# Rochester Embayment, New York
## Beneficial Use Impairment (BUI) Indicator Redesignation (Delisting)
## *for the BUI:*
## Drinking Water Restrictions, Taste and Odor Problems

### Briefing Summary

This Beneficial Use Impairment (BUI) indicator report identifies the background, criteria, supporting data, rationale and statements to redesignate (delist) the Taste and Odor concern in drinking water as not impaired in the Rochester Embayment Area of Concern (AOC). Drinking water restrictions were not identified for the AOC and are not an issue that needs to be addressed for the BUI redesignation. The listing and delisting of the drinking water taste and odor concern has therefore been accomplished for the Rochester Embayment AOC under the Great Lakes Program and guidance by the USEPA, Region 2 and NYSDEC on behalf of the Great Lakes Water Quality Agreement addressing BUIs in AOCs.

**Background -**

In the Stage I, Stage II, and two Addendum documents for the AOC, the Restrictions on Drinking Water, Taste and Odor Problems BUI was identified as impaired for Taste and Odor. As no use restriction was identified for the two primary sources of drinking water (watershed lakes and Lake Ontario), the focus of the impairment was based on taste and odor complaints, mainly in summer months. Scientific study and assessment has since determined the taste and odor characteristics to be non-health threatening and of an aesthetic or nuisance nature, and to be originating from whole lake processes rather than from something unique to the AOC.

Drinking water purveyors can address taste and odor by adding activated carbon filtration treatment (at a substantial cost) or by advising water service users to provide seasonal home filtration and refrigeration for drinking water to reduce taste and odor. The larger purveyors on the South Shore of Lake Ontario have installed tertiary carbon filtration treatment that does benefit taste and odor. Further, the taste and odor characteristics are not unique to the Rochester area but are found in many AOC communities throughout the Great Lakes. For the Monroe County Rochester service area, study has shown that complaints have dramatically decreased since 1999. Drinking water professionals and managers support these conclusions and the redesignation of the BUI for the Rochester Embayment AOC. This report documents this decision and identifies environmental protection.

In 1994, the Stage I Remedial Action Plan indicated that occasional taste and odor problems were reported to the Monroe County Water Authority (MCWA) regarding water drawn from the Embayment. These were described as occurring "primarily in August, when prolonged hot temperatures promote blue-green algae blooms." It attributed these to non-point source phosphorus, but also indicated that weather phenomena could also contribute to the problem, saying that "sudden wind shifts can alter currents, changing the temperature or turbidity of the water reaching the supply intakes."

The Stage II Remedial Action Plan offered much the same information. No specific studies to detail or resolve this problem were identified in the Stage II RAP. The BUI was linked to a specific goal developed for the Rochester Embayment, that "drinking water produced from Lake Ontario has no unusual or unpleasant taste". This use impairment indicator was further linked to a number of water quality programs and initiatives that directly and indirectly contribute to resolution to the BUI. These program activities are both completed and ongoing and include: the Lake Ontario Lakewide Management Plan; rapid response to spills on Lake Ontario; work on the Greece Ponds (which are directly tributary to the western embayment); public education on lawn care and pesticides; the NYS Coastal Nonpoint Pollution Control Program; elimination of overflow dredging; and, watershed stewardship education. Other directly linked activities include: the NY SPDES program; the Environmental Benefits Permit Strategy; Federal Stormwater regulations; the Eastman Kodak Wastewater Treatment Plant; Combined Sewer Overflow Abatement Project (CSOAP) construction; BMP implementation; the CSOAP Modeling program; the phosphate detergent ban; the Pure Waters Program; Agricultural BMP's; and, efforts to minimize taste and odor problems at local water purveyors. Remedial measures to address this Use Impairment included Stormwater Quality Management; Impervious Surface reduction; control of point source phosphorus loadings; promotion of Agricultural BMP's; education on Lawn Care; development of a public education structure; completion of watershed basin plans; and, evaluation of new remedial measures identified in the 2002 RAP Addendum.

Monroe County has undertaken numerous activities intended to reduce phosphorus loadings to the Genesee River and the Rochester Embayment. Implementation of the Pure Waters Master Plan, and the Combined Sewer Overflow Abatement Project (CSOAP) improved municipal wastewater treatment and reduced discharge of phosphorus associated with these waste streams. The Monroe County Soil and Water Conservation District has been implementing programs for nutrient management, implementation of Agricultural BMP's, and streambank soil erosion control. As part of the implementation of Federal Stormwater regulations, the Soil and Water District as also been doing construction site inspections, and conducting contractor training to insure that Stormwater Pollution Prevention Plans are maintained and adhered to. The Monroe County Stormwater Coalition is working to implement the Federal Stormwater regulations at the Municipal Separate Storm Sewer System (MS4) level. Monroe County has sponsored public outreach and education efforts to target non-point source pollutants, especially phosphorus, through lawn care education in the Great Lawns Great Lakes Program, and through the media campaigns of the Water Education Collaborative (WEC).

In conjunction with NYSDEC and USEPA GLNPO, Monroe County sponsored a program for conversion of dry detention basins to created wetlands to sponsor technology transfer to local municipalities for nutrient retention in stormwater facilities. The County has also continued efforts to reduce phosphorus in wastewater effluents by installation of equipment for phosphorus removal in small wastewater treatment plants in upstream areas such as Spencerport, which discharged to Northrup Creek, the main tributary to Long Pond, contiguous to the western embayment, and in Scottsville, which discharges to Oatka Creek, a major tributary to the Genesee River above the AOC, and by incorporating these discharges into the main treatment plants although these discharge to areas outside the embayment. Spencerport Treatment Plant went off line in mid-2008, the Churchville Plant that discharged to Black Creek, a major tributary to the Genesee River above the AOC, went off line in 2004 and the Scottsville plant is slated to go off line in 2010.

**Key Issues and Causes**

Taste and odor problems came to the forefront in 1998 and 1999, as there were prolonged periods of intense taste and odor problems reported in Lake Ontario during the late summer during both those years. Causes of Lake-wide Taste and Odor Problem Constituents are attributed to the compounds of geosmin and MIB (2-methylisoborneol) that are produced in aquatic environments by cyanobacteria (blue green algae) or mould-like, filamentous bacteria called actinomycetes. Intensive testing of Lake Ontario water during T&O events has confirmed that minute concentrations (measured in parts per trillion) of these compounds create the earthy/musty taste/odor.

With the lakewide establishment of the exotic species (zebra and quagga mussels), increased water clarity has contributed to the presence of the compounds "Geosmin and MIB". Research has indicated that these compounds can create a taste and odor in drinking water supply that is considered a nuisance. Typically, taste and odor problems are seasonal occurrences and are treatable with activated carbon treatment in the water supply. Residual chlorine can also cause taste and odor problems. Local governments in the Rochester AOC watershed have focused much effort on the control of nonpoint sources of pollution (nutrients and pesticide application) to protect drinking water supplies and recreational uses of water resources. These efforts contribute to protecting and improving water quality best uses including a reduction of taste and odor characteristics in drinking water.

**Desired Endpoint -**

The desired endpoint for the RAP process to address this drinking water taste and odor BUI was to determine that the condition is not caused by an AOC specific and isolated source that could be acted upon in some direct way to resolve the impairment or that further drinking water treatment is required to be installed to mitigate such a source. With no actionable source identified that is unique to the Rochester Embayment, the condition can be attributed to seasonal and natural causes that occur throughout the Lake Ontario ecosystem, do not present a health problem, cannot be mitigated by any unique local action in the source water (although nutrient reduction strategies have been undertaken and are underway in the Rochester Embayment, as listed previously in this report) and that must be dealt with as having an aesthetic impact or constitute a nuisance condition.

**Resolution and Delisting -**

Support for the redesignation of this BUI was expressed from comments from expert reviewers as well as from the Public Meeting conducted on September 22, 2009. At the public meeting, support for the delisting was expressed by citizens, committee members, and drinking water professionals. There are no identified health issues involved with the taste and odor characteristics in the Rochester Embayment AOC. Continuation of the documentation of the ongoing monitoring that is in place, as well as distribution of the information in reports by water purveyors to users, is important to assure that any health concern is addressed.

The restrictions on drinking water consumption or taste and odor impairment indicator has been determined not impaired for the AOC because there are no drinking water supply intakes in the AOC that have restrictions after treatment for consumption or warrant further actions be taken by a water purveyor to address taste and odor characteristics. In New York State and the Genesee River watershed, a number of water supply protection measures are in place that maintain good drinking water quality for both groundwater and surface water sources. The Safe Drinking Water Act of 1996 required Lake Ontario Water Purveyors in New York to develop a "Source Water Assessment Program" or SWAP to identify potential sources of water supply, to determine protection threats/needs, to expand monitoring, and to streamline testing procedures. These requirements are in response to a real need to implement measures for the protection of drinking water sources and to provide additional treatment where needed. The algae and compounds observed in drinking water sources and the occasional water quality taste characteristic is monitored by survey and other drinking water quality standard parameters so as not to become a threat to public health.

Beyond monitoring, a "multibarrier" approach to drinking water supply protection includes the NYSDEC initiatives such as the Wellhead Protection Program and the Watershed Protection Approach. These NYSDEC programs, along with other environmental protection programs, put a strong emphasis on trying to prevent contamination of a water supply. Most recently, this same general approach called, "Source Water Protection" focused attention on identifying the sources of water supply, the possible sources of contamination to a supply, and the susceptibility of that supply to inventoried contaminants. These contaminants and their potential pathways for entry into a stream, river, lake, or aquifer are the same sources of degradation with which natural resource managers have traditionally been concerned. Each of these environmental protection measures serves to protect our drinking water supplies.

With no restrictions on drinking water consumption supplies and with taste and odor a seasonal occurrence of nuisance nature only, indicated to originate from a ubiquitous source around the lake, the taste and odor BUI is to be redesignated as "not impaired" for the Rochester Embayment AOC at large.

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Alexander B. Grannis
Commissioner

August 19, 2010

Mr. Mario Del Vicario
U.S. Environmental Protection Agency, Region 2
DEPP-WMB
290 Broadway
New York, NY 10007

Dear Mr. Del Vicario:

The purpose of this letter is to request the U.S. Environmental Protection Agency's concurrence with the redesignation of the Restrictions on Drinking Water Consumption or Taste and Odor Problems Beneficial Use Impairment (BUI) indicator in the Rochester Embayment Area of Concern (AOC). This Drinking Water Taste and Odor BUI has been determined to be not impaired in the AOC.

The New York State Department of Environmental Conservation (NYSDEC) in consultation with EPA Region 2 and the Great Lakes National Program Office staff have evaluated the resolution of this BUI as developed in a report by the lead Rochester Embayment Coordinator, the Monroe County Department of Health (MCDOH) and its consultant, Environment and Ecology (E&E), as well as the AOC Oversight Committee (OC) and agrees with the conclusion that this BUI is no longer impaired. This study and evaluation were made possible by various RAP coordination grants under the management of USEPA Region 2. Further, the decision to delist or redesignate this BUI is based on the process in New York State's *Guidance for Delisting (Redesignation) of AOCs and their BUI Indicators,* which is consistent with the United States Policy Committee's *Delisting Principles and Guidelines* document.

Therefore, NYSDEC in collaboration with USEPA Region 2, Monroe Co. Department of Health, E&E, and the OC have determined that the Rochester Embayment AOC has met the delisting criteria for the Restrictions on Drinking Water Consumption or Taste and Odor Problems BUI indicator and that the BUI should be removed from the list of impairments in the Rochester Embayment AOC. Enclosed, please find the delisting report to support this BUI redesignation.

Together, this letter, the report, and supporting guidance can provide the "model" for other BUI delistings in New York State's five remaining Great Lakes Areas of Concern. We look forward to our continuing partnership in the AOC program, and working closely with USEPA Region 2,

GLNPO, and local partners in implementing Great Lakes program activities. If you need further information, please contact Mr. Robert Townsend, NYSDEC RAP Coordinator, Division of Water, Albany, at 518-402-8284 or Charles Knauf, MCDOH, Rochester, at 585-753-5440.

Sincerely,

Glenn Milstrey, P.E
Director
Bureau of Water Assessment & Management

Enclosures

cc: John Perecone, GLNPO
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