FY 2016 NWPG Great Lakes Measure Definitions

Measure Code: GL-SP31

GLRI Action Plan II Measure 1.1.1

Measure Language: Areas of concern in the Great Lakes where all management actions necessary for delisting have been implemented (cumulative)

Type of Measure: Target Measure; annually reported.

Measure Contact: Michael Russ, EPA Great Lakes National Program Office (GLNPO)

russ.michael@epa.gov | (312) 886-4013

Measure Definition

Terms and phrases:

Area of Concern (AOC) de-listing indicates that all management and on the ground actions that need to be taken have been implemented at the AOC to restore all impaired beneficial uses, that monitoring verifies the environmental improvement, and that the respective state's request for de-listing has been approved.

Great Lakes AOCs are severely degraded geographic areas within the Basin. They are defined by the U.S.-Canada Great Lakes Water Quality Agreement (Annex 1 of the 2012 Protocol) as "a geographic area designated by the Parties where significant impairment of beneficial use impairments has occurred as a result of human activities at the local

level." Additional information is available at: http://www.epa.gov/glnpo/aoc/index.html.

Management Actions Necessary for Delisting are the actions identified by stakeholders in the AOC and the states in a Remedial Action Plan (RAP) that outlines the reasonable and realistic management actions that could be taken to remove the relevant BUIs and, hence, delist the AOC. Reasonable and realistic management actions refer to the set of local, state and federal actions that are believed to be necessary to remove the impairment. These actions may not result in the removal of a set of BUIs immediately; however, these actions are expected to remove the contaminant threat that will allow environmental conditions to improve over time which will lead to eventual delisting of the AOC. Implementation of all management actions necessary for delisting is deemed to have occurred at the time those actions have commenced and the work is completed over the life of the project (e.g., a Legacy Act dredging project that takes place over a 6 month period would be considered a completed management action at the end of that 6 month period.).

Task Force Leads are GLNPO staff members who oversee AOC activities, including the tracking of BUIs and completion of management actions.

Methodology for computation of results:

Implementation of all management actions necessary for delisting of an AOC is counted following delivery of either: (i) applicable state documentation to the effect that all the requisite work for all of the management actions at the AOC have been completed or (ii) a memo to the GLNPO Director from the applicable AOC Task Force Lead, through the appropriate EPA manager, verifying the completion of all management actions previously identified by the applicable State as necessary for delisting.

Units: Areas of Concern (AOCs)

Universe: There were once a total of 43 Great Lakes AOCs: 26 located entirely within the United States; 12 located wholly within Canada; and 5 shared by both countries. The Universe is considered to be 31 United States or Binational AOCs.

Baseline: The baseline for GLRI Action Plan II is 7 AOCs where all management actions had been implemented as of October 1, 2014. The baseline for GLRI Action Plan I was 1, as of October 2009.

Measure Code: GL-05

GLRI Action Plan II Measure 1.1.2

Measure Language: Area of Concern Beneficial Use Impairments removed (cumulative)

Type of Measure: Target measure; annually reported.

Measure Contact: Michael Russ, EPA Great Lakes National Program Office

russ.michael@epa.gov | (312) 886-4013

Measure Definition

Terms and phrases:

- An *Beneficial Use Impairment (BUI)* is a change in the chemical, physical or biological integrity of the Waters of the Great Lakes sufficient to cause any of the following: Restrictions on fish and wildlife consumption, tainting of fish and wildlife flavor, degradation of fish wildlife populations, fish tumors or other deformities, bird or animal deformities or reproduction problems, degradation of benthos, restrictions on dredging activities, eutrophication or undesirable algae, restrictions on drinking water consumption, or taste and odor problems, beach closings, degradation of aesthetics, added costs to agriculture or industry, degradation of phytoplankton and zooplankton populations, or a loss of fish and wildlife habitat.

- *Great Lakes Areas of Concern* (AOC) are severely degraded geographic areas within the Basin. They are defined by the U.S.-Canada Great Lakes Water Quality Agreement (Annex 1 of the 2012 Protocol) as "a geographic area designated by the Parties where significant impairment of beneficial uses has occurred as a result of human activities at the local level." Additional information is available at: http://www.epa.gov/glnpo/aoc/index.html.

Methodology for computation of results:

This measure tracks the cumulative total Beneficial Use Impairments (BUIs) removed within the 26 Areas of Concern (AOC) located entirely within the United States and the 5 AOCs that are shared by both the United States and Canada.

A BUI is determined to be removed when:

- a state or other local stakeholder has established the delisting criteria;
- a state or other local stakeholder has developed the appropriate Remedial Action Plan (RAP);
- all management actions necessary for removal of the BUI (determined by the RAP) have commenced and the delisting targets have been met and monitoring data indicates that the delisting targets have been met and environmental conditions have improved such that the impairment no longer exists; and
- the GLNPO Director transmits a letter approving the BUI removal request..

After all BUIs in an AOC are de-listed, the entire AOC can be de-listed.

Units: Beneficial Use Impairments (BUIs)

Universe: A total of 255 beneficial use impairments was reported in the 21 U.S. or Bi-national Areas of Concern as of the end of FY 2006.

Baseline: A total of 52 beneficial use impairments had been removed as of October 1, 2014.

Measure Code: GL-07

GLRI Action Plan II Measure 2.1.1

Measure Language: Number of GLRI-funded Great Lakes rapid responses or exercises conducted (cumulative)

Type of Measure: Target measure; annually reported.

Measure Contact: Michael Russ, EPA Great Lakes National Program Office

russ.michael@epa.gov | (312) 886-4013

Measure Definition

Terms and phrases:

Rapid responses means the response takes place in a timely manner before a species becomes widely established. The actual amount of time may vary significantly given the specific species and the ecology of the invasion site. Note: in contrast to chemical emergencies in which response occurs in a matter of days or hours, biological response actions may occur within days or months and, in rare cases, several years after detection. Biological response actions are typically complex and require the consideration of not just the removal of invasive species, but also the protection and/or minimization of damage to the native resources within the invasion site. As a result, natural resource managers spend a significant amount of time planning before mobilization and responding to new invasions. Species with slower growth rates, invasion sites with lower productivity, and/or the initial containment of invasion sites can provide for additional time for planning strategic and efficient response actions.

Exercises are training drills, ranging from "table top" discussions to simulated on-the-ground or on-the-water actions, in which agencies practice responses to a fictional scenario. Exercises provide a cost-effective method for testing response planning and/or field techniques in advance of an actual detection of an invasive species.

Invasive species means non-native species that are not intentionally introduced or managed within the Great Lakes Basin ecosystem.

Methodology for computation of results:

Federal agencies use information from GLRI-funded projects, theirs or their funding recipients', to calculate the number of rapid responses and exercises conducted by GLRI-funded projects. Federal agencies transmit the number of rapid responses and exercises conducted by GLRI-funded projects semi-annually through the Environmental Accomplishments in the Great Lakes information system. Each federal agency is responsible for storing all records and documentation used to support the results it transmits. EPA tabulates the total number of rapid responses and exercises conducted across the GLRI and reports the total annually as the number of rapid responses and exercises conducted per fiscal year.

Units: Number of GLRI-funded rapid responses and exercises.

Universe: NA-The universe represents all rapid response exercises that could be done by GLRI funded agencies. The universe is without limit.

Baseline: 0-This is an annual measure in Action Plan II. The similar Action Plan I Measure was cumulative. Targets were thus not comparable; consequently this measure starts with a baseline of "0".

Measure Code: GL-09

GLRI Action Plan II Measure 2.2.1

Measure Language: Number of aquatic/terrestrial acres controlled by GLRI-funded projects (cumulative)

Type of Measure: Target measure; annually reported.

Measure Contact: Michael Russ, EPA Great Lakes National Program Office

russ.michael@epa.gov | (312) 886-4013

Measure Definition

Terms and phrases:

Acres includes the total geographic area addressed by a management action, recognizing that most invasive species infestations will vary in their percent coverage. Acreage can be determined through a variety of means, including but not limited to line transects, randomized plot sub-sampling, estimation based on photographic surveys, GPS mapping, and professional judgment.

Controlled means the acreage has received an initial treatment to reduce the populations of invasive species. While the typical goal of control projects is to reduce invasive species to levels as close to zero as possible, there is often a need for retreatment in order to support long-term restoration of the project site. The

retreatment of acres that have already received an initial treatment from GLRI funded activities are not counted.

Aquatic/terrestrial means all habitat types within the Great Lakes basin, whether they are covered in water or not.

Methodology for computation of results:

Federal agencies use information from GLRI-funded projects, theirs or their funding recipients, to calculate the number of aquatic/terrestrial acres controlled by GLRI-funded projects. Methods for calculating acreage include line transects, randomized plot sub-sampling, estimation based on photographic surveys, use of GPS mapping, manual calculations through direct observation, and other methods using professional judgment acceptable to the GLRI funding agency. Each federal agency is responsible for storing all records and documentation used to support the results it transmits. EPA tabulates the total number of aquatic/terrestrial acres controlled across the GLRI and reports the total annually as the cumulative number of aquatic/terrestrial acres controlled by GLRI-funded projects.

Units: Acres

Universe: NA-The universe represents all possible acres which could have invasive species removed in the Great Lakes. Data is not available to determine the total universe. Developing such data would be a significant resource commitment beyond the scope of GLRI

Baseline: GLRI Action Plan II identified a baseline of 36,000 acres as the total acreage from GLRI projects as of October 1, 2013. That total had increased to 84,500 as of October 1 2014.

Measure Code: GL-17

GLRI Action Plan II Measure 3.1.1

Measure Language: Projected phosphorus reductions from GLRI-funded projects in targeted watersheds (cumulative)

Type of Measure: Target measure; annually reported.

Measure Contact: Michael Russ, EPA Great Lakes National Program Office

russ.michael@epa.gov | (312) 886-4013

Measure Definition

Terms and phrases:

Projected total phosphorus reductions from GLRI-funded projects in Great Lakes watersheds are predictions (predicted in average annual total phosphorus lbs. reduced each year) made for reductions at the edge of fields or land parcels and are aggregated over those land units to establish an annual average. This projection is also made for projects that are implemented in stream corridors and act to isolate total phosphorus sequestered from upstream so there is a reduced amount transported downstream via stream flow.

Edge of field/land parcel refers to a land unit where surface and subsurface land and hydrologic processes operate, excluding in-stream and limnological processes.

Stream corridors are land areas impacted by stream and river processes including stream banks and floodplains.

Total Phosphorus is the mass of both dissolved and particulate forms of phosphorus.

Targeted watersheds refers to watersheds in the Great Lakes basin.

Methodology for computation of results:

Federal agencies use an OMB-approved calculation to project average annual phosphorus reductions from the acreage on which best management practices will be implemented through GLRI funded projects. Projections may be made for projects by the GLRI agencies or their funding recipient; the principal agencies providing estimations are expected to be US Department of Agriculture – National Resources Conservation Service, EPA, and US Army Corps of Engineers. Projections are made one time during the reporting period in which the project implementation is sufficiently described and captured within the applicable contract, grant award, or legal agreement. Each federal agency is responsible for storing all records and documentation used to support the results it reports.

Federal agencies transmit the projected phosphorus reductions that are a result of GLRI-funded projects semiannually through the Environmental Accomplishments in the Great Lakes information system. EPA collects projections through its Environmental Accomplishments in the Great Lakes information system and reports the total.

Units: Average pounds projected to be reduced each year

Universe: N/A

Baseline: 0

Measure Code: GL-18

GLRI Action Plan II Measure 3.2.1.

Measure Language: Projected volume of untreated urban runoff captured or treated by GLRI-funded projects (cumulative)

Type of Measure: Target measure; annually reported.

Measure Contact: Michael Russ, EPA Great Lakes National Program Office

russ.michael@epa.gov | (312) 886-4013

Measure Definition

Terms and phrases:

Untreated urban runoff refers to nonpoint source surface runoff resulting from urbanization that is not captured or treated in any way.

Captured or treated for the purpose of this measure refers to technologies used as a means of reducing volume of urban nonpoint source pollution runoff in an effort to remove pollutants that degrade water quality of tributaries and coasts.

Projected volume refers to the gallons (measured in millions per year) of untreated urban runoff captured of treated due to implementation of GLRI-funded projects in urban areas. These gallons are projected for the reporting period in which they can first be identified for the project.

Urban watersheds are urban and downstream areas, city neighborhoods, suburban municipalities, and unincorporated areas characterized by encroaching urban sprawl.

Methodology for computation of results:

Results for this measure are compiled from three federal agencies: the US Forest Service, EPA, and US Army Corps using the respective calculation methodologies below:

- U.S. Forest Service: The Restore Urban Community Forests program grant funds are used for tree planting. Volume of runoff calculations assume a conversion factor of 59 gallons of rainfall intercepted annually.

- U.S. EPA: The calculation methodology varies depending on the project type and the model type the grantee uses to project the benefits of measure implementation.

- U.S. Army Corps: The Long-Term Hydrologic Impact Assessment Low Impact Development model is used to estimate project benefits.

Projections are made one time during the reporting period in which the volume estimate can first be identified for the project: for U.S. Forest Service and for EPA that will generally be when grants are issued and for U.S. Army Corps that will generally be when the project moves from design to construction. Each federal agency is responsible for storing all records and documentation used to support the results it reports. EPA collects projections annually through its Environmental Accomplishments in the Great Lakes information system and reports the total.

Units: Gallons (measured in millions) projected to be reduced per year.

Universe: N/A

Baseline: 0

Measure Code: GL-19

GLRI Action Plan II Measure 4.1.1.

Measure Language: Number of miles of Great Lakes tributaries reopened by GLRI-funded projects (cumulative)

Type of Measure: Target measure; annually reported.

Measure Contact: Michael Russ, EPA Great Lakes National Program Office

russ.michael@epa.gov | (312) 886-4013

Measure Definition

Terms and phrases:

Miles of Great Lakes tributaries refers to the number of miles of in-stream habitat including mileage for seasonal and intermittent streams.

Reopened describes tributaries that are available for target species to move into as a result of bypassing or removing a barrier.

Methodology for computation of results:

Federal agencies use information from GLRI-funded projects, theirs or their funding recipients, to calculate stream miles using methods acceptable to the GLRI funding agency, including: walking the stream; Geographic Information System; the USACE stream mile calculator; and manual calculations through direct observation. Progress is counted either as stream miles reopened for projects that sequentially open up miles, or when the project is complete (for example large scale dam removal). Each federal agency is responsible for storing all records and documentation used to support the results it reports. EPA collects projections through its Environmental Accomplishments in the Great Lakes information system, and reports the total.

Units: Measure in miles

Universe: 20,000 miles (In 2005, the Great Lakes Regional Collaboration determined the universe of total possible miles of river reopened for fish passage to be 20,000 miles)

Baseline: 3,475 miles as of October 1, 2014. (GLRI Action Plan II states a baseline value of 1,900 miles as of October 1, 2013. However, an additional 1,575 miles was reported re-opened in FY 2014, for a revised cumulative total from FY2010 to FY2014 of 3,475 miles of Great Lakes tributaries reopened by GLRI-funded projects)

Measure Code: GL-20

GLRI Action Plan II Measure 4.1.2.

Measure Language: Number of miles of Great Lakes shoreline and riparian corridors protected, restored and enhanced by GLRI-funded projects (cumulative)

Type of Measure: Target measure; annually reported.

Measure Contact: Michael Russ, EPA Great Lakes National Program Office

russ.michael@epa.gov | (312) 886-4013

Measure Definition

Terms and phrases:

Shoreline refers to the aquatic and terrestrial coastal habitats of all of the great lakes.

Riparian corridors are the in-stream and bank habitats of Great Lakes tributaries and rivers.

Protected means that the stress to the ecosystems has been prevented.

Restored means that the ecosystem has recovered from degradation, damage or destruction.

Enhanced means that the value and effectiveness of habitats and species has increased.

Methodology for computation of results:

Federal agencies use information from GLRI-funded projects, theirs or their funding recipients, to calculate stream miles using methods acceptable to the GLRI funding agency, including: walking the stream, the USACE stream mile calculator; and manual calculations through direct observation. Progress is counted towards this measure when the work to protect, restore, or enhance a mile of shoreline and riparian corridor is complete. Each federal agency is responsible for storing all records and documentation used to support the results it reports. EPA collects projections through its Environmental Accomplishments in the Great Lakes information system and reports the total.

Units: Measures in miles

Universe: N/A – There are 10,000 miles of Great Lakes coastline and thousands of miles of tributaries. No comprehensive estimate of restorable shoreline or riparian corridors is available.

Baseline: 0 miles of shoreline and riparian corridors. (Data is not readily available to determine the history of miles of shoreline and riparian corridors protected, restored

and enhanced by past programs prior to October 1, 2014 at the initiation of this effort. Data is not readily available to determine the history of miles of shoreline and riparian corridors protected, restored and enhanced by past programs.)

Measure Code: GL-21

GLRI Action Plan II Measure 4.1.3.

Measure Language: Acres of Great Lakes coastal wetlands protected, restored and enhanced by GLRI-funded projects (cumulative)

Type of Measure: Target measure; annually reported.

Measure Contact: Michael Russ, EPA Great Lakes National Program Office

russ.michael@epa.gov | (312) 886-4013

Measure Definition

Terms and phrases:

Great Lakes Coastal Wetlands are the historical or existing 375,000 acres of US wetlands with a current, previous, or potential hydrologic connection to a Great Lake or connecting channel via surface or subsurface water such that water levels of the wetland are influenced by Great Lakes water levels. These can be wetlands on a Great Lake, connecting channel, river (if the river is influenced by the Great Lakes), or an isolated wetland (with a subsurface connection to the Great Lakes). Note that funding and results under GLRI only pertain to Great Lakes Coastal Wetlands in the US.

Methodology for computation of results:

Federal agencies use information from GLRI-funded projects, theirs or their funding recipients, to calculate acres of Great Lakes coastal wetlands using methods acceptable to the GLRI funding agency, including: Geographic Information System (GIS), Google Earth-type mapping tools, photographic survey estimates, and GPS mapping. Progress is counted on this measure when work to protect, restore, or enhance the acre of Great Lakes coastal wetland has been completed.

Each federal agency is responsible for storing all records and documentation used to support the results it reports. The GLRI designated RWG agency reports the number of acres of coastal wetlands protected, restored, or enhanced in the current reporting period and cumulatively through the reporting period. EPA collects data in the Great Lakes information system, and reports the total.

Units: Measures in acres.

Universe: 375,000 acres (US) plus additional acreage (unknown) having a previous hydrologic connection to a Great Lake or a connecting channel via surface or subsurface water such that water levels of the wetland are influenced by Great Lakes Wetland Consortium via an updated GIS analysis. Prior to this updated analysis, the Universe value stated in GLRI Action Plan II was 260,000 acres. (In 2005, the Great Lakes Regional Collaboration estimated that the total acres of wetlands and wetland associated uplands that potentially could be protected, restored, or enhanced is 550,000 acres in both the US and Canada.)

Baseline: 0 acres (For the purposes of the GLRI, the baseline of "0 acres of wetlands" defines the status of efforts in September 2014 prior to initiation of this effort. Data is not readily available to determine the history of acres of wetlands restored, protected or enhanced by past projects.)

Measure Code: GL-22

GLRI Action Plan II Measure 4.1.4.

Measure Language: Number of acres of other habitats in the Great Lakes basin protected, restored and enhanced by GLRI-funded projects (cumulative)

Type of Measure: Target measure; annually reported.

Measure Contact: Michael Russ, EPA Great Lakes National Program Office

russ.michael@epa.gov | (312) 886-4013

Measure Definition

Terms and phrases:

Great Lakes Coastal Wetlands in regards to GL-22, Great Lakes Coastal Wetlands refers to the 375,000 acres of wetland with a hydrologic connection to a Great Lake via surface or subsurface water such that water levels of the wetland are influenced by Great Lakes water levels. These can be wetlands on a Great Lake, connecting channel, river (if the river is influenced by the Great Lakes), or an isolated wetland (with a subsurface connection to the Great Lakes.

Other habitats (excluding coastal wetlands as defined above), means all habitats within the Great Lakes basin within the following systems: open water; nearshore waters and connecting channels; coastal shore; rivers and tributaries; inland lakes and wetlands; uplands. This measure is a combination of two measures from Action Plan 1: acres of wetlands and wetland-associated uplands and coastal, upland and island habitats protected, restored and enhanced.

Other Habitats refers to open water, nearshore waters and connecting channels, coastal shore, rivers and tributaries, inland lakes and wetlands, uplands that have been protected, restored or enhanced.

Methodology for computation of results:

Federal agencies use information from GLRI-funded projects, theirs or their funding recipients, to calculate the number of acres of other habitats in the Great Lakes basin protected, restored and enhanced by GLRI-funded projects using methods acceptable to the GLRI funding agency, including; Geographic Information System (GIS), Google Earth-type mapping tools, photographic survey estimation, GPS mapping, and manual calculations through direct observation. Progress is counted as Acres of "other habitats" within the Great Lakes basin, when work to restore, protect, or enhance the acreage has been completed. The same acreage could be counted multiple times (at the completion of individual projects) because individual projects generally protect, restore or enhance only a single problem or a small portion of a geographic area and many projects may be needed to fully protect, restore or enhance a habitat. Each federal agency is responsible for storing all records and documentation used to support the results it reports. EPA collects projections through its Environmental Accomplishments in the Great Lakes information system, and reports the total number of Great Lakes "other habitat' acreage protected, restored, or enhanced.

Units: Measures in acres.

Universe: 1,290,000 acres (In 2005, the Great Lakes Regional Collaboration made a projection that the total acres of other habitats that potentially could be protected, restored, or enhanced; however, no comprehensive projection of restorable "other habitats" is available.)

Baseline: 117,000 acres as of October 1, 2013. (For the purposes of the GLRI, the baseline of “117,000 acres” defines the status of efforts in September 2013 prior to the initiation of this effort.