

**POLLUTANTS, SOURCES, AND CAUSES TO WATER QUALITY DEGRADATION IN THE
GRAND TRAVERSE BAY ONLY**

(COMPREHENSIVE WATERSHED MANAGEMENT TABLE)

Environmental Stressor or Pollutant	Impaired or Threatened Use	Sources K = known, S = suspected, P = potential	Causes K = known, S = suspected, P = potential
Nutrients	*Coldwater Fishery	Residential or Commercial Fertilizer Use (k)	Improper application (amount, timing, frequency, location, method, P content) (k)
		Septic Systems (s)	Poorly designed, sited, and maintained (s) High density/age of system (s)
	*Other Indigenous Aquatic Life	Urban/Agricultural/Rural Storm Water (k)	Poor storm water management practices (k) Development (k)
		Lack of Riparian Buffer (k)	Development (k) Clearing by landowner (k) Lack of adequate shoreline setbacks (p)
	*Partial/Total Body Contact	WWTP (p)	Discharge of nutrients in waste water (p)
	*Public Water Supply	Agriculture (p) (fertilizer, manure, & livestock)	Improper application (amt., timing, freq., location, method, P content) (p) Improper storage/handling/application (p) Close proximity to Bay/Tributaries (p)
		Reduction of Wetlands (k)	Development and filling
Invasive Species	*Coldwater Fishery	Connected Waterways (k)	Unrestricted movement thru waterways (k)
	*Other Indigenous Aquatic Life	Boat Hulls and Bilges (k)	Lack of restrictions on boat travel (k) Lack of public knowledge on impact (k)
		Purposeful & Accidental Human Intro (k)	Aesthetics (k) Development in wetlands and undisturbed habitat (p) Lack of public knowledge on impact (k)
	*Navigation	Other Biota (i.e. birds, frogs) (k)	'Hitching' a ride (k)
	*Partial/Total Body Contact		
*Public Water Supply	Zebra Mussels (k)	Sharp shells washing onshore (k)	

**POLLUTANTS, SOURCES, AND CAUSES TO WATER QUALITY DEGRADATION IN THE
GRAND TRAVERSE BAY ONLY CONT'D**

(COMPREHENSIVE WATERSHED MANAGEMENT TABLE)

Environmental Stressor or Pollutant	Impaired or Threatened Use	Sources K = known, S = suspected, P = potential	Causes K = known, S = suspected, P = potential
Loss of Habitat	*Coldwater Fishery	Development (incl. Re-development) (k)	Poor development and design practices (k) Lack of knowledge on impact (k) New construction (p) Inadequate laws or regulations (p) Lack of adequate enforcement (p) Habitat fragmentation (k) Wetland loss (k)
	*Other Indigenous Aquatic Life	Shoreline Erosion and Stabilization (k)	Wave/ice action (k) High lake/river levels (k) Improperly designed/sited sea walls (k) Removal or lack of riparian vegetation (k)
Toxins (Pesticides, Herbicides, Oils, Gas, Grease, Salts/Chlorides, Etc.)	*Coldwater Fishery *Other Indigenous Aquatic Life	Urban/Agricultural/Rural Storm Water (k)	Poor storm water management practices (k)
		Motor Boats (k)	Inefficient (2-cycle) or poorly maintained watercraft motors (k) Fuel spills (p)
		Improper Chemical Use/Disposal (s)	Poor public knowledge of consequences (s) Lack of disposal facilities and/or limited hours of operation (s)
		Air Emissions (k)	Vehicle combustion (k) Industrial/comm./municipal facilities (k)
		Illegal Dumping (p)	Lack of restrictions and enforcement (p)
		Road Salt in Winter (k)	Runoff from roads (k)
Pathogens (<i>E. Coli</i> and Fecal Coliform indicators)	*Coldwater Fishery	Urban/Agricultural/Rural Storm Water (k)	Poor storm water management practices (k)
		Animal Waste (k)	Geese/ducks along shore & beach areas (k) Livestock-access to streams near Bay (p)
	*Other Indigenous Aquatic Life	Illegal Discharges from Boats (p)	Lack of enforcement (p) Lack of public knowledge on impact (k)
	*Partial/Total Body Contact	Septic Systems (s)	Improperly designed and maintained septic systems (s)
	*Public Water Supply	WWTP (p)	Overflowing sewer systems in high flow (p) Hydrology (p)