



The Great Lakes Marine Debris Action Plan: 2018 Action Summary Report

NOAA Marine Debris Program
National Oceanic and Atmospheric Administration
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The Great Lakes Land-based Marine Debris Action Plan

2018 Action Summary Report



Information collected and summarized by the National Oceanic and Atmospheric Administration Marine Debris Program (NOAA MDP) on behalf of the Great Lakes Marine Debris Community.

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Executive Summary

The following document details progress on the Great Lakes Land-based Marine Debris Action Plan. This action plan consists of 53 actions that are to be completed within five years (2014-2019). As indicated in the monitoring of the plan, there is to be an Action Summary Report completed each calendar year. This Action Summary Report highlights progress made in 2018.

To date, contributors to the Great Lakes Land-based Marine Debris Action Plan began work on 26 actions and successfully completed 22 actions. Four actions will be started in the future and one was removed during review.

In 2018, the following five actions were completed:

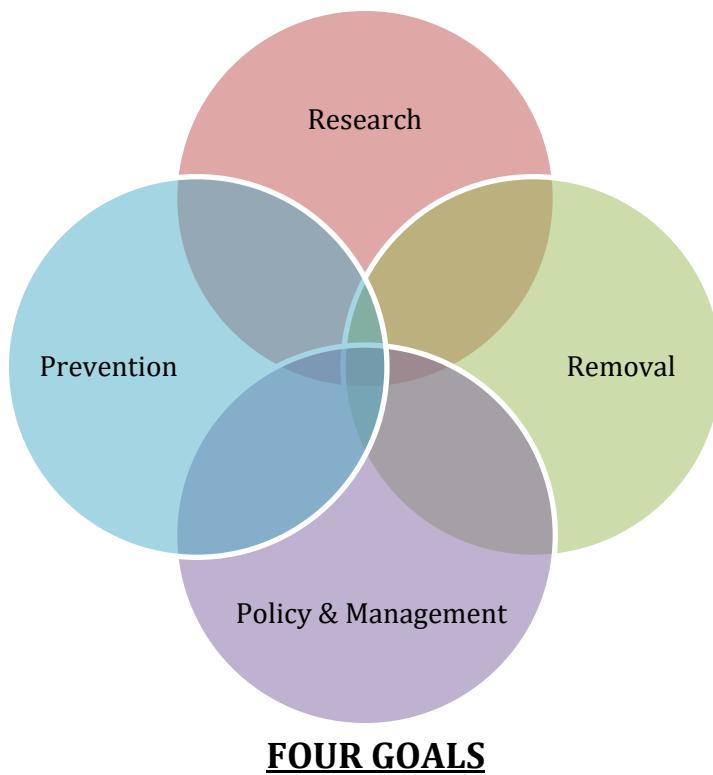
- 1) Review developed summary document of existing policies and best management practices and identify potential target areas for improvement (2.1.2).
- 2) Share the developed summary with policy makers in the Great Lakes region and make recommendations for policy improvements (2.1.3).
- 3) Create new or adapt existing educational materials to fill gaps (3.1.3).
- 4) Organize an annual Boat Float in Lake Erie (3.4.2).
- 5) Identify centralized location that will direct people to sources of volunteer coastal cleanup data (4.1.2).

Semi-annual check-ins for the action plan were held via webinar on May 22 and November 14, 2018. During the webinars, participants heard and shared a summary of action progress to date. Specifically, summary information was presented for each of the four goals in the action plan, completed actions were highlighted in presentations, and other high-level updates were given from action coordinators. The webinars ended with an open discussion of feedback on reporting, communications, and challenges. During the November webinar, Environment and Climate Change Canada presented on their current and future activities to address plastic marine debris in Canada.

Action Plan Status

Vision: The Great Lakes, its coasts, people, and wildlife are free from the impacts of marine debris.

Mission: The Great Lakes will be free from marine debris through an increased understanding of the problem, preventative actions, reductions in impacts, and collaborative efforts of diverse groups.

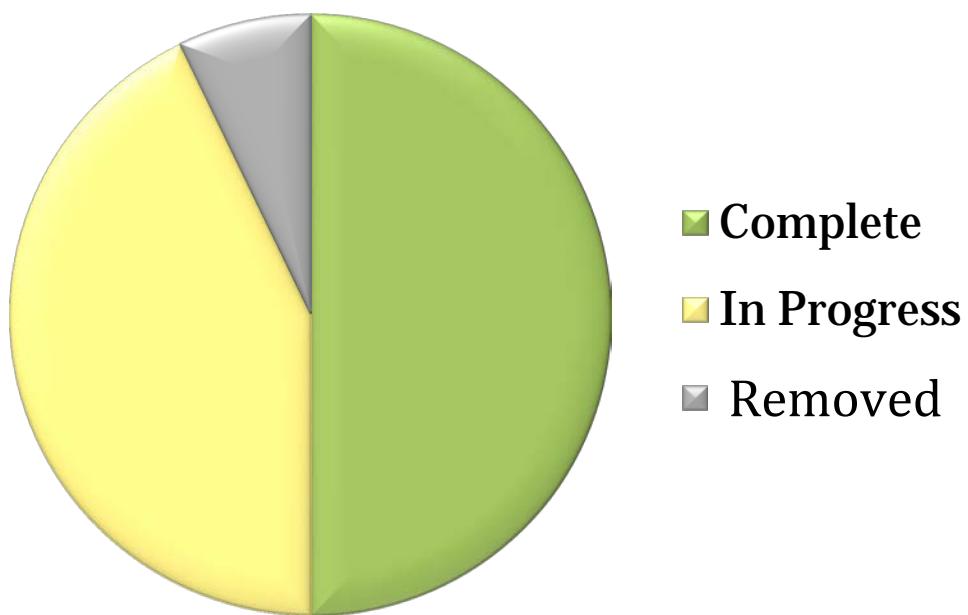


Goal 1: Knowledge gaps are identified and filled through research and monitoring of land-based marine debris.

Action Status:

7 Complete
6 In-Progress
1 Removed

Goal 1 Action Progress



GOAL HIGHLIGHT

In Progress: *Identify relevant management stakeholders and establish communication channels (Action 1.4.1).*

Environment and Climate Change Canada (ECCC) hosted a science symposium to identify research gaps related to the development of a Canadian science agenda on plastics in Ottawa, ON in November 2018. This event engaged domestic stakeholders, particularly intergovernmental departments and academia to determine domestic research gaps and prioritized those of high importance. Discussed were science and policy needs in four

themes: 1) monitoring plastics in the environment; 2) plastic impacts to wildlife; 3) product design; and 4) waste management of plastics. There was a panel discussion by experts from Carleton University, University of Toronto, National Research Council, and Polytechnique Montreal that summarized the state of research in each specific theme. Attendees then worked in small groups of 6-8 individuals to identify and prioritize current science gaps.

<u>Goal 1: Knowledge gaps are identified and filled through research and monitoring of land-based marine debris.</u>			
<i>Objective 1.1: By the end of 2016, develop a platform for long-term collaboration on Great Lakes marine debris research.</i>			
Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
1.1.1 Convene a small working group to discuss research community needs, timeline, scale, and intent for a future platform.	<p><u>Coordinator:</u> NOAA MDP</p> <p><u>Partners:</u> University of Waterloo, Clean Water Action</p> <p><u>Participants:</u> All research organizations</p>	Complete	NOAA MDP has finished the development of a regional web-platform for the Great Lakes marine debris community. Stakeholders submitted ideas/desires for the platform, and provided input on the prioritization of features. A contractor was hired and the Great Lakes Marine Debris Collaborative Portal site is available.
1.1.2. Once the needs analysis is complete, examine existing platforms to meet those needs.	Coordinator: NOAA MDP	Complete	NOAA MDP has finished the development of a regional web-platform for the Great Lakes marine debris community. NOAA MDP met with the developers and manager of NOAA DIVER (Data Integration Visualization Exploration and Reporting) and have concluded that this platform was a good fit based on desires/requirements of regional community that were identified in action 1.1.1. The Great Lakes Marine Debris Collaborative Portal site is now available.

<i>Objective 1.2: By 2016, convene researchers to foster partnerships and collaboration.</i>			
Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
1.2.1. Share current venue opportunities and identify invitees. Invitees should include those researchers who are currently involved in, or have an interest in, land-based marine debris research in the region.	<u>Coordinator:</u> Alliance for the Great Lakes <u>Partners:</u> SUNY Fredonia, NOAA MDP, University of Wisconsin – Superior	Complete	The Alliance was one of the partners for the first ever Great Lakes Day on August 20, 2016 coordinated by the eXXpedition. As a partner, they connected Inland Seas Education Association with participants, and as a result, Inland Seas had a lead vessel in the large sampling effort. In addition, the eXXpedition planners connected Inland Seas with an educational program through Toronto Brigantine Inc., which also participated in Great Lakes Day and used Inland Seas shipboard curriculum for microbeads.
1.2.2. Host a research panel or session at a regional conference.	<u>Coordinator:</u> University of Michigan <u>Partner:</u> University of Wisconsin – Superior	Complete	The International Association of Great Lakes Research (IAGLR) 2014 session was completed. See Goal Highlight in 2014 Summary Report for details. Researchers also gathered again at IAGLR in 2015, 2016, 2017, and 2018 for a session on marine debris.

<p>Objective 1.3: Over the next five years, create summary documents of existing research on land-based marine debris and identify key data gaps for the research community.</p>			
Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
1.3.1. Publish a synthesis paper on plastic marine debris research in the Great Lakes.	<u>Coordinator:</u> University of Waterloo	Complete	<p>The synthesis paper, entitled "Plastic debris in the Laurentian Great Lakes: A review", was published in the March 2015 issue of the Journal of Great Lakes Research. (doi:10.1016/j.jglr.2014.12.020)</p> <p>ECCC is planning to hire Dr. Chelsea Rochman at the University of Toronto to synthesize available research in order to provide a better understanding of the contamination, sources, and effects of plastic pollution on our Great Lakes. This will allow for the identification of outstanding science gaps and updated science priorities. In addition, she will explore the policy implications of the findings, to inform decision making on actions to reduce plastic pollution in the Great Lakes.</p>
1.3.2. Based on results of the synthesis paper, perform a gap analysis to identify research needs in the region.	<u>Coordinator:</u> NOAA MDP <u>Partners:</u> University of Waterloo, University of Western Ontario, University of Michigan, Loyola University, SUNY Fredonia, University of Wisconsin – Superior, Environment Canada	Complete	<p>The International Joint Commission (IJC) held a microplastics workshop in April 2016. At this workshop, research gaps were identified for this particular debris type. Additional analysis will be needed to identify gaps in other types of land-based marine debris. IJC produced a final workshop report (including prioritized research needs).</p>

<i>Objective 1.4: Through 2019, engage Great Lakes management communities to prioritize and foster implementation of relevant research topics.</i>			
Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
1.4.1. Identify relevant management stakeholders and establish communication channels.	<p><u>Coordinator:</u> Great Lakes Sea Grant Network</p> <p><u>Partners:</u> Great Lakes National Estuarine Research Reserves (NERRs), Alliance for the Great Lakes, Keep America Beautiful</p>	In Progress	<p>Ohio Sea Grant is participating in the Plastic Working Group (PWG) in Cleveland. Through the PWG, Ohio Sea Grant has broadened the stakeholders it has worked with on the issue of plastic debris and shared education ideas. Ohio Sea Grant has also coordinated a call with interested parties in the Great Lakes, including the Surfrider Foundation, Shedd Aquarium, NOAA Marine Debris Program, City of Cleveland Office of Sustainability, Ohio Clean Marina Program, and Pennsylvania Sea Grant, on the topic of the Surfrider Ocean Friendly Restaurant Program. A Surfrider chapter is being established in Cleveland and upon the chapter completion, Ohio Sea Grant will work with Surfrider to bring the Ocean Friendly Restaurants Program to Ohio and coordinate bringing it to the other Great Lake states as well.</p> <p>Environment and Climate Change Canada hosted a science symposium to identify research gaps related to the development of a Canadian science agenda on plastics. This event engaged domestic stakeholders, particularly intergovernmental departments and academia, to determine domestic research gaps and prioritize those of high importance.</p>

1.4.2. Through established communication channels, work with management stakeholders to develop a list of research questions that are of interest to the Great Lakes management community.	<p><u>Coordinator:</u> Great Lakes Sea Grant Network</p> <p><u>Partners:</u> NERRs, Alliance for the Great Lakes, Keep America Beautiful</p>	In Progress	Based on results from the single-use social marketing campaign work conducted in Cleveland, OH and further exploration into the needs of the community, it has been determined that more information is needed about the use of single-use plastic bags and the effectiveness of reminder strategies. Scott Hardy and Jill Bartolotta of Ohio Sea Grant will be conducting research through a grant from the NOAA Marine Debris Program to conduct a study to determine the effectiveness of several recommendations identified in the single-use plastic survey. Plastic bag usage at grocery stores and the reminder strategies to encourage reusable alternatives will be the focus for this study. A letter has been drafted and will be shared with grocery stores. Data collections is to begin at the end of November 2018, pending approval.
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<p>Objective 1.5: Within the next five years, the Great Lakes research community will address knowledge gaps on land-based marine debris by completing and publishing a minimum of two studies.</p>			
Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
1.5.1. Based on completed synthesis paper and gap analyses (Objective 1.3), develop a list of prioritized questions that need to be addressed and share it with the regional research community.	<u>Coordinator:</u> NOAA MDP <u>Partners:</u> Researchers, Alliance for the Great Lakes, Environment Canada, Inland Seas Education Association	Complete	<p>The IJC held a microplastics workshop in April 2016 where research gaps were identified for this particular debris type. Additional analysis will be needed to identify gaps in other types of land-based marine debris. IJC produced a final workshop report, including prioritized research needs.</p>
1.5.2. Identify funding sources for land-based marine debris research, both current and future.	<u>Coordinators:</u> University of Waterloo, University of Michigan <u>Partners:</u> Great Lakes Sea Grant Network, University of Wisconsin – Superior	In Progress	<p>No Report for 2017 or 2018 No new progress. May 2016 Information: Melissa Duhaime (University of Michigan), along with other colleagues, took part in Sea Grant training workshop on microplastics at the NOAA Great Lakes Environmental Research Lab in April 2016. Sea Grant affiliates will request microplastics be stated as priority research item in next Sea Grant request for proposals. Sea Grant is identified as a potential funding source.</p>
1.5.3. Create and send a bi-national letter to inform potential funding officials of regional research needs for land-based marine debris.	<u>Coordinators:</u> University of Waterloo, University of Michigan	In Progress	<p>No Report for 2017 or 2018 No new progress. May 2016 Information: Melissa Duhaime (University of Michigan) and Hans Dürr (University of Waterloo), along with other colleagues, took part in an IJC workshop on microplastics. The goal of the workshop was to establish research gaps and priorities, which was accomplished. The IJC will now formalize these statements to present to the United States and Canadian governments to encourage funding basic research. This report could also serve as a template for further dissemination.</p>

<i>Objective 1.6: Through 2019, ensure data collection consistency and quality assurance by multiple users.</i>			
Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
<p>1.6.1. Establish standardized metadata on land-based debris for the following mediums:</p> <ul style="list-style-type: none"> a. Open and nearshore water b. Shoreline c. Deep and nearshore sediments d. Fisheries e. Water infrastructure (wastewater systems, stormwater, etc.) 	<p><u>Coordinators:</u> SUNY Fredonia, University of Michigan</p> <p><u>Partners</u> (<u>corresponding to</u> <u>mediums listed</u>):</p> <ul style="list-style-type: none"> a. SUNY Fredonia, NOAA MDP, University of MI, University of Wisconsin – Superior, Inland Seas Education Association b. Loyola University, University of Waterloo, Alliance for the Great Lakes, NOAA MDP, Inland Seas Education Association c. University of Western Ontario, NOAA MDP d. State/Provincial Departments of Natural Resources e. SUNY Fredonia 	In Progress	<p>No Report for 2018</p> <p>No new progress. Nov 2017 Info: The first 2 steps in the revised timeline (provided below) have been completed. Significant progress has been made on step 3.</p> <ol style="list-style-type: none"> 1. Compile methods (complete) 2. Review methods and identify the steps in the protocols where metadata collection is crucial (complete) 3. Develop optimized/recommended metadata for each sampling media modeled after the Minimum Information about a Genome/Metagenome Sequence (MIGS/MIMS) specification, especially the metadata requirements for environmental sampling component 4. Share drafts of optimized/recommended metadata collection forms for various media types 5. Request various research personnel use the form to “report” some of their samples to ensure that all crucial metadata is accounted for 6. Revise/amend metadata forms based on feedback from researchers 7. Submit final recommendations for metadata collection to Action Plan

1.6.2. Establish opportunities to share standardized meta-data across the regional organizations. This may be completed in conjunction with Objective 1.2.	<p>Coordinator: NEEDS COORDINATOR</p> <p>Partners: SUNY Fredonia, NOAA MDP, University of Wisconsin – Superior, NERRs</p>	In Progress	<p>No Report for 2017 or 2018 - Needs new coordinator</p> <p>No progress in 2017 or 2018.</p>
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Goal 2: A science-based and strategic approach is used to guide land-based marine debris policy and management decisions in the Great Lakes.

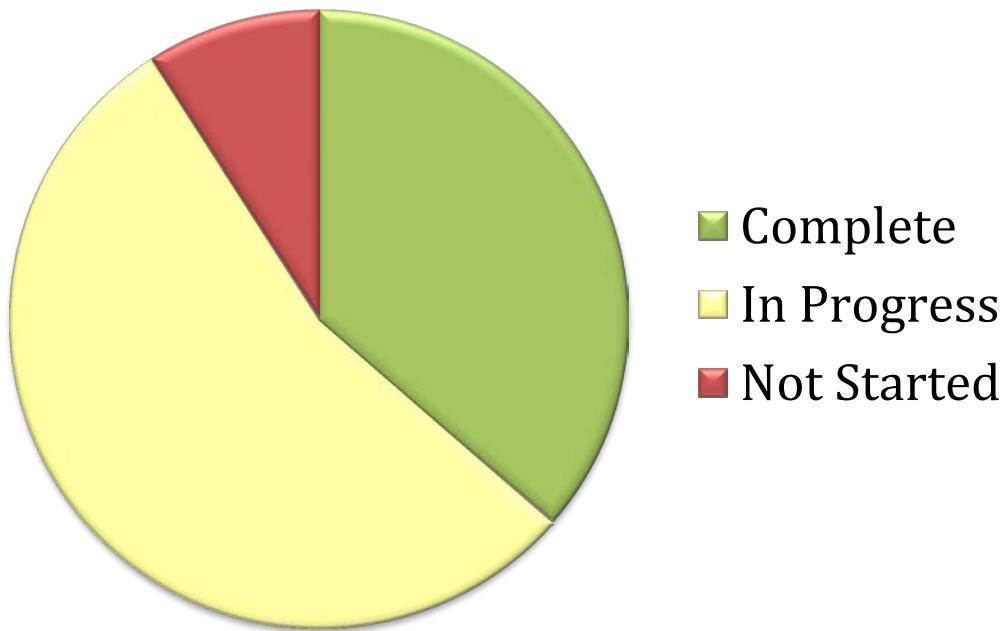
Action Status:

4 Complete

6 In Progress

1 Not Started

Goal 2 Action Progress



GOAL HIGHLIGHT:

Complete: *Objective 1: By the end of 2017, create a summary document of existing land-based marine debris policies and management systems in the Great Lakes (Actions 2.1.1, 2.1.2, and 2.1.3).*

After reviewing policies from other regions, the Alliance for the Great Lakes and Keep America Beautiful created a list of categories and model examples of existing policies and best management practices. Based on this list, outreach began in 2017 across the Great

Lakes basin to find relevant regional examples. The idea of a broad survey was eliminated due to logistical and practical concerns, and instead targeted outreach through the Great Lakes Land-based Marine Debris Action Plan list serve and other Great Lakes coalitions (such as the Healing Our Waters coalition) led to the creation of a list of communities that have implemented policies. Examples of these policies included bag bans/fees, bans on the use of single-use plastics in government facilities, public outreach campaigns, and social marketing campaigns. To date, few examples of local, county, or state level policies aimed at reducing marine debris appear to exist in the Great Lakes.

Based on the results of the outreach in 2017, it was determined that a toolkit for volunteer advocates would be the best way to encourage policies and best management practices in more communities. The toolkit, "[Plastic-Free Great Lakes: An Advocacy Toolkit to Make a Difference in Your Community](#)" was released by the Alliance for the Great Lakes on November 8, 2018 in conjunction with a public webinar. The toolkit features brief examples of plastic pollution reduction policies and programs in the Great Lakes region and tools for volunteers to use in their advocacy to local and state policy makers.

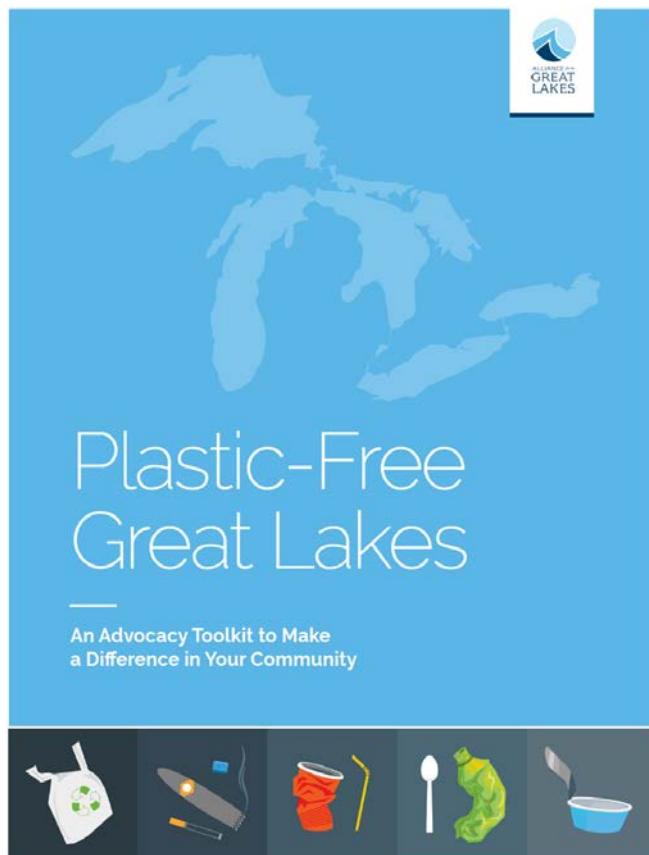


Figure 1: Cover page for the "Plastic-Free Great Lakes: An Advocacy Toolkit to Make a Difference in Your Community," which was developed by the Alliance for the Great Lakes.

Goal 2: A science-based and strategic approach is used to guide land-based marine debris policy and management decisions in the Great Lakes.

Objective 2.1: By the end of 2017, create a summary document of existing land-based marine debris policies and management systems in the Great Lakes.

Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
2.1.1. Inventory and create a summary document on existing policies and best management practices related to land-based marine debris in the Great Lakes.	<u>Coordinators:</u> Alliance for the Great Lakes, Keep America Beautiful <u>Partners:</u> American Chemistry Council, NERRs	Complete	After reviewing policies from other regions, a list of categories and examples of policies was created. Based on this list, outreach began across the Great Lakes basin to find examples. After the idea of a board survey was eliminated due to logistical and practical concerns, targeted outreach through the action plan list serve and other Great Lakes coalitions (such as the Healing Our Waters coalition) led to the creation of a list of communities that have implemented policies. Examples of these policies included bag bans/fees, bans on the use of single-use plastics in government facilities, public outreach campaigns, and social marketing campaigns. To date, few examples of local, county, or state level policies aimed at reducing marine debris appear to exist in the Great Lakes. Information gathering from regional policy research was incorporated into "Plastic-Free Great Lakes: An Advocacy Toolkit to Make a Difference in Your Community". This toolkit features several examples of policies and best management practices.
2.1.2. Review developed summary document and identify potential target areas for improvement.	<u>Coordinators:</u> Alliance for the Great Lakes, Keep America Beautiful <u>Partners:</u> American Chemistry Council, NERRs	Complete	Based on the results of outreach in 2017, it was determined that a toolkit for volunteer advocates would be the best way to encourage policies and best practices in more communities. The toolkit, "Plastic-Free Great Lakes: An Advocacy Toolkit to Make a Difference in Your Community" was released on Thursday, November 8, 2018 in conjunction with a public webinar.

<p>2.1.3. Share the developed summary with policy makers in the Great Lakes region and make recommendations for policy improvements.</p>	<p><u>Coordinators:</u> Alliance for the Great Lakes, Keep America Beautiful <u>Partners:</u> American Chemistry Council, NERRs</p>	<p>Complete</p>	<p>The volunteer advocacy toolkit was released on Thursday November 8, 2018. This toolkit features brief examples of plastic pollution reduction policies and programs in the Great Lakes region, and tools for volunteers to use in their advocacy to local and state policy makers.</p>
<p><i>Objective 2.2: Share the developed land-based marine debris action plan with the policy and management communities upon its completion.</i></p>			
Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
<p>2.2.1. Present the finalized action plan at relevant local, regional, and national conferences and/or meetings.</p>	<p><u>Coordinator:</u> None – captured in annual reporting. <u>Partners:</u> Everyone</p>	<p>In Progress</p>	<p>Throughout 2018 the action plan was presented four times, reaching approximately 206 policy and management representatives.</p>
<p>2.2.2. Develop a contact list of policy and management representatives for distribution of the final action plan.</p>	<p><u>Coordinator:</u> NOAA MDP <u>Partners:</u> State/Provincial management programs (Coastal Zone Management Offices, Departments of Natural Resources), Environmental Protection Agency, Great Lakes Sea Grant Network, NERRs</p>	<p>Complete</p>	<p>Completed in 2014: The NOAA Marine Debris Program, in partnership with state management programs (Coastal Zone Management Offices, Departments of Natural Resources or Environmental Quality), the Environmental Protection Agency, the Great Lakes Sea Grant Network, and the National Estuarine Research Reserves developed a contact list of relevant policy and management representatives from around the region. These contacts received the Great Lakes Land-based Marine Debris Action Plan via email on August 5, 2014. Partners continue to follow-up with these individuals.</p>

2.2.3. Develop a summarized action plan with brief talking points.	<p><u>Coordinator:</u> Great Lakes Sea Grant Network</p> <p><u>Partners:</u> Michigan Department of Environmental Quality, City of Cleveland Office of Sustainability, Wisconsin Coastal Management, Ohio Coastal Management</p>	In Progress	The fact sheet that was previously created by Ohio Coastal Management and sent to partners for feedback has been forwarded to Sarah Zack at Illinois-Indiana Sea Grant, who will now be seeing it through to completion. This project was delayed due to time constraints. Given that the best use of this tool would have been at the beginning of the action plan, IL-IN Sea Grant is proposing to instead develop a fact sheet and information on success stories from the plan. This will be discussed at the next Great Lakes Sea Grant Network Meeting in 2019.
2.2.4. Create a general presentation or summary slide on the final action plan and share with Great Lakes marine debris community for use in outreach to the policy and management communities.	<p><u>Coordinator:</u> Great Lakes Sea Grant Network</p> <p><u>Partners:</u> Michigan Department of Environmental Quality, City of Cleveland Office of Sustainability, Wisconsin Coastal Management, Ohio Coastal Management</p>	In Progress	The presentation that was previously created by Ohio Coastal Management and sent to partners for feedback has been forwarded to Sarah Zack at Illinois-Indiana Sea Grant, who will now be seeing it through to completion. This project was delayed due to time constraints until Spring 2018. Given that the best use of this tool would have been at the beginning of the action plan, IL-IN Sea Grant is proposing to develop information on success stories from the plan. This will be discussed at the next Great Lakes Sea Grant Network Meeting in 2019.

<p>2.2.5. Work with states, municipalities, and other key constituencies throughout the Great Lakes region to fully understand their trash prevention goals, programs, and perceived needs and barriers to success, and develop collaborative regional projects to address those factors.</p>	<p><u>Coordinator:</u> Environmental Protection Agency</p>	<p>Not Started</p>	<p>No new progress to report. The Environmental Protection Agency continues to hold on action 2.2.5, as they lack the staffing support to implement their Trash Free Waters Program in the Great Lakes.</p>
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<i>Objective 2.3: Review and prioritize storm water control practices at five municipal districts in the Great Lakes by 2019.</i>			
Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
2.3.1. Engage storm water professionals and the Great Lakes Storm Water Management Institute on land-based marine debris issues in the region.	<u>Coordinator:</u> NERRs <u>Partners:</u> Great Lakes Sea Grant Network, Erie Soil & Water Conservation District, Cleveland Mayor's Office of Sustainability, Alliance for the Great Lakes, City of Cleveland Water Pollution Control	In Progress	<p>The Lake Superior (LS) NERR has recently acquired a new Coastal Training Program Coordinator. Old Woman Creek (OWC) NERR is hoping to strengthen ties and marine debris collaboration, and recently met with LS NERR staff at the 2018 NERRS Annual Meeting, which was hosted by the LS NERR. While the capacity of the LS NERR has limited their availability to this topic, new research opportunities relating to oil residue attaching itself to microplastics in Lake Superior and educational endeavors, indicate they may be able to coordinate again soon (although unlikely within the Action Plan timeline).</p> <p>OWC NERR is continuing to collaborate with the Erie Conservation District on the Clean Water Contractor Program, which targets the construction industry and provides trainings on stormwater best management practices, and the threat of stormwater-driven land-based marine debris. The 2019 Clean Water Contractor Sediment & Erosion Control Expo is planned for February 28, 2019.</p>
2.3.2. Identify existing stormwater control practices related to land-based marine debris and identify gaps in programs and/or policy.	<u>Coordinator:</u> NERRs <u>Partners:</u> Alliance for the Great Lakes, Keep American Beautiful, American Chemistry Council	In Progress	<p>LS NERR staff limitations have put on hold a potentially planned call with NERR partners to identify existing marine debris efforts, create a strategy, and allocate assignments to move forward on the progress of this action item.</p> <p>Keep America Beautiful, Alliance for the Great Lakes, and American Chemistry Council agreed to help contribute to this action item via their assessment of practices that is an outcome of action item 2.1.1.</p>

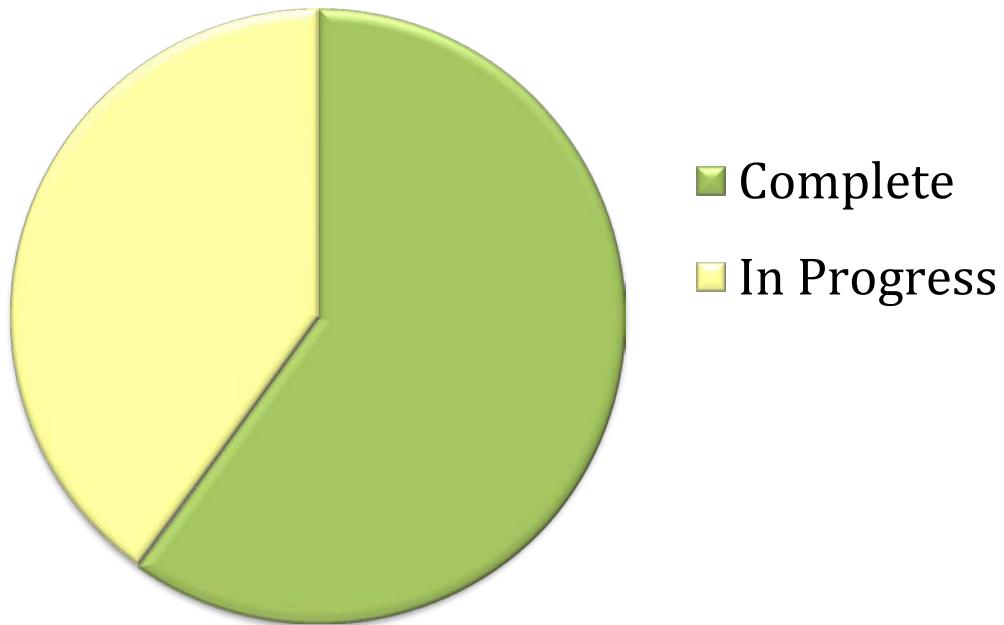
2.3.3. Implement tools and incentives to leverage action by various groups.	<u>Coordinator:</u> NERRs <u>Partner:</u> Keep America Beautiful	In Progress	<p>OWC NERR is working with local stakeholders (e.g., community representatives) to install and track cigarette butt recycling receptacles and monofilament fishing line recycling receptacles. Technical assistance was provided to the Huron Yacht Club and City of Sandusky. OWC NERR also hosted two workshops focused on plastic reduction strategies in July 2018. The workshops were hosted with support from Talkin' Trash, Ohio Sea Grant College Program, the Ohio Clean Marinas and Clean Boaters Programs, the NOAA Marine Debris Program, Lake Erie Nature & Science Center, Bowling Green State University Firelands, and the Cleveland Office of Sustainability.</p> <p>The workshops involved outlining the issue of marine debris in the Great Lakes, highlighted several regional and local awareness campaigns, directing participants on monofilament fishing line receptacle construction and painting, and sharing the NOAA marine debris monitoring protocol. OWC NERR continued to circulate designs from Recycled Runway 2018, which involved multiple action groups' representation to confront the issue of land-based marine debris, and raise funds for conservation projects along Ohio's Lake Erie coast. Venues include the Milan Historical Museum, Ohio State Fair, Stone Laboratory on Gibraltar Island, and the Greater Cleveland Aquarium.</p>
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Goal 3: Land-based marine debris is prevented and reduced through an educated and involved community.

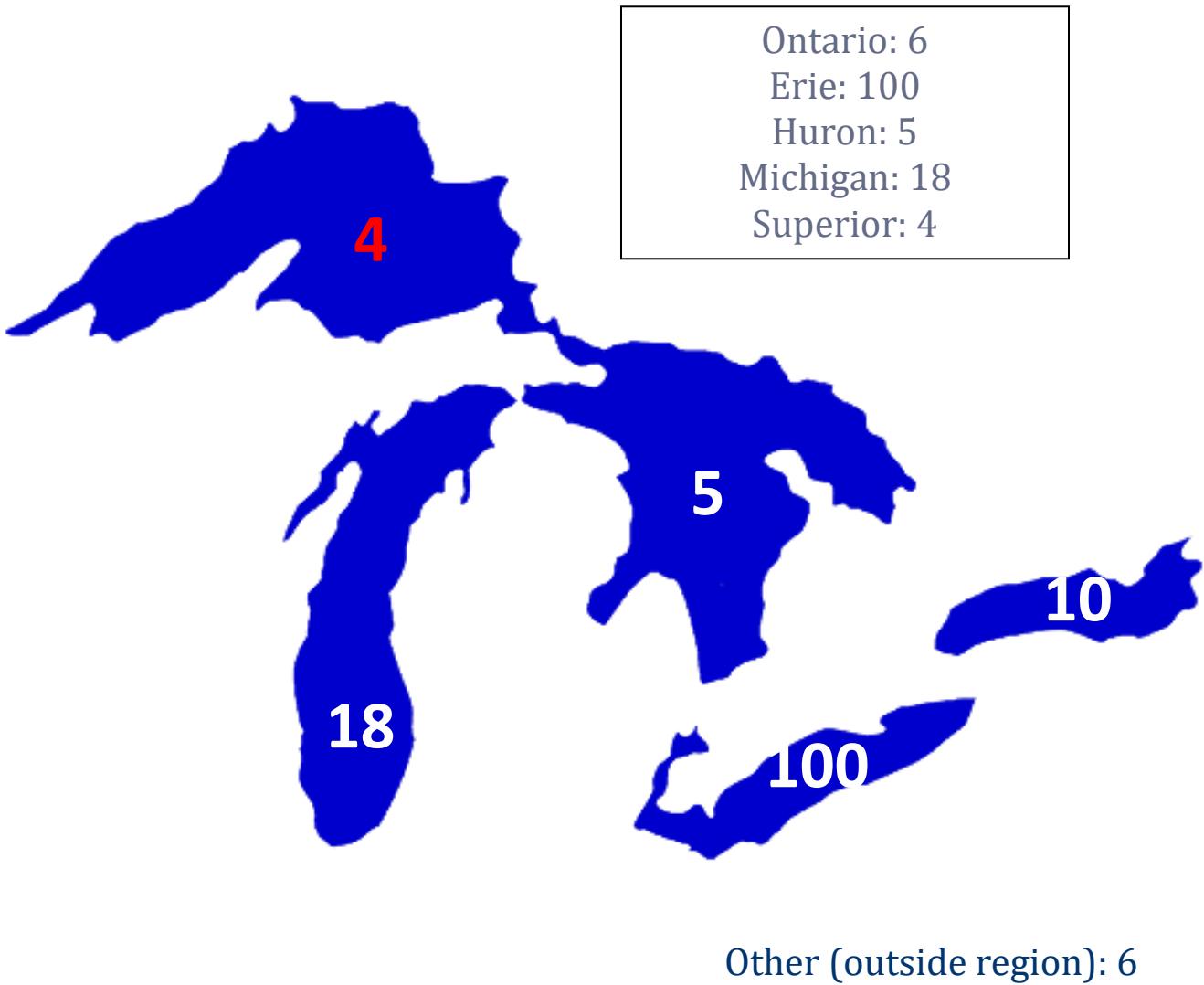
Action Status:

9 Complete
6 In Progress
0 Not Started

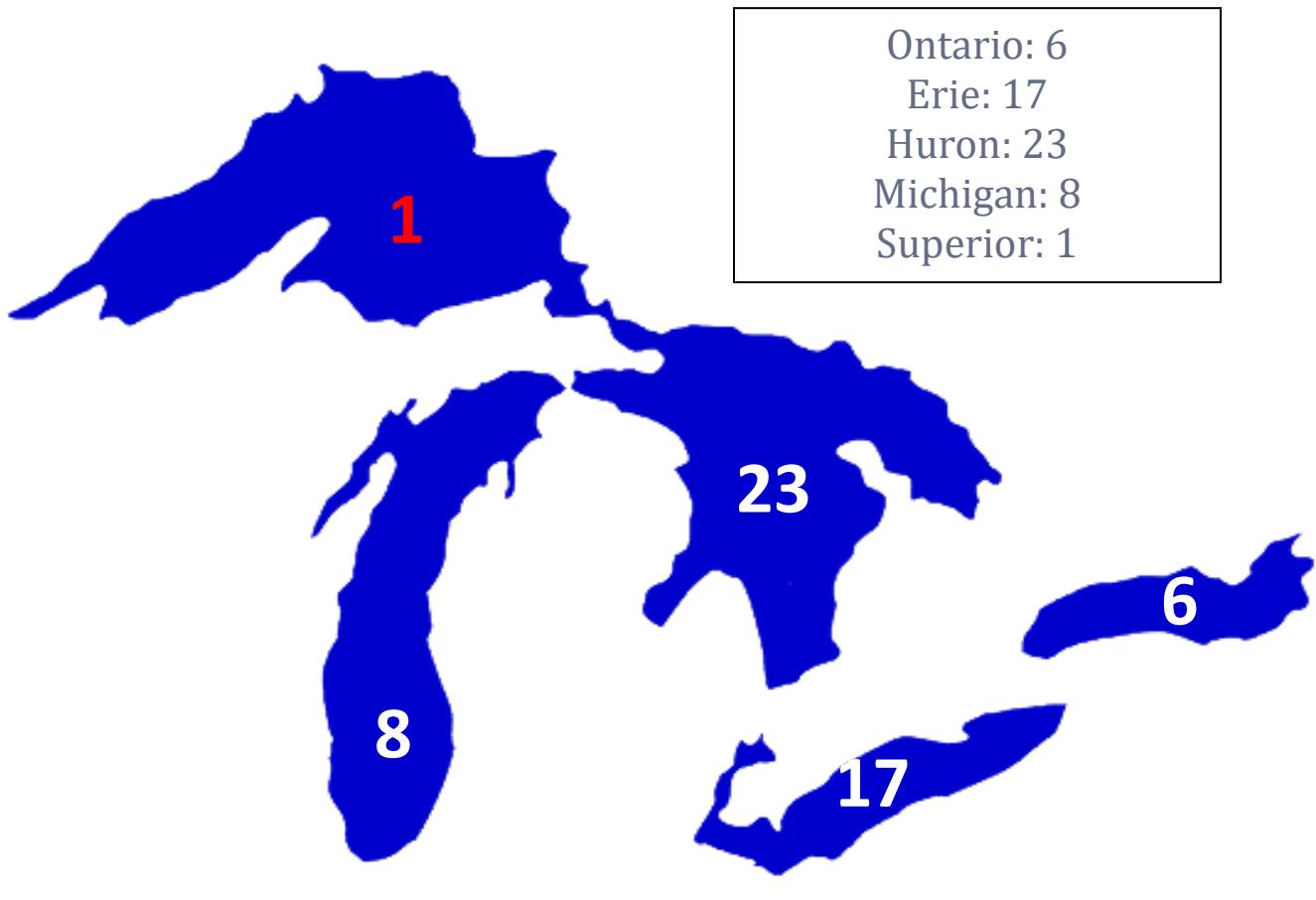
Goal 3 Action Progress



Objective 3.4: Conduct five informal education activities on land-based marine debris per year, per lake, with the public.



Objective 3.5: Conduct five formal education activities on land-based marine debris per year, per lake, with targeted audiences.



Other (outside region): 1

2018 Outreach Highlights



123
Presentations to
12,034 People



55 Educational
Events with 4658
Students



18 Displays
Created

GOAL HIGHLIGHT:

Complete: *Organize an annual Boat Float in Lake Erie (Action 3.4.2).*

The 10th Annual Great Lake Erie Boat Float was held at Edgewater Park beach on Saturday, September 8, 2018. The City of Cleveland Office of Sustainability coordinated this event in partnership with Cleveland Metroparks and the Cleveland Museum of Natural History. Eight boats that were made out of post-consumer recycled materials participated in the event. The Alliance for the Great Lakes also typically organizes a beach cleanup as part of this event and RES Polyflow recycles all of the plastic materials. Photos from the event may be found [here](#). Dr. Marcus Eriksen from The 5 Gyres Institute was the guest judge for the event, and gave an inspirational and positive speech. There have been five successful Boat Float events during the action plan timeline.

Goal 3: Land-based marine debris is prevented and reduced through an educated and involved community.

Objective 3.1: By the beginning of 2016, conduct a needs assessment for future education efforts on land-based marine debris in the Great Lakes.

Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
3.1.1. Identify target audiences and potential new partners for future education efforts.	<u>Coordinator:</u> Alliance for the Great Lakes	Complete	In March and April of 2015, the Alliance for the Great Lakes interviewed all partners listed in Goal 3, with the exception of those that did not respond to outreach. Through that initial outreach, the Alliance determined the target audiences that partners want to reach vary between formal education and public education. To narrow the focus, it has been decided that for this particular objective, the focus is now on formal education. Informal/public education is the focus of Objective 3.2.
3.1.2. Inventory educational resources that are currently available and identify gaps in content and style/type.	<u>Coordinator:</u> Alliance for the Great Lakes <u>Partners:</u> Great Lakes Sea Grant Network, NOAA MDP, NERRs, Coastal Training Program, City of Cleveland Office of Sustainability, Inland Seas, Shedd Aquarium	Complete	Educational materials have been compiled and reviewed by partners and the initial steps for identifying gaps have been taken. However, it is challenging to gather partners to analyze materials for gaps. NOAA, or an organization that has specific objectives to complete this task in their organizational objectives, might best serve in this role.

3.1.3. Create new or adapt existing educational materials to fill gaps identified in action 3.1.2.	<p><u>Coordinator:</u> Alliance for the Great Lakes</p> <p><u>Partners:</u> Great Lakes Sea Grant Network, NOAA MDP, NERRs, Wisconsin Coastal Management Program</p>	Complete	<p>See action 3.1.2. The action team has found many ocean-focused materials that can simply be adapted for the Great Lakes region, but are finding it challenging in both time and accessibility. It is difficult to adapt curricula that the organizations do not own. Adaptation of materials will be the responsibility of owners.</p> <p>Five organizations, including Ocean Wise, Ocean School, Students on Ice, Sea Smart, and WE Charity, have teamed up with support from the Department of Environment and Climate Change Canada to provide teachers with new educational tools focused on plastic pollution and how it affects our environment. The Ocean Plastic Education kit features materials and classroom resources to help students learn about how to reduce plastic use and waste. It relates the plastic material to current curriculum, so that it can easily be incorporated into teacher's lesson plans. The materials support this action by providing custom curriculum to fill educational gaps related to marine plastic waste for Ontario, Canada.</p>
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<p>Objective 3.2: By the end of 2016, launch at least one awareness campaign for Great Lakes communities regarding land-based marine debris.</p>			
Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
3.2.1. Identify and review existing awareness campaigns that could be leveraged.	<u>Coordinator:</u> Keep America Beautiful <u>Partners:</u> Alliance for the Great Lakes, Inland Seas, Hubbub (UK-based litter prevention organization)	Complete	Keep America Beautiful has completed a local pilot in Erie, PA to test the effectiveness of the Hubbub Ballot Bin for reducing cigarette litter. The Erie affiliate placed two bins in their community, one by a library and the second by a park. Overall results were an 88.5% reduction in cigarette litter over the months of the pilot, which compared preliminary to final litter scans.
3.2.2. Engage a marketing expert to assist in the development of a campaign.	<u>Coordinator:</u> City of Cleveland <u>Partners:</u> Alliance for the Great Lakes, American Chemistry Council, Great Lakes Sea Grant Network, Keep America Beautiful, Hi-Cone, Inland Seas	In Progress	The pilot campaign “Don’t Break the Lake” is ongoing. This includes a reusable bag campaign with Zagara’s Marketplace in Cleveland Heights, OH, encouraging reusable water bottle usage through educational signage and social media, and continued research into plastic cigar tip disposal behaviors. Details on project activities can be found on the Great Lakes Marine Debris Collaborative Portal site in the November 2018 action plan report folder or by contacting the City of Cleveland Office of Sustainability.

<p>Objective 3.3: By 2019, develop a social marketing plan, including 10 communication products to address land-based marine debris in the Great Lakes.</p>			
Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
3.3.1. Identify and review effectiveness and impact of existing social marketing programs on littering behavior.	<u>Coordinators:</u> Keep America Beautiful, Alliance for the Great Lakes <u>Partners:</u> Great Lakes Sea Grant Network, Clean Water Action, NERRs	Complete	<p>May 2016 Information: A list of social marketing campaigns is being compiled for review. The partners will continue to add to and refine this list, seeking additional input from relevant contacts, affiliates and others, particularly those connected with water. A project intern will assist.</p>
3.3.2. Create a brand with localized and targeted messages based on social science research on barriers and benefits. Social science research may include public-opinion focus groups and value identification.	<u>Coordinators:</u> City of Cleveland, Alliance for the Great Lakes	Complete	<p>The City of Cleveland has contracted with a local marketing firm, thunder::tech, to develop a social marketing campaign for three plastic marine debris items. Thunder::tech has subcontracted with Ohio Sea Grant (OSG) to conduct research into the barriers to desired behaviors for these three items. OSG conducted an online survey that was distributed via multiple channels. Within the five county region of concern, 982 respondents finished the survey. A focus group was convened to discuss disposal methods of plastic cigar tips. OSG presented the results of their research to thunder::tech in March 2017. In general, respondents forget their reusable bags and bottles. The barriers to the proper disposal of cigar tips are both material and social. The results have been shared with the local marketing firm for development of the campaign and have been published on the Great Lakes Marine Debris Collaboration Portal.</p>

<p>Objective 3.4: Conduct five informal education activities on land-based marine debris per year, per lake, to the public.</p>			
Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
3.4.1. Engage the Beach Ambassador Program as well as museums and/or aquariums on educational activities related to land-based marine debris in the Great Lakes.	<u>Coordinator:</u> Alliance for the Great Lakes <u>Partner:</u> Old Woman Creek NERR	Complete	<p>The Alliance for the Great Lakes launched a new pilot initiative in Chicago called "My Beach Your Beach" through which multiple social and cleanup activities were hosted at Oak Street Beach throughout the summer of 2016. These events included placing small flags on the beach during beach cleanups as items were removed from the beach, a voting box in which individuals could vote with cigarette butts, and various cleanup events. Over the next several months, the Alliance will be assessing the impacts of this work. In addition, the Alliance is working with the state of Michigan on a Clean Beaches Initiative, bringing together agencies at the state level to share information on marine debris in Michigan coastal areas, and looking for opportunities to collaborate to reduce debris.</p>
3.4.2. Organize an annual Boat Float in Lake Erie.	<u>Coordinator:</u> City of Cleveland Office of Sustainability <u>Partners:</u> Cleveland Metroparks, Cleveland Museum of Natural History, Alliance for the Great Lakes, Drink Local Drink Tap, RES Polyflow	Complete	<p>The 10th Annual Great Lake Erie Boat Float was held at Edgewater Park Beach on Saturday, September 8, 2018. Eight boats participated in the event, and despite the less than ideal weather conditions, all boats got in the water. Photos from the event may be found at www.ldempsey.com. Dr. Marcus Eriksen from The 5 Gyres Institute was the guest judge for the event and gave an inspirational and positive speech.</p>

<p>3.4.3. Outreach to general public, including presentations to coastal communities during field research expeditions.</p>	<p><u>Coordinator:</u> None – captured in annual reporting. <u>Partners:</u> All researchers</p>	<p>In Progress</p>	<p>In 2018, 123 events and presentations were conducted, reaching 12,034 people. Additionally, there was a Canada-wide public consultation on plastic waste and plastic pollution and a #BePlasticWise campaign launched in Canada.</p>
<p>3.4.4. Create land-based marine debris educational displays at public venues (i.e., state parks, museums, marinas, universities, etc.). The displays may be mobile in nature to be easily shared across the region.</p>	<p><u>Coordinator:</u> None – captured in annual reporting. <u>Partners:</u> Everyone</p>	<p>In Progress</p>	<p>In 2018, approximately 224,610 people saw displays at 18 locations.</p>
<p>3.4.5. Encourage events (i.e., conferences, etc.) to be “zero-waste” or “reduced-waste.”</p>	<p><u>Coordinators:</u> Keep America Beautiful, City of Cleveland Office of Sustainability <u>Partners:</u> SC2019 ZeroWasteNEO Working Group, Graduates of the Cuyahoga County Solid Waste District's Master Recyclers class</p>	<p>In Progress</p>	<p>The City of Cleveland Office of Sustainability has served as the lead or as an advisor for the following events: Common Ground Trails and Greenways Biannual Conference, Cleveland Museum of Natural History's Wild and Scenic Film Fest, Northeast Ohio Litter Summit, Dr. Sherri Mason at the Beachwood Community Center, and the Sustainable Cleveland Summit. Recycling was coordinated through this Office for PorchFest and Open Streets Festivals. Waste management advice was given to the organizers of IngenuityFest. Supplies have been provided by the office for the Cleveland International Film Fest and Veg Fest. The office has also given a talk to the Master Recyclers about zero waste events.</p>

<i>Objective 3.5: Conduct five formal education activities on land-based marine debris per year, per lake, to targeted audiences.</i>			
Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
3.5.1. Host a regional webinar on land-based marine debris for education/outreach professionals.	<u>Coordinators:</u> NOAA MDP, Alliance for the Great Lakes <u>Partner:</u> Great Lakes Sea Grant Network	In Progress	Initial planning has begun for the webinar. Ohio Sea Grant staff have volunteered to assist in planning and execution. The webinar is tentatively scheduled for February 2019 and advertisement will go out in January. Draft agenda: 1) Background on marine debris; 2) Resources for educators; 3) Example lessons
3.5.2. Host a teacher workshop or class on land-based marine debris.	<u>Coordinators:</u> Great Lakes Sea Grant Network, NOAA MDP <u>Partners:</u> Alliance for the Great Lakes, Old Woman Creek NERR, Regional Science Consortium at the Tom Ridge Environmental Center	Complete/ Additional Workshops Complete	<p>2015 Information: In partnership with The Ohio State University's Stone Lab on Lake Erie, the NOAA MDP and Ohio Sea Grant held a free three-day workshop on marine debris for teachers and informal educators on June 8-10, 2015. Thirteen educators experienced a mix of classroom curriculum and field activities, including the experience of manta net trawls and sample analysis with Dr. Rios Mendoza, as well as a beach cleanup with the Alliance for the Great Lakes. Pennsylvania Sea Grant and the Center for Great Lakes Literacy also held a teacher training for ten teachers at Tom Ridge Environmental Center in Erie, PA.</p> <p>2016 Information: Throughout the year, an additional 33 teachers participated in workshops in PA and OH.</p> <p>2017 Information: Sixty-seven teachers were engaged in marine debris workshops in PA and NY.</p> <p>2018 Information: October 20, 2018 twenty-seven teachers learned of the impacts of plastic pollution on water quality, wildlife, and potentially humans, as part of a Center for Great Lakes Literacy Resources and Curriculum workshop in Erie PA. New York Sea Grant also held two educator workshops in the summer of 2018, reaching 38 teachers.</p>

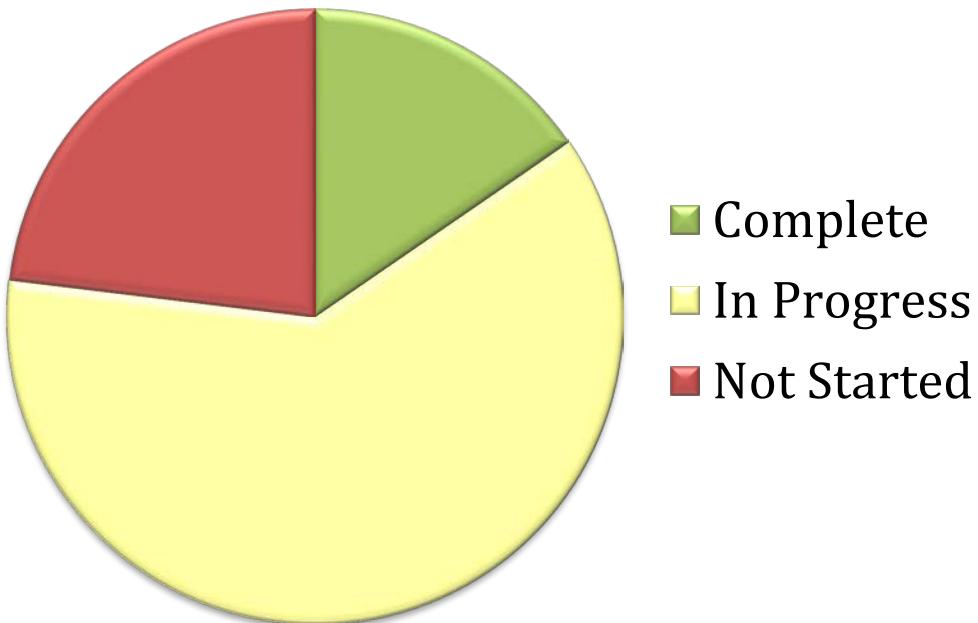
3.5.3. Conduct land-based marine debris educational activities with students of all ages in the Great Lakes.	Coordinator: None – captured in annual reporting. Partners: Everyone	In Progress	During 2018, 4658 students of various ages were reached through 55 educational events.
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Goal 4: The impacts of land-based marine debris are reduced through removal and tracking efforts.

Action Status:

2 Complete
8 In Progress
3 Not Started

Goal 4 Action Progress



GOAL HIGHLIGHT:

In-Progress: Incorporate land-based marine debris best management practices into existing guides (e.g., Clean Marina) (Action 4.2.3).

The Ohio Clean Marinas Program adapted marine debris removal best management practices (BMPs) for the marina and boating community and incorporated these BMPs into

the Program's outreach materials. In spring 2018, a revised Clean Marina Program Tiered Checklist was completed, with the following required BMPs specifically addressing land-based marine debris removal:

- Cigarette disposal containers available for patrons and staff.
- Collection bins for solid recyclables available throughout the marina.
- Empty trash cans and conduct litter pick-up within marina and along shoreline daily.
- Derelict vessels have been removed from the property.
- Shrink wrap is recycled or dry rack storage is available for winterization of boats.
- Label all storm drains to notify patrons of outfall points (i.e. No Dumping, Drains to Lake).
- Require boaters to sign an environmental commitment pledge.

Ohio Clean Marinas Program staff will be developing guidance materials in 2018-2019 to accompany the revised checklist.

In summer 2018, staff began certifying marinas using this revised checklist, and collaborated with Cuyahoga and Summit County Soil and Water Conservation Districts to provide Clean Boater BMPs as part of their outreach materials and social media posts.

Goal 4: The impacts of land-based marine debris are reduced through removal and tracking efforts.

Objective 4.1: By 2019, bi-nationally record and report count and weight (in tons) of land-based marine debris removed from Great lakes shorelines and watersheds by volunteer programs.

Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
4.1.1. Investigate Canadian volunteer program reporting mechanisms and see how they align with U.S. efforts.	<u>Coordinator:</u> Alliance for the Great Lakes <u>Partners:</u> Surfrider, Ocean Conservancy	Complete	The Great Canadian Shoreline Cleanup (GCSC) has a similar system to the Alliance for the Great Lakes for tracking volunteer cleanups through an online database tool. The GCSC is now also encouraging year-round cleanups in addition to the traditional International Coastal Cleanup (ICC) event. They use the same data collection card as the Alliance and the other groups in the Great Lakes doing the ICC event.
4.1.2. Identify a centralized location that will direct people to sources of volunteer coastal cleanup data.	<u>Coordinator:</u> Alliance for the Great Lakes	Complete	The Great Lakes Marine Debris Collaborative Portal provides links to cleanup opportunities, and sources of cleanup data. Partners, like the Alliance for the Great Lakes, continue to host their Adopt-a-Beach data on their own websites and databases, which are linked on the portal.

<i>Objective 4.2: By 2019, develop and publish recommendations for best practices for removing land-based marine debris.</i>			
Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
4.2.1. Investigate existing removal methods for land-based marine debris and analyze for similarities, as well as benefits and challenges.	<u>Coordinator:</u> NERRs <u>Partner:</u> Great Lakes Sea Grant Network	In Progress	<p>OWC NERR has begun to construct, paint, and disseminate monofilament fishing line recycling receptacles along Ohio's Lake Erie coast at prominent fishing piers, marinas, beaches and parks. Workshops hosted during summer 2018 included the construction and painting of receptacles for stakeholders and the Ohio Coastal Training Program (CTP) has already received multiple requests for repeat workshops.</p> <p>OWC NERR has also installed one cigarette butt recycling receptacle at their visitor's center and plans to install another at their beach/boat house, as well as construct a mobile receptacle for off-site trainings.</p> <p>The OWC NERR CTP Coordinator plans to survey other coastal entities' stormwater control measures/policies and methods of removal regarding land-based marine debris.</p> <p>OWC and LS NERRs have also discussed the potential for surveying other NERRs outside of the Great Lakes to gain insight on different marine debris removal methods. The Great Lakes Sea Grant Network has agreed to help contribute to this action item since they have begun/will begin to pursue similar objectives (see action item 4.3.2).</p>

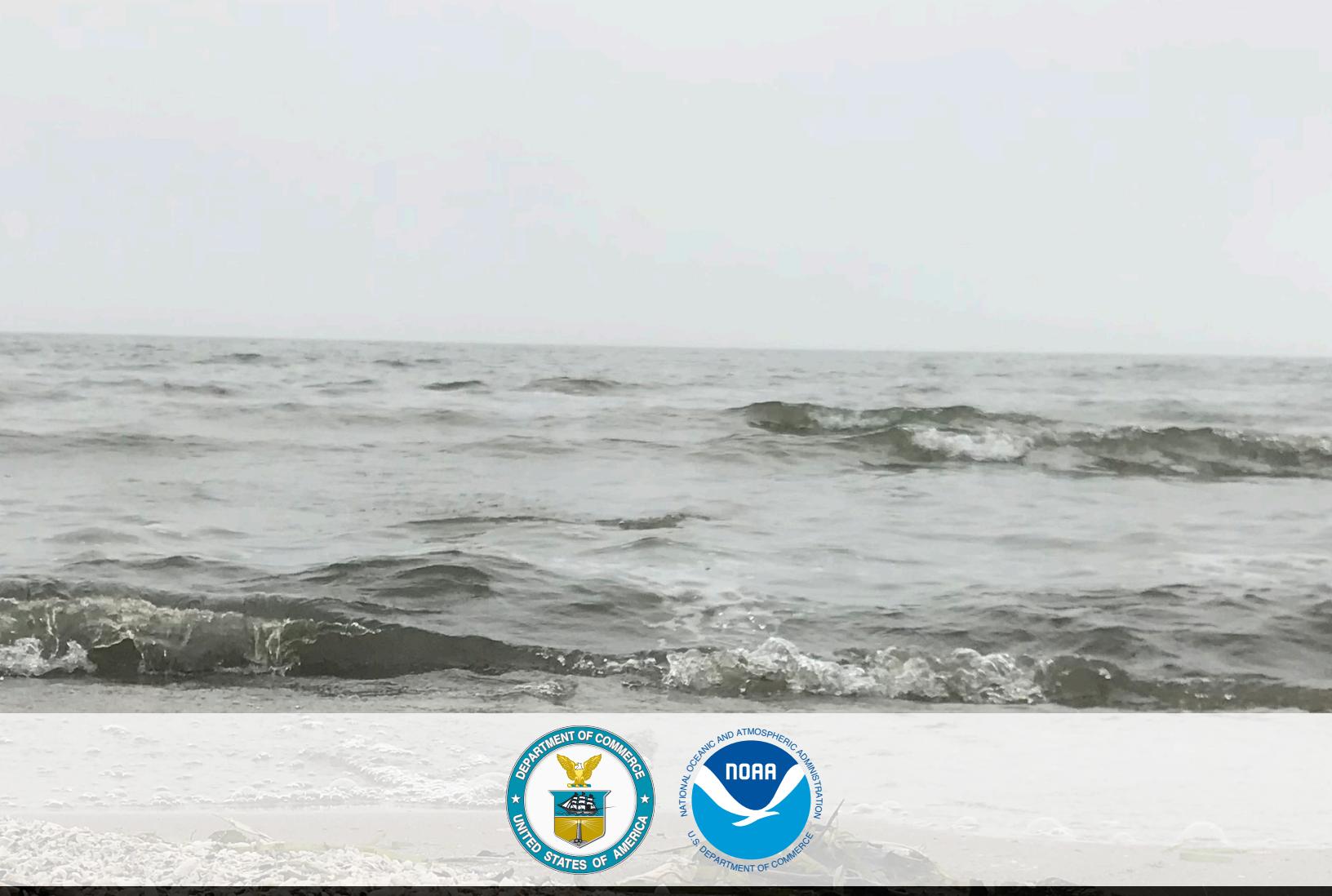
4.2.2. Develop or adapt best management practices (BMPs) to target specific environments or debris types.	<u>Coordinator:</u> Great Lakes Sea Grant Network	In Progress	Ohio Sea Grant (OSG) is working with the Toledo Tennis Club and Mentor Heisley Racquet Club to obtain and distribute personal monofilament recycling containers to anglers. Ohio Sea Grant received 400 bins from the Toledo Tennis Club through Partners for Clean Streams, and three bins from Heisley Racquet Club. OSG is in the process of writing a grant to purchase the other items needed to complete the personal monofilament bins. OSG has seen great success having students or children write letters to the angler who will receive the personal monofilament bins, thanking them for removing their waste, protecting wildlife, humans, and the environment. Additionally, many youth volunteers from Cleveland Metroparks have helped to construct the personal monofilament bins, and in the process, have learned more about marine debris while receiving volunteer hours for school. OSG will also work with senior citizen groups in Lake County to help put together the personal monofilament containers. Cleveland Metroparks has requested a building session to incorporate into one of their public events as well.
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<p>4.2.3. Incorporate land-based marine debris BMPs into existing guides (e.g., Clean Marina).</p>	<p><u>Coordinator:</u> Great Lakes Sea Grant Network <u>Partner:</u> Wisconsin Coastal Management Program</p>	<p>In Progress</p>	<p>The Ohio Clean Marinas Program adapted marine debris removal BMPs for the marina and boating community, and incorporated them into the Program's outreach materials. In Spring 2018, a revised Clean Marina Program Tiered Checklist was completed, with the following required BMPs specifically addressing land-based marine debris removal:</p> <ul style="list-style-type: none"> 1) Cigarette disposal containers available for patrons and staff. 2) Collection bins for solid recyclables available throughout the marina. 3) Empty trash cans and conduct litter pick-up within marina and along shoreline daily. 4) Derelict vessels have been removed from the property. 5) Shrink wrap is recycled or dry rack storage is available for winterization of boats. 6) Label all storm drains to notify patrons of outfall points (i.e. No Dumping, Drains to Lake). 7) Require boaters to sign an environmental commitment pledge. <p>Ohio Clean Marinas Program staff will be developing guidance materials in 2018-2019 to accompany the revised checklist. In Summer 2018, staff began certifying marinas using this revised checklist, and collaborated with Cuyahoga and Summit County Soil and Water Conservation Districts to provide Clean Boater BMPs as part of their outreach materials and social media posts.</p>
<p>4.2.4. Share BMP recommendations with stakeholders.</p>	<p><u>Coordinator:</u> Great Lakes Sea Grant Network</p>	<p>In Progress</p>	<p>At outreach events, Ohio Sea Grant and the Ohio Clean Marinas/Clean Boater Programs educate stakeholders on marine debris and share current research to create an informed public. This year, several presentations were given to resource and watershed management groups.</p>

<i>Objective 4.3: Within five years, target removal efforts towards land-based marine debris items that are expected to have the greatest impact or which are most abundant in number.</i>			
Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
4.3.1. Analyze existing cleanup data to identify land-based marine debris types, quantities by type, and impact. Reports may be separated by geography due to variations in data.	<u>Coordinator:</u> Alliance for the Great Lakes <u>Partners:</u> Ocean Conservancy, University of Michigan, Loyola University	In Progress	<p>2017 Information: The Alliance has shared the Adopt-a-Beach data with multiple research partners across the basin. In January of 2017, Adopt-a-Beach data was featured in an article in <i>Science of the Total Environment</i> Vol. 577, entitled "Citizen science datasets reveal drivers of spatial and temporal variation for anthropogenic litter on Great Lakes beaches." Dr. Timothy Hoellein from Loyola University was the lead author on the paper with several Alliance staff members.</p> <p>Additionally, the Alliance has shared Adopt-a-Beach data with other partners working on analysis, such the Shedd Aquarium.</p>
4.3.2. Partner with industry, manufacturers, and packaging companies to participate in and support removal efforts.	<u>NEEDS COORDINATOR</u> <u>Coordinators:</u> Hi-Cone, Illinois Tool Works <u>Partner:</u> Shedd Aquarium	In Progress	<p>No Report - NEEDS COORDINATOR</p> <p>May 2016 Information: Environmental partner, Leave No Trace, has been lost and no progress has been made with customers in partnering with land-based debris projects. Hi-Cone is rebuilding their marketing program and hope to integrate this proposal in their sustainability portion.</p>

<p><i>Objective 4.4: Create a natural disaster preparedness plan (by state or lake) for land-based marine debris within five years.</i></p>			
Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
4.4.1. Review lessons-learned from Hurricane Sandy response.	<u>Coordinator:</u> NOAA MDP <u>Partners:</u> Alliance for the Great Lakes, Ohio Department of Natural Resources/Ohio Emergency Management Association, Environment Canada	Not Started	Work on this action will begin in early 2019.
4.4.2. Review preparedness plans from other regions and industry partners.	<u>Coordinator:</u> NOAA MDP <u>Partner:</u> Environment Canada	Not Started	Work on this action will begin in early 2019.
4.4.3. Engage the U.S. Coast Guard, FEMA, and the Canadian equivalents on land-based marine debris issues in the region, as well as the creation of the preparedness plans.	<u>Coordinator:</u> NOAA MDP <u>Partner:</u> Environment Canada	Not Started	Work on this action may begin in 2019.

<p>Objective 4.5: By 2019, remove 200 tons of land-based marine debris from Great Lakes environments.</p>			
Action Strategies	Coordinating & Partner Organizations	Status	Progress Description
4.5.1. Understand the current baseline of land-based marine debris removed by volunteers in the region. Report on these values.	<u>Coordinator:</u> Alliance for the Great Lakes <u>Partner:</u> Ocean Conservancy	In Progress	<p>Alliance for Great Lakes 2017 weight (lbs) removed by state:</p> <ul style="list-style-type: none"> Illinois 9,662 Indiana 1,246 Michigan 11,897 Minnesota 788 New York 3,025 Ohio 30,423 Pennsylvania 1,401 Wisconsin 4,328 Grand Total 62,770 <p>In 2018, Partners for Clean Streams held several marine debris removal events in western Lake Erie watersheds, including Clean Your Streams Day as part of the International Coastal Cleanup. 1324 volunteers removed 36,938 pounds of debris.</p> <p>From 2014 to 2018, volunteers have removed 146,885 pounds of marine debris from the Great Lakes watershed through the Great Canadian Shoreline Cleanup.</p>
4.5.2. Identify funding opportunities and potential land-based marine debris removal projects throughout the region.	<u>Coordinator:</u> None – captured in annual reporting. <u>Partners:</u> Everyone	In Progress	<p>Funding opportunities are now available on the Great Lakes Marine Debris Collaborative Portal.</p>



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