

COASTAL HEALTH STRATEGY TEAM
CHAPTER

I. Problem Statement

Contact (including external, ingestion, and inhalation) with near shore water of the Great Lakes can pose a risk to human health¹. Much of the cause is due to pollution that enters and accumulates in the Great Lakes as a result of wet weather overflows, illegal and malfunctioning private sewage treatment systems (e.g., septic and aerobic systems), runoff (e.g., storm water, agricultural, industrial, and urban landscape), avian/animal deposition, shedding from bathers, contamination from boaters, and release of pollutants from contaminated sediments. Inconsistent compliance with sewage treatment and control, lack of storm and waste water enforcement, and aging and overloaded waste water treatment and collection infrastructure also contribute to the risk of adverse health effects.

II. Desired State – Overarching Goal

By 2010, contact with near shore waters of the Great Lakes will pose the minimum feasible risk to human health. (The Great Lakes are a natural body of water and hence the achievement of null risk is unrealistic.) Beneath this overarching goal, categories for specific goals and alternative approaches to achieving them include:

1. Wet Weather Events (CSO, SSO, storm water, run-off)
2. Dry Weather Impacts (algal blooms, wildlife, beach sands)
3. Improved Beach Management Schemes
4. Public Communication and Education
5. Drinking Water Quality

Please refer to *Appendix A* for specific goals by category.

III. Evaluation of Alternative Approaches

Alternative approaches are evaluated for each Coastal Health category. Please refer to *Appendix B* for a detailed description and evaluation of alternative approaches.

IV. Recommended Actions

IV.1. Recommended Action for Wet Weather Events

This is the Coastal Health Strategy Team’s highest priority recommended action as determined by the priority-setting matrix. Please refer to *Appendix C* for a draft of the matrix.

Summary of recommended action

Provide \$10.035 billion over five years through Federal-State-municipal grant funding partnerships (up to 55 percent of this in Federal funds) to plan and implement comprehensive programs to eliminate wet weather sewage system overflows into Great Lakes waters. The focus of this approach is on comprehensive solutions involving construction items, storm water controls, policy revision, strict monitoring, and enforceable schedules. Funding and permits for future sewer district

¹ Coastal Health is affected by the overall health of the natural ecosystem addressed in the Great Lakes Collaboration Habitat/Species strategy chapter. Coastal Health is also affected by the legacy of industrial pollution addressed in the Persistent Bio-accumulative Toxics Reduction and Areas of Concern/Restoration Sediments strategy chapter.

expansions will be tied to having a comprehensive well-integrated plan and to ongoing compliance with timelines set out in NPDES permits or other enforceable documents.

Recommended timeframe

- By 2007, EPA shall promulgate rules necessary to eliminate chronic SSOs.
- By 2007, the eight Great Lakes States will review and update wastewater discharge permits and programs including IPP permits, storm water, CSO, etc.
- By 2008, USEPA, in cooperation with the Great Lakes states, will develop and then promulgate rules governing the disbursement of these grant funds.
- By 2009, or as soon as possible, all significant wet weather overflow communities in the Great Lakes Basin will have adopted and begun to implement comprehensive storm water control programs with the objective of meeting all appropriate State and Federal regulations. For those communities with wet weather problems that have not proceeded with the required planning and implementation by 2009 or sooner, the Great Lakes States or USEPA will proceed with the necessary enforcement actions to require correction of the wet weather problems by a date certain with appropriate penalties.
- By 2015 or sooner wherever possible, eliminate inputs of untreated or inadequately treated human and industrial waste to Great Lakes waters from municipal wastewater treatment systems.

Projected cost and benefit

Cost:

- Beginning in FY 2008, Congress should allocate \$1 billion in Federal grants per year over five years to Great Lakes communities with major wet weather overflow problems. Grants will require up to 45% in state or local matching funds.
- Congress should allocate \$10 million to the three USEPA Regions to review and upgrade their Great Lakes wet weather programs to insure that issues are addressed comprehensively.
- Congress should allocate \$25 million to the Great Lakes States to administer the grants program, review and upgrade all of their wet weather programs (including NPDES permits and enforcement), and implement antidegradation rules in relation to sewage system expansions.

Benefit:

- In addition to reducing bacterial and viral contamination, this will reduce BOD, nutrient, and contaminant loading. Nutrient loading reductions can eliminate the dead zone in Lake Erie and harmful algal blooms.

Best-suited entity(s) to accomplish recommended action

- Grants will only be awarded to communities with approved comprehensive programs addressing wet weather controls including the control of CSOs, SSOs, storm water runoff, overflows from bypassing at the wastewater treatment plant, and related issues.
- Priority funding will go to communities who can demonstrate that non-structural controls – including preservation and restoration of Green Infrastructure such as wetlands, riparian corridors and forest cover – and other land use regulations and best management practices that reduce or eliminate storm water flows into the system, are employed to the greatest extent possible.²
- Plans must include provisions for review and updating industrial pretreatment programs to reduce the discharge of toxics to sewage treatment systems (See PBT section for further detail).
- A discretionary provision for reimbursing communities that implement overflow controls as part of comprehensive programs consistent with grant criteria before October 1, 2008.
- A discretionary provision for rewarding those communities that fully implement and achieve their comprehensive wet weather control plan before 2012.

Measurable objectives

GAP – TO BE COMPLETED.

² See, for example, Center for Watershed Protection, “Model Land Development Principles,” www.cwp.org, also quoted in full in the International Joint Commission’s 2001-2003 *Priorities Report*.

Please refer to *Appendix D* for additional background on Wet Weather Events and detail on the recommended action.

IV.2. Recommended Action for Dry Weather Impacts (Source Control)

Summary of recommended action

Identify environmental sources capable of adversely impacting Great Lakes coastal health during dry weather, including, but not limited to, foreshore beach sands, avian/animal deposition, algal blooms (can appear during dry weather, but are caused by nutrient loading during wet weather and aquatic invasive species), and submerged sediments. Educate communities regarding their impact on the environment and the anthropogenic factors capable of adversely impacting Great Lakes coastal health through public education and/or incentives to reduce the impacts of nutrient-loading household and industrial products, improper discharge of onboard boater waste, and bather shedding. Ask the Great Lakes Sea Grant Network to make this an education/outreach priority for the region and to make it a component of a Great Lakes COSEE through NSF.

Recommended timeframe

By 2010, a 90-95% reduction in bacterial, algal, and chemical contamination will occur at all local Great Lakes beaches by identifying sources, estimating relative contribution of sources (based on historical data and sanitary inspection), and remediating all potential dry weather sources.

Projected cost and benefit

Cost: Depends on pollution sources identified at individual beaches based on annual sanitary surveys.

Benefit: Remediating contamination sources responsible for dry weather water quality failures will reduce health risks, increase availability/access to Great Lakes recreation, improve the health of the ecosystem, promote sustainable practices, decrease economic loss (millions of dollars are lost each year due to beach closures), and increase commercial benefits.

Best-suited entity(s) to accomplish recommended action

Partnering of Federal, State, academic (Great Lakes Sea Grant Network), tribal, local municipalities and NGOs to conduct public information campaigns will improve sustainable practices and identify potential contamination sources by reaching a wider audience.

Measurable objectives

By 2010, the number of non-rainfall associated incidents of poor water quality will have decreased by 90-95% (as determined at the local level based on historic data and sanitary inspections at the local level). Nutrient loading will have decreased as evidenced by a decrease in algal blooms, the elimination of the dead zone in Lake Erie, and the use of non-phosphorous containing fertilizers in coastal areas. Enforceable city ordinances will be in place which call for the placement of signs regarding the health risk associated with bather shedding, availability and importance of proper boater waste disposal, and prohibition of practices that attract nuisance wildlife to which fines are attached for violations. The Great Lakes Sea Grant Network will have an education and outreach program in place for k-12, college, the general public, and coastal decision makers.

IV.3. Recommended Action for Improved Beach Management (Risk-Based Approach)

Summary of recommended action

Standardize, trial, and implement a risk-based approach³ to manage recreational water. The approach should build upon existing water quality monitoring programs and employ the latest technology for microbial assessment and standardized sanitary inspection criteria, based on a holistic watershed assessment.

³ WHO, Annapolis Protocol, USEPA National Beach Guidance and Required Performance Criteria for Grants, June 2002, EPA 823B02004.

Recommended timeframe

Mechanisms are in place for standardized microbial assessment as stated in the BEACH Act of 2000. By 2009, states should add to their existing water quality monitoring programs, real-time analytical tests, a standardized tool for conducting sanitary inspections at beaches, new beach management protocols which are based on microbial assessment and sanitary inspection, and forecasts of water mass movements from the Great Lakes Observation System.

Projected cost and benefit

Cost: \$2.0 million annually

Benefit: An holistic watershed approach to beach management will improve the identification of contamination sources at the local level, encourage remediation of those sources, ensure the protection of public health through a risk-based approach, decrease economic loss, and increase commercial benefits. To attract tourism and improve the economy of municipalities, investments in the development and maintenance of healthy and attractive beach recreational opportunities need to be a part of regional planning. The economic loss to a community from a swim closure day has been estimated to range from \$1,274 to \$37,030/day⁴. Commercial benefits for an individual Great Lake beach projected over the swimming season would range from a low of \$100,000 to over \$3,000,000. For major municipalities, the economic value of beach recreational opportunities is estimated to exceed \$100,000,000 per beach per season. With over 800 beaches in the Great Lakes Basin, healthy beaches can be a major driver of the economy of the Great Lakes.

Best-suited entity(s) to accomplish recommended action

Federal, State, tribal and local municipalities have worked together to standardize the microbial assessment of recreational water and these working groups can also standardize the sanitary inspection process. Once these two tools are in place they can be trialed at the local level, adopted by the Federal government, and implemented at the state and tribal level.

Measurable objectives

By 2010, the number of beaches classified as having “good” water quality will comprise 90-95% of all Great Lakes public bathing beaches. At the local level, individual contamination events will occur no more than 5% of available days within a bathing season and the remediation measures will be in place to address these events.

IV.4. Recommended Action for Public Communication and Education

Summary of recommended action

A public communication and education campaign will be conducted to provide a consistent flow of information regarding coastal health issues using all forms of available media. The public needs to be educated and encouraged to become stakeholders in the improvement of coastal health through the development of sustainable ecosystem practices. Poor personal and business practices (including those at the municipal level) contribute to bacterial and chemical contamination of the Great Lakes.

Recommended timeframe

By 2006, education campaigns will be conducted to effectively communicate water quality issues to both the public and private sectors of the Great Lakes states.

Projected cost and benefit

Cost: \$400,000 (Great Lakes Basin @ \$50,000 per state x 8 states).

Benefit: Increased awareness, stakeholder “buy-in”, a public capable of making informed decisions with regard to sustainable development both personally and at the municipal level, decreased economic loss, and an increase in commercial benefits.

Best-suited entity(s) to accomplish recommended action

⁴ Rabinovici S.J.M., R.L. Bernknopf, A.M. Wein, et al. 2004. Economic and health risk trade-offs of swim closures at a Lake Michigan beach Environ. Sci. Technol. 38 (10): 2737-2745.

Partnering of Federal, State, and tribal agencies; Sea Grant programs, the Great Lakes COSEE (if funded), local municipalities, regional/bi-national commissions, other Great Lakes organizations, NGOs, industry, and media will facilitate the consolidation and utilization of currently available information to spearhead a continuous and adaptive public communication and education campaign reflective of new information on all aspects of coastal health.

Measurable objectives

Information crucial to the improvement of Great Lakes coastal health will be consistently visible in the media (TV, newspaper, radio, PSA, billboards, telephone hotlines, internet), in brochures, videos, on signs posted in public places, through leaflets and brochures, in town-hall type meetings and in the curriculum of our public educational system which is geographically specific at the state and local levels (including individual beaches). Surveys of coastal decision makers and the general public will demonstrate significant knowledge gains.

IV.5. Recommended Action for Drinking Water Quality

Summary of Recommended Action

Amend the Safe Drinking Water Act to require the development and implementation of Source Water Protection Plans that respond to the needs identified in the 1997 State Source Water Assessment, fully-fund the Safe Drinking Water Revolving Fund (SDWRF) and allow the States and local municipalities greater flexibility in how the funds may be used, and integrate the implementation of security measures for critical infrastructure required by the Patriot Act.

Recommended Timeframe

Amendments to the existing SDWA policies will be made immediately to include the recommended actions and the States and local public water suppliers will implement State- and/or system-specific plans to achieve the long-term goal by 2025.

Projected Cost and Benefit

GAP – TO BE COMPLETED.

Best suited Party to accomplish Recommended Action

Congress to amend national policy and appropriate funds necessary to meet full authorization level of SDWRF. States and local municipalities to implement plans at local level for prioritized systems.

Measurable Objectives

- By 2008, amendments to SDWA will be adopted.
- By 2010, all States and local municipalities will establish Source Water Protection Plans (“Plans”) for high susceptible, threatened or stressed systems.
- By 2015, 50% of systems will be implementing plans.
- By 2025, all public drinking water systems will comply with plans.

Please refer to *Appendix D* for additional background on Drinking Water Quality.

V. Assessment of Ongoing Efforts

Ongoing Coastal Health efforts are detailed in journal articles and publications. Please refer to *Appendix E* for a list of research material references under each Coastal Health category.