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Beach Closings BUI Removal: Rochester Embayment AOC

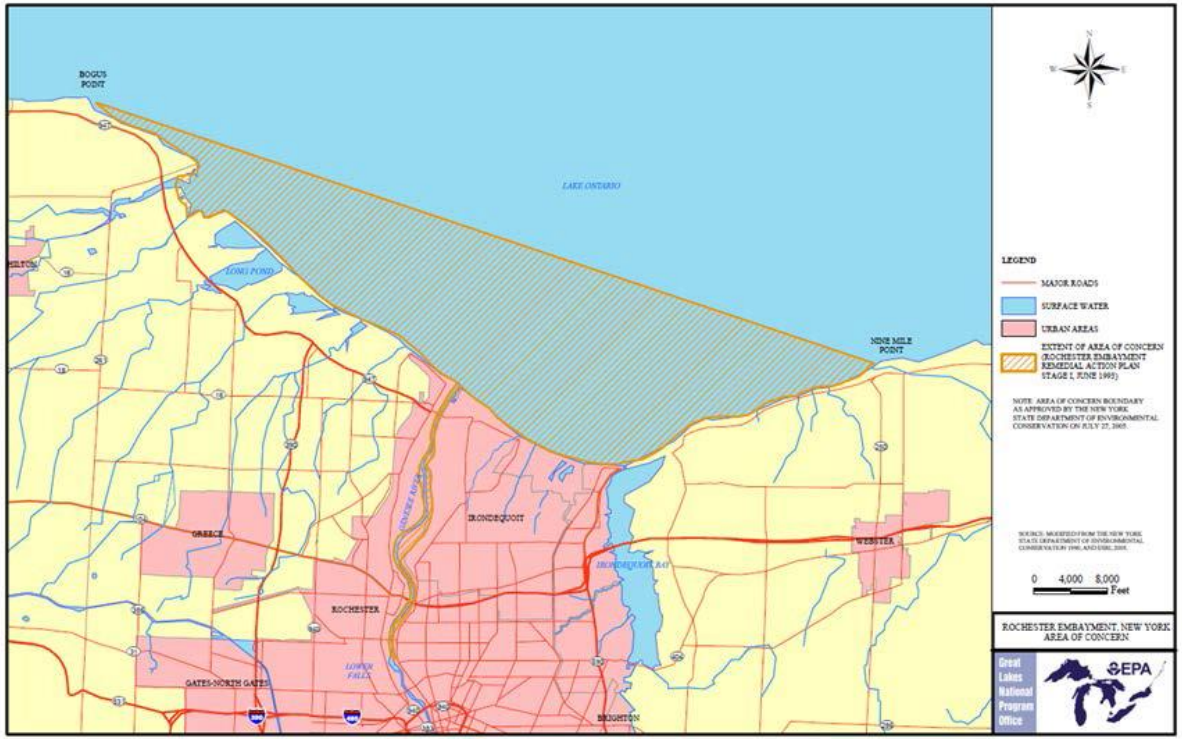
National AOC Conference
Windows on the River
2000 Sycamore Street, Cleveland, OH

September 11, 2019

Outline

- **Setting the Scene: Historic Issues, Original RAP Designation, BUI Removal Criteria Development**
- **Implementing RAP Commitments/Assessing BUI Status**
- **Completing the BUI Removal Process**

Setting the Scene…



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Setting the Scene…

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Ontario Beach

- First became popular in the mid-19th century
- Popular recreational destination into the 20th century
- With urban growth in and around Rochester, environmental issues began to arise…
  - CSO Inputs
  - Nutrient Loading
  - Closed from 1967 - 1976

Ontario Beach

Durand-Eastman Beach

- Originally opened in 1905 following the creation of Durand-Eastman Park
- Closed in 1966 due to pollution issues.
- Closure facilitated many relevant environmental initiatives:
  - Monroe County Pure Waters Master Plan
  - Combined Sewer Overflow Abatement Program

Durand-Eastman Beach

Image courtesy: MCDPH

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Stage I Remedial Action Plan

- Designated as “Impaired”
- Root Causes:
    - Harmful Algae
    - Fecal Coliform Bacteria
    - Water Turbidity
- Known Sources:
    - CSOs
    - Nutrient Loading

BUI Removal Criteria Development

- **BUI Removal Criteria for "Beach Closings" were first reported in the 2002 Stage II RAP Addendum**

Assumptions

1. "No beach closings" is not a realistic goal due to occasional unfavorable weather conditions, the proximity of Ontario Beach to the mouth of the Genesee River, and poor water circulation due to the physical barrier of the pier.

2. It is assumed that the beach will be closed an average of 20% of the time due to river flow and rainfall events, based on data from the last five-years (1997-2001). During high Genesee River flows and when the current of the Lake is reversed (~33% of the time), the poor water clarity, typical of the Genesee River, reduces the clarity of the bathing water, which in turn reduces ultra-violet light penetration that kills harmful bacteria. Rainfall washes bacteria off local land surfaces.

3. Beach closings are based on the Ontario Beach operating model.

BUI Removal Criteria Development

- **March 2009: Comprehensive BUI Removal Criteria Assessment (Ecology & Environment, Inc.)**

Notes:

[1] Currently Ontario Beach and Durand Eastman Beach.

[2] Currently 235 cfu or MPN *E. coli* per 100 mL single sample or 126 cfu or MPN *E. coli* geometric mean of at least five samples in a 30-day period for a Tier I Beach. All existing or potential beaches in Monroe County would be expected to be Tier I due to population density.

[3] New York State Sanitary Code has a clarity standard of a Secchi depth of 4 feet; however, Great Lakes and ocean beaches are exempt from this. Monroe County uses a clarity standard of less than 0.6 meter in a water depth of 1 meter to determine closures.

BUI Removal Criteria Development

- March 2009 Criteria Revisions reviewed three original assumptions from 2002
- Determined that beach closure data was not a realistic or achievable BUI metric
- Recommended using water quality/clarity standards used in MCDPH model instead
- Revised criteria were accepted by the RAC

Implementing RAP Commitments/Management Actions

- Monroe County Pure Waters Master Plan
- Combined Sewer Overflow Abatement Program (CSOAP)
- Ontario Beach Algae Control System
- Durand-Eastman WQ Improvement Project

Monroe County
Pure Waters Master Plan

- Consolidating and improving wastewater treatment throughout Monroe County
- Establishment of new Sewer Districts
- Discharges to smaller streams phased out
- Major Facility Upgrades

Combined Sewer Overflow Abatement

- Significant issue within the City of Rochester
- Modeling of sewer system
- Construction of a storage/conveyance tunnel system
- Over 99% (3.75 billion gallons) of CSO volume captured

Ontario Beach Algae Control System

- Objective: capture and remove algae from Ontario Beach
- Project initially conceived in 2007 (USACE, NYSDEC, URS Corporation)
- Field demonstration in July-August 2011
- Fully operational in 2015 (GLRI funding @ $400K)

Ontario Beach Algae Control System

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Ontario Beach Algae Control System

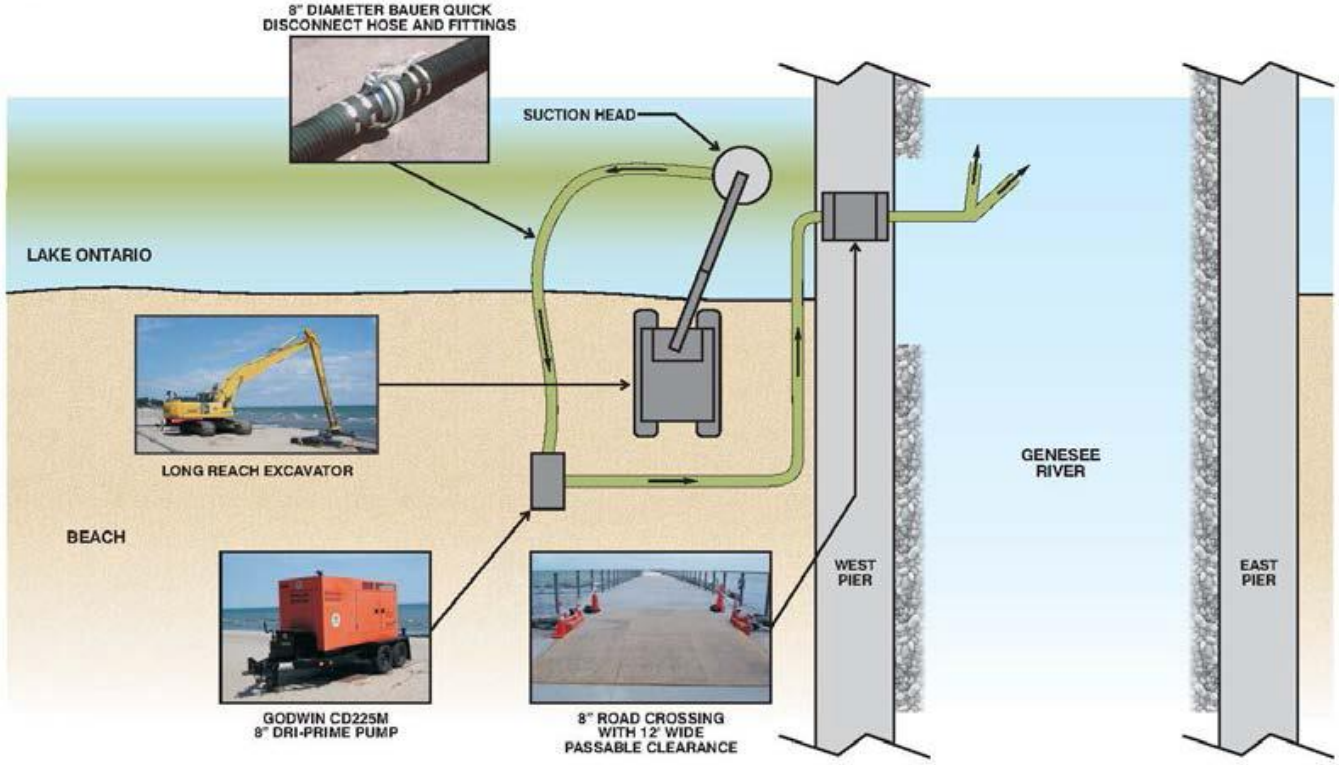

Image courtesy: URS Corporation

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Durand-Eastman WQ Improvement

- 2013 effort spearheaded by the City of Rochester (Durand-Eastman Beach re-opened in 2006)
- Sherry Swamp Outfall
- Storm water detention basin/antimicrobial treatment system
- Full-time operation in 2018
- *E. Coli* input reduced adjacent to beach

Assessing BUI Status

- Daily Water Quality Data (*E. Coli*)
- Daily Water Clarity Data (Secchi Disk)
- Data are used in MCDPH's predictive model for beach closure decisions
- Assessed over a 5-year time period (during the swimming season)

Assessing BUI Status

- Water Quality Standard (235 *E. Coli* cfu per 100mL)
- Water Clarity Standard (0.6m Secchi Disk reading in 1m depth)
- BUI assessment INDEPENDENT OF predictive model used for beach closure decisions

Assessing BUI Status

- What do the data show?

- BUI removal criteria are being met

% OF THE SWIMMING SEASON THAT BATHING BEACHES IN ROCHESTER EMBAYMENT MEET BACTERIAL AND/OR CLARITY STANDARDS			
YEAR	Bacterial Standards Met	Water Clarity Standards Met	Bacterial Standards AND Water Clarity Standards Met On Same Day
2012	71.2%	92.2%	65.4%
2013	89.7%	89.7%	81.5%
2014	82.0%	81.3%	69.8%
2015	70.6%	83.7%	61.4%
2016	97.4%	96.1%	94.1%
2017	100.0%	82.4%	82.4%
2018	100.0%	92.5%	92.5%
AVG 2012-2016	**82.2%**	**88.6%**	**74.4%**
AVG 2013-2017	**87.9%**	**86.6%**	**77.9%**
AVG 2014-2018	**90.0%**	**87.2%**	**80.0%**

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Summary

- Variety of Management Actions have been implemented to address root causes associated with Beach Closings BUI

- RAC revised BUI removal criteria to focus on water quality & clarity data at bathing beaches

- Data collected over five-year time period show that the removal criteria are met

Completing the BUI Removal Process

- Public meeting held in March 2018 – no formal comments received
- Multiple rounds of review from fall 2018 – summer 2019
- Via internal review at NYSDEC, key elements were added in early 2019 (predictive model vs. BUI assessment)

Completing the BUI Removal Process

“Beach Closings” BUI successfully removed in August 2019

Special Thanks

US Army Corps
of Engineers®

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