

Natural Shorelines

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The mission of the Mason-Lake Conservation District is to provide leadership, technical assistance and education to aid individuals, groups, and units of government in conserving, improving and sustaining our natural resources and environment.

Bioengineered Natural Shorelines

Mimic natural shorelines by using native plants and natural biodegradable products to mitigate erosion, slow runoff and protect shorelines while improving and maintaining wildlife and fish habitat.





LEVELS OF NATURAL SHORELINES

- NO NATIVE VEGETATION
- SHARING THE SHORE
- SHARING THE SHORE MORE



Benefits of Natural Shorelines

- ▶ Erosion control
- ▶ Filters and slows runoff
- ▶ Wildlife and fish habitat
- ▶ Goose deterrent
- ▶ Aesthetics

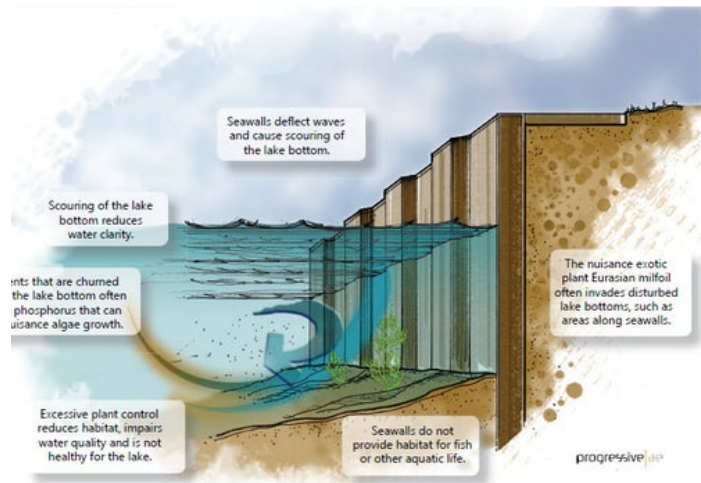
Disadvantages of Unnatural shorelines

Seawalls

- ▶ Wave action scores lake bottom
- ▶ Wave flanking erodes neighboring property

Turf Grass

- ▶ Increased leaching of nutrients from fertilizer use
- ▶ Lack of protection from erosion
- ▶ Decreased wildlife habitat
- ▶ Increased use by geese



Erosion

- Wind
- Wave
- Sheet/rill
- Gully
- Ice push



Shoreline protection

- Soft-armoring/bioengineered
- Rock rip-rap
- Hard structures/seawalls





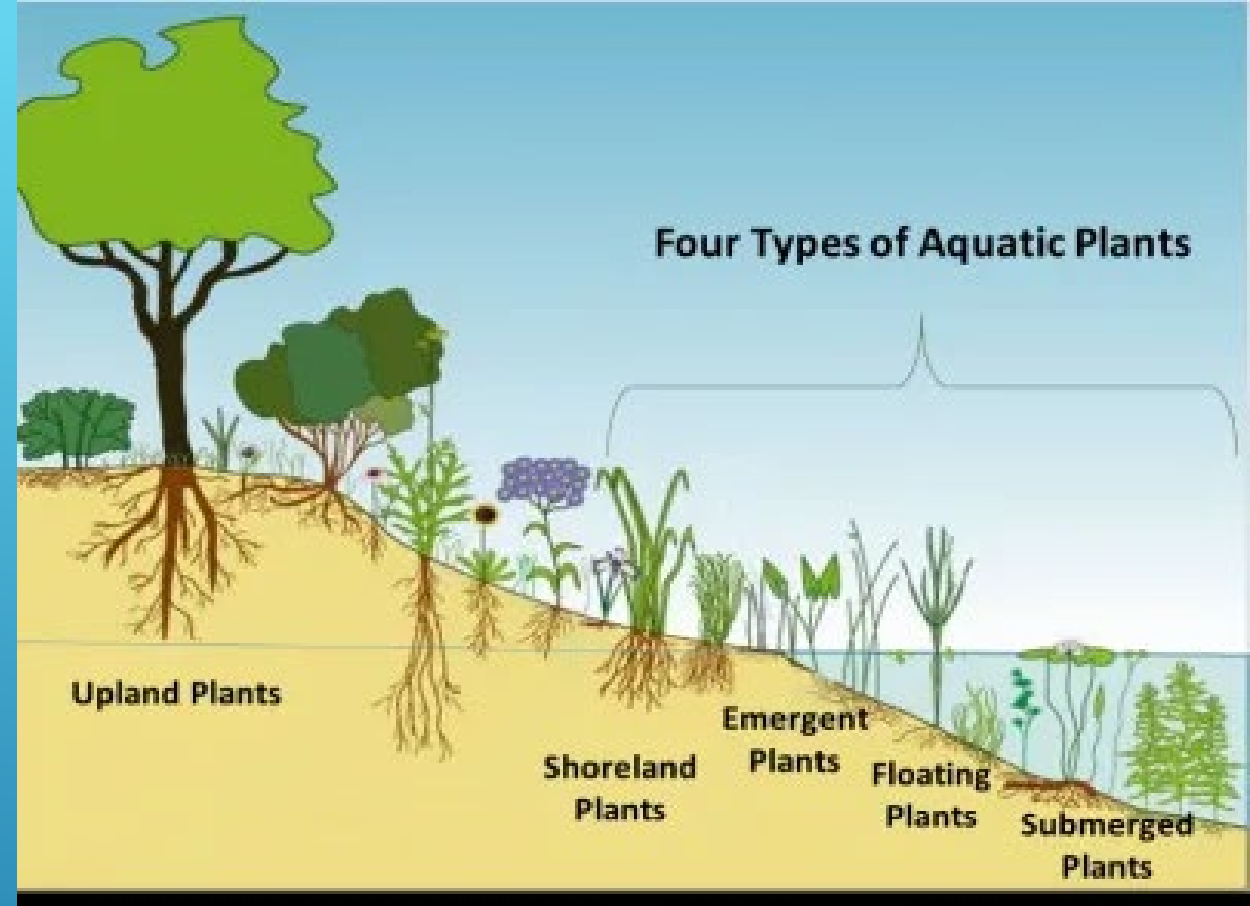
MATERIALS NEEDED

- EROSION CONTROL BLANKETS
- COIR LOGS
- STAKES
- STRING
- TURBIDITY FENCE
- RIPRAP
- NATIVE PLANTS
- LIVE STAKES



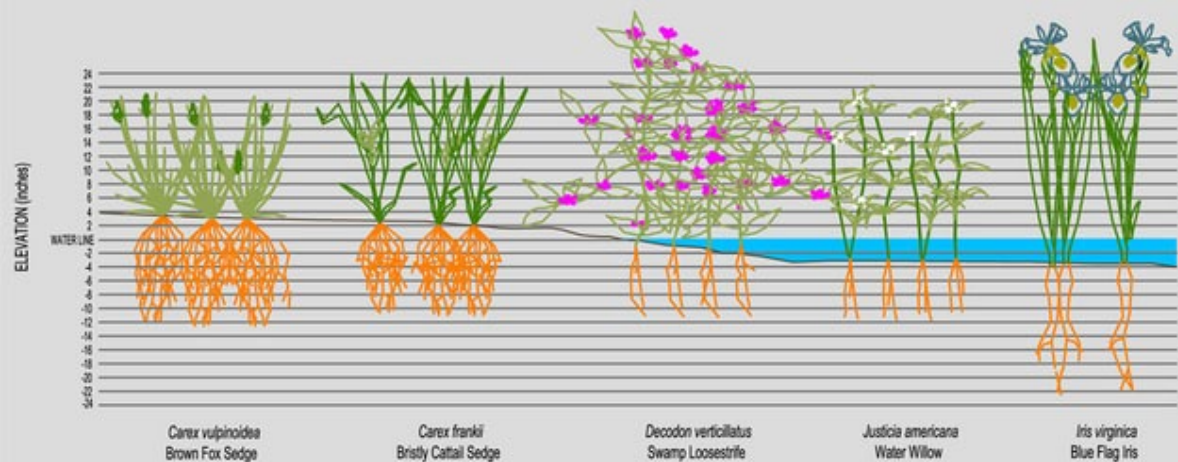
Plants

- Use Michigan natives
- Right plant, right place
 - Submerged
 - Emergent
 - Saturated
 - Upland
- Plugs or seed planting



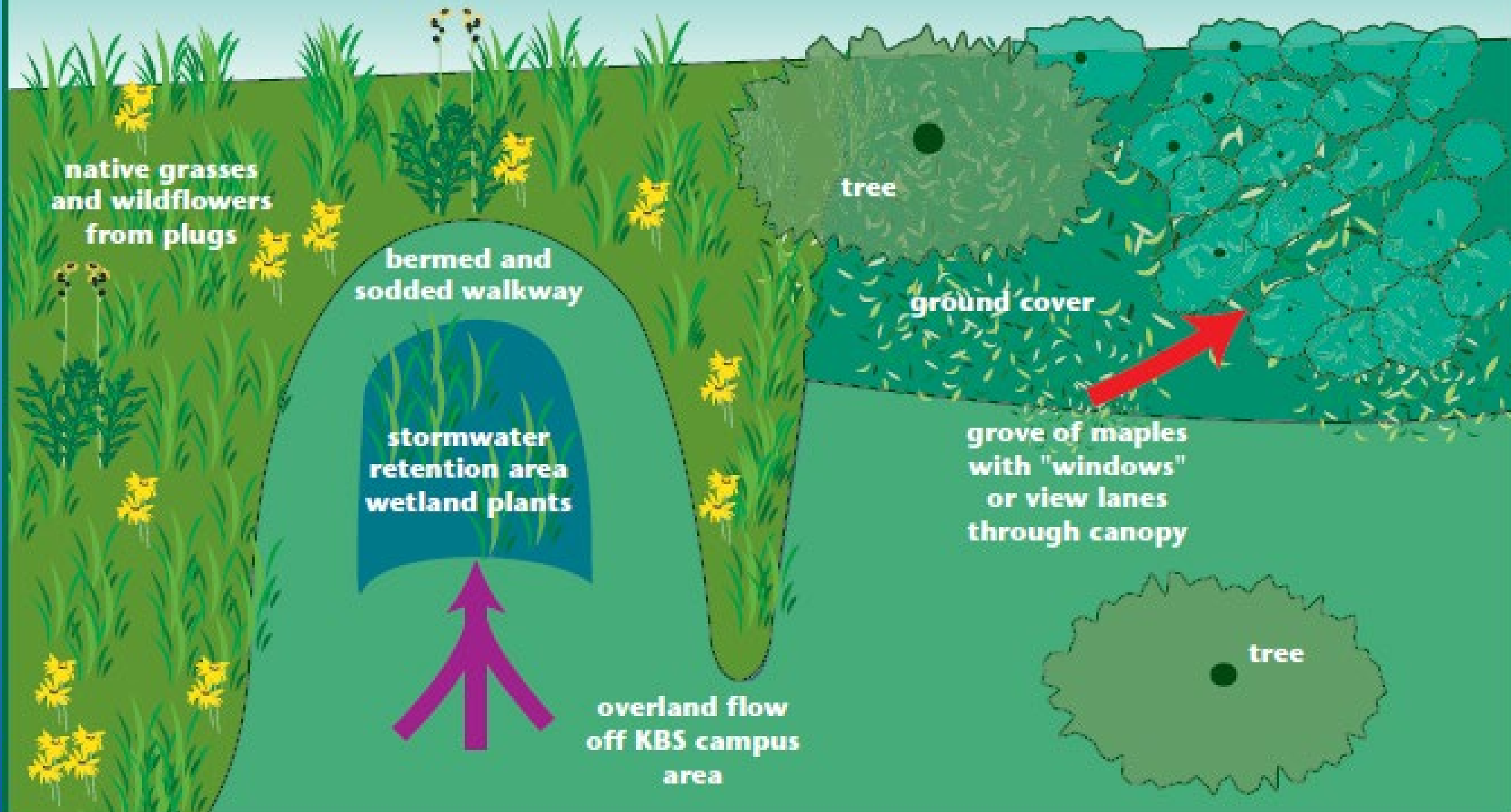
Saturated 0" to 4"
(above water level)

Emergent Shallow 0" to 4"
(below water level)



NATIVE PLANT ZONE

Gull Lake



native grasses
and wildflowers
from plugs

bermed and
sodded walkway

stormwater
retention area
wetland plants

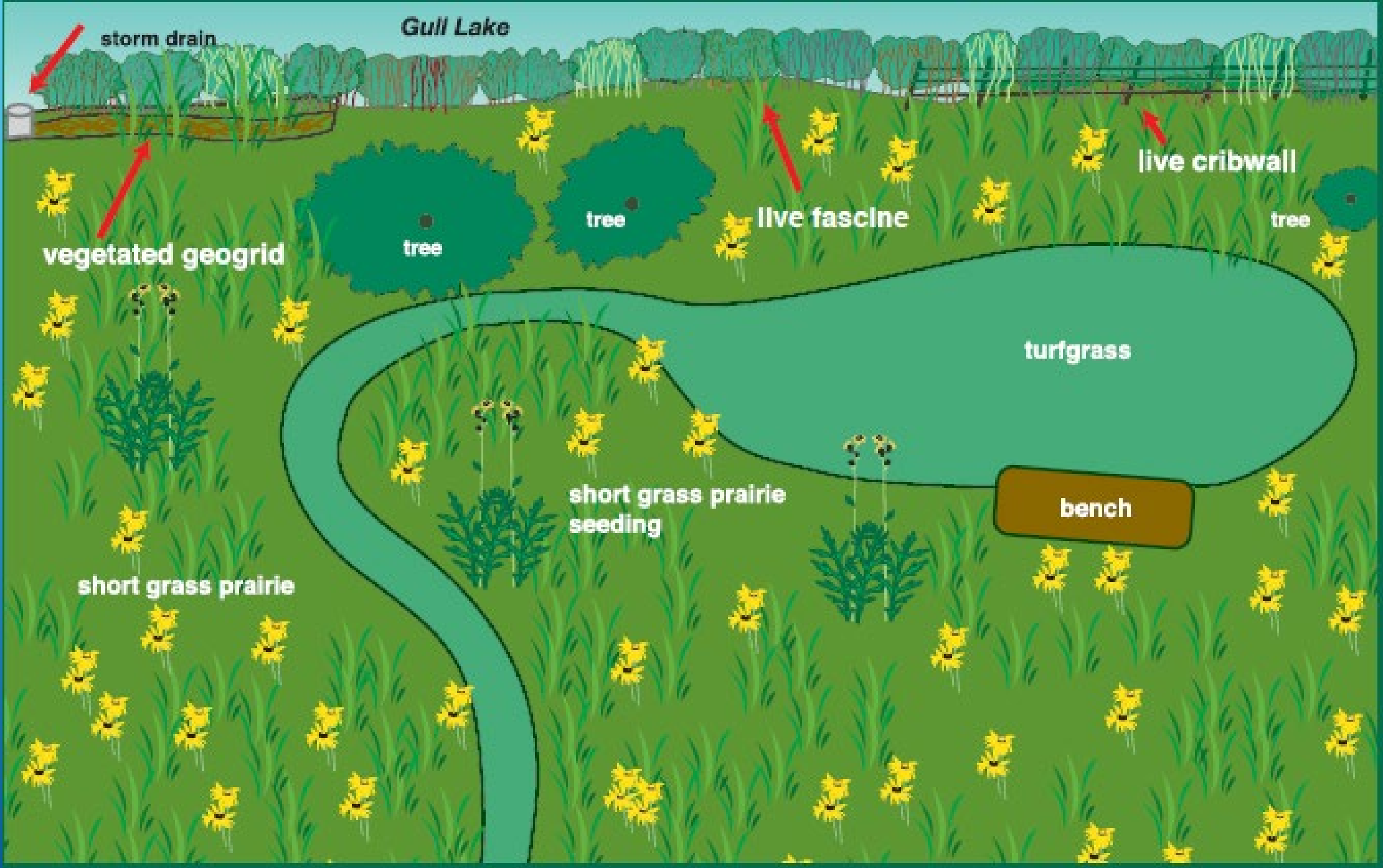
overland flow
off KBS campus
area

tree

ground cover

grove of maples
with "windows"
or view lanes
through canopy

tree



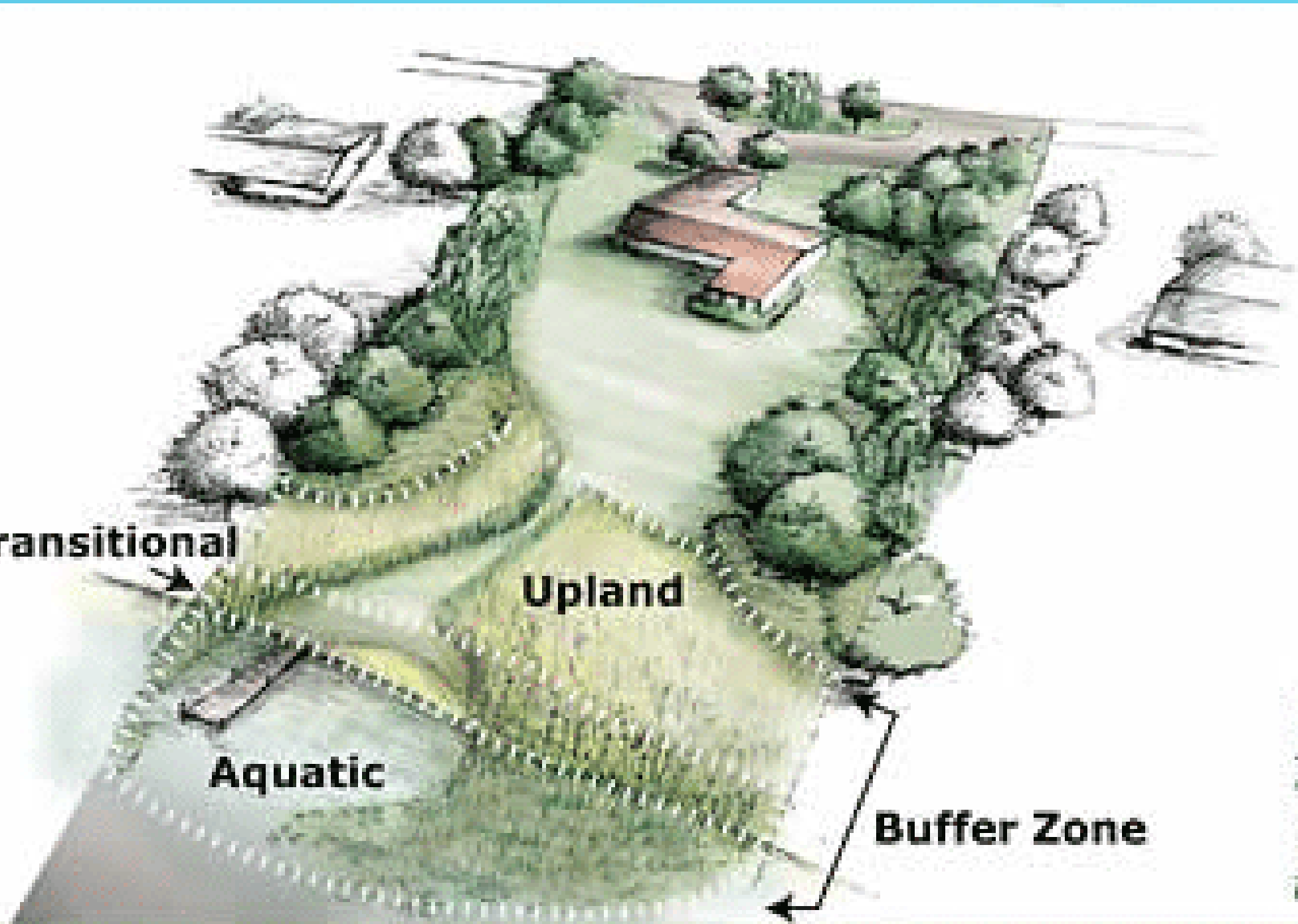
Transitional

Upland

Aquatic

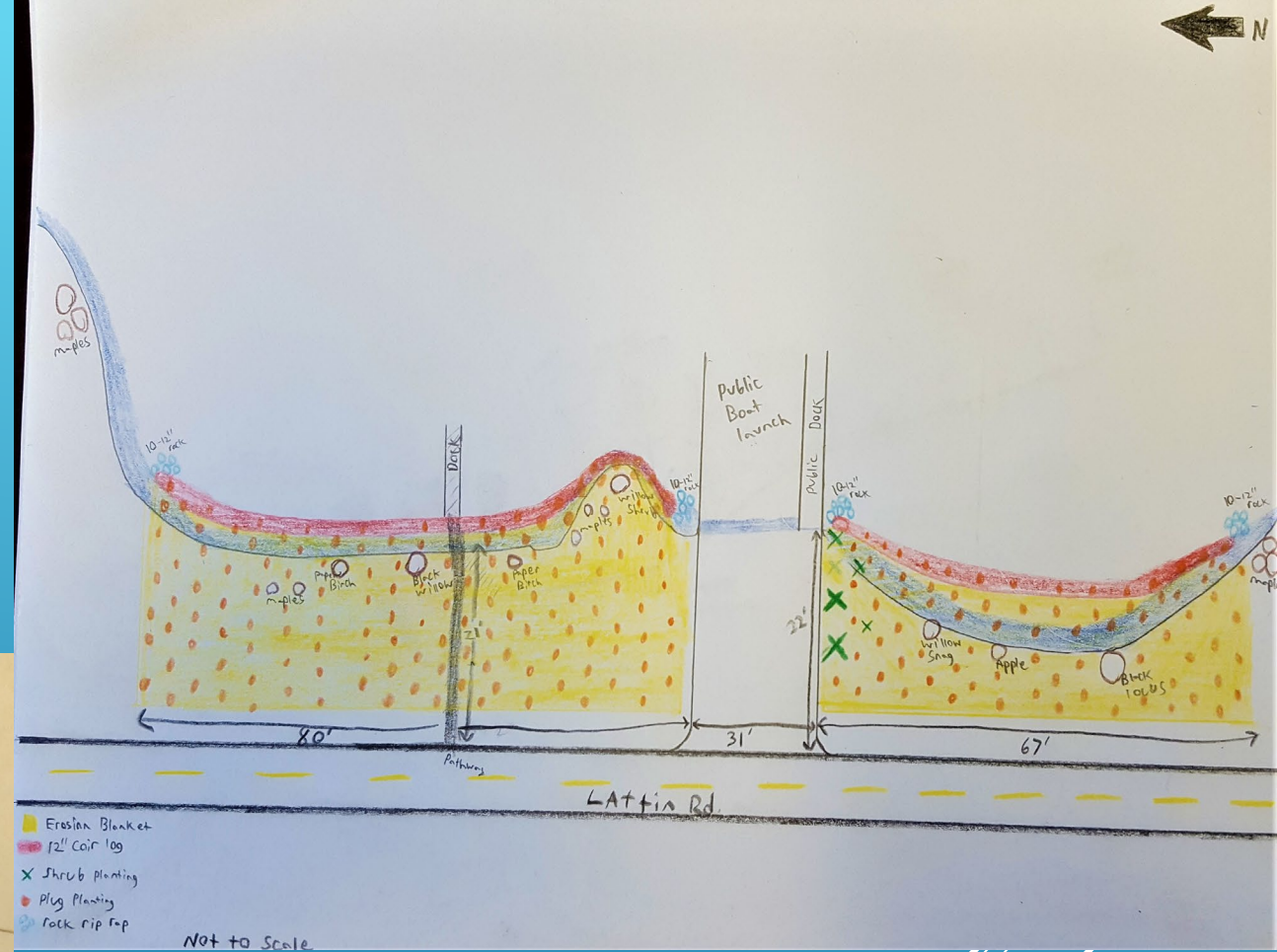
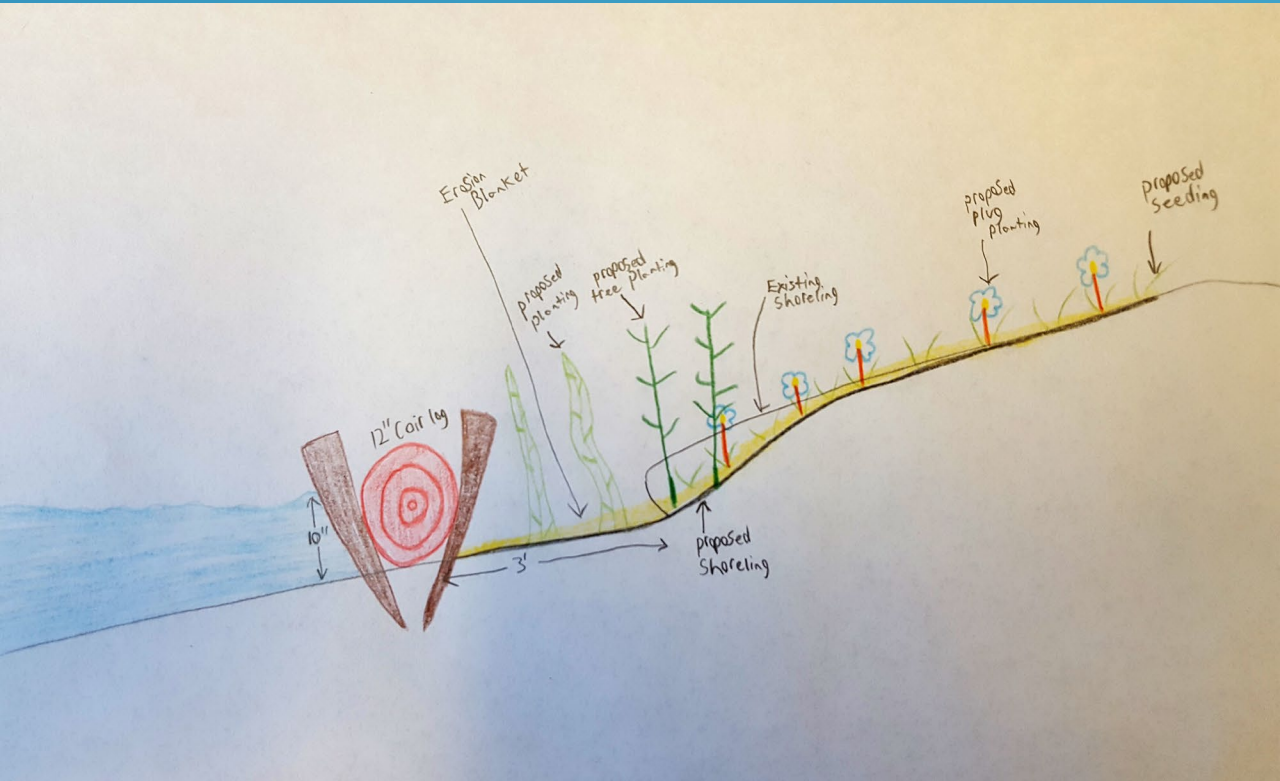
Buffer Zone

Steve Adams



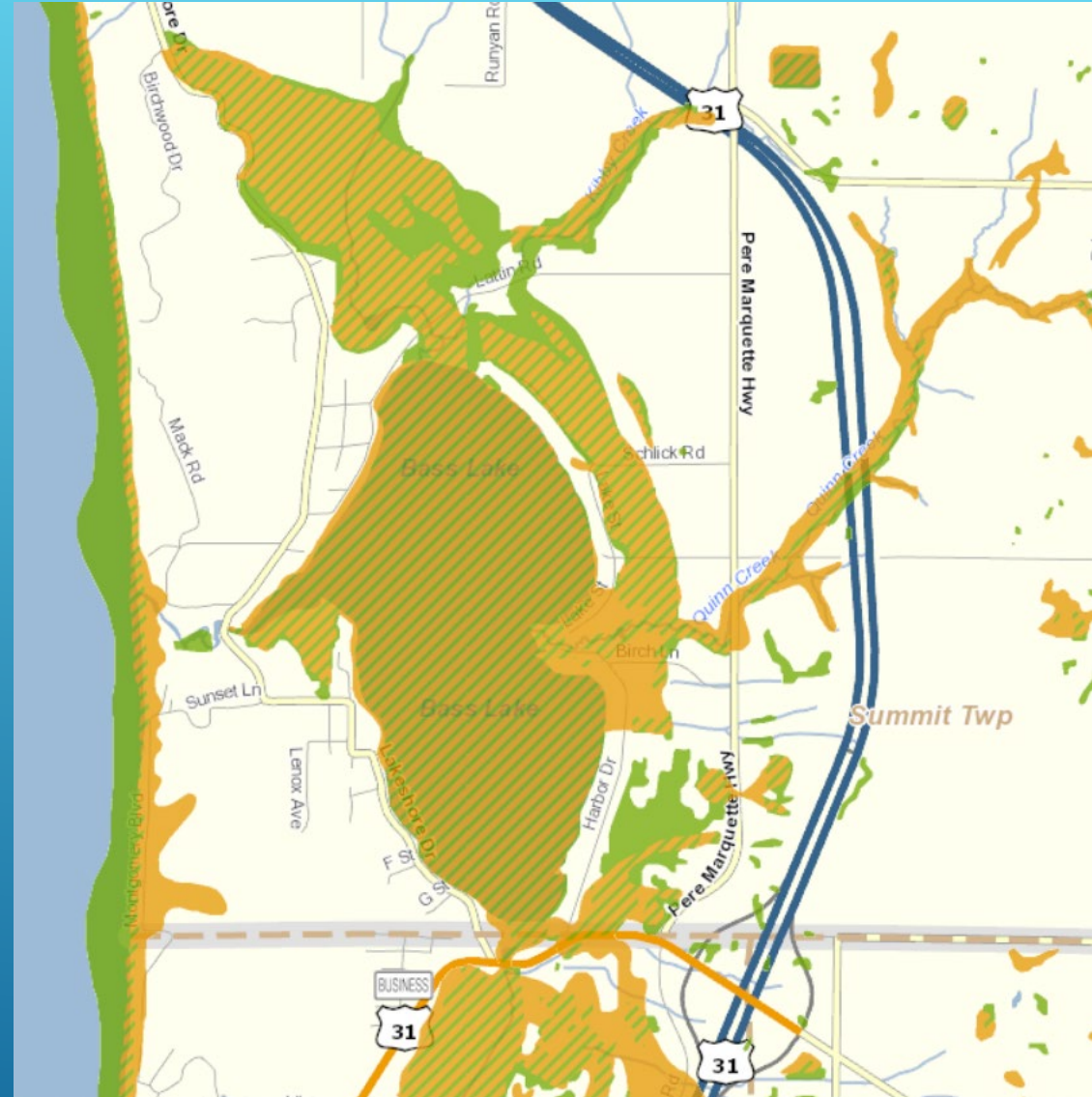
Design

- Overhead View
- Cross section view
- Labels
- Measurements
- North Arrow
- To scale or not to scale



Michigan law and permits

- Natural Resources and Environmental Protection Act, 1994 PA 451
 - Part 301 protects inland lakes and streams
 - Part 303 protects wetlands
 - Part 91 Soil erosion and sedimentation control, requires a permit when a project involves an earth change activity within 500 feet of a lake, stream or when the project will disturb an area greater than 1 acre in size.



MiWaters

<https://www.michigan.gov/egle>

- All permits go through MiWaters
- Allows landowners or contractors to submit joint permits to EGLE and The U.S. Army Corps of Engineers
- Must Create an Account

Three permit categories

- General \$50
- Minor \$100
- Public notice \$500-\$4,000

Permits are good for 5 years

The screenshot shows the EGLE website with a navigation menu at the top including 'EGLE', 'Contacts', 'Permits', 'Online Services', 'Programs', and 'Locations'. The main header features the EGLE logo and the text 'MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY'. A search bar is located on the right. Below the header is a dark blue navigation bar with tabs for 'ABOUT EGLE', 'AIR', 'LAND', 'WASTE', 'WATER', and 'SUSTAINABILITY'. The 'WATER' tab is selected, leading to a page titled 'WATER' with a breadcrumb trail 'EGLE / WATER / MIWATERS'. On the left is a sidebar menu with options: 'Great Lakes', 'Drinking Water', 'Lakes & Streams', 'Wetlands', 'MiWaters', 'Wastewater', 'Water Permits', and 'Water Management'. The main content area is titled 'MiWaters' and includes an 'Introduction' section with a paragraph and a 'READ MORE' button. Below this is a 'Link to the MiWaters application' with the URL 'https://miwaters.deq.state.mi.us' and a 'MiWaters Frequently Asked Questions (FAQ)' link. An 'Information' section lists several links, including 'MiWaters Site Map Explorer', 'Get the latest updates', 'MiWaters - Who to Contact', 'MiWaters System Requirements', 'Certifier Agreement', 'Active Groundwater Permits - updated April 1, 2020', and 'Active NPDES Permits - updated April 1, 2020'. To the right of the 'Information' section is a 'Helpful Links' section with a large blue arrow pointing to a 'Related Links' section. The 'Related Links' section includes 'EGLE/USACE Joint Permit Application Information', 'National Pollutant Discharge Elimination System (NPDES) Permit Information', and 'Water Resources Division home page'. The footer contains five columns: 'Stay Connected' with social media icons, 'Contacts' with phone and email information, 'Our Performance' with 'OPEN Michigan Scorecard', 'Documents' with 'Reports', 'Forms', 'Publications', and 'Maps & Data', and 'Regulations' with 'Nondiscrimination in EGLE Programs', 'EGLE Policies', 'Laws & Rules', and 'Permits'.

Home

Notifications

Start a New Form

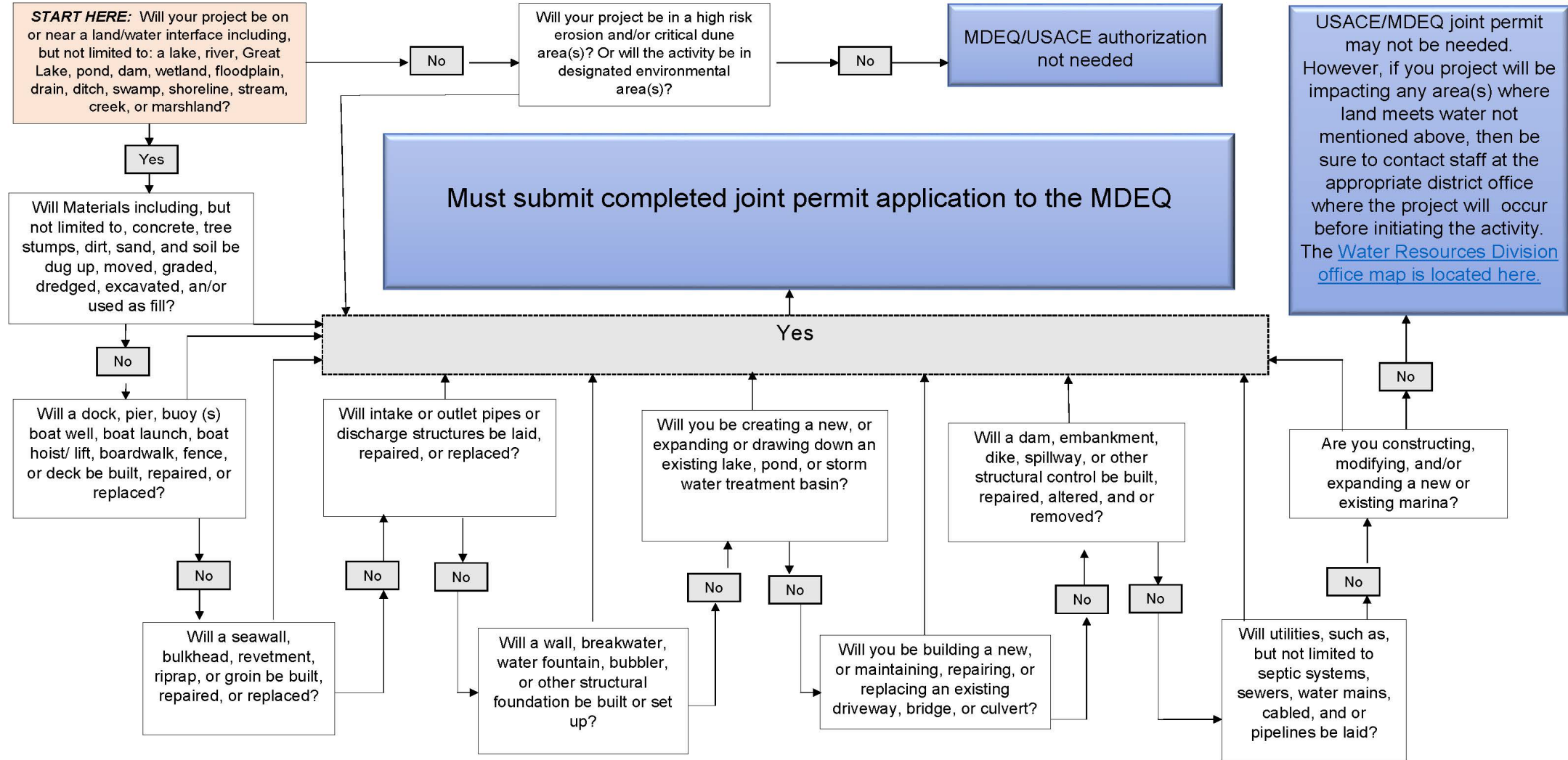
Start a New Form [Home](#)

Find and submit a new application or service request from this screen.

Application for Certificate of Coverage (COC) to Chemically Control Nuisance Aquatic Plants and Algae	Application for a certificate of coverage (COC) to chemically control nuisance aquatic plants and algae under Part 33, Aquatic Nuisance Control, of Act 451, PA 1994, as amended.	ANC	Begin Submission
Application for Permit to Chemically Control Nuisance Aquatic Plants and Algae	Application for an individual permit to chemically control nuisance aquatic plants and algae under Part 33, Aquatic Nuisance Control, of Act 451, PA 1994, as amended.	ANC	Begin Submission
Application for Permit to Chemically Control Nuisance Aquatic Plants and Algae (FLURIDONE ONLY)	Application for an individual permit that requests the use of fluridone to chemically control nuisance aquatic plants and algae under Part 33, Aquatic Nuisance Control, of Act 451, PA 1994, as amended.	ANC	Begin Submission
Application For SubDivisions and Condominiums Plat Review	Application For SubDivisions and Condominiums Plat Review	Resources	Begin Submission
County Drain Projects Request For Coordination Form Under Part 301	County Drain Projects Request For Coordination Form Under Part 301	Resources	Begin Submission
Digital EGLE/USACE Joint Permit Application (JPA) for Inland Lakes and Streams, Great Lakes, Wetlands, Floodplains, Dams, Environmental Areas, High Risk Erosion Areas and Critical Dune Areas	Joint Permit Application For Work in Inland Lakes and Streams, Great Lakes, Wetlands, Floodplains, Dams, High Risk Erosion Areas and Critical Dune Areas	Resources	Begin Submission
Digital PUBLIC TRANSPORTATION AGENCY Projects EGLE/USACE Joint Permit Application (JPA) for Inland Lakes and Streams, Great Lakes, Wetlands, Floodplains, Dams, Environmental Areas, High Risk Erosion Areas and Critical Dune Areas	PUBLIC TRANSPORTATION AGENCIES ONLY in Inland Lakes and Streams, Great Lakes, Wetlands, Floodplains, Dams, High Risk Erosion Areas and Critical Dune Areas	Resources	Begin Submission
Digital Transportation Emergency Request Form	Emergency Information Sheet For Bridge or Culvert Failure	Resources	Begin Submission
Draft Conservation Easement Submittal Form	Draft Conservation Easement Submittal Form	Resources	Begin Submission
Floodplain Elevation Calculation Request	Online Request for Floodplain elevations.	Resources	Begin Submission
Groundwater Discharge Permit Application Discharge Permits Rule 323.2218	Groundwater 2218 permit application required by Part 22 Administrative Rules implementing Part 31, Water Resources Protection, of the NREPA, 1994 PA 451, as amended, being R 323.2101 to 2192 and R 323.2201 to 2240.	Groundwater	Begin Submission
Groundwater Discharge Permit Application General Permit: Rule 323.2215	Groundwater Discharge Permit Application General Permit: Rule 323.2215	Groundwater	Begin Submission
Groundwater Discharge Permit Application Groundwater Exemption	Groundwater Exemption Form	Groundwater	Begin Submission



Does my Project Require a Land and Water Interface Permit?



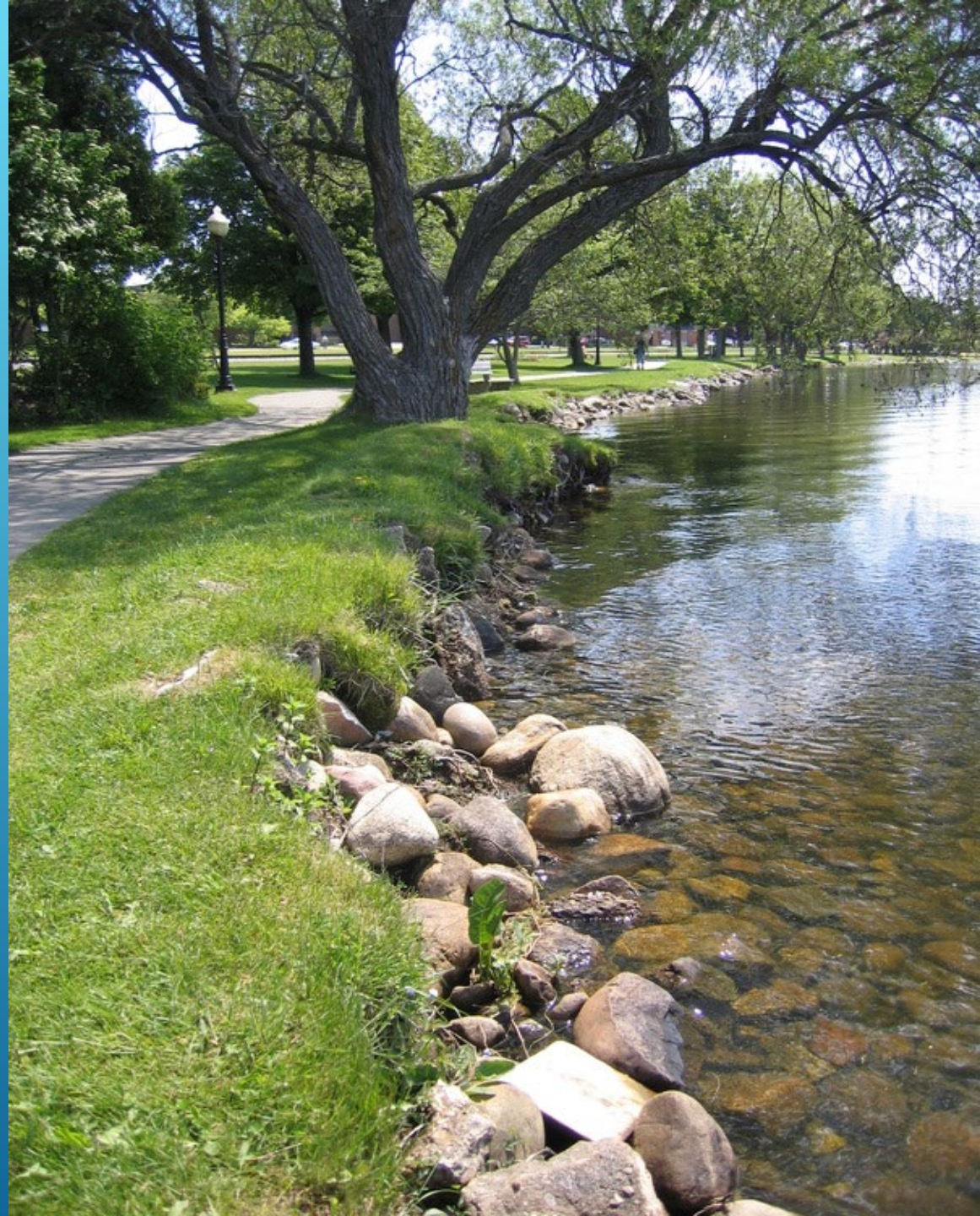
For information or assistance on this publication, please contact the (name of division/office, program), through the DEQ Environmental Assistance Center at 800-662-9278. This publication is available in alternative formats upon request.

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Natural Shoreline Demonstration site at Lake Cadillac Constructed by the Michigan Natural Shoreline Partnership

For more examples go to:

<https://www.mishorelinepartnership.org/demonstration-sites.html>







06/14/2012



08/20/2014



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- Technical Advice
- Permit assistance
- Advocate for landowners