



# Lake Michigan Coastal Resilience Initiative

## Project Worksheet

October 2021

### Background

The Lake Michigan Coastal Resilience Initiative aims to build capacity among Great Lakes cities to strengthen and respond to coastal zone challenges such as shoreline erosion, flooding, and increasingly frequent severe storm events. The Coastal Resilience Initiative includes two phases directed towards supporting municipal leaders and natural resource managers along Lake Michigan's coastal communities. Phase 1 of the project includes training and workshops, while Phase 2 includes the selection of municipal-scale projects.

### Instructions

The following worksheet is intended to gather information in preparation for discussions during the project workshops. Information needed for project discussion includes the assemblage of details of potential, site-specific projects that prepare coastal communities for coastal challenges and strengthen their environmental resilience and support the objectives of GLRI Focus Area 4. The worksheet will also allow the workshop developers to better prepare to support participants during project identification.

It is critical that you and your staff team **fill out this worksheet to the best of your ability before attending one of the four workshops**. Multiple project worksheets are encouraged, where applicable. Please try to answer all of the questions as completely as possible, recognizing that information gaps may remain for some potential projects.

**FAQs** - A link to frequently asked questions (FAQs) and definitions is provided in the link here:

<https://glslcities.org/initiatives/lake-michigan-coastal-resilience-initiative/>

**Technical Assistance** - If you would like technical assistance in filling out this project worksheet, up to two hours are available to develop your project worksheet. However, please initiate a project worksheet and fill out as much as you are able and review the FAQs before setting an appointment for help. To request technical assistance, please send an email with your name, contact information, and a brief description of the type of assistance you desire to Sue Hoegberg at [shoegberg@dewberry.com](mailto:shoegberg@dewberry.com).

## Priority Project and Location Worksheet

### Project Point(s) of Contact

1. Project Lead Organization. Please provide the locality, agency, entity, sponsor, or person that is most likely to be responsible for implementing the project:

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2. Point of Contact. If possible, please provide a name and business email address of someone familiar with the project planning who can answer questions; typically, an employee of—or agent for—the project owner:

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### Project Description

3. Project Name:

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4. Project Description. Please include a description of the project or the name of the site. The more descriptive the better.

[See FAQ #1 Example Projects](#)

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5. Description of the proposed action (e.g. invasive species removal, wetland restoration, shoreline stabilization, fish barrier removal, etc.). Please be as specific as possible.

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6. Project goals. The desired change that the project intends to accomplish.

[See FAQ #2 Lake Michigan Project Goals](#)

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7. Project category. Select the most appropriate project category based on habitat restoration types as defined by EPA (2016).

[See FAQ #3 EPA Wetlands Restoration Definitions](#)

- Protection/Maintenance** –The removal of a threat to, or preventing decline of, wetland conditions by an action in or near a wetland. Includes purchase of land or easement, repairing water control structures or fences, or structural protection such as repairing a barrier island. This term also includes activities commonly associated with the term preservation. Protection/Maintenance does not result in a gain of wetland acres or function.

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- Enhancement** – The manipulation of the physical, chemical, or biological characteristics of a wetland (undisturbed or degraded) site to heighten, intensify, or improve specific function(s) or for a purpose such as water quality improvement, flood water retention or wildlife habitat. Enhancement results in a change in wetland function(s) and can lead to a decline in other wetland function, but does not result in a gain in wetland acres. This term includes activities commonly associated with the terms enhancement, management, manipulation, directed alteration.
- Reestablishment** – The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former wetland. Re-establishment results in rebuilding a former wetland and results in a gain in wetland acres.
- Rehabilitation** – The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions of degraded wetland. Rehabilitation results in a gain in wetland function but does not result in a gain in wetland acres.

### Project Location

8. Project location. Select from the zone(s) below that represent the extent of your proposed project.



Figure 1: Typical zones of shoreland property: Upland: Buffer, Shoreline, and Lake. Figure courtesy of the Michigan Shoreline Stewards Program

- Lake Zone (Offshore)** – This is the offshore area of the lake where in water is typically greater than ~50 feet in water depth.
- Lake Zone (Nearshore)** – This is the nearshore area or “littoral zone” of the lake where waves begin breaking and there is enough light reaching the bottom to allow aquatic plants to grow. The size of this zone will vary depending on multiple factors including the shape of the bottom of the lake (bathymetry). Typically, nearshore areas are less than ~50 feet in water depth.

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- Shoreline Zone** – This is the transitional zone from water to land where erosion and accretion occurs. It begins at the top of the bank or bluff and extends to the land-water interface.
- Buffer Zone** – This is the zone immediately next to the lake. It begins at the top of the bank (edge of the Shoreline Zone) and is the first ~35 feet of the lake front property. This part of the shoreland property is very important for protecting the lake and maintaining a healthy shoreline.
- Upland** – This zone sets back from the lake. It typically starts where the Buffer Zone ends 25 feet from the top of the shoreline, and extends to ~1,000 feet inland from the coastal shoreline.
- Coastal Tributary** – Not pictured in the diagram above, a coastal tributary is a stream or river that is connected to Lake Michigan.
- Other (please specify):  

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9. Please place a point on the map at this link showing the approximate location of your project:  
[Where is your proposed project located? \(arcgis.com\).](#)

See **FAQ #4 Spatial Extents of Projects.**

10. Approximate acreage/length of the project. Please provide an estimate of the amount of habitat impacted by this restoration project. It could be in terms of acreage (e.g. five acres of wetland restored) or in terms of length (e.g. 500 ft of shoreline softened).  

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### Site Description

11. Please describe the current and past land use and general conditions of the proposed site. This could include information about the ownership of the land and/or whether the site may have been contaminated during its past use.  

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12. Please describe any political or community concerns associated with the project. This could include information about past efforts to restore the site, potential roadblocks, or information about direct or adjacent land uses.  

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13. How do people currently use the site?  

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14. What is the vision for the future use of the site?

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15. What are the plans for the future management of the site? Which entity is envisioned to manage the site in the future (e.g. park board, conservancy, city, DNR, etc.)?

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### Coastal Hazards to Be Addressed

16. What resources and local areas are susceptible to coastal hazards? This may include community assets, infrastructure, species, habitat, natural resources, or cultural resources, to name a few.

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17. What coastal hazard(s) does this project address? Select all that apply.

#### See FAQ #5 Coastal Hazards

Step 1 of this NOAA self-guided training resource describes coastal hazards that can be addressed with green infrastructure solutions: Nature-Based Solutions for Coastal Hazards: The Basics.

<https://coast.noaa.gov/elearning/greeninfra/nbspart1/>

- Coastal flooding** occurs in areas directly adjacent to coastal waters. Many factors can contribute to coastal flooding, such as tropical storms, Nor'easters, or hurricanes. These storms cause flooding, storm surge, wind, rain, and erosion—all of which can damage property and infrastructure.
- Stormwater runoff** occurs in area with many paved surfaces that receive too much rain, too fast. The stormwater system can become overwhelmed, causing streets, yards, and basements to flood. Stormwater runoff also carries pollutants into rivers and lakes, causing water quality issues.
- Riverine flooding** occurs when there is excessive rainfall over an extended period, causing a river to exceed its banks and flow into the surrounding floodplain. The floodwater erodes land and damages and destroys homes, roads, bridges, and parks.
- Storm surge** is an abnormal rise of water pushed onshore by a storm, such as a hurricane, which can flood communities and damage homes, infrastructure, and roads.
- Wave action** - Waves and wind erode dunes, overtop coastal barriers such as seawalls, and elevate water levels on top of surge. In addition to the damage waves can inflict directly on buildings and infrastructure, wave action can erode the shoreline and adjacent uplands.
- Coastal erosion** comes from many sources, including stream channelization, wind, waves, seawalls (causing erosion on adjacent properties), lack of sediment, sea level rise, and reduced ice cover during winter storms. Erosion causes damage or loss of land and nearby infrastructure.

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- A **seiche** is a surge-related coastal flooding phenomenon experienced on larger lakes, such as the Great Lakes, that results in both abnormally high and low water levels on opposite sides of the lake in a short period of time. Seiche waves cause flooding and erosion that damages property.
  - Fluctuations in water levels in the Great Lakes** correspond to longer-term temperature and precipitation trends. These fluctuations can cause erosion, flooding, and issues with stormwater pipe outfalls and coastal infrastructure.
  - Climate change or other future conditions** may cause changes to communities, such as population growth or decline; changes to land use, such as suburban sprawl and urbanization; changes to weather, such as increased drought and flood risk; and even changes to the land and water resources themselves, such as erosion, sea level rise, and salt water intrusion.
  - Hydrologic disconnections** between the nearshore region and upper parts of the watershed occur when direct routes of drainage or overland flow of water to a watercourse or lake are removed. This can cause negative environmental effects including blocking fish passage and movement of other species.
  - An **invasive species** is an organism that causes ecological or economic harm, or harm to human health, in a new environment where it is not native.
  - Degraded water quality** can occur due to the presence of chemical contaminants (pesticides, hydrocarbons or oil, heavy metals), pathogens, excessive sedimentation, and elevated nutrient loads.
  - Other (please specify):
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### Project Benefits and Impacts

18. What ecosystem service(s) will this project provide? Select all that apply.

#### See FAQ #6 Ecosystem Services

Step 3 of this NOAA self-guided training resource describes some of the ecosystem services and co-benefits that can be achieved with green infrastructure solutions: Nature-Based Solutions for Coastal Hazards: The Basics. <https://coast.noaa.gov/elearning/greeninfra/nbspart1/>

- Coastal flood control** stores and absorbs floodwaters from coastal storm events.
- Coastal buffering** provides a protective barrier from storm surge and large coastal storms.
- Slope stabilization** holds sediment in place to maintain natural slopes along streams, rivers, and coastlines.
- Erosion control** encourages natural coastal processes that stabilize shorelines.
- Wave attenuation** slows and absorbs the energy of waves coming to shore.
- Sediment transport** allows for the natural movement of sediments that build up the coastline.

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- Water filtration** cleans pollutants from stormwater runoff.
  - Water infiltration** allows water to naturally soak into the ground.
  - Stormwater retention** stores and absorbs stormwater runoff due to inland storm events.
  - Groundwater recharge** raises the water table and reduces saltwater intrusion.
  - Riverine flood control** stores and absorbs floodwaters during storm events that cause riverine flooding.
  - Habitat restoration** provides site-specific actions designed to improve the biological productivity or functioning of a particular ecosystem or area.
  - Species conservation** protects and recovers endangered and threatened species and their habitats.
  - Other (please specify):
- 

19. What co-benefits are expected from the project? Select all that apply:

- Recreation
  - Habitat restoration
  - Aesthetics
  - Improved water quality
  - Social/environmental justice
  - Cultural services
  - Other (please specify):
- 

20. Targeted species or taxa that will benefit from the project? Select all that apply.

### See FAQ #7 Target Species

Federally threatened, endangered, and candidate species that demonstrate how GLRI investments can have the greatest impact (EPA, 2019; pp 24) GLRI Action Plan III

<https://www.epa.gov/sites/default/files/2019-10/documents/glri-action-plan-3-201910-30pp.pdf>

- Native prey fish (e.g. lake trout, walleye, large and smallmouth bass, brook trout)
- Lake sturgeon
- Yellow perch
- Cisco
- Native freshwater mussels
- Great Lakes piping plover
- Wild rice
- Breeding marsh birds (e.g. rails, grebes, bitterns, black and common terns, etc.)

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- Migratory birds and waterfowl
  - Other (please specify):
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21. Does the project have the potential to provide protection or risk reduction to underserved communities?

- Yes
- No

If Yes, please describe:

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22. Has the site been evaluated for any potential adverse impacts to environmental or local social, historical, or cultural assets?

**See FAQ #8 Evaluating Impacts to Environmental or Social, Historical, or Cultural Assets**

- Yes
- No

If Yes, please describe:

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### Project Readiness

23. Please list any potential partners that might be interested in collaborating in a project on this site. We recognize that listing partners here does not imply a formal commitment of any kind. Please provide specific names and contact information if possible.

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24. Have future maintenance requirements for the project been considered?

- Yes
- No

If Yes, please describe the plan:

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25. Has the project been reviewed by the applicable regulatory or permitting authorities?

- Yes
- No
- Underway



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If Yes, does it have preliminary buy-in from them?

- Yes
- No
- Underway

26. Has this project been considered for funding by any other programs and denied (note: does not affect consideration)?

- Yes
- No
- Uncertain

If Yes, what was the reason?

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27. Readiness Score - Your estimate of the readiness of your proposed project:

- 1 = **Ready for engineering and design!** Most of the needed site-specific data are assembled, we have identified partners who are enthusiastic about the project, and we have community support. We also know what permits are required and have preliminary buy-in on the project concept from the permit reviewers.
- 2 = **Pretty close.** A project concept/measure has been selected. We have community buy-in and some key project partners and are working on gathering the needed data and researching the required permits.
- 3 = **Getting there.** We are socializing this within the community and among potential partners for buy-in and support and have gathered some of the preliminary data we need. Some work to evaluate alternatives has also been done.
- 4 = **Ready to get to work on the details.** We know what we want to do, now we need to get to work on the details.
- 5 = **Concept stage.** We know we need something like this and want to explore the feasibility of several design options.

### Supporting Site Information

Project-related site information will depend on the type of project, but please consider the type of information and the resolution that would support the preparation of engineering designs for your project. NOAA's Digital Coast provides resources and links to data, tools and training:

<https://coast.noaa.gov/digitalcoast/>

See [FAQ #9 Data Resources](#)

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28. Available data or information that could support site assessment and the preparation of engineering designs for the project. If you have multiple datasets to report, please provide additional details in a separate file and submit it along with this form.

Data or information description(s):

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Location covered by the data:

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Why are these data important to the project?

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If possible, please provide a point of contact to obtain the data or on-line location to download the data:

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Additional information:

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29. Please list/describe below the data or information needed to support the project. If you require multiple types of data, please provide additional details in a separate file and submit it along with this form.

Data or information description(s):

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Location covered by the data:

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Why are these data important to the project?

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Additional information:

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