery						
	Monitored Natural Recovery	Allow naturally occurring physical, chemical, and biological processes to reduce the bioavailability and/or toxicity of PCBs and PAHs to acceptable levels. Scour during high-flow events and subsequent burial of contaminated sediment by cleaner sediment is occurring in the Lower River and Inner Harbor as evidenced by the remedial investigation findings. May be applicable to sediment in areas along the shoreline and structures where existing sediment cannot be disturbed because of stability concerns.	Some natural attenuation will occur as PCBs and PAHs slowly biodegrade over time and sediment are redistributed and buried or covered by clean sediment. Contaminated sediment could be susceptible to resuspension and could be spread to relatively clean downstream areas and Lake Michigan under continuous changes of hydrodynamic conditions. Does not address dredging restriction BUI.	Easily implementable. Requires periodic sediment sampling and coordination. May also require institutional controls.	Low	Retained for further evaluation.
Routine Monitoring						
	Sampling and Analysis	Routine long-term sampling and analysis of sediment, fish, and possibly benthic organisms at selected locations to record site conditions and contamination levels.	Not effective in reducing concentrations or controlling exposure but can be used in conjunction with other technologies to allow monitoring of effectiveness.	Easily implementable.	Low	Retained for further evaluation. This technology includes monitoring the natural decline in PCB and PAH concentrations or monitoring the effectiveness of remedial technologies.
Institutional Controls						
	Fish Consumption Advisories	Advisories are currently implemented. Use of fish consumption advisories should be limited.	Can be effective. Some citizens may ignore advisories. Not effective in isolating the COCs from ecological receptors. Does not address fish consumption BUI.	Easily implementable. Already in place.	Low	Retained for further evaluation.

TABLE 2
Remedial Technologies Screening Summary
Sheboygan Lower River and Inner Harbor Site, Sheboygan, Wisconsin

Remedial Technologies	Process Options	Descriptions	Screening Criteria			Screening Comment
			Effectiveness	Implementability	Relative Cost	
Sediment Removal						
	Mechanical Dredging	An environmental clamshell bucket operating from a floating barge is used to remove the sediment from the river bottom or up to the specified dredge cut elevation. The mechanically dredged sediment is then loaded into the water tight scow barges and transported to the docking platform and offloaded onto the dewatering pad. The clamshell bucket location is controlled by GPS-integrated software for real time position.	Effective. Sediment contaminated with PCBs and PAHs is removed from the river, eliminating the direct contact human exposure and the fish/benthic community exposure and the potential long-term contamination source. Will release suspended solids during the dredging activities, but can be minimized using engineering controls which can provide long-term effectiveness in controlling contaminated sediment from suspending in the water column. May disrupt the fish/benthic community initially, but provides cleaner substrate.	Easily implementable but requires permits. Limitations may include availability of staging areas and transportation of dredged sediment by barges, affecting the waterway traffic and requires coordination with the waterway users. The presence of huge debris and bedrock makes the process difficult.	Moderate to High	Retained for further evaluation.
	Hydraulic Dredging	Hydraulic dredge is used to remove the sediment from the river bottom or from a specified dredge cut elevation. The hydraulically dredged sediment is conveyed/pumped through a dredge pipeline with or without the help of a booster pump into geotextile tubes for dewatering. The cutterhead location is controlled by GPS-integrated software for real time position.	Effective. Sediment contaminated with PCBs and PAHs is removed from the river eliminating the direct contact human exposure and the fish/benthic community exposure. May release suspended solids during the dredging activities, but can be minimized using engineering controls which can provide long term effectiveness in controlling contaminated sediment from suspending in the water column. May disrupt the fish/benthic community initially, but provides cleaner substrate	Implementable but requires Permits. Requires large staging areas and extended dewatering durations. The dredged sediment can be easily transported through a pipeline up to the dewatering pad without affecting the waterway traffic and requires less coordination with waterway users. Limitations may include availability of staging areas, monitoring the pipeline for leaks and management of the excess water from the dredged sediment. Debris can negatively impact production.	Moderate to High	Not retained due to lack of staging area of sufficient size for geotextile tube dewatering. Based on project requirements to dredge and dewater approximately 200,000 cubic yards in 6 months a staging area of about 9 acres would be required. The owner of the one potentially suitable property was not open to leasing the property.

TABLE 2
Remedial Technologies Screening Summary
Sheboygan Lower River and Inner Harbor Site, Sheboygan, Wisconsin

Remedial Technologies	Process Options	Descriptions	Screening Criteria			Screening Comment
			Effectiveness	Implementability	Relative Cost	
Material Handling and Processing						
	Dewatering – Mechanical Dredging	Mechanically dredged sediment is offloaded onto a dewatering pad for dewatering by gravity and then the gravity drained excess water from sediment is collected in a sump before pumping it for chemical treatment. The dewatered sediment is then mixed with a suitable reagent for stabilization before offsite disposal.	Effective. Requires pilot testing for selecting the suitable stabilization reagent. After dewatering and stabilization, sediment can be easily loaded into trucks for offsite disposal.	Easily implementable. Limitations may include the location of the staging area/dewatering pad from the dredge point and the barge traffic.	Moderate	Retained for further evaluation.
	Dewatering – Hydraulic Dredging	Hydraulically dredged sediment is dewatered by pumping the dredged slurry directly into the geotextile tubes stacked on the dewatering pad and pumping the filtered out excess water to the onsite water treatment system. The dewatered sediment in the geotextile tubes will be stabilized and disposed offsite.	Effective. Controlled water flow from the geotextile tubes into the water treatment system. Requires preconditioning of the dredge slurry prior to pumping into the geotextile tubes. Requires pilot testing for selecting the suitable stabilization reagent. After dewatering and stabilization, sediment can be easily loaded into trucks for offsite disposal.	Easily implementable. Limitations include the requirement of large staging areas for the geotextile tubes and longer durations for the dewatering process to complete. This may require institutional controls during the dewatering period. Also requires constant monitoring of dredge slurry conveyance pipelines for leaks.	Moderate	Not retained because of lack of staging area of sufficient size for geotextile tube dewatering. Based on project requirements to dredge and dewater approximately 200,000 cubic yards in 6 months a staging area of about 9 acres would be required. The owner of the one potentially suitable property was not open to leasing the property.

TABLE 2
Remedial Technologies Screening Summary
Sheboygan Lower River and Inner Harbor Site, Sheboygan, Wisconsin

Remedial Technologies	Process Options	Descriptions	Screening Criteria			Screening Comment
			Effectiveness	Implementability	Relative Cost	
	Water Treatment and Discharge – Mechanical Dredging	Excess water from the mechanically dredged sediment collected in the sump and the free water collected in the watertight scow barge is pumped into an onsite water treatment system to treat and remove contaminants before discharging it back into the Sheboygan River. The residual solids from the treatment system are disposed offsite in an approved landfill.	Effective. Dependent on the discharge criteria and the efficiency of the treatment processes. Removes contaminants and turbidity before discharging into the river. An effluent monitoring system is required to monitor the discharge concentrations. May require additional holding tanks as contingency.	Easily implementable. Discharge permits are easily obtainable. Requires staging area for the construction of the water treatment system.	Moderate	Retained for further evaluation.
	Water Treatment and Discharge – Hydraulic Dredging	The excess water filtering out from the geotextile tubes is directly pumped into an onsite water treatment system for treatment. It is then physically and chemically treated to remove contaminants before discharging it back into the Sheboygan River.	Effective. Dependent on the discharge criteria and the efficiency of the treatment processes. Removes contaminants and turbidity before discharging into the river. An effluent monitoring system is required to monitor the discharge concentrations. May require additional holding tanks as contingency.	Limitations may include availability of large staging areas for the water treatment plant, geotextile tube staging areas, and obtaining permits for onsite chemical storage. Construction of large water treatment systems, which includes preconditioning of dredged slurry is expensive and requires complex operation.	High	Not retained because of lack of staging area of sufficient size for geotextile tube dewatering and onsite water treatment plant. Based on project requirements to dredge and dewater approximately 200,000 cubic yards in 6 months a staging area of about 9 acres would be required. The owner of the one potentially suitable property was not open to leasing the property.
Offsite Disposal						
	TSCA Landfill	Dewatered sediment with total PCB concentrations greater than 50 mg/kg is permanently disposed of in a licensed TSCA-approved facility.	Effective. The engineering controls implemented in the landfill reduce the risk of direct exposure of contaminated sediment. May result in low short-term exposure risk to the operators.	Out-of-state landfills are relatively close and approved for disposal of greater than 50 mg/kg total PCB-contaminated sediment.	Moderate to High	Retained for further evaluation.

TABLE 2
Remedial Technologies Screening Summary
Sheboygan Lower River and Inner Harbor Site, Sheboygan, Wisconsin

Remedial Technologies	Process Options	Descriptions	Screening Criteria			Screening Comment
			Effectiveness	Implementability	Relative Cost	
	Subtitle D Solid Waste Landfill	Dewatered sediment with total PCB concentrations less than 50 mg/kg is permanently disposed in non-TSCA landfill approved for special waste disposal of non-TSCA PCB sediment and PAH-contaminated sediment.	Effective. The engineering controls implemented in the landfill reduce the risk of direct exposure of contaminated sediment. May result in low short-term exposure risk to the operators.	Local landfills within the Sheboygan area are approved for special waste disposal of the less than 50 mg/kg total PCB- and PAH-contaminated sediment.	Moderate	Retained for further evaluation.
Containment						
	Residual Management Cover	After sediment removal, a 6-inch cover layer of clean sand is placed over the residual material to reduce the contaminant concentrations to which biota are exposed. The clean cover layer is not a cap because the clean cover is intended to mix with the dredge residuals and dilute the concentration, not to encapsulate the underlying sediment. Placement of a cover layer can effectively reduce the post-dredge SWAC to the desired level in areas where sufficient contaminant mass has been removed.	Can effectively reduce the residual contaminant concentrations or post-dredge SWAC, to the desired level in areas where contaminated sediment has been removed. Provides cleaner surface for the biota and may replenish the benthic community sooner.	Easily implementable. Needs oversight to confirm the required thickness of clean cover material is placed. Insufficient material may be ineffective.	Low to Moderate	Retained for further evaluation.

TABLE 2
Remedial Technologies Screening Summary
Sheboygan Lower River and Inner Harbor Site, Sheboygan, Wisconsin

Remedial Technologies	Process Options	Descriptions	Screening Criteria			Screening Comment
			Effectiveness	Implementability	Relative Cost	
	Partial Isolation Cap	Place one or more layers of clean material over the surface of partially dredged sediment to isolate the remaining contaminated sediment left in place and reduce the amount of contaminant flux to environment. This layer of clean material acts as an isolation cap over the contaminated sediment left in place and provides long-term risk reduction to human and ecological receptors.	Can be effective if cap remains in place. This method isolates the contaminants from human and ecological receptors. This also controls the contaminated sediment from resuspending into the water column. Regular cap inspection and maintenance is required for eroded or disturbed areas. Since this technique is combined with partial sediment removal, the river bottom elevation will be maintained at navigable elevations and also the flooding potential is not increased. This also provides new surface for the benthic organisms.	Easily implementable but requires permits. Requires coordination with the sediment dredging part of the project. May be challenging with high river currents and may disrupt the waterway users. May require some additional institutional controls.	Low to Moderate	Retained for further evaluation.
	Armor Cap	Place one or more layers of riprap over contaminated sediment in areas along the shoreline where existing sediment cannot be disturbed and/or also requires additional reinforcement to stabilize/restore the shoreline. This does not require the removal of contaminated sediment and still provides long-term risk reduction to human and ecological receptors.	Can be effective if the armored cap remains in place. Not effective if the channel is navigationally active. Regular cap inspection and maintenance is required for eroded or disturbed areas. The armor cap dimensions and materials should be carefully designed to avoid river scouring effects.	Implementable with limitations and requires permits. May disrupt the existing docks and waterway users. May disturb the stability of the existing shoreline structures. High potential for river scouring. Also requires staging areas closer to the remedial location.	Moderate	Not retained for further evaluation because of effectiveness, implementability and cost considerations.

COC – contaminant of concern
GPS – global positioning system
mg/kg – milligram per kilogram
PAH – polynuclear aromatic hydrocarbon
PCB – polychlorinated biphenyl
SWAC – surface weighted average concentration
TSCA – Toxic Substances Control Act

For each remedial alternative (except the no action alternative), remedial technologies and associated process options considered to be potentially appropriate and effective for contaminated sediment within the Sheboygan Lower River and Inner Harbor site were identified based on professional experience, published sources, computer databases, and other documentation and resources. Technologies and process options that are screened out based on the defined criteria listed above are highlighted.

3.1 No Action

Under a no action alternative, no remedial response is performed. This alternative is typically used as a baseline to which other remedial options are compared. A no action alternative may be appropriate where current site conditions present little or no human health or environmental risk.

The no action alternative is retained for the purpose of comparison with other remedial options.

3.2 Monitored Natural Recovery

MNR involves the reliance upon naturally occurring physical, chemical, and biological processes to reduce the bioavailability and/or toxicity of contaminants to acceptable levels. For example, exposure levels are reduced by a decrease in contaminant concentration levels in the near-surface sediment zone through burial or mixing-in-place with cleaner sediment. Contaminated sediment located in depositional areas can gradually be buried by cleaner sediment. This alternative can be implemented only after all significant continuing sources of contaminants to the system have been eliminated.

Typically, MNR is required to occur within a set amount of time. A remedial alternative that involves MNR will require a comprehensive long-term monitoring program to verify such processes are taking place and that anticipated human health and environmental risk reductions are being achieved. MNR is appropriate at sediment sites with the following conditions:

- Sources are controlled.
- Short-term human health and environmental risks are low and/or declining.
- Natural recovery processes have a high degree of certainty to continue.
- Institutional controls effectively restrict human exposure.
- The sediment bed is stable and likely to remain stable.
- Sediment excavation could cause significant resuspension and recontamination downstream.
- Space limitations preclude ex situ remedial options and are not considered cost-effective relative to the risk reduction achieved.
- MNR is used in combination with other approaches.

3.3 Monitoring

Monitoring can be implemented in combination with any remedial technology as an early warning of the need for additional remedial action or to monitor the effectiveness of a completed remedial action. Monitoring may include sampling and analysis of sediment, soil, groundwater, surface water, groundwater/surface water interface, fish tissue, toxicity tests, and/or bioaccumulation tests. A sampling plan is developed in accordance with the final remedial alternative selected to ensure that remedial objectives are met.

Regardless of the technologies or combination of technologies selected for implementation at the Sheboygan Lower River and Inner Harbor site, post-remedial action effectiveness monitoring likely will be required. Additionally, both the Sheboygan River Superfund Site and the Campmarina Superfund Site may be obligated to conduct long-term monitoring; any post-remediation monitoring plans for the Sheboygan River should be coordinated with existing baseline and post-remedy monitoring plans.

3.4 Institutional Controls

Institutional controls are administrative and/or legal restrictions placed on uses of a property or waterway (for example, deed restrictions, and access restrictions). Institutional controls also can take the form of issuance of public health advisories (for example, fish consumption advisories).

Deed and access restrictions can be established for a contaminated property to limit its future use. Similarly, public waterways can be regulated by establishing recreational use limitations, such as swimming bans and "no wake" zones to minimize the potential for sediment disturbance. However, implementing these restrictions will create a negative public perception and furthermore do not assist in removing BUIs; hence, they are not retained for further evaluation. Currently, the City of Sheboygan ordinances limit boat speed to prevent shoreline erosion, as well as disallow anchor dragging (City of Sheboygan Ordinances Sections 134-109 and 134-111).

Fish consumption advisories are intended to provide guidelines to members of the public who may eat fish with elevated contamination levels. Since these advisories currently are in use and reductions in fish tissue PCB concentrations post-remediation would be expected to be a long-term process, this option will be kept for incorporation into alternatives.

3.5 Sediment Removal

Removing contaminated sediment offers the advantage of contaminant mass reduction in the aquatic environment and can reduce the bioaccumulation of PCBs in fish. Sediment removal can be performed through several different methods. Sediment can be mechanically dredged by an environmental clamshell bucket and transported to the staging area by barges. Sediment removal also can be achieved by using a cutter head hydraulic dredge, which can convey the dredged sediment directly into the dewatering/staging area.

3.5.1 Hydraulic Dredging

If the sediment removal option with hydraulic dredging method is undertaken, a 10- or 12-inch cutter head hydraulic dredge would likely be used to dredge the sediment down to the specified elevations. The hydraulic dredge's cutter head is connected to a high-density polyethylene (HDPE) dredge pipeline, and the dredged sediment is conveyed directly to the dewatering area with or without the help of booster pumps depending upon the sediment characteristics. The dredge pipeline can be submerged in the water and can surface at the shoreline of the dewatering pad, avoiding disruption to the waterways. The hydraulic dredge cutter head is controlled by the operator using the global positioning system (GPS) equipment with integrated software that allows the cutterhead position to be monitored in real time. Turbidity control, such as a silt or bubble curtain, may be required to prevent suspended sediment from migrating outside of the project site.

3.5.2 Mechanical Dredging

If the sediment removal option with mechanical dredging is undertaken, an environmental clamshell bucket, with smooth cut surface and no teeth will be used to dredge the sediment down to the specified dredge elevations. The clamshell bucket can either be operated by a crane or cable positioned on the barge. The bucket is controlled by the operator using GPS equipment with integrated software that allows the bucket's position to be monitored in real time. The dredged sediment is then loaded into the watertight scow barges and transported to the dewatering pad, where it is offloaded for dewatering and disposal. The excess water retained in the scow barges is directly pumped to the temporary onsite water treatment system. Turbidity control, such as a silt or bubble curtain, may be required to prevent suspended sediment from migrating outside of the project site.

3.6 Material Handling and Processing

3.6.1 Dewatering of Sediment

A common method of dewatering hydraulically dredged sediment is using geotextile tubes, which retain the dredged material inside the tube but allow the entrained water to pass through the tube. Dewatering with

geotextile tubes requires significantly more shoreline laydown area than mechanically dredging, and available dewatering/staging area space can often be a limiting factor in determining what type of dredging will be conducted at a site.

An evaluation of potential staging/dewatering locations along the Sheboygan River was conducted. Nine potential sites were visited, and a preliminary evaluation and prioritization was prepared (Appendix C). One property was identified as suitable for a hydraulic dredging staging/dewatering area, but the property owner was not interested in leasing the property. Due to the lack of a suitably sized staging/dewatering area, hydraulic dredged was screened out as a viable process option for this project.

Two parcels were found that are suitable for mechanically dredging staging/dewatering areas. Discussions are in progress with both property owners, and design-level calculations are in progress to determine if both sides will be required to handle the project volume in the necessary timeframe. In general, the free water on top of the sediment will be pumped directly from the water tight scow barges to the temporary onsite water treatment system. After free water is pumped out, a suitable reagent will be mixed in with the sediment. Possible means to mix the drying agent include a pugmill. Reagent will continue to be mixed in until the sediment meets the requirements of the disposal facility. Pilot treatability tests will be conducted to choose the most suitable reagent and ratio needed. Mixed sediment may be moved by conveyor belt to a drying pad for stacking and further natural drying until ready for loading into a truck. Stabilized sediment will be directly loaded into the trucks and will be covered with a retractable tarp, and the exterior of the truck will be washed with a pressure washer to remove visible sediment and soil. Once truck washing is completed and the waste manifest paperwork is completed, the truck will depart the site and transport the sediment to an approved offsite landfill.

3.6.2 Water Treatment and Discharge

Water generated during the dredging and dewatering activities will be treated onsite by the temporary water treatment system. Treatment at one or each dewatering site will be considered during the design. The water will be treated to remove the contaminants of concern and suspended solids to meet the water quality discharge requirement levels set by WDNR. Once the effluent water meets the discharge criteria, it will be discharged back into the Sheboygan River. The solids generated during this process will be disposed offsite along with the solid waste. A WPDES wastewater discharge permit will be required for this process.

3.7 Offsite Disposal

If remedial action involving sediment removal and dewatering is undertaken, sediment will need to be transported to the final disposal location by truck once it is removed. Two types of disposal facilities are presented below and could be used in combination depending on the contamination level of the removed sediment.

3.7.1 Subtitle D Solid Waste Landfill

Contaminated materials from the Sheboygan Lower River and Inner Harbor site could be trucked to an offsite Subtitle D landfill for disposal. Previous sampling and analysis has shown approximately 180,000 cubic yards of contaminated sediment volume at the site is between 1 and 50 mg/kg and therefore is not classified as a TSCA material and can be disposed at specially licensed landfills in Wisconsin, with an additional 50,000 yd^3 of PAH and construction-related dredging material. Multiple landfills may be used to process the volume of dewatered sediment without causing issues with the landfill operations (that is, delivery of sediment at a pace in which the landfill can effectively mix the sediment into the municipal waste).

3.7.2 TSCA Landfill

Based on prior sampling and analysis, it is estimated that approximately 13,000 yd^3 of the sediment volume targeted for removal would classify as TSCA material being above 50 mg/kg total PCB and require disposal at a TSCA landfill. There are no TSCA landfills in Wisconsin. Therefore, transportation and disposal of this sediment to an out-of-state landfill is required.

3.8 Containment

Two specific technologies are considered under this remedial alternative: residual management cover and isolation cap after partial dredging of contaminated sediment.

Residual management covers or sand covers are terms used to describe a thin layer of clean material (usually a few inches to half a foot) placed over dredging residuals. Residuals are contaminated sediment remaining in or adjacent to the dredging footprint after completion of the dredging operation, broadly grouped into the following two categories:

- Undisturbed residuals or also commonly termed undredged inventory that have been uncovered by dredging not fully removed resulting from characterization or dredging inaccuracies or the presence of debris or structures.
- Generated residuals defined as sediment dislodged, but not removed, by dredging which falls back, spills, sloughs, or settles in or near the dredging footprint and forms a new sediment layer.

The residual thin-layer cover provides short-term isolation and long-term reduction in surficial contamination. The cover layer of clean sand will be placed over the residual material to reduce the contaminant concentrations to which biota are exposed. The clean cover layer is not a cap because the clean cover is intended to mix with the dredge residuals, not encapsulate the underlying sediment. Placement of a cover layer can effectively reduce the residual contaminant concentrations to the desired level in areas where sufficient contaminant mass has been removed. The thickness of the cover layer is based on that required to achieve the desired SWAC in surface sediment upon completion of the dredging activities and cover layer placement. The clean material used to cover the residuals does not need to be sand; in fact, other materials with the potential to reduce the bioavailability of the contaminants (such as clay and organics) may be preferable (USACE 2008).

Isolation capping of sediment after partial dredging involves subaqueous placement of a layer of clean material over contaminated sediment to physically isolate the contaminated sediment, impede contaminant flux to the environment, and/or stabilize contaminated sediment to prevent transport and redeposition elsewhere. Capping has been implemented at numerous sites. Developing a complete in situ capping remedial alternative involves the following steps:

- Defining project objectives and performance standards
- Characterizing the physical, chemical, and biological properties of the sediment, both laterally and vertically
- Characterizing hydrodynamic conditions of the Sheboygan Lower River and Inner Harbor site, which includes bathymetry, currents, depths, waterway uses, and geotechnical conditions such as layer stratification and physical properties of foundation layers
- Determining the feasibility of capping the partially dredged sediment, which may apply to some portions of the site and not other areas
- Designing the cap, considering types and thickness of materials
- Determining appropriate equipment and methods for placement of the cap materials
- Determining methods to verify that the final cap design meets the standards and objectives
- Developing a suitable long-term monitoring and management program, allowing for maintenance and repair

Feasibility of isolation capping is dependent upon characteristics of contaminants, physical and hydrological site conditions, and current and anticipated future uses of the waterway. Contaminant transport through the cap is dictated by contaminant type (for example, organic or inorganic), diffusivity, and adsorption potential on the cap material. Capping is more appropriate for contaminated sediment located in areas with low erosion potential, low surface water velocities, and less groundwater seepage.

Little upward transport of PCBs would be expected through a cap because they are highly adsorptive. Consideration should be given to existing and future uses of the waterway, such as recreation, navigation, or use as a water source that may preclude the implementation of an isolation cap.

Sediment disturbance and resuspension/mixing should be minimized when choosing placement methods and materials for capping. Delivery method selection also incorporates the relative importance of cap thickness consistency and the water depth at the capping site, which could limit delivery options if water depth is shallow.

To maintain the navigational water depth requirements, removal of sediment at least equal to the thickness of the capping materials applied would need to take place. Failure to maintain current elevations and grades within the river channel and associated floodplain could result in flooding of properties upstream of the project because of the additional volume of capping materials within the project site.

Containment with a partial isolation cap may be an appropriate technology for one or more areas within Sheboygan Lower River and Inner Harbor site and therefore will be evaluated further.

SECTION 4

Alternative Descriptions

4.1 Introduction

The remedial technologies and process options that remained after screening were assembled into a range of alternatives that address the RAOs for the site. The specific details of the remedial technologies presented in each alternative are intended to serve as representative examples for use in estimating an order-of-magnitude cost. Other viable options within the same remedial technology that achieve the same objectives may be evaluated during remedial design activities for the site. This section provides a detailed description of each proposed remedial alternative. Some technologies are common to several alternatives, so they are only described once. Each of the technologies remaining after the technology screening was incorporated into at least one of the alternatives. Table 3 provides a summary of the developed remedial alternatives.

TABLE 3
Developed Remedial Alternatives Summary
Sheboygan Lower River and Inner Harbor Site, Sheboygan River and Inner Harbor AOC

Remedial Technologies	Process Options	Alternative 1: No Action	Alternative 2: Mechanical Dredging	Alternative 3: Combination of Mechanical Dredging and Cover
No Action	None	X		
Natural Recovery	Monitored Natural Recovery		X	
Routine Monitoring	Sampling and Analysis		X	X
Institutional Controls	Fish Consumption Advisories		X	X
Sediment Removal	Mechanical Dredging		X	X
Material Handling and Processing	Dewatering –Mechanical Dredging		X	X
	Water Treatment and Discharge –Mechanical Dredging		X	X
Sediment Disposal	RCRA Subtitle D Landfill		X	X
	Toxic Substances Control Act (TSCA) Landfill		X	X
Containment	Residual Management Cover			X

4.2 Alternative 1—No Action

A no action alternative typically is included in the assembly of alternatives for comparison purposes. Under Alternative 1, there would be no additional remedial actions conducted in this river reach to remove PCBs and PAHs or assist meeting BUIs delisting criteria. This alternative does not provide any specific response actions for environmental monitoring, controlling the migration of contaminants, or mitigating their concentrations. Fish consumption advisories would remain in place, as well as dredging restrictions.

4.3 Alternative 2—Mechanical Dredging

Alternative 2 includes excavation of sediment as defined in Scenario 10 in Section 2, which summarizes the goals to remove sediment with total PCB concentrations equal to or greater than 1 mg/kg and total PAHs greater than 18 mg/kg above the elevation of 568.0 NAVD88 (which equates to 10 feet below Low Water Datum of 578.0 NAVD88). Below elevation 568.0, sediments will be removed to any elevation with concentrations greater than

5 mg/kg total PCBs and with concentrations of total PAHs greater than 18 mg/kg around the Boat Island area. Additionally, a 60-foot-wide channel to elevation 570.0 (-8 feet LWD) will be dredged to facilitate boat and barge traffic between Pennsylvania Avenue and 14th Street bridges. The estimated volume of sediment for excavation and removal is 196,300 yd^3. This volume will be refined further during the design process as constructible dredge prisms are developed.

4.3.1 Dredging

Dredging of the sediment would be completed using mechanical methods, including backhoes and cranes on floating barges with environmental and clamshell buckets to remove the sediment. The dredge material would be placed in a barge and transported to a shoreside dewatering pad. Containment within the project area would be necessary to prevent the downstream migration of sediment during excavation outside of the project area.

A pre-dredge survey would be completed prior to excavation to establish a baseline for measuring removal quantities. Surveys would be conducted periodically during the work to verify that the target excavation elevations are being attained and for payment purposes. Post-dredging sediment verification sampling would be performed. Air monitoring would be performed during activities that have the potential to generate emissions or odor, such as during sediment handling and processing if reagents that may create dust are used (for example, calcimet) or if the sediments have an objectionable odor while drying on the dewatering pad. Turbidity control, such as a silt or bubble curtain, would be used to prevent suspended sediment from migrating outside of the project site.

4.3.2 Dewatering/Drying and Water Treatment

Dredged sediment would require further drying at the time of excavation to meet transport and landfill requirements. The sediment would be mechanically mixed with a drying agent on a dewatering pad or in the barge. The size and quantity of the dewatering/drying pads would depend on several factors that include the volume of sediment to be removed, rate of removal versus rate of loading and transport to offsite landfills, required frequency of waste confirmation sampling, ability to access shoreside sites from all areas of the river requiring dredging, and overall project schedule. Based on these criteria, two dewatering/drying pads and two water treatment systems are included in the cost estimate.

Water that may require treatment would be generated from the following sources:

- Dewatering pad drainage from sediment
- Decontamination water
- Precipitation on the dewatering pad

The components needed to treat the collected water before discharge would be determined during the detailed design. However, to evaluate cost and comparison to other alternatives, it is assumed that the water treatment system would be sized for 100 gallons per minute and include a geotextile tube in a dewatering box, mixing frac tank, an oil/water separator, inclined plate clarifier, sand filters, bag filters, a granular activated carbon (GAC) treatment system, an effluent holding tank, and a discharge pump. The geotextile tube effluent would be pumped to the mixing frac tank for storage and solids removal. Effluent from the frac tank would be pumped through the oil/water separator, inclined plate clarifier, sand filters, bag filters for additional solids removal, and through GAC vessels for final treatment. An effluent holding tank for sampling before discharge into the river will be included. Regular sampling would be conducted to verify that the requirements for discharge to the Sheboygan River are met.

4.3.3 Offsite Disposal

Covered trucks would be used to transport stabilized dredge material offsite, and tires and truck exteriors would be decontaminated after loading and before leaving the site. The sediment excavated under this alternative would be disposed of at a multiple facilities licensed to accept TSCA and non-TSCA waste. Transporting the sediments by truck from the dewatering/drying pad to the landfill would cause an increase in heavy truck traffic along the haul route(s). After completing the project, the pad materials would be transported by truck to an

offsite landfill for disposal and the dewatering site would be restored to pre-project conditions. The pad materials would be characterized for disposal before transportation.

4.4 Alternative 3—Combination of Mechanical Dredging and Cover

This alternative is the same as Alternative 2 with the addition of a cover placed in areas of the river bottom where sediment removal is not possible because of dredge-cut side slopes and offsets from critical structures and contaminants are left exposed. For example if dredging exposes contaminated sediment that cannot be further removed due to slope stability concerns along shorelines or critical structures, a cover would be place to lower the availability and surface concentration of the contamination. A cover may also be employed to assist in meeting SWAC goals. Post-dredging sediment confirmation sampling results will dictate where cover is placed.

The cover would be constructed of a layer of sand or larger particles possibly between 6 and 24 inches thick. A cover is anticipated along the western side of the river, within the historic navigation dredging channel. At this time for the purposes of estimating costs the total cover volume is anticipated to be 27,000 cubic yards.

Cover placement will not exceed the existing sediment elevations so there will not be a net increase in cross sectional flow area of the river. Therefore, cover placement will not negatively impact flooding potential and conveyance within the river. The cover would be designed in accordance with state and federal floodplain regulations. In addition, measures would be taken to avoid impact to any threatened and endangered species according to state guidelines.

Though the potential for sediment erosion because of propeller wash is low, a potential for erosion from storm events does exist. The location and gradation of the cover will be evaluated during detailed design to minimize the potential for the cover to be eroded by river flow rates.

Placement methods for the cover would minimize disturbance to the sediment and reduce sediment resuspension, but containment would be necessary to prevent downstream migration of residual contaminated sediment during cover placement. Selection of the delivery method would involve considering the relative importance of cover thickness consistency and the water depth, which will limit delivery options. Cover placement would be completed by casting or directly placing the sand on the river bottom.

The cover would reduce the surface concentration of the contamination and its bioavailability.

SECTION 5

Detailed Analysis of Alternatives

5.1 Introduction

The detailed analysis provides the relevant information required for comparing the remedial alternatives for the site. The detailed analysis of alternatives evaluates each individual alternative against six evaluation criteria. The detailed evaluation is presented in Table 4 and follows the alternatives as structured in the text.

5.2 Evaluation Criteria

Each alternative was evaluated by using six criteria. These criteria were established to provide grounds for comparison of the relative performance of the alternatives and to identify their advantages and disadvantages. This approach is intended to provide sufficient information for adequately comparing the alternatives and selecting the most appropriate alternative for implementation at the site as a remedial action. The evaluation criteria include the following:

- Evaluation and identification of permits and permit needs for the remedial alternatives.
- Short- and long-term effectiveness and permanence of the alternatives in protecting human health and the environment.
- Engineering implementability, reliability, constructability, and cost.
- General ability to meet GLLA remedial objectives.
- General ability to address BUIs.
- State and community acceptance based on general input from community meetings.

The criteria are briefly described below.

5.2.1 Evaluation and Identification of Permits and Permit Needs

Compliance with applicable federal, state, and local regulations is one of the statutory requirements of remedy selection. Applicable federal, state, and local regulations are cleanup standards, standards of control, and other substantive environmental statutes or regulations. Applicable requirements address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances at a site. Relevant and appropriate requirements are those that while not applicable, address problems or situations sufficiently similar to those encountered at the site. The assessment with respect to this criterion describes how the alternative complies with applicable federal, state, and local regulations or presents the rationale for waiving an applicable federal, state, and local regulations.

5.2.2 Short- and Long-term Effectiveness in Protecting Human Health and the Environment

This criterion reflects the emphasis on implementing remedies that will ensure protection of human health and the environment in the long term as well as in the short term. A remedy is protective if it adequately eliminates, reduces, or controls current and potential risks posed by the site through each exposure pathway. The assessment of alternatives with respect to this criterion includes the evaluation of the risks at a site during the construction and implementation of a remedy (short term) and after completing a remedial action or enacting a no action alternative (long term). Short-term criteria include protection of workers during the remedial action, protection of community during the remedial action, and environmental impacts of the remedial action. Long-term criteria include time until RAOs are achieved (including supporting removal of BUIs in the Sheboygan River AOC), magnitude of residual risks, adequacy and reliability of controls, and minimization of transport of contaminated sediment downstream.

5.2.3 Engineering Implementability, Reliability, Constructability, and Cost

This criterion addresses the availability of the goods and services needed for its implementation, the reliability of the action, and the ease of constructing the remedial action.

Cost encompasses engineering, and construction) costs incurred during project implementation. These estimated costs are expected to provide an accuracy of plus 50 percent to minus 30 percent. The cost estimates for each alternative is included in Appendix D.

The cost estimates presented for each alternative have been developed strictly for comparing the alternatives. The final costs of the project and the resulting feasibility will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, the implementation schedule, and other variables; therefore, final project costs will vary from the cost estimates. Because of these factors, project feasibility and funding needs must be reviewed carefully before specific financial decisions are made or project budgets are established to help ensure proper project evaluation and adequate funding.

The cost estimates are order-of-magnitude estimates with an intended accuracy range of plus 50 to minus 30 percent. The range applies only to the alternatives as they are described and does not account for changes in the scope of the alternatives. Selection of specific technologies or processes to configure remedial alternatives is intended not to limit flexibility during remedial design, but to provide a basis for preparing cost estimates. The specific details of remedial actions and cost estimates would be refined during the final design.

5.2.4 General Ability to Meet Great Lakes Legacy Act Remedial Objectives

This criterion will evaluate the alternatives against the following remedial objectives:

- Short- and long-term reductions in sediment transport and exposure to contaminants of concern
- Improvement in biota and biological communities (such as fish, benthos, and birds)
- Short- and long-term reductions in contaminants of concern in biota
- Reductions in sediment-related toxicity
- Improvement in habitat quality
- Remediation of sediment contamination on a volume, area, and/or mass basis

5.2.5 General Ability to Address BUIs

This criterion will evaluate the alternatives for their remediation of restrictions on fish and wildlife consumption, degradation of benthos, fish tumors and deformities, bird and animal deformities and reproductive problems, loss of fish and wildlife habitat, and restrictions on dredging.

5.2.6 State and Community Acceptance

This criterion will evaluate the alternatives for their acceptance from the state and local community.

5.3 Detailed Analysis of Alternatives

The following alternatives were developed and described in Section 4:

- Alternative 1—No Action
- Alternative 2—Mechanical Dredging
- Alternative 3—Combination of Mechanical Dredging and Cover

These alternatives were evaluated in detail using the six evaluation criteria described above. The detailed evaluations for these alternatives are summarized in Table 4.

TABLE 4
Detailed Evaluation of Remedial Alternatives
Sheboygan Lower River and Inner Harbor Site, Sheboygan River AOC

Criterion	Alternative 1 No Action	Alternative 2 Mechanical Dredging	Alternative 3 Combination of Mechanical Dredging and Cover
1. Permitting	No remedial action; therefore, not applicable.	Multiple permits would be required. Compliance would be met without significant exceptions.	Multiple permits would be required. Compliance would be met without significant exceptions.
2. Short- and Long-term Effectiveness in Protecting Human Health and the Environment			
(a) Overall protection of human health and the environment	RAOs to reduce the potential ingestion of PCBs through fish tissue and potential for dermal contact or ingestion of PCB-contaminated sediment not likely to be met within a reasonable timeframe.	Removal of contaminated sediments reduces the PCBs that bioaccumulate in fish, reduces the potential of direct toxicity of PAHs to benthos, and reduces potential for dermal contact or ingestion of PCB/PAH-contaminated sediment. Offsite disposal of contaminated sediment is protective of human health and the environment.	Removal and covering of contaminated sediments reduces the PCBs that bioaccumulate in fish and reduces potential for dermal contact or ingestion of PCB/PAH-contaminated sediment. Offsite disposal of contaminated sediment is protective of human health and the environment.
(b) Protection of workers during remedial action	No remedial action; therefore, not applicable.	Excavation of sediment may result in potential exposure of workers via direct contact. Proper health and safety procedures such as use of appropriate PPE, truck decontamination, and air monitoring procedures can reduce impacts to workers.	Placement of cover to follow appropriate construction procedures for safety. Excavation of sediment may result in potential exposure of workers via direct contact. Proper health and safety procedures such as use of appropriate personal protective equipment (PPE), truck decontamination, and air monitoring procedures can reduce impacts to workers.
(c) Protection of community during remedial action	No remedial action; therefore, not applicable.	Dust emissions can be controlled with air monitoring and engineering methods to protect the community. Decontamination of trucks used to transport contaminated materials prevents the spread of contamination along haul routes.	Dust emissions can be controlled with air monitoring and engineering methods to protect the community. Decontamination of trucks used to transport contaminated materials prevents the spread of contamination along haul routes.
(d) Environmental impacts of remedial action	No remedial action; therefore, not applicable.	Impacts from excavation because of disturbance of habitats.	Impacts from excavation because of disturbance of habitats. Cover delivery methods can disturb and resuspend contaminated sediment. Without removal of contaminated sediment thickness equal to cover thickness, placement may increase flooding.

TABLE 4
Detailed Evaluation of Remedial Alternatives
Sheboygan Lower River and Inner Harbor Site, Sheboygan River AOC

Criterion	Alternative 1 No Action	Alternative 2 Mechanical Dredging	Alternative 3 Combination of Mechanical Dredging and Cover
(e) Achievement of RAOs Including delisting BUIs			
(e)(1) Support removal of BUIs within the Sheboygan River AOC	Does not support removal of BUIs.	Supports removal of BUIs except if residual contamination remains due to site conditions not allowing dredging of all contamination. See criterion 5.	Supports removal of BUIs more quickly than Alternative 2. See criterion 5.
(e)(2) Minimize potential human health and environmental risks associated with remedial activities to the extent practical	No remedial action; therefore, not applicable.	Excavation, handling, and transport of contaminated sediments create potential risk to human health. Moderate potential risk to environment from earthwork and habitat disturbance.	Excavation, handling, and transport of contaminated sediments create potential risk to human health. Moderate potential risk to environment from earthwork and habitat disturbance.
(f) Magnitude of residual risks	Unchanged from existing conditions.	Low residual risks except in areas where dredging extents expose contamination that cannot be removed due to shoreline stability (does not change magnitude of contaminated sediment at depth).	Very low residual risks, including in areas with residual contamination due to cover thickness. Does not change magnitude of contaminated sediment at depth.
(g) Adequacy and reliability of controls	Fish consumption advisories and warnings regarding dermal contact or ingestion of PCB-contaminated sediment can reduce, but not eliminate risks.	Not applicable.	Limited control over disturbance of cover by humans or the environment.
(h) Minimization of transport of contaminated sediments downstream	Unchanged from existing conditions.	Transport minimized due to excavation but contamination exposed and not dredged due to side slopes and shoreline offsets potentially available for transport.	Transport minimized with excavation and cover over-exposed residual contamination.
3. Engineering Implementability, Reliability, Constructability, and Cost			
(a) Availability of services and materials	No impediments.	No impediments.	Methods of cover placement limited in shallow water depth.
(b) Reliability	No impediments.	No impediments.	Placement of cover material influenced by river currents and water depth. Location of cover placement influenced by scour and geomorphology of river.

TABLE 4
Detailed Evaluation of Remedial Alternatives
Sheboygan Lower River and Inner Harbor Site, Sheboygan River AOC

Criterion	Alternative 1 No Action	Alternative 2 Mechanical Dredging	Alternative 3 Combination of Mechanical Dredging and Cover
(c) Constructability	No impediments.	No impediments.	Difficult in areas of shallow water depth. Limited methods of installation. Difficult to achieve consistent thickness of cover in deeper conditions.
(d) Cost	See Appendix D.	See Appendix D.	See Appendix D.
4. General Ability to Meet Great Lakes Legacy Act Remedial Objectives			
(a) Short- and long-term reductions in sediment transport and exposure to contaminants of concern	Unchanged from existing conditions.	Decrease in sediment transport due to increased cross-sectional area of dredged channel. Less short-term sediment transport to downstream Lake Michigan due to sediment removal.	Decrease in sediment transport due to increased cross-sectional area of dredged channel. Less short-term sediment transport to downstream Lake Michigan due to sediment removal. Cover depth insignificant to sediment transport.
		Eliminates exposure in areas where sediment removed. Short-term exposure may increase in areas where residual contamination remains due to site conditions restricting dredging. Improvement in long-term exposure with expected natural sedimentation.	Eliminates exposure in areas where sediment removed. Short-term exposure will decrease with cover placement on residual contamination. Improvement in long-term exposure with cover placement and expected natural sedimentation.
(b) Improvement in biota and biological communities	Unchanged from existing conditions.	Temporary impact from dredging but long-term positive impact.	Temporary impact from dredging and cover placement but long-term positive impact.
(c) Short- and long-term reduction of contaminant in biota	Unchanged from existing conditions.	Supportive of remedial objective.	Supportive of remedial objective.
(d) Reduction in sediment-related toxicity	Unchanged from existing conditions.	Supportive of remedial objective.	Supportive of remedial objective.
(e) Improvement in habitat quality	Unchanged from existing conditions.	Temporary impact due to dredging.	Temporary impact due to dredging and cover placement.
(f) Remediation on a volume, area, and/or mass bases	Unchanged from existing conditions.	Supportive of remedial objective.	Supportive of remedial objective.

TABLE 4
Detailed Evaluation of Remedial Alternatives
Sheboygan Lower River and Inner Harbor Site, Sheboygan River AOC

Criterion	Alternative 1 No Action	Alternative 2 Mechanical Dredging	Alternative 3 Combination of Mechanical Dredging and Cover
5. General Ability to Address BUIs			
(a) Restrictions on fish and wildlife consumption	Unchanged from existing conditions.	Supportive of addressing BUI.	Supportive of addressing BUI.
(b) Degradation of benthos	Unchanged from existing conditions.	Temporary degradation of benthos due to dredging.	Temporary degradation of benthos due to dredging and cover placement.
(c) Fish tumors and deformities	Unchanged from existing conditions.	Supportive of addressing BUI.	Supportive of addressing BUI.
(d) Bird and animal deformities and reproductive problems	Unchanged from existing conditions.	Supportive of addressing BUI.	Supportive of addressing BUI.
(e) Loss of fish and wildlife habitat	Unchanged from existing conditions.	Temporary loss of fish habitat due to dredging.	Temporary loss of fish habitat due to dredging and cover placement.
(f) Restrictions on dredging	Unchanged from existing conditions.	Restrictions on dredging if residual contamination remains due to site conditions not allowing dredging of all contamination.	Restrictions on dredging if residual contamination remains due to site conditions not allowing dredging of all contamination.
6. State and Community Acceptance			
	Unfavorable public acceptance.	Favorable public acceptance.	Favorable public acceptance.
Summary	Least supportive of evaluation criteria and does not achieve project objectives.	Supportive of evaluation criteria within physical constraints of project site.	Most supportive of evaluation criteria within physical constraints of project site.

5.3.1 Cover Placement

The cover material included in Alternative 3 would be placed on the excavation surface in instances where post dredging confirmation sampling yields residual surface total PCB and total PAH concentrations in excess of cleanup goals. Where confirmation sampling shows that residual concentrations are less, no cover placement is expected. However, it is expected that residual contamination will remain due to physical site conditions that limit the extent of dredging. These site conditions include offsets from the existing natural shoreline, docks, engineered shorelines, and other shoreline structures. In addition to the offsets, minimum side slopes ranging between 3:1 (horizontal:vertical) to 4:1 further limit the ability of the dredging to remove contamination within the areas between the shoreline and the dredge extents. A management plan will be developed during the design to identify the specific locations, cover material type, and depth of cover placement.

In areas where cover material is placed, a maximum side slope of 4:1 would be used to help minimize the cover material from sloughing. Cover materials such as sand generally cannot remain in-place on side slopes steeper than 4:1. The type and thickness of cover material will depend on the residual contamination concentration and the location of the proposed cover. For example, a low residual contamination concentration on a flat side slope in an area where scour is not expected, a 6-inch sand cover may be appropriate. In contrast, in areas with higher levels of residual concentration and greater scour potential, a thicker and heavier cover may be appropriate (for example, 12 inches of gravel). The cover is not intended to be a cap, but the cover is also not intended to mobilize during low energy flow conditions. The type, thickness and extent of the cover material will be determined during detailed design, and may include multiple cover materials and thicknesses for the potentially varying site conditions.

SECTION 6

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Figures

N

0 500 1,000
Feet

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Figure 1
Site Map
Lower River and Inner Harbor
Sheboygan River, Wisconsin

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Pennsylvania Ave. Bridge

Legend

60-Foot Channel

PAH Removal to Full Depth Area

N

0 150 300

Feet

Figure 2
PAH Removal to Full Dredge Depth Area (Scenarios 7-10)
Lower River and Inner Harbor
Sheboygan River, WI

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Appendix A
Surface Weighted Average Concentration Scenarios

Surface-weighted Average Concentration Calculation Methodology

PREPARED FOR: Heather Williams/USEPA-GLNPO
Amy Mucha/USEPA-GLNPO

PREPARED BY: Adrienne Korpela/CH2M HILL
Huck Raddemann/CH2M HILL
Frank Dillon/CH2M HILL
Shaun Roark/CH2M HILL

COPIES: Gina Bayer/CH2M HILL
Project file

DATE: October 5, 2011

PROJECT NUMBER: 419917.RS.01

Introduction

This memorandum summarizes the process and calculations used to determine the SWAC values representative of existing and post-dredging scenarios in the Sheboygan River Area of Concern, specifically, the Lower River reach from ¼-mile upstream of the 14th Street Bridge to the end of the Lower River and the Inner Harbor reach from Pennsylvania Avenue Bridge to the 8th Street Bridge. The basis of the SWAC approach is that the exposure domain for receptors is broader than the small areas represented by individual samples, so an average concentration of the exposure domain should be calculated and used.

Pre-dredge SWAC

The following steps were used to develop the SWAC for pre-remediation conditions of the river.

1. Where A_i is the estimated area of river to be assigned to each sample location. The area was determined based on polygonal declustering. The method divides the total area of influence into polygons (one for each core location), with the polygon area representing the relative weighting of that sample. The polygons of influence, or Thiessen polygons, were delineated within a geographic information system computer application, such that a polygon contains the area that is closer to a given sample point than to any other sample point.

$$Cw_i = Conc \times A_i$$

2. After defining the Thiessen polygons and surface sediment (0 to 0.5 foot or a grab sample) concentrations for each sediment sample location, the weighted concentration for each polygon (Cwi) was calculated by multiplying the concentration (Conc) by the area (Ai).

3. The products of the surface sediment concentrations and surface areas of each polygon were summed and the total divided by the total surface area to get a surface-weighted average concentration (SWAC), or:

$$SWAC = \frac{\sum_{i=1}^{n} Cw_i}{A}$$

The above SWAC calculations and the values for polychlorinated biphenyls (PCBs) and total organic carbon (TOC) in the pre-remediation sediment surface are presented in Tables 1A and 1B. The pre-remediation Thiessen polygon grids for the PCB SWAC calculations are presented in Figure 1. The calculated pre-remediation PCB SWAC value is 4.17 milligrams per kilogram (mg/kg). The SWAC value for TOC was calculated from 142 surface locations. The TOC SWAC value is 24,454 mg/kg and the average concentration is 29,078 mg/kg. The surface PCB concentrations were normalized to the surface TOC SWAC concentration. The normalized PCB SWAC value is 170.2 mg/kg of TOC.

Post-dredge SWAC

A series of post-dredge SWACs were calculated based on the following removal scenarios:

- Post Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Emergency Removal
- Post-CERCLA and Emergency Removal and 1 part per million (ppm) PCB Removal
- Pos-CERLA, Emergency Removal, and a Great Lakes National Program Office (GLNPO) 1-ppm PCB removal and 45-ppm polynuclear aromatic hydrocarbon (PAH) to any depth removal (MVS Model Scenario #2)
- Post-CERCLA, Emergency Removal, GLNPO 1-ppm PCB to any depth, 18-ppm PAH to 567.5 feet above mean sea level (amsl) North American Vertical Datum of 1988 (NAVD88) (-10.5 Low Water Datum [LWD]) and 45-ppm PAH below 567.5 feet amsl NAVD88 (Mining Visualization System [MVS] Model Scenario #3)
- Post-CERCLA, Emergency Removal, GLNPO 1-ppm PCB, 18-ppm PAH to 567.5 feet amsl NAVD88 (-10.5 LWD), and 5-ppm PCB below 567.5 feet amsl NAVD88, and 18-ppm PAH below 567.5 feet amsl NAVD88 to any depth from 500 feet upstream and 1,000 feet downstream of Boat Island (MVS Model Scenario #10)

The estimated post-dredge SWACs were calculated using the same process as the pre-dredge SWAC. However, the surface sediment concentration differs in that the generated dredge residual is estimated to account for 50 percent of the surface concentration, approximately 3 inches. The concentration of the generated residual was calculated by averaging the concentrations of the sediment samples above the dredge cut neatline. Sample results from sediments removed per CERCLA and Emergency Removal dredge cut neatlines were not used in the generated residual calculation for GLNPO dredge cut scenarios because of the timing of the removal actions. The SWAC values and calculations are presented in Tables 2 through 11.

The concentration used to calculate the SWAC is comprised of the concentration of the generated residual layer (top 3 inches) and the post-dredge surficial sediment concentration at the specified dredge cut depths (bottom 3 inches). When the specified neatline dredge cut depth was below the bottom of the deepest sample interval at a given location, the location was removed from the SWAC calculation, and as a result, decreased the number of polygons. With each consecutive removal scenario, the number of locations used to calculate the SWAC is reduced, thereby increasing the representative area of the remaining locations. When a location is removed, the area of the surrounding locations is increased and the weight of those locations' concentrations on the overall SWAC is also increased. When comparing the PCB SWAC at 1ppm PCB vs 1ppm PCB & 45 ppm PAH, as the overall PCB concentrations decrease the PCB SWAC value increases. This is due to the reduction of polygons from 205 to 164 and the concentration distribution of the altered polygons. The post-dredge Thiessen polygon grids for the SWAC calculations are presented in Figures 2 through 11.

The post-dredge SWAC values are based on the modeled neatline dredge cut depth. The calculated SWAC values and number of polygons are summarized in the following table.

Post-Dredge Scenario	PCB SWAC (mg/kg)	Normalized PCB SWAC* (mg/kg OC)	Number of PCB Polygons	PAH SWAC (mg/kg)	Number of PAH Polygons
Pre-remediation Surface	4.17	170.2	*508*	-	-
Post-CERCLA and Emergency Removal	4.26	173.8	*421*	70.22	*150*
Post-CERCLA and Emergency Removal, and 1-ppm PCB Removal	2.81	114.6	*205*	118.09	*84*
MVS Model Scenario 2: Post-CERCLA and Emergency Removal, and 1-ppm PCB and 45-ppm PAH	3.99	163.0	*164*	82.88	*72*
MVS Model Scenario 3: Post-CERCLA and Emergency Removal, and 1-ppm PCB to any depth and 18-ppm PAH > 567.5 (-10.5 LWD) < 45-ppm PAH	3.18	129.9	*114*	81.58	*57*
MVS Model Scenario 10: Post-CERCLA and Emergency Removal, and 1-ppm PCB and 18-ppm PAH > 567.5 (-10.5 LWD) < 5-ppm PCB, and 18-ppm PAH near Boat Island	2.98	121.8	*126*	86.63	*60*

*PCBs normalized to TOC SWAC fraction of 0.0245.
mg/kg OC = milligrams per kilogram of organic carbon
LWD = Low Water Datum (578.0 NAVD88 @ Lake Michigan)

Appendix A, Attachment 1
Figures

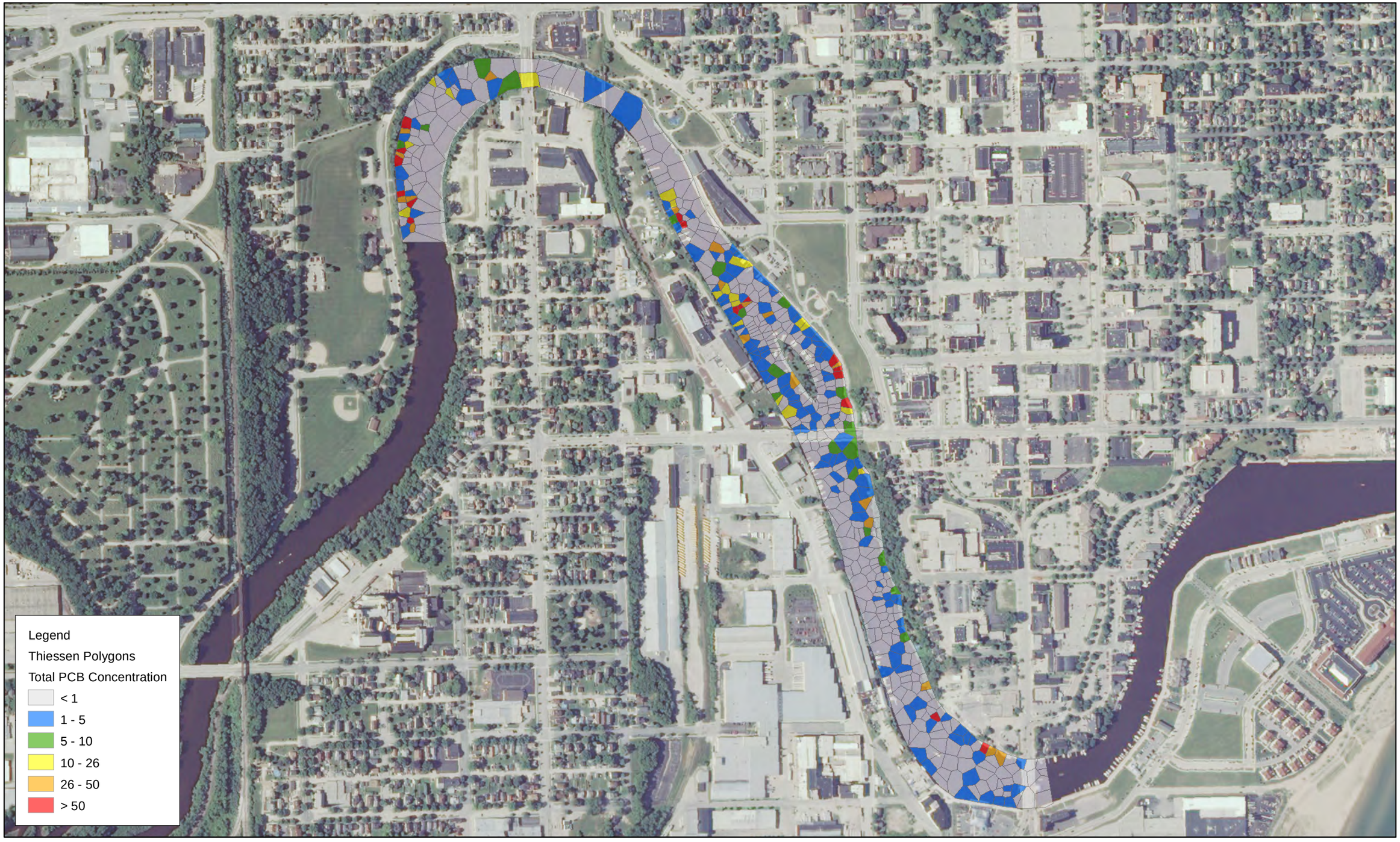

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Figure 1 - PCB SWAC
Pre-Remediation Sediment Surface
Sheboygan, WI

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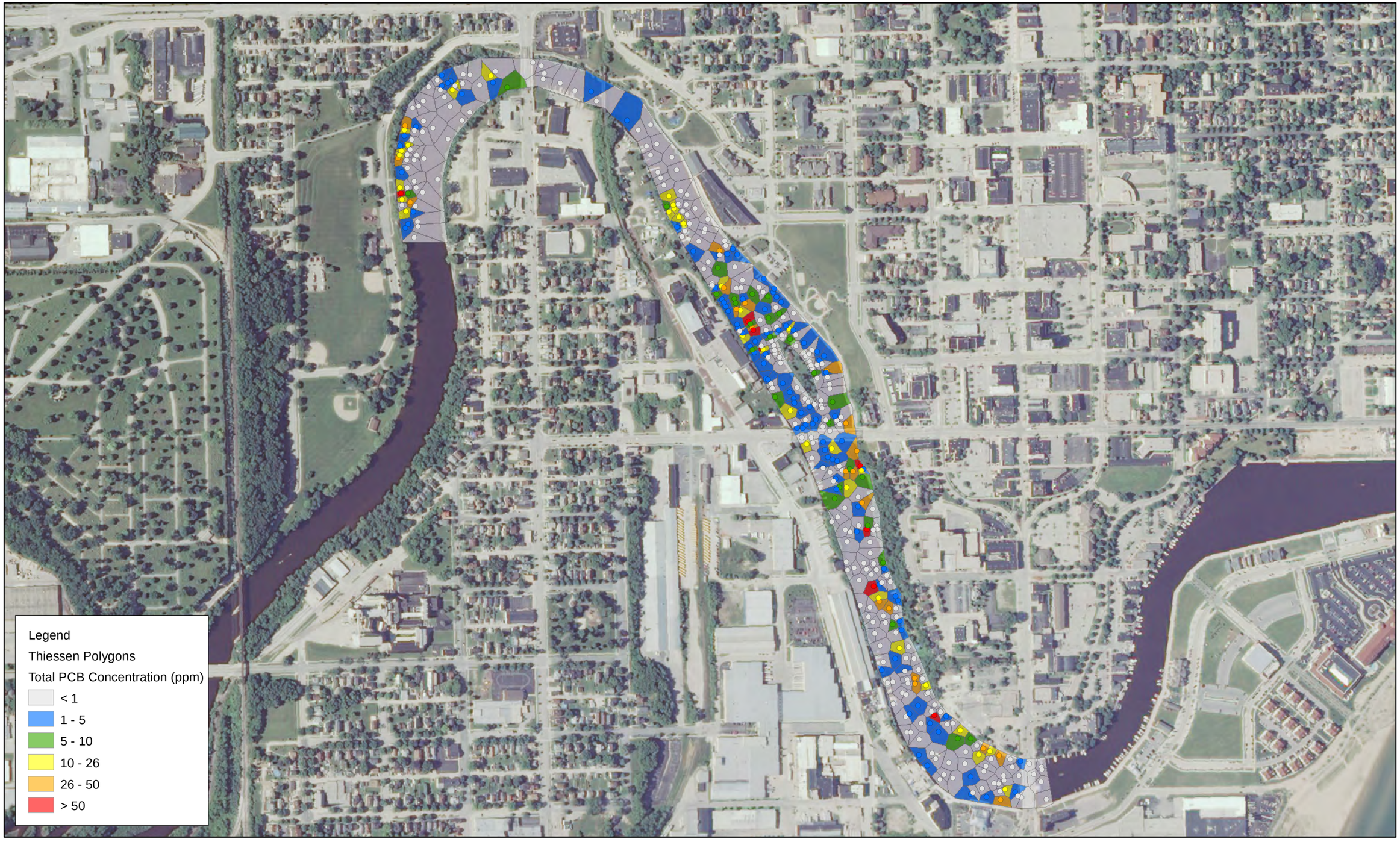

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Figure 2 - PCB SWAC
Post-CERCLA and Emergency Removal
Sheboygan, WI

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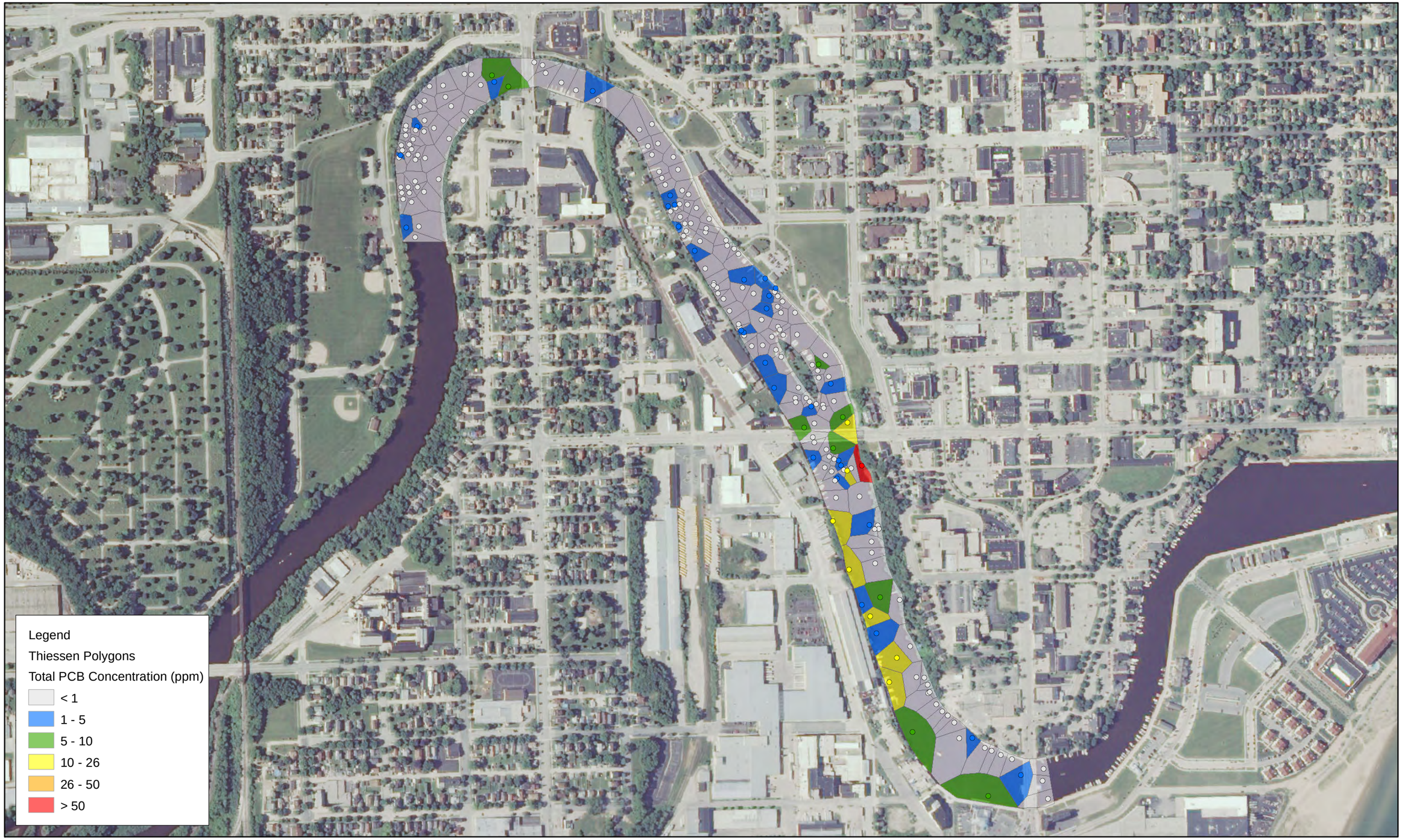

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Figure 3 - PCB SWAC
Post-CERCLA, Emergency Removal, and GLNPO 1ppm PCB
Sheboygan, WI

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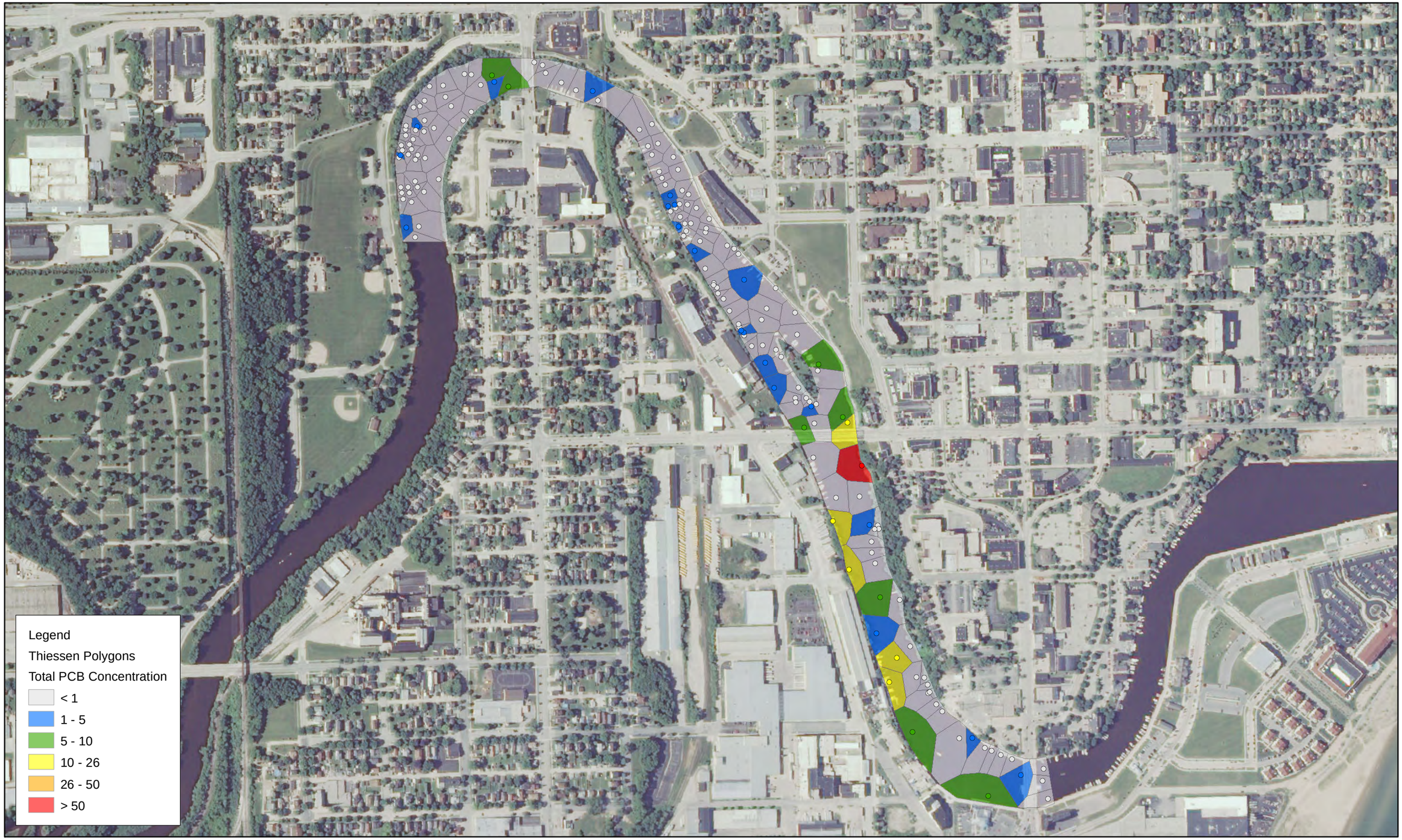

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Figure 4 - PCB SWAC
MVS Model Scenario #2

Sheboygan, WI

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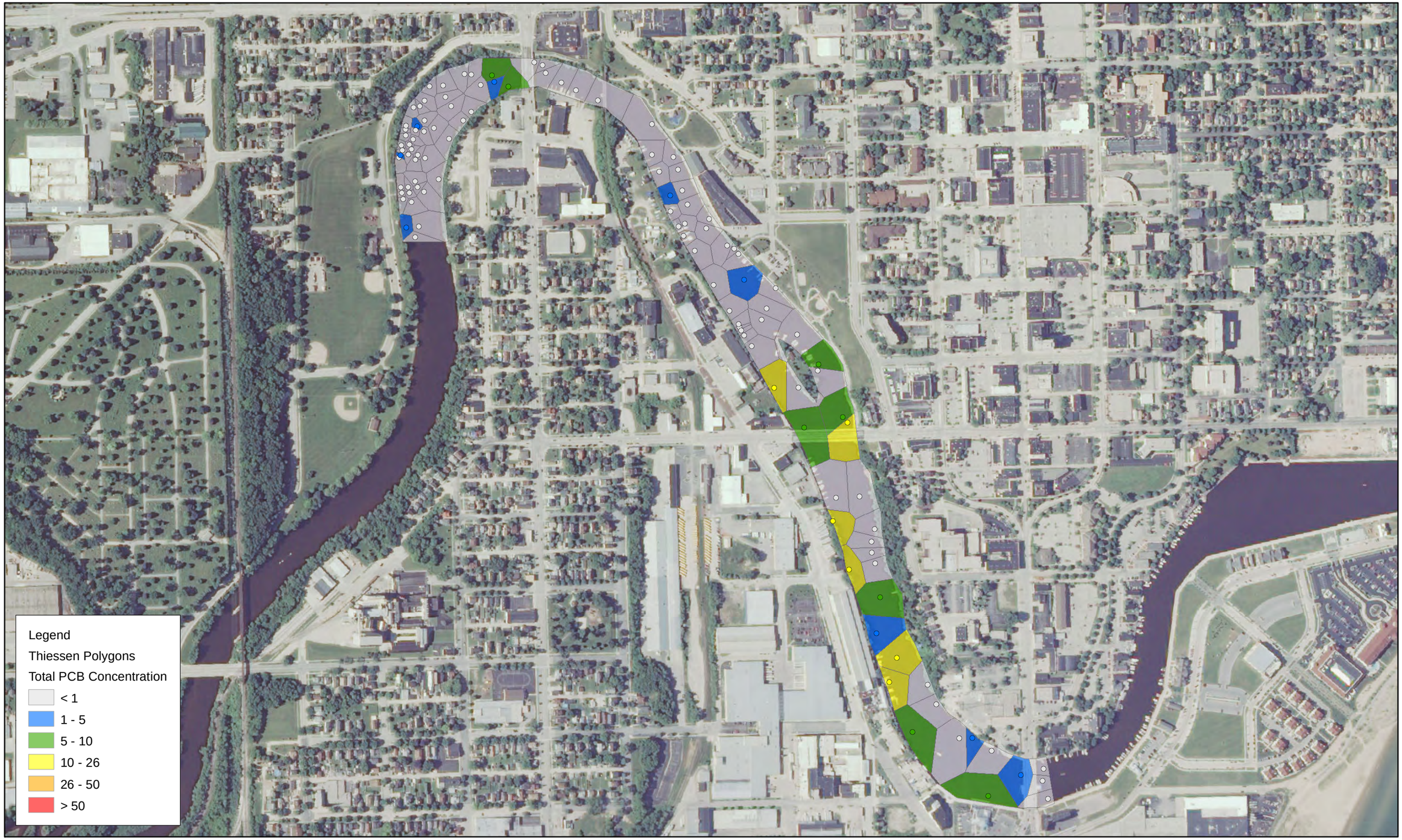
E:\EPA\406504SHEBOYGAN\REPORTS\2010SHEBOYGANRIVERREMEDIALINVESTIGATION\MAPFILES\2011\SWACS_072611\POST PRS NRT 1PCB45PAH PCB SWAC.MXD JHANSEN1 7/26/2011 12:33:25 PM



DRAFT

Figure 5 - PCB SWAC
MVS Model Scenario #3

Sheboygan, WI

CH2MHILL

Legend

Thiessen Polygons

Total PAH Concentration (ppm)

- < 18
- 18 - 45
- 45 - 100
- 100 - 129
- > 129

N

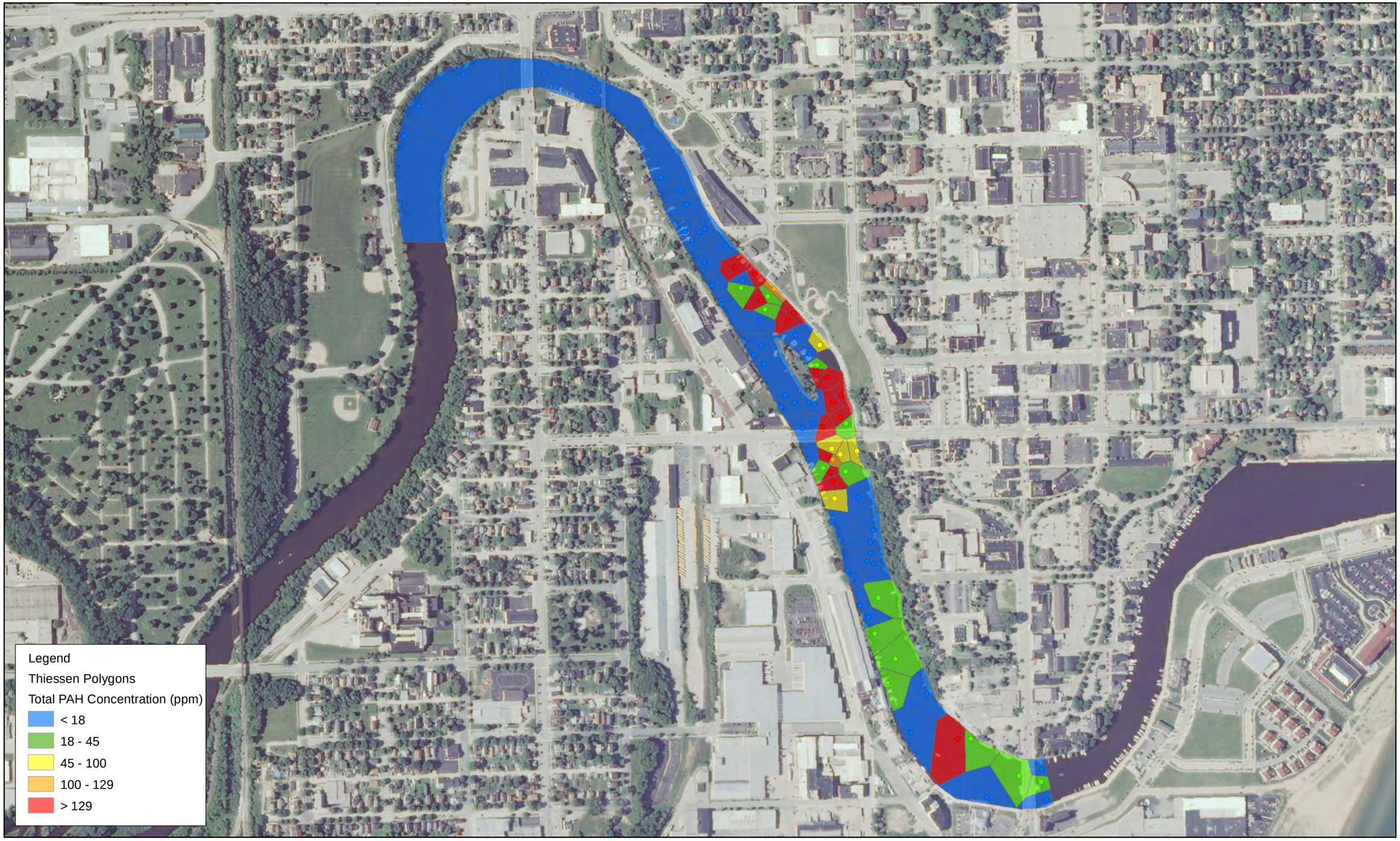
0 250 500

Feet

DRAFT

Figure 6 – PAH SWAC
Post-CERCLA and Emergency Removal
Sheboygan, WI

CH2MHILL



DRAFT

Figure 7 – PAH SWAC
Post-CERCLA, Emergency Removal, and GLNPO 1ppm PCB
Sheboygan, WI

CH2MHILL

Legend

Thiessen Polygons

Total PAH Concentration (ppm)

- < 18
- 18 - 45
- 45 - 100
- 100 - 129
- > 129

N

0 250 500

Feet

DRAFT

Figure 8 - PAH SWAC

MVS Model Scenario #2

Sheboygan, WI

CH2MHILL

E:\EPA\406504SHEBOYGAN\REPORTS\2010SHEBOYGANRIVERREMEDIALINVESTIGATION\MAPFILES\2011\SWACS_072611\POST PRS NRT 1PCB 45PAH.MXD JHANSEN1 7/26/2011 12:50:39 PM

Legend

Thiessen Polygons

Total PAH Concentration (ppm)

- < 18
- 18 - 45
- 45 - 100
- 100 - 129
- > 129

N

0 250 500

Feet

DRAFT

Figure 9 - PAH SWAC

MVS Model Scenario #3

Sheboygan, WI

CH2MHILL

E:\EPA\406504SHEBOYGAN\REPORTS\2010SHEBOYGANRIVERREMEDIALINVESTIGATION\MAPFILES\2011\SWACS_072611\POST PRS NRT 1PCB 18-45@10PAH.MXD JHANSEN1 7/26/2011 12:47:47 PM

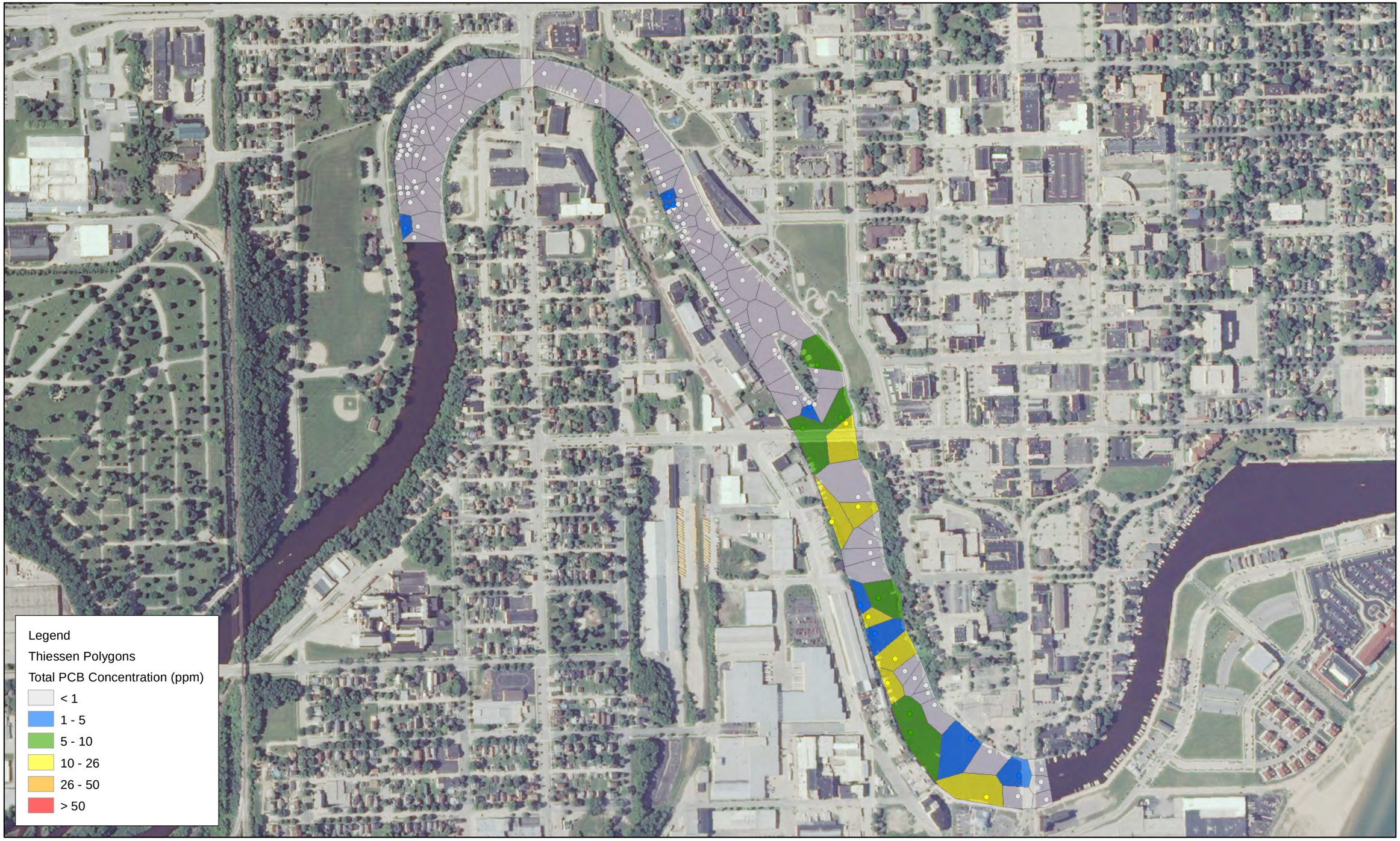


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Figure 10 – PCB SWAC
MVS Model Scenario #10

Sheboygan, WI

CH2MHILL

E:\EPA\406504SHEBOYGAN\REPORTS\2010SHEBOYGANRIVERREMEDIALINVESTIGATION\MAPFILES\2011\SWACS_092111\FIGURE 10 - PCB SWAC - SCENARIO 10.MXD JHANSEN1 9/23/2011 5:13:13 PM

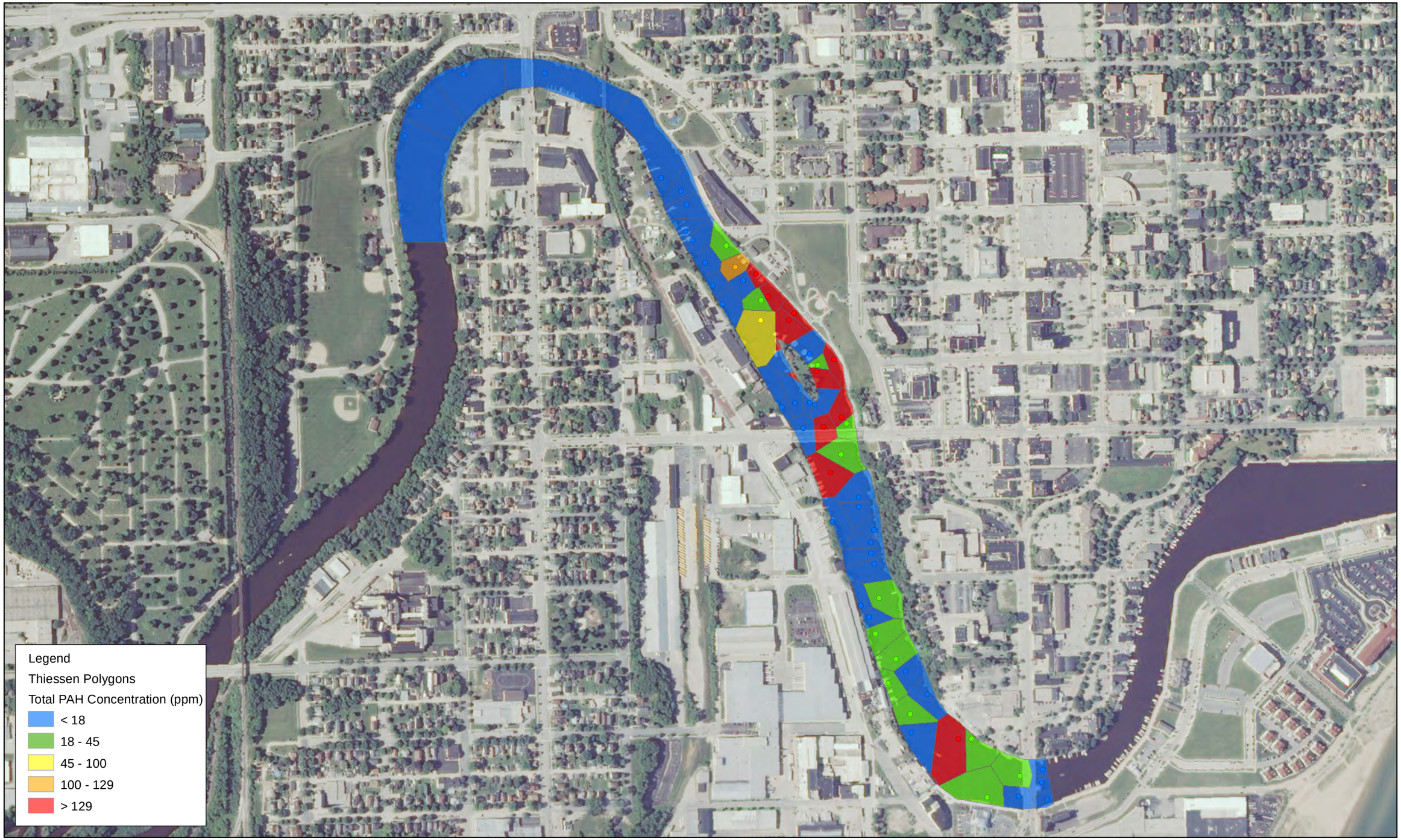

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Figure 11 – PAH SWAC

MVS Model Scenario #10

Sheboygan, WI

CH2MHILL

E:\EPA\406504SHEBOYGAN\REPORTS\2010SHEBOYGANRIVERREMEDIALINVESTIGATION\MAPFILES\2011\SWACS_092111\FIGURE 11 - PAH SWAC - SCENARIO 10.MXD JHANSEN1 9/23/2011 5:15:40 PM

Appendix A, Attachment 2
Tables

TABLE 1A - PCB SWAC Data

Pre-Remediation Sediment Surface, Sheboygan River

Sample_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
BKG06 0 - 0.6'	1.31	1726.323122	2261.483289	0.0245	53.46938776	92305.44038
BKG07 0 - 0.6'	3.09	1631.590981	5041.616131	0.0245	126.122449	205780.2502
PRS111-0'/1'	0.27	3092.427341	834.955382	0.0245	11.02040816	34079.81151
PRS113-0'/1'	0.29	4499.837412	1304.95285	0.0245	11.83673469	53263.38162
PRS113E-0'/1'	0.496	3689.365948	1829.92551	0.0245	20.24489796	74690.83715
PRS114-0'/1'	0.01895	8422.415024	159.6047647	0.0245	0.773469388	6514.480192
PRS115-0'/1'	2.1	2522.252543	5296.73034	0.0245	85.71428571	216193.0751
PRS116-0'/1'	1.13	3804.166134	4298.707731	0.0245	46.12244898	175457.4584
PRS117-0'/1'	0.5	3331.256164	1665.628082	0.0245	20.40816327	67984.81968
PRS117E-0'/1'	0.0164	3199.857315	52.47765996	0.0245	0.669387755	2141.945304
PRS118-0'/1'	2.03	3205.509681	6507.184653	0.0245	82.85714286	265599.3736
PRS118A-0'/0.5'	0.258	1419.046603	366.1140236	0.0245	10.53061224	14943.42953
PRS118B-0'/0.5'	0.215	2392.432955	514.3730853	0.0245	8.775510204	20994.81981
PRS118C-0'/0.5'	0.378	2116.623705	800.0837603	0.0245	15.42857143	32656.48001
PRS118D-0'/0.5'	0.304	1293.888324	393.3420504	0.0245	12.40816327	16054.77757
PRS118E-0'/0.5'	3.04	2872.434413	8732.200615	0.0245	124.0816327	356416.3516
PRS119-0'/1'	0.55	4448.289831	2446.559407	0.0245	22.44897959	99859.56764
PRS119E-0'/1'	35.8	3738.503183	133838.4139	0.0245	1461.22449	5462792.406
PRS120-0'/1'	0.159	3872.881249	615.7881185	0.0245	6.489795918	25134.20892
PRS121-0'/1'	0.43	3159.808713	1358.717746	0.0245	17.55102041	55457.8672
PRS121E-0'/1'	40.2	2452.416296	98587.13509	0.0245	1640.816327	4023964.698
PRS122-0'/1'	0.31	4379.704333	1357.708343	0.0245	12.65306122	55416.66707
PRS123-0'/1'	0.29	4789.361387	1388.914802	0.0245	11.83673469	56690.40009
PRS123E-0'/1'	96.1	2073.545081	199267.6822	0.0245	3922.44898	8133374.785
PRS124-0'/1'	1.72	6098.972108	10490.23203	0.0245	70.20408163	428172.7357
PRS125-0'/1'	1.18	4033.212806	4759.191111	0.0245	48.16326531	194252.6984
PRS126-0'/1'	1.51	6941.284474	10481.33956	0.0245	61.63265306	427809.7778
PRS127-0'/1'	0.56	5017.715207	2809.920516	0.0245	22.85714286	114690.6333
PRS127E-0'/1'	0.0143	2701.722816	38.63463626	0.0245	0.583673469	1576.923929
PRS128-0'/1'	0.194	9257.847211	1796.022359	0.0245	7.918367347	73307.03506
PRS129-0'/1'	0.226	5495.781595	1242.046641	0.0245	9.224489796	50695.78125
PRS130-0'/1'	0.874	4639.704665	4055.101877	0.0245	35.67346939	165514.3623
PRS131-0'/1'	1.03	3896.600809	4013.498833	0.0245	42.04081633	163816.2789
PRS131E-0'/1'	2.77	2180.771028	6040.735748	0.0245	113.0612245	246560.6428
PRS132-0'/1'	0.13	6388.423192	830.495015	0.0245	5.306122449	33897.75571
PRS133-0'/1'	0.76	2435.973897	1851.340162	0.0245	31.02040816	75564.90457
PRS133E-0'/1'	2.56	3037.29173	7775.466829	0.0245	104.4897959	317365.993
PRS134-0'/1'	0.993	4192.748262	4163.399024	0.0245	40.53061224	169934.654
PRS135-0'/1'	0.38	2870.534677	1090.803177	0.0245	15.51020408	44522.57867
PRS135E-0'/1'	0.135	2383.300838	321.7456131	0.0245	5.510204082	13132.474
PRS136-0'/1'	1.21	4932.62421	5968.475294	0.0245	49.3877551	243611.2365
PRS137-0'/1'	111	1937.630053	215076.9359	0.0245	4530.612245	8778650.445
PRS137A-0'/0.5'	0.832	2343.184538	1949.529536	0.0245	33.95918367	79572.63411
PRS137B-0'/0.5'	0.0173	1912.360669	33.08383957	0.0245	0.706122449	1350.360799
PRS137C-0'/0.5'	0.0192	1901.278469	36.5045466	0.0245	0.783673469	1489.981494
PRS137D-0'/0.5'	0.385	1666.28376	641.5192475	0.0245	15.71428571	26184.45908
PRS137E-0'/0.5'	4.04	1919.693719	7755.562624	0.0245	164.8979592	316553.5765
PRS138-0'/1'	0.753	5694.297397	4287.80594	0.0245	30.73469388	175012.4874
PRS139-0'/1'	1.7	4796.420614	8153.915044	0.0245	69.3877551	332812.8589
PRS139E-0'/1'	0.0171	3072.200083	52.53462143	0.0245	0.697959184	2144.270262
PRS140-0'/1'	0.342	7480.279074	2558.255443	0.0245	13.95918367	104418.5895
PRS141-0'/1'	0.0176	3288.749717	57.88199502	0.0245	0.718367347	2362.530409
PRS141E-0'/1'	0.0176	1672.52449	29.43643102	0.0245	0.718367347	1201.48698
PRS142-0'/1'	0.559	4075.045196	2277.950265	0.0245	22.81632653	92977.56182
PRS143-0'/1'	0.26	2843.85697	739.4028123	0.0245	10.6122449	30179.70663
PRS143A 0-6	0.281	2144.106967	602.4940577	0.0245	11.46938776	24591.59419

TABLE 1A - PCB SWAC Data

Pre-Remediation Sediment Surface, Sheboygan River

Sample_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS143B 0-6	0.631	1922.915317	1213.359565	0.0245	25.75510204	49524.88021
PRS143C 0-6	0.159	2182.377871	346.9980815	0.0245	6.489795918	14163.187
PRS143D 0-6	0.552	2103.878159	1161.340744	0.0245	22.53061224	47401.66301
PRS143E 0-6	37.4	2238.804986	83731.30648	0.0245	1526.530612	3417604.346
PRS144-0'/1'	0.465	4070.024073	1892.561194	0.0245	18.97959184	77247.39568
PRS145-0'/1'	1.14	3121.622989	3558.650207	0.0245	46.53061224	145251.0289
PRS145E-0'/1'	0.0165	3327.654879	54.90630551	0.0245	0.673469388	2241.073694
PRS146-0'/1'	0.617	5716.527676	3527.097576	0.0245	25.18367347	143963.1664
PRS147-0'/1'	0.28	3244.13052	908.3565456	0.0245	11.42857143	37075.77737
PRS147E-0'/1'	0.0182	3323.653805	60.49049926	0.0245	0.742857143	2468.99997
PRS148-0'/1'	0.159	5679.868124	903.0990317	0.0245	6.489795918	36861.18497
PRS149-0'/1'	2.68	4263.321665	11425.70206	0.0245	109.3877551	466355.1862
PRS149E-0'/1'	0.01525	3442.336075	52.49562515	0.0245	0.62244898	2142.678578
PRS150-0'/1'	0.202	3548.35889	716.7684957	0.0245	8.244897959	29255.85697
PRS151-0'/1'	0.43	1987.791617	854.7503951	0.0245	17.55102041	34887.77123
PRS151A 0-6	0.286	1964.270591	561.7813889	0.0245	11.67346939	22929.85261
PRS151B 0-6	0.204	1256.949317	256.4176608	0.0245	8.326530612	10466.02697
PRS151C 0-9	3.46	1416.231768	4900.161917	0.0245	141.2244898	200006.6089
PRS151D 0-6	0.465	3027.759926	1407.908366	0.0245	18.97959184	57465.64758
PRS151E 0-7	8.19	2390.621015	19579.18611	0.0245	334.2857143	799150.4535
PRS152-0'/1'	0.312	4628.345132	1444.043681	0.0245	12.73469388	58940.55841
PRS153-0'/1'	0.3	1431.512243	429.4536729	0.0245	12.24489796	17528.72134
PRS153A 0-6	0.351	2172.603057	762.583673	0.0245	14.32653061	31125.8642
PRS153B 0-6	0.145	1796.008027	260.421164	0.0245	5.918367347	10629.43526
PRS153C 0-6	0.211	2014.991435	425.1631929	0.0245	8.612244898	17353.59971
PRS153D 0-6	0.324	1521.786898	493.058955	0.0245	13.2244898	20124.85531
PRS153E 0-6	1.49	1585.930919	2363.037069	0.0245	60.81632653	96450.49261
PRS154-0'/1'	1.09	3681.768872	4013.128071	0.0245	44.48979592	163801.1457
PRS155-0'/1'	1.45	1703.652448	2470.29605	0.0245	59.18367347	100828.4102
PRS155A 0-6	0.372	1829.38401	680.5308515	0.0245	15.18367347	27776.76945
PRS155B 0-6	4.8	1473.446344	7072.542449	0.0245	195.9183673	288675.202
PRS155C 0-6	0.241	2073.940432	499.8196441	0.0245	9.836734694	20400.8018
PRS155D 0-6	0.453	1298.971468	588.4340751	0.0245	18.48979592	24017.71735
PRS155E 0-6	0.04	2187.234788	87.48939153	0.0245	1.632653061	3570.995573
PRS156-0'/1'	0.19	5057.443175	960.9142032	0.0245	7.755102041	39220.98789
PRS157-0'/1'	1.2	1782.088716	2138.50646	0.0245	48.97959184	87285.97795
PRS157A-0'/0.5'	0.471	1031.143085	485.6683932	0.0245	19.2244898	19823.19972
PRS157B-0'/0.5'	0.594	1586.974997	942.663148	0.0245	24.24489796	38476.04686
PRS157C-0'/0.5'	9.36	1816.867438	17005.87922	0.0245	382.0408163	694117.5193
PRS157D-0'/0.5'	0.661	1277.087401	844.154772	0.0245	26.97959184	34455.29682
PRS157E-0'/0.5'	1.02	1479.606154	1509.198277	0.0245	41.63265306	61599.92967
PRS158-0'/1'	0.809	7188.484661	5815.484091	0.0245	33.02040816	237366.6976
PRS159-0'/1'	1.64	895.3544711	1468.381333	0.0245	66.93877551	59933.93195
PRS159A 0-6	0.185	2451.768145	453.5771068	0.0245	7.551020408	18513.3513
PRS159B 0-6	0.993	1642.00963	1630.515563	0.0245	40.53061224	66551.65561
PRS159C 0-6	0.291	1466.197887	426.6635853	0.0245	11.87755102	17414.84021
PRS159D 0-6	0.382	1196.115725	456.9162069	0.0245	15.59183673	18649.6411
PRS159E 0-6	0.01595	1787.121969	28.5045954	0.0245	0.651020408	1163.452873
PRS160-0'/1'	0.69	3671.252085	2533.163939	0.0245	28.16326531	103394.4465
PRS161-0'/1'	0.52	835.7776417	434.6043737	0.0245	21.2244898	17738.95403
PRS161A 0-6	0.01775	3416.650865	60.64555285	0.0245	0.724489796	2475.328688
PRS161B 0-6	5.83	2690.169267	15683.68682	0.0245	237.9591837	640150.4826
PRS161C 0-6	0.266	2336.837069	621.5986604	0.0245	10.85714286	25371.37389
PRS161D 0-6	0.344	1330.919662	457.8363637	0.0245	14.04081633	18687.19852
PRS161E 0-6	2.56	1483.331114	3797.327651	0.0245	104.4897959	154992.9654
PRS162-0'/1'	0.279	3800.870096	1060.442757	0.0245	11.3877551	43283.37782

TABLE 1A - PCB SWAC Data

Pre-Remediation Sediment Surface, Sheboygan River

Sample_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS163-0'/1'	0.66	3183.467506	2101.088554	0.0245	26.93877551	85758.7165
PRS164-0'/1'	0.172	3474.298481	597.5793388	0.0245	7.020408163	24390.99342
PRS165-0'/1'	3.61	3168.004195	11436.49515	0.0245	147.3469388	466795.7202
PRS166-0'/1'	0.163	5477.121991	892.7708846	0.0245	6.653061224	36439.62794
PRS167-0'/1'	8.85	1616.015444	14301.73668	0.0245	361.2244898	583744.3543
PRS167A 0-6	0.262	2414.185486	632.5165974	0.0245	10.69387755	25817.00397
PRS167B 0-6	29.8	2394.350815	71351.6543	0.0245	1216.326531	2912312.42
PRS167C 0-6	0.111	2187.349293	242.7957715	0.0245	4.530612245	9910.031489
PRS167D 0-6	0.149	1509.625478	224.9341962	0.0245	6.081632653	9180.987599
PRS167E 0-6	0.104	1718.12189	178.6846765	0.0245	4.244897959	7293.252103
PRS168-0'/1'	0.249	6450.561614	1606.189842	0.0245	10.16326531	65558.76906
PRS169-0'/1'	1.95	4595.53706	8961.297266	0.0245	79.59183673	365767.2354
PRS170-0'/1'	0.354	3303.158328	1169.318048	0.0245	14.44897959	47727.26727
PRS171-0'/1'	0.17	5597.580953	951.588762	0.0245	6.93877551	38840.35763
PRS172-0'/1'	0.625	5403.435814	3377.147384	0.0245	25.51020408	137842.7504
PRS173-0'/1'	2.48	4937.618664	12245.29429	0.0245	101.2244898	499807.9301
PRS174-0'/1'	0.182	6414.756511	1167.485685	0.0245	7.428571429	47652.47694
PRS175-0'/1'	0.41	4993.022044	2047.139038	0.0245	16.73469388	83556.69543
PRS176-0'/1'	0.889	5295.109349	4707.352211	0.0245	36.28571429	192136.8249
PRS177-0'/1'	1.75	6020.311721	10535.54551	0.0245	71.42857143	430022.2658
PRS178-0'/1'	0.442	5168.001293	2284.256572	0.0245	18.04081633	93234.9621
PRS179-0'/1'	4.42	2950.037287	13039.16481	0.0245	180.4081633	532210.8085
PRS179A 0-6	0.147	2469.713124	363.0478293	0.0245	6	14818.27875
PRS179B 0-6	4.46	2147.772621	9579.065889	0.0245	182.0408163	390982.2812
PRS179C 0-6	0.0176	2587.00659	45.53131599	0.0245	0.718367347	1858.421061
PRS179D 0-6	5.19	2752.473868	14285.33937	0.0245	211.8367347	583075.0765
PRS179E 0-6	0.987	734.7430543	725.1913946	0.0245	40.28571429	29599.64876
PRS180-0'/1'	0.216	5426.216101	1172.062678	0.0245	8.816326531	47839.29297
PRS181-0'/1'	2.86	2949.477638	8435.506046	0.0245	116.7346939	344306.3692
PRS182-0'/1'	0.99	1501.914491	1486.895346	0.0245	40.40816327	60689.60598
PRS182E-0'/1'	0.705	2837.94395	2000.750485	0.0245	28.7755102	81663.2851
PRS183-0'/1'	7.11	6845.619304	48672.35325	0.0245	290.2040816	1986626.663
PRS184-0'/1'	0.66	5925.964126	3911.136323	0.0245	26.93877551	159638.2173
PRS184E-0'/1'	0.679	1557.699458	1057.677932	0.0245	27.71428571	43170.52784
PRS185-0'/1'	1.06	6384.287968	6767.345247	0.0245	43.26530612	276218.1733
PRS186-0'/1'	1.85	2812.809028	5203.696701	0.0245	75.51020408	212395.7837
PRS187-0'/1'	0.32	4103.693642	1313.181965	0.0245	13.06122449	53599.26389
PRS188-0'/1'	1.73	2563.175056	4434.292847	0.0245	70.6122449	180991.5448
PRS189-0'/1'	1.17	1700.746202	1989.873057	0.0245	47.75510204	81219.30843
PRS189A 0-6	0.458	2064.317481	945.4574064	0.0245	18.69387755	38590.09822
PRS189B 0-6	0.657	983.8513888	646.3903624	0.0245	26.81632653	26383.2801
PRS189C 0-6	0.723	1801.118949	1302.209	0.0245	29.51020408	53151.38775
PRS189D 0-6	0.499	2439.002738	1217.062366	0.0245	20.36734694	49676.01495
PRS189E 0-6	9.97	3385.957241	33757.99369	0.0245	406.9387755	1377877.294
PRS190-0'/1'	0.737	5765.506752	4249.178476	0.0245	30.08163265	173435.8562
PRS191-0'/1'	1.17	1611.203004	1885.107515	0.0245	47.75510204	76943.16387
PRS192-0'/1'	0.379	2654.156941	1005.925481	0.0245	15.46938776	41058.18289
PRS193-0'/1'	93.4	2688.823989	251136.1606	0.0245	3812.244898	10250455.53
PRS193A 0-6	0.01535	1051.069351	16.13391454	0.0245	0.626530612	658.5271242
PRS193B 0-6	0.333	1430.004596	476.1915306	0.0245	13.59183673	19436.389
PRS193C 0-6	0.357	2440.005843	871.082086	0.0245	14.57142857	35554.37086
PRS193D 0-6	0.884	1833.949127	1621.211028	0.0245	36.08163265	66171.87871
PRS193E 0-6	10.7	2212.891988	23677.94427	0.0245	436.7346939	966446.705
PRS194-0'/1'	0.484	2980.544556	1442.583565	0.0245	19.75510204	58880.96185
PRS194A 0-6	0.494	2685.72157	1326.746456	0.0245	20.16326531	54152.91656
PRS194B 0-6	0.527	2580.551714	1359.950753	0.0245	21.51020408	55508.19401

TABLE 1A - PCB SWAC Data

Pre-Remediation Sediment Surface, Sheboygan River

Sample_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS194C 0-8	0.687	2584.546416	1775.583388	0.0245	28.04081633	72472.79133
PRS194D 0-6	0.141	2381.454499	335.7850843	0.0245	5.755102041	13705.51364
PRS194E 0-6	0.607	2372.436434	1440.068915	0.0245	24.7755102	58778.32307
PRS195-0'/1'	0.0519	2530.75476	131.346172	0.0245	2.118367347	5361.068247
PRS196-0'/1'	1.34	1737.462029	2328.199119	0.0245	54.69387755	95028.53548
PRS197-0'/1'	1.02	2197.79817	2241.754134	0.0245	41.63265306	91500.16873
PRS198-0'/1'	0.42	2322.057184	975.2640174	0.0245	17.14285714	39806.69459
PRS198A 0-6	0.278	2047.361601	569.166525	0.0245	11.34693878	23231.28673
PRS198B 0-6	1.19	2335.670506	2779.447902	0.0245	48.57142857	113446.8531
PRS198C 0-6	0.422	1224.273862	516.6435698	0.0245	17.2244898	21087.49265
PRS198D 0-6	0.612	1223.761816	748.9422315	0.0245	24.97959184	30569.07068
PRS198E 0-6	0.405	2168.746842	878.3424711	0.0245	16.53061224	35850.71311
PRS199-0'/1'	7.33	3321.5881	24347.24077	0.0245	299.1836735	993764.9295
PRS199A 0-6	0.331	1590.389818	526.4190298	0.0245	13.51020408	21486.49101
PRS199B 0-6	0.39	1761.285039	686.9011652	0.0245	15.91836735	28036.78225
PRS199C 0-6	0.466	2506.547742	1168.051248	0.0245	19.02040816	47675.56113
PRS199D 0-6	0.336	2200.324489	739.3090284	0.0245	13.71428571	30175.87871
PRS199E 0-6	0.655	1180.649846	773.3256493	0.0245	26.73469388	31564.31222
PRS200-0'/1'	3.7	3131.16848	11585.32338	0.0245	151.0204082	472870.3419
PRS201-0'/1'	0.849	1804.776658	1532.255383	0.0245	34.65306122	62541.03604
PRS202-0'/1'	3.45	2238.46681	7722.710494	0.0245	140.8163265	315212.6732
PRS203-0'/1'	0.69	1586.296791	1094.544786	0.0245	28.16326531	44675.29738
PRS203A 0-6	0.015	849.0511424	12.73576714	0.0245	0.612244898	519.82723
PRS203B 0-6	111	1142.024976	126764.7723	0.0245	4530.612245	5174072.34
PRS203C 0-6	0.441	1611.806406	710.8066252	0.0245	18	29012.51532
PRS203D 0-6	2.01	1133.097006	2277.524982	0.0245	82.04081633	92960.20334
PRS203E 0-6	151	2200.496817	332275.0193	0.0245	6163.265306	13562245.69
PRS204-0'/1'	15.1	1188.624881	17948.23571	0.0245	616.3265306	732581.0493
PRS204A 0-6	1.54	1879.786458	2894.871146	0.0245	62.85714286	118158.006
PRS204B 0-6	0.276	2708.66452	747.5914077	0.0245	11.26530612	30513.93501
PRS204C 0-6	0.516	3028.108778	1562.50413	0.0245	21.06122449	63775.67876
PRS204D 0-6	1.67	769.4189363	1284.929624	0.0245	68.16326531	52446.10709
PRS204E 0-6	0.714	1555.167391	1110.389517	0.0245	29.14285714	45322.02112
PRS205-0'/1'	62.1	2462.660473	152931.2154	0.0245	2534.693878	6242090.423
PRS205A 0-6	0.253	1527.560042	386.4726907	0.0245	10.32653061	15774.39554
PRS205B 0-6	2.28	1305.53903	2976.628989	0.0245	93.06122449	121495.0608
PRS205C 0-6	0.01575	815.9676415	12.85149035	0.0245	0.642857143	524.5506267
PRS205D 0-6	0.559	1650.07094	922.3896556	0.0245	22.81632653	37648.55737
PRS205E 0-6	32.6	1075.444651	35059.49563	0.0245	1330.612245	1430999.822
PRS206-0'/1'	2.96	2027.006151	5999.938207	0.0245	120.8163265	244895.437
PRS207-0'/1'	0.407	2125.655799	865.14191	0.0245	16.6122449	35311.9147
PRS208-0'/1'	33.5	3355.727383	112416.8673	0.0245	1367.346939	4588443.564
PRS208A 0-6	0.86	1789.433176	1538.912531	0.0245	35.10204082	62812.75637
PRS208B 0-6	3.83	4313.188372	16519.51147	0.0245	156.3265306	674265.7741
PRS208C 0-6	0.383	2138.437736	819.0216527	0.0245	15.63265306	33429.45521
PRS208D 0-6	2.59	2059.195586	5333.316568	0.0245	105.7142857	217686.3905
PRS208E 0-6	0.0163	2373.101447	38.68155358	0.0245	0.665306122	1578.838922
PRS209-0'/1'	0.352	1699.436072	598.2014975	0.0245	14.36734694	24416.38765
PRS210-0'/1'	4.16	2333.438123	9707.10259	0.0245	169.7959184	396208.269
PRS211-0'/1'	2.13	2352.41012	5010.633556	0.0245	86.93877551	204515.6554
PRS211A 0-6	0.259	2391.169926	619.3130107	0.0245	10.57142857	25278.08207
PRS211B 0-6	0.374	1585.145358	592.844364	0.0245	15.26530612	24197.72914
PRS211C 0-6	1	2046.415347	2046.415347	0.0245	40.81632653	83527.157
PRS211D 0-6	0.57	2566.042655	1462.644313	0.0245	23.26530612	59699.76788
PRS211E 0-6	1.11	2828.411933	3139.537246	0.0245	45.30612245	128144.3774
PRS212-0'/1'	9.85	4389.132257	43232.95273	0.0245	402.0408163	1764610.315

TABLE 1A - PCB SWAC Data

Pre-Remediation Sediment Surface, Sheboygan River

Sample_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS213-0'/1'	0.267	2323.535655	620.3840199	0.0245	10.89795918	25321.79673
PRS214-0'/1'	0.0172	4171.129525	71.74342784	0.0245	0.702040816	2928.303177
PRS215-0'/1'	0.37	1436.120522	531.3645931	0.0245	15.10204082	21688.35074
PRS215A 0-6	0.316	2323.587832	734.2537549	0.0245	12.89795918	29969.54101
PRS215B 0-6	14.6	1597.566083	23324.46481	0.0245	595.9183673	952018.9719
PRS215C 0-6	0.348	1396.506585	485.9842915	0.0245	14.20408163	19836.09353
PRS215D 0-6	1.48	1693.229402	2505.979515	0.0245	60.40816327	102284.8782
PRS215E 0-6	3.79	3029.385572	11481.37132	0.0245	154.6938776	468627.4007
PRS216-0'/1'	3.8	2204.389727	8376.680964	0.0245	155.1020408	341905.3455
PRS216A 0-6	1.38	1117.65589	1542.365128	0.0245	56.32653061	62953.6787
PRS216B 0-6	1.17	1589.542208	1859.764383	0.0245	47.75510204	75908.75035
PRS216C 0-6	0.297	1264.181392	375.4618733	0.0245	12.12244898	15324.97442
PRS216D 0-6	0.691	1898.377488	1311.778844	0.0245	28.20408163	53541.99363
PRS216E 0-9	0.473	1665.66127	787.8577807	0.0245	19.30612245	32157.46044
PRS217-0'/1'	13.7	1947.929779	26686.63797	0.0245	559.1836735	1089250.529
PRS218-0'/1'	2.95	567.1640878	1673.134059	0.0245	120.4081633	68291.18608
PRS218A 0-6	1.48	2176.426396	3221.111065	0.0245	60.40816327	131473.921
PRS218B 0-6	0.325	1461.860677	475.1047199	0.0245	13.26530612	19392.02938
PRS218C 0-6	1.64	1122.942834	1841.626247	0.0245	66.93877551	75168.41827
PRS218D 0-6	1.89	1144.844203	2163.755544	0.0245	77.14285714	88316.55281
PRS218E 0-6	0.208	1337.743631	278.2506752	0.0245	8.489795918	11357.17041
PRS219-0'/1'	43.1	1479.618208	63771.54476	0.0245	1759.183673	2602920.194
PRS219A 0-6	0.337	2447.989606	824.9724971	0.0245	13.75510204	33672.34682
PRS219B 0-6	3.88	2888.619732	11207.84456	0.0245	158.3673469	457463.0433
PRS219C 0-6	2.72	2118.024477	5761.026577	0.0245	111.0204082	235143.9419
PRS219D 0-6	0.768	2566.942928	1971.412169	0.0245	31.34693878	80465.8028
PRS219E 0-6	1.32	1600.430857	2112.568731	0.0245	53.87755102	86227.29513
PRS220-0'/1'	0.39	1516.076668	591.2699005	0.0245	15.91836735	24133.46532
PRS221-0'/1'	0.551	2470.354697	1361.165438	0.0245	22.48979592	55557.77299
PRS222-0'/1'	41.4	2265.018822	93771.77922	0.0245	1689.795918	3827419.56
PRS222A 0-6	4.8	1121.122337	5381.387216	0.0245	195.9183673	219648.4578
PRS222B 0-6	0.403	1307.215133	526.8076987	0.0245	16.44897959	21502.35505
PRS222C 0-6	0.264	1421.593658	375.3007257	0.0245	10.7755102	15318.39697
PRS222D 0-6	0.186	1516.597804	282.0871916	0.0245	7.591836735	11513.76292
PRS222E 0-6	0.527	1549.014378	816.3305773	0.0245	21.51020408	33319.6154
PRS223-0'/1'	6.62	3100.229479	20523.51915	0.0245	270.2040816	837694.6592
PRS224-0'/1'	0.45	978.3972084	440.2787438	0.0245	18.36734694	17970.56097
PRS224A 0-6	1.61	1057.952902	1703.304172	0.0245	65.71428571	69522.61927
PRS224B 0-6	0.221	1445.932405	319.5510616	0.0245	9.020408163	13042.90047
PRS224C 0-6	0.847	1000.521564	847.4417647	0.0245	34.57142857	34589.45978
PRS224D 0-6	0.415	1140.489807	473.30327	0.0245	16.93877551	19318.50081
PRS224E 0-6	0.301	1239.40325	373.0603784	0.0245	12.28571429	15226.95422
PRS225-0'/1'	0.33	2748.616919	907.0435832	0.0245	13.46938776	37022.18707
PRS225A 0-6	0.397	2223.333372	882.6633486	0.0245	16.20408163	36027.07545
PRS225B 0-6	0.135	2076.970503	280.3910179	0.0245	5.510204082	11444.53134
PRS225C 0-6	1.18	1236.918369	1459.563675	0.0245	48.16326531	59574.02755
PRS225D 0-6	0.244	2801.289498	683.5146375	0.0245	9.959183673	27898.55663
PRS225E 0-6	0.766	2080.805067	1593.896681	0.0245	31.26530612	65057.00739
PRS226-0'/1'	0.26	1377.499219	358.149797	0.0245	10.6122449	14618.35906
PRS226A 0-6	4.66	1781.027954	8299.590267	0.0245	190.2040816	338758.7864
PRS226B 0-6	0.221	2474.644011	546.8963264	0.0245	9.020408163	22322.29904
PRS226C 0-6	12.3	1336.179044	16435.00224	0.0245	502.0408163	670816.4179
PRS226D 0-6	0.247	991.5286648	244.9075802	0.0245	10.08163265	9996.227763
PRS226E 0-6	0.209	939.305411	196.3148309	0.0245	8.530612245	8012.850241
PRS227-0'/1'	0.545	3205.814739	1747.169033	0.0245	22.24489796	71313.02174
PRS228-0'/1'	3.55	1531.561127	5437.042002	0.0245	144.8979592	221920.0817

TABLE 1A - PCB SWAC Data

Pre-Remediation Sediment Surface, Sheboygan River

Sample_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS229-0'/1'	4.74	4611.917489	21860.4889	0.0245	193.4693878	892264.8529
PRS230-0'/1'	112	710.7073902	79599.2277	0.0245	4571.428571	3248948.069
PRS230A 0-6	0.902	1470.49552	1326.386959	0.0245	36.81632653	54138.24322
PRS230B 0-6	0.563	1893.421721	1065.996429	0.0245	22.97959184	43510.05833
PRS230C 0-6	3.79	1500.863624	5688.273133	0.0245	154.6938776	232174.4136
PRS230D 0-6	7.46	1825.143197	13615.56825	0.0245	304.4897959	555737.4794
PRS230E 0-6	0.306	3013.672713	922.1838501	0.0245	12.48979592	37640.15715
PRS231-0'/1'	1.95	4953.768779	9659.84912	0.0245	79.59183673	394279.5559
PRS232-0'/1'	180	849.3958071	152891.2453	0.0245	7346.938776	6240458.991
PRS232A 0-6	1.65	2009.833473	3316.22523	0.0245	67.34693878	135356.1318
PRS232B 0-6	16.2	2366.463683	38336.71167	0.0245	661.2244898	1564763.742
PRS232C 0-6	1.07	1251.386696	1338.983765	0.0245	43.67346939	54652.39856
PRS232D 0-6	24.7	1371.623289	33879.09524	0.0245	1008.163265	1382820.214
PRS232E 0-6	30.4	1092.557314	33213.74234	0.0245	1240.816327	1355662.953
PRS233-0'/1'	17.3	4996.744587	86443.68135	0.0245	706.122449	3528313.525
PRS234-0'/1'	19.7	1745.816334	34392.58178	0.0245	804.0816327	1403778.848
PRS235-0'/1'	26.7	3590.270738	95860.22869	0.0245	1089.795918	3912662.396
PRS235B 0-6	1.31	1591.106142	2084.349047	0.0245	53.46938776	85075.47129
PRS235C 0-6	0.01315	1566.285093	20.59664897	0.0245	0.536734694	840.6795498
PRS235D 0-8	1.61	2426.466882	3906.611679	0.0245	65.71428571	159453.5379
PRS235E 0-6	1.89	2062.647357	3898.403505	0.0245	77.14285714	159118.5104
PRS236-0'/1'	38.6	1510.015071	58286.58173	0.0245	1575.510204	2379044.152
PRS236A 0-6	0.0811	3387.167488	274.6992833	0.0245	3.310204082	11212.21564
PRS236B 0-6	0.365	2284.826547	833.9616898	0.0245	14.89795918	34039.25265
PRS236C 0-6	1.1	1147.828145	1262.610959	0.0245	44.89795918	51535.1412
PRS236D 0-6	13.4	2124.582979	28469.41191	0.0245	546.9387755	1162016.813
PRS236E 0-6	0.194	1777.995046	344.9310389	0.0245	7.918367347	14078.81792
PRS237-0'/1'	0.35	4932.464723	1726.362653	0.0245	14.28571429	70463.78175
PRS238-0'/1'	4.1	3416.154342	14006.2328	0.0245	167.3469388	571682.9715
PRS239-0'/1'	0.621	4516.483257	2804.736102	0.0245	25.34693878	114479.0246
PRS240-0'/1'	0.01485	5075.601803	75.37268677	0.0245	0.606122449	3076.436195
PRS241-0'/1'	0.112	5209.461374	583.4596738	0.0245	4.571428571	23814.68057
PRS242-0'/1'	0.782	5185.154426	4054.790761	0.0245	31.91836735	165501.6637
PRS243-0'/1'	0.194	6038.438297	1171.45703	0.0245	7.918367347	47814.57264
PRS244-0'/1'	1.51	6074.956199	9173.183861	0.0245	61.63265306	374415.6678
PRS245-0'/1'	0.257	6179.940757	1588.244774	0.0245	10.48979592	64826.31732
PRS246-0'/1'	0.163	6214.617479	1012.982649	0.0245	6.653061224	41346.23057
PRS248-0'/1'	0.01625	3039.197378	49.38695739	0.0245	0.663265306	2015.794179
PRS249-0'/1'	0.572	10447.15614	5975.773313	0.0245	23.34693878	243909.1148
PRS250-0'/1'	50.5	1381.336475	69757.49198	0.0245	2061.22449	2847244.571
PRS250A 0-6	7.12	1848.521494	13161.47304	0.0245	290.6122449	537202.9812
PRS250B 0-6	72.8	1516.760971	110420.1987	0.0245	2971.428571	4506946.886
PRS250C 0-6	0.223	946.2707042	211.018367	0.0245	9.102040816	8612.994573
PRS250D 0-6	1.37	1951.963375	2674.189824	0.0245	55.91836735	109150.6051
PRS250E 0-6	0.172	3753.932863	645.6764524	0.0245	7.020408163	26354.14092
PRS251-0'/1'	0.221	9326.14059	2061.07707	0.0245	9.020408163	84125.59471
PRS252-0'/1'	37	1185.253631	43854.38433	0.0245	1510.204082	1789974.871
PRS252A 0-6	1.63	1890.775703	3081.964395	0.0245	66.53061224	125794.4651
PRS252B 0-6	18.6	1225.743783	22798.83436	0.0245	759.1836735	930564.6678
PRS252C 0-6	0.297	2088.868399	620.3939145	0.0245	12.12244898	25322.20059
PRS252D 0-6	3.42	1410.503426	4823.921717	0.0245	139.5918367	196894.764
PRS252E 0-6	0.28	1427.456446	399.6878049	0.0245	11.42857143	16313.78796
PRS253-0'/1'	0.571	9076.34011	5182.590203	0.0245	23.30612245	211534.294
PRS254-0'/1'	24.7	4602.337184	113677.7284	0.0245	1008.163265	4639907.283
PRS255-0'/1'	0.17	10418.34494	1771.118641	0.0245	6.93877551	72290.55676
PRS256-0'/1'	0.0764	5350.936359	408.8115378	0.0245	3.118367347	16686.18522

TABLE 1A - PCB SWAC Data

Pre-Remediation Sediment Surface, Sheboygan River

Sample_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS258-0'/1'	0.258	6510.131808	1679.614006	0.0245	10.53061224	68555.67373
PRS260-0'/1'	0.276	6738.565662	1859.844123	0.0245	11.26530612	75912.00501
PRS262-0'/1'	0.486	5558.30854	2701.33795	0.0245	19.83673469	110258.6919
PRS264-0'/1'	0.333	7353.456668	2448.701071	0.0245	13.59183673	99946.98247
PRS266-0'/1'	1.43	22648.97412	32388.03299	0.0245	58.36734694	1321960.53
PRS269-0'/1'	0.0161	5036.162778	81.08222073	0.0245	0.657142857	3309.478397
PRS270-0'/1'	0.244	15716.68507	3834.871157	0.0245	9.959183673	156525.3533
PRS271-0'/1'	0.243	9544.848996	2319.398306	0.0245	9.918367347	94669.31862
PRS272-0'/1'	0.996	12915.21191	12863.55106	0.0245	40.65306122	525042.9006
PRS274-0'/1'	0.266	15062.22611	4006.552144	0.0245	10.85714286	163532.7406
PRS275-0'/1'	34.6	2167.372361	74991.08368	0.0245	1412.244898	3060860.558
PRS275C 0-6	0.627	12171.40266	7631.469465	0.0245	25.59183673	311488.5496
PRS276-0'/1'	0.211	4564.633694	963.1377094	0.0245	8.612244898	39311.74324
PRS277-0'/1'	7.63	7947.903907	60642.50681	0.0245	311.4285714	2475204.36
PRS278-0'/1'	25.1	8380.731667	210356.3649	0.0245	1024.489796	8585974.076
PRS279-0'/1'	0.407	5499.5791	2238.328694	0.0245	16.6122449	91360.35484
PRS280-0'/1'	5.34	9826.914601	52475.72397	0.0245	217.9591837	2141866.284
PRS281-0'/1'	0.32	3068.887735	982.0440751	0.0245	13.06122449	40083.43164
PRS282-0'/1'	2.61	6732.440024	17571.66846	0.0245	106.5306122	717210.9576
PRS283-0'/1'	1.59	1115.355664	1773.415505	0.0245	64.89795918	72384.30634
PRS283A 0-8	3.38	3301.123199	11157.79641	0.0245	137.9591837	455420.2617
PRS283B 0-7	1.45	2592.82393	3759.594699	0.0245	59.18367347	153452.8448
PRS283C 0-6	0.428	1604.016079	686.5188816	0.0245	17.46938776	28021.17884
PRS283D 0-6	1.36	1345.917673	1830.448035	0.0245	55.51020408	74712.16471
PRS283E 0-6	0.291	769.9574861	224.0576285	0.0245	11.87755102	9145.209325
PRS284-0'/1'	0.128	10000.92905	1280.118919	0.0245	5.224489796	52249.75179
PRS285-0'/1'	24.7	1725.4633	42618.94352	0.0245	1008.163265	1739548.715
PRS285A 0-4	18	1367.530281	24615.54506	0.0245	734.6938776	1004716.125
PRS285B 0-6	0.26	1342.651527	349.089397	0.0245	10.6122449	14248.54682
PRS285C 0-6	0.316	1464.794755	462.8751426	0.0245	12.89795918	18892.86296
PRS285D 0-6	0.0465	3570.975996	166.0503838	0.0245	1.897959184	6777.566686
PRS285E 0-6	0.606	2721.744276	1649.377031	0.0245	24.73469388	67321.51149
PRS287-0'/1'	0.253	4634.698085	1172.578616	0.0245	10.32653061	47860.35165
PRS289-0'/1'	0.01415	7306.511825	103.3871423	0.0245	0.57755102	4219.88336
PRS290-0'/1'	0.318	10107.15336	3214.074767	0.0245	12.97959184	131186.7252
PRS291-0'/1'	0.01585	4873.866907	77.25079048	0.0245	0.646938776	3153.093489
PRS292-0'/1'	0.0163	7186.387139	117.1381104	0.0245	0.665306122	4781.147362
PRS294-0'/1'	0.015	7099.748493	106.4962274	0.0245	0.612244898	4346.784792
PRS295-0'/1'	0.236	5703.581038	1346.045125	0.0245	9.632653061	54940.61734
PRS296-0'/1'	0.167	9344.095069	1560.463877	0.0245	6.816326531	63692.40312
PRS297-0'/1'	29.3	1488.713226	43619.29752	0.0245	1195.918367	1780379.49
PRS297A 0-6	116	3315.74894	384626.877	0.0245	4734.693878	15699056.21
PRS297B 0-6	1.27	2604.735124	3308.013608	0.0245	51.83673469	135020.9636
PRS297C 0-9	7.29	1439.273225	10492.30181	0.0245	297.5510204	428257.2167
PRS297D 0-6	0.726	1918.513294	1392.840652	0.0245	29.63265306	56850.63884
PRS297E 0-6	0.291	4809.030146	1399.427773	0.0245	11.87755102	57119.50092
PRS298-0'/1'	0.01815	12491.56901	226.7219775	0.0245	0.740816327	9253.958265
PRS299-0'/1'	0.0765	3382.768718	258.7818069	0.0245	3.12244898	10562.52273
PRS301-0'/1'	20.9	1508.297202	31523.41152	0.0245	853.0612245	1286669.858
PRS301A 0-6	6.91	1886.222998	13033.80092	0.0245	282.0408163	531991.8743
PRS301C 0-6	58	1316.879544	76379.01357	0.0245	2367.346939	3117510.758
PRS301D 0-6	0.241	1914.144883	461.3089167	0.0245	9.836734694	18828.93538
PRS302-0'/1'	0.126	13003.5437	1638.446506	0.0245	5.142857143	66875.3676
PRS303-0'/1'	81.7	2211.151339	180651.0644	0.0245	3334.693878	7373512.832
PRS303A 0-6	35.5	1077.508916	38251.56652	0.0245	1448.979592	1561288.429
PRS303B 0-9	0.0544	1269.536662	69.06279442	0.0245	2.220408163	2818.889568

TABLE 1A - PCB SWAC Data

Pre-Remediation Sediment Surface, Sheboygan River

Sample_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS303C 0-6	0.151	2902.862346	438.3322143	0.0245	6.163265306	17891.11079
PRS303D 0-8	0.022	1693.125741	37.2487663	0.0245	0.897959184	1520.357808
PRS303E 0-6	0.155	2907.269322	450.626745	0.0245	6.326530612	18392.92837
PRS305-0'/1'	0.0552	3520.357816	194.3237514	0.0245	2.253061224	7931.581691
PRS306-0'/1'	0.02085	12573.82405	262.1642315	0.0245	0.851020408	10700.58088
PRS307-0'/1'	0.487	5663.366466	2758.059469	0.0245	19.87755102	112573.8559
PRS308-0'/1'	0.209	12076.42187	2523.972171	0.0245	8.530612245	103019.2723
PRS309-0'/1'	107	1478.404308	158189.261	0.0245	4367.346939	6456704.531
PRS309A 0-6	3.74	2567.213035	9601.37675	0.0245	152.6530612	391892.9286
PRS309B 0-6	0.476	2173.818143	1034.737436	0.0245	19.42857143	42234.18106
PRS309C 0-8	0.259	2604.686896	674.613906	0.0245	10.57142857	27535.26147
PRS309D 0-6	4.9	1682.048825	8242.039241	0.0245	200	336409.7649
PRS311-0'/1'	90.8	1539.057626	139746.4325	0.0245	3706.122449	5703936.019
PRS311A 0-6	48	1483.348011	71200.70454	0.0245	1959.183673	2906151.206
PRS311B 0-6	43.2	1349.414207	58294.69373	0.0245	1763.265306	2379375.254
PRS311D 0-6	0.303	1901.215463	576.0682853	0.0245	12.36734694	23512.99124
PRS311E 0-6	0.157	6169.403155	968.5962953	0.0245	6.408163265	39534.54267
PRS313-0'/1'	2.06	2665.235156	5490.384422	0.0245	84.08163265	224097.3234
PRS315-0'/1'	47.4	1306.737674	61939.36575	0.0245	1934.693878	2528137.377
PRS315A 0-6	0.542	2073.245788	1123.699217	0.0245	22.12244898	45865.27418
PRS315B 0-9	140	1194.494475	167229.2265	0.0245	5714.285714	6825682.715
PRS315C 0-6	0.184	9860.918798	1814.409059	0.0245	7.510204082	74057.51261
PRS315D 0-6	2.09	2869.941458	5998.177648	0.0245	85.30612245	244823.5775
PRS315E 0-6	0.244	12704.65224	3099.935148	0.0245	9.959183673	126527.9652
PRS317-0'/1'	0.227	6832.660228	1551.013872	0.0245	9.265306122	63306.68864
SD034-0.0/0.5	0.075	1953.853249	146.5389936	0.0245	3.06122449	5981.183414
SD035-0.0/0.5	0.084	7389.817135	620.7446394	0.0245	3.428571429	25336.51589
SD036-0.0/0.5	0.093	8211.32878	763.6535766	0.0245	3.795918367	31169.53374
SD041-0.0/1.0	0.65	1889.138836	1227.940243	0.0245	26.53061224	50120.00993
SD042-0.0/1.0	0.591	6240.105913	3687.902595	0.0245	24.12244898	150526.6365
SD043-0.0/1.0	1.738	1644.815264	2858.688928	0.0245	70.93877551	116681.1808
SD044-0.0/1.0	2.003	4745.225999	9504.687677	0.0245	81.75510204	387946.4358
SD045-0.0/1.0	0.461	3610.765885	1664.563073	0.0245	18.81632653	67941.34991
SD046-0.0/1.0	0.445	2922.793711	1300.643201	0.0245	18.16326531	53087.47761
SD047-0.0/1.0	0.723	3526.079225	2549.35528	0.0245	29.51020408	104055.3175
SD048-0.0/1.0	0.33	6436.642707	2124.092093	0.0245	13.46938776	86697.63646
SD049-0.0/1.0	1.428	1666.783154	2380.166344	0.0245	58.28571429	97149.64668
SD050-0.0/1.0	1.026	4276.924588	4388.124628	0.0245	41.87755102	179107.1277
SD051-0.0/1.0	0.771	4030.996389	3107.898216	0.0245	31.46938776	126852.9884
SD052-0.0/1.0	0.418	4220.931773	1764.349481	0.0245	17.06122449	72014.26453
SD053-0.0/1.0	1.04	3001.643633	3121.709378	0.0245	42.44897959	127416.7093
SD054-0.0/1.0	1.484	3616.309418	5366.603176	0.0245	60.57142857	219045.0276
SD055-0.0/1.0	0.635	4536.600695	2880.741441	0.0245	25.91836735	117581.2833
SD056-0.0/1.0	0.756	3487.236913	2636.351106	0.0245	30.85714286	107606.1676
SD057-0.0/1.0	0.261	1975.02257	515.4808908	0.0245	10.65306122	21040.03636
SD058-0.0/1.0	1.644	5215.194468	8573.779706	0.0245	67.10204082	349950.1921
SD059-0.0/1.0	0.734	2423.693386	1778.990945	0.0245	29.95918367	72611.87532
SD060-0.0/1.0	0.55	3457.450828	1901.597955	0.0245	22.44897959	77616.24308
SD061-0.0/1.0	0.938	3302.183662	3097.448275	0.0245	38.28571429	126426.4602
SD062-0.0/1.0	3.447	1270.036526	4377.815904	0.0245	140.6938776	178686.3634
SD063-0.0/1.0	0.741	2439.687614	1807.808522	0.0245	30.24489796	73788.10294
SD064-0.0/1.0	0.298	1774.179376	528.705454	0.0245	12.16326531	21579.81445
SD065-0.0/1.0	0.383	3575.443898	1369.395013	0.0245	15.63265306	55893.674
SD066-0.0/1.0	0.451	3658.017279	1649.765793	0.0245	18.40816327	67337.37929
SD067-0.0/1.0	0.482	2119.572761	1021.634071	0.0245	19.67346939	41699.34983
SD068-0.0/1.0	0.723	2585.986759	1869.668427	0.0245	29.51020408	76312.997

TABLE 1A - PCB SWAC Data

Pre-Remediation Sediment Surface, Sheboygan River

Sample_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
SD069-0.0/1.0	3.364	3171.212395	10667.9585	0.0245	137.3061224	435426.8774
SD070-0.0/1.0	1.832	2787.636561	5106.95018	0.0245	74.7755102	208446.9461
SD071-0.0/1.0	0.198	4599.382193	910.6776742	0.0245	8.081632653	37170.51731
SD072-0.0/1.0	0.9315	2920.725734	2720.656021	0.0245	38.02040816	111047.1846
SD073-0.0/1.0	0.239	5414.54246	1294.075648	0.0245	9.755102041	52819.4142
SD074-0.0/1.0	1.5745	1973.326986	3107.00334	0.0245	64.26530612	126816.4628
SD075-0.0/1.0	5.78	3582.204444	20705.14168	0.0245	235.9183673	845107.8239
SD076-0.0/1.0	2.0695	1660.353282	3436.101117	0.0245	84.46938776	140249.0252
SD077-0.0/1.0	0.713	1671.662141	1191.895107	0.0245	29.10204082	48648.77987
SD078-0.0/1.0	11.115	4137.397668	45987.17508	0.0245	453.6734694	1877027.554
SD079-0.0/1.0	0.714	2827.40935	2018.770276	0.0245	29.14285714	82398.78678
SD080-0.0/1.0	0.6595	1624.159884	1071.133443	0.0245	26.91836735	43719.73239
SD081-0.0/1.0	1.9395	1702.653192	3302.295865	0.0245	79.16326531	134787.5863
SD082-0.0/1.0	1.901	1358.49311	2582.495401	0.0245	77.59183673	105407.9756
SD083-0.0/1.0	1.132	1979.374382	2240.651801	0.0245	46.20408163	91455.17554
SD084-0.0/1.0	0.982	1190.079669	1168.658235	0.0245	40.08163265	47700.33613
SD085-0.0/1.0	4.255	4315.680974	18363.22254	0.0245	173.6734694	749519.2875
SD086-0.0/1.0	2.638	3871.538326	10213.1181	0.0245	107.6734694	416861.9634
SD087-0.0/1.0	1.57	2103.615343	3302.676089	0.0245	64.08163265	134803.1057
SD088-0.0/1.0	0.364	1557.002024	566.7487369	0.0245	14.85714286	23132.60151
SD089-0.0/1.0	3.241	1590.806681	5155.804455	0.0245	132.2857143	210440.9981
SD090-0.0/1.0	0.67	1658.85813	1111.434947	0.0245	27.34693878	45364.69171
SD091-0.0/1.0	0.531	1324.048171	703.0695786	0.0245	21.67346939	28696.7175
SD092-0.0/1.0	2.899	3811.735111	11050.22009	0.0245	118.3265306	451029.3913
SD093-0.0/1.0	3.862	1585.870256	6124.630929	0.0245	157.6326531	249984.9359
SD094-0.0/1.0	0.849	7124.232377	6048.473288	0.0245	34.65306122	246876.4607
SD095-0.0/1.0	5.975	5073.537136	30314.38439	0.0245	243.877551	1237321.812
SD096-0.0/1.0	0.42	2639.472894	1108.578615	0.0245	17.14285714	45248.10675
SD097-0.0/1.0	0.592	2447.539975	1448.943665	0.0245	24.16326531	59140.55776
SD098-0.0/1.0	0.209	6648.702672	1389.578859	0.0245	8.530612245	56717.50443
SD099-0.0/1.0	0.9635	3732.737193	3596.492285	0.0245	39.32653061	146795.6035
SD100-0.0/1.0	1.173	14672.42647	17210.75625	0.0245	47.87755102	702479.8468
SD101-0.0/0.6	0.3405	5427.30453	1847.997192	0.0245	13.89795918	75428.45683
SD102-0.0/1.0	0.4805	5537.807083	2660.916303	0.0245	19.6122449	108608.8287
SD103-0.0/1.0	3.6295	6921.809211	25122.70653	0.0245	148.1428571	1025416.593
SD104-0.0/1.0	0.148	3478.667333	514.8427653	0.0245	6.040816327	21013.99042
SD105-0.0/1.0	1.0185	2383.111826	2427.199395	0.0245	41.57142857	99069.36305
SD106-0.0/1.0	2.767	4739.966307	13115.48677	0.0245	112.9387755	535325.9906
SD107-0.0/1.0	17.335	2640.82712	45778.73813	0.0245	707.5510204	1868519.924
SD108-0.0/1.0	4.59	425.5426849	1953.240924	0.0245	187.3469388	79724.11934
SD109-0.0/1.0	0.094	3468.292142	326.0194614	0.0245	3.836734694	13306.91679
SD110-0.0/1.0	0.6565	1597.521514	1048.772874	0.0245	26.79591837	42807.05608
SD111-0.0/1.0	0.611	1522.903442	930.4940032	0.0245	24.93877551	37979.34707
SD112-0.0/1.0	2.0295	1968.346275	3994.758766	0.0245	82.83673469	163051.3782
T01A 0 - 0.5'	0.189	4134.170946	781.3583088	0.0245	7.714285714	31892.17587
T02C 0 - 0.5'	0.224	872.4812062	195.4357902	0.0245	9.142857143	7976.971028
T03B 0 - 0.5'	0.306	1868.01534	571.6126942	0.0245	12.48979592	23331.13037
T04A 0 - 0.6'	3.88	1352.67963	5248.396964	0.0245	158.3673469	214220.2842
T05C2 0 - 0.7'	0.611	1930.959902	1179.8165	0.0245	24.93877551	48155.77551
T07B 0 - 0.5'	0.902	1361.302627	1227.89497	0.0245	36.81632653	50118.16203
T08E 0 - 0.6'	5.25	1599.790423	8398.89972	0.0245	214.2857143	342812.2335
T10A 0 - 0.5'	7.68	1122.670206	8622.107185	0.0245	313.4693878	351922.7423
T11D 0 - 0.8'	4.65	2401.623409	11167.54885	0.0245	189.7959184	455818.3205
T12A 0 - 0.5'	20.2	961.8182651	19428.72895	0.0245	824.4897959	793009.3451
T13A 0 - 0.5'	42.4	2903.529901	123109.6678	0.0245	1730.612245	5024884.401
T14B 0 - 0.6'	0.659	2016.521817	1328.887877	0.0245	26.89795918	54240.32152

TABLE 1A - PCB SWAC Data

Pre-Remediation Sediment Surface, Sheboygan River

Sample_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
T15C 0 - 0.5'	0.556	2230.425585	1240.116625	0.0245	22.69387755	50617.00511
T16B 0 - 0.5'	0.81	2717.018793	2200.785222	0.0245	33.06122449	89827.96824
T17C 0 - 0.5'	1.07	1529.158483	1636.199577	0.0245	43.67346939	66783.6562
T18C 0 - 0.7'	57.7	1188.928585	68601.17938	0.0245	2355.102041	2800048.138
	SUM =	1630837.499	6800536.392			277572914
		SWAC =	**4.17**		**Normalized PCB SWAC =**	**170.20**

TABLE 1B - TOC SWAC Data

Pre-Remediation Sediment Surface, Sheboygan River

Sample ID	TOC_Result	Area	Area*TOC_Result
BKG03	44300	51335.7745	2274174810
BKG06	31300	12428.4577	389010725.9
BKG07	62300	7929.338299	493997776
BKG08	63800	11167.56705	712490778
SD034	7370	17814.43981	131292421.4
SD041	32900	22027.20842	724695157.1
SD042	9320	20999.86649	195718755.7
SD043	8740	13337.39574	116568838.8
SD044	11400	10037.47261	114427187.7
SD045	2250	25473.19612	57314691.26
SD046	17600	15877.31955	279440824.1
SD047	6540	17615.25172	115203746.2
SD048	5760	19258.38711	110928309.7
SD049	14800	17125.21678	253453208.3
SD050	11100	7238.746576	80350087
SD051	4200	16506.25441	69326268.5
SD052	4030	18432.82443	74284282.47
SD053	8510	18415.50168	156715919.3
SD054	7390	16314.96143	120567565
SD055	5590	24034.12409	134350753.7
SD056	6470	11012.35641	71249945.95
SD057	4090	19950.23464	81596459.69
SD058	14300	27979.71785	400109965.2
SD059	14800	25832.85216	382326211.9
SD060	10000	10819.86138	108198613.8
SD061	25700	5312.08732	136520644.1
SD062	29800	21149.13062	630244092.4
SD063	22600	5682.080053	128415009.2
SD064	6170	6008.65557	37073404.87
SD065	13300	4157.363423	55292933.52
SD066	10500	7090.962142	74455102.49
SD067	23100	5447.043019	125826693.7
SD068	10800	3375.358163	36453868.16
SD069	25900	4345.617617	112551496.3
SD070	31700	6865.482337	217635790.1
SD071	7680	8381.617901	64370825.48
SD072	17900	4528.683336	81063431.71
SD073	10300	4487.130925	46217448.53
SD074	4660	3154.060921	14697923.89
SD075	5220	9450.760074	49332967.58
SD076	9390	9419.075277	88445116.85
SD077	5920	7008.756566	41491838.87
SD078	12400	5333.704718	66137938.5
SD079	28700	6425.961959	184425108.2
SD080	8990	4966.59283	44649669.54
SD081	23100	5440.600901	125677880.8
SD082	18300	7157.035658	130973752.5
SD083	7900	10264.06682	81086127.89
SD084	7870	3103.681974	24425977.14
SD085	17100	8851.143883	151354560.4
SD086	21900	3635.306384	79613209.81
SD087	21500	2418.958008	52007597.16
SD088	7720	6658.544937	51403966.91
SD089	17500	9367.581495	163932676.2
SD090	5720	7005.187674	40069673.5
SD091	18700	9228.207199	172567474.6

TABLE 1B - TOC SWAC Data

Pre-Remediation Sediment Surface, Sheboygan River

Sample ID	TOC_Result	Area	Area*TOC_Result
SD092	11800	7698.152477	90838199.23
SD093	15100	4187.716831	63234524.15
SD094	18700	5593.79694	104604002.8
SD095	23100	5363.962218	123907527.2
SD096	18000	7993.559574	143884072.3
SD097	7940	13315.21462	105722804.1
SD098	32800	22053.17739	723344218.4
SD099	26900	44730.45547	1203249252
SD100	13400	41152.21884	551439732.4
SD101	7580	58591.38862	444122725.7
SD102	20800	45793.35082	952501697.2
SD103	28700	54899.34202	1575611116
SD104	20700	44217.9317	915311186.3
SD105	26000	43594.64253	1133460706
SD106	7390	51155.30613	378037712.3
SD107	22700	34530.34481	783838827.3
SD108	28600	35727.00827	1021792437
SD109	6390	14426.42385	92184848.4
SD110	3280	9876.751885	32395746.18
SD111	24200	7339.363178	177612588.9
SD112	18000	6938.632905	124895392.3
T01A	60900	12143.22383	739522331.5
T01B	44300	5728.011033	253750888.8
T01C	43400	8866.93523	384824989
T02A	63600	10369.05679	659472012.1
T02B	58500	6418.696962	375493772.2
T02C	46700	8448.090057	394525805.7
T03A	55200	6300.979112	347814047
T03B	65000	6635.311026	431295216.7
T03C	40500	7074.016922	286497685.3
T04A	62600	4115.070168	257603392.5
T04B	27000	5022.662737	135611893.9
T04C	43100	3666.376019	158020806.4
T04D	53700	11122.84557	597296807.3
T05A	60600	6699.50509	405990008.4
T05B1	54000	5573.686579	300979075.3
T05C2	29300	5171.836497	151534809.4
T05D	15700	10057.74274	157906561
T05E	40300	4578.797208	184525527.5
T06A	54300	6486.972947	352242631
T06B	18900	4938.593577	93339418.61
T06C	25100	10624.51666	266675368.2
T07A	50500	4876.581147	246267347.9
T07B	17200	3226.09049	55488756.43
T07C	19200	2684.859684	51549305.93
T08A	65500	5090.749332	333444081.3
T08B	24200	3127.624271	75688507.36
T08C	49800	4240.271866	211165538.9
T08D	53200	7921.97052	421448831.7
T08D1	51700	5171.600153	267371727.9
T08E	53400	3834.397401	204756821.2
T09A	50200	8243.121105	413804679.5
T09B	35600	6413.288943	228313086.4
T09C	51000	5728.07952	292132055.5
T09D	40300	2893.482246	116607334.5
T10A	80000	9314.822313	745185785

TABLE 1B - TOC SWAC Data

Pre-Remediation Sediment Surface, Sheboygan River

Sample ID	TOC_Result	Area	Area*TOC_Result
T10B	49200	7152.134602	351885022.4
T10C	26300	6887.691124	181146276.6
T10D	58900	3884.621861	228804227.6
T11A	30500	3845.403641	117284811.1
T11B	55900	5991.410644	334919855
T11C	37400	3995.2195	149421209.3
T11D	45700	4362.689737	199374921
T11E	58600	8995.661655	527145773
T12A	62300	4250.770035	264822973.2
T12B	59300	7361.949003	436563575.9
T12C	52600	3668.373081	192956424
T12D	15200	5674.152431	86247116.96
T13A	56400	8010.159465	451772993.8
T13B	38000	6692.094092	254299575.5
T13C	14700	6953.512809	102216638.3
T14A	61700	4753.600261	293297136.1
T14B	37500	5709.613917	214110521.9
T14C	14800	8002.315653	118434271.7
T15A	49200	4433.409758	218123760.1
T15B	48500	6282.062623	304680037.2
T15C	50500	7014.64613	354239629.6
T16A	18400	10060.81533	185119002
T16B	50500	6437.551218	325096336.5
T16C	29100	8440.846832	245628642.8
T17A	59600	7535.375653	449108388.9
T17B	45000	5988.131226	269465905.2
T17C	36900	3308.797074	122094612
T18A	18300	6263.782093	114627212.3
T18B	17500	5175.346001	90568555.01
T18C	57100	7031.987342	401526477.2
	SUM =	1,630,837.50	39,881,325,609.57
		TOC (mg/kg)	**Fraction of TOC**
	TOC SWAC =	**24,454.51**	**0.0245**
	TOC Mean =	**29,078.03**	**0.0291**

TABLE 2 - PCB SWAC Data

Post-CERCLA and Emergency Removal; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
BKG06	0.8505	2276.745046	1936.371661	0.0245	34.71428571	79035.57801
BKG07	3.09	1631.590981	5041.616131	0.0245	126.122449	205780.2502
PRS111	0.27	3092.427341	834.955382	0.0245	11.02040816	34079.81151
PRS113	0.29	4499.837412	1304.95285	0.0245	11.83673469	53263.38162
PRS113E	0.496	3689.365948	1829.92551	0.0245	20.24489796	74690.83715
PRS114	0.01895	8430.070268	159.7498316	0.0245	0.773469388	6520.401289
PRS115	2.1	2522.252543	5296.73034	0.0245	85.71428571	216193.0751
PRS116	1.13	4129.222093	4666.020965	0.0245	46.12244898	190449.8353
PRS117	0.5	3331.256164	1665.628082	0.0245	20.40816327	67984.81968
PRS117E	0.0164	3199.857315	52.47765996	0.0245	0.669387755	2141.945304
PRS118A	0.258	1419.046603	366.1140236	0.0245	10.53061224	14943.42953
PRS118B	0.215	2392.432955	514.3730853	0.0245	8.775510204	20994.81981
PRS118C	0.378	2285.161872	863.7911877	0.0245	15.42857143	35256.78317
PRS118E	43.981	4951.744095	217782.6571	0.0245	1795.142857	8889088.043
PRS119	0.55	4448.289831	2446.559407	0.0245	22.44897959	99859.56764
PRS119E	27.2855	3738.503183	102006.9286	0.0245	1113.693878	4163548.106
PRS120	0.159	3872.881249	615.7881185	0.0245	6.489795918	25134.20892
PRS121	0.43	3159.808713	1358.717746	0.0245	17.55102041	55457.8672
PRS121E	17.3115	2452.416296	42455.00471	0.0245	706.5918367	1732857.335
PRS122	0.31	4379.704333	1357.708343	0.0245	12.65306122	55416.66707
PRS123	0.29	4789.361387	1388.914802	0.0245	11.83673469	56690.40009
PRS123E	48.057775	2073.545081	99649.96293	0.0245	1961.541837	4067345.426
PRS124	1.72	6098.972108	10490.23203	0.0245	70.20408163	428172.7357
PRS125	19.463	4033.212806	78498.42084	0.0245	794.4081633	3204017.177
PRS126	1.51	6941.284474	10481.33956	0.0245	61.63265306	427809.7778
PRS127	0.56	5877.498389	3291.399098	0.0245	22.85714286	134342.8203
PRS127E	0.0143	2701.722816	38.63463626	0.0245	0.583673469	1576.923929
PRS128	0.194	9257.847211	1796.022359	0.0245	7.918367347	73307.03506
PRS130	0.874	4639.704666	4055.101878	0.0245	35.67346939	165514.3624
PRS131	7.20125	7530.898859	54231.88541	0.0245	293.9285714	2213546.343
PRS132	0.13	7735.485444	1005.613108	0.0245	5.306122449	41045.43297
PRS133E	22.23925	3299.862998	73386.47817	0.0245	907.7244898	2995366.456
PRS134	0.993	4460.747799	4429.522564	0.0245	40.53061224	180796.8393
PRS135	0.38	3175.528114	1206.700683	0.0245	15.51020408	49253.08911
PRS135E	0.135	2383.300838	321.7456131	0.0245	5.510204082	13132.474
PRS136	1.21	4932.62421	5968.475294	0.0245	49.3877551	243611.2365
PRS137	55.635	2117.349217	117798.7237	0.0245	2270.816327	4808111.171
PRS137B	0.0173	2752.694531	47.62161538	0.0245	0.706122449	1943.739403
PRS137C	0.0192	1901.278469	36.5045466	0.0245	0.783673469	1489.981494
PRS137E	3.371	1927.844728	6498.764577	0.0245	137.5918367	265255.697
PRS139	1.7	5971.783908	10152.03264	0.0245	69.3877551	414368.6794
PRS139E	0.0171	3072.200083	52.53462143	0.0245	0.697959184	2144.270262
PRS140	0.342	7631.257415	2609.890036	0.0245	13.95918367	106526.1239
PRS141	0.0176	3288.749717	57.88199502	0.0245	0.718367347	2362.530409
PRS141E	0.0176	1672.52449	29.43643102	0.0245	0.718367347	1201.48698
PRS142	0.559	4075.045196	2277.950265	0.0245	22.81632653	92977.56182
PRS143	27.15	2843.85697	77210.71675	0.0245	1108.163265	3151457.826
PRS143A	0.281	2144.106967	602.4940577	0.0245	11.46938776	24591.59419
PRS143B	46.422133	1922.915317	89265.83059	0.0245	1894.780939	3643503.29
PRS143C	0.159	2182.377871	346.9980815	0.0245	6.489795918	14163.187
PRS143D	0.552	2103.878159	1161.340744	0.0245	22.53061224	47401.66301
PRS143E	17.387	2238.804986	38926.1023	0.0245	709.6734694	1588820.502
PRS144	0.465	5193.022472	2414.75545	0.0245	18.97959184	98561.44692
PRS145	1.14	3121.622989	3558.650207	0.0245	46.53061224	145251.0289
PRS145E	0.0165	3327.654879	54.90630551	0.0245	0.673469388	2241.073694
PRS146	0.617	5716.527676	3527.097576	0.0245	25.18367347	143963.1664

TABLE 2 - PCB SWAC Data

Post-CERCLA and Emergency Removal; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS147	0.28	3244.13052	908.3565456	0.0245	11.42857143	37075.77737
PRS147E	0.0182	3323.653805	60.49049926	0.0245	0.742857143	2468.99997
PRS148	0.159	5679.868124	903.0990317	0.0245	6.489795918	36861.18497
PRS149	12.578333	5023.130296	63182.60556	0.0245	513.4013469	2578881.86
PRS149E	0.01525	3945.198421	60.16427593	0.0245	0.62244898	2455.684732
PRS150	0.202	3548.35889	716.7684957	0.0245	8.244897959	29255.85697
PRS151B	0.204	4712.81535	961.4143313	0.0245	8.326530612	39241.40128
PRS151C	3.46	2793.966919	9667.125539	0.0245	141.2244898	394576.5526
PRS152	0.312	4628.345132	1444.043681	0.0245	12.73469388	58940.55841
PRS153A	0.351	3298.24991	1157.685719	0.0245	14.32653061	47252.47831
PRS153B	0.145	2271.216677	329.3264182	0.0245	5.918367347	13441.89462
PRS153C	0.211	3301.640663	696.6461799	0.0245	8.612244898	28434.53796
PRS153D	7.891	2243.847251	17706.19866	0.0245	322.0816327	722701.9862
PRS153E	1.49	1585.930919	2363.037069	0.0245	60.81632653	96450.49261
PRS154	1.09	3681.768872	4013.128071	0.0245	44.48979592	163801.1457
PRS155A	26.3402	2867.759728	75537.3648	0.0245	1075.110204	3083157.747
PRS155B	4.8	1528.70609	7337.789233	0.0245	195.9183673	299501.6013
PRS155D	33.3137	3026.589932	100826.909	0.0245	1359.742857	4115384.042
PRS155E	0.04	2239.470799	89.57883194	0.0245	1.632653061	3656.278855
PRS156	0.19	5057.443175	960.9142032	0.0245	7.755102041	39220.98789
PRS157E	1.02	4005.945865	4086.064782	0.0245	41.63265306	166778.1544
PRS158	0.809	8244.942665	6670.158616	0.0245	33.02040816	272251.3721
PRS159	1.64	2052.641509	3366.332075	0.0245	66.93877551	137401.3092
PRS159A	0.185	2804.290116	518.7936715	0.0245	7.551020408	21175.2519
PRS159C	0.291	1750.169682	509.2993775	0.0245	11.87755102	20787.72969
PRS159D	0.382	1984.325002	758.0121508	0.0245	15.59183673	30939.27146
PRS159E	0.01595	2657.245056	42.38305865	0.0245	0.651020408	1729.920761
PRS160	0.69	3671.252085	2533.163939	0.0245	28.16326531	103394.4465
PRS161A	0.01775	4107.343557	72.90534813	0.0245	0.724489796	2975.728495
PRS161B	5.83	2701.335441	15748.78562	0.0245	237.9591837	642807.5763
PRS161C	0.266	2371.189749	630.7364732	0.0245	10.85714286	25744.34584
PRS161D	0.344	1864.82927	641.5012689	0.0245	14.04081633	26183.72526
PRS161E	2.56	1554.176967	3978.693034	0.0245	104.4897959	162395.6341
PRS162	0.279	3800.870096	1060.442757	0.0245	11.3877551	43283.37782
PRS164	0.172	3997.508862	687.5715243	0.0245	7.020408163	28064.14385
PRS167	56.1325	2005.410556	112568.7081	0.0245	2291.122449	4594641.145
PRS167A	0.262	4485.627652	1175.234445	0.0245	10.69387755	47968.75285
PRS167B	9.97	2918.780119	29100.23779	0.0245	406.9387755	1187764.808
PRS167C	0.111	2187.349293	242.7957715	0.0245	4.530612245	9910.031489
PRS167E	0.104	1718.12189	178.6846765	0.0245	4.244897959	7293.252103
PRS168	0.249	7729.406975	1924.622337	0.0245	10.16326531	78556.01375
PRS170	0.354	3371.848442	1193.634348	0.0245	14.44897959	48719.76932
PRS171	0.17	5889.272609	1001.176344	0.0245	6.93877551	40864.34055
PRS174	0.182	8382.312585	1525.580891	0.0245	7.428571429	62268.60778
PRS175	14.025	5616.303635	78768.65848	0.0245	572.4489796	3215047.285
PRS176	0.889	5324.916947	4733.851166	0.0245	36.28571429	193218.4149
PRS177	5.955	6372.333002	37947.24303	0.0245	243.0612245	1548867.062
PRS178	0.442	5174.497621	2287.127949	0.0245	18.04081633	93352.16116
PRS179	9.955	2596.813745	25851.28083	0.0245	406.3265306	1055154.32
PRS179A	0.147	2036.120616	299.3097306	0.0245	6	12216.7237
PRS179B	129.026	1935.159893	249685.9404	0.0245	5266.367347	10191262.87
PRS179C	0.017342	1545.465735	26.80146677	0.0245	0.707836735	1093.937419
PRS179D	28.69	2475.81862	71031.23619	0.0245	1171.020408	2899234.13
PRS179E	2.3585	734.7430556	1732.891497	0.0245	96.26530612	70730.26517
PRS180	0.216	6214.746767	1342.385302	0.0245	8.816326531	54791.2368
PRS181	2.86	3398.318918	9719.192107	0.0245	116.7346939	396701.7186

TABLE 2 - PCB SWAC Data

Post-CERCLA and Emergency Removal; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS184E	7.060975	1805.774768	12750.53049	0.0245	288.2030612	520429.8159
PRS185	1.06	8244.801154	8739.489223	0.0245	43.26530612	356713.8458
PRS186	1.85	2096.370743	3878.285874	0.0245	75.51020408	158297.3826
PRS187	0.32	3887.799263	1244.095764	0.0245	13.06122449	50779.41895
PRS188	1.73	2523.37387	4365.436795	0.0245	70.6122449	178181.0937
PRS189	7.97	1491.382361	11886.31742	0.0245	325.3061224	485155.8131
PRS189A	0.458	2048.23295	938.090691	0.0245	18.69387755	38289.41596
PRS189B	0.657	983.8513888	646.3903624	0.0245	26.81632653	26383.2801
PRS189D	0.499	2439.420759	1217.270959	0.0245	20.36734694	49684.52892
PRS190	0.737	5765.506752	4249.178476	0.0245	30.08163265	173435.8562
PRS191	1.17	2797.021561	3272.515226	0.0245	47.75510204	133572.0501
PRS192	1.27025	2654.156941	3371.442855	0.0245	51.84693878	137609.9124
PRS193A	0.015808	1051.331127	16.61944246	0.0245	0.64522449	678.3445901
PRS193C	0.357	2765.112319	987.145098	0.0245	14.57142857	40291.63665
PRS194	22.816	2980.544556	68004.1046	0.0245	931.2653061	2775677.739
PRS194A	0.494	2685.72157	1326.746456	0.0245	20.16326531	54152.91656
PRS194B	0.527	3004.209097	1583.218194	0.0245	21.51020408	64621.15079
PRS194D	0.141	2447.975136	345.1644942	0.0245	5.755102041	14088.3467
PRS194E	2.467875	3641.321911	8986.32731	0.0245	100.7295918	366788.8698
PRS195	0.033775	3543.251759	119.6733281	0.0245	1.378571429	4884.625639
PRS196	1.34	1737.462029	2328.199119	0.0245	54.69387755	95028.53548
PRS198A	0.278	2047.380298	569.1717229	0.0245	11.34693878	23231.49889
PRS198B	1.19	2714.10255	3229.782034	0.0245	48.57142857	131827.8381
PRS198C	0.422	2983.871828	1259.193911	0.0245	17.2244898	51395.66985
PRS198D	4.00225	1223.761816	4897.800729	0.0245	163.3571429	199910.2338
PRS199B	0.791	4409.234389	3487.704402	0.0245	32.28571429	142355.2817
PRS199E	0.463	5882.729282	2723.703658	0.0245	18.89795918	111171.5779
PRS200	3.7	3238.62799	11982.92356	0.0245	151.0204082	489098.921
PRS201	0.431675	3531.427728	1524.429065	0.0245	17.61938776	62221.59447
PRS202	3.45	2238.46681	7722.710494	0.0245	140.8163265	315212.6732
PRS203	32.6125	5217.078936	170141.9868	0.0245	1331.122449	6944570.889
PRS203A	0.015	849.0511424	12.73576714	0.0245	0.612244898	519.82723
PRS203C	8.16875	1611.806406	13166.44358	0.0245	333.4183673	537405.8605
PRS203D	2.263167	1134.57441	2567.731364	0.0245	92.37416327	104805.3618
PRS204A	1.54	2095.028391	3226.343722	0.0245	62.85714286	131687.4988
PRS204B	0.276	2708.66452	747.5914077	0.0245	11.26530612	30513.93501
PRS204D	1.67	984.5095641	1644.130972	0.0245	68.16326531	67107.38661
PRS204E	0.714	1555.167391	1110.389517	0.0245	29.14285714	45322.02112
PRS205A	0.253	1527.560042	386.4726907	0.0245	10.32653061	15774.39554
PRS205B	2.28	1305.53903	2976.628989	0.0245	93.06122449	121495.0608
PRS205C	0.01575	815.9676415	12.85149035	0.0245	0.642857143	524.5506267
PRS205D	0.5525	1888.70776	1043.511038	0.0245	22.55102041	42592.28725
PRS206	2.96	3357.996126	9939.668533	0.0245	120.8163265	405700.7565
PRS207	0.407	2125.655799	865.14191	0.0245	16.6122449	35311.9147
PRS208A	0.86	1804.820557	1552.145679	0.0245	35.10204082	63352.88486
PRS208B	3.83	6884.179281	26366.40665	0.0245	156.3265306	1076179.863
PRS208C	0.383	2194.725974	840.580048	0.0245	15.63265306	34309.38972
PRS208E	0.0163	4533.200162	73.89116263	0.0245	0.665306122	3015.965822
PRS209	0.352	2601.341584	915.6722376	0.0245	14.36734694	37374.37704
PRS210	4.16	2668.918153	11102.69952	0.0245	169.7959184	453171.4088
PRS211A	7.726	2397.968849	18526.70733	0.0245	315.3469388	756192.1359
PRS211D	0.57	2824.591914	1610.017391	0.0245	23.26530612	65714.99555
PRS211E	1.11	6743.226068	7484.980936	0.0245	45.30612245	305509.4259
PRS213	0.267	2323.535655	620.3840199	0.0245	10.89795918	25321.79673
PRS214	0.0172	6035.355454	103.8081138	0.0245	0.702040816	4237.06587
PRS215	19.535	1540.319023	30090.13211	0.0245	797.3469388	1228168.657

TABLE 2 - PCB SWAC Data

Post-CERCLA and Emergency Removal; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS215A	0.316	2323.587832	734.2537549	0.0245	12.89795918	29969.54101
PRS215C	4.2685	1396.506585	5960.988358	0.0245	174.2244898	243305.6473
PRS215D	1.48	3878.259597	5739.824204	0.0245	60.40816327	234278.5389
PRS216A	1.38	2833.206265	3909.824646	0.0245	56.32653061	159584.6794
PRS216B	1.17	1604.00923	1876.690799	0.0245	47.75510204	76599.62443
PRS216C	0.297	1264.181392	375.4618733	0.0245	12.12244898	15324.97442
PRS216D	0.691	1957.208664	1352.431187	0.0245	28.20408163	55201.27293
PRS216E	0.473	1665.66127	787.8577807	0.0245	19.30612245	32157.46044
PRS218	177.2725	567.1640878	100542.5957	0.0245	7235.612245	4103779.418
PRS218A	1.48	2176.426396	3221.111065	0.0245	60.40816327	131473.921
PRS218B	0.325	1461.860677	475.1047199	0.0245	13.26530612	19392.02938
PRS218C	8.732833	1130.985027	9876.703363	0.0245	356.4421633	403130.7495
PRS218D	11.05625	1144.844203	12657.68372	0.0245	451.2755102	516640.1519
PRS218E	0.208	1337.743631	278.2506752	0.0245	8.489795918	11357.17041
PRS219A	8.466333	2423.647366	20519.40568	0.0245	345.5646122	837526.7623
PRS219C	6.24	3195.24882	19938.35264	0.0245	254.6938776	813810.3117
PRS219D	0.768	2580.606234	1981.905587	0.0245	31.34693878	80894.10561
PRS220	0.39	1516.076668	591.2699005	0.0245	15.91836735	24133.46532
PRS221	0.551	2472.868122	1362.550335	0.0245	22.48979592	55614.2994
PRS222	20.925	2302.611487	48182.14538	0.0245	854.0816327	1966618.179
PRS222A	4.8	1121.122337	5381.387216	0.0245	195.9183673	219648.4578
PRS222C	4.410833	1670.398014	7367.846683	0.0245	180.034	300728.436
PRS222E	6.88825	1549.014378	10669.99829	0.0245	281.1530612	435510.1343
PRS223	3.695	2976.852396	10999.4696	0.0245	150.8163265	448957.943
PRS224	29.8475	1107.353636	33051.73766	0.0245	1218.265306	1349050.517
PRS224A	1.61	1057.952902	1703.304172	0.0245	65.71428571	69522.61927
PRS224C	0.847	1000.521564	847.4417647	0.0245	34.57142857	34589.45978
PRS224D	86.181	2574.259455	221852.2541	0.0245	3517.591837	9055194.046
PRS224E	0.301	2458.240166	739.9302898	0.0245	12.28571429	30201.23632
PRS225	7.2425	4341.839867	31445.77524	0.0245	295.6122449	1283501.03
PRS225B	0.135	2497.292226	337.1344505	0.0245	5.510204082	13760.58982
PRS225C	1.936625	1122.156413	2173.196163	0.0245	79.04591837	88701.88421
PRS225E	2.609775	1941.647287	5067.26255	0.0245	106.5214286	206827.0428
PRS226B	69.692833	3369.636467	234839.5115	0.0245	2844.605429	9585286.185
PRS226C	3.3675	3011.45784	10141.08428	0.0245	137.4489796	413921.8072
PRS226D	6.7312	1189.5191	8006.890968	0.0245	274.7428571	326811.8763
PRS227	0.545	3409.762897	1858.320779	0.0245	22.24489796	75849.82771
PRS229	4.74	4608.006667	21841.9516	0.0245	193.4693878	891508.2286
PRS230A	2.693025	1470.49552	3960.081197	0.0245	109.9193878	161635.9672
PRS230C	3.79	2581.221976	9782.831289	0.0245	154.6938776	399299.2363
PRS230D	10.33	2924.434344	30209.40678	0.0245	421.6326531	1233037.011
PRS232A	1.65	2009.833473	3316.22523	0.0245	67.34693878	135356.1318
PRS232B	8.7575	2366.463683	20724.30571	0.0245	357.4489796	845890.0288
PRS232C	1.07	1251.386696	1338.983765	0.0245	43.67346939	54652.39856
PRS232D	9.326	1478.82277	13791.50115	0.0245	380.6530612	562918.4143
PRS232E	34.85	3579.567971	124747.9438	0.0245	1422.44898	5091752.807
PRS234	9.85745	1745.816334	17209.29722	0.0245	402.344898	702420.2948
PRS235	26.7	3590.270738	95860.22869	0.0245	1089.795918	3912662.396
PRS235B	1.31	1591.106142	2084.349047	0.0245	53.46938776	85075.47129
PRS235C	0.01315	1566.285093	20.59664897	0.0245	0.536734694	840.6795498
PRS235D	1.61	2712.843612	4367.678215	0.0245	65.71428571	178272.5802
PRS235E	4.77285	3913.679096	18679.40328	0.0245	194.8102041	762424.6235
PRS236	19.66	2685.224163	52791.50704	0.0245	802.4489796	2154755.389
PRS236A	0.0811	3427.375254	277.9601331	0.0245	3.310204082	11345.31155
PRS236C	1.1	1147.828145	1262.610959	0.0245	44.89795918	51535.1412
PRS236D	28.95	3150.067594	91194.45685	0.0245	1181.632653	3722222.728

TABLE 2 - PCB SWAC Data

Post-CERCLA and Emergency Removal; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS236E	0.194	3312.116557	642.5506121	0.0245	7.918367347	26226.55559
PRS237	0.35	4932.464723	1726.362653	0.0245	14.28571429	70463.78175
PRS239	0.621	4516.483257	2804.736102	0.0245	25.34693878	114479.0246
PRS240	0.01485	5075.601803	75.37268677	0.0245	0.606122449	3076.436195
PRS241	0.112	5209.461374	583.4596738	0.0245	4.571428571	23814.68057
PRS242	0.782	5185.154426	4054.790761	0.0245	31.91836735	165501.6637
PRS243	0.194	6038.438297	1171.45703	0.0245	7.918367347	47814.57264
PRS244	1.51	6074.956199	9173.183861	0.0245	61.63265306	374415.6678
PRS245	0.257	6179.940757	1588.244774	0.0245	10.48979592	64826.31732
PRS246	0.163	6214.617479	1012.982649	0.0245	6.653061224	41346.23057
PRS248	0.01625	3039.197378	49.38695739	0.0245	0.663265306	2015.794179
PRS249	0.572	10447.15614	5975.773313	0.0245	23.34693878	243909.1148
PRS250	25.26	1523.850402	38492.46116	0.0245	1031.020408	1571120.864
PRS250B	24.1495	2463.820632	59500.03636	0.0245	985.6938776	2428572.913
PRS250D	1.37	2418.627192	3313.519254	0.0245	55.91836735	135245.6838
PRS250E	0.172	3813.444785	655.9125031	0.0245	7.020408163	26771.9389
PRS251	0.221	9326.14059	2061.07707	0.0245	9.020408163	84125.59471
PRS252	18.51	1186.840796	21968.42314	0.0245	755.5102041	896670.3323
PRS252A	9.5075	1890.775703	17976.54999	0.0245	388.0612245	733736.7344
PRS252B	14.795	1225.743783	18134.87927	0.0245	603.877551	740199.1537
PRS252C	0.297	2088.868399	620.3939145	0.0245	12.12244898	25322.20059
PRS252D	13.53265	2007.724264	27169.82977	0.0245	552.3530612	1108972.644
PRS252E	0.28	1457.269388	408.0354287	0.0245	11.42857143	16654.50729
PRS253	0.571	9076.34011	5182.590203	0.0245	23.30612245	211534.294
PRS254	14.455	4602.337184	66526.784	0.0245	590	2715378.939
PRS255	0.17	10418.34494	1771.118641	0.0245	6.93877551	72290.55676
PRS256	0.0764	5350.936359	408.8115378	0.0245	3.118367347	16686.18522
PRS258	0.258	6510.131808	1679.614006	0.0245	10.53061224	68555.67373
PRS260	0.276	6738.565662	1859.844123	0.0245	11.26530612	75912.00501
PRS262	0.486	5558.30854	2701.33795	0.0245	19.83673469	110258.6919
PRS264	0.333	7353.456668	2448.701071	0.0245	13.59183673	99946.98247
PRS266	1.43	22648.97412	32388.03299	0.0245	58.36734694	1321960.53
PRS269	0.0161	5066.070358	81.56373277	0.0245	0.657142857	3329.13195
PRS270	0.244	15716.68507	3834.871157	0.0245	9.959183673	156525.3533
PRS271	0.243	11650.39619	2831.046275	0.0245	9.918367347	115552.9092
PRS272	0.996	12915.21191	12863.55106	0.0245	40.65306122	525042.9006
PRS274	0.266	15062.22611	4006.552144	0.0245	10.85714286	163532.7406
PRS275	17.745	4784.169801	84895.09311	0.0245	724.2857143	3465105.841
PRS275C	0.627	14228.69858	8921.394008	0.0245	25.59183673	364138.531
PRS276	0.211	8851.797771	1867.72933	0.0245	8.612244898	76233.85019
PRS279	0.407	8554.543424	3481.699173	0.0245	16.6122449	142110.1703
PRS280	5.34	11583.63698	61856.62149	0.0245	217.9591837	2524760.061
PRS281	0.32	3068.887735	982.0440751	0.0245	13.06122449	40083.43164
PRS282	2.61	6732.440024	17571.66846	0.0245	106.5306122	717210.9576
PRS283	23.9725	1115.355664	26737.86365	0.0245	978.4693878	1091341.373
PRS283A	3.38	3301.123199	11157.79641	0.0245	137.9591837	455420.2617
PRS283B	1.45	2592.82393	3759.594699	0.0245	59.18367347	153452.8448
PRS283C	0.428	2375.178049	1016.576205	0.0245	17.46938776	41492.90632
PRS283D	1.36	1394.637727	1896.707309	0.0245	55.51020408	77416.62487
PRS283E	0.291	769.9574861	224.0576285	0.0245	11.87755102	9145.209325
PRS284	0.128	10219.77532	1308.131241	0.0245	5.224489796	53393.11188
PRS285B	3.686637	1418.687286	5230.185041	0.0245	150.4749796	213476.9405
PRS285C	10.5265	2552.766304	26871.6945	0.0245	429.6530612	1096803.857
PRS285D	0.0465	4155.394754	193.2258561	0.0245	1.897959184	7886.769636
PRS285E	0.606	2830.952255	1715.557066	0.0245	24.73469388	70022.7374
PRS287	0.253	5039.513975	1274.997036	0.0245	10.32653061	52040.69533

TABLE 2 - PCB SWAC Data

Post-CERCLA and Emergency Removal; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS289	0.01415	7306.511825	103.3871423	0.0245	0.57755102	4219.88336
PRS290	0.318	10117.81492	3217.465146	0.0245	12.97959184	131325.108
PRS291	0.01585	4873.866907	77.25079048	0.0245	0.646938776	3153.093489
PRS292	0.0163	7186.387139	117.1381104	0.0245	0.665306122	4781.147362
PRS294	0.015	7099.748493	106.4962274	0.0245	0.612244898	4346.784792
PRS295	0.236	6172.746489	1456.768171	0.0245	9.632653061	59459.92537
PRS296	0.167	9557.042448	1596.026089	0.0245	6.816326531	65143.92199
PRS297	14.66	1488.713226	21824.53589	0.0245	598.3673469	890797.3833
PRS297A	29.064175	3315.74894	96369.50745	0.0245	1186.292857	3933449.284
PRS297B	1.27	2706.122314	3436.775339	0.0245	51.83673469	140276.5444
PRS297D	0.726	1918.513294	1392.840652	0.0245	29.63265306	56850.63884
PRS297E	0.291	5464.803351	1590.257775	0.0245	11.87755102	64908.48061
PRS298	0.01815	12491.56901	226.7219775	0.0245	0.740816327	9253.958265
PRS299	0.0765	3382.768718	258.7818069	0.0245	3.12244898	10562.52273
PRS301	10.495	1508.297202	15829.57914	0.0245	428.3673469	646105.2709
PRS301A	3.253025	1886.222998	6135.93057	0.0245	132.7765306	250446.1457
PRS301C	14.56775	1316.879544	19183.97198	0.0245	594.6020408	783019.2645
PRS301D	0.241	1914.144883	461.3089167	0.0245	9.836734694	18828.93538
PRS302	0.126	13003.5437	1638.446506	0.0245	5.142857143	66875.3676
PRS303	41.165	2211.151339	91022.04486	0.0245	1680.204082	3715185.504
PRS303A	18.745	1077.508916	20197.90463	0.0245	765.1020408	824404.2707
PRS303B	0.0544	1269.536662	69.06279442	0.0245	2.220408163	2818.889568
PRS303C	0.151	2902.862346	438.3322143	0.0245	6.163265306	17891.11079
PRS303D	0.022	1693.125741	37.2487663	0.0245	0.897959184	1520.357808
PRS303E	0.155	2907.269322	450.626745	0.0245	6.326530612	18392.92837
PRS305	0.0552	3520.357816	194.3237514	0.0245	2.253061224	7931.581691
PRS306	0.02085	12573.82405	262.1642315	0.0245	0.851020408	10700.58088
PRS307	0.487	5663.366466	2758.059469	0.0245	19.87755102	112573.8559
PRS308	0.209	12082.5154	2525.245718	0.0245	8.530612245	103071.2538
PRS309	53.705	1478.404308	79397.70339	0.0245	2192.040816	3240722.587
PRS309A	11.04	2567.213035	28342.0319	0.0245	450.6122449	1156817.629
PRS309B	0.476	2173.818143	1034.737436	0.0245	19.42857143	42234.18106
PRS309C	0.259	2604.686896	674.613906	0.0245	10.57142857	27535.26147
PRS309D	8.257175	2105.021068	17381.52733	0.0245	337.027551	709450.0953
PRS311	45.625	2272.518914	103683.6755	0.0245	1862.244898	4231986.754
PRS311A	12.3086	1668.271909	20534.09162	0.0245	502.3918367	838126.1884
PRS311D	0.303	1903.178689	576.6631427	0.0245	12.36734694	23537.27113
PRS311E	0.157	6169.403155	968.5962953	0.0245	6.408163265	39534.54267
PRS313	2.06	2761.00914	5687.678828	0.0245	84.08163265	232150.1563
PRS315C	0.184	10061.18842	1851.25867	0.0245	7.510204082	75561.57835
PRS315D	2.09	3603.544083	7531.407132	0.0245	85.30612245	307404.3728
PRS315E	0.244	13094.91897	3195.160228	0.0245	9.959183673	130414.7032
PRS317	0.227	6900.472797	1566.407325	0.0245	9.265306122	63934.99286
SD034	0.075	1953.853249	146.5389936	0.0245	3.06122449	5981.183414
SD035	0.084	7389.817135	620.7446394	0.0245	3.428571429	25336.51589
SD036	0.093	8211.328785	763.653577	0.0245	3.795918367	31169.53375
SD041	0.65	2883.447914	1874.241144	0.0245	26.53061224	76499.63853
SD042	0.591	6240.105913	3687.902595	0.0245	24.12244898	150526.6365
SD043	15.177	2569.345428	38994.95556	0.0245	619.4693878	1591630.839
SD044	2.003	4745.226001	9504.687681	0.0245	81.75510204	387946.4359
SD045	0.461	3610.765885	1664.563073	0.0245	18.81632653	67941.34991
SD046	0.445	2922.793711	1300.643201	0.0245	18.16326531	53087.47761
SD047	0.723	3526.079225	2549.35528	0.0245	29.51020408	104055.3175
SD048	0.33	6436.642707	2124.092093	0.0245	13.46938776	86697.63646
SD049	5.94525	3278.850791	19493.58767	0.0245	242.6632653	795656.6394
SD050	1.026	4276.924588	4388.124627	0.0245	41.87755102	179107.1276

TABLE 2 - PCB SWAC Data

Post-CERCLA and Emergency Removal; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
SD051	0.771	6865.620081	5293.393082	0.0245	31.46938776	216056.8605
SD052	2.64925	8092.498346	21439.05124	0.0245	108.1326531	875063.3161
SD053	1.04	3946.528441	4104.389579	0.0245	42.44897959	167526.1053
SD054	1.484	4015.207129	5958.56738	0.0245	60.57142857	243206.8318
SD055	0.635	4536.600695	2880.741441	0.0245	25.91836735	117581.2833
SD056	0.756	3487.236913	2636.351106	0.0245	30.85714286	107606.1676
SD057	0.261	1975.02257	515.4808908	0.0245	10.65306122	21040.03636
SD058	1.644	5215.194468	8573.779706	0.0245	67.10204082	349950.1921
SD059	0.734	3191.647122	2342.668987	0.0245	29.95918367	95619.14235
SD060	0.55	3463.461893	1904.904041	0.0245	22.44897959	77751.18535
SD061	0.938	5149.865163	4830.573522	0.0245	38.28571429	197166.2662
SD062	19.9655	3922.35545	78311.78773	0.0245	814.9183673	3196399.499
SD063	0.741	2439.687614	1807.808522	0.0245	30.24489796	73788.10294
SD064	0.1325	2375.376574	314.737396	0.0245	5.408163265	12846.42433
SD065	0.409125	6225.235549	2546.899494	0.0245	16.69897959	103955.0814
SD066	0.15225	7057.738971	1074.540758	0.0245	6.214285714	43858.80646
SD067	0.482	2119.572761	1021.634071	0.0245	19.67346939	41699.34983
SD068	0.723	2585.986759	1869.668427	0.0245	29.51020408	76312.997
SD069	3.364	4736.59851	15933.91739	0.0245	137.3061224	650363.9749
SD070	0.58275	6611.684805	3852.95932	0.0245	23.78571429	157263.6457
SD071	7.816917	8632.483958	67479.4106	0.0245	319.0578367	2754261.657
SD072	0.9315	4971.182791	4630.65677	0.0245	38.02040816	189006.3988
SD073	0.239	4509.840561	1077.851894	0.0245	9.755102041	43993.95486
SD074	1.5745	1875.314384	2952.682498	0.0245	64.26530612	120517.653
SD075	10.3	3582.204444	36896.70577	0.0245	420.4081633	1505987.991
SD076	2.0695	1660.353282	3436.101117	0.0245	84.46938776	140249.0252
SD077	0.713	5033.135867	3588.625873	0.0245	29.10204082	146474.5254
SD078	11.115	5641.002247	62699.73997	0.0245	453.6734694	2559173.06
SD079	8.122333	8322.135208	67595.15343	0.0245	331.5237959	2758985.854
SD080	0.6595	1624.159884	1071.133443	0.0245	26.91836735	43719.73239
SD081	1.9395	1702.653192	3302.295865	0.0245	79.16326531	134787.5863
SD082	1.901	2409.871092	4581.164946	0.0245	77.59183673	186986.3243
SD083	0.8855	3354.267246	2970.203646	0.0245	36.14285714	121232.8019
SD084	0.982	1190.079669	1168.658235	0.0245	40.08163265	47700.33613
SD085	4.255	5355.152071	22786.17206	0.0245	173.6734694	930047.8392
SD086	3.821667	5564.030124	21263.87031	0.0245	155.9864082	867913.074
SD087	3.746	4365.330118	16352.52662	0.0245	152.8979592	667450.0661
SD088	0.164	1607.341463	263.6039999	0.0245	6.693877551	10759.34694
SD089	3.241	2765.444609	8962.805978	0.0245	132.2857143	365828.8154
SD090	0.67	3730.64078	2499.529323	0.0245	27.34693878	102021.605
SD091	0.21475	3841.029726	824.8611337	0.0245	8.765306122	33667.80138
SD092	2.899	5109.974814	14813.81699	0.0245	118.3265306	604645.5912
SD093	1.9855	2005.02624	3980.9796	0.0245	81.04081633	162488.9633
SD094	0.849	7236.510763	6143.797638	0.0245	34.65306122	250767.2505
SD095	5.975	6233.316619	37244.0668	0.0245	243.877551	1520165.992
SD096	0.42	2639.472894	1108.578615	0.0245	17.14285714	45248.10675
SD097	0.592	2447.539975	1448.943665	0.0245	24.16326531	59140.55776
SD098	0.209	6648.702672	1389.578859	0.0245	8.530612245	56717.50443
SD099	0.9635	3732.737193	3596.492285	0.0245	39.32653061	146795.6035
SD100	1.173	14672.42647	17210.75625	0.0245	47.87755102	702479.8468
SD101	0.3405	5628.694768	1916.570569	0.0245	13.89795918	78227.37015
SD102	0.4805	5537.807071	2660.916298	0.0245	19.6122449	108608.8285
SD103	3.6295	6921.809211	25122.70653	0.0245	148.1428571	1025416.593
SD104	0.148	3478.667333	514.8427653	0.0245	6.040816327	21013.99042
SD105	1.0185	2383.111826	2427.199395	0.0245	41.57142857	99069.36305
SD106	2.767	4739.966307	13115.48677	0.0245	112.9387755	535325.9906

TABLE 2 - PCB SWAC Data

Post-CERCLA and Emergency Removal; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
SD107	17.335	3261.627963	56540.32074	0.0245	707.5510204	2307768.193
SD108	2.334	2891.493974	6748.746935	0.0245	95.26530612	275459.0586
SD109	0.094	3468.292142	326.0194614	0.0245	3.836734694	13306.91679
SD110	0.6565	1597.521514	1048.772874	0.0245	26.79591837	42807.05608
SD111	0.611	1537.691707	939.5296331	0.0245	24.93877551	38348.14829
SD112	2.0295	2234.21407	4534.337455	0.0245	82.83673469	185074.9982
T01A	0.189	4134.170946	781.3583088	0.0245	7.714285714	31892.17587
T02A	0.244	8597.949738	2097.899736	0.0245	9.959183673	85628.56066
T02C	0.224	872.4812062	195.4357902	0.0245	9.142857143	7976.971028
T03B	0.306	2335.661026	714.7122741	0.0245	12.48979592	29171.92955
T04A	3.88	1352.67963	5248.396965	0.0245	158.3673469	214220.2843
T04B	9.49	2588.139854	24561.44721	0.0245	387.3469388	1002508.05
T05A	0.0192	5225.700647	100.3334524	0.0245	0.783673469	4095.242956
T05C2	4.4655	2012.583108	8987.18987	0.0245	182.2653061	366824.0763
T07B	0.902	1361.302627	1227.89497	0.0245	36.81632653	50118.16203
T08E	9.325	4124.811886	38463.87083	0.0245	380.6122449	1569953.912
T10A	41.04	5503.665389	225870.4276	0.0245	1675.102041	9219201.125
T10C	0.01715	2801.541874	48.04644313	0.0245	0.7	1961.079312
T11A	32.4	5121.495154	165936.443	0.0245	1322.44898	6772916.041
T11D	2.3455	2401.623409	5633.007705	0.0245	95.73469388	229918.6819
T12A	20.2	961.8182651	19428.72895	0.0245	824.4897959	793009.3451
T12B	29.1	1828.433587	53207.41739	0.0245	1187.755102	2171731.322
T12C	0.0172	3321.380972	57.12775273	0.0245	0.702040816	2331.745009
T13A	42.4	3738.613828	158517.2263	0.0245	1730.612245	6470090.869
T14B	1.99725	3229.095388	6449.310764	0.0245	81.52040816	263237.1741
T15C	0.556	4961.423234	2758.551318	0.0245	22.69387755	112593.9313
T16B	57.96375	4803.907313	278452.4825	0.0245	2365.867347	11365407.45
T17C	3.5575	3004.335848	10687.92478	0.0245	145.2040816	436241.8278
T18C	39.25	1759.083149	69044.01358	0.0245	1602.040816	2818123.003
	SUM =	1630837.498	6943224.46			283396916.7
		SWAC =	**4.26**		**Normalized PCB SWAC =**	**173.77**

TABLE 3 - PCB SWAC Data

Post-CERCLA, Emergency Removal, and 1ppm PCB; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS117E	0.016925	8735.430286	147.8471576	0.0245	0.690816327	6034.577861
PRS119E	0.11965	9407.396476	1125.594988	0.0245	4.883673469	45942.65258
PRS121E	0.1692	7220.709367	1221.744025	0.0245	6.906122449	49867.10306
PRS123E	0.017533	15462.1265	271.0974639	0.0245	0.715632653	11065.20261
PRS131	0.16	43675.03473	6988.005557	0.0245	6.530612245	285224.7166
PRS135E	0.09035	7946.323959	717.9503697	0.0245	3.687755102	29304.09672
PRS137C	0.0192	6496.188932	124.7268275	0.0245	0.783673469	5090.890918
PRS137E	0.137	4961.571066	679.7352361	0.0245	5.591836735	27744.29535
PRS139E	0.0171	8466.804629	144.7823592	0.0245	0.697959184	5909.484047
PRS141	0.0176	11610.42351	204.3434537	0.0245	0.718367347	8340.549132
PRS141E	0.0176	1672.52449	29.43643102	0.0245	0.718367347	1201.48698
PRS143B	0.015388	14521.57273	223.4579612	0.0245	0.628081633	9120.733111
PRS143C	0.05125	3681.177946	188.6603697	0.0245	2.091836735	7700.423254
PRS143E	0.3194	2878.339806	919.3417342	0.0245	13.03673469	37524.15241
PRS149E	0.015208	15541.60983	236.3568022	0.0245	0.620734694	9647.216417
PRS155B	0.357954	14824.02011	5306.317293	0.0245	14.61036735	216584.3793
PRS167B	4.57	15128.0099	69135.00524	0.0245	186.5306122	2821836.949
PRS167C	0.1235	3965.714285	489.7657142	0.0245	5.040816327	19990.43732
PRS167E	0.757	1718.121903	1300.61828	0.0245	30.89795918	53086.46042
PRS179	0.5	5341.652338	2670.826169	0.0245	20.40816327	109013.313
PRS179A	1.14925	2036.120616	2340.011618	0.0245	46.90816327	95510.67829
PRS179B	101	9406.718497	950078.5682	0.0245	4122.44898	38778717.07
PRS179C	0.016575	1545.465735	25.61609455	0.0245	0.676530612	1045.55488
PRS181	2.0375	4944.358968	10074.1314	0.0245	83.16326531	411189.0366
PRS186	1.172781	3784.681729	4438.602823	0.0245	47.86861224	181167.4622
PRS190	1.20175	6299.370409	7570.268389	0.0245	49.05102041	308990.5465
PRS192	0.876	4121.615753	3610.5354	0.0245	35.75510204	147368.7918
PRS193A	0.013988	2790.766159	39.03723704	0.0245	0.570938776	1593.356614
PRS193C	0.357	5171.105966	1846.08483	0.0245	14.57142857	75350.40122
PRS194B	0.527	5939.712069	3130.228261	0.0245	21.51020408	127764.4188
PRS194D	0.141	5539.180953	781.0245144	0.0245	5.755102041	31878.55161
PRS199B	1.075	9447.709437	10156.28765	0.0245	43.87755102	414542.3529
PRS201	0.01515	3932.858983	59.58281359	0.0245	0.618367347	2431.951575
PRS202	1.7325	4277.734517	7411.175051	0.0245	70.71428571	302496.9408
PRS204A	0.79705	4992.624568	3979.371412	0.0245	32.53265306	162423.323
PRS204B	0.276	2709.6773	747.8709347	0.0245	11.26530612	30525.34427
PRS204E	0.714	1592.025717	1136.706362	0.0245	29.14285714	46396.17803
PRS205C	0.016488	6191.790538	102.0902424	0.0245	0.672979592	4166.948669
PRS208C	1.63075	13336.31497	21748.19564	0.0245	66.56122449	887681.4547
PRS208E	0.014575	8661.932337	126.2476638	0.0245	0.594897959	5152.96587
PRS213	0.2822	4015.302891	1133.118476	0.0245	11.51836735	46249.73371
PRS215A	0.258917	4277.089378	1107.41115	0.0245	10.56804082	45200.45512
PRS215C	0.413	2377.072692	981.7310219	0.0245	16.85714286	40070.65396
PRS216E	0.473	8240.483813	3897.748843	0.0245	19.30612245	159091.7895
PRS218A	0.569688	5704.416618	3249.737694	0.0245	23.25257143	132642.3549
PRS218E	0.208	4462.962131	928.2961232	0.0245	8.489795918	37889.63768
PRS219A	0.166	4824.947857	800.9413443	0.0245	6.775510204	32691.48344
PRS221	0.595	2514.398002	1496.066811	0.0245	24.28571429	61063.95149
PRS222	0.45	3040.527874	1368.237544	0.0245	18.36734694	55846.43035
PRS222A	2.408575	2767.627747	6666.039001	0.0245	98.30918367	272083.2245
PRS222E	0.190425	5497.636563	1046.887442	0.0245	7.77244898	42730.09969
PRS223	0.77	2976.852396	2292.176345	0.0245	31.42857143	93558.21815
PRS224A	0.81345	1365.971174	1111.149251	0.0245	33.20204082	45353.03067
PRS224C	1.5985	1014.320873	1621.391915	0.0245	65.24489796	66179.26186
PRS225	0.02	10040.80482	200.8160965	0.0245	0.816326531	8196.575367
PRS225C	0.688	1181.475306	812.8550102	0.0245	28.08163265	33177.75552

TABLE 3 - PCB SWAC Data

Post-CERCLA, Emergency Removal, and 1ppm PCB; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS225E	0.0202	1941.647287	39.22127521	0.0245	0.824489796	1600.868376
PRS226C	0.497	5960.30726	2962.272708	0.0245	20.28571429	120909.0901
PRS229	1.827	6500.623444	11876.63903	0.0245	74.57142857	484760.7768
PRS230C	0.596187	7915.728853	4719.254638	0.0245	24.33416327	192622.6383
PRS232A	0.906	5683.734086	5149.463082	0.0245	36.97959184	210182.1666
PRS234	0.0149	2193.874824	32.68873487	0.0245	0.608163265	1334.234076
PRS235B	0.977	2464.626896	2407.940478	0.0245	39.87755102	98283.28481
PRS235E	0.0507	10364.40949	525.4755612	0.0245	2.069387755	21447.98209
PRS236A	0.0811	6775.085984	549.4594733	0.0245	3.310204082	22426.91728
PRS236C	0.56035	4033.417214	2260.125336	0.0245	22.87142857	92250.0137
PRS237	0.35	5573.535208	1950.737323	0.0245	14.28571429	79621.93155
PRS239	0.621	4576.444012	2841.971732	0.0245	25.34693878	115998.8462
PRS240	0.01485	12099.23917	179.6737017	0.0245	0.606122449	7333.620479
PRS241	0.112	5209.461374	583.4596738	0.0245	4.571428571	23814.68057
PRS243	0.194	6658.865238	1291.819856	0.0245	7.918367347	52727.34107
PRS244	1.51	7006.738695	10580.17543	0.0245	61.63265306	431843.8951
PRS245	0.257	6179.940757	1588.244774	0.0245	10.48979592	64826.31732
PRS246	0.163	7229.238631	1178.365897	0.0245	6.653061224	48096.56722
PRS248	0.01625	3039.197378	49.38695739	0.0245	0.663265306	2015.794179
PRS249	0.572	10447.15614	5975.773313	0.0245	23.34693878	243909.1148
PRS250	0.02	1611.858962	32.23717925	0.0245	0.816326531	1315.803235
PRS250B	0.08815	3582.891431	315.8318797	0.0245	3.597959184	12891.09713
PRS250D	1.37	2418.627192	3313.519254	0.0245	55.91836735	135245.6838
PRS250E	0.036663	4589.240345	168.2553188	0.0245	1.49644898	6867.564032
PRS251	0.221	9326.14059	2061.07707	0.0245	9.020408163	84125.59471
PRS252	0.02	1289.219399	25.78438798	0.0245	0.816326531	1052.423999
PRS252A	2.583075	1890.775703	4884.015448	0.0245	105.4316327	199347.5693
PRS252B	2.249	1225.743783	2756.697768	0.0245	91.79591837	112518.2762
PRS252C	0.4917	2310.620824	1136.132259	0.0245	20.06938776	46372.74527
PRS252D	0.0178	2007.724264	35.73749191	0.0245	0.726530612	1458.673139
PRS253	0.571	9076.34011	5182.590203	0.0245	23.30612245	211534.294
PRS254	2.112275	4602.337184	9721.401775	0.0245	86.21530612	396791.9092
PRS255	0.17	14186.62531	2411.726303	0.0245	6.93877551	98437.8083
PRS256	0.0764	5350.936359	408.8115378	0.0245	3.118367347	16686.18522
PRS258	0.258	6510.131808	1679.614006	0.0245	10.53061224	68555.67373
PRS260	0.96075	6738.565662	6474.076959	0.0245	39.21428571	264248.0392
PRS262	0.486	5558.30854	2701.33795	0.0245	19.83673469	110258.6919
PRS264	0.333	19714.41542	6564.900336	0.0245	13.59183673	267955.1158
PRS269	0.0161	5066.070361	81.56373282	0.0245	0.657142857	3329.131952
PRS270	0.244	22236.41964	5425.686393	0.0245	9.959183673	221456.5875
PRS271	0.243	12950.53773	3146.980667	0.0245	9.918367347	128448.1905
PRS272	0.996	12915.21191	12863.55106	0.0245	40.65306122	525042.9006
PRS274	0.266	15884.24836	4225.210063	0.0245	10.85714286	172457.5536
PRS275	8.195	16161.54072	132443.8262	0.0245	334.4897959	5405870.458
PRS279	0.407	9246.703879	3763.408479	0.0245	16.6122449	153608.5093
PRS280	5.34	13547.1249	72341.64695	0.0245	217.9591837	2952720.284
PRS282	2.61	7043.217748	18382.79832	0.0245	106.5306122	750318.2988
PRS284	0.128	12707.38532	1626.545321	0.0245	5.224489796	66389.60492
PRS285B	0.0504	10566.91527	532.5725295	0.0245	2.057142857	21737.65426
PRS285D	0.03125	5493.4277	171.6696156	0.0245	1.275510204	7006.923087
PRS287	0.253	8510.664921	2153.198225	0.0245	10.32653061	87885.64184
PRS289	0.01415	7341.696186	103.885001	0.0245	0.57755102	4240.204124
PRS290	0.318	11993.95822	3814.078714	0.0245	12.97959184	155676.6822
PRS291	0.01585	4873.866907	77.25079048	0.0245	0.646938776	3153.093489
PRS292	0.0163	9061.676149	147.7053212	0.0245	0.665306122	6028.788622
PRS294	0.015	7099.748493	106.4962274	0.0245	0.612244898	4346.784792

TABLE 3 - PCB SWAC Data

Post-CERCLA, Emergency Removal, and 1ppm PCB; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS295	0.236	6172.746489	1456.768171	0.0245	9.632653061	59459.92537
PRS296	0.167	9557.042448	1596.026089	0.0245	6.816326531	65143.92199
PRS297	0.02	1488.713226	29.77426452	0.0245	0.816326531	1215.276103
PRS297A	0.02035	3315.74894	67.47549093	0.0245	0.830612245	2754.101671
PRS297B	1.27	2706.122314	3436.775339	0.0245	51.83673469	140276.5444
PRS297D	0.726	1918.513294	1392.840652	0.0245	29.63265306	56850.63884
PRS297E	0.291	5464.803351	1590.257775	0.0245	11.87755102	64908.48061
PRS298	0.01815	12491.56901	226.7219775	0.0245	0.740816327	9253.958265
PRS299	0.0765	3382.768718	258.7818069	0.0245	3.12244898	10562.52273
PRS301	0.09	1508.297202	135.7467482	0.0245	3.673469388	5540.6836
PRS301A	0.0143	1886.222998	26.97298888	0.0245	0.583673469	1100.938322
PRS301C	0.0165	1316.879544	21.72851248	0.0245	0.673469388	886.8780604
PRS301D	0.14785	1914.144883	283.0063209	0.0245	6.034693878	11551.2784
PRS302	0.126	13003.5437	1638.446506	0.0245	5.142857143	66875.3676
PRS303	0.63	5016.382242	3160.320813	0.0245	25.71428571	128992.6862
PRS303A	1.233	1130.790631	1394.264848	0.0245	50.32653061	56908.76933
PRS303B	0.0544	2147.275746	116.8118006	0.0245	2.220408163	4767.828595
PRS303C	0.151	2902.862346	438.3322143	0.0245	6.163265306	17891.11079
PRS303E	0.155	5317.390808	824.1955752	0.0245	6.326530612	33640.63572
PRS306	0.02085	12573.82405	262.1642315	0.0245	0.851020408	10700.58088
PRS307	0.487	7557.810183	3680.653559	0.0245	19.87755102	150230.7575
PRS308	0.209	15016.17232	3138.380015	0.0245	8.530612245	128097.1435
PRS309	0.41	1478.404314	606.1457685	0.0245	16.73469388	24740.64361
PRS309A	0.937	4236.43969	3969.543989	0.0245	38.24489796	162022.2036
PRS309B	0.249025	2417.224415	601.9493099	0.0245	10.16428571	24569.35959
PRS309C	0.259	2604.686896	674.613906	0.0245	10.57142857	27535.26147
PRS309D	0.01435	2105.021068	30.20705232	0.0245	0.585714286	1232.940911
PRS311	0.235	9147.36703	2149.631252	0.0245	9.591836735	87740.05111
PRS311A	0.02225	3774.780838	83.98887366	0.0245	0.908163265	3428.117292
PRS315D	1.563588	7347.402495	11488.31037	0.0245	63.81991837	468910.6274
PRS315E	0.1263	24483.94796	3092.322627	0.0245	5.155102041	126217.2501
PRS317	0.227	6900.472797	1566.407325	0.0245	9.265306122	63934.99286
SD034	0.482792	8734.251618	4216.826807	0.0245	19.70579592	172115.3799
SD035	0.365583	10326.21367	3775.088171	0.0245	14.9217551	154085.2315
SD036	0.093	13272.45814	1234.338607	0.0245	3.795918367	50381.16765
SD042	2.351194	24851.44429	58430.5667	0.0245	95.96710204	2384921.09
SD044	7.977536	47707.39688	380587.4761	0.0245	325.6137143	15534182.7
SD049	4.89825	7009.386241	34333.72615	0.0245	199.9285714	1401376.578
SD056	16.49185	19647.81288	324028.7828	0.0245	673.1367347	13225664.6
SD058	13.731375	20328.03053	279131.8102	0.0245	560.4642857	11393135.11
SD059	3.459625	21127.3251	73092.62211	0.0245	141.2091837	2983372.331
SD060	10.03075	10484.56527	105168.053	0.0245	409.4183673	4292573.594
SD061	2.843375	9069.229684	25787.22095	0.0245	116.0561224	1052539.631
SD062	9.582125	19270.75947	184654.8261	0.0245	391.1071429	7536931.676
SD063	11.619583	17424.32773	202463.4223	0.0245	474.2686939	8263813.154
SD064	0.078	17696.69514	1380.342221	0.0245	3.183673469	56340.49882
SD065	0.081	10198.12221	826.0478992	0.0245	3.306122449	33716.24078
SD066	0.0845	12499.79865	1056.232986	0.0245	3.448979592	43111.55046
SD068	15.38495	16273.28784	250363.7198	0.0245	627.9571429	10218927.34
SD070	0.076	23522.86282	1787.737575	0.0245	3.102040816	72968.88059
SD071	0.1845	15051.59455	2777.019195	0.0245	7.530612245	113347.7222
SD072	0.582125	6947.211251	4044.145349	0.0245	23.76020408	165067.1571
SD073	0.8115	6890.635468	5591.750682	0.0245	33.12244898	228234.7217
SD074	0.8423	1885.45025	1588.114746	0.0245	34.37959184	64821.01004
SD075	7.47175	11097.18874	82915.41998	0.0245	304.9693878	3384302.856
SD076	7.473125	10035.32945	74995.27142	0.0245	305.0255102	3061031.487

TABLE 3 - PCB SWAC Data

Post-CERCLA, Emergency Removal, and 1ppm PCB; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
SD077	9.669667	10369.63765	100270.9429	0.0245	394.6802857	4092691.549
SD079	0.115	10327.80546	1187.697628	0.0245	4.693877551	48477.45421
SD080	0.189917	2543.605875	483.0739969	0.0245	7.751714286	19717.30599
SD081	0.557625	9899.251289	5520.07	0.0245	22.76020408	225308.9796
SD083	0.3575	7959.619	2845.563793	0.0245	14.59183673	116145.4609
SD084	8.744625	3290.476358	28773.98182	0.0245	356.9234694	1174448.238
SD085	1.134125	11177.42449	12676.59655	0.0245	46.29081633	517412.1041
SD086	0.092	14813.52496	1362.844296	0.0245	3.755102041	55626.29779
SD088	0.091	6143.693843	559.0761398	0.0245	3.714285714	22819.43428
SD090	0.2925	18677.07687	5463.044986	0.0245	11.93877551	222981.428
SD091	0.09225	10453.84494	964.3671961	0.0245	3.765306122	39361.92637
SD092	2.093	6256.966115	13095.83008	0.0245	85.42857143	534523.6766
SD094	1.06775	12624.24159	13479.53396	0.0245	43.58163265	550185.0596
SD096	0.42	2639.472894	1108.578615	0.0245	17.14285714	45248.10675
SD097	0.592	3254.121522	1926.439941	0.0245	24.16326531	78630.20166
SD098	0.209	6648.702672	1389.578859	0.0245	8.530612245	56717.50443
SD099	0.9635	3732.737193	3596.492285	0.0245	39.32653061	146795.6035
SD100	1.173	14672.42658	17210.75638	0.0245	47.87755102	702479.8522
SD101	0.3405	12911.69565	4396.43237	0.0245	13.89795918	179446.2192
SD102	0.27925	11561.19464	3228.463603	0.0245	11.39795918	131774.0246
SD104	0.148	3478.667333	514.8427653	0.0245	6.040816327	21013.99042
SD105	0.54925	2383.111826	1308.92417	0.0245	22.41836735	53425.47634
SD109	8.751321	42371.60976	370807.5583	0.0245	357.1967755	15135002.38
SD110	0.6565	7490.337303	4917.406439	0.0245	26.79591837	200710.4669
SD111	0.21225	2068.84057	439.111411	0.0245	8.663265306	17922.91474
SD112	0.732375	9072.350727	6644.362863	0.0245	29.89285714	271198.4842
T01A	0.189	4134.170946	781.3583088	0.0245	7.714285714	31892.17587
T02C	0.224	872.4812062	195.4357902	0.0245	9.142857143	7976.971028
T03B	0.258	7818.82689	2017.257338	0.0245	10.53061224	82337.03419
T04A	2.867	1491.208305	4275.294211	0.0245	117.0204082	174501.8045
T04B	3.05505	4351.029254	13292.61192	0.0245	124.6959184	542555.5887
T05A	0.0192	7205.249172	138.3407841	0.0245	0.783673469	5646.562617
T08C	0.0191	2348.371252	44.85389092	0.0245	0.779591837	1830.771058
T10A	18.996	12064.44659	229176.2274	0.0245	775.3469388	9354131.73
T11D	0.261	2474.602512	645.8712555	0.0245	10.65306122	26362.09206
T12B	14.5578	3471.399846	50535.94467	0.0245	594.1959184	2062691.619
T12C	0.0172	3323.926736	57.17153985	0.0245	0.702040816	2333.532239
	SUM =	1630837.497	4577267.89			186827260.8
		SWAC =	**2.81**		**Normalized PCB SWAC =**	**114.56**

TABLE 4 - PCB SWAC Data

Post-CERCLA, Emergency Removal, 1ppm PCB, and 45ppm PAH; Scenario #2; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS117E	0.016662	8735.430286	145.5497394	0.0245	0.680081633	5940.805691
PRS119E	0.11965	9407.396476	1125.594988	0.0245	4.883673469	45942.65258
PRS121E	0.1692	7220.709367	1221.744025	0.0245	6.906122449	49867.10306
PRS123E	0.017533	15462.1265	271.0974639	0.0245	0.715632653	11065.20261
PRS131	0.16	49223.75556	7875.800889	0.0245	6.530612245	321461.2608
PRS137C	0.0192	13715.79863	263.3433337	0.0245	0.783673469	10748.7075
PRS139E	0.0171	8466.804629	144.7823592	0.0245	0.697959184	5909.484047
PRS141	0.0176	11610.42351	204.3434537	0.0245	0.718367347	8340.549132
PRS141E	0.0176	1672.52449	29.43643102	0.0245	0.718367347	1201.48698
PRS143B	0.015388	14521.57273	223.4579612	0.0245	0.628081633	9120.733111
PRS143C	0.05125	3681.177946	188.6603697	0.0245	2.091836735	7700.423254
PRS143E	0.3194	2878.339806	919.3417342	0.0245	13.03673469	37524.15241
PRS149E	0.015208	15541.60983	236.3568022	0.0245	0.620734694	9647.216417
PRS155B	0.357954	14960.36215	5355.121473	0.0245	14.61036735	218576.3866
PRS167B	4.57	15128.0099	69135.00524	0.0245	186.5306122	2821836.949
PRS167C	0.1235	3965.714285	489.7657142	0.0245	5.040816327	19990.43732
PRS167E	0.757	1718.121903	1300.61828	0.0245	30.89795918	53086.46042
PRS179B	101	26455.7052	2672026.226	0.0245	4122.44898	109062294.9
PRS190	0.619625	30895.48224	19143.61319	0.0245	25.29081633	781371.9667
PRS202	1.7325	4326.120208	7495.00326	0.0245	70.71428571	305918.5004
PRS204A	0.79705	4992.624568	3979.371412	0.0245	32.53265306	162423.323
PRS204B	0.276	2881.022455	795.1621975	0.0245	11.26530612	32455.5999
PRS204E	0.714	1592.025717	1136.706362	0.0245	29.14285714	46396.17803
PRS208C	1.63075	13336.31497	21748.19564	0.0245	66.56122449	887681.4547
PRS208E	0.014575	8661.932337	126.2476638	0.0245	0.594897959	5152.96587
PRS216E	0.473	8275.364182	3914.247258	0.0245	19.30612245	159765.1942
PRS218A	0.569688	5704.416618	3249.737694	0.0245	23.25257143	132642.3549
PRS218E	0.208	7411.994902	1541.69494	0.0245	8.489795918	62926.32407
PRS222	0.45	3040.527874	1368.237544	0.0245	18.36734694	55846.43035
PRS222A	2.408575	2767.627747	6666.039001	0.0245	98.30918367	272083.2245
PRS224A	0.81345	1365.971174	1111.149251	0.0245	33.20204082	45353.03067
PRS224C	1.5985	1014.320873	1621.391915	0.0245	65.24489796	66179.26186
PRS226C	0.497	5991.881283	2977.964997	0.0245	20.28571429	121549.5917
PRS230C	0.596187	9629.473767	5740.967077	0.0245	24.33416327	234325.1868
PRS232A	0.906	7126.268283	6456.399065	0.0245	36.97959184	263526.4924
PRS234	0.0149	2193.874824	32.68873487	0.0245	0.608163265	1334.234076
PRS235B	0.391305	2464.626896	964.4208277	0.0245	15.97163265	39364.11542
PRS235E	0.0366	10365.50955	379.3776496	0.0245	1.493877551	15484.80202
PRS236A	0.0811	6775.085984	549.4594733	0.0245	3.310204082	22426.91728
PRS236C	0.56035	4193.701793	2349.9408	0.0245	22.87142857	95915.95101
PRS239	0.621	5087.103033	3159.090984	0.0245	25.34693878	128942.4891
PRS240	0.01485	12099.23917	179.6737017	0.0245	0.606122449	7333.620479
PRS241	0.112	5225.517877	585.2580022	0.0245	4.571428571	23888.08172
PRS243	0.194	6658.865238	1291.819856	0.0245	7.918367347	52727.34107
PRS244	1.51	7006.738695	10580.17543	0.0245	61.63265306	431843.8951
PRS245	0.257	6179.940757	1588.244774	0.0245	10.48979592	64826.31732
PRS246	0.163	7244.541459	1180.860258	0.0245	6.653061224	48198.37787
PRS248	0.01625	3039.197378	49.38695739	0.0245	0.663265306	2015.794179
PRS249	0.572	10447.15614	5975.773313	0.0245	23.34693878	243909.1148
PRS250	0.02	1611.858962	32.23717925	0.0245	0.816326531	1315.803235
PRS250B	0.08815	3582.891431	315.8318797	0.0245	3.597959184	12891.09713
PRS250D	1.37	2418.627192	3313.519254	0.0245	55.91836735	135245.6838
PRS250E	0.036663	4589.240345	168.2553188	0.0245	1.49644898	6867.564032
PRS251	0.221	9326.14059	2061.07707	0.0245	9.020408163	84125.59471
PRS252	0.02	1289.219399	25.78438798	0.0245	0.816326531	1052.423999
PRS252A	2.583075	1890.775703	4884.015448	0.0245	105.4316327	199347.5693

TABLE 4 - PCB SWAC Data

Post-CERCLA, Emergency Removal, 1ppm PCB, and 45ppm PAH; Scenario #2; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS252B	2.249	1225.743783	2756.697768	0.0245	91.79591837	112518.2762
PRS252C	0.4917	2310.620824	1136.132259	0.0245	20.06938776	46372.74527
PRS252D	0.0178	2007.724264	35.73749191	0.0245	0.726530612	1458.673139
PRS253	0.571	9076.34011	5182.590203	0.0245	23.30612245	211534.294
PRS254	2.112275	4602.337184	9721.401775	0.0245	86.21530612	396791.9092
PRS255	0.17	14186.62531	2411.726303	0.0245	6.93877551	98437.8083
PRS256	0.0764	5350.936359	408.8115378	0.0245	3.118367347	16686.18522
PRS258	0.258	6510.131808	1679.614006	0.0245	10.53061224	68555.67373
PRS260	0.96075	6738.565662	6474.076959	0.0245	39.21428571	264248.0392
PRS262	0.486	5558.30854	2701.33795	0.0245	19.83673469	110258.6919
PRS264	0.333	19714.41542	6564.900336	0.0245	13.59183673	267955.1158
PRS269	0.0161	5066.070361	81.56373282	0.0245	0.657142857	3329.131952
PRS270	0.244	22236.41964	5425.686393	0.0245	9.959183673	221456.5875
PRS271	0.243	12950.53773	3146.980667	0.0245	9.918367347	128448.1905
PRS272	0.996	12915.21191	12863.55106	0.0245	40.65306122	525042.9006
PRS274	0.266	15884.24836	4225.210063	0.0245	10.85714286	172457.5536
PRS275	8.195	16161.54072	132443.8262	0.0245	334.4897959	5405870.458
PRS279	0.407	9246.703879	3763.408479	0.0245	16.6122449	153608.5093
PRS280	5.34	13547.1249	72341.64695	0.0245	217.9591837	2952720.284
PRS282	2.61	7043.217748	18382.79832	0.0245	106.5306122	750318.2988
PRS284	0.128	12707.38532	1626.545321	0.0245	5.224489796	66389.60492
PRS285B	0.0504	10566.91527	532.5725295	0.0245	2.057142857	21737.65426
PRS285D	0.03125	5493.4277	171.6696156	0.0245	1.275510204	7006.923087
PRS287	0.253	8510.664921	2153.198225	0.0245	10.32653061	87885.64184
PRS289	0.01415	7341.696186	103.885001	0.0245	0.57755102	4240.204124
PRS290	0.318	11993.95822	3814.078714	0.0245	12.97959184	155676.6822
PRS291	0.01585	4873.866907	77.25079048	0.0245	0.646938776	3153.093489
PRS292	0.0163	9061.676149	147.7053212	0.0245	0.665306122	6028.788622
PRS294	0.015	7099.748493	106.4962274	0.0245	0.612244898	4346.784792
PRS295	0.236	6172.746489	1456.768171	0.0245	9.632653061	59459.92537
PRS296	0.167	9557.042448	1596.026089	0.0245	6.816326531	65143.92199
PRS297	0.02	1488.713226	29.77426452	0.0245	0.816326531	1215.276103
PRS297A	0.02035	3315.74894	67.47549093	0.0245	0.830612245	2754.101671
PRS297B	1.27	2706.122314	3436.775339	0.0245	51.83673469	140276.5444
PRS297D	0.726	1918.513294	1392.840652	0.0245	29.63265306	56850.63884
PRS297E	0.291	5464.803351	1590.257775	0.0245	11.87755102	64908.48061
PRS298	0.01815	12491.56901	226.7219775	0.0245	0.740816327	9253.958265
PRS299	0.0765	3382.768718	258.7818069	0.0245	3.12244898	10562.52273
PRS301	0.09	1508.297202	135.7467482	0.0245	3.673469388	5540.6836
PRS301A	0.0143	1886.222998	26.97298888	0.0245	0.583673469	1100.938322
PRS301C	0.0165	1316.879544	21.72851248	0.0245	0.673469388	886.8780604
PRS301D	0.14785	1914.144883	283.0063209	0.0245	6.034693878	11551.2784
PRS302	0.126	13003.5437	1638.446506	0.0245	5.142857143	66875.3676
PRS303	0.63	5016.382242	3160.320813	0.0245	25.71428571	128992.6862
PRS303A	1.233	1130.790631	1394.264848	0.0245	50.32653061	56908.76933
PRS303B	0.0544	2147.275746	116.8118006	0.0245	2.220408163	4767.828595
PRS303C	0.151	2902.862346	438.3322143	0.0245	6.163265306	17891.11079
PRS303E	0.155	5317.390808	824.1955752	0.0245	6.326530612	33640.63572
PRS306	0.02085	12573.82405	262.1642315	0.0245	0.851020408	10700.58088
PRS307	0.487	7557.810183	3680.653559	0.0245	19.87755102	150230.7575
PRS308	0.209	15016.17232	3138.380015	0.0245	8.530612245	128097.1435
PRS309	0.41	1478.404314	606.1457685	0.0245	16.73469388	24740.64361
PRS309A	0.937	4236.43969	3969.543989	0.0245	38.24489796	162022.2036
PRS309B	0.249025	2417.224415	601.9493099	0.0245	10.16428571	24569.35959
PRS309C	0.259	2604.686896	674.613906	0.0245	10.57142857	27535.26147
PRS309D	0.01435	2105.021068	30.20705232	0.0245	0.585714286	1232.940911

TABLE 4 - PCB SWAC Data

Post-CERCLA, Emergency Removal, 1ppm PCB, and 45ppm PAH; Scenario #2; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS311	0.235	9147.36703	2149.631252	0.0245	9.591836735	87740.05111
PRS311A	0.02225	3774.780838	83.98887366	0.0245	0.908163265	3428.117292
PRS315D	1.563588	7347.402495	11488.31037	0.0245	63.81991837	468910.6274
PRS315E	0.1263	24483.94796	3092.322627	0.0245	5.155102041	126217.2501
PRS317	0.227	6900.472797	1566.407325	0.0245	9.265306122	63934.99286
SD034	0.21355	8734.251618	1865.199433	0.0245	8.716326531	76130.5891
SD035	0.2215	10326.21367	2287.256327	0.0245	9.040816327	93357.40112
SD036	0.093	13272.45814	1234.338607	0.0245	3.795918367	50381.16765
SD042	1.784791	24851.44429	44354.6341	0.0245	72.84861224	1810393.229
SD044	7.977536	47707.39688	380587.4761	0.0245	325.6137143	15534182.7
SD049	4.89825	7013.773036	34355.21377	0.0245	199.9285714	1402253.623
SD056	16.49185	19647.81288	324028.7828	0.0245	673.1367347	13225664.6
SD058	13.731375	20328.03053	279131.8102	0.0245	560.4642857	11393135.11
SD059	2.7624	27290.65245	75387.69834	0.0245	112.7510204	3077048.912
SD062	9.582125	31494.2226	301781.5778	0.0245	391.1071429	12317615.42
SD063	11.619583	18454.99015	214439.2898	0.0245	474.2686939	8752624.075
SD064	0.078	17696.69514	1380.342221	0.0245	3.183673469	56340.49882
SD065	0.081	10198.12221	826.0478992	0.0245	3.306122449	33716.24078
SD066	0.0845	12499.79865	1056.232986	0.0245	3.448979592	43111.55046
SD068	15.38495	16273.28784	250363.7198	0.0245	627.9571429	10218927.34
SD070	0.076	24806.70316	1885.30944	0.0245	3.102040816	76951.40573
SD071	0.114625	26371.69146	3022.855133	0.0245	4.678571429	123381.8422
SD076	7.473125	13581.98111	101499.8426	0.0245	305.0255102	4142850.719
SD077	9.669667	19623.67373	189754.3903	0.0245	394.6802857	7745077.154
SD080	0.189917	14220.48888	2700.712587	0.0245	7.751714286	110233.1668
SD081	0.557625	9899.251289	5520.07	0.0245	22.76020408	225308.9796
SD084	8.744625	23827.16728	208359.6427	0.0245	356.9234694	8504475.212
SD085	1.134125	11177.42449	12676.59655	0.0245	46.29081633	517412.1041
SD088	0.091	8853.999438	805.7139489	0.0245	3.714285714	32886.28363
SD090	0.238375	25722.67781	6131.643323	0.0245	9.729591837	250271.156
SD091	0.094583	15065.40558	1424.931256	0.0245	3.860530612	58160.45943
SD092	0.757	16842.5516	12749.81156	0.0245	30.89795918	520400.472
SD094	1.06775	25743.80342	27487.9461	0.0245	43.58163265	1121956.984
SD096	0.42	2639.472894	1108.578615	0.0245	17.14285714	45248.10675
SD097	0.592	3254.121522	1926.439941	0.0245	24.16326531	78630.20166
SD098	0.209	6648.702672	1389.578859	0.0245	8.530612245	56717.50443
SD099	0.9635	3732.737193	3596.492285	0.0245	39.32653061	146795.6035
SD100	1.173	14672.42658	17210.75638	0.0245	47.87755102	702479.8522
SD101	0.3405	12911.69565	4396.43237	0.0245	13.89795918	179446.2192
SD102	0.27925	11561.19464	3228.463603	0.0245	11.39795918	131774.0246
SD104	0.148	3478.667333	514.8427653	0.0245	6.040816327	21013.99042
SD105	0.54925	2383.111826	1308.92417	0.0245	22.41836735	53425.47634
SD109	8.751321	42506.78757	371990.5427	0.0245	357.1967755	15183287.46
SD110	0.47025	12016.54031	5650.778082	0.0245	19.19387755	230644.0034
SD111	0.21225	2068.84057	439.111411	0.0245	8.663265306	17922.91474
SD112	0.732375	15279.7514	11190.50793	0.0245	29.89285714	456755.4257
T01A	0.189	4639.484791	876.8626255	0.0245	7.714285714	35790.31124
T02C	0.224	872.4812062	195.4357902	0.0245	9.142857143	7976.971028
T04A	0.68115	11738.77807	7995.868681	0.0245	27.80204082	326361.987
T05A	0.0192	13088.63112	251.3017175	0.0245	0.783673469	10257.21296
T08C	0.01905	17982.10099	342.5590239	0.0245	0.77755102	13982.00098
T10A	18.996	18499.66151	351419.5701	0.0245	775.3469388	14343655.92
	SUM =	1630837.498	6511948.065			265793798.6

SWAC = 3.99 **Normalized PCB SWAC = 162.98**

TABLE 5 - PCB SWAC Data

Post-CERCLA, Emergengy Removal, 1ppm PCB, 18ppm PAH > 567.5 (-10 LWD) < 45ppm PAH; Scenario #3; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS121E	0.095125	27188.88511	2586.342696	0.0245	3.882653061	105565.008
PRS131	0.16	53442.27088	8550.76334	0.0245	6.530612245	349010.7486
PRS139E	0.015575	22729.52547	354.0123593	0.0245	0.635714286	14449.48405
PRS143E	0.066963	22036.22756	1475.611906	0.0245	2.733183673	60229.05738
PRS208C	16.648833	25856.18925	430475.3769	0.0245	679.5442041	17570423.55
PRS208E	0.016581	25060.66005	415.5308044	0.0245	0.67677551	16960.44099
PRS218A	0.332832	22792.82271	7586.180769	0.0245	13.58497959	309640.0314
PRS222	0.45	4519.743715	2033.884672	0.0245	18.36734694	83015.7009
PRS224A	0.283233	1417.582941	401.5062692	0.0245	11.56053061	16388.01099
PRS224C	0.565692	2143.469418	1212.543502	0.0245	23.08946939	49491.57151
PRS226C	0.2576	5991.881283	1543.508618	0.0245	10.51428571	63000.35177
PRS230C	0.479265	14402.6382	6902.680395	0.0245	19.56183673	281742.057
PRS235B	0.334312	2464.626896	823.954347	0.0245	13.64538776	33630.78967
PRS235E	0.02745	10659.87864	292.6136688	0.0245	1.120408163	11943.41505
PRS241	0.112	7513.867167	841.5531227	0.0245	4.571428571	34349.10705
PRS244	0.388538	16015.36778	6222.578967	0.0245	15.85869388	253982.815
PRS248	0.016363	5397.776566	88.32381795	0.0245	0.667877551	3605.053794
PRS249	0.572	11220.34217	6418.035721	0.0245	23.34693878	261960.6417
PRS250	0.02	7316.680462	146.3336092	0.0245	0.816326531	5972.800377
PRS250D	0.37919	3086.208765	1170.259501	0.0245	15.47714286	47765.69394
PRS251	0.221	11594.67096	2562.422281	0.0245	9.020408163	104588.6645
PRS252D	0.016467	5887.75097	96.95359522	0.0245	0.672122449	3957.289601
PRS254	1.066362	9680.490012	10322.90669	0.0245	43.52497959	421343.1302
PRS255	0.17	35468.96258	6029.723639	0.0245	6.93877551	246111.1689
PRS258	0.46775	11061.03699	5173.800052	0.0245	19.09183673	211175.5123
PRS260	0.96075	15303.95208	14703.27196	0.0245	39.21428571	600133.5495
PRS269	0.0161	5066.070361	81.56373282	0.0245	0.657142857	3329.131952
PRS270	0.244	33647.54271	8210.00042	0.0245	9.959183673	335102.058
PRS271	0.243	12950.53773	3146.980667	0.0245	9.918367347	128448.1905
PRS272	0.6205	18409.32632	11422.98698	0.0245	25.32653061	466244.3667
PRS274	0.266	15884.24836	4225.210063	0.0245	10.85714286	172457.5536
PRS275	8.195	16161.54072	132443.8262	0.0245	334.4897959	5405870.458
PRS279	0.407	9246.703879	3763.408479	0.0245	16.6122449	153608.5093
PRS280	5.34	13547.1249	72341.64695	0.0245	217.9591837	2952720.284
PRS282	2.61	7043.217748	18382.79832	0.0245	106.5306122	750318.2988
PRS284	0.128	12707.38532	1626.545321	0.0245	5.224489796	66389.60492
PRS285B	0.0504	10566.91527	532.5725295	0.0245	2.057142857	21737.65426
PRS285D	0.03125	5493.4277	171.6696156	0.0245	1.275510204	7006.923087
PRS287	0.253	8510.664921	2153.198225	0.0245	10.32653061	87885.64184
PRS289	0.01415	7341.696186	103.885001	0.0245	0.57755102	4240.204124
PRS290	0.318	11993.95822	3814.078714	0.0245	12.97959184	155676.6822
PRS291	0.01585	4873.866907	77.25079048	0.0245	0.646938776	3153.093489
PRS292	0.0163	9061.676149	147.7053212	0.0245	0.665306122	6028.788622
PRS294	0.015	7099.748493	106.4962274	0.0245	0.612244898	4346.784792
PRS295	0.236	6172.746489	1456.768171	0.0245	9.632653061	59459.92537
PRS296	0.167	9557.042448	1596.026089	0.0245	6.816326531	65143.92199
PRS297	0.02	1488.713226	29.77426452	0.0245	0.816326531	1215.276103
PRS297A	0.02035	3315.74894	67.47549093	0.0245	0.830612245	2754.101671
PRS297B	1.27	2706.122314	3436.775339	0.0245	51.83673469	140276.5444
PRS297D	0.726	1918.513294	1392.840652	0.0245	29.63265306	56850.63884
PRS297E	0.291	5464.803351	1590.257775	0.0245	11.87755102	64908.48061
PRS298	0.01815	12491.56901	226.7219775	0.0245	0.740816327	9253.958265
PRS299	0.0765	3382.768718	258.7818069	0.0245	3.12244898	10562.52273
PRS301	0.09	1508.297202	135.7467482	0.0245	3.673469388	5540.6836
PRS301A	0.0143	1886.222998	26.97298888	0.0245	0.583673469	1100.938322
PRS301C	0.0165	1316.879544	21.72851248	0.0245	0.673469388	886.8780604

TABLE 5 - PCB SWAC Data

Post-CERCLA, Emergengy Removal, 1ppm PCB, 18ppm PAH > 567.5 (-10 LWD) < 45ppm PAH; Scenario #3; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS301D	0.14785	1914.144883	283.0063209	0.0245	6.034693878	11551.2784
PRS302	0.126	13003.5437	1638.446506	0.0245	5.142857143	66875.3676
PRS303	0.63	5016.382242	3160.320813	0.0245	25.71428571	128992.6862
PRS303A	1.233	1130.790631	1394.264848	0.0245	50.32653061	56908.76933
PRS303B	0.0544	2147.275746	116.8118006	0.0245	2.220408163	4767.828595
PRS303C	0.151	2902.862346	438.3322143	0.0245	6.163265306	17891.11079
PRS303E	0.155	5317.390808	824.1955752	0.0245	6.326530612	33640.63572
PRS306	0.02085	12573.82405	262.1642315	0.0245	0.851020408	10700.58088
PRS307	0.487	7557.810183	3680.653559	0.0245	19.87755102	150230.7575
PRS308	0.209	15016.17232	3138.380015	0.0245	8.530612245	128097.1435
PRS309	0.41	1478.404314	606.1457685	0.0245	16.73469388	24740.64361
PRS309A	0.937	4236.43969	3969.543989	0.0245	38.24489796	162022.2036
PRS309B	0.249025	2417.224415	601.9493099	0.0245	10.16428571	24569.35959
PRS309C	0.259	2604.686896	674.613906	0.0245	10.57142857	27535.26147
PRS309D	0.01435	2105.021068	30.20705232	0.0245	0.585714286	1232.940911
PRS311	0.235	9147.36703	2149.631252	0.0245	9.591836735	87740.05111
PRS311A	0.02225	3774.780838	83.98887366	0.0245	0.908163265	3428.117292
PRS315D	1.563588	7347.402495	11488.31037	0.0245	63.81991837	468910.6274
PRS315E	0.1263	24483.94796	3092.322627	0.0245	5.155102041	126217.2501
PRS317	0.227	6900.472797	1566.407325	0.0245	9.265306122	63934.99286
SD034	0.21355	8767.826421	1872.369332	0.0245	8.716326531	76423.23805
SD035	0.2215	10326.21367	2287.256327	0.0245	9.040816327	93357.40112
SD036	0.093	13272.45814	1234.338607	0.0245	3.795918367	50381.16765
SD042	1.784791	32786.09752	58516.33178	0.0245	72.84861224	2388421.705
SD044	7.977536	48681.98909	388362.3205	0.0245	325.6137143	15851523.29
SD049	4.89825	10640.61679	52120.40121	0.0245	199.9285714	2127363.315
SD056	16.49185	23280.35018	383936.0431	0.0245	673.1367347	15670858.9
SD058	13.731375	36591.37334	502449.8691	0.0245	560.4642857	20508157.92
SD059	2.7624	32183.33835	88903.25385	0.0245	112.7510204	3628704.239
SD062	9.582125	44210.2206	423627.8601	0.0245	391.1071429	17290933.06
SD063	11.619583	18454.99015	214439.2898	0.0245	474.2686939	8752624.075
SD064	0.078	17697.31228	1380.390357	0.0245	3.183673469	56342.46357
SD065	0.081	10198.12221	826.0478992	0.0245	3.306122449	33716.24078
SD066	0.0845	13965.74374	1180.105346	0.0245	3.448979592	48167.56514
SD068	15.38495	17729.18783	272762.6682	0.0245	627.9571429	11133170.13
SD070	0.076	41116.7333	3124.871731	0.0245	3.102040816	127545.7849
SD071	0.114625	41739.68075	4784.410905	0.0245	4.678571429	195282.0778
SD076	7.473125	49101.24236	366939.7218	0.0245	305.0255102	14977131.5
SD077	9.669667	30062.71307	290696.4245	0.0245	394.6802857	11865160.18
SD084	8.744625	23834.44414	208423.2761	0.0245	356.9234694	8507072.494
SD090	0.238375	38419.15243	9158.16546	0.0245	9.729591837	373802.6719
SD091	0.094583	17787.1389	1682.360959	0.0245	3.860530612	68667.79425
SD092	0.757	20650.18833	15632.19257	0.0245	30.89795918	638048.6762
SD094	1.06775	27329.49132	29181.06436	0.0245	43.58163265	1191063.851
SD097	0.295675	12352.94476	3652.456943	0.0245	12.06836735	149079.8752
SD098	0.0946	11440.30716	1082.253057	0.0245	3.86122449	44173.59417
SD101	0.2069	12911.69565	2671.429831	0.0245	8.444897959	109037.9523
SD102	0.27925	11561.19464	3228.463603	0.0245	11.39795918	131774.0246
SD104	0.148	3478.667333	514.8427653	0.0245	6.040816327	21013.99042
SD105	0.54925	2383.111826	1308.92417	0.0245	22.41836735	53425.47634
SD109	8.751321	44133.06578	386222.6254	0.0245	357.1967755	15764188.79
SD110	0.281125	14619.3717	4109.870869	0.0245	11.4744898	167749.8314
SD111	0.21225	17494.32103	3713.169638	0.0245	8.663265306	151557.9444
T01A	0.319	12196.18196	3890.582045	0.0245	13.02040816	158799.2671
T02C	0.0403	20029.33059	807.1820229	0.0245	1.644897959	32946.20502
T04A	0.68115	13272.61334	9040.640579	0.0245	27.80204082	369005.7379

TABLE 5 - PCB SWAC Data

Post-CERCLA, Emergengy Removal, 1ppm PCB, 18ppm PAH > 567.5 (-10 LWD) < 45ppm PAH; Scenario #3; Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
T08C	0.01905	21554.75187	410.618023	0.0245	0.77755102	16759.91931
T10A	18.996	32438.78372	616207.1355	0.0245	775.3469388	25151311.65
	SUM =	1630837.499	5191003.291			211877685.4
		SWAC =	**3.18**		**Normalized PCB SWAC =**	**129.92**

TABLE 6 - PAH SWAC Data

Post-CERCLA and Emergency Removal; Sheboygan River

Location_ID	Total_PAH	Area	Total_PAH*Area
BKG03	0.1831	51335.77445	9399.580301
BKG06	7.2321	12428.4577	89883.84891
BKG07	2.2117	7929.338299	17537.31752
BKG08	2.492	11167.56705	27829.5771
PRS114	14.811	8520.700435	126200.0941
PRS115	10.146	8746.979904	88746.8581
PRS121	1.0762	13446.28073	14470.88732
PRS127	1.2925	9032.724019	11674.79579
PRS131	476.474887	10210.46012	4865027.832
PRS135	4.117	7609.690149	31329.09434
PRS137	8.47045	7968.66232	67498.15575
PRS139	1.6181	6690.119961	10825.28311
PRS141	6.7962	7861.861658	53430.7842
PRS143	5.8292	10040.25656	58526.66351
PRS144	1.7959	5907.837628	10609.8856
PRS145	1.0459	7907.167936	8270.106944
PRS146	0.705226	8210.962378	5790.584154
PRS149	6.303983	19774.00024	124654.9613
SD034	1.030039	7645.567253	7875.232447
SD035	0.495855	9065.833637	4495.338938
SD036	10.31	8211.328784	84658.79977
SD041	2.286	6487.115716	14829.54653
SD042	5.063042	11892.40427	60211.74232
SD043	3.552523	13337.38581	47381.36983
SD044	2.698309	10037.4726	27084.20265
SD045	6.811	12890.32456	87796.00056
SD046	3.783563	15877.31957	60072.83887
SD047	0.756467	17615.2517	13325.35661
SD048	0.907703	13484.97963	12240.35646
SD049	58.985045	6525.859636	384928.1243
SD050	1.972488	7238.746579	14278.34076
SD051	1.537597	15616.58212	24012.00982
SD052	78.3795	8869.331507	695173.7689
SD053	0.2656	4087.776307	1085.713387
SD054	1.534397	4047.612333	6210.64422
SD055	2.110917	11532.43795	24344.01931
SD056	0.993813	11009.84885	10941.73092
SD057	1.528952	5697.133456	8710.643592
SD058	12.845	13968.33335	179423.2419
SD059	1.748634	20558.43992	35949.18703
SD060	0.927212	10819.86138	10032.30531
SD061	0.841221	5312.08732	4468.639407
SD062	36.963878	21102.17912	780018.3747
SD063	1.387935	5682.080053	7886.357778
SD064	0.551564	7617.092371	4201.313937
SD065	0.216793	6712.67383	1455.260698
SD066	21.483846	7351.755748	157943.9883
SD067	5.570562	5447.043019	30343.09085
SD068	1.46443	3375.358163	4942.975754
SD069	0.975655	4345.617617	4239.823556
SD070	5.149248	8767.647028	45146.78893
SD071	39.694648	8381.617901	332705.3723
SD072	19.51058	4528.683336	88357.23851
SD073	0.570507	4487.130925	2559.939603
SD074	3.11966	3154.060921	9839.597693
SD075	21.9575	9570.682042	210148.2509

TABLE 6 - PAH SWAC Data

Post-CERCLA and Emergency Removal; Sheboygan River

Location_ID	Total_PAH	Area	Total_PAH*Area
SD076	1.245215	9419.075277	11728.77382
SD077	23.022	8447.924591	194488.1199
SD078	0.474982	5333.704718	2533.413734
SD079	175.837909	6703.968685	1178811.836
SD080	0.682925	5092.2178	3477.602841
SD081	2.514352	5440.600901	13679.58576
SD082	1.160856	7157.035658	8308.287785
SD083	411.952916	11429.11556	4708257.48
SD084	14.593	3933.415964	57400.33916
SD085	0.847934	8851.241641	7505.268729
SD086	4471.373586	3747.68151	16757284.11
SD087	38.993121	2418.958008	94322.72229
SD088	2.730765	10545.7603	28797.99312
SD089	0.217	11684.13495	2535.457284
SD090	1.161734	11429.56563	13278.115
SD091	21.296628	13526.46448	288068.0822
SD092	12.870947	7698.152477	99082.51254
SD093	0.357332	4187.716831	1496.405231
SD094	11.289006	5593.79694	63148.40722
SD095	1.133383	5363.962218	6079.42359
SD096	2.938196	7993.559574	23486.64477
SD097	3.778856	13315.21462	50316.27865
SD098	0.350294	22053.17739	7725.095721
SD099	0.036815	44730.45547	1646.751718
SD100	0.628585	41152.21917	25867.66769
SD101	1.082477	58591.38828	63423.83022
SD102	0.214693	45793.35087	9831.511879
SD103	0.618368	54899.34202	33947.99633
SD104	1.845076	44217.93189	81585.44489
SD105	0.484862	43594.64254	21137.38557
SD106	0.077791	51155.30573	3979.422388
SD107	3.367197	34530.34481	116270.4735
SD108	6.497413	35727.00849	232133.1294
SD109	1.457302	12131.91371	17679.86211
SD110	9.346239	9876.751885	92310.48366
SD111	5.87648	7339.363192	43129.62101
SD112	0.990177	6941.09831	6872.915901
T01A	8.088	12143.22383	98214.39438
T01B	0.1909	5728.011033	1093.477306
T01C	2.25	8866.93523	19950.60427
T02A	166.85835	10369.05679	1730163.708
T02B	2.998	6418.696962	19243.25349
T02C	10.585	8448.090057	89423.03325
T03A	9.7965	6300.979112	61727.54187
T03B	38.169	6635.311026	253263.1866
T03C	15.57	7074.016922	110142.4435
T04A	5.816	4115.070168	23933.2481
T04B	16.9776	5022.662737	85272.75889
T04C	1.093575	3666.376019	4009.457155
T05A	1465.115125	7139.305266	10459904.13
T05B1	1676.567	5574.436489	9345916.26
T05C2	1.15765	9157.490114	10601.16843
T05E	2.042488	4578.797208	9352.138351
T06B	0.32875	5195.106962	1707.891414
T06C	0.22505	10641.10691	2394.78111
T07A	3.496975	6820.940504	23852.65842

TABLE 6 - PAH SWAC Data

Post-CERCLA and Emergency Removal; Sheboygan River

Location_ID	Total_PAH	Area	Total_PAH*Area
T07B	0.27025	3238.034775	875.078898
T07C	0.52995	2684.859684	1422.84139
T08A	4963.968	5562.725259	27613190.18
T08C	307.63	4788.762534	1473167.018
T08D	0.01985	7921.97052	157.2511148
T08D1	1.1632	5171.600153	6015.605297
T08E	3.34745	3834.397401	12835.45358
T09A	1441.85	8243.121105	11885344.16
T09B	326.433837	6413.288943	2093514.518
T09C	2.054	5728.07952	11765.47533
T09D	0.83855	2893.482246	2426.329538
T10A	27.77	9934.891675	275891.9418
T10C	457.8175	11560.93324	5292797.553
T10D	2.1571	3884.621861	8379.517816
T11A	23.99	6607.492357	158513.7416
T11C	35.4865	6790.257897	240962.4869
T11D	544.948863	4362.689737	2377442.812
T11E	2.7585	8995.661655	24814.53268
T12A	612.1	9168.033229	5611753.14
T12B	27.8865	8012.796131	223448.8393
T12C	179.666358	3668.373081	659083.2312
T12D	0.7738	5674.152431	4390.659151
T13A	32.36	8010.159465	259208.7603
T13B	0.661	6692.094092	4423.474195
T13C	0.98285	6953.512809	6834.260065
T14A	10.5175	4753.600261	49995.99075
T14B	2.026663	5709.613917	11571.46327
T14C	0.143	8002.315653	1144.331138
T15B	2.08255	6290.9318	13101.18002
T15C	2.3688	7014.64613	16616.29375
T16A	11.476	10060.81546	115457.9183
T16B	2.057831	6437.551218	13247.39246
T16C	2.854325	8440.846832	24092.92013
T17B	18.102219	6381.151266	115512.9977
T17C	3.057	3308.797074	10114.99266
T18A	4.543	6263.782093	28456.36205
T18B	0.62105	5447.771141	3383.338267
T18C	2.20635	12845.01037	28340.58863
	SUM =	1630837.498	114522513.1
		SWAC=	**70.22**

TABLE 7 - PAH SWAC Data

Post-CERCLA, Emergency Removal, and 1ppm PCB; Sheboygan River

Location_ID	Total_PAH	Area	Total_PAH*Area
BKG08	7.18	16585.8624	119086.492
PRS131	319.1835	56926.97225	18170150.25
PRS141	6.7962	36612.38686	248825.1036
SD034	2.068364	8767.854487	18135.11458
SD035	33.202428	10326.20617	342855.1169
SD036	10.31	13272.45818	136839.0438
SD042	30.01719	40080.8737	1203115.201
SD044	9.890776	53297.32542	527151.9071
SD049	27.625305	25845.14363	713979.9757
SD056	36.272582	23335.18828	846427.5302
SD058	28.128375	38737.24591	1089615.779
SD059	22.221415	25832.85216	574042.5284
SD060	11.658159	10819.86138	126139.6644
SD061	13.007156	9069.229683	117964.8853
SD062	38.96525	31702.27812	1235287.193
SD063	12.304705	16024.31115	197174.4216
SD064	0.019748	14493.34863	286.2146487
SD065	0.022245	7253.395793	161.3517894
SD066	0.072883	13965.74374	1017.865301
SD068	1.713894	17729.18824	30385.94935
SD070	0.881448	27459.20427	24203.86069
SD071	77.81	15061.6046	1171943.454
SD072	214.155145	9963.879464	2133816.051
SD073	21.078377	7253.82235	152898.8022
SD074	116.61483	3154.060921	367810.2781
SD075	72.56	9570.682042	694448.689
SD076	0.803059	13418.24967	10775.64617
SD077	188.821589	8447.924591	1595150.545
SD079	213.19	9163.455238	1953557.022
SD080	0.151622	7590.144151	1150.832836
SD081	0.815042	9122.521949	7435.238534
SD083	449.276747	12781.00841	5742209.881
SD084	44.332669	4278.442167	189674.7604
SD085	0.29657	21342.19052	6329.453441
SD086	7690.235504	4383.213808	33707946.45
SD088	0.250988	18176.19019	4562.005623
SD090	14.945619	16610.17984	248249.4194
SD091	15.2885	22476.04514	343625.0162
SD092	23.005474	7811.21514	179700.7068
SD094	10.131501	6193.462283	62749.06931
SD096	2.938196	11370.63245	33409.14678
SD097	3.778856	21102.31512	79742.61011
SD098	0.350294	22053.17743	7725.095734
SD099	0.036815	64324.94134	2368.122715
SD100	0.628585	72893.50773	45819.76556
SD101	1.082477	58673.09643	63512.2774
SD102	0.132968	85829.27865	11412.54752
SD104	1.845076	58999.63737	108858.8149
SD105	1.048431	165007.3025	172998.7712
SD109	15.857382	46675.24437	740147.1799
SD110	9.346239	14660.25756	137018.271
SD111	1.50143	17494.32099	26266.49837
SD112	0.280724	6941.255123	1948.576903
T01A	8.088	13139.88204	106275.366
T01B	0.1909	6228.541717	1189.028614
T01C	2.25	8878.260669	19976.0865

TABLE 7 - PAH SWAC Data

Post-CERCLA, Emergency Removal, and 1ppm PCB; Sheboygan River

Location_ID	Total_PAH	Area	Total_PAH*Area
T02A	202.445	15343.21227	3106156.609
T02C	10.585	11900.01843	125961.6951
T03A	137.7875	8544.050254	1177263.324
T03B	25.2685	12623.11038	318967.0646
T03C	5.366256	15082.09195	80934.3664
T04A	101.854	5015.059894	510803.9105
T04B	33.423375	6192.081354	206960.2571
T04C	129.2805	9020.670336	1166196.771
T05A	2441	7139.305266	17427044.15
T05B1	3339	11064.70244	36945041.45
T05E	9.7813	6452.469901	63113.54384
T07A	45.1105	7693.636218	347063.7766
T07B	3.996781	8815.686218	35234.36718
T08A	6623	5562.725259	36841929.39
T08C	247.855	4852.232311	1202650.039
T08D1	0.669558	20095.54374	13455.13207
T09A	917.3	8262.937355	7579592.436
T09C	2.054	6180.650073	12695.05525
T09D	3.229242	5932.168337	19156.40714
T10A	37.3725	9934.891675	371291.7391
T10C	199.892325	11560.93324	2310941.824
T11A	85.269	7505.019143	639945.4773
T11C	57.849	6790.257897	392809.6291
T11D	960.2	4362.689737	4189054.685
T11E	13.121475	9028.86498	118472.0261
T12B	36.98	15064.741	557094.122
T12C	227.4	4062.167319	923736.8485
T15B	5.5834	7548.706907	42147.45015
	SUM =	1630837.498	192581260.5
		SWAC =	**118.09**

TABLE 8 - PAH SWAC Data

Post-CERCLA, Emergency Removal, 1ppm PCB, and 45ppm PAH; Scenario #2; Sheboygan River

Location_ID	Total_PAH	Area	Total_PAH*Area
BKG08	7.18	16585.8624	119086.492
PRS131	319.1835	56926.97225	18170150.25
PRS141	6.7962	36612.38686	248825.1036
SD034	2.388673	8767.854487	20943.53728
SD035	22.999363	10326.20617	237496.1642
SD036	10.31	13272.45818	136839.0438
SD042	15.613711	40080.8737	625811.1785
SD044	9.890776	53297.32542	527151.9071
SD049	27.625305	25845.14363	713979.9757
SD056	36.272582	23335.18828	846427.5302
SD058	28.128375	38737.24591	1089615.779
SD059	165.667132	32183.33835	5331721.362
SD062	38.96525	44210.2206	1722662.298
SD063	12.304705	17054.97342	209856.4167
SD064	0.019748	14493.34863	286.2146487
SD065	0.022245	7253.395793	161.3517894
SD066	0.072883	13965.74374	1017.865301
SD068	1.713894	17729.18824	30385.94935
SD070	0.881448	31836.82591	28062.50653
SD071	31.67825	18831.78196	596557.8969
SD076	0.803059	13418.24967	10775.64617
SD077	188.821589	10123.44126	1911524.266
SD080	0.151622	11012.77874	1669.779539
SD081	0.815042	9122.521949	7435.238534
SD084	44.332669	5517.993296	244627.3703
SD085	0.29657	21342.19052	6329.453441
SD088	0.250988	18176.19019	4562.005623
SD090	11.263425	16610.17984	187087.5148
SD091	66.706	22476.04514	1499287.067
SD092	11.301491	7811.21514	88278.37761
SD094	10.131501	14094.51708	142798.6139
SD096	2.938196	11370.63245	33409.14678
SD097	3.778856	21102.31512	79742.61011
SD098	0.350294	22053.17743	7725.095734
SD099	0.036815	64324.94134	2368.122715
SD100	0.628585	72893.50773	45819.76556
SD101	1.082477	58673.09643	63512.2774
SD102	0.132968	85829.27865	11412.54752
SD104	1.845076	58999.63737	108858.8149
SD105	1.048431	165007.3025	172998.7712
SD109	15.857382	46675.24437	740147.1799
SD110	10.492295	14660.25756	153819.7471
SD111	1.50143	17494.32099	26266.49837
SD112	0.280724	6941.255123	1948.576903
T01A	8.088	13139.88204	106275.366
T01B	0.1909	6228.541717	1189.028614
T01C	2.25	8878.260669	19976.0865
T02A	202.445	15343.21227	3106156.609
T02C	10.585	12167.50649	128793.0562
T03A	113.911667	8556.518986	974687.3414
T03C	5.366256	17444.68726	93612.65766
T04A	450.57225	5015.059894	2259646.82
T04B	149.90685	6192.081354	928235.4107
T04C	31.828	11100.17382	353296.3322
T05A	2441	7139.305266	17427044.15
T05B1	694.642833	11064.70244	7686016.249

TABLE 8 - PAH SWAC Data

Post-CERCLA, Emergency Removal, 1ppm PCB, and 45ppm PAH; Scenario #2; Sheboygan River

Location_ID	Total_PAH	Area	Total_PAH*Area
T05E	9.7813	6452.469901	63113.54384
T07A	45.1105	9091.823638	410136.7102
T07B	3.996781	8988.762966	35926.11704
T08A	3634.6	9883.431427	35922319.86
T08C	168.155	10714.84098	1801754.086
T08D1	0.669558	20095.54374	13455.13207
T09A	917.3	16379.88657	15025269.95
T09C	2.054	6227.798504	12791.89813
T09D	3.229242	5932.168337	19156.40714
T10A	37.3725	10267.11681	383707.8229
T10C	199.892325	14365.26129	2871505.478
T11A	85.269	11511.80218	981599.8597
T11C	24.83475	18373.21633	456294.2342
T11E	13.121475	13676.33465	179453.6832
T12C	347.865	21981.77808	7646691.232
T15B	5.5834	7548.706907	42147.45015
	SUM =	1630837.498	135159695.9
		SWAC =	**82.88**

TABLE 9 - PAH SWAC Data

Post-CERCLA, Emergengy Removal, 1ppm PCB, 18ppm PAH > 567.5 (-10 LWD) < 45ppm PAH; Scenario #3; Sheboygan River

Location_ID	Total_PAH	Area	Total_PAH*Area
PRS131	319.1835	59385.28695	18954803.74
SD034	2.388673	8767.854487	20943.53728
SD035	22.999363	10326.20617	237496.1642
SD036	10.31	13272.45818	136839.0438
SD042	15.613711	40080.8737	625811.1785
SD044	9.890776	53297.32542	527151.9071
SD049	27.625305	25845.14363	713979.9756
SD056	36.272582	37717.80968	1368122.344
SD058	28.128375	42816.12249	1204347.949
SD059	165.667132	32183.33835	5331721.362
SD062	38.96525	44210.2206	1722662.298
SD063	12.304705	17054.97342	209856.4167
SD064	0.019748	14493.34863	286.2146487
SD065	0.022245	7253.395793	161.3517894
SD066	0.072883	13965.74374	1017.865301
SD068	1.713894	17729.1882	30385.94928
SD070	0.881448	31836.82591	28062.50653
SD071	31.67825	18831.78196	596557.8969
SD076	0.803059	24697.56782	19833.60412
SD077	188.821589	10669.30944	2014595.963
SD084	44.332669	5517.993296	244627.3703
SD090	11.263425	19205.21886	216316.5423
SD091	66.706	32064.55845	2138898.436
SD092	11.301491	7811.21514	88278.37761
SD094	10.131501	17172.39973	173982.185
SD097	2.106404	26882.91154	56626.2724
SD098	0.373153	99967.08527	37303.01777
SD101	0.595483	117977.6376	70253.67759
SD102	0.132968	85829.27865	11412.54752
SD104	1.845076	58999.63737	108858.8149
SD105	1.048431	165007.3025	172998.7712
SD109	15.857382	62367.81909	988990.3318
SD110	5.600353	20679.73953	115813.8413
SD111	1.50143	17494.32099	26266.49837
T01A	5.630525	35914.11715	202215.3345
T02A	101.426775	16245.05544	1647683.583
T02C	2.739455	27609.40179	75634.71378
T03A	113.911667	8556.518986	974687.3414
T04A	450.57225	5015.059894	2259646.82
T04B	149.90685	6192.081354	928235.4107
T04C	31.828	12753.97546	405933.531
T05A	1053.925	7139.305266	7524292.302
T05B1	694.642833	11186.57744	7770675.843
T05E	9.7813	32202.91594	314986.3817
T07A	45.1105	9091.823638	410136.7102
T07B	3.996781	10405.83263	41589.83414
T08A	3634.6	9883.431427	35922319.86
T08C	168.155	11705.51671	1968341.163
T08D1	0.669558	34080.87968	22819.12564
T09A	917.3	20989.89277	19254028.64
T09D	1.940469	8742.192283	16963.95312
T10A	37.3725	10267.11681	383707.8229
T10C	133.060975	23724.51143	3156806.623
T11A	85.269	11511.80218	981599.8597
T11C	24.83475	19748.04799	490437.8347
T12C	347.865	28910.84269	10057070.29
T15B	5.5834	7548.706907	42147.45015
	SUM =	1630837.498	133047224.4
		SWAC =	**81.58**

TABLE 10 - PCB SWAC Data

Post-CERCLA, Emergengy Removal, 1ppm PCB, 18ppm PAH > 567.5 (-10 LWD) < 5ppm PCB, and 18ppm PAH near Boat Island; Scenario #10
Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS121E	0.095125	27251.51316	2592.300189	0.0245	3.882653061	105808.171
PRS139E	0.01815	19587.34662	355.5103412	0.0245	0.740816327	14510.62617
PRS141E	0.0157	6840.535701	107.3964105	0.0245	0.640816327	4383.526959
PRS143B	0.016275	12081.04046	196.6189335	0.0245	0.664285714	8025.262593
PRS143E	0.094037	4506.506563	423.7783577	0.0245	3.838244898	17297.07582
PRS167E	0.384925	10666.30213	4105.726346	0.0245	15.71122449	167580.6672
PRS202	1.7325	5832.785522	10105.30092	0.0245	70.71428571	412461.2619
PRS204B	0.276	3001.18562	828.3272312	0.0245	11.26530612	33809.27474
PRS204E	0.365575	1015.060218	371.0806392	0.0245	14.92142857	15146.14854
PRS208E	0.014042	16179.85708	227.1975532	0.0245	0.573142857	9273.369516
PRS216E	0.473	22116.50864	10461.10859	0.0245	19.30612245	426984.024
PRS218E	0.28	23029.73287	6448.325204	0.0245	11.42857143	263196.9471
PRS222	0.45	11007.37905	4953.320572	0.0245	18.36734694	202176.3499
PRS224A	0.415525	1417.58294	589.0411511	0.0245	16.96020408	24042.49596
PRS224C	0.565692	2143.469419	1212.543503	0.0245	23.08946939	49491.57154
PRS226C	0.2576	5991.881281	1543.508618	0.0245	10.51428571	63000.35175
PRS230C	0.479265	9830.90203	4711.607262	0.0245	19.56183673	192310.5005
PRS232A	0.460425	7126.268286	3281.112075	0.0245	18.79285714	133922.9419
PRS234	0.016075	2193.874823	35.26653778	0.0245	0.656122449	1439.450521
PRS235B	0.334312	2464.626814	823.9543195	0.0245	13.64538776	33630.78855
PRS235E	0.02405	10365.50955	249.2905046	0.0245	0.981632653	10175.12264
PRS236A	0.0811	6775.085985	549.4594734	0.0245	3.310204082	22426.91728
PRS236C	0.56035	4193.701792	2349.940799	0.0245	22.87142857	95915.95099
PRS240	0.01485	12099.23917	179.6737017	0.0245	0.606122449	7333.620479
PRS241	0.112	12483.74378	1398.179303	0.0245	4.571428571	57068.54299
PRS244	0.762275	7006.738696	5341.061739	0.0245	31.11326531	218002.52
PRS246	0.163	11292.71652	1840.712793	0.0245	6.653061224	75131.1344
PRS248	0.01625	3039.197375	49.38695735	0.0245	0.663265306	2015.794178
PRS250	0.02	4560.065933	91.20131865	0.0245	0.816326531	3722.502802
PRS250B	0.087708	3673.043925	322.1553366	0.0245	3.579918367	13149.19741
PRS250D	0.37919	2418.627193	917.1192451	0.0245	15.47714286	37433.43858
PRS252	0.015	1289.219398	19.33829097	0.0245	0.612244898	789.317999
PRS252A	1.300437	1890.775704	2458.834684	0.0245	53.07906122	100360.5994
PRS252B	1.133675	1225.743782	1389.595082	0.0245	46.27244898	56718.16662
PRS252C	0.39554	2345.12098	927.5891525	0.0245	16.1444898	37860.78173
PRS252D	0.01735	2007.724265	34.83401599	0.0245	0.708163265	1421.796571
PRS254	2.112275	4602.337185	9721.401777	0.0245	86.21530612	396791.9093
PRS256	0.0764	5912.585305	451.7215173	0.0245	3.118367347	18437.61295
PRS258	0.258	18774.75465	4843.886699	0.0245	10.53061224	197709.6612
PRS262	0.486	21973.1081	10678.93054	0.0245	19.83673469	435874.7159
PRS264	0.333	32899.05832	10955.38642	0.0245	13.59183673	447158.6294
PRS270	0.244	31437.03588	7670.636754	0.0245	9.959183673	313087.2144
PRS271	0.243	25239.0903	6133.098943	0.0245	9.918367347	250330.5691
PRS272	0.996	26760.9899	26653.94594	0.0245	40.65306122	1087916.161
PRS279	0.407	14028.13078	5709.449227	0.0245	16.6122449	233038.7439
PRS284	0.128	33346.39884	4268.339052	0.0245	5.224489796	174217.9205
PRS285B	0.0504	10566.91527	532.5725294	0.0245	2.057142857	21737.65426
PRS285D	0.03125	5493.427699	171.6696156	0.0245	1.275510204	7006.923086
PRS287	0.2295	8510.664922	1953.1976	0.0245	9.367346939	79722.35101
PRS289	0.01415	7594.518424	107.4624357	0.0245	0.57755102	4386.221865
PRS290	0.318	12046.09122	3830.657007	0.0245	12.97959184	156353.3472
PRS291	0.01585	4956.778534	78.56493976	0.0245	0.646938776	3206.732235
PRS292	0.0163	9061.67615	147.7053212	0.0245	0.665306122	6028.788622
PRS294	0.015	7099.748492	106.4962274	0.0245	0.612244898	4346.784791
PRS296	0.167	11753.23905	1962.790922	0.0245	6.816326531	80113.91519

TABLE 10 - PCB SWAC Data

Post-CERCLA, Emergengy Removal, 1ppm PCB, 18ppm PAH > 567.5 (-10 LWD) < 5ppm PCB, and 18ppm PAH near Boat Island; Scenario #10
Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
PRS297A	0.0186	4188.132789	77.89926988	0.0245	0.759183673	3179.562036
PRS297B	0.6604	4422.339202	2920.512809	0.0245	26.95510204	119204.6045
PRS297D	0.4445	1973.046826	877.019314	0.0245	18.14285714	35796.70669
PRS297E	0.5935	5778.929451	3429.794629	0.0245	24.2244898	139991.6175
PRS298	0.01815	12491.56901	226.7219775	0.0245	0.740816327	9253.958263
PRS299	0.25325	3382.768717	856.6861776	0.0245	10.33673469	34966.78276
PRS301	0.09	1508.297202	135.7467481	0.0245	3.673469388	5540.683597
PRS301A	0.0143	1886.222987	26.97298871	0.0245	0.583673469	1100.938315
PRS301C	0.016275	1316.879545	21.4322146	0.0245	0.664285714	874.7842693
PRS301D	0.0827	1914.144882	158.2997818	0.0245	3.375510204	6461.215583
PRS302	0.126	13884.35043	1749.428155	0.0245	5.142857143	71405.2308
PRS303	0.63	5189.082514	3269.121984	0.0245	25.71428571	133433.5504
PRS303A	0.622975	1130.790633	704.4542943	0.0245	25.42755102	28753.2365
PRS303B	0.0544	3563.571743	193.8583028	0.0245	2.220408163	7912.583788
PRS303C	0.10325	4897.47693	505.6644931	0.0245	4.214285714	20639.36706
PRS306	0.02085	12573.82405	262.1642315	0.0245	0.851020408	10700.58088
PRS307	0.487	8410.78352	4096.051574	0.0245	19.87755102	167185.7785
PRS308	0.209	15016.17232	3138.380015	0.0245	8.530612245	128097.1435
PRS309	0.215	2938.379536	631.7516003	0.0245	8.775510204	25785.7796
PRS309A	0.545	4236.439688	2308.85963	0.0245	22.24489796	94239.16858
PRS309B	0.131463	2417.224415	317.7755733	0.0245	5.365836735	12970.43156
PRS309C	0.259	2604.686896	674.613906	0.0245	10.57142857	27535.26147
PRS309D	0.01645	2219.554989	36.51167958	0.0245	0.671428571	1490.272636
PRS311	0.235	11295.89208	2654.534639	0.0245	9.591836735	108348.3526
PRS315D	1.563588	7399.149331	11569.2211	0.0245	63.81991837	472213.1063
PRS315E	0.20935	24483.94796	5125.714505	0.0245	8.544897959	209212.8369
PRS317	0.227	6900.472797	1566.407325	0.0245	9.265306122	63934.99286
SD034	0.098937	8767.826419	867.4624424	0.0245	4.038244898	35406.6303
SD035	0.1005	9356.794933	940.3578907	0.0245	4.102040816	38381.95472
SD036	0.093	9024.487107	839.277301	0.0245	3.795918367	34256.21637
SD041	0.194	18729.28182	3633.480673	0.0245	7.918367347	148305.3336
SD042	2.351194	23820.52281	56006.67031	0.0245	95.96710204	2285986.543
SD044	11.1545	46885.87841	522988.5307	0.0245	455.2857143	21346470.64
SD049	4.89825	48112.45932	235666.8538	0.0245	199.9285714	9619055.259
SD054	9.96925	22066.71895	219988.6379	0.0245	406.9081633	8979128.079
SD056	16.49185	14927.87893	246188.3402	0.0245	673.1367347	10048503.68
SD057	0.274625	11597.8435	3185.05777	0.0245	11.20918367	130002.358
SD058	13.731375	27979.71785	384199.9981	0.0245	560.4642857	15681632.58
SD059	3.459625	25832.85216	89371.98116	0.0245	141.2091837	3647835.966
SD060	10.03075	10819.86138	108531.3245	0.0245	409.4183673	4429849.981
SD061	4.76825	11160.17923	53214.52461	0.0245	194.622449	2172021.413
SD062	9.582125	31767.63297	304401.43	0.0245	391.1071429	12424548.16
SD064	0.078	25838.1782	2015.3779	0.0245	3.183673469	82260.32245
SD065	0.081	16541.68017	1339.876094	0.0245	3.306122449	54688.82014
SD066	0.078	16466.43181	1284.381681	0.0245	3.183673469	52423.74209
SD068	12.857875	26567.16682	341597.3101	0.0245	524.8112245	13942747.35
SD069	10.773917	19142.67809	206241.6249	0.0245	439.7517143	8418025.507
SD070	0.076	54637.20546	4152.427615	0.0245	3.102040816	169486.8414
SD076	7.473125	42107.38267	314673.7341	0.0245	305.0255102	12843825.88
SD077	9.669667	21947.41587	212224.203	0.0245	394.6802857	8662212.367
SD080	0.189917	15408.90088	2926.412228	0.0245	7.751714286	119445.3971
SD081	0.39775	16741.47899	6658.923268	0.0245	16.23469388	271792.7864
SD084	8.744625	29619.47957	259011.2415	0.0245	356.9234694	10571887.41
SD091	0.094583	26674.44668	2522.949191	0.0245	3.860530612	102977.518
SD094	0.7375	26660.07493	19661.80526	0.0245	30.10204082	802522.6637

TABLE 10 - PCB SWAC Data

Post-CERCLA, Emergengy Removal, 1ppm PCB, 18ppm PAH > 567.5 (-10 LWD) < 5ppm PCB, and 18ppm PAH near Boat Island; Scenario #10
Sheboygan River

Location_ID	Total_PCB	Area	Total_PCB*Area	TOC SWAC	PCB_Normalized	PCB_Normal*Area
SD096	0.251	3751.065018	941.5173196	0.0245	10.24489796	38429.27835
SD097	0.295675	9936.164044	2937.875304	0.0245	12.06836735	119913.2777
SD098	0.0946	15735.22359	1488.552152	0.0245	3.86122449	60757.2307
SD099	0.9635	6077.430842	5855.604616	0.0245	39.32653061	239004.27
SD101	0.2069	24553.24173	5080.065715	0.0245	8.444897959	207349.621
SD102	0.27925	11561.19464	3228.463604	0.0245	11.39795918	131774.0247
SD104	0.148	5037.0072	745.4770656	0.0245	6.040816327	30427.63533
SD105	0.54925	2944.907669	1617.490537	0.0245	22.41836735	66020.02192
SD109	8.751321	42340.54711	370535.7191	0.0245	357.1967755	15123906.9
SD110	0.215083	12893.87459	2773.253228	0.0245	8.778897959	113194.0093
T02C	0.224	872.4812064	195.4357902	0.0245	9.142857143	7976.97103
T04A	0.68115	16267.32352	11080.48741	0.0245	27.80204082	452264.7924
T05A	0.0192	26351.46068	505.948045	0.0245	0.783673469	20650.94061
T08C	0.01905	17982.10099	342.5590239	0.0245	0.77755102	13982.00098
T09C	0.0225	710.4207494	15.98446686	0.0245	0.918367347	652.4272188
T10A	18.996	33589.30652	638062.4666	0.0245	775.3469388	26043365.98
	SUM =	1630837.499	4864746.004			198561061.4
		SWAC =	**2.98**		**Normalized PCB SWAC =**	**121.8**

TABLE 11 - PAH SWAC Data

Post-CERCLA, Emergengy Removal, 1ppm PCB, 18ppm PAH > 567.5 (-10 LWD) < 5ppm PCB, and 18ppm PAH near Boat Island; Scenario #10
Sheboygan River

Location_ID	Total_PAH	Area	Total_PAH*Area
BKG08	7.18	16613.88695	119287.7083
PRS131	319.1835	56915.19484	18166391.09
PRS141	3.7524	23790.51343	89271.52258
SD034	1.030039	8767.854482	9031.232063
SD035	0.74807	9356.78744	6999.53198
SD036	15.44	9024.487121	139338.0812
SD041	2.930212	18729.28187	54880.76648
SD042	30.01719	31115.29899	933993.8416
SD044	28.515922	48751.00814	1390179.946
SD049	27.625305	25845.14363	713979.9757
SD054	35.186531	24548.57596	863779.229
SD056	36.272582	15411.90747	559029.6776
SD057	1.395205	20115.44728	28065.17263
SD058	28.128375	27979.71785	787023.996
SD059	22.221415	25832.85216	574042.5285
SD060	11.658159	10819.86138	126139.6643
SD061	2.250088	11160.17923	25111.38536
SD062	38.96525	31767.63297	1237833.76
SD064	0.019748	25838.1782	510.2523432
SD065	0.022245	16541.68017	367.9696753
SD066	0.031744	14355.05193	455.6867683
SD068	9.654359	22402.28437	216279.6957
SD069	3.184387	18111.53433	57674.13445
SD070	0.881448	26546.61954	23399.4647
SD076	0.803059	20559.95804	16510.85934
SD077	188.821589	17350.03626	3276061.416
SD080	0.151622	15939.57206	2416.789795
SD081	0.815042	20290.55031	16537.65071
SD084	44.332669	5671.165959	251417.9233
SD091	66.706	51888.44497	3461270.61
SD094	5.960183	14094.51708	84005.90107
SD096	1.505074	14917.96254	22452.63755
SD097	2.106404	24045.32442	50649.16754
SD098	0.373153	22053.17749	8229.209342
SD099	0.036815	88109.72397	3243.759488
SD101	0.595483	107781.8217	64182.24253
SD102	0.132968	85829.27866	11412.54752
SD104	1.845076	58999.63737	108858.8149
SD105	1.048431	165007.3025	172998.7712
SD109	15.857382	33525.68139	531629.5366
SD110	18.79849	18947.47208	356183.8645
SD111	1.50143	13866.02066	20818.8594
T01C	1.15565	17441.1061	20155.81426
T02A	101.426775	15343.21228	1556212.539
T02C	10.585	12167.50649	128793.0562
T03A	159.078	8880.549723	1412700.089
T03C	5.366256	17444.68726	93612.65769
T04B	149.90685	12581.86093	1886107.139
T04C	31.828	13303.29825	423417.3766
T05A	2441	8678.046269	21183110.94
T05B1	535.429875	23074.22649	12354630.21
T07B	11.630925	31793.78041	369791.0754
T08A	3634.6	13951.1349	50706794.9
T08C	168.155	14836.67932	2494861.811
T09C	1.353225	6390.300116	8647.513874

TABLE 11 - PAH SWAC Data

Post-CERCLA, Emergengy Removal, 1ppm PCB, 18ppm PAH > 567.5 (-10 LWD) < 5ppm PCB, and 18ppm PAH near Boat Island; Scenario #10 Sheboygan River

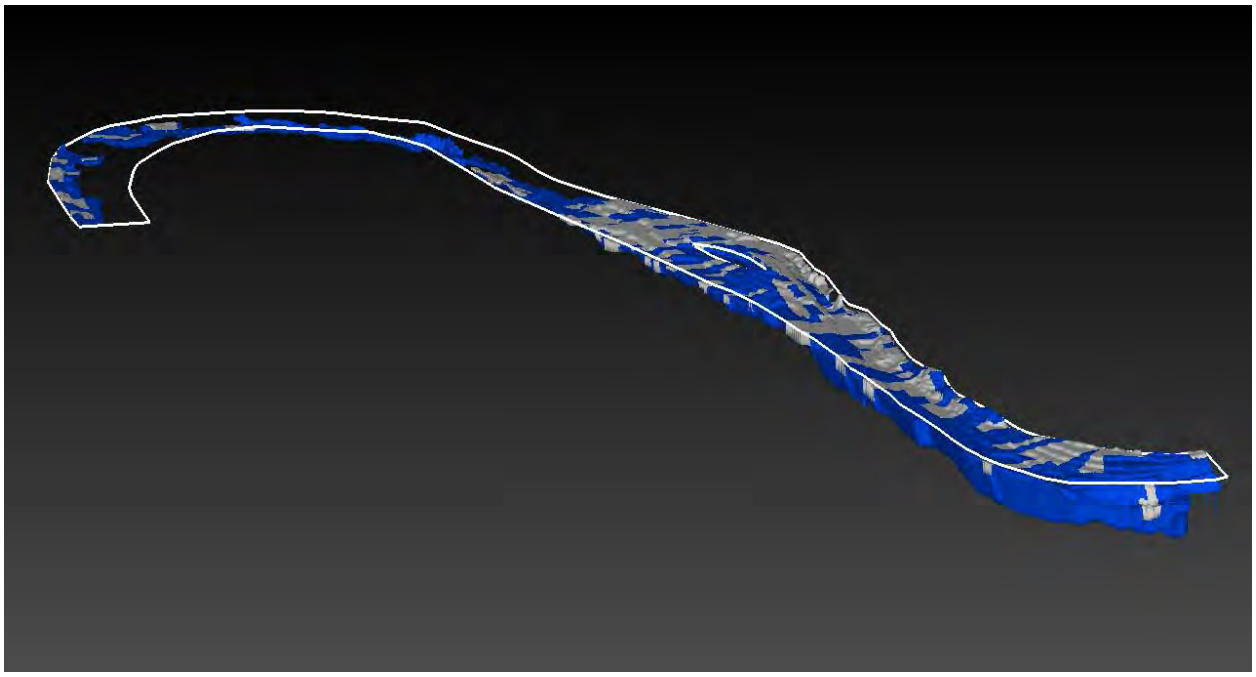
Location_ID	Total_PAH	Area	Total_PAH*Area
T09D	1.940469	21431.35239	41586.87495
T10A	37.3725	11076.40665	413953.0077
T10C	133.060975	18503.37287	2462076.835
T11C	18.6832	29216.10513	545850.3354
T12C	298.539167	35505.24792	10599707.14
	SUM =	1630837.501	141283956.2
		SWAC =	**86.63**

Appendix B

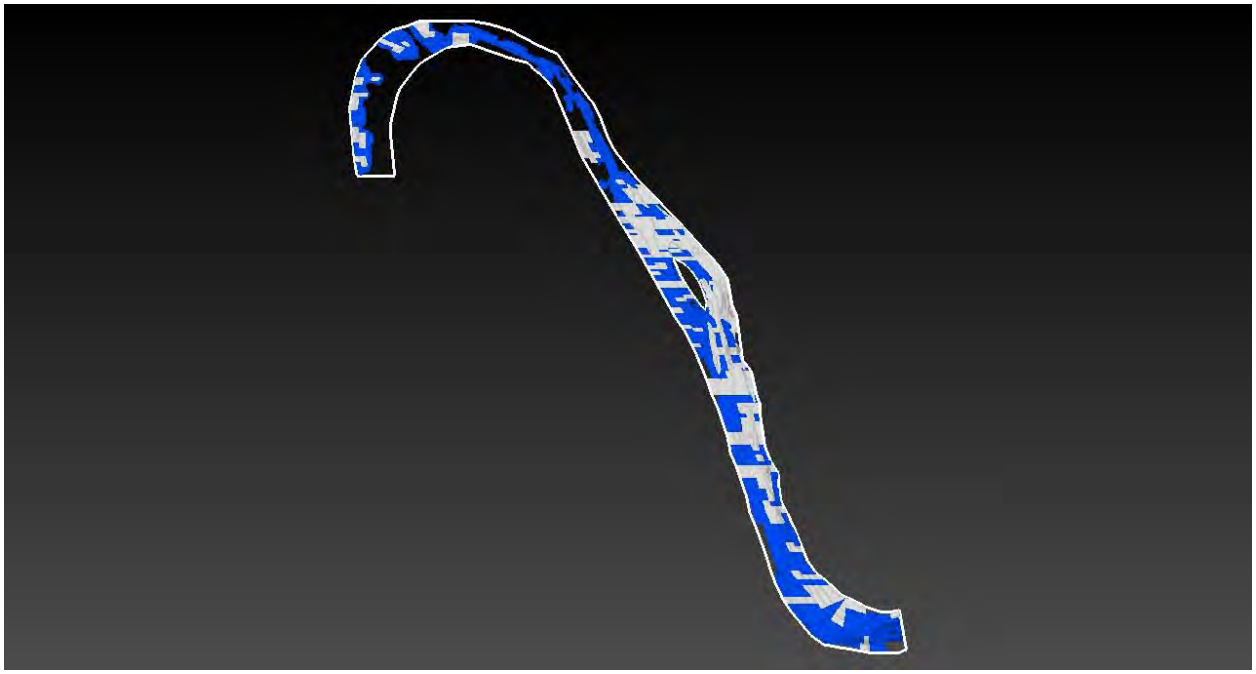
Scenario 10 Sediment Modeling

APPENDIX B

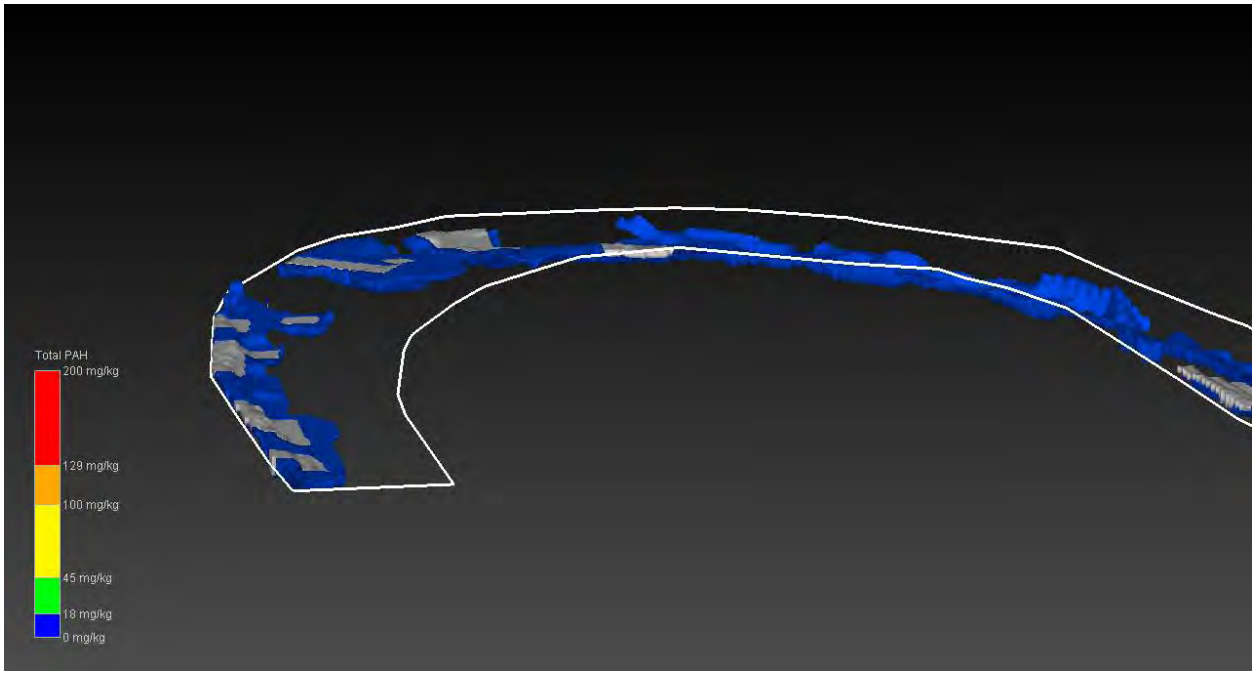
Scenario 10 Sediment Modeling



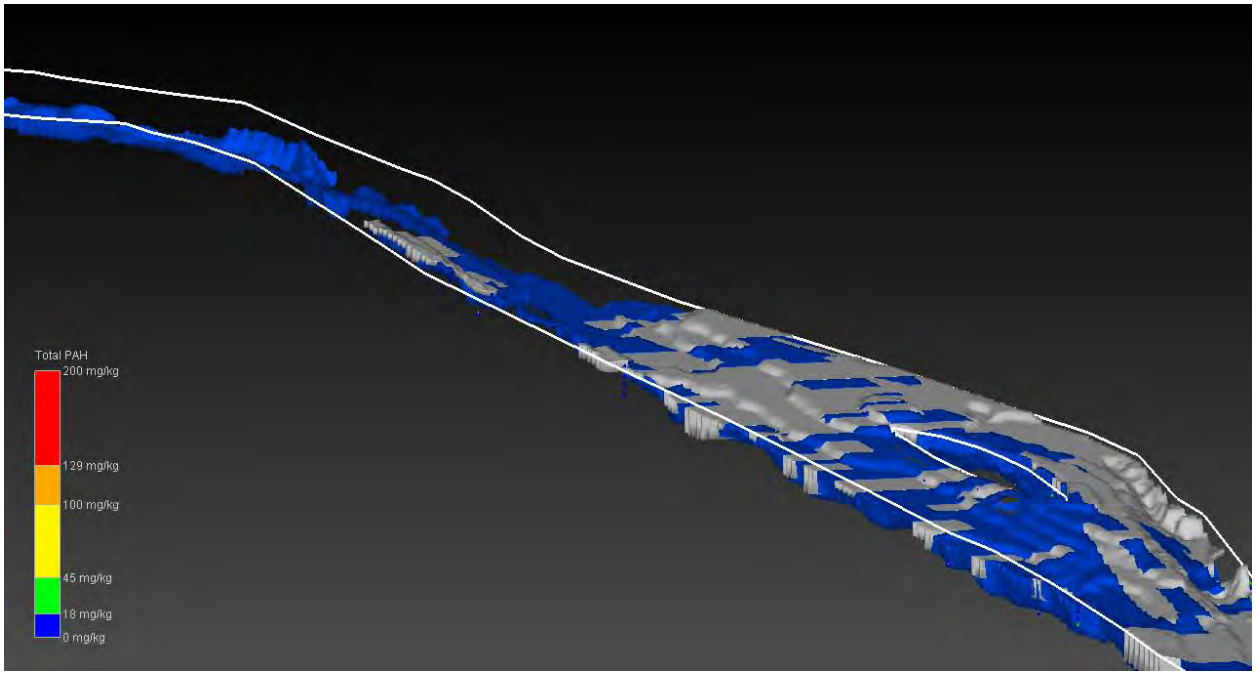
Full Iso



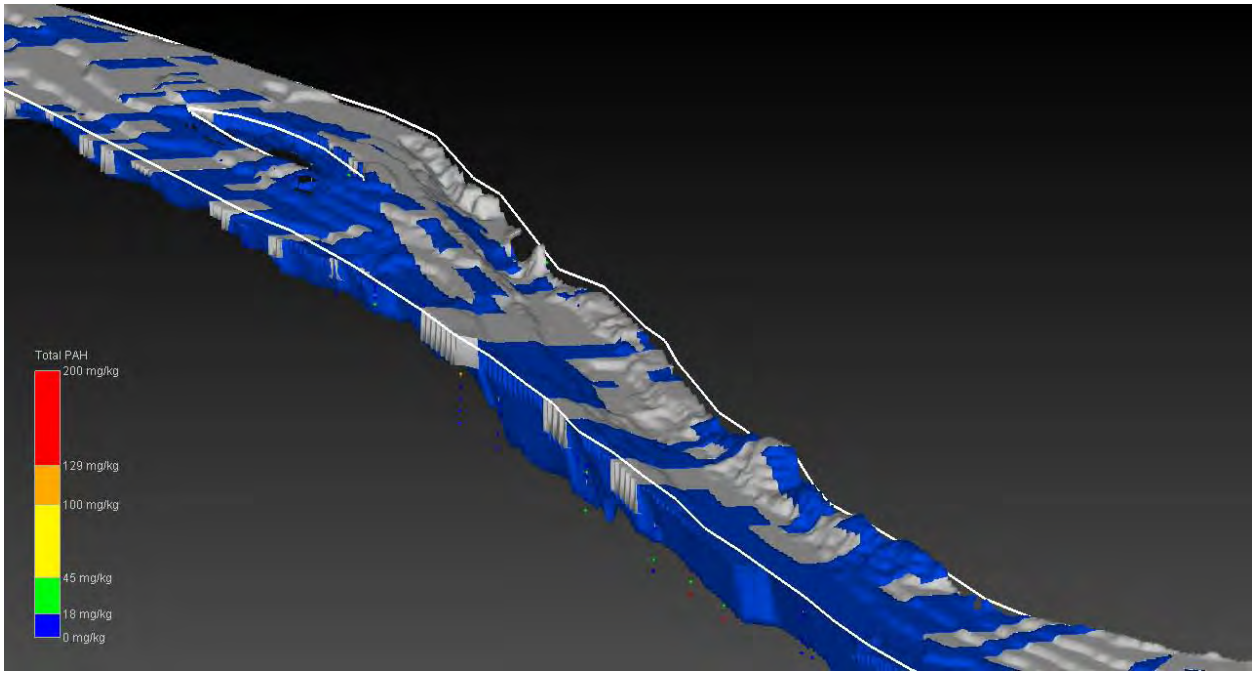
Full Plan


Total PAH
200 mg/kg
129 mg/kg
100 mg/kg
45 mg/kg
18 mg/kg
0 mg/kg

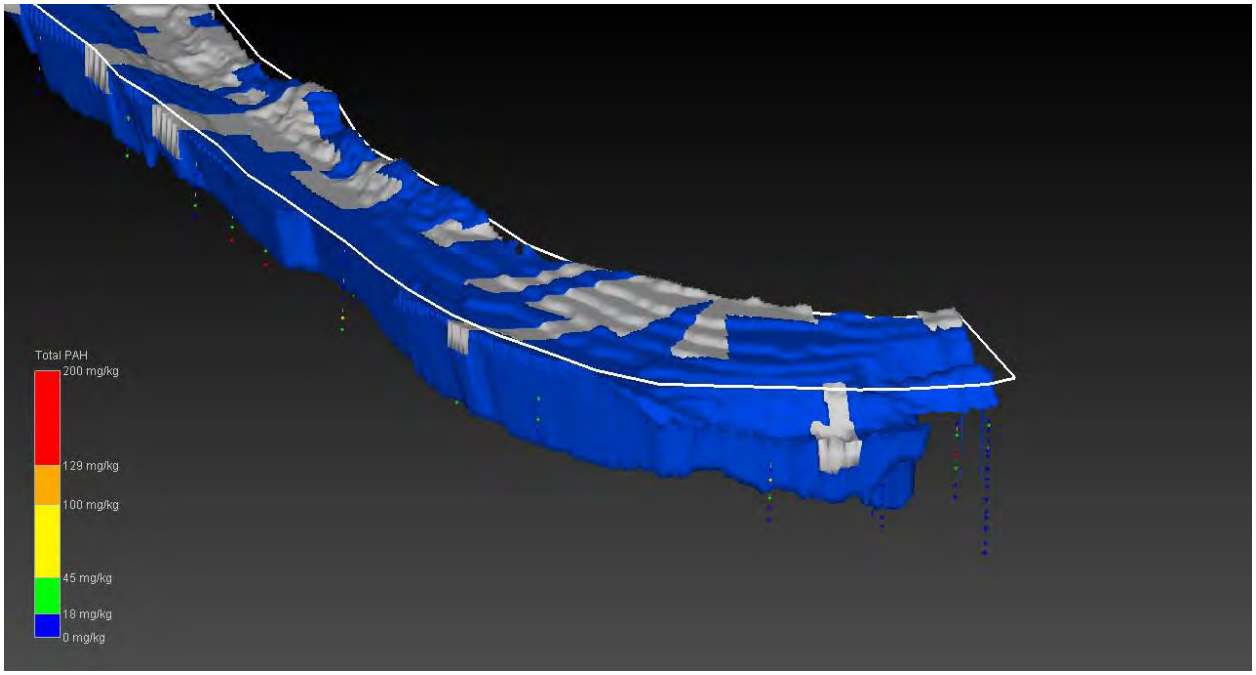
PAH 1


Total PAH
200 mg/kg
129 mg/kg
100 mg/kg
45 mg/kg
18 mg/kg
0 mg/kg

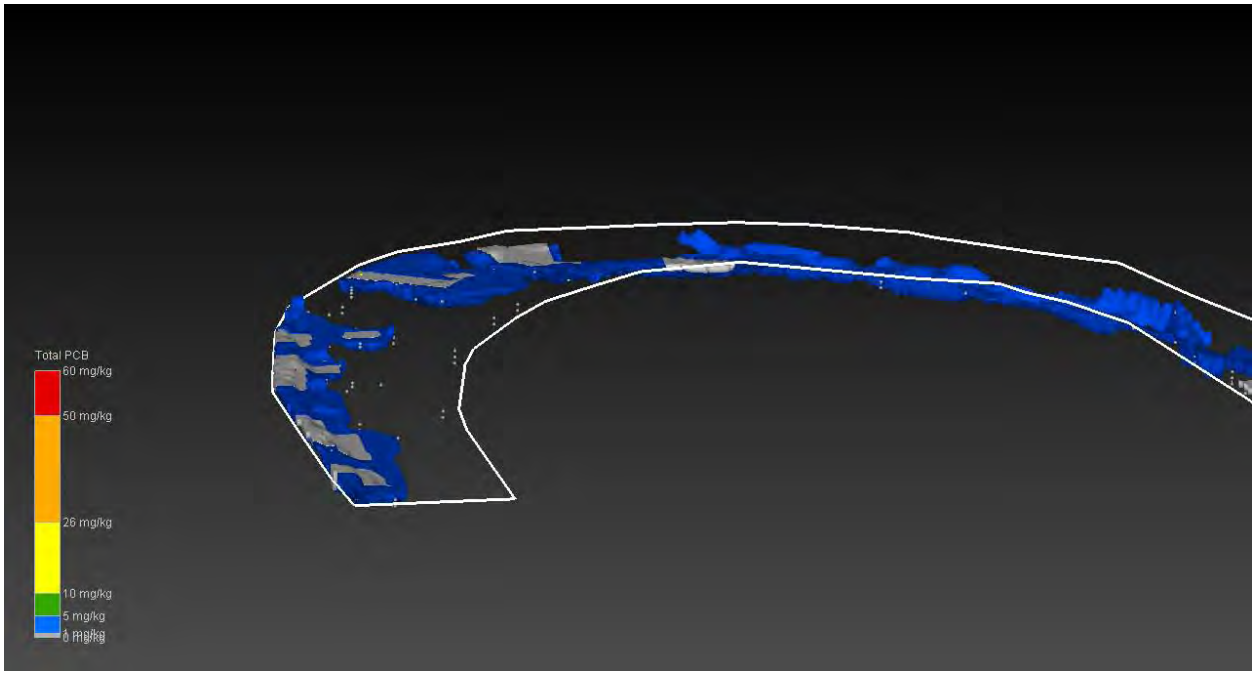
PAH 2


Total PAH
200 mg/kg
129 mg/kg
100 mg/kg
45 mg/kg
18 mg/kg
0 mg/kg

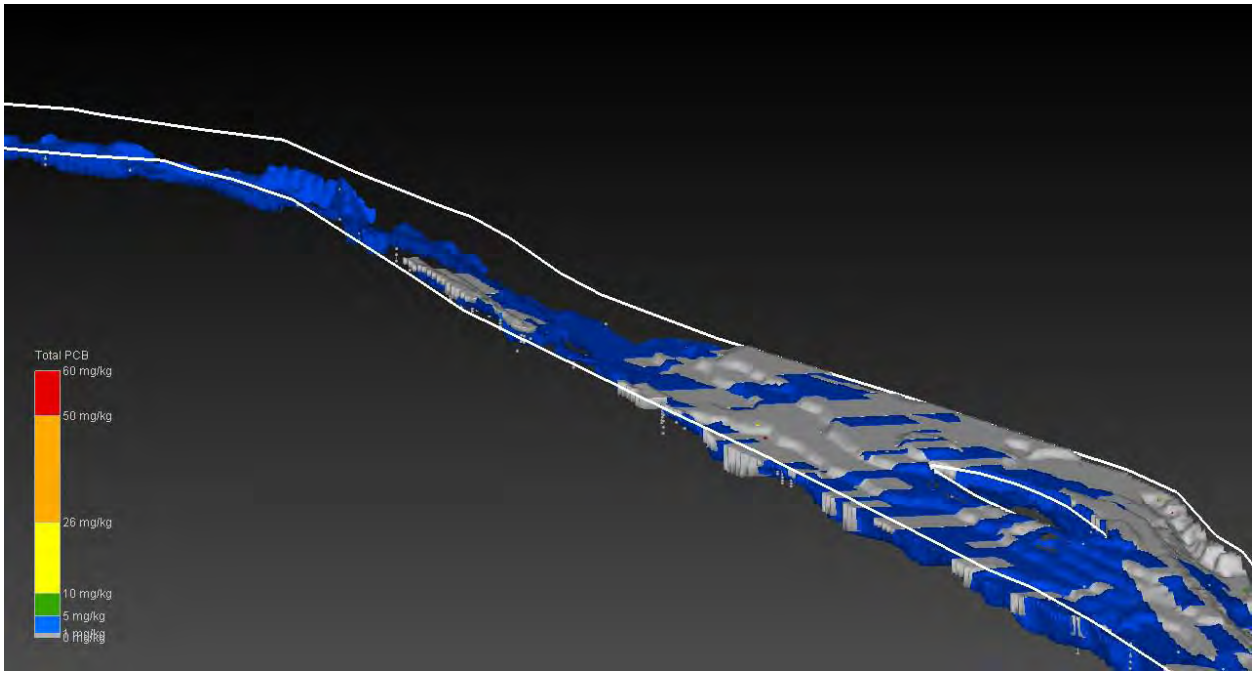
PAH 3


Total PAH
200 mg/kg
129 mg/kg
100 mg/kg
45 mg/kg
18 mg/kg
0 mg/kg

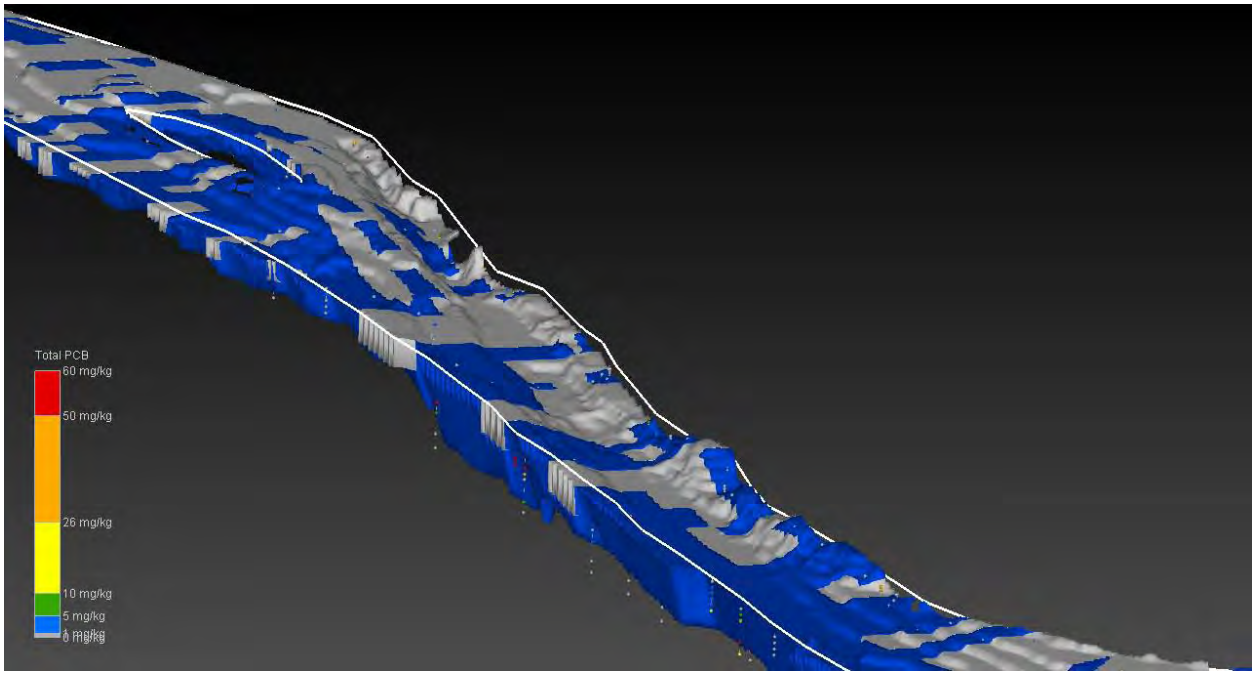
PAH 4


Total PCB
60 mg/kg
50 mg/kg
26 mg/kg
10 mg/kg
5 mg/kg

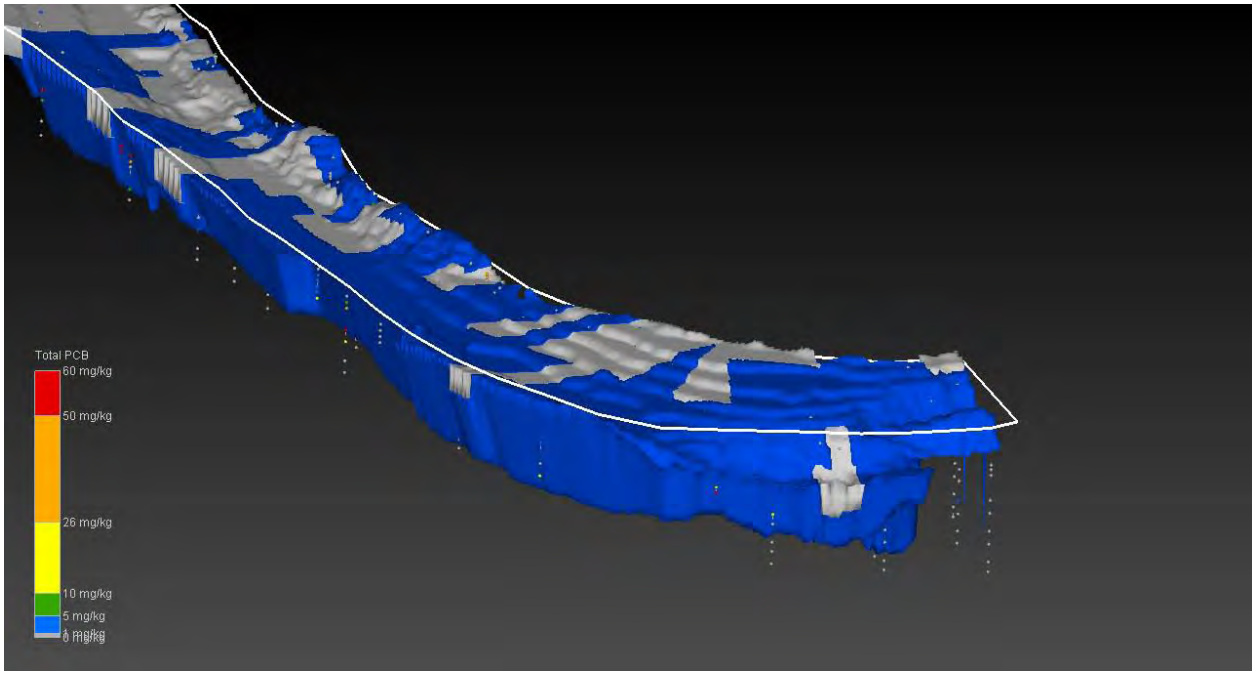
PCB 1


Total PCB
60 mg/kg
50 mg/kg
26 mg/kg
10 mg/kg
5 mg/kg

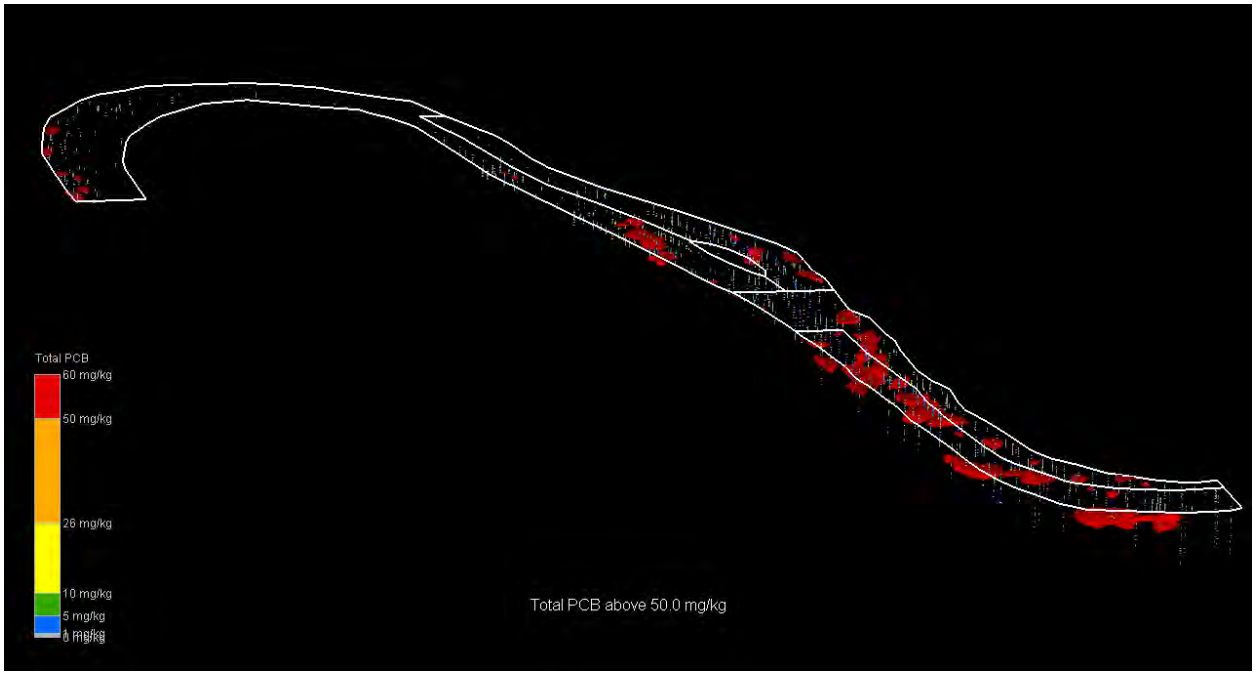
PCB 2


Total PCB
60 mg/kg
50 mg/kg
26 mg/kg
10 mg/kg
5 mg/kg

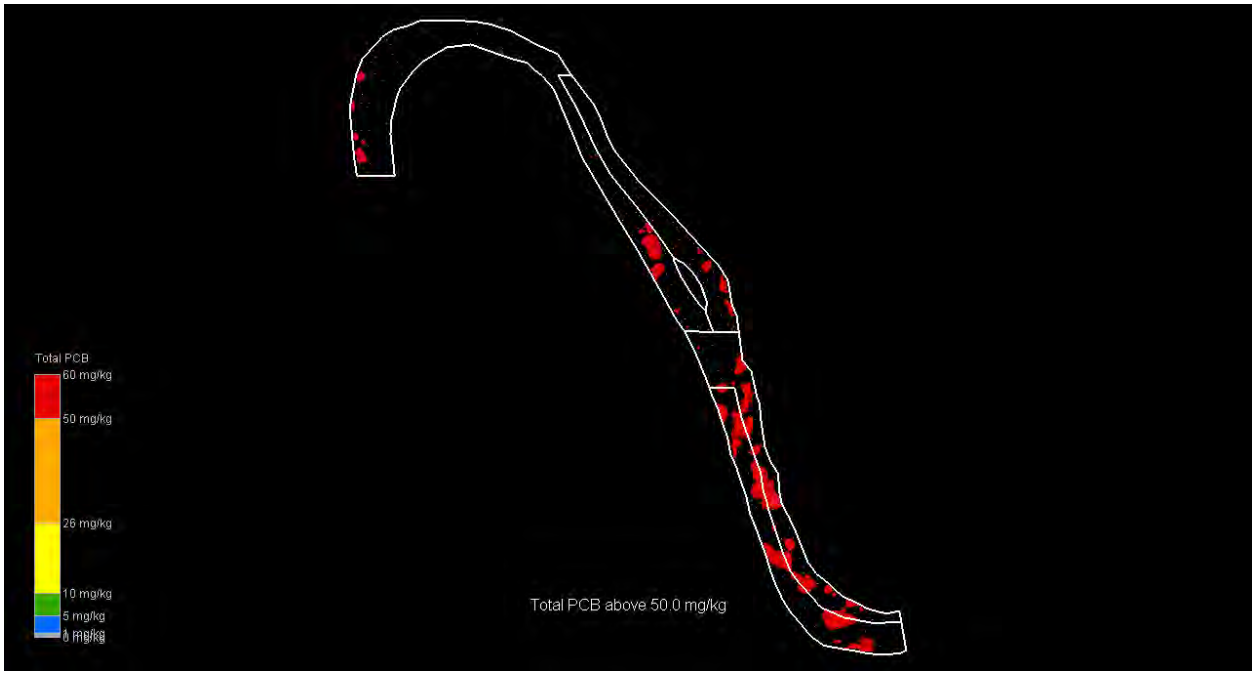
PCB 3


Total PCB
60 mg/kg
50 mg/kg
26 mg/kg
10 mg/kg
5 mg/kg

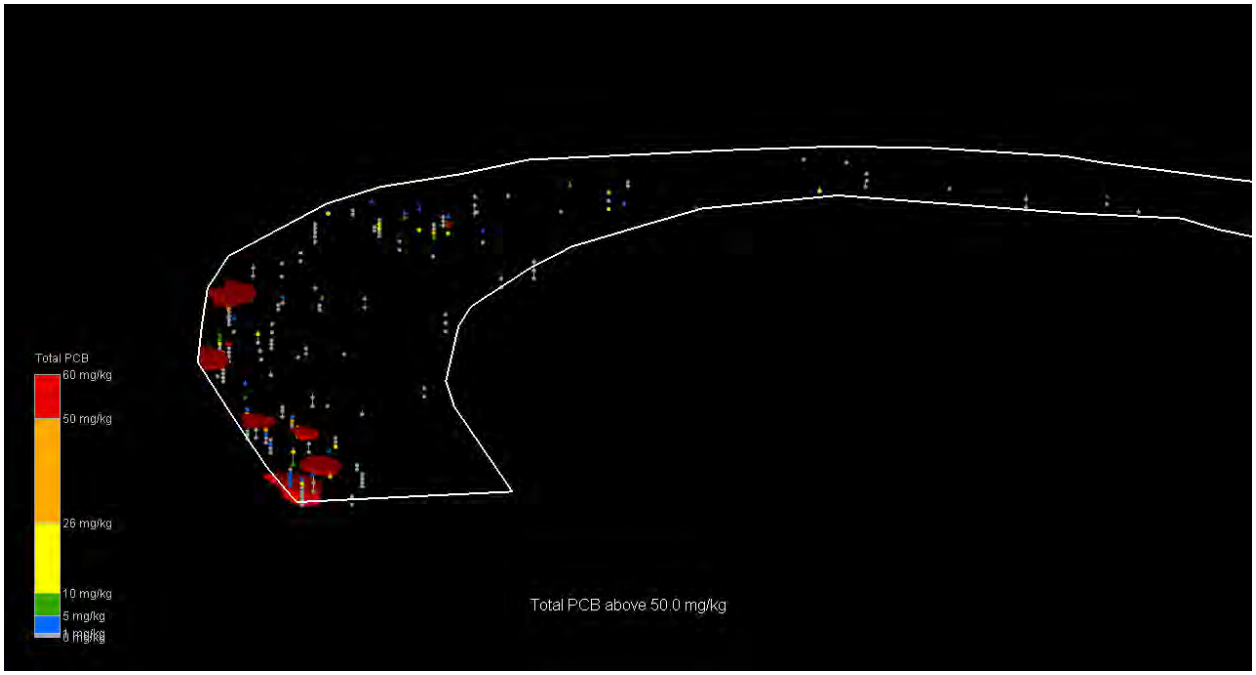
PCB 4



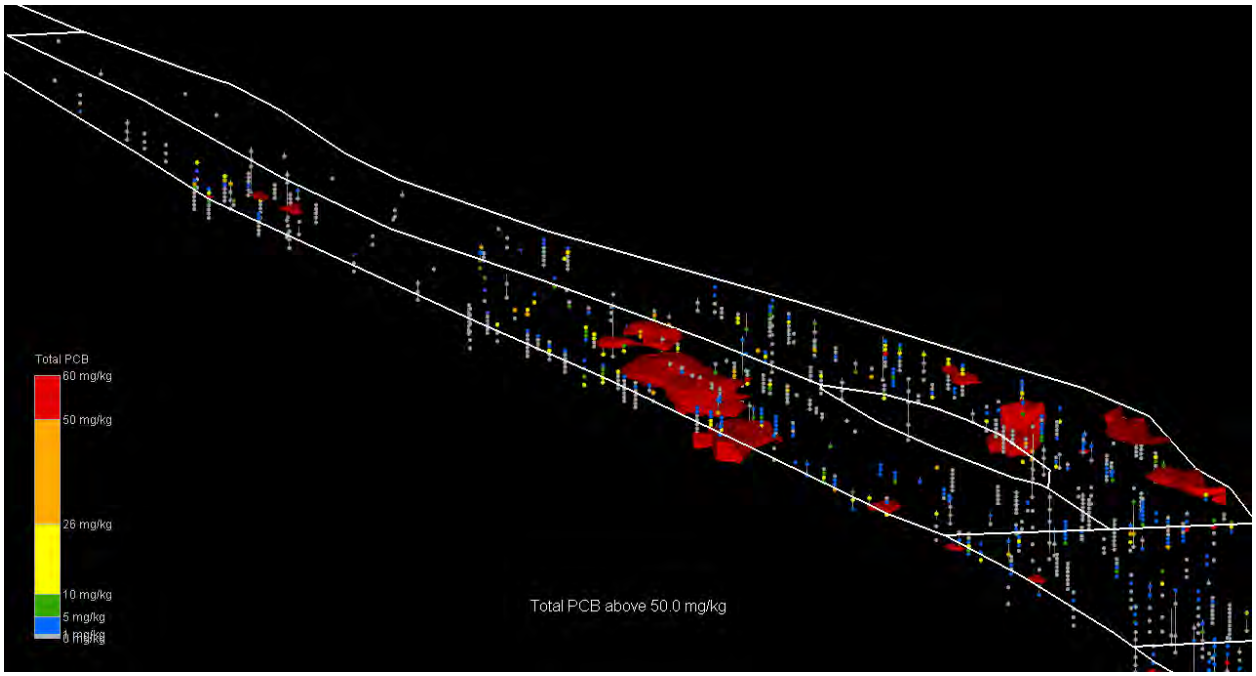
TSCA Iso



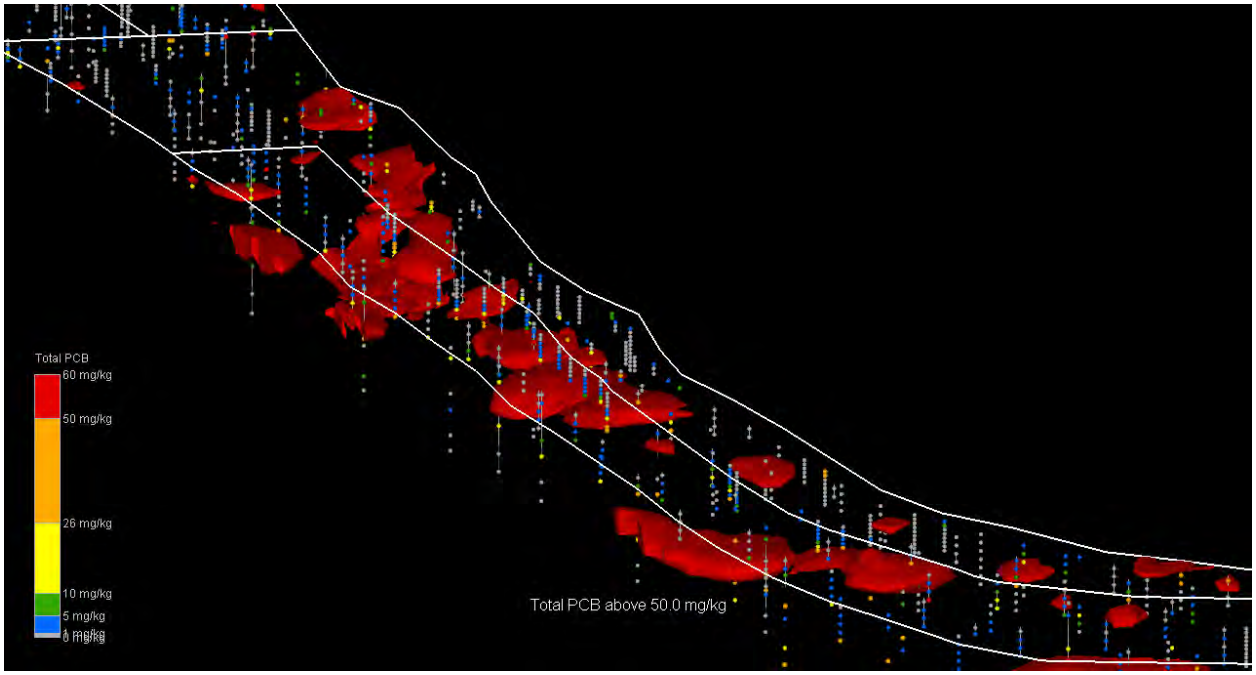
TSCA Plan


Total PCB
60 mg/kg
50 mg/kg
26 mg/kg
10 mg/kg
5 mg/kg
Total PCB above 50.0 mg/kg

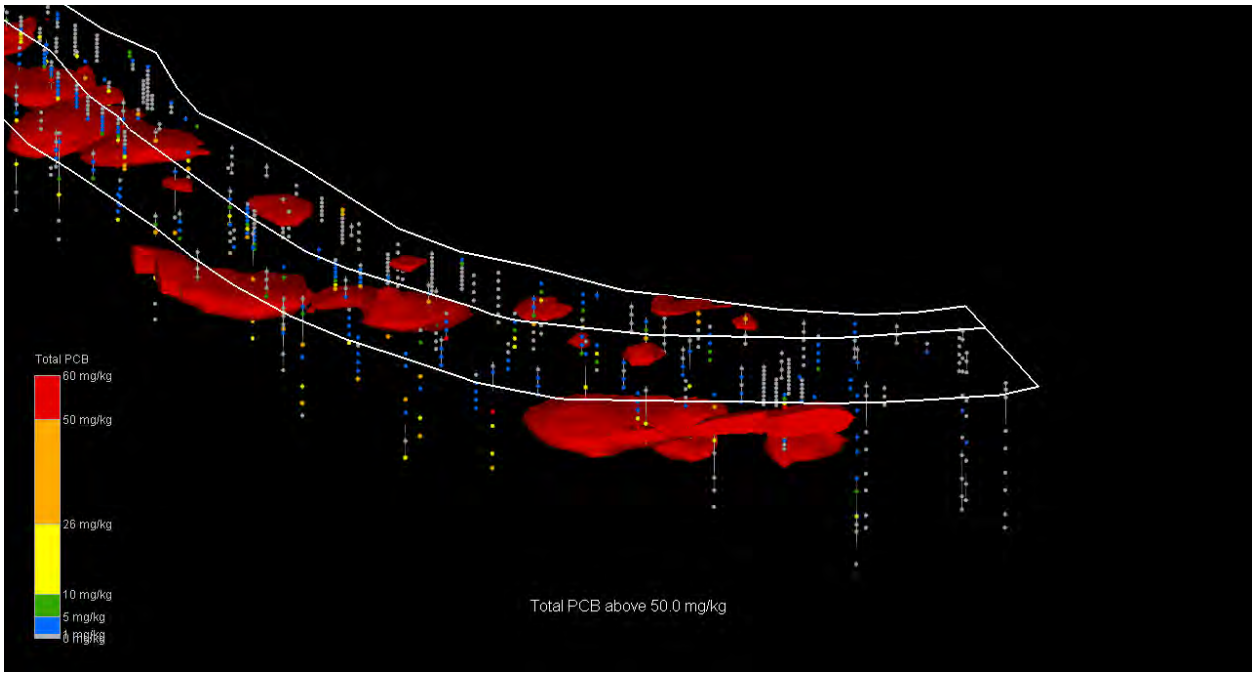
TSCA 1


Total PCB
60 mg/kg
50 mg/kg
26 mg/kg
10 mg/kg
5 mg/kg
Total PCB above 50.0 mg/kg

TSCA 2


Total PCB
60 mg/kg
50 mg/kg
26 mg/kg
10 mg/kg
5 mg/kg
Total PCB above 50.0 mg/kg

TSCA 3


Total PCB
60 mg/kg
50 mg/kg
26 mg/kg
10 mg/kg
5 mg/kg
Total PCB above 50.0 mg/kg

TSCA 4

Appendix C

Shoreside Sites Evaluation Memorandum and Table

Desktop Evaluation of Potential Shoreside Sites to Support Legacy Dredging on the Sheboygan River

TO: Heather Williams/EPA GLNPO

FROM: CH2M HILL

DATE: June 23, 2011

As a follow-up to the June 20, 2011, site visit in Sheboygan, an evaluation matrix was developed that summarizes the advantages, disadvantages, and next steps for nine potential sites that were visited to potentially support the Legacy dredging project. The following are the nine sites (in no particular order):

1. Armory Parking Lot
2. Two Parcels Adjacent to Marina Vista Condos
3. Pentair
4. Alliant
5. 14th Street Boat Launch
6. Richardson Lumber
7. PRS Dewatering Site
8. Campmarina Site
9. Schukart Property

As shown in the matrix, there are two main types of sites. The first types of sites could support mechanical dredging because the sites are too small to support hydraulic dredging operations. In some cases, the mechanical dredging sites are small and would require at least two sites to even support mechanical operations. The second types of sites are only considered for hydraulic dredging. While the sites considered for hydraulic dreging are large enough to support mechanical operations, there are other factors that are not supportive of mechanical operations (for example, the Schukart (sp?) property is very large and could possibly support hydraulic dredging, but it is not practical for mechanical dredging because it is not reachable by a barge).

Because each of the nine sites has unique constraints and some sites may not be available (for example, privately owned or leased properties are not viable), the method of sediment removal, either mechanical or hydraulic, may be determined by the availability of a shoreside location that will support dredging operations. It is not uncommon to select a sediment removal technology based on shoreside support availability, but it stresses the importance of investigating the availability of potential shoreside locations as soon as possible.

Site Name: Shoreside Staging and Dewatering Operations, Sheboygan River GLNPO Remedial Design	Approximate Size (acres)	Advantages	Disadvantages	Mechanical or Hydraulic Dredging Support	Supportive of Project Timing? (Anticipated notice to proceed in January 2012)	Further Considered? (If Yes, Summary of Next Steps and Action Items)	Relative Ranking of Sites being Further Considered (1: Best Site Potential)
1. Armory Parking Lot	0.6	City owned Paved Accessible to major city streets	Small (unless combined with Site 2 next to the condominiums) Downstream of 8th Street Bridge (clearance issue) Requires road crossing of Pennsylvania Ave.; May require closing this segment of Pennsylvania Ave. and diverting traffic around the block to maintain access to the condominiums, Coast Guard, and boat launch; Requires right-of-way across private property Surrounded by residential properties Does not support transfer of material Disrupts riverwalk	Mechanical only	Yes; minimal civil site improvements needed	No; disadvantages outweigh advantages	N/A
2. Two Parcels Adjacent to Marina Vista Condos	1.2	Adjacent to river No street closings required Access to major city streets Land is cleared Suitable for transfer and water treatment	Privately owned Adjacent to residential properties Unimproved site (gravel/topsoil/grass) Downstream of 8th Street Bridge Disrupts riverwalk	Mechanical only	No; anticipate needing asphalt for staging area	No; only further consider if other sites do not work out or multiple sites are needed	N/A
3. Pentair	Main Site: 7.4 South Parking: 2.2 Total: 9.6	Vacant site Large and flat Accessible to major city streets Good public education potential Minimal site restoration likely required after project (because site will hopefully be immediately redeveloped) Size is suitable for Hydraulic placement	Privately owned Highly visible/tourist area Construction traffic at round-about and down main street Requires road crossing of dredge slurry pipeline City requests use of southern part or parking lot	Hydraulic or mechanical (only being considered for hydraulic dredging because of location in tourist area, downstream of 8th Street Bridge, and the need to cross South Pier Drive)	Would require winter construction of the dewatering pad; If asphalt/concrete is not required for dewatering, this should not be a problem	Yes (as long as hydraulic dredging is being considered) Begin discussions with Pentair immediately for short term lease Requires Mayor and City Council approval given the highly visible project site	1 (for hydraulic dredging)
4. Alliant	Lower Lot: 0.6 Upper Lot: 0.6 Total Area: 1.2 (does not include building)	Paved Secured by existing fence Lighted intersection at entrance with easy access to major city streets May be able to exchange shoreline improvements in lieu of lease payment Existing building could be project office and provide additional storage in garage Upstream of 8th Street Bridge	Privately owned with sale pending to Wisconsin Naval Ship Association (WINSA)	Mechanical only	Yes; minimal civil site improvements needed	Yes Begin discussions with Alliant and possibly WINSA if their purchase is successful	1 (for mechanical dredging)

Site Name: Shoreside Staging and Dewatering Operations, Sheboygan River GLNPO Remedial Design	Approximate Size (acres)	Advantages	Disadvantages	Mechanical or Hydraulic Dredging Support	Supportive of Project Timing? (Anticipated notice to proceed in January 2012)	Further Considered? (If Yes, Summary of Next Steps and Action Items)	Relative Ranking of Sites being Further Considered (1: Best Site Potential)
5. 14th Street Boat Launch	0.4	City owned Existing boat launch Access to major city streets Existing commercial area Upstream of 8th Street Bridge	Small Mix of poor asphalt and gravel Would require tree removals and heavy fill for leveling	Mechanical only	No; anticipate needing asphalt for staging area	No; only further consider if multiple sites are needed	N/A
6. Richardson Lumber	1.3	Flat and adjacent to river	Inadequate draft in river for barge access along shoreline Privately owned	Mechanical only (water treatment only)	No; anticipate needing asphalt for staging area	No; barge access to the site not possible due to draft requirements	N/A
7. PRS Dewatering Site	1.5	Developed for existing dredging/dewatering operations.	Current operations are expected to end in June 2012, with history of delays (that is, not a reliable end date for the Legacy project to begin); May conflict with Legacy timing for use Limited hydraulic capacity	Mechanical only	No	No; project schedule not conducive to existing site use	N/A
8. Campmarina Site	Staging/dewatering area: 1.5 Existing Stabilization/dewatering pad only: 0.5	City owned Developed for existing dredging/dewatering operations.	Requires extra handling of spoils (minimum three handlings) Coordination with existing operations and contract amendments with existing dredging contractor Adjacent residential properties Additional year closure of park and riverwalk Extensive park restoration post-project	Mechanical only	Yes	Yes Observe operation in July/August to determine if site can process expected production rates. (Legacy project is 8 times the sediment of Campmarina Site) Begin discussions with Envirocon and NRT	2 (for mechanical dredging)
9. Schukart (sp?) Property	9	Access to major roads and freeway Avoids city streets and downtown construction Adequate space Minimal number of neighbors will be disrupted	Minimal/unknown infrastructure (adequate temporary power available, water and sewer service unknown) Long pumping distance for dredge (over 3 miles from 8th street bridge) Shallow depth in river limits pipeline inspection and repair opportunities Multiple property owners to coordinate site access for pipeline inspection, maintenance, and anchoring Longer pipeline has greater risk of failure and greater consequent compared to shorter pipeline Permitting and Wetland impacts/mitigation Site conditions unknown (structural considerations for design of dewatering pad) Private owner with history of challenging relationship Extensive site restoration likely required.	Hydraulic only	Would require winter construction of the dewatering pad, which would include significant earth moving at this site; If asphalt/concrete is not required for dewatering, this should not be a problem.	Yes Secondary only to the Pentair site for hydraulic dredging; Begin discussions with landowner for possibility of lease agreement	2 (for hydraulic dredging)

Appendix D

Detailed Cost Estimates (bound separately)