

# The Michigan Department of Environmental Quality Biennial Remedial Action Plan Update for the River Raisin Area of Concern



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## ***Purpose of the Biennial Remedial Action Plan Update***

A Michigan Department of Environmental Quality (MDEQ) Biennial Remedial Action Plan (RAP) Update will be prepared at least every 2 years for each Area of Concern (AOC), and will be the primary tool for documenting and communicating progress to the public and agencies. These documents are meant to be brief, user-friendly updates on recent remedial actions and assessments in the AOC. They are prepared by the MDEQ in consultation with the Public Advisory Council (PAC) and the U.S. Environmental Protection Agency (USEPA). These biennial RAP updates will also be posted on the MDEQ AOC web site.

The biennial RAP update is one component of the MDEQ's process for tracking AOC restoration, removing BUIs, and ultimately delisting AOCs. These processes and relevant restoration criteria are described in more detail in the MDEQ's *Guidance for Delisting Michigan's Great Lakes Areas of Concern (Guidance)* (MDEQ, 2006).

The purpose of this River Raisin biennial RAP update is to track progress in the AOC by providing an update on those remedial actions completed in recent years. This update will discuss BUI assessment results that are based on the readiness of a BUI removal and subsequent technical committee review and recommendations. Comprehensive background information is provided in the 1987 River Raisin RAP document (Michigan Department of Natural Resources [MDNR], 1987).

## ***How to Use this Document***

For each of the nine BUIs identified in the River Raisin AOC, this biennial RAP update includes:

- A description of the significance of the BUI based on previous RAP documentation
- A summary of the restoration criteria for the BUI outlined in the *Guidance* document
- A brief summary of relevant remedial actions, if any, completed in recent years
- A brief summary of the technical committee's assessment activities and results, if any, completed in recent years
- A list of annotated references and studies that may be used by a technical committee when the MDEQ AOC coordinator, in consultation with the PAC, determines the BUI is ready for formal review of remedial actions and restoration according to the applicable criteria.

# Introduction

## ***Background***

In 1987, amendments to the Great Lakes Water Quality Agreement (GLWQA) were adopted by the federal governments of the U.S. and Canada. Annex 2 of the amendments listed 14 BUIs which are caused by a detrimental change in the chemical, physical, or biological integrity of the Great Lakes system (International Joint Commission, 1988). The Annex directed the two countries to identify AOCs that did not meet the objectives of the GLWQA. The RAPs addressing the BUIs were to be prepared for all 43 AOCs identified, including the River Raisin. The BUIs provided a tool for describing effects of the contamination, and a means for focusing remedial actions.

The 1987 River Raisin RAP identified nine of the GLWQA's 14 beneficial uses as being impaired (MDNR, 1987). Table 1 is a matrix for tracking the progress of assessments and removal of these BUIs from the River Raisin AOC. These impairments have been primarily caused by historical discharges of oils and grease, heavy metals, and polychlorinated biphenyls (PCBs) to the river from industrial facilities in the area. Additionally, industrial and municipal waste disposal sites adjacent to the river were suspected of contaminating the river and have also caused a significant loss of fish and wildlife habitat.

<b>Beneficial Use Impairment</b>	<b>Beneficial Use Remains Impaired</b>	<b>Assessment in Progress</b>	<b>BUI Removed</b>
Restrictions on fish and wildlife consumption	<b>x</b>		
Bird or animal deformities or reproductive problems	<b>x</b>		
Degradation of benthos	<b>x</b>		
Restrictions on dredging activities	<b>x</b>		
Eutrophication or undesirable algae	<b>x</b>		
Beach closings	<b>x</b>		
Degradation of aesthetics	<b>x</b>		
Degradation of fish and wildlife populations	<b>x</b>		
Loss of fish and wildlife habitat	<b>x</b>		

The River Raisin AOC is located in Monroe County, in the southeastern portion of Michigan's Lower Peninsula. The boundary of the AOC includes the lower 2.6 miles of the River Raisin (Figure 1), downstream from Dam No. 6 at Winchester Bridge in the City of Monroe, extending one-half mile into Lake Erie following the federal navigation channel and along the nearshore zone of Lake Erie both north and south, for one mile (MDNR, 1987).

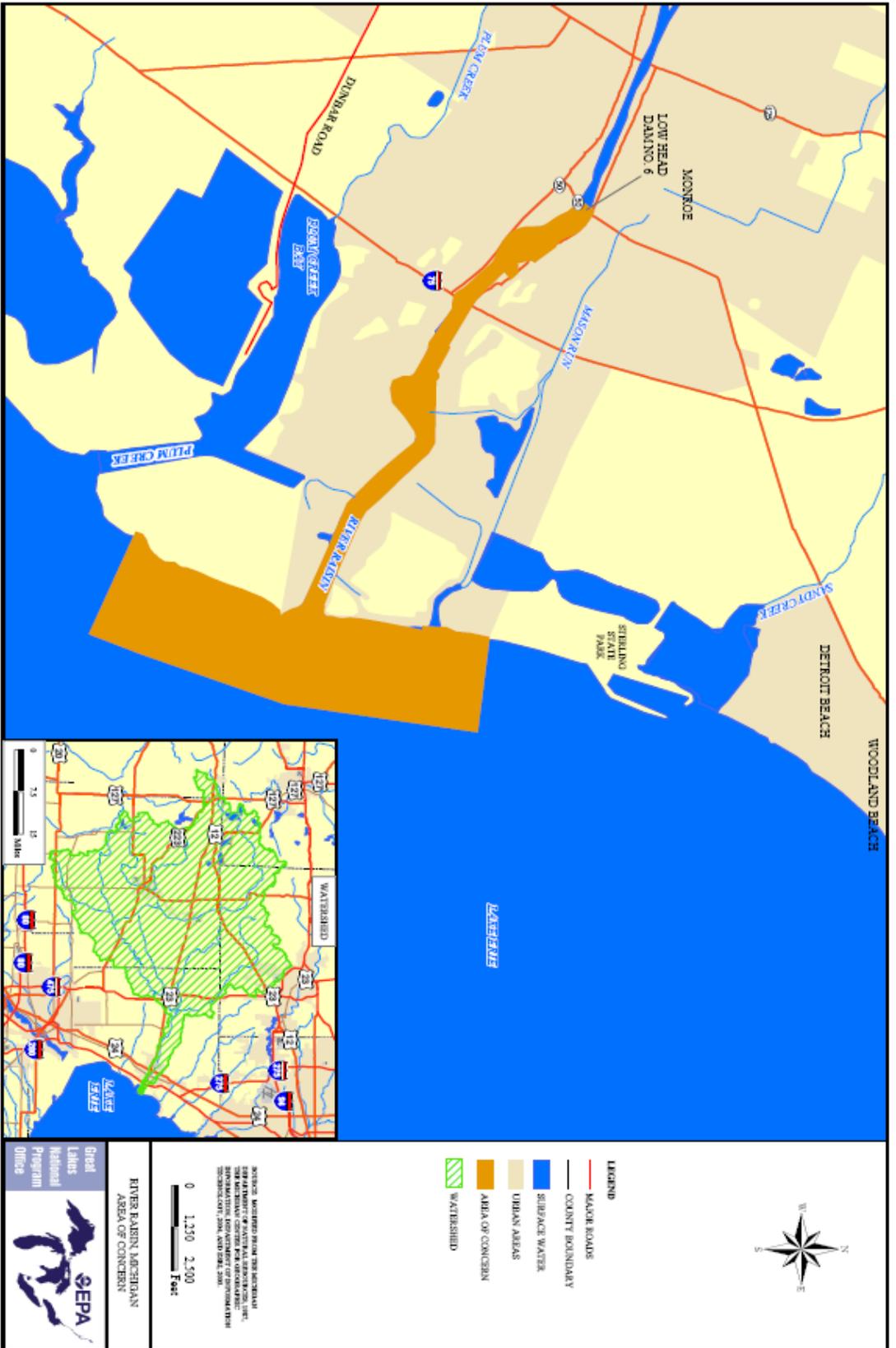


Figure 1. The River Raisin Area of Concern.

## ***Restrictions on Fish and Wildlife Consumption***

### **Significance in the River Raisin Area of Concern**

As a result of polychlorinated biphenyl (PCB) contamination in the lower River Raisin, a fish contamination and consumption advisory has been identified as the primary impaired use in the AOC (MDNR, 1987). Currently, there is a no consumption advisory for carp and channel catfish taken from the River Raisin below the Monroe Dam, including the Detroit Edison Corporate levee. There are also various consumption advisories below the Monroe Dam for black buffalo, freshwater drum (for women and children only), smallmouth bass, and white bass (Michigan Department of Community Health [MDCH], 2004).

### **Restoration Criteria**

The River Raisin PAC has accepted the state's criteria for restoring this beneficial use. The fish consumption advisory in the River Raisin AOC is more stringent than for Lake Erie. This BUI will need to be assessed using either a comparison study or trend analysis.

### **Remedial Actions**

See the Degradation of Benthos section below for recent remedial actions completed on contaminated sediments in the River Raisin AOC.

### **Assessment Activities and Results**

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the River Raisin PAC determine that this BUI is ready for a formal review and assessment. The technical committee will review the results of all remedial actions completed and other supporting documentation to provide a decision on whether or not to support a recommendation to formally remove this BUI.

### **Annotated References and Studies**

Bohr, J. and J. Zbytowski. 2006. Michigan Fish Contaminant Monitoring Program: 2005 Annual Report. MDEQ-WB Report #MI/DEQ/WB-06/091. <http://www.deq.state.mi.us/documents/deq-wb-swas-fcmreport2005.pdf>

The MDEQ's fixed station whole fish contaminant trend monitoring project was initiated to measure spatial and temporal trends of certain bioaccumulative contaminants. Since 1991, carp or redhorse sucker have been collected five times from the River Raisin for trend monitoring. In addition to Michigan's whole fish trend monitoring, caged channel catfish are used to monitor the presence and distribution of persistent bioaccumulative chemicals (Edly and Wuycheck, 2006).

Michigan Department of Community Health. 2004. Michigan Family Fish Consumption Guide: Important Facts to Know if You Eat Michigan Fish. [http://www.michigan.gov/mdch/1,1607,7-132-2944\\_5327-13110--,00.html](http://www.michigan.gov/mdch/1,1607,7-132-2944_5327-13110--,00.html)

Certain kinds and sizes of fish from the Great Lakes, and some Michigan lakes and streams, contain levels of toxic chemicals that may be harmful if those fish are eaten too often. The MDCH advises caution about eating Michigan fish for the general population, women of childbearing age, and children under 15 years old.

## ***Bird or Animal Deformities or Reproductive Problems***

### **Significance in the River Raisin Area of Concern**

Prior to the late 1940's, the River Raisin AOC contained over 800 acres of wetlands and was considered a renowned hunting and fishing destination (MDNR, 1987). However, recognizing the potential for industrial development in the lower reaches, the Monroe Port Commission allowed the uncontrolled filling of most of the wetlands with industrial waste, which produced several contaminated waste sites on both sides of the river (MDNR, 1987). Today, the remaining wildlife habitat, especially the Eagle Island Marsh (formerly the Ford Marsh) and the Port of Monroe Landfill lagoons adjacent to Plum Creek (in the immediate vicinity of the AOC), are home to nesting eagles, a colony of ring billed and herring gulls, a number of wintering bald eagles, and other aquatic birds (D. Best, personal communication, October 24, 2006).

### **Restoration Criteria**

The River Raisin PAC has accepted the state's criteria for restoring this beneficial use. According to the *Guidance*, restoration of this beneficial use will be demonstrated using one of two approaches. The approach taken will depend on the availability of data. The first approach evaluates restoration based on field assessment of birds and/or other wildlife where MDEQ or other state-approved bird and wildlife data are available. The second approach will be applied where bird or other wildlife data are not available. This approach will use levels of contaminated fish tissue known to cause reproductive or developmental problems as an indicator of the likelihood deformities or reproductive problems may exist in the AOC.

### **Remedial Actions**

See the Degradation of Benthos section below for recent remedial actions completed on contaminated sediments in the River Raisin AOC.

### **Assessment Results**

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the River Raisin PAC determine that this BUI is ready for a formal review and assessment. The technical committee will review the results of all remedial actions completed and other supporting documentation to provide a decision on whether or not to support a recommendation to formally remove this BUI.

## **Annotated References and Studies**

Michigan Department of Environmental Quality. 2004. Michigan Wildlife Contamination Trend Monitoring. Year 2002 Annual Report. Nestling Bald Eagles. MI/DEQ/WD-04/024.

Michigan Department of Environmental Quality. 2006. Michigan Wildlife Contamination Trend Monitoring. Year 2003 Annual Report. Nestling Bald Eagles (Draft).

Since 1999, the MDEQ has funded researchers at Michigan State University (MSU) and Clemson University to measure contaminant levels in bald eagle blood and feathers each year. Bald eagle productivity is also monitored. Eaglets from selected nests have been monitored annually, while others have been sampled according to the MDEQ's five-year rotating watershed cycle. Samples are analyzed for PCBs, mercury, dichlorodiphenyltrichloroethane (DDT), and a few other selected pesticides (Edly and Wuycheck, 2006).

The same researchers monitoring bald eagles are also assessing contaminant levels (PCBs, DDT, and mercury) in herring gull eggs. This project complements and expands existing herring gull egg monitoring conducted by the Canadian Wildlife Service. The data are used for trend assessment of near-shore areas of the Great Lakes (Edly and Wuycheck, 2006).

## ***Degradation of Benthos***

### **Significance in the River Raisin Area of Concern**

According to the 1987 RAP, benthic impairments are due to PCB contamination from a variety of sources from within and outside of the AOC, including: contaminated sediments, waste disposal sites and industrial point sources located along the river; heavy metals from urban non-point sources, waste disposal sites, and industrial point sources; suspended solids from combined sewer overflows (CSOs) and sanitary sewer overflows (SSOs); oil and grease from industrial point sources, and urban non-point sources (MDNR, 1987).

### **Restoration Criteria**

The River Raisin PAC has accepted the state's criteria for restoring this beneficial use. According to the *Guidance*, an assessment of the benthic community will be conducted by either MDEQ's Surface Water Assessment Section (SWAS) procedures for wadeable or non-wadeable streams; or, in cases where MDEQ procedures are not applicable and benthic degradation is caused by contaminated sediments, this beneficial use will be considered restored when all remedial actions for known contaminated sediment sites with degraded benthos are completed (except for minor repairs required during operation and maintenance) and monitored according to the approved plan for the site.

Historically, the MDEQ's SWAS Procedure #51 for wadeable streams has not been conducted in the River Raisin AOC because a significant portion of the river in the AOC is non-wadeable and considered a federally maintained navigational channel. The MDEQ's pending rapid assessment procedure for non-wadeable rivers may not be applicable to the AOC because it based on the biologist's ability to wade along the shoreline to collect insects in the shoreline areas (samples are not collected in non-wadeable areas). Because the historic benthic impairments were due mainly to contaminated sediments, the assessment of this BUI will likely depend on whether or not all remedial actions for known contaminated sediment sites with degraded benthos are completed and monitored.

### **Remedial Actions**

In 1991, elevated PCBs were detected at an area on the north side of the river known as the "PCB Hot Spot" located near outfall pipes leading from the Ford Motor Company Stamping Plant (now Automotive Components Holding, LLC). In 1997, the Ford Motor Company, under an Administrative Order of Consent by USEPA Superfund program, removed approximately 27,000 cubic yards of contaminated sediment from the river and placed it one of the Corrective Action Management Units provided by Ford Motor Company.

Post remedial sediment quality surveys conducted in 2001 through 2003 by the MDEQ and USEPA - Great Lakes National Program Office indicated that greater than 2,000 cubic yards of PCB-contaminated sediment remained in the "PCB Hot Spot." Sediments from the turning basin downstream showed concentrations of PCBs above levels of concern. The studies also indicated that there was significant potential for uptake of PCBs into the food web (USEPA, 2003). An addendum was completed for the remedial alternatives evaluation report, recommending dredging of five sites with elevated PCB concentration from the turning basin downstream, including the former Ford "PCB Hot Spot" (MACTEC, 2003).

In March 2006, USEPA sent a special notice letter to the Ford Motor Company requesting that they enter into negotiations with the USEPA to perform a Remedial Investigation/Feasibility Study. The study would involve collecting additional samples and evaluating alternatives to remediate contamination that may pose a human threat. In August 2006, Ford responded by indicating that the PCBs found in recent sampling (since the 1997 removal action) were not the same as those that the company used in their processes. The USEPA is currently evaluating Ford's response and will continue to pursue the study and cleanup of the Ford Motor Company site (personal communication, Brad Bradley).

Consolidated Packing Corporation (CPC) began to manufacture paperboard boxes in the late 1800's. During the early years of operation, the paper wastes from the mill were discharged into a drainage ditch that discharged in the River Raisin. Between 1950 and 1970, seven lagoons were constructed to dispose of high fiber paper wastes. The CPC facility closed in 1978 and the City of Monroe

acquired the property in 1987. In 1993, the MDNR conducted a Remedial Investigation and found a significant volume of paper sludge contaminated with PCBs within the seven lagoons, two surface fill areas, and within the drainage ditch. In 2004, approximately 30,000 cubic yards of paper sludge in the drainage ditch, leading to the River Raisin, were remediated by dredging. In 2005, upland sludge in the southwest fill areas was also removed. From 2005 through 2006, PCB paper sludge from Lagoon 1 was excavated and properly disposed, eliminating a direct contact hazard. In addition, contaminated paper sludge was excavated from and an area west of Lagoon 1 (R. Spaulding, personal communication, November 16, 2006).

### **Assessment Activities and Results**

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the River Raisin PAC determine that this BUI is ready for a formal review and assessment. The technical committee will review the results of all remedial actions completed and other supporting documentation to provide a decision on whether or not to support a recommendation to formally remove this BUI.

### **Annotated References and Studies**

MACTEC. 2003. Draft Remedial Alternatives Evaluation Report Addendum River Raisin 307 Site.

The purpose of the addendum was to document the results of the additional sediment sampling investigation in the River Raisin navigational channel. The investigation was conducted by MACTEC Engineering and Consulting of Michigan, Inc. (MACTEC, formerly Harding ESE, Inc.) and directed by the MDEQ. The specific objective of the investigation was to verify historical sampling results of PCB impacted areas at select locations within the AOC. The sample locations were selected to verify historical data prior to the design of remedial action. In addition, MACTEC calculated the volume of sediment which contained 80 percent of the total PCB mass, and the volume of sediment in five areas selected by the MDEQ for remediation.

USEPA. 2003. Post-Remediation Sediment Sampling on the Raisin River Near Monroe, Michigan. Final Results from 2001-2002 Survey: PCB Chemistry, Caged Fished and Bioaccumulation Results.

<http://www.epa.gov/glnpo/sediment/raisin/index.html>

In 2001 and 2002 the USEPA - Great Lakes National Program Office, in conjunction with the US Army Corps of Engineers (USACE) - Detroit District and the MDEQ conducted an extensive survey of sediment quality conditions within the Raisin River AOC. The focus of the survey was to evaluate the levels of PCB contamination remaining in the area of the Ford Motor Company sediment remediation project completed in 1997. The survey also collected data to evaluate the quality of sediments in the AOC outside the removal area. The assessment focused on PCBs, the

primary contaminant of concern within the AOC, but also included analysis of other chemical constituents.

## ***Restrictions on Dredging Activities***

### **Significance in the River Raisin Area of Concern**

In 1981, samples collected for the USACE revealed elevated levels of PCBs in sediments located from the Monroe Waste Water Treatment Plant (WWTP) to Lake Erie (MDNR, 1987). The highest concentrations were found in and immediately downstream of the turning basin. In 1983 and 1984, it was noted that PCB concentrations in sediment increased from the turning basin to the Detroit Edison Power Plant water intake (Harding, 2002). In 1991, an MSU investigation found high levels of PCBs (40,000 ppm) in sediments located near the outlet of a former Ford Motor Company wastewater discharge pipe. This pipe was located on the north side of the River Raisin just downstream from the turning basin.

### **Restoration Criteria**

The River Raisin PAC has accepted the state's criteria for restoring this beneficial use. According to the *Guidance*, this beneficial use will be considered restored when either there have been no restrictions on routine commercial or recreational navigational channel dredging by the USACE, based on the most recent dredging cycle; or, in cases where dredging restrictions exist, a comparison of sediment contaminant data from the commercial or recreational navigation channel (at the time of proposed dredging) in the AOC indicates that contaminant levels are not statistically different from other comparable, non-AOC commercial or recreational navigation channels.

### **Remedial Actions**

The USACE conducts pre-maintenance survey for metals, PCBs, and organic compounds every five years, and dredges the River Raisin navigational channel every three years. The most recent maintenance dredging activities occurred in 2003. The most recent pre-maintenance survey conducted in 2006 found one area in the river of the navigational channel where the sediment was contaminated with PCB over 1 part per million (ppm). The sampling effort from 2000 found that 8 out of 17 stations in the river had detectable levels of PCBs, however, only two stations were above 1 ppm. The two locations over 1 ppm were located in front of and just downstream of the turning basin. The dredging in 2003 was performed by hydraulic dredging, and no dredging restrictions were placed on the contract. If mechanical dredging were used, then overflow would have been restricted in the area near the turning basin (P. Horner, personal communication, December 11, 2006).

The city of Monroe and the River Raisin PAC are planning to request that the USACE consider over-dredging during future maintenance dredging operations,

in an effort to reduce the presence of any potential contaminated sediment present within the navigational channel.

### **Assessment Activities and Results**

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the River Raisin PAC determine that this BUI is ready for a formal review and assessment. The technical committee will review the results of all remedial actions completed and other supporting documentation to provide a decision on whether or not to support a recommendation to formally remove this BUI.

### **Annotated References and Studies**

Great Lakes Dredging Team. 1999. Decision Making Process for Dredged Material Management. Draft Final, October 13, 1998, Amendment #1, January 18, 1999.

This document describes how to manage the dredged material, management options, treatment technologies available, the technical evaluation process, and regulatory information.

U.S. Army Corps of Engineers. 2005. Monroe Harbor, Michigan, Sediment Sampling and Analysis Final Report.

U.S. Army Corps of Engineers. 2000. Monroe Harbor, Michigan, Sediment Sampling Report.

Prior to maintenance dredging, USACE contractors conduct pre-maintenance dredging surveys of the River Raisin navigational channel. The surveys involve the collection of sediment and water samples at selected stations for analysis of physical and chemical parameters.

## ***Eutrophication or Undesirable Algae***

### **Significance in the River Raisin Area of Concern**

According to the 1987 River Raisin RAP, water quality in the river between the 1960s and 1970s was considered generally poor (MDNR, 1987). Low flow in the summer months causes nutrients from upstream sources to accumulate in the AOC, causing the water quality to assume a “sludge-like character” and undesirable algae growth (Cyr, 2002). Monitoring during the mid-1970s showed that turbidity and total phosphorus was consistently high, indicative of highly eutrophic conditions, and was likely related more to runoff from agriculture in the upper watershed rather than municipal or industrial discharges in the AOC (SEMCOG, 1978, as cited in MDNR, 1987).

### **Restoration Criteria**

The River Raisin PAC has not yet accepted the state's criteria for restoring this beneficial use. The *Guidance* criteria requires that no waterbodies within the AOC are included on the list of impaired waters due to nutrients or excessive algal growths in the most recent Clean Water Act *Water Quality and Pollution Control in Michigan: Section 303(d) and 305(b) Integrated Report* (Edly and Wuycheck, 2006). An assessment of this BUI using the Integrated Report is not appropriate for the River Raisin AOC because the lower 2.6 miles is considered non-wadeable and the MDEQ does not routinely monitor this stretch of river for eutrophic conditions. However, the MDEQ's Water Chemistry Monitoring Project does collect contaminant loading data on a regular basis, including phosphorus, from a sampling station located within the AOC. In addition, the Heidelberg College Tributary Monitoring Program collects data on major nutrients and suspended solids approximately 12 miles upstream from the mouth of the river. These data may provide insight into whether or not phosphorus levels are high enough to cause eutrophication or nuisance algal blooms in the AOC.

### **Remedial Actions**

Remedial efforts have been ongoing in the upper watershed to address nutrient loadings. For example, the River Raisin watershed is one of three priority watersheds under the Michigan's Conservation Reserve Enhancement Program (CREP). Since 1998, the CREP has provided landowners with cost-share assistance in establishing conservation practices, including establishing riparian buffers, grass plantings, field windbreaks, filter strips, wetland restoration, controlled livestock access, and conservation easements. As of July 7, 2006, the CREP has enrolled over 11,624 acres of land in the River Raisin watershed (personal communication, John Suppnick).

In 2005, the River Raisin Watershed Council was awarded a \$277,000 Clean Water Act Section 319 grant to develop a watershed management plan. The goals of the watershed plan are to: coordinate, inform and improve planning and implementation activities; establish eligibility for state and federal grant funds; increase stakeholder participation and foster stewardship; improve the public's perception of the river; and, improve water quality and habitat impairments within the River Raisin. The plan is scheduled to be completed by the end of 2007.

### **Assessment Activities and Results**

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the River Raisin PAC determine that this BUI is ready for a formal review and assessment. The technical committee will review the results of all remedial actions completed and other supporting documentation to provide a decision on whether or not to support a recommendation to formally remove this BUI.

### **Annotated References and Studies**

Aiello, C. 2003. Michigan Water Chemistry Trend Monitoring 2001 Report. Michigan Department of Environmental Quality, Water Division. Report #MI/DEQ/WD-03/085.

- Aiello, C. 2004. Michigan Water Chemistry Monitoring Great Lakes Tributaries 2002 Report. Department of Environmental Quality, Water Bureau. Report #MI/DEQ/WD-04/049.
- Aiello, C. 2005. Michigan Water Chemistry Monitoring Great Lakes Tributaries 2003 Report. Department of Environmental Quality, Water Bureau. Report #MI/DEQ/WB-05/058.
- Aiello, C. 2006. Michigan Water Chemistry Trend Monitoring Great Lakes Tributaries 2004 Report. Michigan Department of Environmental Quality Water Division. Report #MI/DEQ/WD-06/045.

The Water Chemistry Monitoring Project allows for the calculation of contaminant loadings from key Michigan tributaries. The key goals of this project are to: 1) assess the current status and condition of individual waterbodies and determine whether standards are being met, 2) measure temporal and spatial trends, 3) to detect new and emerging water quality problems, and 4) provide data to support MDEQ water quality programs and evaluate their effectiveness. Water chemistry reports are available at: [http://www.michigan.gov/deq/0,1607,7-135-3313\\_3686\\_3728-32361--,00.html](http://www.michigan.gov/deq/0,1607,7-135-3313_3686_3728-32361--,00.html)

Heidelberg College Tributary Monitoring Program: <http://wql-data.heidelberg.edu/>

Since 1982, the Heidelberg College Water Quality Laboratory has collected water samples from the River Raisin as part of its Ohio Tributary Monitoring Program. These samples have been collected at a U.S. Geological Survey (USGS) stream gaging station approximately 12 miles upstream from the mouth of the river. Water samples are analyzed for major nutrients and suspended solids. The data also provide uniquely detailed data sets on ambient water quality in the river and may support investigations on pollutant sources and transport into the River Raisin AOC.

- Suppnick, J. and GLEC. 2003. Conservation Reserve Enhancement Program 2003 Annual Water Quality Monitoring Report. Report #MI/DEQ/WD-03/118.
- Suppnick, J. and GLEC. 2004. Conservation Reserve Enhancement Program 2004 Annual Water Quality Monitoring Report. Report #MI/DEQ/WB-04/085.
- Suppnick, J. and GLEC. 2005. Conservation Reserve Enhancement Program 2005 Annual Water Quality Monitoring Report. Report #MI/DEQ/WB-05/122.

The MDEQ works closely with the Michigan Department of Agriculture to implement the CREP, a federal-state-local conservation partnership designed to reduce significant environmental effects related to agriculture. The CREP is being implemented in three critical watersheds (Saginaw Bay, Macatawa River, and River Raisin) that have intense agricultural land use. The objectives of the program are to improve and protect water quality and to promote and enhance wildlife habitat by providing incentives

to Michigan citizens for implementing conservation practices for a period of 15 years (Edly and Wuycheck, 2006).

## ***Beach Closings***

### **Significance in the River Raisin Area of Concern**

The only public beach within the AOC is located at the Sterling State Park. The swimming beach is located within one mile north of the mouth of the River Raisin (Figure 1). Historically, the park was closed to swimming due to *E. coli* contamination from the River Raisin (R. Micka, personal communication, December 11, 2006). Today, because all of the River Raisin water flows through the Detroit Edison Power Plant and is discharged into Plum Creek, which discharges over one mile downstream from the mouth of the River Raisin (Figure 1), the threat of bacterial contamination at the park has been reduced (R. Micka, personal communication, December 11, 2006). However, recreational contact with surface water contaminated with bacteria is an ongoing concern in the river. Bacterial contamination within the lower river has been attributed to inputs from the upper watershed, including discharges from upstream wastewater facilities, periodic SSOs and CSOs from upstream municipalities, and failed septic systems and agricultural inputs from rural areas (D. Stefanski, personal communication, December 11 and 12, 2006).

### **Restoration Criteria**

The River Raisin PAC has not yet accepted the state's criteria for restoring this beneficial use because the *Guidance* criteria require that no waterbodies within the AOC are included on the list of impaired waters due to contamination with pathogens in the most recent Integrated Report. The MDEQ and the Monroe County Health Department are not currently monitoring the AOC for pathogens. However, some local water quality monitoring has been conducted in the past. These data and future local monitoring will likely be used to assess this BUI.

### **Remedial Actions**

As of January 1987, the Monroe WWTP discontinued discharging into the River Raisin by moving the outfall to Plum Creek, outside the boundary of the AOC (MDNR, 1987).

In August 2005, a \$142,345 Clean Michigan Initiative grant was awarded to the Monroe County Drain Commissioner's Office to implement Phase II of the USEPA's stormwater program. This project is ongoing in the city of Monroe, and in Frenchtown and Monroe townships, and is expected to identify and eliminate illicit discharges, reduce pollution (e.g., sanitary wastewater and effluent from septic tanks) and improve water quality in Monroe County. This effort will also reduce or eliminate pathogenic inputs into the River Raisin AOC.

### **Assessment Activities and Results**

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the River Raisin PAC determine that this BUI is ready for a formal review and assessment. The technical committee will review the results of all remedial actions completed and other supporting documentation to provide a decision on whether or not to support a recommendation to formally remove this BUI.

### **Annotated References and Studies**

MDEQ's beach website: <http://www.deq.state.mi.us/beach/public/default.aspx>

The MDEQ awards grants each year to local health departments to monitor *E. coli* levels at Great Lakes and inland beaches. County health departments use the results to assess whether the total body contact recreation designated use is being attained and whether beach closings are necessary. Results are reported in annual beach monitoring reports and are posted on the MDEQ's beach website above (Edly and Wuycheck, 2006).

CSO & SSO Discharge website: [http://www.deq.state.mi.us/csosso/find\\_event.asp](http://www.deq.state.mi.us/csosso/find_event.asp)

Facilities are required to report that a CSO and SSO discharge event occurred within 24 hours of the initial discharge. Later, after the event ends, a written report is submitted which contains additional information including volume of the discharge, and the start/end date and time. This information is posted on the above website.

## ***Degradation of Aesthetics***

### **Significance in the River Raisin Area of Concern**

According to the 1987 River Raisin RAP, the Ford Motor Company was a potential source of excessive levels of oil and grease to the AOC by way of direct discharge from its manufacturing operations (MDNR, 1987). Studies conducted in the River Raisin during the 1960s through the 1980s documented poor water quality due in part to high turbidity, high suspended solids (especially from the Monroe WWTP and upstream areas), and total phosphorus loadings (MDNR, 1987).

### **Restoration Criteria**

The River Raisin PAC has not yet accepted the state's criteria for restoring this beneficial use. The *Guidance* criteria require that monitoring data be collected for two successive monitoring cycles to determine whether or not the water bodies in the AOC exhibit persistent, high levels of the following "unnatural physical properties" (as defined by Rule 323.1050 of the Michigan Water Quality Standards) in quantities which interfere with the state's designated uses for surface waters:

turbidity  
color  
oil films  
floating solids

foams  
settleable solids  
suspended solids  
deposits

The MDEQ does not routinely monitor this stretch of river for degraded aesthetic conditions. However, once this BUI is ready to be assessed, the MDEQ biologists will monitor for aesthetic conditions during ongoing monitoring projects and/or work with other local water quality efforts to determine the status. For example, the MDEQ's Water Chemistry Monitoring Project does collect contaminant loading data on a routine basis, which includes analysis for turbidity and suspended solids from a sampling station located within the AOC. The Heidelberg College Tributary Monitoring Program also collects data on major nutrients and suspended solids approximately 12 miles upstream from the river mouth. These data may provide insight into whether or not these unnatural properties are in high enough quantities to interfere with the state's designated uses in the AOC. The remaining unnatural properties can also be observed during routine water chemistry sampling events.

### **Remedial Actions**

As of January 1987, the Monroe WWTP discontinued discharging into the River Raisin by moving the outfall to Plum Creek, outside the boundary of the AOC (MDNR, 1987).

### **Assessment Activities and Results**

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the River Raisin PAC determine that this BUI is ready for a formal review and assessment. The technical committee will review the results of all remedial actions completed and other supporting documentation to provide a decision on whether or not to support a recommendation to formally remove this BUI.

### **Annotated References and Studies**

- Aiello, C. 2003. Michigan Water Chemistry Trend Monitoring 2001 Report. Michigan Department of Environmental Quality, Water Division. Report #MI/DEQ/WD-03/085.
- Aiello, C. 2004. Michigan Water Chemistry Monitoring Great Lakes Tributaries 2002 Report. Department of Environmental Quality, Water Bureau. Report #MI/DEQ/WD-04/049.
- Aiello, C. 2005. Michigan Water Chemistry Monitoring Great Lakes Tributaries 2003 Report. Department of Environmental Quality, Water Bureau. Report #MI/DEQ/WB-05/058.
- Aiello, C. 2006. Michigan Water Chemistry Trend Monitoring Great Lakes Tributaries 2004 Report. Michigan Department of Environmental Quality Water Division. Report #MI/DEQ/WD-06/045.

The Water Chemistry Monitoring Project allows for the calculation of contaminant loadings from key Michigan tributaries. The key goals of this project are to: 1) assess the current status and condition of individual waterbodies and determine whether standards are being met, 2) measure temporal and spatial trends, 3) to detect new and emerging water quality problems, and 4) provide data to support MDEQ water quality programs and evaluate their effectiveness. Water chemistry reports are available at: [http://www.michigan.gov/deq/0,1607,7-135-3313\\_3686\\_3728-32361--,00.html](http://www.michigan.gov/deq/0,1607,7-135-3313_3686_3728-32361--,00.html)

Heidelberg College Tributary Monitoring Program: <http://wql-data.heidelberg.edu/>

Since 1982, the Heidelberg College Water Quality Laboratory has collected water samples from the River Raisin as part of its Ohio Tributary Monitoring Program. These samples have been collected at a USGS stream gaging station approximately 12 miles upstream from the mouth of the river. Water samples are analyzed for major nutrients and suspended solids. The data also provide uniquely detailed data sets on ambient water quality in the river and may support investigations on pollutant sources and transport into the River Raisin AOC.

## ***Loss of Fish and Wildlife Habitat Degradation of Fish and Wildlife Populations***

### **Significance in the River Raisin Area of Concern**

The current sites of Ford Motor Company Stamping Plant (now Automotive Components Holdings, LLC) and Detroit Edison's Power Plant were once the sites of renowned hunting and fishing lodges (MDNR, 1987). As the area underwent intense industrial development in the early and mid-1900s, the extensive fish and wildlife habitat was covered by industrial waste and eliminated. Subsequently, water quality and biota became susceptible to significant point and non-point source contaminants. Fish populations became impaired due to combined sewer overflows and residual chlorine from the WWTP; oil and grease from industrial point sources; and in particular, PCBs and heavy metals from contaminated sediments, waste disposal sites and other point sources located along both sides of the river (MDNR, 1987).

Biotic impairment is not limited to municipal and industrial loadings. The large water demand required to operate the Detroit Edison power plant has impacted the hydrology of the lower river by withdrawing nearly all of river water and diverting it to the power plant water intake, where it is discharged via the Detroit Edison Corporate levee into Plum Creek. The alteration of water flow has resulted in significant impacts to the River Raisin fishery and is responsible for the entrainment of planktonic organisms and the impingement of millions of fish against the plant's water intake screens (MDNR, 1987).

### **Restoration Criteria**

Per the *Guidance*, these two BUIs are considered together in recognition of the integral relationship between them. The restoration criteria outlined in the *Guidance* is a process for local PACs to use to develop locally-derived restoration targets and plans for fish and wildlife habitat and populations. The River Raisin PAC is currently in the process of developing restoration criteria. The finalized restoration plans will be part of future biennial RAP updates, and will contain at least the following components:

- A short narrative on historical fish and wildlife habitat or population issues in the AOC
- Description of the impairment(s) and location for each aquatic habitat or population site(s) to address all habitat or population issues identified in the RAP documents
- A locally derived restoration target for each impacted habitat or population site
- A list of all other ongoing habitat or population planning processes in the AOC
- A scope of work for restoring each impacted aquatic habitat or population site
- A component for reporting on habitat or population restoration implementation action(s) to the MDEQ.

Removal of this BUI will be based on achievement of full implementation of actions in the steps above. Habitat values and populations need not be fully restored prior to delisting, as some may take many years to recover after actions are complete. Actions already implemented in the AOC may be reported and evaluated as long as the documentation contains all of the elements above.

### **Remedial Actions**

In 2004, the City of Monroe was awarded a MDEQ Coastal Management Program grant to conduct a field assessment of all open waterways within the city. This comprehensive assessment identifies best management practices to address fish and wildlife impairments as well as other River Raisin BUIs within the City of Monroe. The assessment will also provide a means to implement natural resource conservation programs to restore relevant beneficial uses (USEPA and Environment Canada, 2006).

In 2005, the Automotive Components Holdings, LLC (ACH) and the U.S. Fish and Wildlife Service entered into a cooperative management agreement to incorporate 240 acres of coastal wetlands, called Eagle Island Marsh, into the Detroit River International Wildlife Refuge. The Eagle Island Marsh is located behind the ACH's plant and is bordered by the Sterling State Park to the north, Lake Erie to the east, and the River Raisin to the south (USEPA and Environment Canada, 2006).

In 2005, the River Raisin Watershed Council was awarded a \$277,000 Clean Water Act Section 319 grant to develop a watershed management plan. The

goals of the watershed plan are to: coordinate, inform and improve planning and implementation activities; establish eligibility for state and federal grant funds; increase stakeholder participation and foster stewardship; improve the public's perception of the river; and, improve water quality and habitat impairments within the River Raisin. The plan is scheduled to be completed by the end of 2007.

### **Assessment Activities and Results**

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the River Raisin PAC determine that this BUI is ready for a formal review and assessment. The technical committee will review the results of all remedial actions completed and other supporting documentation to provide a decision on whether or not to support a recommendation to formally remove this BUI.

### **Annotated References and Studies**

- Dodge. K. 1998. River Raisin Assessment. Michigan Department of Natural Resources, Fisheries Division. Special Report 23.
- Dodge. K. 1998. River Raisin Assessment Appendix. Michigan Department of Natural Resources, Fisheries Division. Special Report 23.

The River Raisin assessment and appendix were prepared to provide a comprehensive reference for citizens and agency personnel who desire information about a particular fisheries resource, fisheries management tool, water quality data, and biological community structure. The assessment identifies opportunities for restoration and provides problem solving recommendations related to aquatic resources in the River Raisin watershed. The River Raisin Assessment is available online at:  
[http://www.michigan.gov/dnr/0,1607,7-153-10364\\_10951\\_19056-46270--,00.html](http://www.michigan.gov/dnr/0,1607,7-153-10364_10951_19056-46270--,00.html)

## **References**

Cry, T. 2002. The River Raisin Remedial Action Plan Update – Draft.

Edly, K. and J. Wuycheck. 2006. Water Quality and Pollution Control in Michigan: 2006 Sections 303(d) and 305(b) Integrated Report. Report MI/DEQ/WB-6/019.

[http://www.michigan.gov/deq/0,1607,7-135-3313\\_3686\\_3728-12711--,00.html](http://www.michigan.gov/deq/0,1607,7-135-3313_3686_3728-12711--,00.html)

International Joint Commission. 1988. Revised Great Lakes Water Quality Agreement of 1978, as amended by Protocol signed November 18, 1987. Consolidated by the International Joint Commission, United States and Canada. Available at: <http://www.ijc.org/rel/agree/quality.html#ann2>

Michigan Department of Environmental Quality. 2006. Guidance for Delisting Michigan's Great Lakes Areas of Concern. Report MI/DEQ/WB-06-001.

[http://www.michigan.gov/deq/0,1607,7-135-3313\\_3677\\_15430---,00.html](http://www.michigan.gov/deq/0,1607,7-135-3313_3677_15430---,00.html)

Michigan Department of Natural Resources. 1987. Remedial Action Plan for the River Raisin.

USEPA and Environment Canada. 2006. Lake Erie Lakewide Management Plan. <http://www.epa.gov/glnpo/lakeerie/2006update/index.html>