

Rochester Embayment AOC – Beneficial Use Impairment Delisting Criteria

Use Impairment	Delisting Criteria	Monitoring Method
1. Fish and Wildlife Consumption Advisories	1. There are no Area of Concern-specific fish and wildlife consumption advisories issued by New York State; and	Monitor annual New York State Department of Health (NYSDOH) fish and wildlife consumption advisories
	<p>2. There is no significant contaminant input from the Rochester Embayment watershed contributing to contaminant levels in fish and wildlife tissue that require fish and wildlife consumption advisories, as indicated by the following:</p> <ul style="list-style-type: none"> • Tissue concentrations of contaminants of concern in representative samples of resident fish and wildlife are lower than the guidelines requiring advisories.* <p>*Note: A natural restoration time period will likely occur between low contaminant levels in the environment and low contaminant levels in tissues.</p>	<p>Identify the best resident species to monitor for tissue concentrations of dioxins/furans, PCBs and mirex/photomirex.</p> <p>Request that the New York State Department of Environmental Conservation sample tissue of the resident species in the area of interest and evaluate the results against the New York State Department of Health consumption advisory criteria.</p> <p>Notes:</p> <ul style="list-style-type: none"> • A SUNY Brockport study is proposed to identify the best resident species to monitor and to develop a model correlating air, water, sediment and tissue concentrations of dioxins/furans, PCBs and mirex/photomirex. <p>Use lipid normalization as an interpretation method.</p>
3. Degradation of Fish and Wildlife Populations	<p>1. Representative samples of water do not exceed NYSDEC ambient water quality standards for the protection of aquatic life and/or for protection of wildlife*, and</p> <p>NYSDEC, Division of Water (June 1998). Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limits, Technical and Operational Guidance Series (TOGS) 1.1.1, Albany, NY.</p>	<p>Collect samples during each of the four seasons of the year throughout the Rochester Embayment and its watershed. The following sites should be considered:</p> <ul style="list-style-type: none"> • Genesee River at Turning Point above any area of dredging • Braddocks Bay/Salmon Creek outside any area of dredging • Irondequoit Bay outside any area of dredging • Open lake site(s) <p>Analyze the samples for PCBs, dioxins/furans, mirex and mercury. If concentrations of these contaminants in 90% or more of the samples are below concentrations known to degrade fish and wildlife populations, there will be no further monitoring for this delisting criterion. Note: As new information becomes available on other contaminants affecting fish and wildlife, additional contaminants may be monitored.</p>
	2. Water column macroinvertebrate communities are “non-impacted” or “slightly impacted” according to NYSDEC	Conduct multiplate sampling during 3 seasons of the year for one year within the Rochester Embayment and its watershed. The following sites should be considered:

	indices (Bode et al, 1996), and	<ul style="list-style-type: none"> Genesee River at Turning Point above any area of dredging Braddocks Bay/Salmon Creek outside any area of dredging Irondequoit Bay outside any area of dredging Open lake site(s) Determine if water column macroinvertebrate communities are “non-impacted” or “slightly impacted” according to NYSDEC community indices.
	<p>3. Mink are present and are reproducing*, or levels of PCBs, dioxins/furans, mirex and mercury measured in the tissue of resident prey are below those known to be associated with mink reproductive failure.</p> <p>*Note: It is not currently feasible to evaluate mink reproduction, but it may become feasible in the future.</p>	<p>Utilize a winter track study to determine if mink are present.</p> <p>Establish and monitor levels of PCBs, dioxins/furans, mirex and mercury in tissues of resident mink prey.</p> <p>Note: As new information becomes available on other contaminants affecting mink, additional contaminants may be monitored.</p>
5. Bird or Animal Deformities or Reproductive Problems	<p>Representative samples of water do not exceed NYSDEC ambient water quality standards for the protection of aquatic life and/or for protection of wildlife*, and</p> <p>* NYSDEC, Division of Water (June 1998). Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limits, Technical and Operational Guidance Series (TOGS) 1.1.1, Albany, NY.</p>	<p>Collect water samples during each of the four seasons of the year for one year within the Rochester Embayment and its watershed. The following sites should be considered:</p> <ul style="list-style-type: none"> Genesee River at Turning Point above any area of dredging Braddocks Bay/Salmon Creek outside any area of dredging Irondequoit Bay outside any area of dredging Open lake site(s) <p>Analyze the samples for PCBs, dioxins/furans, mirex and mercury. If concentrations of these contaminants in 90% or more of the samples are below concentrations known to cause bird or animal deformities or reproduction problems, there will be no further monitoring for this delisting criterion.</p> <p>Note: As new information becomes available on other contaminants affecting fish and wildlife, additional animal species and contaminants may be monitored.</p>
	<p>2. Mink are present and are reproducing*, or levels of PCBs, dioxin/furans, mirex and mercury measured in the tissue of resident prey are below those known to be associated with mink reproductive failure.</p> <p>*Note: It is not currently feasible to evaluate mink</p>	<p>Utilize a winter track study to determine if mink are present.</p> <p>Establish and monitor levels of PCBs, dioxin/furans, mirex and mercury in tissues of resident mink prey.</p> <p>Note: As new information becomes available on other contaminants affecting mink, additional contaminants may be monitored.</p>

	reproduction, but it may become feasible in the future.	
6. Degradation of Benthos	1. Benthic macroinvertebrate communities are “non-impacted” or “slightly impacted” according to NYSDEC indices (Bode et al., 1996). Or	Collect benthic macroinvertebrates during spring, summer and fall seasons for one year within the Rochester Embayment and its watershed. The following sites should be considered: <ul style="list-style-type: none"> • Genesee River at Turning Point above any area of dredging • Braddocks Bay/Salmon Creek outside any area of dredging • Irondequoit Bay outside any area of dredging • Open lake site(s) Analyze samples for community structure indices for Ponar samples from soft sediments (Appendix IV, Bode et al., 1996).
	2. In the absence of conclusive community structure data, the toxicity of sediment-associated contaminants is not statistically higher than controls.	Perform acute and chronic sediment toxicity tests according to ASTM/EPA standard methods on samples collected as described under Use Impairment #6, Delisting Criterion #1, Monitoring Methods.
7. Restrictions on Dredging Activities	1. A formal long-term agreement between Monroe County and the U.S. Army Corps of Engineers (COE) is in place to prohibit overflow dredging in the Rochester harbor (the NYSDEC may also be included in the Agreement); and	Formal monitoring of the dredging process would be conducted by Monroe County Health Department staff during beach monitoring activities.
	2. The quality of the material to be dredged meets the standards for open-lake disposal.	Great Lakes Dredge Material Testing and Evaluation Manual (U.S. EPA, U.S. Army Corps of Engineers)
8. Eutrophication or Undesirable Algae	1. Total Phosphorus concentrations for near (11-12 m) and near-nearshore (1 m) are less than or equal to 15 ppb and 20 ppb respectively; and	Monitor total phosphorus concentrations from May through October in near* and near-nearshore** areas.
	2. Chlorophyll a concentrations for the near (11-12 m) and near-nearshore (1 m) are less than or equal to 3.8 ppb and 5 ppb respectively; and	Monitor chlorophyll a concentrations from May through October in near* and near-nearshore** areas.
	3. Secchi disk measurements in the nearshore (12 m) are greater than or equal to 4 meters.	Measure secchi disk depths in nearshore^ areas from May through October.
9. Drinking Water Taste and Odor Problems	1. Current scientific literature indicates that drinking water taste and odor is a Great Lakes-wide problem; and	Members of the Drinking Water Oversight Committee review scientific literature on an ongoing basis and meet, as needed, to determine if the Rochester Embayment watershed may be contributing to any cause of drinking water taste and odor that has been established.
	2. The scientific literature establishes cause(s) for taste and odor problems; and	

	3. The Rochester Embayment watershed does not contribute significantly to the taste and odor problem as determined using the findings of Delisting Criteria #2.	
10. Beach Closings	1. Ontario Beach is open at least 80% of the swimming season (16 days closed in a maximum 80-day season), measured as a five-year rolling average; and	Data collected and summarized annually in the Ontario Beach Report
	2. The Ontario Beach operating model is at least 80% accurate, measured as a 5-year rolling average.	
11. Degradation of Aesthetics	1. There is virtually no persistent decomposing algae (algae does not persist more than 10% of summer days) along the Lake Ontario shoreline that is not part of a lakewide problem, for 5 consecutive years; and	Health Department monitoring documentation that algae problem is a lakewide problem.
	2. There is no odor due to chemical seeps at the Lower Fall; and	Conduct Initial Survey according to process described in RAP Action 9.8.2 of Stage II RAP. Subsequent frequency to be determined based on initial survey findings
	3. There are no alewife die-offs for a 5-year period or dead alewives along the Lake Ontario shoreline are part of a lakewide problem to which the Rochester Embayment watershed does not contribute; and	One-time Literature search by student intern to confirm that alewife die-offs were a lakewide problem.
	4. There are no reports of discarded salmonids along the shoreline of the lower Genesee River, due to fishing practices, for 5 consecutive years; and	Annual Tracking of complaints lodged with the City of Rochester, NYSDEC, MCDOH, and MC Fishery Advisory Board. Tracking will be done by Health Department staff as part of the Water Quality Management Agency Annual Report writing process.
	5. There is virtually no litter caused by combined sewer overflows or left by fishermen or other recreational users in the lower Genesee River or adjacent shoreline; and	Observational and photographic survey at identified locations at regular time intervals and monitoring of complaints to private or public agencies. Observations could be conducted by WQMAC, members of Fishery Advisory Board, A Community Water Watch Team, or City Environmental Stewardship Committee or Annual Coastal Clean-up.

	6. Suspended sediment concentrations in the Genesee River remain less than 30 mg/l for at least 80% of a year, and exceed 200 mg/l for no more than 5 events with a combined duration of not greater than 20 days, as determined by a 5-year average (habitat delisting criterion on suspended sediment)	Evaluate Health Department data at the Charlotte Pump Station. Use water years (Oct. 1-Sep 30) for averaging.
12. Added Costs to Agriculture and Industry	1. Current scientific literature indicates that zebra mussel is a Great Lakes-wide problem; and	Members of the Drinking Water Oversight Committee review scientific literature on an ongoing basis and meet, as needed, to determine if the Rochester Embayment watershed may be contributing to the zebra mussel problem.
	2. The Rochester Embayment watershed does not contribute to the presence of zebra mussel in the Rochester Embayment.	
13. Degradation of Phytoplankton and Zooplankton Populations	Ninety percent of ambient water samples (collected monthly for one year), compared to a control, cause no chronic toxicity to Ceriodaphnia dubia.	Perform chronic toxicity testing* monthly for one year on Ceriodaphnia dubia exposed to samples of ambient water from the Boxart Street sampling site, as part of NYSDEC Rotating Intensive Basin Studies (RIBS). Repeat testing every 5 years on RIBS rotation until use impairment is delisted. * USEPA. 1994. Short-term methods for estimating the chronic toxicity of effluents and receiving water to freshwater organisms, Third edition. EPA/600/4-91/002. U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, Cincinnati, OH. 341 pp.
14. Loss of Fish and Wildlife Habitat	1. There is no net loss of acreage and quality of federal or state-designated wetlands, using 1996 as the baseline year for comparisons; and	1. Use EMC inventory method to evaluate diversity of vegetation (every 3 years is recommended) in 6 representative wetlands, including the degree of intrusion by exotic/invasive species. Incorporate information about additional wetlands if it becomes available. 2. Evaluate acreage of wetlands, as shown by aerial photos (every 3 years is recommended).
	2. There is no net loss of the 50-foot-wide buffer strip of trees and shrubs on both sides of NYSDEC classified streams and the Genesee River up to the Lower Falls (using 1999 as the baseline year for comparisons); and	Evaluate some streambanks where there is concern plus some streambanks chosen randomly (every 3 years is recommended). Use aerial photos for the evaluation or, if a town has streambank regulations, contact the town for data. Conservation Boards and Highway Departments are possible sources of data.

	<p>3. Suspended sediment concentrations remain less than 30 mg/l for at least 80% of a year, and exceed 200 mg/l for no more than 5 events with a combined duration of not greater than 20 days, as determined by a 5-year average; and</p>	<p>Evaluate Environmental Laboratory data at the Charlotte Pump Station. Use water years (Oct. 1-Sep 30) for averaging.</p>
	<p>4. Hexagenia, or another appropriate indicator, is present in the Embayment and in suitable habitats in the Genesee River up to the Lower Falls; Members of the stonefly, mayfly and caddisfly families are present in streams; and</p>	<p>1. Use Makarewicz (SUNY Brockport) data for Lake Ontario portion of Embayment. 2. Use U.S. Fish & Wildlife or Environmental Laboratory data for the River. 3. Use Community Water Watch data for streams</p>
	<p>5. Amphibian diversity and abundance in the study area (including the Genesee River up to the Lower Falls if monitoring can be performed safely) are comparable to expected standards for the type of habitat; and</p>	<p>Use Marsh Monitoring Program (MMP) methods and data. Compare the number of species in study area wetlands with the number expected to be found in healthy wetlands. Number expected could be a non-AOC average determined by the MMP.</p>
	<p>6. Lake sturgeon of different life stages inhabit the Genesee River up to the Lower Falls and the Embayment, or physical and biological habitat are suitable for sturgeon; and</p>	<p>Assess and monitor habitat conditions, presence or absence of sturgeon and movements of transplanted sturgeon on a 3-5 year basis. Use data from U.S. Fish and Wildlife project.</p>
	<p>7. Mink inhabit and reproduce within areas contiguous to the Genesee River and streams within the defined area, or physical and biological habitat are suitable for mink.</p>	<p>1. NYSDEC would fine-tune mink trapping data for our purpose. 2. Perform winter tracking study in conjunction with NYSDEC. 3. Use CWW reporting.</p>