

2007

TOWARD SAFE HARBOURS

Report Card

SUPPORTING DOCUMENT



BAY AREA RESTORATION COUNCIL



ECOLOGY • INDUSTRY • RECREATION

www.hamiltonharbour.ca

ACKNOWLEDGEMENTS

BARC gratefully acknowledges TD Friends of the Environment Foundation for their generous support in producing the *2007 Toward Safe Harbours Report Card*.

We recognize the dedication of the volunteers who comprise the BARC Monitoring Committee:

Andrew Sebestyen (chair)	<i>Stelco Hamilton and BARC Director</i>
Vic Cairns	<i>Fisheries and Oceans Canada emeritus and BARC Director</i>
David Gale	<i>Conservation Halton</i>
Bruce Gall	<i>Citizen</i>
Michel Gingras	<i>Westway Terminal Canada Ltd.</i>
Martin Keller	<i>Citizen and BARC Vice President</i>
Sarodha Rajkumar	<i>Dofasco</i>
Roland Weiler	<i>Citizen</i>
John Hall (resource)	<i>Hamilton Harbour RAP Office</i>
Kristin O'Connor (resource)	<i>Hamilton Harbour RAP Office</i>
Jennifer Parkin (writer)	<i>BARC Projects Coordinator</i>

BARC thanks the RAP experts who met to discuss the grades and forecasts for the report card and also those who submitted comments.

BAY AREA RESTORATION COUNCIL



ECOLOGY · INDUSTRY · RECREATION

BAY AREA RESTORATION COUNCIL

The Bay Area Restoration Council (BARC) is at the centre of community efforts to restore and protect the ecosystem health of Hamilton Harbour and its watershed. A not-for-profit group incorporated in 1991, BARC was established to promote, assess and monitor the Hamilton Harbour Remedial Action Plan (RAP). Its members represent organizations from the private, public, and not-for-profit sectors as well as citizens from the community.

REMEDIAL ACTION PLAN

In the 1980s, Hamilton Harbour was identified as an Area of Concern by the International Joint Commission. Industrial activity and residential sewage had polluted the water and bottom sediments, fish and wildlife were stressed, and most marshes had been filled in – the ecosystem was severely degraded. To address these issues, the Hamilton Harbour Remedial Action Plan (RAP) was developed by 1992. The RAP identifies: what environmental problems affect the harbour, how these problems can be resolved, who is responsible for implementing solutions, and when this should happen. The strength of the Hamilton Harbour RAP is its stakeholder approach in reaching consensus-based decisions. The stakeholders are targeting to complete the RAP by 2015.

HAMILTON HARBOUR

Hamilton Harbour (also known as Burlington Bay) is one of the largest and busiest commercial ports in the Great Lakes. It is also the largest naturally protected harbour on Western Lake Ontario and is separated from the lake by a sandbar, with the Burlington ship canal as the only access point. Some 46 percent of the harbour's 45 kilometre shoreline is composed of industrial uses; 10 percent is residential, and the remaining 44 percent is private, institutional or public open space. The open water of the harbour is approximately 2,150 hectares, and its 49,400 hectare watershed is fed by the Grindstone, Spencer, and Red Hill Creeks as well as several smaller urban creeks. The City of Hamilton as well as parts of the City of Burlington and the Township of Puslinch (totaling 650,000 people), are located within the watershed.

BACKGROUND

In 1987, Hamilton Harbour was declared an 'Area of Concern' on the Great Lakes. Contaminated sediment, the presence of toxic substances, degraded fish and wildlife populations, beach closures, and excess algae were among the reasons this area was identified as requiring a special clean up effort. There are 42 other locations on the Great Lakes with the same designation.

The Area of Concern designation is based on Annex 2 of a joint Canada-U.S. treaty called the Great Lakes Water Quality Agreement (GLWQA). It identifies 14 Beneficial Use Impairments (BUIs) that are indicators of degraded ecosystem health. The delisting objectives of the Hamilton Harbour Remedial Action Plan (RAP) describe the environmental conditions necessary to declare the impairments restored and the harbour delisted.

INTRODUCTION

To monitor and assess the progress of the Hamilton Harbour RAP, the Bay Area Restoration Council (BARC) has produced the *Toward Safe Harbours* report annually since 1994. This report is produced by a group of volunteers and technical assistants who form the BARC Monitoring Committee. The reports are written for the scientists and decision-makers of Hamilton Harbour, as well as the general public.

In 2002 the focus of the reports shifted from evaluating past remedial actions to determining what future actions are necessary for the Harbour to be restored. The 2003 report outlined a work plan and the subsequent reports of 2004, 2005, and 2006 each consider a different theme of the International Joint Commission's 14 BUIs and the delisting objectives associated with the Hamilton Harbour RAP.

The 2007 *Toward Safe Harbours Report Card* is an update of the report card produced in 2002. The same 'Category' and 'Desired Outcomes' are used, but the 'Progress to Date' and 'Threats and Future Actions Needed' sections have been updated. As well, the term 'Trend' is changed to 'Forecast' to reflect the Monitoring Committee's view of whether the work toward the desired outcome is moving toward delisting (up), or away from delisting (down), or staying even.

The letter grades are represented as follows:

- A Excellent
- B Good
- C Adequate
- D Barely Passing
- F Failure

To link with the 2002 report, a stop-light colour system is used for the grades. If the 2007 grade is improved from 2002, the letter is shown in green; if it is unchanged, it is shown in yellow; and if it is worse, it is shown in red.

The purpose of this document is to supplement and support the information presented in the report card. It also outlines the methodology for the grading process and the rationale behind the grades and forecasts. It is intended for those who want more information than can be accommodated in the published report card format. Additional bullet points are marked with a 'dot' bullet point (•); the points included in the report card are marked with a 'diamond' bullet point (◆), although they may be more detailed in this document.

METHODOLOGY

To prepare for the grading and forecasting process, the 'Progress to Date' and 'Threats and Future Actions Needed' sections were updated by a BARC staff person. A draft was circulated to a group of RAP and technical experts for their review. At an independently facilitated meeting of this group, discussion led to a consensus grade and forecast for each Desired Outcome.

The Monitoring Committee also completed the consensus grading and forecasting process (without knowing the decisions of the RAP and technical experts). The two sets of consensus grades and forecasts were then compared and any discrepancies discussed and resolved by the Committee. In some cases, additional information from the RAP experts and others was required to determine the final grade and/or forecast.

CONCLUSION

The 2007 *Toward Safe Harbours Report Card* illustrates the significant progress achieved in many areas of the Remedial Action Plan since the release of the 2002 report card. All but one of the Desired Outcomes received the same or an improved grade and three-quarters of the forecasts are in the upward direction with the remainder showing an even forecast. We acknowledge and recognize the great and continuing progress of the RAP stakeholders and the community toward delisting. However, achieving the delisting criteria will require a level of on-going effort that is at least equal to, if not greater than the work that has brought us this far. Delisting by 2015 is an ambitious but attainable target.

WATER QUALITY AND BACTERIAL CONTAMINATION

Desired Outcome: Healthy harbour water quality

Both the RAP experts and the Monitoring Committee felt that this desired outcome had improved since the 2002 report and a C+ grade was assigned. The upward forecast reflects the significant commitments in place to improve wastewater treatment and to control combined sewer overflows into the harbour and Cootes Paradise.

Progress to Date 2002-2006

- Water clarity is substantially improved and generally meets the initial water quality target of 2 metres.
- A model to assist in determining management options for the sources of phosphorus in Cootes Paradise is nearing completion.
- ◆ Although monitoring shows that levels of nutrients such as phosphorus are declining in the harbour, nutrient loads from sewers, wastewater treatment plants (WWTPs) and the watershed continue to result in floating mats of algae in Cootes Paradise and the harbour, including toxic blue-green algae blooms in 2004 and 2006.
- ◆ Ongoing construction of Combined Sewer Overflow tanks, implementation of a Wastewater Master Plan and securing \$75 million for infrastructure upgrades mean continued improvement to Hamilton's wastewater treatment systems.
- ◆ Effluent from the Skyway Wastewater Treatment Plant began to regularly meet final RAP targets in 2004.

Threats and Future Actions Needed

- Toxic blue-green algae blooms are becoming more common.
- Need studies on the possible impacts of climate change on storm intensities and Lake Ontario water levels.
- Studies on the potential impacts of atmospheric deposition of nutrients and contaminants in the watershed and harbour are needed.
- Continued monitoring is needed to determine if oxygen levels in the deep water of the Harbour are improving.
- Monitoring and assessment is needed to determine if nitrites (and nitrates) are affecting fish and wildlife in the Harbour.
- ◆ Expected population growth will require even more wastewater treatment capacity, and increase the volume of urban runoff.
- ◆ Additional federal and provincial funding needed to ensure Woodward Wastewater Treatment Plant meets RAP targets by 2015.

Desired Outcome: Beaches open at west end of harbour

Between 2002 and 2006, Bayfront Park Beach was closed an average of 86% of the swimming season and Pier 4 Beach was closed an average of 57%, resulting in a lowering of the grade from C to D.

However, due to the investment of significant resources to identify birds as the most likely source of the *E. coli* at the beaches and the preliminary success of a pilot project to exclude the birds at the Pier 4 Beach, the forecast is upward. By better understanding the source of the coliforms, a realistic and feasible solution is closer.

Public education is a key component of this desired outcome both in terms of not feeding the birds and recognizing that the water quality at the beaches is not necessarily reflective of the water quality in the rest of the Harbour.

As more information about the *E. coli* and its sources is determined, the overall suitability of *E. coli* as an indicator may need to be examined. In Hamilton, the Provincial Water Quality Objective of 100 organisms per 100 millilitres (ml) of water is used to determine if the beach is safe for swimming. The federal guideline is 200 organisms per 100 ml of water and in some jurisdictions the guideline is as high as 400 organisms per 100 ml of water.

Progress to Date 2002-2006

- Construction of several CSO tanks has reduced the amount of untreated stormwater and wastewater entering Cootes Paradise and the harbour.
- ◆ Bayfront Park Beach closed an average of 86% of the swimming season; Pier 4 Beach closed an average of 57%.
- ◆ Beach closures are mainly due to bacterial contamination from birds, particularly Canada geese; blue-green algae blooms also caused closures.
- ◆ Starting in 2005, a bird exclusion experiment at Pier 4 Beach reduced *E. coli* counts enough to permit swimming.

Threats and Future Actions Needed

- ◆ Education campaign needed to discourage the public from feeding birds and other wildlife.
- ◆ More programs needed to exclude the birds at Pier 4 Beach and Bayfront Park Beach.
- ◆ Research methods aimed at reducing blue-green algae blooms needed.

TOXIC SUBSTANCES AND SEDIMENT REMEDIATION

Desired Outcome: Reduce and eliminate discharges and spills

Both the RAP experts and the Monitoring Committee agreed that the number of spills and discharges has apparently decreased. There have been fewer spills reported in the media. An improved grade of B and an upward trend were assigned.

Progress to Date 2002-2006

- The Ontario Ministry of the Environment (OMOE) continues to collect and report data on spills in Hamilton Harbour.
- Skyway Wastewater Treatment Plant reduced the effect of chlorine toxicity by switching to ultraviolet disinfection in 2003.
- ◆ BARC's Yellow Fish Road™ program encourages proper disposal of household hazardous waste.
 - 200,000 bags of hazardous waste were diverted from the landfill at the City of Hamilton's recycling centres in 2006; this material may have otherwise been disposed of improperly.
- ◆ Sewer-use bylaws in Halton and Hamilton updated in 2005; monitoring and enforcement improved.
- ◆ Remediation at former landfill sites (Kay Drage Park, Rennie Street and Brampton Street) and proposed shoreline remediation of Chedoke Creek will reduce leachate seeps.

Threats and Future Actions Needed

- ◆ Studies needed to determine the impact of hormone disrupters and pharmaceutical products on fish and wildlife populations in the harbour and Cootes Paradise.

Desired Outcome: Clean up contaminated sediments in harbour

The plans to remediate the contaminated sediment of Randle Reef have moved forward slowly in the time since the last report card. With the engineering design and environmental assessment processes underway, but not completed, the same grade of D was assigned. The forecast is in the upward direction but it is felt to be heavily dependant on securing the necessary funding; the funding agreements are what will allow the project to move into the construction phases.

Progress to Date 2002-2006

- The Confined Disposal Facility at Pier 26 was capped reducing wildlife exposure to toxic sediments.
- Identification of contaminated sediments in Cootes Paradise, particularly the old Desjardin Canal is nearing completion.
- A flood connection between Spencer Creek and the old Desjardin Canal was recreated adding fresh, clean sediment to the canal.
- ◆ Engineering design underway for the Engineered Containment Facility to remediate contaminated sediment at Randle Reef.
- ◆ Studies of contaminated sediments in progress for Windermere Arm and Ottawa Street slip.
- ◆ Researchers are examining data for any additional contaminated sediment sites in the harbour.

Threats and Future Actions Needed

- Remediation of the contaminated sediments identified in the Cootes Paradise sediment study.
- ◆ Secure funding needed to ensure the Randle Reef Sediment Remediation project is completed by 2015.
- ◆ The Hamilton Port Authority needs to develop a management plan for long-term disposal of dredged material before existing Confined Disposal Facilities are full.
- ◆ Completion and implementation of a management strategy for the Dofasco boat slip needed; planned completion of the management strategy by the end of 2008, and implementation initiated by 2009.

RESEARCH AND MONITORING

Desired Outcome: Monitor harbour environmental conditions

This desired outcome was given an improved grade of B+ and an upward forecast. The *Toward Safe Harbours* reports prepared by BARC in 2004, 2005, and 2006 concluded that in most areas of the Remedial Action Plan, the monitoring and research is in place to provide the information necessary to support delisting. In the areas where there are gaps, there should be sufficient time before the target delisting date of 2015 to address them.

Progress to Date 2002-2006

- Eight separate research projects are being used to assess the clean up of the sediment at Randle Reef; the data from these studies will be beneficial in assessing other areas of the RAP (e.g. benthic communities, fish and wildlife health etc.).
- ◆ Federal and provincial agencies, the Royal Botanical Gardens, and the municipalities maintained or increased their environmental monitoring and research programs.
- ◆ BARC's *Toward Safe Harbours* reports in 2004, 2005, and 2006 reviewed monitoring programs and made recommendations to address data gaps.
- ◆ An annual Monitoring Catalogue was initiated in 2004.
- ◆ In 2004, a RAP report on contaminant loadings and concentrations to the harbour was released; "1996-2002 Contaminant Loadings and Concentrations to Hamilton Harbour", published by the RAP Technical Team, updated the report from 1998.
- ◆ Annual workshops report on substantial amounts of ongoing monitoring and research in the harbour and Cootes Paradise by Environment Canada, Ontario Ministry of the Environment, Fisheries and Oceans Canada, Royal Botanical Gardens and others.

Threats and Future Actions Needed

- ◆ Current monitoring programs in all areas of the RAP need to continue and address the gaps identified in the *Toward Safe Harbours* reports.
- ◆ Funding for long-term trend monitoring and analysis not assured
- ◆ The potential loss of corporate research memory due to retirements.

Desired Outcome: Monitor environmental conditions in the watershed

As with the harbour monitoring programs, the progress in watershed programs since the last report card resulted in an improved grade of C+ and an upward forecast.

Progress to Date 2002-2006

- Conservation Halton and the Hamilton Conservation Authority co-host an annual Research and Monitoring Workshop for the watershed.
- In 2002, the Hamilton Conservation Authority re-started its creek monitoring program on the Spencer and Red Hill Creeks, focusing on identifying long-term trends.
- Conservation Halton has initiated a long term environmental monitoring plan.
- Local conservation authorities partner with the Ontario Ministry of the Environment to monitor groundwater through the Provincial Groundwater Monitoring Network; surface water is monitored in the same manner through the Provincial Water Quality Monitoring Network.
- In 2003, the Hamilton Naturalists' Club, City of Hamilton, Hamilton Conservation Authority, Conservation Halton and other partners completed the Nature Counts Inventory of natural areas within the watershed; data will contribute to our understanding of population trends of wildlife and plants over time.
- The provincial Source Water Protection program includes the development of a watershed-specific report on the quality and quantity of surface water and groundwater.
- ◆ Federal and provincial agencies, the Royal Botanical Gardens, and the municipalities conduct extensive monitoring of numerous environmental components throughout the watershed.
- ◆ Annual workshop reports on monitoring and research in the watershed.
- ◆ Knowledge and understanding of watershed functions greatly enhanced through Geographic Information Systems.

Threats and Future Actions Needed

- Studies are needed on the impacts of climate change on storm intensities and Lake Ontario water levels for mitigation and adaptation efforts.
- ◆ Watershed-based monitoring programs should seek additional opportunities to coordinate with RAP needs and goals.
- ◆ See also three points under 'Monitor harbour environmental conditions'.

Desired Outcome: Investigate new and emerging remediation technologies and techniques

An improved grade of C+ was given to this desired outcome, primarily due to the work at the wastewater treatment plants in improving the effluent through tertiary processes. The forecast is even, indicating that there is not likely to be any significant progress or setbacks in this area.

Progress to Date 2002-2006

- The City of Hamilton opened an Ontario Water Operators Training Centre in 2006.
- The Great Lakes Sustainability Fund hosts biennial workshops to promote new and emerging technologies.
- ◆ In 2006, Hamilton initiated pilot tertiary wastewater treatment study at Woodward Wastewater Treatment Plant using membrane technology.
- ◆ Numerous techniques assessed to contain and manage contaminated sediment for the Randle Reef Remediation Project.
- ◆ Research into new ways to remediate bacterial contamination at beaches.
- ◆ New operating procedures implemented at the Skyway Wastewater Treatment Plant assisted with the facility regularly meeting the final RAP water quality targets.

Threats and Future Actions Needed

- ◆ Ongoing review of best management practices and emerging technologies should continue in all areas of the RAP including fish and wildlife restoration, non-point source pollution, wastewater treatment, and sediment remediation.

FISH AND WILDLIFE

Desired Outcome: Restore fish and wildlife habitat and populations

Significant successes have been achieved in this category and desired outcome. Since 2002, those projects have continued. As such, the same grade (B+) was assigned. The upward forecast reflects the continuation of the successful initiatives as well as future proposed projects by various Hamilton Harbour and watershed stakeholders.

Progress to Date 2002-2006

- The Head-of-the-Lake Trust, an offshoot of the Hamilton Naturalists' Club, is proposing a nature sanctuary in Hamilton's north end; planned activities include: tree and wildflower planting, bird and bat boxes, a pathway and interpretive signage.
- In its rural Official Plan, the City of Hamilton incorporated the "How Much Habitat is Enough" guidelines established by Environment Canada.
- Seven kilometers of Red Hill Creek realigned, increasing fish habitat and removing migration barriers.
- ◆ Habitat restoration projects show continued success in various locations including Grindstone Creek and the Cootes Paradise marshes; planning initiated for Windermere Basin, mouth of Indian Creek, Sherman Inlet, and Fisherman's Pier.
- ◆ Improvements in numbers and diversity of native fish species observed in the harbour by Fisheries and Oceans Canada and Royal Botanical Gardens; in 2006, the Ministry of Natural Resources completed a draft Fisheries Management Plan for the harbour and its watershed.
- ◆ The City of Hamilton, Conservation Halton, Hamilton Conservation Authority, and the Hamilton-Halton Watershed Stewardship Program are developing watershed habitat targets.

Threats and Future Actions Needed

- Ongoing management of ring-billed gulls, Canada geese, and other species as needed.
- Explore the potential to exceed original habitat targets at Windermere Basin, Fisherman's Pier, Red Hill Creek estuary, and Chedoke Creek estuary.
- Potential effects of climate change on fish and wildlife need to be investigated.
- Degraded water quality in most of the marsh areas continues to limit habitat suitability.
- ◆ Continued introductions of invasive species have unknown impacts on fish and wildlife populations and restoration efforts.
- ◆ Urbanization of the watershed, particularly in the Ancaster Creek and Borers Creek watersheds, threatens fish and wildlife habitat.
- ◆ Expand wildlife targets to include wildlife other than colonial nesting birds as a measure of environmental health and progress toward delisting.

Desired Outcome: Reduce contaminant levels in fish and wildlife

Contaminant levels in fish and wildlife declined rapidly until 1989. The levels have since stabilized. The same grade as 2002 (C+) and an even forecast reflect this stabilization. As the remaining local sources are remediated, the fish and wildlife populations should reflect the decreasing exposure.

Progress to Date 2002-2006

- From 2001 to 2005, Fisheries and Oceans Canada developed a monitoring protocol for measuring trends in contaminant levels in resident fish in Hamilton Harbour; the fish contaminant surveillance program was transferred to Environment Canada in 2006.
- Environment Canada reported that endocrine disrupting compounds were found in the sediment and benthic organisms in Cootes Paradise; Environment Canada also demonstrated estrogenic responses in fish exposed to ambient water in Hamilton Harbour.
- Eight separate research projects are being used to assess the clean up of the sediment at Randle Reef; the data from these studies will be beneficial in assessing other areas of the RAP (e.g. benthic communities, fish and wildlife health etc.)
- Canadian Wildlife Service annually monitors contaminant levels in herring gull eggs; in 2002, they assessed the health of snapping turtles.
- ♦ Levels of Dieldrin, Heptachlor Epoxide, and DDE declined in herring gull eggs (2001-2005), levels of PCBs, Hexachlorobenzene, and Mirex show non-significant downward trends; fish consumption advisories have not changed.
- ♦ Capping of the Confined Disposal Facility at Pier 26 reduced wildlife exposure to toxic sediments.
- ♦ From 2001 to 2005, Fisheries and Oceans Canada developed a monitoring protocol to measure trends in contaminant levels in fish in Hamilton Harbour; the fish contaminant program was transferred to Environment Canada in 2006.

Threats and Future Actions Needed

- It is necessary to determine if endocrine disrupting compounds are adversely affecting fish and wildlife populations in Cootes Paradise and Hamilton Harbour.
- ♦ Monitoring contaminant levels in edible portions of wildlife is needed.
- ♦ Monitoring the status of fish tumours is incomplete.

WATERSHED MANAGEMENT (URBANIZATION AND LAND MANAGEMENT)

Desired Outcome: Set firm boundaries to discourage urban sprawl; preserve natural spaces and rural areas

As the various restoration activities for the harbour have successfully moved forward, the focus of BARC and other agencies has taken on more of a watershed focus. Healthy watersheds are critical to maintaining the improvements made to the harbour proper. Watershed Management (Urbanization and Land Management) is becoming an increasingly important component of the Remedial Action Plan.

This desired outcome created the most discussion amongst the RAP experts and the Monitoring Committee. It is important to note that the desired outcome consists of two parts, a firm urban boundary and preserving natural and rural areas.

The grade and forecast for this desired outcome has been subdivided by municipality. Hamilton was awarded an improved grade of C+ and Burlington was given the same grade of B. The forecast for both municipalities is even.

The City of Hamilton's improved grade was due in part to their work with the Growth Related Integrated Development Strategy (GRIDS) process. However, the Ministry of Municipal Affairs and Housing has identified a number of concerns with the Rural Official Plan particularly with regard to the currently identified boundaries. These concerns suggest that there may be changes to Hamilton's urban boundary in the future as a result of the comments from the province.

The same grade from 2002 was applied to the City of Burlington. Their firm boundary is in place in part due to provincial legislation such as the Greenbelt and the Niagara Escarpment Plan and they are not anticipating any recommendations from the province on their plan.

The even forecast for both municipalities reflects the continuing pressure for new development and the ongoing vigilance that is needed to curb further urban sprawl and preserve natural and rural areas.

Progress to Date 2002-2006

- In May 2006, the City of Hamilton's Growth Related Integrated Development Strategy (GRIDS) was adopted by Council:
 - Two-thirds of the future residential growth will occur within the existing urban area.
 - The various land uses have been integrated with watershed considerations particularly in areas such as stormwater management.
- The 2003 BARC workshop was devoted to smart growth topics.
- ◆ Provincial Greenbelt legislation and the Official Plans of Halton, Burlington, and Hamilton have established firm urban boundaries.
- ◆ In 2005, Hamilton completed its Growth Related Integrated Development Strategy (GRIDS) planning process to guide future growth of the city.
- ◆ In 2006, the Hamilton-Halton Home Builders' Association joined the Bay Area Implementation Team.

Threats and Future Actions Needed

- Efforts continue to engage the development industry in the RAP process.
- ♦ Population growth will exert pressure to expand urban boundaries and transportation networks; increased population will also result in increased water use, more hard surfaces in the watershed, and increased loadings to the storm sewers and wastewater treatment plants.
- ♦ Implementation of GRIDS through various Master Plans and Official Plan review processes should continue.

Desired Outcome: Control erosion; implement storm water management

As with the other desired outcomes in the Watershed Management category, controlling erosion and stormwater is critical to maintaining the water quality and habitat successes achieved to date. The Cootes Paradise Marshes in particular are extremely susceptible to large inputs of sediment that occur during storm events.

The grade and forecast for this desired outcome has been subdivided in an Urban and Rural component. The Urban component received an improved grade of C+ and an upward forecast. The Rural component received the same grade of B and an even forecast.

Progress to Date 2002-2006

- Loadings report published by the RAP Office quantifies loadings to the harbour from the creeks and watershed.
- Conservation Authorities updated sediment and erosion control guidelines.
- Seven kilometers of Red Hill Creek have been realigned using natural channel design techniques that will reduce sediment loading to Windermere Basin.
- ♦ Erosion reduced in Grindstone Creek with a natural channel constructed through Hidden Valley Park in Burlington.
- ♦ City of Hamilton preparing a stormwater master plan; stormwater management facilities in the watershed meet most stringent Ontario Ministry of the Environment guidelines.
- ♦ Sediment and erosion control guidelines updated by conservation authorities.

Threats and Future Actions Needed

- Soil erosion due to subdivision construction near Ancaster Creek is increasing turbidity in Cootes Paradise; sediment loading to Cootes Paradise marsh seems to be increasing.
- Trend in increasing extreme events linked to climate change has potential to confound overall restoration efforts.
- ♦ Better sediment control is required, especially in the Cootes Paradise watershed.

Desired Outcome: Complete and implement watershed plans; encourage water conservation

This desired outcome has achieved the most success of the three desired outcomes in the Watershed Management category. An improved grade of B+ was assigned in part because of the water metering program. The forecast is in an upward direction due an increase in focus on the watershed by BARC and other stakeholders and an increase public awareness on the need for water conservation.

Progress to Date 2002-2006

- ◆ By 2006, approximately 90% of the universal water metering program was completed in Hamilton resulting in decreased water use; rain barrels and other water conservation devices readily available.
- ◆ Watershed plan for the North Shore Watershed of Hamilton Harbour released in 2006.
- ◆ The provincial Source Water Protection program is built on locally-driven, watershed-based source protection plans that include a water conservation component.

Threats and Future Actions Needed

- Increased population growth forecast for the municipalities will result in substantially more water use and increased loading of nutrients and other substances to the wastewater treatment plants and additional use of fertilizers and pesticides on urban properties.
- ◆ Watershed plans and strategies should be reviewed and assessed every five years.
- ◆ Implementation of subwatershed planning for Spencer Creek.

EDUCATION AND PUBLIC INFORMATION

Desired Outcome: Increase the public's understanding and appreciation of the harbour and watershed and its effect on quality of life

With significant support from a variety of funding and program partners, the Bay Area Restoration Council has greatly increased its reach into the community. The increased presence of BARC and other stakeholders has directly impacted this desired outcome in a positive manner. The grade was increased to a B and the forecast is upwards.

Progress to Date 2002-2006

- Road signs installed throughout the watershed to inform the public what creeks and watersheds they interact with.
- A number of planning initiatives by Hamilton and Burlington offered opportunities for the public to get engaged.
- BARC's pilot Adopt-a-Creek program reaches a new segment of the community and highlights the individual's role toward overall restoration efforts.
- ◆ Local media coverage of Hamilton Harbour issues increased by 43% from 2002.
- ◆ Royal Botanical Gardens offers education on marsh restoration and sport fish consumption; in 2004, the Canada Marine Discovery Centre opened on Pier 8.
 - The Ontario Ministry of the Environment partnered with the Royal Botanical Gardens on a sport fish consumption outreach program in 2003 and 2004; consumption guidelines were presented in 19 different languages.
 - Royal Botanical Gardens holds several weekend open houses at the Fishway to demonstrate the relationships between the harbour, Cootes Paradise Marsh and the watersheds.
- ◆ BARC actively promotes the revitalization of Hamilton Harbour and its watershed through displays, a website, public meetings, presentations, school programs, community planting events, and quarterly newsletter; in 2003 BARC won a province-wide award for public education.

Threats and Future Actions Needed

- ◆ Continued education for people who fish that some species of sport fish exceed consumption guidelines for some contaminants.
- ◆ Continued implementation of a Harbour communications plan by BARC.
- ◆ Sustained funding is needed to continue environmental and outdoor education programs.

Desired Outcome: Educate the public to reduce the use of harmful products

As with the previous desired outcome, BARC and its partners have successfully increased and expanded its outreach and education programs. Expanding the Yellow Fish Road™ Program to further spread the “only rain down the drain” message and piloting the Adopt-a-Creek program contributed to a grade of B and an upward forecast.

Progress to Date 2002-2006

- ◆ Led by BARC and Conservation Halton, the Yellow Fish Road™ Storm Drain Marking Program returned to Hamilton and Halton in 2005.
- ◆ Green Venture and the City of Hamilton launched ‘Naturally Hamilton’ to help residents reduce or eliminate pesticide use on their lawns and gardens.
- ◆ Burlington initiated a community education program to reduce lawn and garden pesticide use.

Threats and Future Actions Needed

- ◆ Funding is required for sustaining and expanding public education programs.

Desired Outcome: Educate watershed residents regarding land stewardship

With the shift in focus to the watershed, this desired outcome will likely see more improvement moving forward. It received the same grade (B) but an upward forecast. Activities such as the Hamilton-Halton Watershed Stewardship Program and others will become increasingly important as the initiatives of the RAP move forward.

Progress to Date 2002-2006

- ◆ Hamilton Conservation Authority is preparing Stewardship Action Plans for three subwatersheds (Ancaster, Chedoke and Tiffany Creeks); plans will focus on activities such as education and awareness, habitat restoration, and mitigation efforts.
- ◆ BARC’s Adopt-a-Creek program involves community groups and high school students to clean up urban creeks.
- ◆ Hamilton-Halton Watershed Stewardship Program protects more than 4,400 hectares of land and 115 km of stream through stewardship agreements with landowners.
- ◆ The Hamilton-Wentworth Stewardship Council promotes conservation and responsible use of land.

Threats and Future Actions Needed

- ◆ Sustained funding for Hamilton-Halton Watershed Stewardship Program and similar initiatives is needed.

PUBLIC ACCESS AND AESTHETICS

Desired Outcome: Protect and enhance views and vistas

Views and vistas are an inherently important part of the Remedial Action Plan. However, what constitutes a desirable view or vista can be very subjective. An improved grade of C and an upward forecast was given for this desired outcome. The addition of features such as the Canada Marine Discovery Centre have improved the view of the harbour from both land and water vantage points. In addition, naturalization of the lands adjacent to Windermere Basin will substantially improve the view of this previously degraded area.

In the discussion of this section, it was suggested that the desired outcome be changed to include studying of and planning for views and vistas as well as the protection and enhancement of them to address some of the ambiguities with this desired outcome.

Progress to Date 2002-2006

- Cootes Paradise/Grindstone Creek Estuary to Escarpment Natural Lands Master Plan will guide park use and development in this area; views and vistas will be an important component.
- Improvements in Grindstone Creek marsh habitat have improved the natural views and vistas.
- Watershed Planning Network prepared Terms of Reference for a viewshed study.
- ◆ The City of Hamilton's Setting Sail plan identified viewshed requirements.
- ◆ Views at Pier 4 and Pier 8 improved with addition of the Canada Marine Discovery Center.
- ◆ Views at Windermere Basin enhanced by re-naturalization.

Threats and Future Actions Needed

- Secure funding to proceed with viewshed study.
- ◆ Balance the need for views and vistas with the need for intensification of urban residential development.
- ◆ Aesthetic concerns due to algal blooms.

Desired Outcome: Increase public access to 35% of harbour shoreline (formerly 25%)

The improved grade of A represents the highest mark awarded in the 2007 report card. The level of success achieved with increasing the public's access to the water's edge has been crucial to sustaining the community momentum behind the other areas of the RAP. The upward forecast reflects exceeding the original target and the setting of a higher target.

Progress to Date 2002-2006

- Waterfront Scoops ice cream shop open on Pier 8.
- The HMCS Haida was moved to Hamilton Harbour in 2004.
- ◆ By 2006, 28% of the shoreline was accessible.
- ◆ Additional opportunities for access include: Hamiltonian tour boat (2003); Hamilton Harbour Queen cruise boat (2005); Hamilton Waterfront Trolley (2006); Williams Coffee Pub (2006).
- ◆ City of Hamilton West Harbour Recreation Master Plan and other planning processes ongoing; Trails Master Plan complete.
- ◆ Increased public access with the extension of Hamilton Waterfront Trail from Pier 4 to Pier 8, a new trail at Windermere Basin, and an accessible fishing platform and trail extension at the Canada Centre for Inland Waters in 2006.

Threats and Future Actions Needed

- ◆ Continue creating additional access at the east end of the Harbour.
- ◆ Increasing access to meet the remaining 10% of the updated target.