Removal Recommendation
Beach Closings Beneficial Use Impairment
St. Clair River Area of Concern

Issue

The Michigan Department of Environmental Quality (MDEQ), Office of the Great Lakes, Areas of Concern (AOC) program staff recommend the removal of the Beach Closings Beneficial Use Impairment (BUI) for the St. Clair River AOC based on the review of relevant documentation pursuant to the process and criteria set forth in the *Guidance for Delisting Michigan's Great Lakes Areas of Concern* (*Guidance*) (MDEQ 2015). This recommendation is made with the support of staff from the United States Environmental Protection Agency (USEPA) Great Lakes National Program Office, the MDEQ Water Resources Division (WRD), the St. Clair County Health Department (SCCHD) and the St. Clair River Binational Public Advisory Council (BPAC).

Background

The St. Clair River is one of five binational AOCs in the Great Lakes region, sharing a boundary with Canada. The boundary of the AOC includes the entire river from the Blue Water Bridge (connecting Sarnia and Port Huron) to the southern tip of Seaway Island, west to St. John's Marsh, and east to include the north shore of Mitchell's Bay on Lake St. Clair (Figure 1) (OMOE and MDNR 1991).

Figure 1: Boundary of the St. Clair River AOC

"The St. Clair River was identified as an AOC due to the following types of problems: conventional pollutants (e.g. bacteria), heavy metals, contaminated sediments, fish consumption advisories, impacted biota and beach closings" (OMOE and MDNR 1991).

According to the 1991 St. Clair River Remedial Action Plan (RAP) the Beach Closings BUI was determined to be impaired on both the US and Canadian sides of the river as "beach closings occur along the Ontario shore of the St. Clair River due to coliform bacteria densities which exceeded both Ontario and Michigan standards" and even though " there have been no beach closings in Michigan… all areas downstream of Michigan Combined Sewer Overflows (CSOs) are identified as impaired areas due to the periodic discharge of inadequately treated sewage" (OMOE and MDNR 1991). As of the Stage 2 update in 2008, "…CSOs, storm sewer outfall discharges and discharges from the Sarnia Water Pollution Control Centre and the Port Huron Waste Water Treatment Plant still constitute major sources of pollution to the St. Clair River and contribute to beach closures" (MDEQ 2008).

Four BUIs will remain impaired on the United States (U.S.) side of the St. Clair AOC: Restrictions on Fish and Wildlife Consumption, Bird or Animal Deformities or Reproductive Problems, Restrictions on Drinking Water Consumption or Taste and Odor Problems, and Loss of Fish and Wildlife Habitat.

Removal Criteria

According to the 2015 *Guidance*, this BUI will be considered restored when:

1. No waterbodies within the AOC are included on the list of non-attaining waters due to human pathogens in the most recent Clean Water Act *Water Quality and Pollution Control in Michigan: Section 303(d) and 305(b) Integrated Report* (Integrated Report), which is submitted to U.S. EPA every two years.

2. OR, in cases where the waterbodies within the AOC are on the list of non-attaining waters due to human pathogens, this BUI will be considered restored when human sources of pathogens regulated under the National Pollutant Discharge Elimination System (NPDES) are on schedule to be controlled through implementation of permit requirements. Sources of pathogens from failing on-site septic systems regulated under county health departments can be an issue state-wide and are not included in the AOC program.

The attached excerpt from the *Guidance* (pages 37-39) includes the rationale for the delisting criteria (Attachment A).

Tier 1 of the *Guidance* requires that no waterbodies within the AOC be included on the list of non-attaining waters due to human pathogens in the most recent *Integrated Report*. In the 2014 *Integrated Report,* four areas of the St. Clair River and one area on the Black River are identified as non-attaining, not supporting designated body contact uses due to contamination by *Escherichia coli*. (Table 1) (MDEQ 2014). Since the St. Clair River AOC is on the list of non-attaining waterbodies, the Tier 1 criterion has not been met; therefore, the BUI must be assessed using the second tier of the *Guidance* focusing on the schedule for control of sources of human pathogens through the DEQ's NPDES permit process.

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Impaired Water (Sampling Location)	Reason for Non-Attainment	Full Body Contact Designated Use	Partial Body Contact Designated Use	TMDL
Marysville Water Filtration Plant	*E. coli*	Not Supporting	Not Supporting	No
City of Port Huron Water Filtration Plant	*E. coli*	Not Supporting	Not Supporting	No
Cuttle Creek, South of Marysville Upstream to Lake Huron Outlet at Port Huron	*E. coli*	Not Supporting	Not Supporting	No
St. Clair River Chrysler Beach	*E. coli*	Not Supporting	Fully Supporting	TMDL Scheduled for 2029
Black River	*E. coli*	Not Supporting	Not Supporting	TMDL Completed on September 27, 2011

Table 1: Areas of non-attaining waters in the St. Clair River Area of Concern (MDEQ 2014)

Analysis

Frequent discharges from combined sewer overflows (CSOs) were a primary reason for the impairment of the Beach Closings BUI in the St. Clair River AOC. At the time of the 1991 RAP, there were "no beach closings in Michigan although all areas downstream of Michigan CSOs are identified as impaired areas due to the periodic discharge of inadequately treated sewage" (OMOE and MDNR 1991). In 1991, there were "53 CSOs which drain[ed] either directly to the St. Clair River or indirectly via its tributaries" (OMOE and MDNR 1991). Of the 53 CSOs discharging to the St. Clair River, only 4 were in Sarnia, with the remaining 49 CSOs discharging on the US side via four of the five operating wastewater treatment plants (Table 2) (OMOE and MDNR 1991). These five wastewater treatment plants are still in operation; however significant progress has been made in the reduction of CSOs from the 49 that were discharging in 1991, to only one CSO that remains in 2015. A map showing the locations of the CSOs present in 1991 is available in Attachment D.

Name	MDEQ NPDES Permit Number	Receiving Water	Township	1991 CSOs	2015 CSOs	Year CSO Separation Complete
Marine City WWTP	MI0020893	St. Clair River	Cottrellville	13	0	1993
City of Marysville WWTP	MI0020656	St. Clair River	Port Huron	3	0	1996
Port Huron WWTP	MI0023833	St. Clair River	Port Huron	21	1	December 31, 2019
St. Clair County – Algonac WWTP	MI0020389	St. Clair River	Clay	0	0	n/a
St. Clair WWTP	MI0020591	St. Clair River	St. Clair	12	0	1996
Total				49	1	

Table 2: St. Clair River CSOs in 1991 and 2015

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City of Port Huron

The City of Port Huron is located at the south end of Lake Huron in the Upper St. Clair River and is home to over 31,000 residents. The City had an aged wastewater infrastructure system as "approximately 80% of the sewers were built prior to World War II" (R. Clegg, personal communication, May 12, 2015). In 1998, "approximately 50% or 2,358 acres" of the City was "served by combined sewer systems" (DEQ 1998). At the time of the original RAP in 1991, the City of Port Huron had 21 CSOs which were a major contributor of *E. coli* to the St. Clair River (OMOE and MDNR 1991). In 1992, 19 outfalls remained and "conveyed 309 million gallons of wastewater to the AOC" (R. Clegg, personal communication, May 12, 2015). As a result, the City's wastewater collection system was a significant source of human pathogens to the St. Clair River during wet weather events; therefore upgrades to the infrastructure separating the combined sewers were necessary.

Beginning in the 1980's, "the City's NPDES permit required the development of a Long Term Control Plan (LTCP)" (Hufnagel and Clegg 2012) for sewer separation. Subsequently, the DEQ Director's Order issued on February 19, 1998 required that "the City shall complete the entire sewer separation project in not more than a 15-year time frame" (DEQ 1998).

To comply with the 1998 Director's Order, the City of Port Huron worked at multiple levels of infrastructure improvement throughout the city, including CSOs, private inflow removal and illicit discharge connections. After 32 projects completed between 1999 and 2015 at a cost of 176 million dollars, there is now only one remaining CSO outfall. This outfall services just 12 acres and conveys less than one million gallons of wastewater (R. Clegg, personal communication, May 12, 2015).

This last remaining CSO outfall, Outfall 005, is located at the end of McPherson Street and discharges to the Black River (Figure 2). This CSO is expected to be addressed as plans for the Blue River Water Bridge Plaza continue between the City of Port Huron, the Michigan Department of Transportation (MDOT) and other state and federal agencies. As of December 2010, the Blue Water Bridge Plaza is currently planned as a 16 acre project, downsized from the original 56 acre plan. However, funding for construction of the plaza has not yet been provided. Although the separation of the CSO at Outfall 005 through the construction of the Blue Water Bridge Plaza is unknown, the Port Huron WWTP's most recent draft DEQ NPDES permit requires full CSO separation at Outfall 005 to be completed by December 31, 2021.

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Figure 2: Location of Outfall 005

<u>City of Marysville</u>

City of Marysville Sanitary Sewer Overflows

The City of Marysville is located in the Upper St. Clair River just south of the City of Port Huron, and has "approximately 10,000 residents and encompasses an area of approximately 3,800 acres" (HRC 2015). The "sanitary and stormwater sewers were constructed as an interconnected, combined sewer system in the 1920's" (HRC 2015) and in the 1990s, the majority of the City's wastewater infrastructure was updated, with full CSO separation accomplished by 1996.

However, "despite major system improvements, the City was still experiencing sanitary sewer overflows (SSOs) thereby requiring the city to enter into a District Compliance Agreement (DCA) with the Michigan Department of Environmental Quality (MDEQ)" (HRC 2015). Sanitary sewer overflows (SSOs) differ from CSOs in that they are "discharges of raw or inadequately treated sewage from municipal separate sanitary sewer systems, which are designed to carry domestic sanitary sewage only" (DEQ 2015). In 2010, to address the issue of SSOs, the City of Marysville implemented a three-part plan which included local system rehabilitation, WWTP upgrades, and sanitary storage designed to "improve the City's sanitary sewer system and eliminate SSOs and/or basement flooding" (HRC 2015).

The three-part construction plan to eliminate the SSO was completed in 2013 and included the rehabilitation of "over 100 sewer structures throughout its system" (HRC 2015). Monitoring to demonstrate the efficacy of the improvements was completed in 2015, and "no SSO has occurred since the WWTP improvements were completed and the operation optimized in 2013" (HRC 2015).

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City of Marysville Illicit Discharges

In 2010, the SSCCHD received Great Lakes Restoration Initiative (GLRI) funding as a subgrantee of the MDEQ in order to "understand and improve the water quality at several of the county's swimming beaches" including the Chrysler Park Beach in Marysville, Michigan (ECT 2013).

Part of this effort included the acquisition of grab samples at locations within the storm drain that discharge north of Chrysler Beach in the City of Marysville. The sampling was conducted in 2012 and showed elevated *E. coli* concentrations that were "high enough to suspect sewage as a potential source" (ECT 2013). The City of Marysville followed up with dye testing which revealed three illicit connections discharging from an outlet upstream of Chrysler Beach, identified at Outlet A in Figure 3. Subsequently, in 2014, the City of Marysville implemented a series of construction projects to remove each of the three illicit connections. Construction was successfully completed in 2014. Following the removal of the illicit connections, the SCCHD sampled Outlet A for *E. coli* on four wet weather occasions and all samples were found to be well within acceptable limits demonstrating that the illicit connections removal work was successful (Table 3).

Figure 3: Location of the Illicit Connections Discharge Point

Date of Sample	Sample Type	Sample Location	Analysis Method	Result Value*
July 28, 2014	Individual	Outlet A	Colilert-18 Hour	49.6
August 4, 2015	Individual	Outlet A	Colilert-18 Hour	6.3
August 14, 2015	Individual	Outlet A	Colilert-18 Hour	25.3
August 19, 2015	Individual	Outlet A	Colilert-18 Hour	4.0

Table 3: Wet Weather Samples at Outlet A (SCCHD 2014)

Public Beaches

While the focus of the removal of this BUI is related to separation of combined sewers from wastewater treatment plants discharging to the AOC, the public's ability to swim and recreate in clean waters must still be a consideration. On the U.S. side of the St. Clair River, the public recreates along the shoreline and in the St. Clair river at multiple public and private locations. Three of these locations are public beaches that are monitored regularly by the SCCHD. Beach monitoring is conducted throughout the recreational season and the monitoring results as well as any resultant beach closures are posted to the DEQ's Beach Guard website at www.deq.state.mi.us/beach.

The Chrysler Park Beach is located in the City of Marysville and both the Marine City Beach and the Marine City Diving Area are located in Marine City (Figure 4).

Figure 4: Locations of Public Beaches in the St. Clair River Area of Concern

Marine City Public Beaches

The Marine City Beach and the Marine City Diving Beach are both located in Marine City, Michigan and are routinely monitored by the SCCHD. The SCCHD began sampling in 1997 and the only time the Marine City Diving Beach was closed due to *E. coli* levels was for three days in 1998. The Marine City Beach has never been closed due to *E. coli* levels (K. Shinn, personal communication, August 20, 2015).

Chrysler Park Beach - City of Marysville

The Chrysler Park Beach includes 1,000 feet of shoreline located in Marysville, Michigan. Chrysler Park Beach has had a history of closures due to high *E. coli* levels caused by both storm water runoff and wildlife such as Canada geese. The beach closure information from 1997 to 2015 is available in Attachment E.

In 2012, the City of Marysville was awarded a GLRI grant from the EPA in the amount of $500,000 in order to complete a green infrastructure project designed to improve the conditions at the beach after many years of closures due to high bacteria levels. "The goals of the project were to improve water quality at the beach, reduce beach closures, and eliminate the Beach Closures Beneficial Use Impairment (BUI) for the St. Clair River Area of Concern (ECT 2015)." This was accomplished by the installation of "rain gardens and bioswales to filter stormwater runoff from 2.5 acres" by reducing, "the amount of impervious surfaces by 0.7 acres" and by adding"17,300 square feet of planting beds to deter geese from congregating on the beach" (ECT 2015).

Following the completion of the green infrastructure improvements, during the recreational season in 2014, the SCCHD performed their normal beach monitoring in addition to eight wet weather samples. "The Michigan Public Health Code sets the Total Body Contact Standard daily geometric mean limit at 300 E. coli colonies per 100 mL of water" therefore, all dry weather and wet weather samples from 2014 "were well within acceptable limits" (S. Demick, personal communication, September 25, 2014). The wet weather sampling data is available in Attachment F.

<u>Total Maximum Daily Load (TMDL) at Chrysler Park Beach</u>

It is important to note that although significant improvements have been made in the separation of combined sewers, the elimination of SSOs, and the disconnection of illicit discharges; beach closures due to the presence of *E. coli* may still occur and have occurred for the recreational season in 2015. The issue of beach closures related to *E. coli* is a statewide issue and does not only occur within the Great Lakes Areas of Concern. High levels of human pathogens occur in approximately half of Michigan's rivers and streams and due to this widespread problem, the MDEQ WRD is currently developing an *E. coli* TMDL to cover all Michigan's impaired waters. According to the 2014 Integrated Report, the Chrysler Park Beach is listed as scheduled to have a TMDL by 2029; however with the development of a statewide *E. coli* TMDL, the process is likely to be significantly faster. A statewide *E. coli* TMDL could be in place as early as 2017 (M. Rippke, personal communication, August 26, 2015).

<u>St. Clair and Black River 2008 and 2009 *E. coli* Monitoring</u>

In 2008 and 2009, the Upper St. Clair River and the Lower Black River were assessed for compliance with Michigan's Water Quality Standards for *E. coli*. Sampling was performed for a total of 25 weeks on the St. Clair River and for 17 weeks on the Black River. Sampling included both dry and wet weather events. The study concluded that "ambient *E. coli* concentrations in the St. Clair River are very low" with only "one exceedance of Michigan's Water Quality Standards for *E. coli*" from a sample collected at the confluence of the Black River and following a four inch rain event over the course of four days (RTI & ECT 2009). On the Black River, "ambient *E. coli* concentrations" were found to be "fairly low" with two exceedances of Water Quality Standards (RTI & ECT 2009). The authors of the report concluded that "the sources [of *E. coli*] likely include untreated combined sewer overflows, failing septic systems" and

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"illicit connections to the storm sewer system" (RTI & ECT 2009). Therefore, it is important to reiterate the date of the study which was conducted in 2008 and 2009. Since the study was finalized, and as discussed in the *City of Port Huron* section of this document, substantial work upgrading the City of Port Huron's infrastructure has occurred eliminating many of the sources of *E. coli* found during the 2008 and 2009 monitoring period.

Canadian Status of the Beach Closings BUI

On the Canadian side of the St. Clair River AOC, the Beach Closings BUI is also under assessment. *E. coli* monitoring of Canatara Park and Mitchell's Bay public beaches is conducted regularly and thirteen additional beaches where the public is known to recreate were monitored between 2011 and 2013. The results of monitoring will be presented to the BPAC in the near future for review and discussion separate from this document (D. Strang, personal communication, September 22, 2015).

Conclusion and Recommendation

In 1991, when the Stage 1 RAP was written, 49 CSOs existed on the U. S. side of the St. Clair River. Over the past two decades, substantial infrastructure improvements have been implemented, most recently in the Cities of Port Huron and Marysville. All of the original 49 CSOs have been separated on the U. S. side of the St. Clair River with the exception of only one located in the City of Port Huron. Separation of this final CSO will be required by December 31, 2019 under the most recent NPDES permit. Additional projects including removal of illicit connections in the City of Marysville and the green infrastructure project at Chrysler Park Beach have further reduced sources of both human and animal pathogens allowing for safe recreation at the beaches along the shoreline of the St. Clair River.

Based on review of all pertinent data, the MDEQ AOC Program staff request approval on this recommendation to remove the Beach Closings BUI from the U.S. side of the St. Clair River AOC.

This removal recommendation was discussed with the St. Clair River BPAC during their regular meetings on September 29, 2015, December 1, 2015 and January 26, 2016. The St. Clair River BPAC submitted a formal letter of support for removal of the BUI on February 4, 2016 (Attachment B). The proposed action was published in the MDEQ Calendar for public notice on February 22, 2016.

Prepared by: Melanie Foose, St. Clair River AOC Coordinator
Great Lakes Management Unit
Office of the Great Lakes
Michigan Department of Environmental Quality
February 9, 2016

Attachments

A – Beach Closings, pages 37-39 of the *Guidance*
B – St. Clair River AOC Binational Public Advisory Council Letter of Support
C – St. Clair River AOC Binational Public Advisory Council Meeting Minutes
D – Map of St. Clair River CSOs in the United States and Canada in 1991
E – Beach Closure Days at Chrysler Park Beach
F – 2014 Wet Weather Sampling Results for Chrysler Park Beach

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Strang, Donna, personal communication, September 22, 2015

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Attachment A

20015 Guidance for Delisting
Michigan's Great Lakes Areas of Concern

Beach Closings

Significance in Michigan's Areas of Concern

Originally eleven of Michigan's AOCs were listed as impaired due to beach closings from bacterial contaminants, including: River Raisin, Detroit River, Rouge River, Clinton River, St. Clair River, Saginaw River/Bay, St. Marys River, Kalamazoo River, Menominee River, Muskegon Lake, and Manistique River. The AOC program tracking table with current information about which BUIs have been restored in each AOC can be found at: www.michigan.gov/deqaocprogram.

Michigan Restoration Criteria and Assessment

This BUI will be considered restored when:

3. No waterbodies within the AOC are included on the list of non-attaining waters due to human pathogens in the most recent Clean Water Act *Water Quality and Pollution Control in Michigan: Section 303(d) and 305(b) Integrated Report* (Integrated Report), which is submitted to U.S. EPA every two years.

4. OR, in cases where the waterbodies within the AOC are on the list of non-attaining waters due to human pathogens, this BUI will be considered restored when human sources of pathogens regulated under the National Pollutant Discharge Elimination System (NPDES) are on schedule to be controlled through implementation of permit requirements. Sources of pathogens from failing on-site septic systems regulated under county health departments can be an issue state-wide and are not included in the AOC program.

Rationale

Practical Application in Michigan

These restoration criteria are based on Michigan's WQS for bacterial contamination. Rule 323.1062 of Michigan's WQS sets the maximum concentrations of *E. coli* that are acceptable for waters of the state to meet total- and partial-body contact recreation uses. The AOCs with a Beach Closing BUI have historically found persistent elevation of bacteria levels in their recreation waters, often due to the existence of sanitary sewer overflows and CSOs. This BUI does not address wide-spread, low level contamination from diffuse human sources of pathogens such as failing septic systems.

In accordance with Public Health Code (Act 368 of 1978), county health departments have the authority to monitor and evaluate public beaches to determine if the water is safe for bathing, swimming, or partial body contact recreation. While beach monitoring is a voluntary program, those county health departments that participate must monitor in accordance with Michigan's WQS.

County health departments which monitor public beaches must submit their sampling data to the MDEQ, which tracks monitoring results and uses the data to determine whether water bodies are identified as impaired in the *Water Quality and Pollution Control in Michigan: Section 303(d) and 305(b) Integrated Report to* the U.S. EPA on Clean Water Act compliance.

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Point source discharges from combined sewer overflows can be a source of pathogens to AOC waters. Requirements to eliminate the discharges under NPDES permits are the primary source control tool available to restore the BUIs. When source control is assured under regulatory programs, this BUI is considered restored.

Sources of pathogens from failing on-site septic systems regulated under county health departments can be an issue state-wide and are not included in the AOC program.

1991 IJC General Delisting Guideline

When waters, commonly used for total-body contact or partial body-contact recreation, do not exceed standards, objectives, or guidelines for such use.

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

State of Michigan Programs/Authorities for Evaluating Restoration

Michigan assesses water bodies throughout the state on a 5-year basin rotation cycle according to the MDEQ's "Strategic Environmental Quality Monitoring Program for Michigan's Surface Waters" (MDEQ, 1997) and "Michigan Water Quality Strategy Update" (MDEQ, 2005). Each year, a set of targeted watersheds are sampled at selected sites for conventional and toxic pollutants, and biological and physical habitat/morphology indicators. The set of watersheds sampled rotates each year, with each major watershed in the state revisited every 5 years (see Appendix 1 for maps of the basin rotations). One element of the strategy is improved support for public beach monitoring.

The specific objectives of the beach monitoring element are to:

1. Support county health departments in determining whether waters of the state are safe for total body contact recreation.

2. Evaluate the effectiveness of MDEQ programs in protecting waters of the state from bacteria/*E. coli* contamination.

3. Develop and maintain a database into which counties can enter their beach monitoring data, and which the public can access for the latest information.

The beach monitoring element consists of two components that, in combination, provide data necessary to achieve these objectives. These include annual grants awarded to local governments/county health departments each year to monitor public beaches through a grant application package, and development and maintenance of a statewide beach database, which is available on the MDEQ web site (www.michigan.gov/deq - click on "Water," then "Water Quality Monitoring," and then "Beach Monitoring"). Counties enter data directly into the database.

The NPDES program is administered by the MDEQ Water Division. It is applicable to discharges to waters of the state for the control of all forms of water pollution.

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Attachment B

St. Clair River AOC Binational Public Advisory Council
Letter of Support for the Removal of the Beach Closings BUI

St. Clair River
BINATIONAL PUBLIC ADVISORY COUNCIL

February 4, 2016

Mr. Rick Hobrla
Office of the Great Lakes
Michigan Department of Environmental Quality
525 West Allegan Street
Lansing, Michigan 48909-7973

Dear Mr. Hobrla:

On January 26, 2016 the St. Clair River Binational Public Advisory Council (SCRBPAC) for the St. Clair River Area of Concern voted to accept the new state delisting criteria for the Beach Closings Beneficial Use Impairment (BUI). At the same meeting the SCRBPAC voted to accept the Removal Recommendation for the St. Clair River Area of Concern Beach Closings BUI for the US side of the St. Clair River as presented by Melanie Foose on behalf of the Michigan Department of Environmental Quality.

Along with that, BPAC wishes to emphasize our collective desire to see continued and increased support for the St. Clair County Health Department's beach monitoring program. This program is vital for continued demonstration of improvement in water quality and to safeguard public health. Recent years have seen a continual decline in available funding for St. Clair County's efforts, and consequently a decrease in beaches monitored from 20 beaches to just 8 beaches.

We request that you initiate the formal review and removal process for this BUI. Thank you for your time and attention to this matter.

Sincerely,

Patty Troy

Paulette Duhaime

Patty Troy
U.S. Chair SCRBPAC

Paulette Duhaime
U.S. Vice-Chair SCRBPAC

Attachment C

St. Clair River AOC Binational Public Advisory Council
Meeting Minutes

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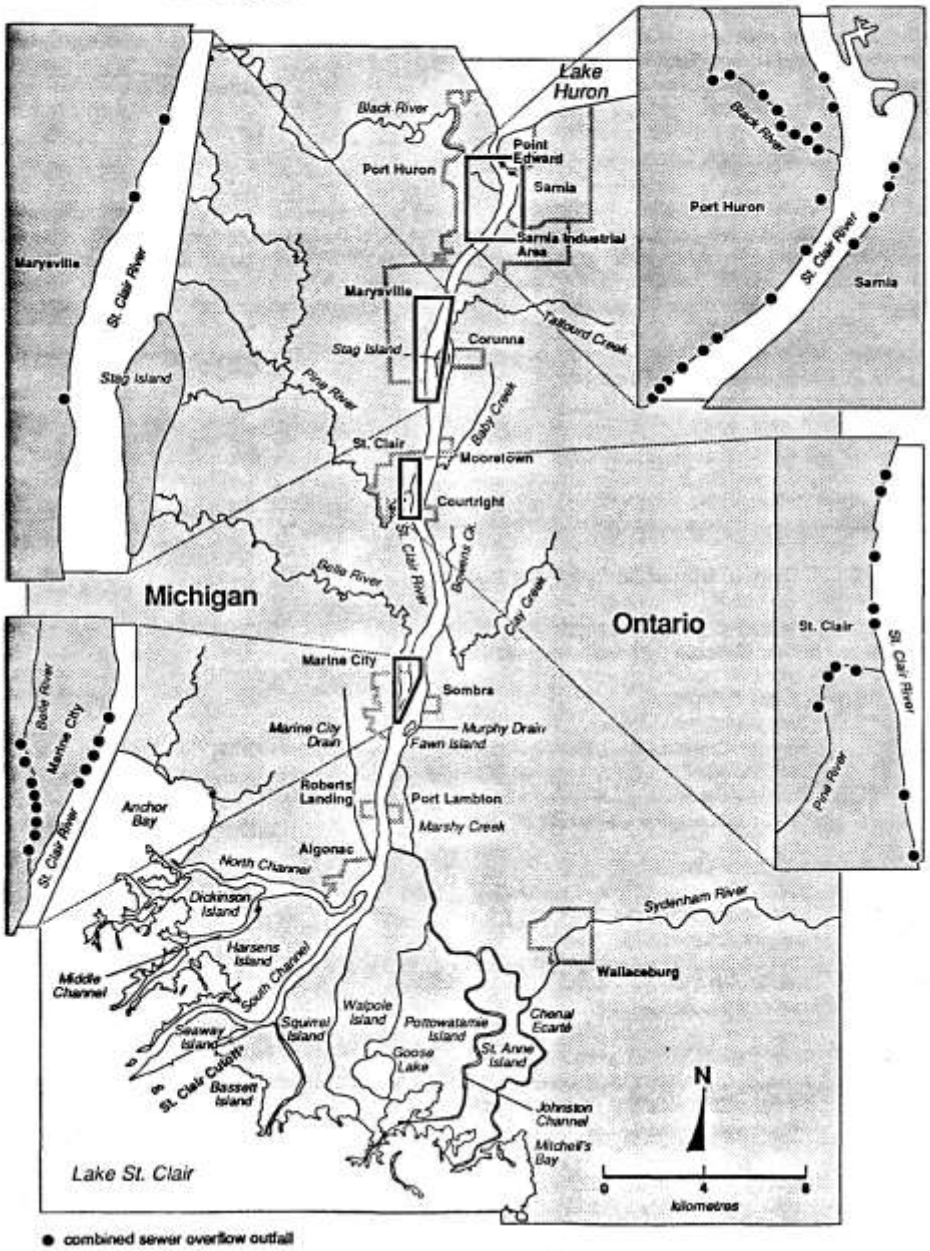
Attachment D

Map of St. Clair River CSOs in the United States and Canada in 1991

Figure 8.3

St. Clair River Remedial Action Plan

The location of combined sewer overflow outfalls in Ontario and Michigan



Source: OMOE and MDNR 1991

Attachment E

Beach Closure Days at Chrysler Park Beach

Year	Days Closed	Reason	Source
1997	1	High Bacteria Levels	Unknown
1998	2	High Bacteria Levels	Unknown
1999	3	High Bacteria Levels	Unknown
2000	1	High Bacteria Levels	Unknown
2001	1	High Bacteria Levels	Unknown
2002	4	High Bacteria Levels	Unknown
2003	2	High Bacteria Levels	Unknown
2004	0	N/A	N/A
2005	0	N/A	N/A
2006	2	High Bacteria Levels	Unknown
2007	1	High Bacteria Levels	Unknown
2008	0	N/A	N/A
2009	29	High Bacteria Levels	Wildlife
2010	7	High Bacteria Levels	Unknown
2011	1	High Bacteria Levels	Unknown
2012	11	High Bacteria Levels	Unknown/Wildlife
2013	0	N/A	N/A
2014	0	N/A	N/A
2015	4	High Bacteria Levels	Unknown/Storm Water Runoff

Number of Beach Closure Days at the Chrysler Park Beach in Marysville, Michigan
(K. Shinn, personal communication, August 24, 2015)

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Attachment F

2014 Wet Weather Sampling* Results for Chrysler Park Beach

Date of Sample	Sample Type	Sample Location	Analysis Method	Result Value*
June 9, 2014	Individual	North Chrysler Beach	Colilert-18 Hour	6.3
	Individual	Mid Chrysler Beach	Colilert-18 Hour	6.3
	Individual	South Chrysler Beach	Colilert-18 Hour	19.5
	Daily Mean		Colilert-18 Hour	9.1813
June 18, 2014	Individual	North Chrysler Beach	Colilert-18 Hour	9.8
	Individual	Mid Chrysler Beach	Colilert-18 Hour	13.2
	Individual	South Chrysler Beach	Colilert-18 Hour	12
	Daily Mean		Colilert-18 Hour	11.5787
June 26, 2015	Individual	North Chrysler Beach	Colilert-18 Hour	45.7
	Individual	Mid Chrysler Beach	Colilert-18 Hour	11
	Individual	South Chrysler Beach	Colilert-18 Hour	4.1
	Daily Mean		Colilert-18 Hour	12.7262
July 9, 2014	Individual	North Chrysler Beach	Colilert-18 Hour	33.5
	Individual	Mid Chrysler Beach	Colilert-18 Hour	25.3
	Individual	South Chrysler Beach	Colilert-18 Hour	185
	Daily Mean		Colilert-18 Hour	53.9236
July 15, 2014	Individual	North Chrysler Beach	Colilert-18 Hour	11.9
	Individual	Mid Chrysler Beach	Colilert-18 Hour	9.8
	Individual	South Chrysler Beach	Colilert-18 Hour	77.1
	Daily Mean		Colilert-18 Hour	20.7942
July 28, 2014	Individual	North Chrysler Beach	Colilert-18 Hour	28.1
	Individual	Mid Chrysler Beach	Colilert-18 Hour	39.9
	Individual	South Chrysler Beach	Colilert-18 Hour	60.9
	Daily Mean		Colilert-18 Hour	40.8726
August 4, 2014	Individual	North Chrysler Beach	Colilert-18 Hour	6.3
	Individual	Mid Chrysler Beach	Colilert-18 Hour	8.6
	Individual	South Chrysler Beach	Colilert-18 Hour	517.2
	Daily Mean		Colilert-18 Hour	30.3738
August 14, 2014	Individual	North Chrysler Beach	Colilert-18 Hour	6.3
	Individual	Mid Chrysler Beach	Colilert-18 Hour	11
	Individual	South Chrysler Beach	Colilert-18 Hour	34.5
	Daily Mean		Colilert-18 Hour	21.2635
August 19, 2014	Individual	North Chrysler Beach	Colilert-18 Hour	5.2
	Individual	Mid Chrysler Beach	Colilert-18 Hour	4.1
	Individual	South Chrysler Beach	Colilert-18 Hour	198.9
	Daily Mean		Colilert-18 Hour	16.186

*The Michigan Department of Community Health and the Michigan Department of Environmental Quality used guidance provided by the EPA to develop ambient standards for E. coli. E. coli standards for water used for total body contact recreation are provided in the Michigan Public Health Code and Rule 323.1062(1) of the Part 4. Water Quality Standards (Promulgated pursuant to Part 31 of the Natural Resources and Environmental Protection Act, 1997 PA 451, as amended). R 323.1062(1) states, "All waters of the state protected for total body contact recreation shall not contain more than 130 Escherichia coli (E. coli per 100 milliliters (ml), as a 30-day geometric mean. Compliance shall be based on the geometric mean of all individual samples taken during five or more sampling events representatively spread over a 30-day period. Each sampling event shall consist of three or more samples taken at representative locations within a defined sampling area. At no time shall the water of the state protected for total body contact recreation contain more than a maximum of 300 E. coli per 100 ml. Compliance shall be based on the geometric mean of three or more samples taken during the same sampling event at representative locations within a defined sampling area" (Beach Guard website August 19, 2015).

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