



# Wheatley Harbour

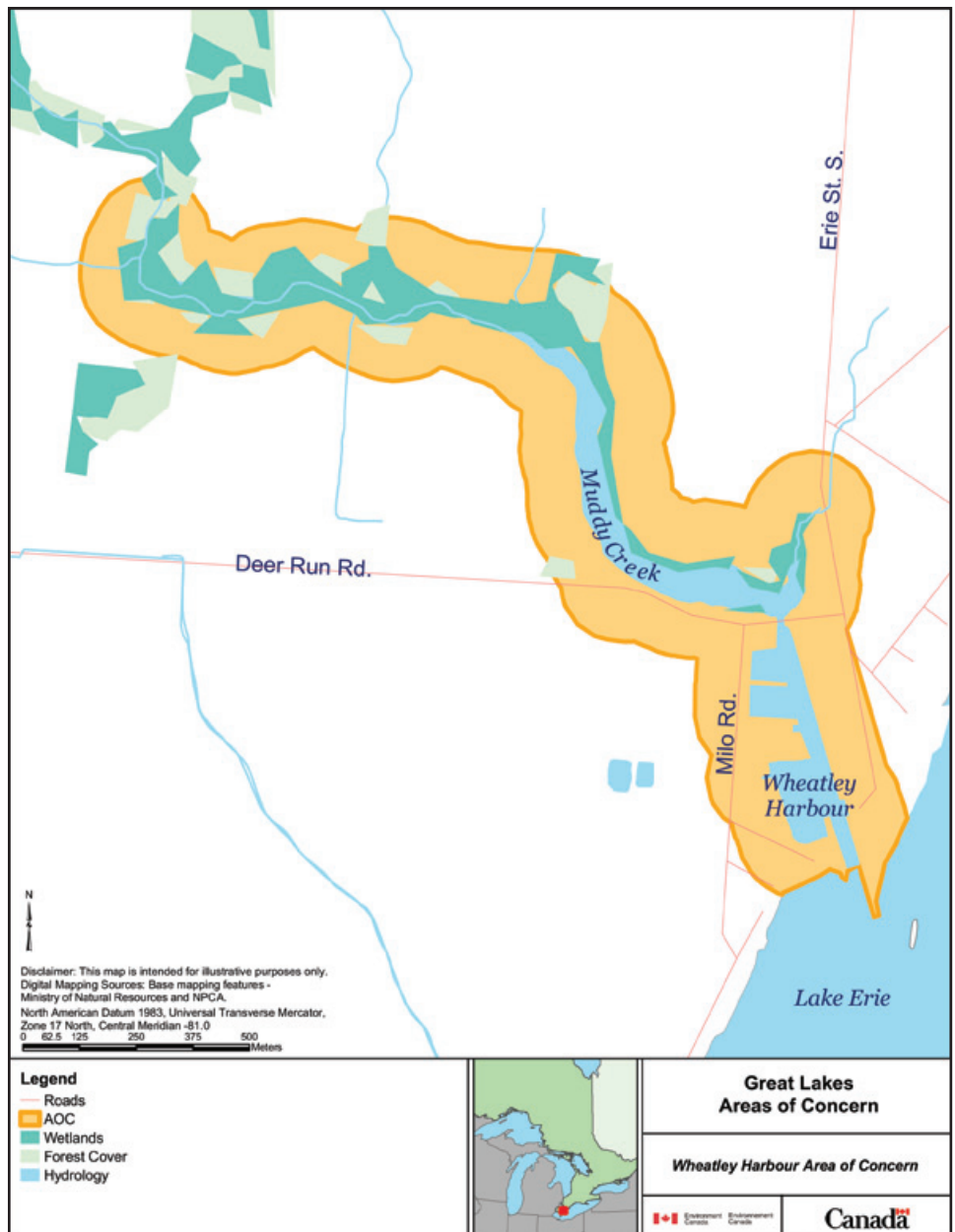
## Area of Concern

### Final Progress Report

September 2010

Wheatley Harbour is a small harbour on the north shore of Lake Erie, just east of Point Pelee, Ontario. The Area of Concern, the only one on the Canadian shore of Lake Erie, encompasses the harbour and the Muddy Creek wetland, a provincially significant wetland about 13 ha in size. Land use in the watershed is predominantly agricultural. The harbour is home to the largest commercial fishing fleet in the Great Lakes and the site of fish and vegetable processing facilities. The harbour is designated a federal small craft harbour and is managed by a local harbour authority.

In the past, the Wheatley Harbour Area of Concern experienced significant water pollution problems. Concentrated industrial discharges from the fish processing operations resulted in levels of PCBs<sup>1</sup> in sediments and levels of phosphorus in water that exceeded provincial standards. Runoff from agricultural operations in the area also resulted in contaminated levels of some metals. The construction of the harbour and the infilling of some of the wetlands for industrial development impacted habitat for fish, waterfowl and other wetland wildlife.



<sup>1</sup> Polychlorinated biphenyls (PCBs) are synthetic chemicals that have wide industrial applications. The manufacturing and importing of PCBs were banned in North America in 1977. PCBs are very persistent (long-lasting) in the environment and can be transported over long distances.

# PARTNERSHIPS IN ENVIRONMENTAL PROTECTION

Wheatley Harbour was designated an Area of Concern in 1987 under the Canada–United States Great Lakes Water Quality Agreement. Areas of Concern are sites on the Great Lakes system where environmental quality is significantly degraded and beneficial uses are impaired. Currently, there are 9 such designated areas on the Canadian side of the Great Lakes, 25 in the United States, and 5 that are shared by both countries. In each Area of Concern, government, community and industry partners are undertaking a coordinated effort to restore environmental quality through a remedial action plan.

## Remedial Action Plan Partners

Environment Canada and the Ontario Ministry of the Environment coordinate the development and implementation of the remedial action plans to protect and restore these Areas of Concern in Canada. Other partners in the cooperative effort in the Wheatley Harbour Area of Concern include (in alphabetical order): the Essex County Stewardship Network, the Essex Region Conservation Authority, the Ontario Ministry of Agriculture, Food and Rural Affairs, and the Ontario Ministry of Natural Resources. The Remedial Action Plan partners also have worked with other groups in the community including the Mersea Township, the Municipality of Wheatley, the Southwest Outdoors Club, industry and landowners.

## Remedial Action Plan Process

The Great Lakes Water Quality Agreement requires that remedial action plans be developed and implemented in three stages:

### Stage 1: Identifying the Environmental Challenges and

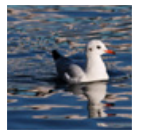
### Stage 2: Planning and Implementing Remedial Actions

The governments of Canada and Ontario, working with community stakeholders, undertook an extensive program of research and monitoring to assess environmental quality and identify the causes of degradation in the Area of Concern. They also carried out a detailed review of several potential remedial actions to restore, protect and monitor environmental quality in the Area of Concern.

A combined Stage 1 and **Stage 2 Remedial Action Plan Report** was completed in 1998. The report identified five environmental challenges needing to be addressed and known as *beneficial use impairments* in the remedial action plan process. The report also included a prioritized list of nine remedial measures proposed by the partners and endorsed by the public to address the environmental challenges. All five of the original beneficial use impairments have been restored through implementation of the remedial actions. These are described below in **Progress on Environmental Challenges**.

### Stage 3: Monitoring Actions and Delisting of the Area of Concern

Wheatley Harbour has been delisted as an Area of Concern. All remedial actions recommended in the 1998 report, as well as other initiatives developed by the partners in 2004, were completed by 2008. The **Stage 3 Remedial Action Plan Report**, reporting on the results of monitoring undertaken to confirm that the environmental challenges have been addressed successfully through the remedial actions, was completed in 2009. In April 2010, community stakeholders and government officials gathered to celebrate the delisting of Wheatley Harbour Area of Concern, a major milestone for the Great Lakes.



## PROGRESS ON ENVIRONMENTAL CHALLENGES

The Remedial Action Plan partners have successfully addressed the five environmental challenges identified in the Wheatley Harbour Area of Concern. The **Stage 3 Remedial Action Plan Report** was completed in 2009, and Wheatley Harbour has been delisted as an Area of Concern.

Continued navigational dredging is expected to remove any remaining PCBs from the harbour. Ongoing issues with a regional scope, such as invasive species and nutrients, will continue to be addressed under the Lake Erie Lakewide Management Plan.

### Status of Beneficial Use Impairments

The tables below summarize, for each of the five beneficial use impairments in the Wheatley Harbour Area of Concern, their status as of September 2010 and key actions taken by various partner agencies and organizations under the Remedial Action Plan. There are no key actions remaining as all five beneficial use impairments are no longer impaired.

# Status – NOT IMPAIRED

## Degradation of Fish and Wildlife Populations

Status: *Not Impaired*

Current data indicate that fish and wildlife populations in the Area of Concern are healthy. The fish community appears balanced and diverse, and the relative abundance of fish in 2008 was much higher than in 1987. Snapping Turtles are abundant, with a variety of size classes ranging from small juveniles to large mature adults. Elevated PCB concentrations and some level of physiological alteration have been noted in fish, Snapping Turtles and Tree Swallows, but these effects have not translated into any reproductive impacts in these species.

### KEY ACTIONS

#### COMPLETED

- Launched projects to restore natural habitat in the Area of Concern and remediate non-point sources of pollution in the Muddy Creek watershed (since 1998)
- Conducted an ecological risk assessment that concluded there were no potential impacts of contaminated sediments to indicator wildlife species<sup>2</sup> (2007)
- Undertook fish community monitoring, Snapping Turtle population and health effects study; and Tree Swallow reproductive viability study

#### REMAINING

- No further action required

## Eutrophication<sup>3</sup> or Undesirable Algae

Status: *Not Impaired*

While total phosphorus concentrations in the Area of Concern continue to be elevated, they remain similar to (and in some cases lower than) those in other wetland and creek systems in the region outside the Area of Concern. Discharges from the Omstead Foods Limited now are regulated and phosphorus concentrations are within the bounds established by the provincial certificate of approval. Dissolved oxygen conditions with the Area of Concern have improved considerably since the 1960s and there have been no reports of persistent algal blooms or nuisance algae.

### KEY ACTIONS

#### COMPLETED

- Implemented erosion control measures, septic system upgrades, and naturalization of riparian areas through a rural non-point source remediation program in the Muddy Creek watershed (since 1998)
- Improved wastewater treatment by local industry (regulated by a certificate of approval)
- Initiated two provincial water quality monitoring network sampling sites to monitor nutrient concentrations in and upstream of the Area of Concern (2003)
- Undertook periodic monitoring of total phosphorous and dissolved oxygen in the wetland and harbour

#### REMAINING

- No further action required

<sup>2</sup> Indicator species are species whose presence, absence, or relative well-being in a given environment is a sign of the overall health of its ecosystem.

<sup>3</sup> Eutrophication (or eutrophic conditions) is the process by which lakes and other water bodies are enriched by nutrients (usually phosphorus and nitrogen), which leads to excessive plant growth and oxygen depletion.



## Loss of Fish and Wildlife Habitat

Status: *Not Impaired*

The Remedial Action Plan target for natural areas cover in the Area of Concern has been surpassed. Sediments in the waters of the Area of Concern are moderately contaminated with PCBs, but do not pose a risk to indicator fish and wildlife. There are no active sources of PCBs in the Area of Concern and the contaminated sediments within the wetlands are stable and continue to be covered by clean sediment from upstream.

### KEY ACTIONS

COMPLETED	REMAINING
<ul style="list-style-type: none"> <li>Programs to restore habitat in the Area of Concern and to remediate impacts of non-point source pollution in the Muddy Creek watershed have been in place since 1998</li> <li>Designated the Muddy Creek wetland a provincially significant wetland (1985) and included it in the town's Official Plan (1999)</li> <li>Re-inventoried the Muddy Creek wetland and expanded the significant wetland to include upper portions (2007)</li> <li>Conducted an ecological risk assessment that concluded there were no potential impacts of contaminated sediments to upper trophic-level wildlife (2007)</li> </ul>	<ul style="list-style-type: none"> <li>No further action required</li> </ul>

## Restrictions on Dredging Activities

Status: *Not Impaired*

Navigational dredging of the harbour mouth occurs on an annual basis and is completely unrestricted. The inner harbour was dredged in 1984–1985 and in 2004–2005, with the dredged material being disposed of on land. Sediment chemistry data suggest that the inner harbour dredging in 2005 resulted in reduced concentrations of cadmium and PAHs<sup>4</sup> in the sediments. Partners have confirmed that there are no active sources of PCBs in the Area of Concern. Continued routine maintenance dredging of the inner harbour in the future is expected to remove additional contaminated sediments.

### KEY ACTIONS

COMPLETED	REMAINING
<ul style="list-style-type: none"> <li>Maintained annual dredging of the harbour mouth, with disposal of material in Lake Erie</li> <li>Dredged the inner harbour and disposed of material on land (1985 and 2005)</li> <li>Conducted monitoring of sediment chemistry pre- and post-inner harbour dredging (2004 and 2008)</li> <li>Eliminated PCB sources in the Area of Concern through upgraded wastewater treatment by local industry and revised backwash procedures by local wastewater treatment plant</li> <li>Investigated potential ongoing sources of PCBs to confirm that there are no ongoing sources in the Area of Concern</li> </ul>	<ul style="list-style-type: none"> <li>No further action required</li> </ul>

<sup>4</sup> Polycyclic aromatic hydrocarbons (PAHs) are chemical compounds found in oil, coal, and tar deposits, and that also are produced as byproducts of fuel burning (whether fossil fuel or biomass). As pollutants, they are of concern because some compounds have been identified as carcinogenic.

# Restrictions on Fish and Wildlife Consumption

Status: *Not Impaired*

Overall, consumption restrictions in Wheatley Harbour appear to be consistent with those in the central basin of Lake Erie. Wheatley Harbour Carp have shown significant declines in PCB concentrations since the 1980s and Brown Bullhead have low PCB concentrations and no restrictions on consumption.

KEY ACTIONS	
COMPLETED	REMAINING
<ul style="list-style-type: none"><li>▪ Eliminated PCB sources in the Area of Concern through upgraded wastewater treatment by local industry and revised backwash procedures by local water treatment plant</li><li>▪ Removed PCBs from sediments through ongoing navigational dredging of the harbour</li><li>▪ Confirmed through monitoring that there are no ongoing sources of PCBs in the Area of Concern</li><li>▪ Promoted natural capping of PCB contaminated sediments with clean sediment from upstream flows</li><li>▪ Separated out Wheatley Harbour from the Ontario Sport Fish Contaminants Monitoring Program's central basin sampling area to allow more effective monitoring in the Area of Concern</li></ul>	<ul style="list-style-type: none"><li>▪ No further action required</li></ul>



## FOR MORE INFORMATION

Environment Canada:

[www.ec.gc.ca/raps-pas](http://www.ec.gc.ca/raps-pas)

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