

# EIGHTEENMILE CREEK REMEDIAL ACTION PLAN COORDINATION

## SEMI-ANNUAL PROGRESS REPORT

02/01/2011

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### Project No. GL 972925-07-1

#### ACCOMPLISHMENTS TO DATE

On January 1, 2007, the Niagara County Soil and Water Conservation District (NCSWCD) began its five year commitment to continue with the coordination and management of the Eighteenmile Creek Remedial Action Plan. Much work has been accomplished during this reporting quarter. The following list of deliverables reflects project direction and activities completed between 8/1/2010 and 1/31/2011.

- Submission of EPA Form 5700-52 A, “MBE/WBE UTILIZATION UNDER FEDERAL GRANTS, COOPERATIVE AGREEMENTS, AND INTERAGENCY AGREEMENTS” to EPA Region 2 prior to October 30, 2010 and January 30, 2011.
  
- A good deal of time has been invested in the planning and implementation of a Great Lakes Legacy Act investigation project for Eighteenmile Creek. The presence of PCB in the 2009/2010 sediment samples in Reaches 4, 6, and 7 determined that these areas will need to be addressed in a future feasibility study (FS). Therefore, it was determined that additional physical data was needed to estimate the volume of the contaminated sediments including bankfull width that can be used as the boundary between sediments and upland soils (assumed limits of remediation). In November of 2010, a sediment thickness and bankfull survey was completed. These additional data provided by delineating bankfull width and sediment thickness measurement will be used for the following:
  1. Verification of the shoreline established using the GIS. The field data will be used as a quality control check of the GIS interpretation of the bankfull width that is based on the 2008 1-foot ground pixel resolution orthophotography.
  2. Creation of a systematic dataset of sediment thickness. The historic and the Phase 2 data investigations mainly focused on the collecting sediment chemistry data to identify potential sources and define the nature and extent of contamination. A systematic approach to collecting thickness data is needed to estimate the sediment volume that will need to be addressed in the FS.
  3. Determination of a sediment thickness “bottom” layer and “top” layer. The creek boundary and sediment thickness information will be used to model the volume of sediment present. ArcGIS extension “spatial analyst” will be used in GIS to perform a spatial interpolation of thickness points. The method of interpolation will be “Simple Kriging”—a geostatistical method, which will allow the user to define an acceptable confidence interval.

The delineation of the edge of the bankfull and the sediment thickness measurements was conducted concurrently. A total of 136 transects were surveyed in Reaches 4, 6, and 7 and shallow areas of Reaches 3 and 5. A slight variation of “systematic point sampling” was implemented in the field to collect the additional sediment thickness data. Systematic point sampling uses a regular sampling interval and results in an unbiased and proportionally representative dataset of evenly spaced measurements across the study area. The sediment thickness was measured by probing at an average five

locations along each transect including the edges of both banks, at the thalweg or midpoint, at two points between the thalweg and left and right banks.

A Data Summary Report is expected to be completed later this year which will include all Legacy Act data collected to date.

In the fall of 2010, New York State Department of Environmental Conservation (NYSDEC) announced to the Legacy Act project team that New York State would not be able to continue its support of the current Legacy Act project agreement and any future agreements anticipated to address a project remediation phase due to budgetary constraints and the current State fiscal crisis. New York State has been the source of the required 35% non-federal match for the current project agreement with USEPA which expected to complete a remedial investigation, feasibility study and design phase. Furthermore, New York State funds anticipated to be spent remediating the Eighteenmile Creek Corridor Site in Lockport, NY were intended to be used as the non-federal match for a remediation phase for the AOC. NYSDEC intends to refer the Eighteenmile Creek Corridor Site to the Federal Superfund Program, which means that a non-federal match no longer exists to progress the Legacy Act project to completion.

At the completion of the current remedial investigation phase, the Legacy Act project will cease unless another non-federal source of in-kind funds can be secured. The PI has been and will be working closely with New York State and other potential partners to ascertain the feasibility of continuing with a Legacy Act project for the Eighteenmile Creek AOC.

- NCSWCD has entered into a project agreement with the U.S. Army Corps of Engineers (USACE), Buffalo District and their Engineer Research and Development Center (ERDC) in Vicksburg, MS to complete a Trophic Trace Food Web Study for the Eighteenmile Creek AOC. Utilizing USACE assistance identified under Section 401 (a) of the Water Resources Development Act of 1990, \$539,000 have been secured to complete the project, which would assist in determining the current status of numerous use impairments to the creek. To date, all sediment information has been collected for the project. A fish sampling plan was completed by U.S. Fish & Wildlife Service, Lower Great Lakes Fish and Wildlife Conservation Office. Fish sampling took place in the Eighteenmile Creek AOC, above and below Burt Dam, on six days between September 13<sup>th</sup> and 30<sup>th</sup> 2010. Fish were collected by the U.S. Fish and Wildlife Service, Lower Great Lakes Fish and Wildlife Conservation Office in Amherst, NY. Boat mounted electrofishing gear or minnow traps were used for collection. Per the Conceptual Site Model, largemouth bass, brown bullhead, and pumpkinseed were targeted. These fish species represent different trophic levels, have different feeding strategies, and their tissue concentrations can be simulated in the *TrophicTrace* Model. A summary of the collected fish is included in Table 1.

**Table 1. Characteristics of Collected Fish**

	Number Collected		Size (inches) (min-max, geometric mean)		Weight (grams) (min-max, geometric mean)	
	Section 1	Section 2	Section 1	Section 2	Section 1	Section 2
Largemouth Bass	10	10	11.2 - 15.0, 12.9	12.6 - 15.0, 13.6	364 - 956, 547	492 - 884, 607
Brown Bullhead	9	10	8.9 - 11.1, 10.5	9.5 - 11.9, 10.7	146 - 312, 244	188 - 450 284
Pumpkinseed (5 fish composite)	10	11	NA	NA	NA	NA

The number of fish sampled met target ranges. Bullheads were slightly larger than those targeted, however, this does not affect the overall basis for their inclusion which was a close association with sediments and sediment derived food sources. The largemouth bass were within the targeted (contingency) size range. For pumpkinseed, the contingency to expand to alternate *Lepomis* spp. was used. The collection included a mixture of bluegill, green sunfish, and pumpkinseed, all below 4 inches in length. At that size range, *Lepomis* spp. share a similar trophic level and food preference. Overall, the size of fish sampled from above and below Burt Dam was quite similar.

In January of 2011, USACE ERDC completed a Conceptual Site Model (CSM) Memorandum. This memorandum describes the conceptual site model, providing an overview of the physical, chemical, and biological aspects of the system that will be modeled, including site-specific assumptions used to establish modeling conditions. Using the conceptual model presented in the memo, the projects next step involves parameterizing the TrophicTrace model using a combination of site-specific and literature-derived data. For example, for fish lipid, measured lipid contents will be used from the fish sampling program supplemented with values from the literature. Feeding preferences for fish will largely be based on the results of a site-specific stomach contents analysis conducted for bass and bullhead, again supplemented with information from the literature. Feeding preferences for the ecological receptors will be obtained from the literature.

Once the model has been parameterized, we will run it for total PCBs and selected congeners and compare the results to the observed fish tissue data. If the comparison is favorable, (e.g., within a factor of 3), the parameterization will be considered successful and used for all subsequent analyses. If the comparison is not favorable, the model will need to be re-calibrated. A Draft Final Foodweb Bioaccumulation Report is expected to be completed in March 2011.

- The PI has also been working with USACE, Buffalo District, NYS Department of Environmental Conservation (DEC) and other New York State RAP Coordinators in an attempt to craft a collaborative NY AOC project which would provide each AOC with remedial strategies to delist Beneficial Use Impairments (BUI). A collective effort to complete this work was deemed not feasible. However, individual AOC projects have commenced with USACE assistance. The PI has been working closely with USACE Buffalo District and its environmental contractor to identify priority actions required to delist the impaired beneficial uses of Eighteenmile Creek. USACE will produce an “Eighteenmile Creek AOC Strategic Plan for BUI Delisting” report. Generally, conclusions and recommendations in the report will be based on evaluation of available data, assessment of data gaps, and consultation with experts where appropriate and feasible. For each of the five (5) beneficial uses currently considered impaired, the report will prioritize and recommend a series of actions to: improve relevant conditions to the maximum extent practicable and; document restoration and protection of the beneficial use in support of its delisting or re-designation. Recommended actions will be organized into the following (or similar) general project categories: inventory and assessment; project design and implementation; and monitoring and re-assessment.

The report will also provide preliminary cost estimates and schedules for each of these actions, including the identification of additional funding sources, as needed. The monitoring and re-assessment sections of each BUI addressed in the report will provide a detailed description and cost estimate of post-remedial monitoring, as necessary, to satisfy identified delisting criteria.

In the course of evaluating a BUI, the consultant may judge that existing data shows the beneficial use has recovered sufficiently to allow delisting or re-designation. In these cases, the report will include a recommendation to proceed with delisting or re-designation along with an explanation of the rationale and an assessment of the level to which the delisting criteria are satisfied.

A plan draft outline has been completed by USACE and is included with this project report as Attachment A.

- For this year's round of Great Lakes Restoration Initiative (GLRI) funding, it was a requirement that Great Lakes Areas of Concern have a Stage II Remedial Action Plan, or equivalent document, on file with USEPA to be considered for project funding. Given the fact that the USACE funded BUI Strategy documents would not be completed and available in time for the GLRI submission deadline, NY RAP Coordinators worked with each other, NYSDEC and USEPA Region 2 in an effort to complete Draft Stage II RAP addendums for each respective AOC. The addendum was intended to act as a "place holder" while the more complete BUI Strategy document is completed. A copy of the draft addendum is attached to this progress report as Attachment B.
- Over the past 12 months an enormous amount of data and reports have been developed in relation to the numerous projects that are ongoing in the AOC. For instance, the Legacy Act project and the work being completed at the Eighteenmile Creek Corridor Site have yielded endless amounts of materials. In an effort to add all new data and reports to the existing catalog, an update to the RAP data repository was completed. The data repository, which is available on-line and in hard copy format in the SWCD office, is a complete listing and source for all data relevant to Eighteenmile Creek and its AOC.
- On August 11<sup>th</sup>, 2010, the PI attended a meeting of the Western New York Storm Water Coalition (WNYSWC) and gave a presentation relevant to the Eighteenmile Creek watershed and Remedial Action Plan (RAP). A number of communities in Erie and Niagara counties have joined together to develop a stormwater management program to protect our waterways and enhance our quality of life. The WNYSWC is a forum for these regulated communities to share resources and work in partnership toward compliance with the United States Environmental Protection Agency (U.S. EPA) Phase II Stormwater requirements. The overall goal of the Coalition is to utilize regional collaboration to identify existing resources and develop programs to reduce the negative impacts of stormwater pollution.
- The PI continued to participate in conference planning activities for the annual AOC conference which was held on September 22-23, 2010, in Buffalo, NY. Planning activities included conference calls to brainstorm with AOC partners in order to provide suggestions for topics to discuss at the conference, the completion of questionnaires and the compilation of materials to be presented at the meeting which were relevant to Eighteenmile Creek. The PI also attended the 2 day meeting in Buffalo, NY where over 200 participants met to review recent developments affecting the AOC program; discuss approaches for implementing delisting targets; build capacity to implement on-the-ground restoration actions; identify opportunities to address AOC restoration priorities under President Obama's Great Lakes Restoration Initiative; improve linkages between the AOCs, LaMPs and other programs; and consider actions that will strengthen the regional U.S. AOC program. As usual, the meeting was a terrific opportunity to interface and collaborate with other AOC stakeholders from all over the Great Lakes Basin.
- On August 25<sup>th</sup>, October 20<sup>th</sup> and November 17<sup>th</sup>, 2010, the PI participated in conference calls of the Federal-State AOC Coordinating Committee (FEDSTAC). FEDSTAC works as a mechanism for coordinating regional efforts to assist in restoration of Areas of Concern. Calls included a: review of the new EPA tracking system for GLRI projects; an update of the Great Lakes Accountability System (GLAS); Legacy Act program updates; annual AOC conference planning issues; an update of Stage II RAP development and; reports from various federal and state agencies with a vested interest in the AOC program.
- In coordination with the Littoral Society and Boy Scouts of America, an Area of Concern "Clean Sweep" was completed in October 2<sup>nd</sup>, 2010. Eleven scouts and parents from pack 4 in Lockport and

Pack 44 in Newfane participated in the project by collecting approximately 150 pounds of trash, which included car parts, tire, saw blades, food containers, general debris, etc...

- On November 1<sup>st</sup>, 2010, the PI led a field trip of the Eighteenmile Creek AOC for a class of graduate students from the University at Buffalo (UB). The class studies environmental planning and management issues with special attention to methods for preventing and ameliorating environmental problems. Each week students read about a generic environmental planning or management method like 'stream restoration and remedial action planning', have a field trip to see an example of this method in practice, discuss the method with an environmental professional involved with the field trip project, and finally to have a class discussion of how environmental planners and managers use the method. Nineteen students were on hand to experience the AOC up close and learn about the issues relative to Eighteenmile Creek.
- In an attempt to once again engage the students of Niagara County, the 2nd Annual Niagara County Youth Environmental Essay Contest was conducted in the fall of 2010 and focused upon issues relevant to Eighteenmile Creek. Students from Niagara County were given the following topic: "Why and how we should protect the natural resources of Eighteenmile Creek and its watershed." Many great essays were submitted and winners were awarded with prizes which were donated by local sponsors. First place winners in both the Novice and Expert divisions were awarded Camping Equipment Packages. It is anticipated that this essay contest will continue to be an annual event as long as local sponsors continue to endorse the program.
- With input from the RAC, the 2010 Eighteenmile Creek AOC Report Card was completed in January 2011. The purpose of the Report Card is to give a brief overview of the health, improvements and current conditions of Eighteenmile Creek during 2010. A copy of the Report Card has been made available on the AOC website and was mailed to 4,500 residents in Niagara County. The Report Card offers six "indicators" related to the management of the creek's overall health. They are: 1) Water Quality; 2) Contamination; 3) Fish & Wildlife; 4) Public Access & Recreation; 5) Remedial Action Plan and; 6) Environmental Education/Public Involvement. The Report Card is included with this progress reports as Appendix C.

## PROJECT WORK SCHEDULE

<u>Activities</u>	<u>% Completed</u>
• COORDINATION OF EXISTING EFFORTS & PROJECTS AIMED AT ELIMINATING BUIs-----	ONGOING
• SEEK FUNDING TO IMPLEMENT VARIOUS UNFUNDED RAP INITIATIVES-----	ONGOING
• MANAGE DATA IN SUPPORT OF RAP IMPLEMENTATION & DELISTING EFFORTS-----	ONGOING
• COORDINATION WITH THE WNY STORMWATER COALITION-----	ONGOING
• COORDINATION WITH THE LAKE PLAINS RC&D-----	ONGOING
• COORDINATE WITH ALL FORUMS RELATED TO RAP, LAMPS, AND GLRC-----	ONGOING
• COORDINATION AND OVERSIGHT OF THE NCWQCC-----	ONGOING
• OVERSIGHT OF COUNTY WATER QUALITY MONITORING PROGRAMS-----	ONGOING
• COORDINATE WATERSHED STAKEHOLDERS IN THE PURSUIT OF COMPLETING A CWMP-----	ONGOING
• QUARTERLY WEBSITE UPDATES-----	ONGOING
• COMPLETE 2010 REPORT CARD-----	100%
• ESTABLISH UPDATED REMEDIATION AND MONITORING STRATEGY FOR ALL BUIs -----	85%
• OUTREACH ACTIVITY – CLEAN SWEEP-----	100%
• PROGRESS REPORT-----	100%

## PROJECT OBJECTIVES

<u>Activities</u>	<u>% Completed</u>
1. Continued coordination/management of the Remedial Action Plan (RAP) for the Eighteenmile Creek Area of Concern and the Remedial Advisory Committee	<b>Ongoing</b>
2. Research and evaluate the following Beneficial Use Impairments: <ul style="list-style-type: none"> <li>○ (3) Degradation of fish and wildlife populations</li> <li>○ (4) Fish tumors or other deformities</li> <li>○ (5) Bird/Animal deformities or reproductive problems</li> </ul>	<b>100%</b>
3. Complete a full Stage 2 Eighteenmile Creek RAP document to reflect research conducted and priorities established since 1997.	<b>75%</b>
4. Establish an updated remediation strategy for all impaired beneficial uses and the development of monitoring protocol necessary for delisting.	<b>85%</b>
5. Actively pursue resources to develop and implement Eighteenmile Creek RAP initiatives.	<b>Ongoing</b>

- 6. Continue local coordination of Eighteenmile Creek projects and identify and develop programs to address current data gaps or needed RAP initiatives. **Ongoing**
  
- 7. Coordinate with other Great Lakes programs and agencies such as the Lake Ontario LAMP, International Joint Commission (IJC), EPA-GLNPO, EPA Region 2, Great Lakes Commission (GLC), and the Great Lakes Regional Collaboration (GLRC). **Ongoing**

**PROJECT FUNDING RATE**

The following is a breakdown of budgeted dollars that have been spent between 8/1/2010 and 1/31/2011. It is apparent that the project funding rate does support project progress.

	<b><u>FEDERAL</u></b>	<b><u>NON-FEDERAL</u></b>
August 2010	\$ 3,762.06	\$0
September 2010	\$ 5,499.44	\$0
October 2010	\$ 3,766.97	\$0
November 2010	\$ 3,828.07	\$0
December 2010	\$ 5,738.88	\$0
January 2011	\$ 9,196.15	\$0

**Total Federal Share = \$31,791.57**



**SCOUTS AND OTHERS PARTICIAPTE IN ANNUAL "AOC CLEAN SWEEP"**



**SCOUTS AND OTHERS PARTICIAPTE IN ANNUAL "AOC CLEAN SWEEP"**





**ESSAY CONTEST WINNER MITCHELL DOCKERY**



**2010 UNIVERSITY AT BUFFALO GRADUATE CLASS "OUTDOOR EDUCATION"**

# **ATTACHMENT A**

## **Eighteenmile Creek AOC Strategic Plan Draft Outline (12-8-10)**

### **Executive Summary**

#### **1. Introduction**

- 1.1 Scope and Objectives
- 1.2 Description of AOC
- 1.3 BUIs, Delisting Targets, and Current Status
- 1.4 Literature Summary and Investigation Timeline
- 1.4 Recent and Ongoing Work to Characterize Sediment Contamination and Bioaccumulation
  - 1.4.1 Sediment Sampling Upstream of Burt Dam
  - 1.4.2 Sampling to Support Sediment Volume Estimates
  - 1.4.3 Trophic Trace Model
    - 1.4.3.1 TTM Theory
    - 1.4.3.2 Sampling to Support the TTM

#### **2. BUIs and Projects/Actions to Address Impairments**

- 2.1 BUI #1 -- Restrictions on Fish and Wildlife Consumption
  - 2.1.1 No AOC-specific Advisories
  - 2.1.1 No Upstream Causes of AOC Impairment
- 2.2 BUI #3 -- Degradation of Fish and Wildlife Populations
  - 2.2.1 Diversity and Abundance in the AOC Compared with Reference Areas
  - 2.2.2 PCBs in Bottom-Dwelling Fish
- 2.3 BUI #5 -- Bird or Animal Deformities or Reproductive Problems
  - 2.3.1 No Reports of Deformities or Reproductive Problems
  - 2.3.2 Bioaccumulative Chemicals in Fish
  - 2.3.3 Bioaccumulative Chemicals in Sediment
- 2.4 BUI #6 -- Degradation of Benthos
  - 2.4.1 Community is Non-Impacted or Slightly Impacted Based on NYSDEC Indices
  - 2.4.2 Species Richness, EPT Richness, and Other Benthic Metrics
  - 2.4.3 Sediment Toxicity
- 2.5 BUI #7 -- Restrictions on Dredging Activities

#### **3. Summary of Proposed Actions and Overall Delisting Strategy**

#### **4. Conclusions**

#### **5. References**

**Appendices (as necessary)**

# **ATTACHMENT B**

**December 2010 Addendum to Stage 1/2 Remedial Action Plan**  
***Eighteenmile Creek Area of Concern***  
**New York State**

I. Purpose:

This document briefly (a) outlines the existing Beneficial Use Impairments (BUIs), the purported causes and potential remedies as described in the Remedial Action Plan's (RAP) Combined Stage 2 Report published in September 1997, and (b) tentatively identifies a series of project-specific actions, either regulatory or non-regulatory, needed to accomplish the remedies and to ultimately justify re-designation of the BUI.

This document will be used to assist government and non-government organizations in focusing their efforts and funding opportunities on the most immediate "action-oriented" projects needed within the AOC, or its contributing watershed. Because this document has not undergone an extensive public consultation process, it should be considered as a preliminary planning piece of the overall RAP, subject to future changes as needed. In addition, this document will be used to support a more thorough strategic re-evaluation and planning process, currently underway in each AOC, in order to prioritize implementation projects specifically designed to address BUI delisting targets, and to direct public and non-public support as appropriate.

II. RAP Management, Coordination and Stewardship

The Niagara County Soil & Water Conservation District is currently operating under a 5 year agreement with US EPA to coordinate and manage the Remedial Action Plan (RAP) for the Eighteenmile Creek Area of Concern (AOC) and also address Eighteenmile Creek RAP priorities. This 5 year agreement is scheduled to expire on December 31, 2011. To effectively coordinate and manage the Eighteenmile Creek RAP, resources must be allocated which are intended to support the continuation of this necessary work into 2012 and beyond.

The NCSWCD aims to continue the current efforts to strategically manage Eighteenmile Creek planning, assessment and restoration activities, to facilitate substantial progress towards de-listing of the Eighteenmile Creek AOC. A project beginning in 2012 would continue to address tasks associated with RAP development and implementation as well as tasks that will significantly contribute to the delisting of the AOC, or its individual BUIs. These tasks include:

- Development of periodic RAP status reports that describe and track remediation efforts aimed at eliminating beneficial use impairments identified for Eighteenmile Creek and moving the Area of Concern towards delisting;
- Organization of periodic meetings of the remedial advisory committee;
- Coordination of RAP activities with other Great Lakes programs such as the LaMPs;
- Coordination of RAPs with related organizations such as the International Joint Commission (IJC), the Federal RAP Liaisons, USEPA/GLNPO, and the Great Lakes Commission;
- Participation and co-operation with USEPA (GLNPO and Regional programs) and their agents on gathering, assessing, and summarizing RAP progress;
- Periodic re-evaluation of beneficial use impairments and adjustment of remediation strategies and ecosystem restoration efforts as necessary for the elimination of impairments and (AOC) delisting.
- Implementation of restoration/remedial efforts that will lead to the delisting of an existing BUI and;
- Monitoring efforts aimed at evaluating the status of beneficial use impairments (BUIs) which require further assessment.

III. Current Beneficial Use Impairments, Likely Causes, Planned Remedies, Specific Actions

**Beneficial use impairment at Eighteenmile Creek is largely due to PCB contamination.**

**The reduction or elimination of BUIs at Eighteenmile Creek hinges upon the identification and control of the sources of this contamination. There are known PCB source areas in Lockport, New York. Secondary source areas also exist downstream from Lockport, such as in the sediments behind Burt Dam and numerous sediment deposition “hot spots” throughout the main branch of the creek.**

**A. BUI – Restrictions on Fish and Wildlife Consumption**

This is a Lake-Wide impairment. The consumption restrictions present in the impact AOC are the same as the lake-wide restrictions. However, Eighteenmile Creek is a source of PCBs to Lake Ontario and the consumption restriction in the source (AOC) is far worse than the lake-wide restrictions.

This BUI and its causes apply consistently throughout the AOC.

**1. Known or Suspected Cause – PCBs and dioxins**

**(a.) Remedies & Specific Actions Needed:**

- *Inactive Hazardous Waste Site Remediation: Eighteenmile Creek Corridor – Site #932121; Cost estimate - \$22 Million*
- *Sediment Remediation Feasibility Study/Remedial Design; Cost estimate - \$1 Million*
- *Remediation of In-Stream Contaminated Sediments; Cost estimate - \$25 Million*
- *Baseline/Long Term Sampling, Post Remediation Monitoring of Fish; Cost estimate – Undetermined*
- *Pilot Study on Treatment of PCB Contaminated Sediments w/ Powdered Activated Carbon; Cost estimate - Undetermined*

**B. BUI – Degradation of Fish and Wildlife Populations**

The impairment of fish and mammal populations at Eighteenmile Creek is the result of high levels of PCBs in fish. Whole-body concentrations of PCBs in brown bullheads collected from Eighteenmile Creek were: (1) 10 times greater than in bullheads collected from control sites, (2) often exceeded the critical PCB tissue concentration for effects on fish, and (3) great enough to possibly affect reproduction of fish-eating mammals. Regarding fish populations, an additional line of evidence that suggests impairment is the significantly greater prevalence of raised mouth lesions and barbell deformities in bullheads from Eighteenmile Creek compared with control sites.

This BUI and its causes apply consistently throughout the AOC for fish and mammal populations.

**1. Known or Suspected Cause – PCBs**

**(a.) Remedies & Specific Actions Needed:**

- *Mink Survey and Exposure Assessment; Cost estimate - Undetermined*
- *Inactive Hazardous Waste Site Remediation: Eighteenmile Creek Corridor – Site #932121; Cost estimate - \$22 Million*
- *Sediment Remediation Feasibility Study/Remedial Design; Cost estimate - \$1 Million*
- *Remediation of In-Stream Contaminated Sediments; Cost estimate - \$25 Million*
- *Baseline/Long Term Sampling, Post Remediation Monitoring of Fish; Cost estimate – Undetermined*

- *Continued Annual Fish Stocking & Pen Rearing;*  
*Cost estimate - Undetermined*
- *Pilot Study on Treatment of PCB Contaminated Sediments w/ Powdered Activated Carbon;*  
*Cost estimate - Undetermined*

**C. BUI – Bird or Animal Deformities or Reproductive Problems**

The impairment of bird/animal deformities or reproductive problems fish at Eighteenmile Creek is the result of high levels of PCBs in fish. PCB levels in fish from Eighteenmile Creek are great enough to adversely affect reproduction of fish-eating mammals. Fish-eating birds do not appear to be at risk due largely to their lower sensitivity to PCBs compared with mammals.

This BUI and its causes apply consistently throughout the AOC for mammal populations.

**1. Known or Suspected Cause – PCBs, DDT & metabolites, dioxins, dieldrin**

**(a.) Remedies & Specific Actions Needed:**

- *Continued Discharge Permit Monitoring and Renewal (SPDES);*  
*Cost estimate – Undetermined (Regulatory Actions)*
- *Inactive Hazardous Waste Site Remediation: Eighteenmile Creek Corridor – Site #932121;*  
*Cost estimate - \$22 Million*
- *Inactive Hazardous Waste Site Remediation: Upper Mountain Road – Site #932112;*  
*Cost estimate – Undetermined*
- *Sediment Remediation Feasibility Study/Remedial Design*  
*Cost estimate - \$1 Million*
- *Remediation of In-Stream Contaminated Sediments;*  
*Cost estimate - \$25 Million*
- *Baseline/Long Term Sampling, Post Remediation Monitoring of Fish;*  
*Cost estimate – Undetermined*
- *Pilot Study on Treatment of PCB Contaminated Sediments w/ Powdered Activated Carbon;*  
*Cost estimate - Undetermined*

**D. BUI – Degradation of Benthos**

The impairment of degraded benthic organism populations at Eighteenmile Creek is the result of PCB and heavy metals contamination present in creek sediments.

This BUI and its causes apply consistently throughout the AOC.

**1. Known or Suspected Cause – PCBs, heavy metals**

**(a.) Remedies & Specific Actions Needed:**

- *Continued Discharge Permit Monitoring and Renewal (SPDES);*  
*Cost estimate – Undetermined (Regulatory Actions)*
- *Continued Rotating Integrated Basin Studies (RIBS) assessments*  
*Cost estimate - Undetermined*
- *Inactive Hazardous Waste Site Remediation: Eighteenmile Creek Corridor – Site #932121;*  
*Cost estimate - \$22 Million*
- *Inactive Hazardous Waste Site Remediation: Upper Mountain Road – Site #932112;*  
*Cost estimate – Undetermined*
- *Sediment Remediation Feasibility Study/Remedial Design*  
*Cost estimate - \$1 Million*

- *Remediation of In-Stream Contaminated Sediments;*  
*Cost estimate - \$25 Million*
- *Long Term Monitoring of AOC Benthic Populations;*  
*Cost estimate - Undetermined*

**E. BUI – Restriction on Dredging**

The impairment of restricted dredging at Eighteenmile Creek is the result of high levels of PCBs, heavy metals and dioxins in creek sediments. There have been some dredging restrictions placed on Eighteenmile Creek under the EPA's *Guidelines for the Pollution Classification of Great Lakes Harbor Sediments* and the NYSDEC *Guidance on Freshwater Navigational Dredging*. The area surrounding a Corps of Engineers (USACE) site located approximately at the mid-point of Olcott Harbor was classified as unsuitable for open lake disposal. The sediments from this site were classified as polluted with chromium, copper, lead, manganese, nickel, zinc, and cyanides. In addition, USACE Buffalo District collected sediment samples from 3 locations within Olcott Harbor in August 2003. A composite sample of those 3 sites exceeded EPA guidelines for copper, lead, manganese, and zinc. Furthermore, total PCB concentrations significantly exceeded lake reference levels.

This BUI only applies to the actual or potential dredging areas identified for the improvement of ship navigation in Olcott Harbor. However, the causes of this BUI apply consistently throughout the AOC.

**1. Known or Suspected Cause – PCBs, heavy metals, dioxins**

**(a.) Remedies & Specific Actions Needed:**

- *Continued Discharge Permit Monitoring and Renewal (SPDES);*  
*Cost estimate – Undetermined (Regulatory Actions)*
- *Inactive Hazardous Waste Site Remediation: Eighteenmile Creek Corridor – Site #932121;*  
*Cost estimate - \$22 Million*
- *Inactive Hazardous Waste Site Remediation: Upper Mountain Road – Site #932112;*  
*Cost estimate – Undetermined*
- *Sediment Remediation Feasibility Study/Remedial Design*  
*Cost estimate - \$1 Million*
- *Remediation of In-Stream Contaminated Sediments;*  
*Cost estimate - \$25 Million*
- *Olcott Harbor Sediment Dredging;*  
*Cost estimate - Undetermined*



# EIGHTEENMILE CREEK BUI DELISTING TARGETS

## RESTRICTIONS ON FISH & WILDLIFE CONSUMPTION

- There is no Area of Concern-specific fish and wildlife consumption advisories issued by NYS. **AND**
- Contaminant levels in fish and wildlife must not be due to contaminant input from the watershed upstream of Burt Dam.

## DEGREDDATION OF BENTHOS

- Benthic macroinvertebrate communities are "non-impacted" or "slightly impacted" according to NYSDEC indices (Bode et al., 1996); **OR**
- In the absence of NYSDEC data, riffle habitats require benthic macroinvertebrate communities with a species richness higher than 20, EPT richness greater than 6, a biotic index value greater than 4.51, and a percent model affinity greater than 50; **OR**
- In the absence of benthic community data, this use will be considered restored when the level of toxic contaminants in sediments is not significantly higher than controls.

## RESTRICTIONS ON DREDGING ACTIVITIES

- When contaminants in AOC sediments (located within the actual or potential dredging areas identified for the improvement of ship navigation) do not exceed standards, criteria, or guidelines such that there are restrictions on dredging or disposal activities.

## DEGREDDATION OF FISH & WILDLIFE POPULATIONS

- Fish & wildlife diversity, abundance and condition are statistically similar to diversity, abundance and condition of populations at non-AOC control sites. **AND**
- PCB levels in bottom dwelling fish do not exceed the critical PCB tissue concentration for effects on fish (440 micrograms per kilogram wet weight; Dyer et al. 2000)

## BIRD OR ANIMAL DEFORMITIES/REPRODUCTIVE PROBLEMS

- No reports of wildlife population deformities or reproductive problems from wildlife officials above expected natural background levels; **AND**
- Contaminant levels in bottom dwelling fish do not exceed the level established for the protection of fish-eating wildlife (NYSDEC Fish Flesh Criteria); **OR**,
- In the absence of fish data, the toxicity of sediment-associated contaminants does not exceed levels associated with adverse effects on wildlife (NYSDEC Fish & Wildlife Bioaccumulation Sediment Criteria)

# **ATTACHMENT C**

<b>REPORT CARD</b>		CATEGORIES	GRADE	SUCCESSES & IMPROVEMENTS	CURRENT CONDITIONS	TREND	STEPS NEEDED FOR PROBLEM RESOLUTION	
<p>The Eighteenmile Creek Area of Concern Report Card was created by the Eighteenmile Creek Remedial Advisory Committee (RAC). The purpose of this Report Card is to give a brief overview of the health, improvements and current conditions of Eighteenmile Creek during 2010. The Eighteenmile Creek Watershed includes – the main branch of Eighteenmile Creek, Gulf Creek Tributary, East Branch of Eighteenmile Creek (Red Creek), and augmented flow from the NYS Erie Barge Canal.</p> <p>Scientific data and research that was referenced during the development of this Report Card can be found at the Area of Concern website: <a href="http://WWW.EIGHTEENMILERAP.COM">WWW.EIGHTEENMILERAP.COM</a></p> <p>This Report Card offers six "indicators" related to the management of the creek's overall health. They are: 1) Water Quality; 2) Contamination; 3) Fish &amp; Wildlife; 4) Public Access &amp; Recreation; 5) Remedial Action Plan; and 6) Environmental Education &amp; Public Involvement.</p> <p>Each indicator has been further divided into several "sub-categories" to assess how specific concerns are being addressed. Each sub-category has been assigned a letter grade based upon past successes, current health conditions, and trends over the past few years. The last column identifies action steps or immediate concerns to be addressed in order to meet restoration targets for the Area of Concern. This Report Card will be updated annually.</p>	<b>WATER QUALITY</b>	Overall Water Quality	C	<ul style="list-style-type: none"> <li>Agricultural Environmental Management (AEM) Program has been deployed in the watershed to document and prioritize water quality impairments within agricultural areas.</li> <li>NYSDEC completed a Lake Ontario contaminant loading study and identified the creek as a lake source for PCBs, dioxins and pesticides.</li> </ul>	<ul style="list-style-type: none"> <li>The AOC is a Class B/C stream indicating that the primary use is contact recreation and fishing.</li> <li>NYSDEC monitors water quality through the Rotating Intensive Basin Study (RIBS) program and State Pollutant Discharge Elimination System (SPDES) program.</li> </ul>	↔	<ul style="list-style-type: none"> <li>A citizen water quality campaign should be deployed within the watershed.</li> <li>Contaminated sediments within the watershed must be remediated.</li> <li>Annual "Clean-Sweep" events should continue to occur throughout the watershed.</li> <li>Unknown sources of impairments must be identified.</li> </ul>	
		Quality of Storm Water	C	<ul style="list-style-type: none"> <li>Storm water education activities are ongoing throughout the watershed.</li> <li>Storm drains are being monitored for illicit discharges.</li> </ul>	<ul style="list-style-type: none"> <li>Between 2003 and 2005, the mean storm event concentrations of phosphorus and total suspended solids were more than double than the mean concentrations during nonevent conditions.</li> </ul>	↔	<ul style="list-style-type: none"> <li>Continue with the storm water education campaign.</li> <li>Continue to monitor the quality of storm water entering the creek.</li> </ul>	
	<b>CONTAMINATION</b>	Spills, Discharges & Leaching of Contaminants	C	<ul style="list-style-type: none"> <li>An online Pollutant Generator Database and Mapping Portal have been completed &amp; are available to the public via web access.</li> </ul>	<ul style="list-style-type: none"> <li>Upstream sources of contamination continue to negatively impact the AOC.</li> </ul>	↔	<ul style="list-style-type: none"> <li>Assist farms in the watershed via the NYS Agricultural Environmental Management (AEM) program.</li> <li>Continue to remediate Inactive Hazardous Waste Sites and other sources of contamination.</li> </ul>	
		Contaminated Sediment	D	<ul style="list-style-type: none"> <li>A Proposed Remedial Action Plan (PRAP) was completed for the Eighteenmile Creek Corridor Site in January 2010 and a Record of Decision (ROD) was finalized in March 2010.</li> <li>Contaminated sediments in the creek continue to be assessed via an ongoing USEPA Legacy Act project.</li> </ul>	<ul style="list-style-type: none"> <li>Sediments in the AOC exceed NYS standards for a variety of contaminants, including PCBs, lead, etc.</li> <li>Contaminated sediments within the watershed continue to influence the overall health of the AOC.</li> <li>A number of historic power generation structures present in the creek act as "sinks" for contaminated sediment.</li> </ul>	↑	<ul style="list-style-type: none"> <li>Utilize Legacy Act funds to address current sediment contamination.</li> <li>Remediate all upstream sources of contamination, including the Corridor Site and Old Upper Mountain Road Site.</li> <li>Continue to identify new funding sources.</li> </ul>	
	<b>FISH &amp; WILDLIFE</b>	Contaminant Levels in Fish & Wildlife	D	<ul style="list-style-type: none"> <li>A Trophic Trace Food Web study is ongoing in the AOC. The study will assist in determining the status of current use impairments and identify potential human health and ecological risks due to bioaccumulation of sediment-associated contaminants.</li> </ul>	<ul style="list-style-type: none"> <li>Fish consumption advisories exist for the AOC, upper watershed and Lake Ontario.</li> <li>PCBs in fish collected from the Creek were: 10 times greater than in fish collected from control sites; often exceeded the critical PCB tissue concentration for effects on fish and; great enough to possibly affect reproduction of fish-eating mammals</li> </ul>	↑	<ul style="list-style-type: none"> <li>Remediate upstream sources and contaminated sediments.</li> <li>Monitor contaminant levels in fish and wildlife present in the AOC and watershed in an attempt to establish a more current baseline of data prior to any potential remediation.</li> </ul>	
		Fish & Wildlife Diversity & Populations	B	<ul style="list-style-type: none"> <li>Over 130,000 Chinook and Coho salmon and 7,000 Steelhead stocked by NYSDEC in 2010.</li> </ul>	<ul style="list-style-type: none"> <li>Large concentrations of Coho and Chinook salmon and brown trout migrate from Lake Ontario each fall. The area also supports natural reproduction by bass, northern pike and black crappie.</li> </ul>	↔	<ul style="list-style-type: none"> <li>Continue to support Olcott Pen Rearing Project.</li> <li>Contaminated sediments affecting fish &amp; wildlife require special attention.</li> </ul>	
	<b>BENEFICIAL USE IMPAIRMENTS</b>	<b>PUBLIC ACCESS &amp; RECREATION</b>	Public Access to the Creek & Adjacent Areas	A	<ul style="list-style-type: none"> <li>Access to the Newfane Dam area was constructed as part of the Legacy Act investigation.</li> </ul>	<ul style="list-style-type: none"> <li>The AOC is accessible for anglers and general recreation activities from Fisherman's Park and Olcott Harbor.</li> <li>Majority of the AOC is secluded by a steep ravine.</li> </ul>	↔	<ul style="list-style-type: none"> <li>Investigate the options for land acquisition and conservation easements of properties adjacent to the AOC.</li> </ul>
			Aesthetics of the Creek & Adjacent Riparian Areas	B	<ul style="list-style-type: none"> <li>Cub Scouts participated in a "Clean-Sweep" of the AOC which yielded the collection of 150 lbs of trash from creek banks/riparian areas.</li> </ul>	<ul style="list-style-type: none"> <li>The Town of Newfane routinely monitors Fisherman's Park and Olcott Harbor for garbage and large debris.</li> </ul>	↔	<ul style="list-style-type: none"> <li>Continue with annual AOC "Clean-Sweep" events.</li> <li>Educate and encourage recreational users to "Pitch-In" and promote a healthy creek ecosystem.</li> </ul>
		<b>REMEDIATION ACTION PLAN</b>	RAP Management	B	<ul style="list-style-type: none"> <li>A New York AOC workshop occurred in 2010 which provided a forum to discuss mutual goals &amp; objectives across all NY AOCs.</li> <li>A Stage II RAP revision is currently underway.</li> </ul>	<ul style="list-style-type: none"> <li>EPA Region 2 has funded Niagara County SWCD to oversee the Eighteenmile RAP until the end of 2011.</li> <li>New York AOCs have begun to collaborate as a group to identify common challenges and goals to AOC recovery.</li> </ul>	↔	<ul style="list-style-type: none"> <li>Regular Status Reports and updates should continue to be completed.</li> <li>Grant fund acquisition should continue to be ongoing.</li> <li>Complete strategic plan to guide BUI delisting.</li> </ul>
			RAC Management	B	<ul style="list-style-type: none"> <li>RAC members are actively working with partners to complete a remedial delisting strategy for current beneficial use impairments.</li> <li>RAC members are working on a Stage II RAP.</li> </ul>	<ul style="list-style-type: none"> <li>The RAC is comprised of a diverse group of original members and representatives from newer interests.</li> <li>The RAC meets to discuss various aspects of the RAP and to explore new opportunities to de-list the AOC.</li> </ul>	↑	<ul style="list-style-type: none"> <li>Develop a remedial strategy by 2011 to delist all impaired beneficial uses (BUIs).</li> <li>Continue to assess the status of active BUIs.</li> <li>Complete a revised Stage II RAP by 2011.</li> </ul>
Public Awareness			A	<ul style="list-style-type: none"> <li>A social media campaign is ongoing which incorporates a website, Facebook &amp; other media.</li> <li>A number of student classes visit the AOC to learn about critical issues.</li> </ul>	<ul style="list-style-type: none"> <li>Despite a fish consumption advisory, the AOC is visited by 12,000 anglers annually.</li> <li>Every year the AOC is utilized as an "outside classroom" for elementary, secondary and collegiate classes.</li> </ul>	↔	<ul style="list-style-type: none"> <li>Continue to engage the public utilizing educational tools like the annual report card, various education events, internet mapping database, AOC website, newsletters and press releases.</li> </ul>	
<b>ENVIRONMENTAL EDUCATION</b>	Watershed Stewardship	B	<ul style="list-style-type: none"> <li>Cub Scouts participated in a "Clean-Sweep" of the AOC which yielded the collection of 150 lbs of trash from creek banks/riparian areas.</li> </ul>	<ul style="list-style-type: none"> <li>There is an increasing but still limited amount of participation from the public related to the AOC.</li> <li>The Marsh Monitoring Program has attracted volunteers interested in environmental issues.</li> </ul>	↔	<ul style="list-style-type: none"> <li>Partner with sportsmen clubs/local residents to promote AOC stewardship.</li> <li>Continue with annual AOC "Clean-Sweep" and education events to keep youth interested in stewardship.</li> </ul>		

- BENEFICIAL USE IMPAIRMENTS**
- 1) Fish & Wildlife Consumption - Impaired Delisting Targets → **Identified**
  - 2) Degraded Benthic Populations - Impaired Delisting Targets → **Identified**
  - 3) Dredging Restrictions - Impaired Delisting Targets → **Identified**
  - 4) Animal Reproductive Issues - Impaired Delisting Targets → **Identified**
  - 5) Fish & Wildlife Populations - Impaired Delisting targets → **Identified**

TRENDS	GRADING
Conditions Improving ↑	A Excellent
Conditions Unchanged ↔	B Good
Conditions Worsening ↓	C Fair
	D Poor
	E Failure

### WHAT IS THE EIGHTEENMILE CREEK AREA OF CONCERN (AOC) ?

Local, state and federal officials identified a section of Eighteenmile Creek as one of 42 "Areas of Concern" (AOC) in the Great Lakes Basin. Eighteenmile Creek received this designation because of poor water quality and contaminated sediments present throughout the watershed. Eighteenmile Creek's long history of use by major industries in the area, especially near the City of Lockport and Town of Newfane, has played a large role in the present condition of the creek.

### WHAT IS THE EIGHTEENMILE CREEK REMEDIAL ACTION PLAN (RAP) ?

A RAP is an integrated, whole ecosystem approach to remediating impaired water bodies. The RAP first identifies use impairment, their causes, and contaminant sources, using existing studies and data. Next, existing cleanup and regulatory programs which apply to the water body are identified. A coordinated cleanup strategy is then developed to eliminate the use impairment. The NYS Department of Environmental Conservation produced the Stage 1/2 RAP in 1997 in an effort to restore the integrity of the creek's ecosystem.

### WHAT IS THE EIGHTEENMILE CREEK REMEDIAL ADVISORY COMMITTEE (RAC) ?

The Eighteenmile Creek RAC is comprised of a group of local, state and federal stakeholders, representing industries, organizations and local communities with a vested interest in the health of Eighteenmile Creek. The RAC is responsible for implementing the RAP, monitoring restoration efforts, and assessing ongoing needs and conditions. After a brief hiatus, the RAC reconvened in 2005 and is currently making progress in moving the RAP forward.



**FOR MORE INFORMATION**  
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## EIGHTEENMILE CREEK AREA OF CONCERN



### 2010 REPORT CARD



### A COMPILATION OF SUCCESSES, IMPROVEMENTS & CURRENT CONDITIONS

