

## Resources for Minnesota's Coastal Property Owners

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The Minnesota Department of Natural Resources (DNR) is providing this list of select resources and tools for coastal property owners. These resources cover a broad range of topics relating to coastal hazards, reducing risks, and important considerations unique to coastal properties. Please note that many of these resources are not specific to Minnesota's shoreline. Inclusion in this list is not any endorsement. This list will be updated as more resources become available.

### Natural Hazards for Coastal Properties

#### Erosion and Shoreline Processes

*A Guide to Coastal Erosion Processes*

Author(s): Charles O'Neill Jr., New York Sea Grant; 1985

Provides a good overview of the natural drivers of erosion.

<https://seagrant.sunysb.edu/glcoastal/pdfs/GuidetoErosionProcesses.pdf>

*Living on the Coast*

Author(s): US Army Corps of Engineers & University of Wisconsin Sea Grant Institute; 2003

Overview of natural shoreline processes ranging from storm surges to erosion.

<https://publications.aqua.wisc.edu/product/living-on-the-coast-protecting-investments-in-shore-property-on-the-great-lakes/>

*North Shore Erosion Mapping Tool*

Author(s): ARDC, DNR, NOAA, and partners

Interactive map with shoreline and erosion data for the Minnesota's Lake Superior shoreline.

<http://bit.ly/2P5tu0b>

#### Disaster Preparedness

*Ready North*

Author(s): Ready North

Local guidance and resources for preparing and responding to natural disasters.

<https://readynorth.org/>

## **Flooding**

### *Flood Forecasts*

Author(s): National Weather Service (NWS)

Flood forecasts from the NWS-Duluth Office for Northeastern MN and Northwestern WI.

<https://water.weather.gov/ahps2/index.php?wfo=dlh>

### *Flood Map Service Center*

Author(s): Federal Emergency Management Agency (FEMA)

Interactive online viewer to search for flood maps based on location. Provides access to digital flood maps where available.

<https://msc.fema.gov/portal/search>

### *Flood Preparation, Response, & Recovery*

Author(s): DNR

Resources and guidance from the DNR on preparing for and responding to flooding at your home.

<https://www.dnr.state.mn.us/climate/floods/index.html>

## **Lake Superior Water Levels**

### *Lake Level Viewer*

Author(s): National Oceanic and Atmospheric Administration (NOAA)

Interactive map viewer that shows how changes in lake level across the Great Lakes might potentially impact the shoreline. You can raise or drop lake levels by up to 6 feet and understand potential impacts on your shore.

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

### *Great Lakes High Water*

Author(s): US Army Corps of Engineers

US Army Corps of Engineers webpage with all of its resources relating to high water levels on the Great Lakes.

<https://www.lre.usace.army.mil/About/Great-Lakes-High-Water/>

### *The Great Lakes Dashboard*

Author(s): NOAA & US Army Corps of Engineers

Viewer that shows monthly averages of water levels in all of the Great Lakes.

[https://www.glerl.noaa.gov/data/dashboard/GLD\\_HTML5.html](https://www.glerl.noaa.gov/data/dashboard/GLD_HTML5.html)

## **Reducing Your Coastal Hazard Risks**

### **Adapting to Coastal Hazards**

#### *Adapting to a Changing Coast: Options and Resources for Lake Michigan Property Owners*

Author(s): Wisconsin Sea Grant; 2017

Guide for different strategies that home owners can take to adapt to coastal shoreline changes and hazards.

<https://publications.aqua.wisc.edu/product/adapting-to-a-changing-coast-for-property-owners/>

## **Flood Insurance**

### *Flood Insurance*

Author(s): DNR

Helpful FAQs regarding flood insurance in Minnesota.

[https://www.dnr.state.mn.us/waters/watermgmt\\_section/floodplain/flood\\_insurance.html](https://www.dnr.state.mn.us/waters/watermgmt_section/floodplain/flood_insurance.html)

### *Flood Insurance Basics*

Author(s): Minnesota Department of Commerce

More FAQs about purchasing flood insurance and what it covers.

[https://www.dnr.state.mn.us/waters/watermgmt\\_section/floodplain/flood\\_insurance.html](https://www.dnr.state.mn.us/waters/watermgmt_section/floodplain/flood_insurance.html)

### *National Flood Insurance Program (NFIP)*

Author(s): FEMA

Official webpage for the NFIP.

<https://www.fema.gov/national-flood-insurance-program>

## **Natural Shorelines and Vegetation Buffers**

### *For Shoreland Property Owners*

Author(s): University of Minnesota Extension

Guide with videos explaining best management practices for shoreland properties.

<https://extension.umn.edu/water-resources/shoreland-property-owners>

### *Living Shorelines Academy*

Author(s): EPA, North Carolina Coastal Federation, Restore America's Estuaries

Guidance for homeowners on designing and implementing a living shoreline.

<https://livingshorelinesacademy.org/index.php>

### *Minnesota Shoreland Management Resource Guide*

Author(s): Minnesota Sea Grant

Interactive quick guide on managing shorelines and best management practices.

<http://www.shorelandmanagement.org/index.html>

### *Shoreline Alterations: Natural Buffers and Lakescaping*

Author(s): DNR; 2012

Explains the importance of vegetation buffers and how to incorporate the lake in lakescaping.

[https://files.dnr.state.mn.us/publications/waters/shoreline\\_alterations\\_lakescaping.pdf](https://files.dnr.state.mn.us/publications/waters/shoreline_alterations_lakescaping.pdf)

### *Vegetative Best Management Practices: A Manual for Pennsylvania/Lake Erie Bluff Landowners*

Author(s): Pennsylvania Department of Environmental Protection; 2017

Although not all of the plants and legal considerations are relevant to Minnesota, this is an excellent handout for understanding how to protect bluff shorelines.

[https://seagrant.psu.edu/sites/default/files/BluffBook2017\\_0.pdf](https://seagrant.psu.edu/sites/default/files/BluffBook2017_0.pdf)

## Water Runoff and Stormwater

### *Controlling Coastal Bluff Groundwater*

Author(s): New York Sea Grant

Discusses strategies for addressing groundwater seepage in coastal bluffs.

<https://seagrant.sunysb.edu/glcoastal/pdfs/BluffGroundwater.pdf>

### *Home and Garden*

Author(s): Lake Superior Streams

Guidance for coastal homeowners on managing stormwater and preventing water pollution at their home.

<https://www.lakesuperiorstreams.org/citizen/action.html>

## Protecting Your Shoreline

### Permits & Regulations Related to Coastal Properties

#### *DNR Water Permits*

Author(s): DNR

<https://www.dnr.state.mn.us/permits/water/index.html>

#### *Shoreland Management Program*

Author(s): DNR

[https://www.dnr.state.mn.us/waters/watermgmt\\_section/shoreland/index.html](https://www.dnr.state.mn.us/waters/watermgmt_section/shoreland/index.html)

#### *Permitting Process and Procedures*

Author(s): U.S. Army Corps of Engineers Detroit District

<https://www.lre.usace.army.mil/Missions/Regulatory-Program-and-Permits/>

## Shoreline Protection and Modification

### *Erosion Management for New York's Great Lakes Shorelines*

Author(s): Roy Widrig, New York Sea Grant

<https://seagrant.sunysb.edu/glcoastal/pdfs/ErosionManagement.pdf>

### *Great Lakes Coastal Shore Protection Structures and Their Effects on Coastal Processes*

Author(s): New York Sea Grant

<https://publications.aqua.wisc.edu/product/great-lakes-coastal-shore-protection-structures-and-their-effects-on-coastal-processes/>

### *Maintaining Shoreline Erosion Control Structures*

Author(s): New York Sea Grant

<https://seagrant.sunysb.edu/glcoastal/pdfs/MaintainingCECStructures.pdf>

*Natural and Structural Measures for Shoreline Stabilization*

Author(s): Systems Approach to Geomorphic Engineering

Overview for more natural and living shoreline stabilization techniques.

<http://sagecoast.org/info/information.html>

*Ohio Coastal Design Manual*

Author(s): Ohio Department of Natural Resources Office of Coastal Management; 2014

Designs specific to Lake Erie, but is a useful manual on engineering considerations when designing shoreline protection.

<http://coastal.ohiodnr.gov/design/introduction>

*Stabilizing Coastal Slopes on the Great Lakes*

Author(s): Gene Clark, University of Wisconsin Sea Grant Institute; 2012

<https://publications.aqua.wisc.edu/product/stabilizing-coastal-slopes-on-the-great-lakes/>

*Structural Methods for Controlling Coastal Erosion*

Author(s): Charles O'Neill Jr., New York Sea Grant; 1986

<https://seagrant.sunysb.edu/glcoastal/pdfs/StructuralMethodstoControlErosion.pdf>

*Types of Shore Structures*

Author(s): Ohio Department of Natural Resources Office of Coastal Management

Provides a useful list and description of shore structures.

<http://coastal.ohiodnr.gov/shorestructures>

## **Working with Engineers and Contractors**

*Great Lakes coastal engineering firms and contractors*

Author(s): University of Wisconsin Sea Grant Institute

Guidance for homeowners on selecting and working with engineers and contractors.

<https://www.seagrant.wisc.edu/our-work/focus-areas/coastal-processes-and-engineering/resources-for-property-owners/great-lakes-coastal-engineering-firms-and-contractors/>

*Guidelines for Selecting a Marine Contractor*

Author(s): New York Sea Grant; 2015

Tips on choosing a contractor and a glossary of common coastal structure terms.

<https://seagrant.sunysb.edu/glcoastal/pdfs/SelectingAContractor.pdf>

*Working with Engineers and Contractors on Shore Protection Projects*

Author(s): Gene Clark, University of Wisconsin Sea Grant Institute; 2012

<https://publications.aqua.wisc.edu/product/working-with-engineers-and-contractors-on-shore-protection-projects/>

## Local Resources

### Local Property Owner Guides

#### *Lake County Property Owner's Guide*

Author(s): Lake County, Minnesota; 2007

Guide that oversees property ownership for Lake County with some information about shoreline management.

[https://www.co.lake.mn.us/departments/planning\\_and\\_zoning/lake\\_county\\_property\\_owner\\_s\\_guide.php](https://www.co.lake.mn.us/departments/planning_and_zoning/lake_county_property_owner_s_guide.php)

#### *Shoreland Guide for St. Louis County*

Author(s): Planning and Development Department, St. Louis County; 2010

General shoreline protection guide, not specific to Lake Superior, but gives overview of different practices.

<https://www.southstlouisswcd.org/wp-content/uploads/2019/03/St-Louis-County-shoreland-property-owners-guide.pdf>

#### *Shoreland Stewardship Resource Guide*

Author(s): Cook County Soil and Water Conservation District; 2019

General shoreline guide, not specific to Lake Superior, that highlights best management practices.

[https://www.co.cook.mn.us/images/SoilandWater\\_Agendas/Shoreland\\_Guide\\_Large\\_-\\_44PG\\_5MB.pdf](https://www.co.cook.mn.us/images/SoilandWater_Agendas/Shoreland_Guide_Large_-_44PG_5MB.pdf)

### Online Maps and Tools

#### *Cook County mAPP*

Author(s): Cook County, MN

Interactive map platform with property information for Lake County.

<https://cookcountymn.maps.arcgis.com/home/index.html>

#### *Lake County Atlas and Online Parcel Viewer*

Author(s): Lake County, MN

Interactive map with aerial imagery and property information for Lake County.

<https://lakecountymn.maps.arcgis.com/apps/webappviewer/index.html?id=daf39925b74d4123a8f98ce10f1115c2>

#### *NWI Wetland Finder*

Author(s): DNR

Interactive map for locating wetlands in the state of Minnesota.

<https://arcgis.dnr.state.mn.us/ewr/wetlandfinder/>

#### *St. Louis County Land Explorer*

Author(s): St. Louis County, MN

Interactive map platform with local property information for St. Louis County.

<https://gis.stlouiscountymn.gov/landexplorer/>