



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
GREAT LAKES NATIONAL PROGRAM OFFICE
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

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JUN 30 2008

Mail Code: R-19J

James Cleland, Chief
Water Division
Michigan Department of Environmental Quality
P.O. Box 30273
Lansing, Michigan 48909

Dear Mr. Cleland:

This letter is the U.S. Environmental Protection Agency's official response to your letter of January 3, 2008, requesting the delisting of the Restrictions on Drinking Water Consumption or Taste and Odor Problems Beneficial Use Impairment (BUI) in the Saginaw River and Bay Area of Concern (AOC). As your request points out and the supplied data support, the following restoration criteria for Restrictions on Drinking Water Consumption or Taste and Odor Problems Beneficial Use Impairment BUI in the Saginaw River and Bay AOC have been met:

Monitoring data for 2 years indicate that public water supplies:

- *Meet the current and most stringent human health standards, objectives, or guidelines (at the point of distribution into the water system) for levels of disease-causing organisms, hazardous or toxic chemicals, or radioactive substances; and*
- *Treatment needed to make raw water potable and palatable does not exceed standard methods in those supplies. In the event a public drinking water intake must be closed due to contamination of surface water, standard treatment methods are considered to have been exceeded.*

Based upon EPA's review of your request and the supporting data, and upon our shared desire to show progress as we move all of the Great Lakes AOCs toward restoration of all BUIs and formal delisting, EPA approves your request for the delisting of the Restrictions on Drinking Water Consumption or Taste and Odor Problems BUI in the Saginaw River and Bay AOC. EPA will notify the International Joint Commission (IJC) of this significant positive change in the environmental health of the Saginaw River and Bay AOC.

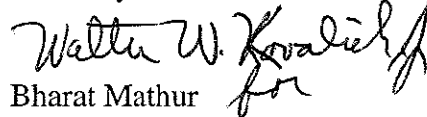
We congratulate all of the parties involved in this Federal/State/local partnership. This has been instrumental in achieving this important environmental improvement which will benefit the citizens of the Saginaw River and Bay AOC, the State of Michigan, and of the Great Lakes Basin. We look forward to the continuation of this important and productive relationship with the Michigan Department of Environmental Quality and the local coordinating committees as we work together to fully restore all of Michigan's AOCs.

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If I or my staff can be of further service to you, please do not hesitate to contact us.

Sincerely,



Bharat Mathur

Acting Great Lakes National Program Manager

cc: Diana Klemans, MDEQ
Rick Hobrla, MDEQ
Michelle Selzer, MDEQ
Dennis Zimmerman, Partnership for the Saginaw Bay Watershed
Karen Vigmostad, Director, Great Lakes Regional Office, IJC
James Schardt, AOC Liaison, USEPA-GLNPO
Mark Elster, RAP Coordinator, USEPA-GLNPO
Pete Christich, USEPA-Office of International Activities



JENNIFER M. GRANHOLM
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING



January 3, 2008

Mr. Gary Gulezian, Director
Great Lakes National Program Office
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard (G-17J)
Chicago, Illinois 60604-3507

Dear Mr. Gulezian:

The purpose of this letter is to request the U.S. Environmental Protection Agency (U.S. EPA), Great Lakes National Program Office's (GLNPO), concurrence with the removal of the Restrictions on Drinking Water Consumption or Taste and Odor Problems Beneficial Use Impairment (BUI) in the Saginaw River/Bay Area of Concern (AOC).

The Michigan Department of Environmental Quality (MDEQ) has evaluated the restoration of this BUI based on the process in the state's *Guidance for Delisting Michigan's Great Lakes Areas of Concern*, which is consistent with the United States Policy Committee's *Delisting Principles and Guidelines* document. The MDEQ has determined that the Saginaw River/Bay AOC has met the statewide restoration criteria for the Restrictions on Drinking Water Consumption or Taste and Odor Problems BUI and that the BUI should be removed from the list of impairments in the Saginaw River/Bay AOC.

Enclosed please find documentation to support the removal of the Restrictions on the Drinking Water Consumption or Taste and Odor Problems BUI in the Saginaw River/Bay AOC, including a briefing paper from the MDEQ's technical staff and other supporting documentation that was used to assess the status of this BUI.

We look forward to our continuing partnership in the AOC program, and working closely with the U.S. EPA, GLNPO, in the delisting of AOCs. If you need further information or assistance, please contact Ms. Michelle Selzer, Aquatic Nuisance Control and Remedial Action Unit, Surface Water Assessment Section, Water Bureau, at 517-241-3731, or you may contact me.

Sincerely,

Richard A. Powers, Chief
Water Bureau
517-335-4176

Enclosures

cc: Mr. Mark Elster, U.S. EPA
Mr. Jamie Schardt, U.S. EPA
Ms. Vicki Thomas, U.S. EPA
Mr. James K. Cleland, MDEQ
Ms. Diana Klemans, MDEQ
Mr. Richard Hobrla, MDEQ
Ms. Michelle Selzer, MDEQ



STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING



JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTEF
DIRECTOR

January 3, 2008

File
Copy

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We look forward to our continuing partnership in the AOC program, and working closely with the U.S. EPA, GLNPO, in the delisting of AOCs. If you need further information or assistance, please contact Ms. Michelle Selzer, Aquatic Nuisance Control and Remedial Action Unit, Surface Water Assessment Section, Water Bureau, at 517-241-3731, or you may contact me.

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Enclosures

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Mr. Jamie Schardt, U.S. EPA
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Mr. James K. Cleland, MDEQ
Ms. Diana Klemans, MDEQ
Mr. Richard Hobrla, MDEQ
Ms. Michelle Selzer, MDEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: Richard A. Powers, Chief, Water Bureau

FROM: Rick Hobrla, Chief, Aquatic Nuisance Control & Remedial Action Unit

DATE: December 28, 2007

SUBJECT: Removal of the Restrictions on Drinking Water Consumption or Taste and Odor Problems Beneficial Use Impairment (BUI) for the Saginaw River/Bay Area of Concern (AOC)

The purpose of this memo, the attached supporting documentation, and the following Information Paper titled, *Removal Recommendation Restriction on Drinking Water Consumption or Taste and Odor Problems Beneficial Use Impairment (BUI) Saginaw River/Bay Area of Concern (AOC)*, is to document restoration and support removal of the Restrictions on Drinking Water Consumption or Taste and Odor Problems BUI in the Saginaw River/Bay AOC, per the process outlined in the *Guidance for Delisting Michigan's Great Lakes Areas of Concern*.

Michelle Selzer, MDEQ liaison for the Saginaw River/Bay AOC, has consulted with other MDEQ technical staff, the Partnership for the Saginaw Bay Watershed (the Partnership), and convened a Technical Committee to assess the status of this BUI. The Technical Committee was comprised of the 5 municipal water supply supervisors, the MDEQ district and Lansing staff, and other stakeholders. A public meeting was also held on June 13, 2007, to discuss this recommendation with the citizens that are serviced by the 5 municipal drinking water facilities in the AOC. The MDEQ technical staff, the Partnership, the Technical Committee, and the community expressed their support for recommending the removal of this BUI.

Therefore, the MDEQ AOC staff requests that you sign and submit the enclosed letter requesting concurrence from the U.S. Environmental Protection Agency, Great Lakes National Program Office, to remove the Restrictions on Drinking Water Consumption or Taste and Odor Problems BUI from the Saginaw River/Bay AOC.

cc: Diana Klemans, Water Bureau

Briefing Paper
**Removal Recommendation Restrictions on Drinking Water Consumption or Taste
and Odor Problems Beneficial Use Impairment**
Saginaw River/Bay Area of Concern

Issue or Request

The purpose of this document and the attached supporting documentation is to outline restoration activities and support the recommendation to remove the Restrictions on Drinking Water Consumption or Taste and Odor Problems Beneficial Use Impairment (BUI) in the Saginaw River/Bay Area of Concern (AOC), per the process outlined in the Michigan Department of Environmental Quality's (MDEQ) *Guidance for Delisting Michigan's Great Lakes Areas of Concern* (Guidance) (MDEQ, 2006).

Background/Facts

The physical boundary of the Saginaw River/Bay AOC is defined as extending from the head of the Saginaw River, at the confluence of the Shiawassee and Tittabawassee Rivers upstream of the city of Saginaw, to its mouth, including all of Saginaw Bay out to its interface with Lake Huron, at an imaginary line drawn between Au Sable Point and Point Aux Barques. On May 31, 2006, the Saginaw River/Bay Public Advisory Council, known as the Partnership for the Saginaw Bay Watershed (the Partnership), held a meeting and voted to adopt the delisting targets included in the Guidance to evaluate the status of the AOC BUIs. The Saginaw River/Bay AOC has 12 BUIs as identified in Annex 2 of the Great Lakes Water Quality Agreement (GLWQA) (International Joint Commission [IJC], 1987) including: Restrictions on Fish and Wildlife Consumption, Tainting of Fish and Wildlife Flavor, Bird or Animal Deformities or Reproductive Problems, Degradation of Benthos, Restrictions on Dredging Activities, Eutrophication or Undesirable Algae, Restrictions on Drinking Water Consumption or Taste and Odor Problems, Beach Closing, Degradation of Aesthetics, Degradation of Phyto- or Zooplankton Populations, Degradation of Fish and Wildlife Populations, and Loss of Fish and Wildlife Habitat. This document only addresses the Restrictions on Drinking Water Consumption or Taste and Odor Problems BUI.

The 1988 Saginaw River/Bay Remedial Action Plan (RAP) states that taste and odor in municipal water supplies drawn from Saginaw Bay was one of the principal water quality issues for Saginaw Bay (Michigan Department of Natural Resources [MDNR], 1988). According to the 2001 RAP Update, the Restriction on Drinking Water Consumption or Taste and Odor Problems BUI in the AOC was originally identified primarily due to significant taste and odor problems during the 1970s that were linked to excessive blue-green algal (i.e., cyanobacteria) blooms, which had caused some of the drinking water intakes in the bay to exceed federal threshold odor standards (Public Sector Consultants, Inc., 2002). The 1994 RAP also lists this BUI as impaired because drinking water drawn from inner Saginaw Bay (i.e., Bay City) must undergo ozone treatment to remove objectionable taste and odor (MDNR, 1994). There are five municipal water facilities that draw water from Saginaw Bay: the Saginaw-Midland Water Supply Corporation, which services the cities of Saginaw and Midland and other smaller communities; the Bay City Water Supply System; the township and village of Caseville Water Supply System; the Huron Shores Water Authority,

which services the cities of Tawas and East Tawas and several townships; and the Huron Regional Water Authority, which services the village of Port Austin and the city of Bad Axe (formerly served by the Port Austin Area Sewer and Water Authority) (MDNR, 1994). Figures 1 and 2 in Appendix 1 show the approximate locations of the drinking water intakes in Saginaw Bay. At present, there are no active municipal withdrawals from the Saginaw River. However, the city of Saginaw does have an emergency intake located in the river (MDNR, 1994).

Due to significant remedial actions and source control activities over the last 35 years, the Partnership and the MDEQ technical staff have assessed the status of this impairment per the criteria outlined in the Guidance and recommend removal of this BUI.

Remedial Actions and Source Control Activities to Address this BUI

1972-1977

The National Pollutant Discharge Elimination System (NPDES) Program was initiated by the Federal Water Pollution Control Act amendments of 1972. The purpose of the program is to control the discharge of pollutants into surface waters by imposing effluent limitations to protect the environment. Discharges to state surface waters from municipal, industrial, and commercial facilities must be authorized by permit under Michigan's NPDES Program. Effluent limits for phosphorus are often lower than 1 milligram per liter to protect designated uses in receiving or downstream waters (Edly and Wuycheck, 2006).

Legislation passed in 1977 reduced the allowable phosphorus content in cleaning agents and water conditioner products sold in Michigan to less than 0.5% phosphorus by weight, further reducing phosphorus loadings from point sources (Edly and Wuycheck, 2006).

1979

The city of Bay City built a water treatment facility that featured an ozonation treatment process, which destroys most bacterial, viruses, algae, and organic compounds that can cause taste and odor problems. The ozone treatment is utilized on a continuous basis to minimize taste and odor in the water supply (MDNR, 1994).

1987

Control of phosphorus inputs into Saginaw Bay was the principal pollution control strategy adopted under the 1972 GLWQA between the United States and Canada. The development of the State of Michigan Phosphorus Reduction Strategy for the Michigan portion of Lake Erie and Saginaw Bay, and the Supplement to Annex 3 of the 1978 GLWQA led to a specific target of 15 micrograms per liter for total phosphorus in the inner region of Saginaw Bay.

1989

In 1989, the village of Caseville constructed a water intake buried below the sediment surface in Saginaw Bay (MDNR, 1994). The major benefit to using this system is that raw water from Saginaw Bay is prefiltered through the sediment prior to entering the intake.

1995

According to the draft 1995 RAP, conventional and nutrient parameters in Saginaw Bay and the surrounding watershed were at levels below those that would cause concern for public drinking water supplies (MDNR, 1994).

The village of Port Austin's water treatment facility constructed a new buried intake under the lake floor (similar to the city of Caseville). Since then, there have been no reported taste and/or odor complaints (Personal communication, Neil Harder, August 8, 2006).

2001

According to the 2001 RAP, communities in the Saginaw Bay drainage basin have spent approximately \$700 million since 1972 to improve wastewater treatment facilities. These improvements have significantly reduced the amount of nutrients entering the bay, especially phosphorus loadings, which had historically contributed to the excessive algal blooms that had been associated with taste and odor problems in Saginaw Bay (Public Sector Consultants, 2002).

2006

The Conservation Reserve Enhancement Program (CREP), implemented in 2001, is a 15-year program to reduce sediment, phosphorus, and nitrogen loadings entering the surface water of the Saginaw Bay, Macatawa River, and River Raisin watersheds. Since July 2006, the Saginaw Bay watershed has had the largest number of acres enrolled (44,442) in the program, and the highest percentage (79%) of all the CREP implementation sites (Supnick and Saxton, 2006). In addition, 19 of the 22 counties in the Saginaw Bay watershed have implemented CREP practices. The counties in the Saginaw Bay watershed with the most acreage enrolled in the program include Saginaw (8,702), Huron (8,111), and Tuscola (7,069).

Analysis

Assessment of Restoration

According to the Guidance, the Restriction on Drinking Water Consumption or Taste and Odor Problems BUI will be considered restored when monitoring data for two years indicates that public water supplies:

- Meet the current and most stringent human health standards, objectives, or guidelines (at the point of distribution into the water system) for levels of disease-causing organisms, hazardous or toxic chemicals, or radioactive substances; and
- Treatment needed to make raw water potable and palatable does not exceed standard methods in those supplies. In the event a public drinking water intake must be closed due to contamination of surface water, standard treatment methods are considered to have been exceeded.

Assessment Findings

Water Quality Report Review

To assess the status of this BUI, water quality reports were reviewed for the five municipal water supplies that draw water from Saginaw Bay. These reports provide the annual water quality testing data results based on all state and federal water quality standards, and are sent to the citizens served by the municipal drinking water facilities. In addition, comments were solicited from an ad hoc Technical Committee comprised of the five municipal water supply supervisors, the MDEQ district and Lansing staff, and other stakeholders.

Based on a review of the water quality reports for the 2005 and 2006 calendar years, and subsequent communication with the Technical Committee, all of the aforementioned Saginaw Bay public water supplies meet the MDEQ and the U.S. Environmental Protection Agency (U.S. EPA) current and most stringent drinking water regulatory requirements for levels of disease-causing organisms, hazardous or toxic chemicals (e.g., polychlorinated biphenyls and dioxins), and radioactive substances at the point of distribution.

Treatment needed to make raw water potable and palatable in Saginaw Bay drinking water supplies does not exceed standard methods. Specifically, the use of ozonation in the Bay City drinking water supply is considered a standard method for treating drinking water. Though not yet widely used in the United States (mainly due to cost), ozone is considered an acceptable treatment method that is used in the states and throughout the world. Ozone is considered standard treatment in Michigan and is currently being utilized to treat surface water for drinking at several municipal drinking water facilities in Michigan, including: Bay City, Ann Arbor, Monroe, Frenchtown Township, and Detroit (Personal communication, Richard Benzie, July 17, 2006). Ozone is considered an acceptable, alternate means of disinfection, which is an integral component of surface water treatment under both state and federal rules. In addition, no public drinking water intake in Saginaw Bay has ever been closed due to contamination. Therefore, according to the state's restoration criteria outlined above, this BUI can be considered restored.

Other Considerations

Michigan Water Quality Standards

The inner region of Saginaw Bay is presently listed in the 2006 Clean Water Act *Water Quality and Pollution Control in Michigan: Sections 303(d), 305(b), and 314 Integrated Report* (Edly and Wuycheck, 2006) as "impaired" due to taste and odor problems with drinking water intakes and elevated nutrients (i.e., phosphorus). Specifically, the inner region of Saginaw Bay is listed in Category 4b, which means that the impairment is being addressed through an approved pollutant control mechanism other than a Total Maximum Daily Load. The control mechanism in place to address elevated phosphorus levels in the inner region of Saginaw Bay is the "Saginaw Bay Phosphorus Reduction Strategy" of 1985.

The "Saginaw Bay Phosphorus Reduction Strategy" was developed in response to the 1985 Phosphorus Reduction Supplement to Annex 3 of the 1978 GLWQA. The target phosphorus load of 440 metric tons per year was established to reduce taste and odor in the Saginaw Bay drinking water supplies. The recommended criterion of 15 micrograms per liter as a spring area-wide mean total phosphorus concentration was thought to represent the estimated "in bay" concentration when the 440 tons per year target load has been met. Although this goal has not yet been achieved, phosphorus reductions in combination with actions at the water treatment plants have been sufficient to eliminate drinking water taste and odor problems at the point of distribution. The remaining issues related to nutrient enrichment will continue to be addressed by the implementation of the Saginaw Bay Phosphorus Strategy and will be handled for this RAP under the Eutrophication or Undesirable Algae BUI listing.

State and Federal Drinking Water Supply Regulations

In an effort to assess the drinking water BUI from a broader regulatory perspective, additional information was obtained and discussed with the Technical Committee to gain a better understanding of: (1) what are the current regulations regarding public drinking water supplies; (2) what have the five municipal drinking water facilities in the Saginaw River/Bay AOC, particularly the Bay City plant, done to mitigate taste and odor episodes; (3) what is the public perception of the taste and odor; and (4) how do the drinking water facilities address the issue.

The current U.S. EPA drinking water regulations and standards referenced in the municipal water supplies' quality reports are available on the U.S. EPA's Drinking Water Contaminants Web site: *(The link provided was broken and has been removed)*. The MDEQ regulations and standards are available on the MDEQ's Community Water Supply Program Web site: <http://www.michigan.gov/water>; select Drinking Water and then select Community Water Supply. Currently, taste and odor is designated by the MDEQ and U.S. EPA drinking water programs as a secondary, nonenforceable standard. Taste and odor is considered aesthetic in nature and is considered under the Secondary Maximum Contaminant Levels in the U.S. EPA drinking water regulations.

Aesthetics are important to public acceptance and confidence in drinking water; however, taste and odor do not necessarily mean water is unsafe to consume or untreatable (Personal communication, Paul Reinsch, October 2, 2006). Though Michigan does not currently have taste and odor standards in place, drinking water facilities strive to provide the public with water that is safe to drink and free of taste and odor, especially since any untreated surface water supply is not safe to drink (Personal communication, John DeKam, February 16, 2007).

Mitigating Taste and Odor Episodes

Over the past 35 years, the five municipal water treatment plants have spent millions of dollars to address and mitigate taste and odor concerns. While formal complaint records have not been kept, personal communications with water treatment plant supervisors to inquire about the status of this BUI indicate that drinking water taste and odor problems from the Saginaw Bay water intakes have dramatically declined.

Assessment and early detection of potential taste and odor episodes have improved drinking water quality and significantly reduced consumer complaints in the Saginaw Bay area. For example, the Bay City drinking water facility qualitatively tests both raw and treated water every four hours. Though daily odor tests are not reported to the MDEQ, odor tests that are run in conjunction with the twice monthly "plankton counts" are included in the Monthly Operating Report submitted to the MDEQ (Personal communication, John DeKam, February 16, 2007).

In addition to testing for potential taste and odor episodes, treatment methods and raw water intake placement have been instrumental in eliminating, or significantly reducing, the incidents of taste and odor complaints. For example, in an effort to address the significant taste and odor episodes that occurred during the 1970s, ozone treatment was built into the Bay City drinking water facility. As a result of implementing ozone treatment, the Bay City facility, on average, detects some "off" odor at the plant only about twice a year. When odor is detected it is eliminated, or minimized, from the drinking water by increasing the dose of ozone prior to entering the distribution system and reaching the consumer (Personal communication, John DeKam, February 16, 2007).

Adjusting the dosage of ozone in response to changing water quality, either to maintain adequate residuals for disinfectant contact time compliance or as a cost control measure, is considered to be a routine practice (Personal communication, Richard Benzie, October 17, 2007). For example, Ann Arbor (not an AOC) routinely increases the dosage of ozone in the spring months during high run off and in the summer months during algal blooms in an effort to maintain their ozone residual goal.

Another effective method of reducing taste and odor episodes in drinking water is to essentially "pretreat" raw water by drawing it through the sediment prior to entering a buried intake. The village of Caseville has utilized a buried intake from 1989 to 2003 and from December 2006 to present. The Caseville plant did not experience the occasional taste and odor complaint until after 2003, when the buried intake became clogged with sediment and had to be replaced by a temporary surface water intake (Personal communication, Dave Quinn, March 7, 2007). However, all of the drinking water standards continued to be met between 2003 and 2006. In December 2006, the village of Caseville received funding to install a new buried intake and discontinued the use of the surface water intake.

Unlike the cities of Bay City and Caseville, which have intakes in the shallower inner region of Saginaw Bay (Appendix 1, Figure 1), the remaining drinking water facilities in the AOC, including the Huron Shores Water Authority, the Huron Regional Authority, and the Saginaw-Midland Municipal Water Supply Corporation, seldom, if ever, experience taste and odor episodes. These communities obtain their water from the outer most regions of the Saginaw Bay (Appendix 1, Figure 2) where water quality is more indicative of deep Lake Huron water (Personal communication, Mike Quinnell, August 23, 2006).

Finally, there have been no restrictions of water consumption due to water quality in any of the drinking water supplies of Saginaw Bay, and none of the drinking water treatment plants have had to close due to taste and odor problems or contamination. There are mechanisms in place, by law, that require public notification of any drinking water standard violation in the event a problem does occur and a health-related issue develops (Personal communication, Paul Reinsch, October 2, 2006). If there were health concerns (e.g., bacterial contamination), the treatment plant would issue a warning not to drink the water, or would issue a "boil water" notice. In the case of a significant taste and odor episode, the plant would issue a press release stating that though the water may be unpalatable, it is safe to drink (Personal communication, John DeKam, February 16, 2007).

Public Perception of Taste and Odor

There was consensus among the Technical Committee members that public taste and odor detection levels are very subjective and often based on what people are use to drinking. Paul Reinsch, Superintendent of the city of Saginaw Water Treatment Plant, stated that a good example of this point is between well water consumers and chlorinated surface water consumers. Both waters are safe to drink, but people who are use to well water may avoid chlorinated water and vice versa (Personal communication, Paul Reinsch, October 2, 2006).

Taste and odor episodes are often influenced by increased water temperature, which affects a person's ability to discern taste. It was also emphasized that public taste and odor complaints may or may not be due to the raw water containing taste and odor producing compounds (Personal communication, Paul Reinsch, October 2, 2006). Citizen complaints that are received are more often tracked to an issue related to the household plumbing, such as water that becomes warmed and stagnant in the consumer's household plumbing (Personal communication, John DeKam, February 16, 2007).

Both the city of Bay City and the village of Caseville draw their water from the inner regions of the Saginaw Bay and have on occasion experienced episodes of taste and odor. The Technical Committee concluded, however, that: (1) both communities have initiated standard treatment methods to mitigate for taste and odor, that is, ozone treatment in Bay City and Caseville's buried intake; and (2) the occasional taste and odor complaint reported by a citizen is often tracked to problems not related to the drinking water facility treatment methods or the distribution system.

Summary of Assessment Findings

- Significant remedial actions and source control activities have occurred over the last 35 years to restore the drinking water beneficial use in the Saginaw River/Bay AOC.
- Based on the Guidance criteria, this BUI is considered restored because:
 - Drinking water at the point of distribution into the water system meets the current and most stringent human health standards, objectives, or guidelines for levels of disease-causing organisms, hazardous or toxic chemicals, or radioactive substances.

- Treatment needed to make raw water potable and palatable in Saginaw Bay drinking water supplies do not exceed standard methods.
- No public drinking water intake in Saginaw Bay has ever been closed due to contamination.
- While nutrient enrichment is still a concern in the inner region of Saginaw Bay, those issues will be addressed under the Eutrophication or Undesirable Algae BUI.
- The five municipal drinking water facilities have spent millions of dollars to address and mitigate public taste and odor concerns.
- Public taste and odor complaints may or may not be due to the raw water containing taste and odor producing compounds. Most often complaints are tracked to an issue related to the household plumbing.

Recommendation

Michelle Selzer, MDEQ liaison for the Saginaw River/Bay AOC, has consulted with other MDEQ technical staff, convened a Technical Committee to assess the status of this BUI, and has discussed the removal recommendation with the Partnership. A public meeting was held on June 13, 2007, to discuss this recommendation with the citizens that are serviced by the five municipal drinking water facilities in the AOC. The MDEQ technical staff, the Technical Committee including all five municipal water supply operators, the Partnership, and the community expressed their support for recommending the removal of this BUI.

Therefore, the MDEQ AOC staff recommend that the Chief of the MDEQ, WB, approve the recommendation to remove the Restriction on Drinking Water Consumption or Taste and Odor Problems BUI. Consistent with the Guidance, we also recommend submittal of a letter from the Chief of the WB to the U.S. EPA, Great Lakes National Program Office, requesting the removal of this BUI from the Saginaw River/Bay AOC.

Prepared by: Michelle Selzer, Environmental Quality Analyst
Aquatic Nuisance Control and Remedial Action Unit
Surface Water Assessment Section
Water Bureau
Michigan Department of Environmental Quality
December 28, 2007

References

- Benzie, R., Chief, Community Drinking Water Unit, WB, MDEQ, Lansing, Michigan. October 17, 2007. Personal Communication.
- Benzie, R., Chief, Community Drinking Water Unit, WB, MDEQ, Lansing, Michigan. July 17, 2006. Personal Communication.
- DeKam, J., Superintendent of Water, Bay City, Michigan. February 16, 2006. Personal Communication.
- Edly, K. and J. Wuycheck. 2006. *Water Quality and Pollution Control in Michigan: 2006 Sections 303(d), 305(b), and 314 Integrated Report*. Report No. MI/DEQ/WB-06/019.
- Harder, N., Wade Trim Operations Services, Huron Regional Water Authority, Port Austin, Michigan. August 8, 2006. Personal Communication.
- International Joint Commission. 1987. *U.S./Canada Great Lakes Water Quality Agreement of 1978*, as amended by protocol, signed November 18, 1987.
- MDEQ. 2006. *Guidance for Delisting Michigan's Great Lakes Areas of Concern* Report No. MI/DEQ/WB-06/001.
- MDEQ. 2004. *State of Michigan Source Water Assessment Program Report*. <https://www.michigan.gov/eglè/0,9429,7-135-3313-110933--,00.html>
- MDNR. 1994. *Saginaw River/Bay Remedial Action Plan: Draft 1995 Biennial Report*. Surface Water Quality Division.
- MDNR. 1988. *Remedial Action Plan for Saginaw River and Bay Areas of Concern*. Surface Water Quality Division.
- Public Sector Consultants, Inc. 2002. *Targeting Environmental Restoration in the Saginaw River/Bay Area of Concern (AOC): 2001 Remedial Action Plan Update*.
- Quinn, D., Supervisor, Department of Public Works, Caseville, Michigan. March 7, 2007. Personal Communication.
- Quinnell, M., Manager, Saginaw-Midland Water Supply, Bay City, Michigan. August 23, 2006. Personal Communication.
- Reinsch, P., Superintendent, city of Saginaw Water Treatment Plant, Saginaw, Michigan. October 2, 2006. Personal Communication.
- Suppnick, J. and J. Saxton. 2006. *Conservation Reserve Enhancement Program 2006 Annual Water Quality Monitoring Report*. Report No. MI/DEQ/WB-06/109.

Appendix 1

Figure 1. Approximate locations of the Huron Shores, Saginaw-Midland, and Huron Regional drinking water intakes in Saginaw Bay.

Figure 2. Approximate locations of the Bay City and Caseville drinking water intakes in Saginaw Bay.

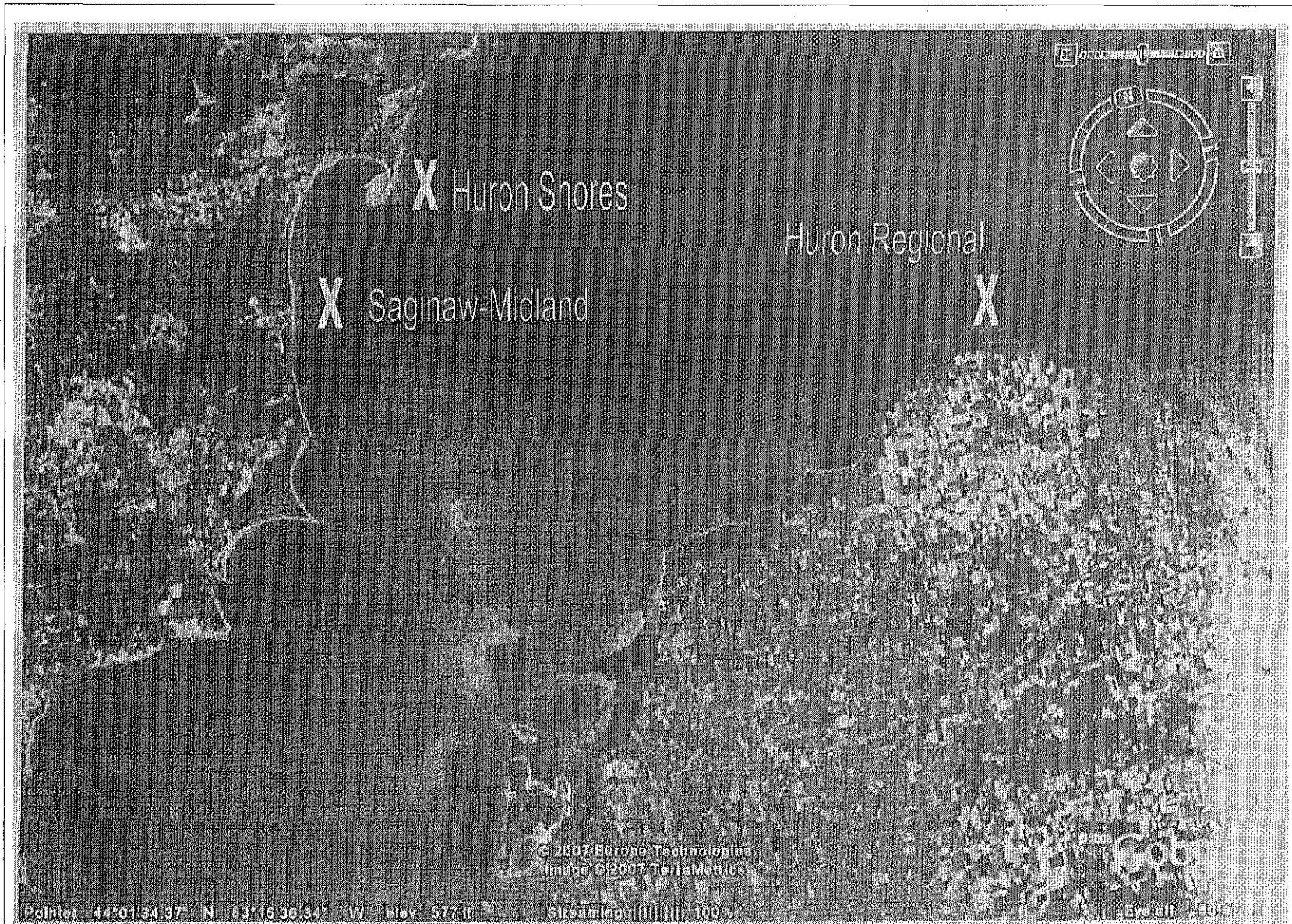


Figure 1. Approximate locations of the Huron Shores, Saginaw-Midland, and Huron Regional drinking water intakes in Saginaw Bay.

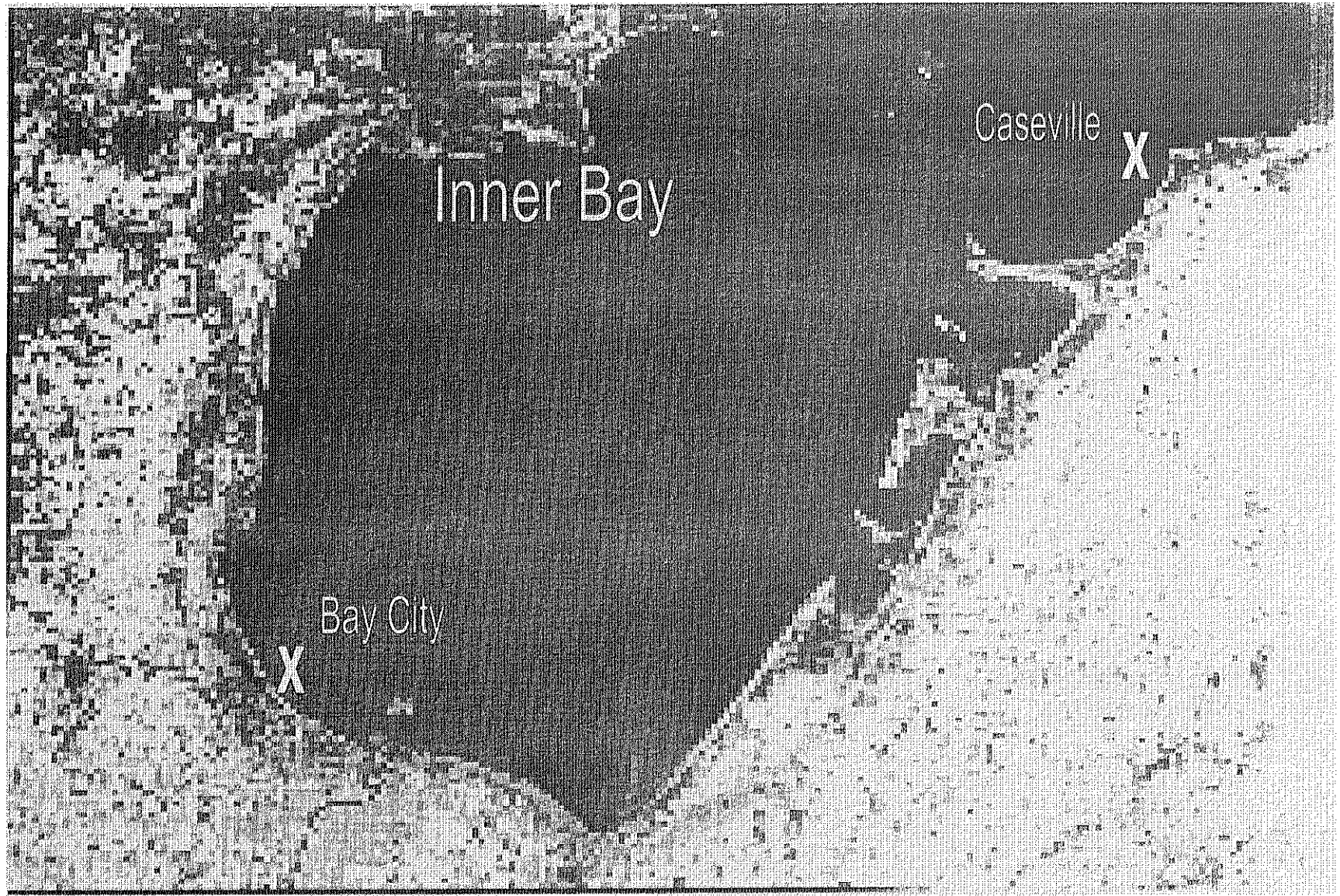


Figure 2. Approximate locations of the Bay City and Caseville drinking water intakes in Saginaw Bay.

Supporting Documentation

August 27, 2007, e-mail and letter from Warren Smith to Michelle Selzer

Removal of Beneficial Use Impairments; page 8 of the Guidance for Delisting Michigan's Great Lakes AOCs

Restriction on Drinking Water Consumption or Taste and Odor Problems criteria; pages 34-35 of the Guidance for Delisting Michigan's Great Lakes AOCs

Listing of the 2005 and 2006 Water Quality Reports Reviewed

May 28, 2007 DEQ Calendar public notice

Saginaw River/Bay AOC Public Meeting Agenda

Handout presented at the Public Meeting: Summary document – Removal Recommendation Restriction on Drinking Water Consumption or Taste and Odor Problems Beneficial Use Impairment Saginaw River/Bay AOC

Saginaw River/Bay AOC Public Meeting Sign-in Sheet

Saginaw River/Bay AOC Public Meeting Minutes/Comments

News article: *Saginaw Bay slowly trying to get off EPA's 'worst of the worst' list.* The Bay City Times, June 20, 2007