

**Office of the Great Lakes, Areas of Concern Program  
Michigan Department of Environmental Quality  
Statewide Aesthetics Assessment Findings for Impaired AOCs**

Muskegon Lake, Clinton River, Rouge River  
and Detroit River Areas of Concern

**INTRODUCTION**

Two cycles of aesthetics assessments were conducted by Michigan Department of Environmental Quality (DEQ) staff between July 6, 2011 and May 23, 2012 in eight of the ten Michigan Areas of Concern (AOCs) that had the Degradation of Aesthetics Beneficial Use Impairment (BUI). The assessments were conducted in accordance with the DEQ 2011 Statewide Aesthetics Assessment Workplan and Monitoring Protocol. This findings document briefly describes and summarizes the assessment results in the four AOCs listed above, where it was determined that the Aesthetics beneficial use remains impaired.

For the AOCs that may no longer have impaired aesthetics (Kalamazoo River, River Raisin, St. Clair River, St. Marys River), those findings are summarized in the appropriate BUI Removal Recommendation or other summary documents, and are not addressed here. Additionally, the White Lake AOC will be assessed a second time following cleanup of the former Montague municipal dump site in late 2012; the Saginaw Bay/River AOC will be re-assessed following the development of AOC-specific aesthetics criteria that account for the presence of shoreline muck. The following chart summarizes the current status of aesthetics assessments.

AOC	Aesthetics Assessment Status	Result
Kalamazoo River	complete	BUI removed
River Raisin	complete	BUI removed
St. Clair River	complete	BUI removed
St. Marys River	complete	BUI removal recommended
Muskegon Lake	complete	BUI remains impaired
Clinton River	complete	BUI remains impaired
Rouge River	complete	BUI remains impaired
Detroit River	complete	BUI remains impaired
White Lake	1 cycle complete	Remedial activity required
Saginaw Bay/River	1 cycle complete	AOC specific criteria to be developed

At most monitoring locations in each AOC, a minimum of five photographs were taken and are available upon request, as are the individual monitoring data sheets recorded for each site. Unless otherwise indicated, aerial photos in this document are oriented with north to the top.

Overall, it appears that aesthetic conditions in most AOCs improved considerably when compared with historic reports of those conditions from decades ago. Many of the aesthetic conditions described in early Remedial Action Plans (RAPs) and other documents simply no longer exist. In part, this may be due to the implementation of National Pollutant Discharge Elimination System permitting, an increasing sense of resource stewardship by local resource users, improved environmental best management practices implemented by various municipal, commercial and

industrial operations around the state, and increased advocacy and educational outreach by the scores of organizations that seek to enhance and protect their local water resources. However, the result of the statewide assessment indicates that the Muskegon Lake, Clinton River, Rouge River and Detroit River AOCs still have specific environmental conditions that must be addressed before the Degradation of Aesthetics BUI will be ready for removal.

It is important to note that there is a difference between designated uses, as defined by the federal Clean Water Act and the Michigan Water Quality Standards, and beneficial uses, as defined by the Great Lakes Water Quality Agreement (GLWQA). According to the revised GLWQA of 1978 as amended in 1987, the impairment of beneficial uses means a change in the chemical, physical or biological integrity of the Great Lakes system sufficient to cause any of 14 different categories of use restrictions or degraded resources that were enumerated in the document, commonly known as Beneficial Use Impairments. While Michigan's Part 4 Rules, Water Quality Standards, promulgated pursuant to Part 31, Water Quality Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, specify particular uses for which Michigan Waters are to be protected. Some are generally applicable to all surface waters in the state, while others are conditional, depending on geographic region or time of year, for instance. The designated uses include, but are not limited to: agriculture, navigation, industrial water supply, warmwater fishery, body contact recreation, etc.

Putting a finer point on the distinction between the two types of uses, the *Guidance for Delisting Michigan's Great Lakes Areas of Concern* establishes criteria for the removal of Beneficial Use Impairments. Most relevant to this discussion about the Degradation of Aesthetics BUI is the *Guidance* requires that in order to remove the BUI, monitoring must indicate that certain physical properties do not exist in unnatural quantities which interfere with the state's designated uses for surface waters. The goal of the aesthetics assessments was to determine whether this was the case in the 10 AOCs with that BUI.

## SUMMARY OF INDIVIDUAL AOC FINDINGS

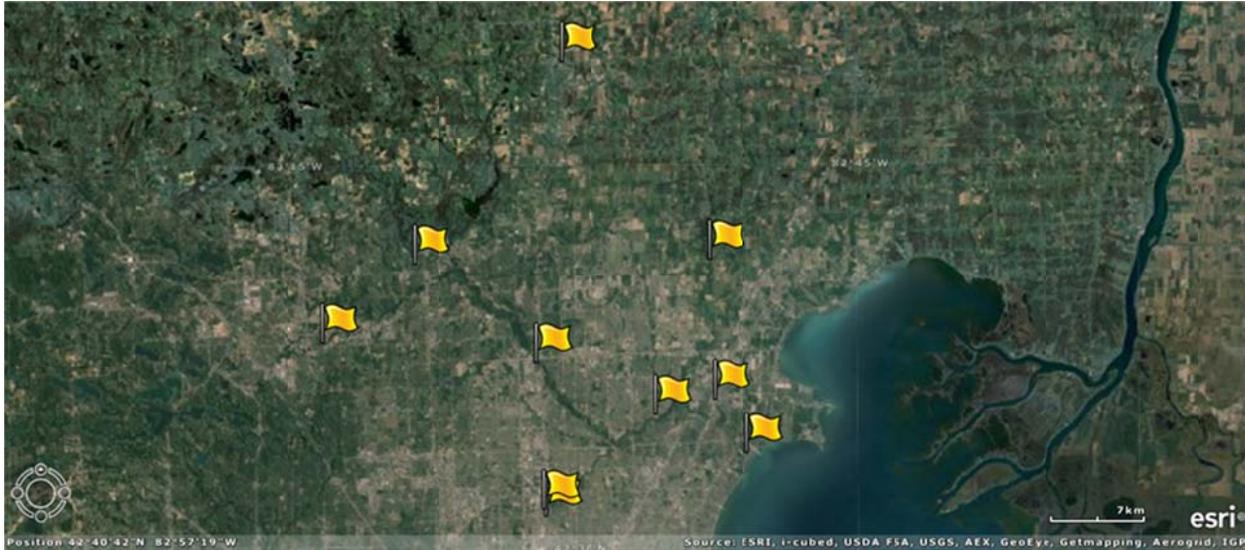
This document focuses on the four AOCs that underwent two cycles of assessments and were found to remain impaired for the Degradation of Aesthetics beneficial use.

**Muskegon Lake** was assessed on July 12 and November 29, 2011, see Figure 1 for locations. Eight sites were assessed around Muskegon Lake. Staff identified the ongoing oil leak in Fenner's Ditch, which feeds Bear Lake, and petroleum odors and oil films near Bear Creek and adjacent to Celery Lane, near the Zephyr site (determined by the DEQ to be a "facility" under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended) as potentially impairing designated uses. Also noted was abundant trash in a small area of Ryerson Creek, resulting from a backed up culvert near the farmers market. Since the assessments, the Ryerson Creek culvert was replaced and its elevation adjusted to restore stream flow, which also appears to be alleviating the accumulation of trash. DEQ AOC staff conclude the Muskegon Lake AOC continues to be aesthetically impaired, due to petroleum contamination at the Fenner's Ditch and Zephyr sites.



**Figure 1. Muskegon Lake Aesthetics Monitoring Locations.**

The **Clinton River** was assessed on July 27 and November 16, 2011. See Figure 2 for locations. Ten sites were assessed in the Clinton River watershed during the initial round of monitoring. Although there are dissolved oxygen and *E. coli* Total Maximum Daily Loads (TMDLs) in place for specific parts of the Clinton River AOC, there was no evidence of potential aesthetic impairments observed, outside of a small amount of debris in one limited area. Evidence of wildlife habitat was observed, along with minnows, shore birds, aquatic insects, crayfish, etc. One person was observed paddling a kayak in the Clinton River in downtown Mt. Clemons and children were seen playing in Paint Creek, a tributary of the Clinton River, at the City of Rochester municipal park. In the days immediately following the conclusion of the first cycle of monitoring, information came to the attention of AOC staff regarding a potentially aesthetically impaired site in the AOC, of which staff were not previously aware. On September 21, 2011, the DEQ AOC Coordinator visited the St. Lawrence Cemetery on Auburn Road, in Macomb County and took a number of photographs showing an inactive landfill behind the cemetery, on the banks of the Clinton River. Over time, the banks have eroded, exposing landfill debris and leachate seeps. Some of the debris continues to fall into the river, and water of unnatural characteristics had been observed discharging into the Clinton River. This site was added to the list of monitoring locations for the second round of assessments.



**Figure 2. Clinton River Aesthetics Monitoring Locations.**

During the November 16, 2011 assessment, additional photographs of the landfill area were taken showing a six to eight foot vertical wall of landfill debris sloughing into the river (Figure 3). The debris found in the immediate area included: car bodies, a transmission, a motorcycle frame, a clothes dryer, scores of tires, glass bottles, plastic toys, bicycle parts, plastic bags, wood debris, and other various forms of trash. In terms of water quality, discolored water was observed seeping out of the exposed river bank and into the river (Figure 4). However, surface samples of river water that were collected adjacent to the site did not exhibit unnatural color, but petroleum odors were present, as were oily sheens and biofilms.



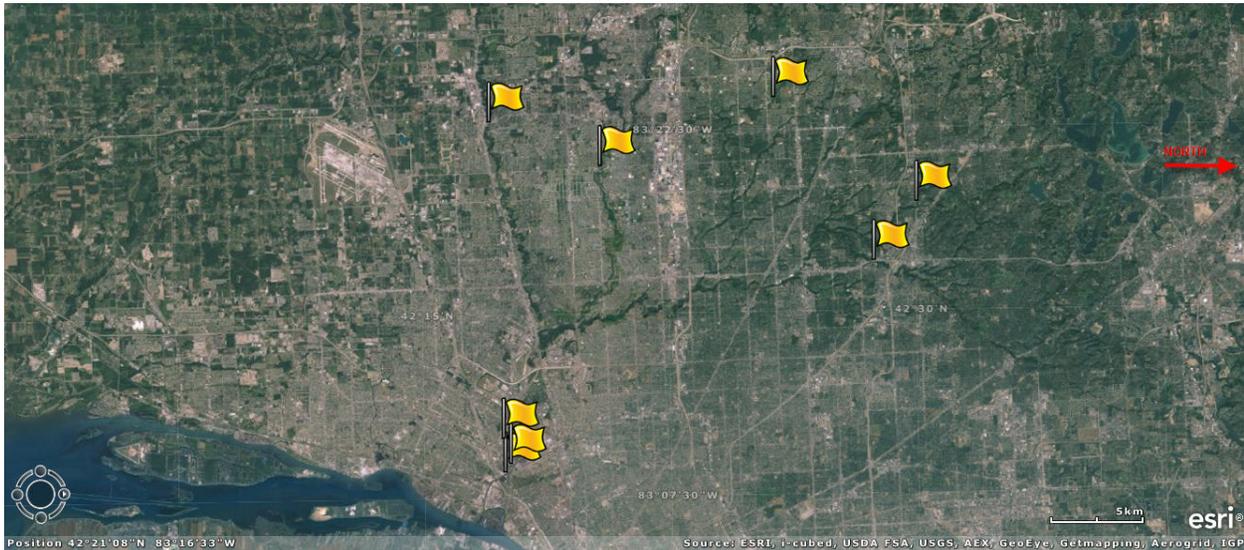
**Figure 3. St. Lawrence Cemetery Property, 11-16-11**



**Figure 4. Landfill Leachate, 11-16-11**

The site was immediately referred to the DEQ's Water Resources Division and Remediation Division for further investigation and follow up. On September 1, 2011, water and sediment samples were collected from the site for analysis. The water samples exceeded aquatic life values developed for both mercury and copper. The sediment samples did not exceed available screening value concentrations. A meeting has been scheduled with the landowners, regulatory authorities and other stakeholders to begin the process of determining how best to proceed with site remediation. It is the professional opinion of AOC program staff that due to ongoing, persistent conditions at the St. Lawrence Cemetery site immediately adjacent to the Clinton River, the aesthetics beneficial use in the Clinton River AOC remains impaired.

The **Rouge River** was assessed from shoreline locations on July 28 and November 17, 2011. See Figure 5 for locations. Eight sites were assessed in the Rouge River AOC from shore. The mouth of the river was observed from the water on August 9, 2011, as an excursion from the Detroit River assessment, from the river mouth up to Jefferson Avenue. Significant rain fell overnight prior to the July and August dates. A number of aesthetic issues were identified, including frequent oil sheens, chemical odors, debris resulting from apparent Combined Sewer Overflow discharges (floating sanitary trash), and the appearance of the river in some areas was extremely turbid and almost opaque.



**Figure 5. Rouge River Aesthetics Monitoring Locations.**

**North →**

On August 9, for approximately a couple hundred yards downstream of the Detroit Water and Sewerage Department (DWSD) outfall #050, prolific gas bubbling was observed at the surface, which occasionally buoyed globs of fine, black sediment to the surface. At the outfall location, oil sheen was observed and the discharge was extremely dark, coloring the river from the outfall discharge point to the mouth where the Rouge River discharges into the Detroit River (see Figures 6 and 7). Additional photos and video of these phenomena were captured and are available. In July, at the Fordson Island site in Dearborn on the lower main stem of the river, staff disturbed the sediment to observe the release of oily black sediment from the river bottom.

The November assessment occurred during a dry weather period. As a result, there was less oil sheen present than in July and the water was less turbid. In the best professional judgment of DEQ staff, the three most downstream monitoring locations were aesthetically impaired during both monitoring cycles, while the upstream reaches were not observed as having any aesthetic impairments.

Although a monitoring data sheet was not completed at the DSWD outfall, there is no question that the lower main stem of the river near Jefferson Avenue was the most aesthetically impaired area assessed in the Rouge River AOC. Following these assessments, DEQ staff conclude that the Rouge River remains impaired due to the remaining combined sewer overflows and persistent, high levels of submerged oil and oil sheens.

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Figure 6. Rouge River Sediment Globs, 8-9-11.



Figure 7. Rouge River DWSD Outfall #050, 8-9-11.

The **Detroit River** was assessed on August 9 and October 31, 2011. See Figure 8 for locations. Four sites were assessed from the water, courtesy of Detroit Riverkeeper, Robert Burns. The DEQ would like to acknowledge and thank Mr. Burns and the Friends of the Detroit River for providing DEQ staff with the opportunity to observe the Detroit River system on board their vessel, and for sharing his personal knowledge of the history and conditions of the Detroit River.



Figure 8. Detroit River Aesthetics Monitoring Locations.

A significant rain event occurred overnight prior to the August assessment. Typical CSO sanitary trash was observed near the mouths of the Ecorse and Rouge Rivers. Moderate turbidity was observed at the mouth of the Ecorse, presumably as a result of the rain event. An *E. coli* TMDL is in effect for the Ecorse River, related to various stormwater management issues in the area.

An ongoing coal dust discharge was observed running off Zug Island into the Detroit River as a result of the rain event. Photos of the runoff were submitted to stormwater compliance staff in the Southeast Michigan (SEMI) district office of the DEQ's Water Resources Division for follow up.

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The shoreline adjacent to the US Steel Slag operation, identified by SEMI staff as being operated by Edward C Levy (industrial stormwater general permit holder), appeared to be bleached and has an unnatural grey/light brown color. Slag operation debris appears to have been dumped along the shoreline, perhaps for stabilization. Tires and other debris were noted as well. Closer inspection revealed calcified deposits and stains along the shore. Submerged aquatic vegetation was absent and no aquatic insects or other aquatic life was observed in the area, except discolored algae (see figures 7 and 8). Additional photos are available. During the initial assessment, DEQ staff conducting the aesthetics monitoring at this site did not evaluate any physical or chemical water quality parameters to assess any potential runoff that may be occurring. However, during the October 31 assessment, a pH meter was deployed in the river at this site, and several readings were taken, with the highest reading being 9.5. The pH level gradually fell as the readings were taken farther away from the shore.

Without performing a biosurvey, it is not clear whether the aquatic life designated use may be impaired at this location. However, based on the pH level and calcified deposits observed during the aesthetics assessment, DEQ staff conclude that the aesthetics beneficial use in the Detroit River remains impaired.



**Figures 7 & 8. Detroit River Shoreline Adjacent to US Steel Slag Operation.**

### SUMMARY

Following two complete cycles of aesthetics monitoring, DEQ AOC program staff find that Muskegon Lake, the Clinton River, the Rouge River and the Detroit River remain impaired for the Degradation of Aesthetics beneficial use, due to persistent high levels of physical properties in unnatural quantities that interfere with the State's designated uses, as described in this document.

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August 2012