

THE PURPOSE. THE PLAN.



The prevailing opinion among experts is that the water quality in Grand Traverse Bay is excellent. The bay is typical of other oligotrophic embayments in the Great Lakes; deep, clear, and cold with an overall low productivity. However, there are several potential threats to water quality, with localized areas of pollution, both in the bay and its watershed.

THE PLAN AND IMPLEMENTATION STRATEGIES

The intent of the Coastal Grand Traverse Bay Watershed Plan is to assist area watershed groups, lake associations, local governments, volunteer groups, and many others in making sound decisions to help improve and protect water quality in their area. The plan summarizes existing water quality conditions in and around the bay while also outlining the major watershed pollutants and giving recommendations on how to reduce the impact and amount of pollution entering the system. Specific and tangible actions and recommendations were developed based on the prioritization of watershed pollutants, sources, and causes while also looking at the priority and critical areas in the watershed.

EVALUATION AND OVERSIGHT

An evaluation strategy will be utilized to measure progress during the implementation of the Coastal Grand Traverse Bay Watershed Plan to determine whether water quality is improving. The first aspect of the evaluation strategy measures how well the watershed plan is being implemented and whether project milestones are being met. The second aspect will evaluate water quality protection efforts.

TIMELINE

Implementation of the coastal watershed plan is spread out over ten years and will be evaluated for its success in 2030. Throughout that time, The Watershed Center and other partners will continue to strengthen existing relationships with various groups throughout the watershed. Funding sources will be pursued to implement recommendations made in the watershed plan.

WATERSHED CHARACTERISTICS

The coastal Grand Traverse Bay watershed includes subwatershed areas of Mitchell, Tobeco, Acme, and Yuba creeks, as well as areas along east and west Grand Traverse Bay and Old Mission Peninsula totaling 190 square miles. The coastal watershed area encompasses 7 lakes, 6 major rivers/creeks, and more than 100 additional small streams entering the bay. Most of the streams and rivers in this watershed are designated trout streams, with Tobeco Creek being the largest creek not classified as a cold water trout stream.

There are several areas of state-owned and other public land in the coastal watershed area. This large amount of publicly owned land provides significant recreational opportunities, attracts thousands of visitors each year, and adds to the highly cherished quality of life that makes this area such a desirable place to live and visit.

There are 11 townships and 4 municipalities located along the shoreline of Grand Traverse Bay that deal with Great Lakes shoreline issues and other watershed concerns. Since the watershed crosses so many political boundaries, it is important for local governments to know and understand watershed boundaries and to plan on a watershed scale with neighboring townships and municipalities.

UNIQUE ATTRIBUTES OF GRAND TRAVERSE BAY

WETLANDS — Wetlands are a vital part of the coastal ecosystem and perform important ecological functions like flood storage, pollutant filtration, and habitat for fish and wildlife. In the coastal Grand Traverse Bay watershed, the most wetlands (by percentage) are found in the East Bay Shoreline subwatershed (~20% of its area). Other subwatersheds with significant amounts of wetlands are Yuba, Tobeco, and Mitchell. A wetland loss analysis for the coastal watershed areas along Grand Traverse Bay shows a 38% wetland loss since pre-settlement times (from 19,005 acres to just over 7,000 acres). However, some subwatersheds have experienced more substantial wetland losses compared to their watershed size – both Acme Creek and Old Mission Peninsula subwatersheds have lost over half of their pre-settlement wetlands, with East Bay Shoreline, Mitchell Creek, and Yuba Creek at just under a 50% loss.

GRAND TRAVERSE BAY COASTAL WATERSHED WETLAND LOSS ANALYSIS

SUBWATERSHED	LOSS
West Bay Shoreline	29%
East Bay Shoreline	42%
Mitchell Creek	45%
Yuba Creek	48%
Tobeco Creek	25%
Acme Creek	52%
Old Mission Peninsula	53%
TOTAL	38%

FLUCTUATING WATER LEVELS IN THE GREAT LAKES — Grand Traverse Bay is part of Lake Michigan and the Great Lakes ecosystem. Water levels in the Great Lakes naturally fluctuate daily, seasonally, and annually and are primarily affected by evaporation, surface runoff, and precipitation. Short-term water level fluctuations in the Great Lakes are due to changes in barometric pressure and winds. Long-term annual variation of Great Lakes water levels occurs over consecutive years and depends on climatic conditions. Due to fluctuating water levels, the shoreline of the Great Lakes is considered a dynamic and quickly changing environment. Wave action, storms, wind, ground water seepage, surface water runoff, and frost are contributing factors to changing and reshaping the shoreline.

WATERSHED POLLUTANTS, SOURCES, AND CAUSES

Numerous watershed pollutants and their sources of water quality decline in the coastal Grand Traverse Bay watershed have been identified.

MAJOR POLLUTANTS

- Changes to hydrologic flow
- Loss of habitat
- Nutrients
- Sediment
- Invasive species
- Pathogens
- Thermal pollution
- Toxic substances (oils, gas, pesticides, pharmaceuticals)

PRIORITY SOURCES AND CAUSES

- Road stream crossings
- Streambank and shoreline erosion
- Stormwater
- Reduction of wetlands
- Lack of riparian buffers/streamside canopy
- Septic systems
- Lack of ordinances to protect water quality and natural resources
- Increased development in sensitive areas

**Note: the top two stressors affecting the waters of Grand Traverse Bay are invasive species and toxic substances (specifically emerging contaminants like microplastics, PFAS, and pharmaceuticals). Additionally, elevated nutrients in the nearshore area may cause localized problems in the bay.

THE WATERSHED. THE VISION.



EVERYDAY WAYS YOU CAN PROTECT THE COASTAL WATERSHED

- Properly operate and maintain your septic system, including regular pumping and inspections.
- Clean and drain your boat after leaving every water body to prevent spreading invasive species.
- Establish a buffer of native plants between your lawn and the water to absorb pollutants from runoff, prevent shoreline erosion, and provide fish and wildlife habitat.
- Do not dump motor oil, litter, or cigarettes in storm drains.
- Only fertilize your lawn if tests show you need it.
- Direct runoff from your property onto vegetated areas instead of onto your driveway or the street.
- To help reduce *E. coli* bacteria, don't feed waterfowl and put pet waste in the trash immediately.
- Avoid using coal tar-based sealants to coat your driveway and parking areas and instead look for less toxic asphalt-based products for sealing surfaces.
- Put all litter, including cigarette butts, in the trash.
- Check local government meeting agendas to stay up to date on decisions and policies that may affect your area.

Get involved by visiting gtbay.org for updates on the Coastal Grand Traverse Bay Watershed Plan.

This project has been funded by Michigan Department of Environment, Great Lakes, and Energy's Nonpoint Source Program using Watershed Council Support funds.



WE PROTECT WHAT YOU LOVE



WATERSHED GOALS

The goal for the Coastal Grand Traverse Bay Watershed Plan is to provide guidance for the implementation of actions that will reduce the negative impact that pollutants and environmental stressors have on the designated watershed uses in the coastal watershed area. Seven specific goals were developed to work in conjunction with those identified in the companion watershed plans for the Boardman River and Elk River Chain of Lakes subwatersheds.

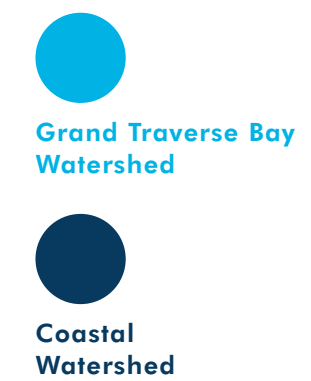
- 1 **Protect the integrity of aquatic and terrestrial ecosystems.**
- 2 **Protect and improve water quality.**
- 3 **Establish and promote land and water management practices that conserve or protect natural resources.**
- 4 **Encourage and support a sustainable local economy with diverse recreational and commercial opportunities that are compatible with a healthy watershed.**
- 5 **Develop and maintain effective education and outreach efforts to support watershed protection.**
- 6 **Protect the distinctive character, cultural heritage, and aesthetic qualities of the watershed.**
- 7 **Integrate climate-resilient practices and efforts throughout the watershed.**

COASTAL WATERSHED

132 miles of Lake Michigan shoreline

10 miles at its widest point

32 miles to its base in Traverse City



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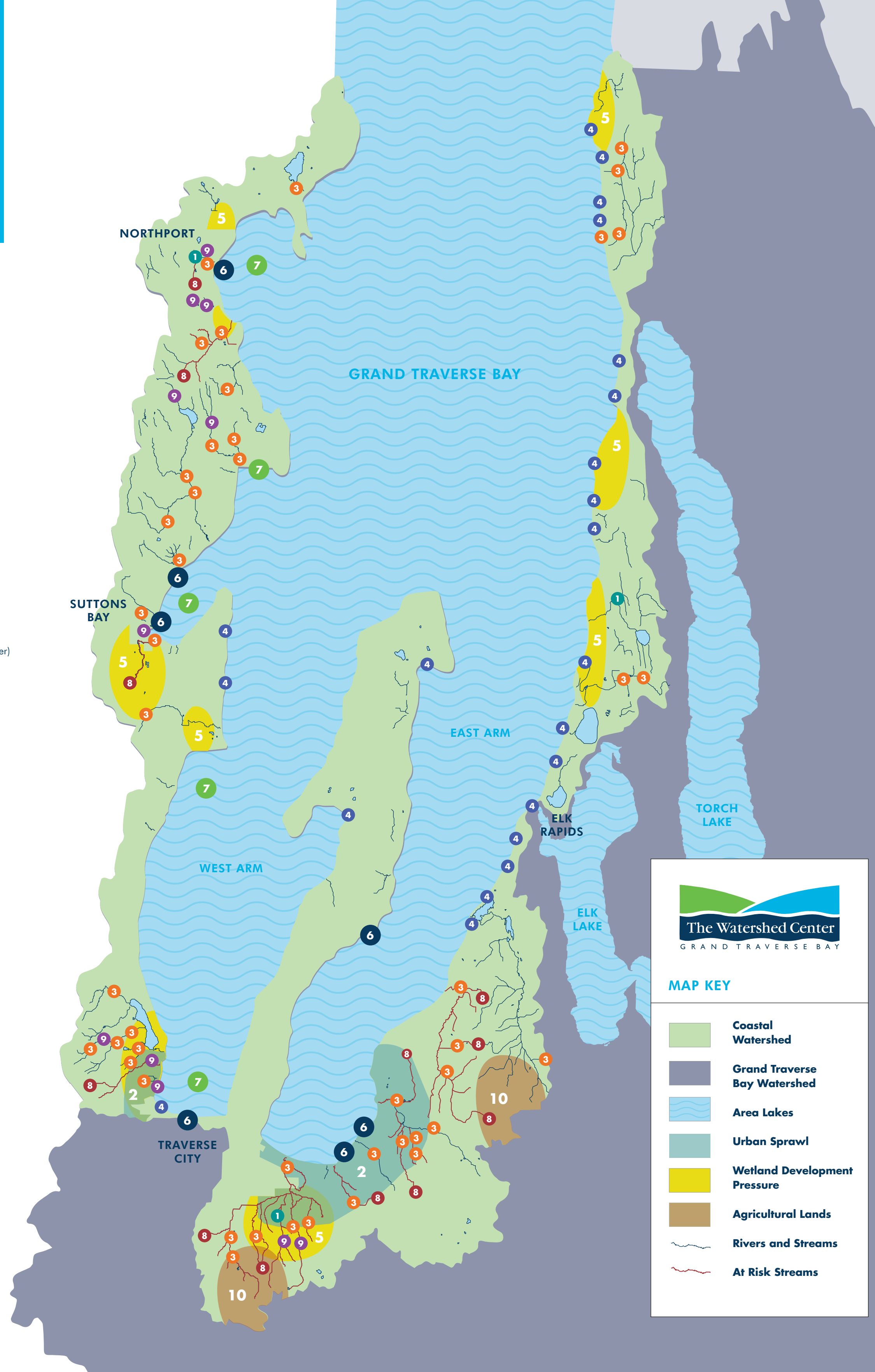


Protecting and enhancing the quality of our watershed is critical to our region's future. The Coastal Grand Traverse Bay Watershed Plan is a 10-year strategy for the management of this valuable resource.



THE COASTAL WATERSHED CRITICAL AREAS FOR RESTORATION

- 1 Critical Concerns:** Areas of bacterial impairment
Location: Mitchell Creek, Grand Traverse County; Mitchell Creek, Antrim County; Northport Creek
- 2 Critical Concerns:** Urban sprawl
Location: Zones directly east and west of Traverse City, downstream portion of the Mitchell Creek subwatershed, Acme Township area
- 3 Critical Concerns:** Severe road stream crossings
Location: Various throughout watershed
- 4 Critical Concerns:** High risk erosion areas
Location: Various locations along bay shoreline (identified by EGLE)
- 5 Critical Concerns:** Areas of wetland development pressure
Location: Various throughout watershed (close to urban areas where commercial development is happening and prime real estate along the bay where there is an increased demand for residential homes)
- 6 Critical Concerns:** Areas of coastal infrastructure challenges (due to high water)
Location: Various locations along bay shoreline, near Traverse City
- 7 Critical Concerns:** Macrophyte bed clusters (Grand Traverse Bay)
Location: Northport, Omena, and Suttons bays; Lee Point; southern end of west Grand Traverse Bay
- 8 Critical Concerns:** Compromised at-risk streams
Location: Northport, Ennis, Leo, Waterwheel, Brewery, Mitchell, Acme, Baker, and Yuba creeks
- 9 Critical Concerns:** Small dam locations
Location: Various throughout watershed
- 10 Critical Concerns:** Agricultural lands
Location: Tobeco Creek and Mitchell Creek headwater areas



MAP KEY

- Coastal Watershed
- Grand Traverse Bay Watershed
- Area Lakes
- Urban Sprawl
- Wetland Development Pressure
- Agricultural Lands
- Rivers and Streams
- At Risk Streams

CRITICAL AND PRIORITY AREAS

Several areas in the coastal Grand Traverse Bay watershed were identified for protection or restoration activities. Recommendations were aimed at protecting land from future development or protecting water quality from future potential impairment. Locations for these actions were placed into either **Priority Areas** (for protective actions) or **Critical Areas** (for restoration actions).

PRIORITY AREAS FOR PROTECTION

Priority areas are those that are particularly vulnerable to degradation or development pressure and should be protected from future harm. One of the best strategies for protecting priority areas is through the purchase/donation of land or the establishment of conservation easements.

General: critical dunes, undeveloped parcels along Grand Traverse Bay shoreline, headwaters of Acme Creek and Cedar Lake, wetlands, and Grand Traverse Bay spawning reefs

Specific: local land conservancies identified parcels of land as priorities for their land protection efforts

CRITICAL AREAS FOR RESTORATION

Critical areas are those in need of restoration that are contributing a significant amount of pollutants to the watershed (currently or in the future).

General:

- Grand Traverse Bay shoreline
- Riparian corridors (areas within 100 feet of bodies of water)
- City and village centers

There are several areas in the coastal watershed where various specific critical areas are clustered and overlap. These include areas surrounding Mitchell Creek (Grand Traverse County), Cedar Lake/Creek area just north of Traverse City, Suttons Bay area and south, and the Village of Northport. Special care should be taken for these areas and they should be prioritized for restoration activities.

IMPAIRMENTS

There are three waterbodies in the coastal Grand Traverse Bay watershed that are on the State's Impaired Waters List due to elevated bacteria (*E. coli*) levels. Coincidentally, two are named Mitchell Creek – one in Grand Traverse County and the other in Antrim County. The third is Northport Creek in Leelanau County. Sources and causes of these impairments are unknown at this time. In 2021, The Watershed Center began microbial source tracking studies in Mitchell Creek in Grand Traverse County. Surface water and groundwater testing for *E. coli* and other genetic markers is being conducted at various locations along Mitchell Creek to determine the source of bacterial contamination.



TO DO LIST

Priority work that should be conducted over the next several years is as follows, in no particular order:

- Streambank and shoreline erosion stabilization projects
- Establish riparian buffers in priority areas
- Install green infrastructure and other stormwater best management practices in urban areas to reduce stormwater runoff
- Road crossing improvements using best management practices
- Assist with developing or revising Master Plans and Zoning Ordinances to include more water quality protection, including stormwater ordinances
- Continue successful initiatives by local conservancies to preserve open space and wildlife corridors
- Implement measures to reduce bacteria contamination of local waters
- Wetland assessment, restoration, and protection
- Continue tracking the introduction and spread of invasive species and implement programs to reduce and eliminate their spread
- Continue developing Conservation Plans for farms
- Continue priority monitoring programs
- Continue outreach and education efforts

Costs for implementing all the tasks noted in the plan total more than \$34 million, with the most expensive tasks in the categories containing stormwater management, road stream crossings, and septic systems. Outreach costs are much less at just over \$2 million.