

TORCH LAKE SHORELINE GREENBELT SURVEY

Summary Report
May 12, 2008



Torch Lake Shoreline Greenbelt Survey

Summary Report

PURPOSE

The purpose of the shoreline greenbelt survey was to evaluate the condition of the natural greenbelt buffer along the shoreline of Torch Lake in Antrim and Kalkaska Counties, Michigan.

BACKGROUND

According to the Grand Traverse Bay Watershed Protection Plan, the major threats to high water quality within the watershed are *sediments* from erosion and stormwater runoff and *nutrients* from fertilizers, stormwater runoff, and leaking septic systems.

Sediments are regulated by the Michigan Department of Environmental Quality and individual counties have Soil Erosion and Stormwater Control Ordinances, which attempt to control erosion and runoff. Local zoning regulations in 5 of the 6 townships have established a consistent 50' setback from the water, but greenbelt buffers are required by only 3 of the 6 townships bordering Torch Lake.

Nutrients from septic systems are regulated by the Northwest Michigan Community Health Agency Unified Sanitary Code. Revised in 2006, the code regulates new septic systems by requiring setbacks from surface water (lake or stream): 100' - absorption fields, 50' - septic tanks and 175' - toe of a mound system. Nutrients from fertilizers are currently unregulated in the watershed.

The purpose of a greenbelt buffer along a shoreline is to reduce the impact of human activities on the lake. *A greenbelt buffer is one of the best ways to protect the lake from both sediments and nutrients.*

SURVEY METHODS AND PARTNERS

During the summer and fall of 2007, The Watershed Center conducted a survey of the greenbelt buffer along the entire 41 mile shoreline zone of Torch Lake. The shoreline of Torch Lake is located in six townships: Central Lake Township, Clearwater Township, Forest Home Township, Helena Township, Milton Township and Torch Lake Townships. The Michigan Department of Environmental Quality funded the survey to establish a baseline for the condition of the shoreline on Michigan's largest inland lake.

All 1,752 properties were surveyed. The shoreline zone extends 50 feet inland from the ordinary high water mark. Data was recorded on a survey sheet by trained observers. A GPS reading and photographs were taken of each property.

White Pine Associates coordinated the survey under contract with The Watershed Center. The survey method was modified from a method used by Tip of the Mitt Watershed Council on Walloon Lake. The Watershed Center consulted with Tip of the Mitt on the early survey design for Torch Lake. More than twenty volunteers from Three Lakes Association and Torch Lake Protection Alliance provided valuable field assistance.

RESULTS

The results of the Torch Lake Shoreline Greenbelt Survey were compiled into a series of Excel spreadsheets for each Township. The following graphs highlight the results and summarize some of the data included in the tables (Appendix A).

- Graph #1- Development of Torch Lake Shoreline
- Graph #2- Condition of Torch Lake Shoreline: Natural and Landscaped
- Graph #3- Condition of Torch Lake Shoreline: Greenbelt Buffer
- Graph #4- Extent of Erosion on Torch Lake Shoreline

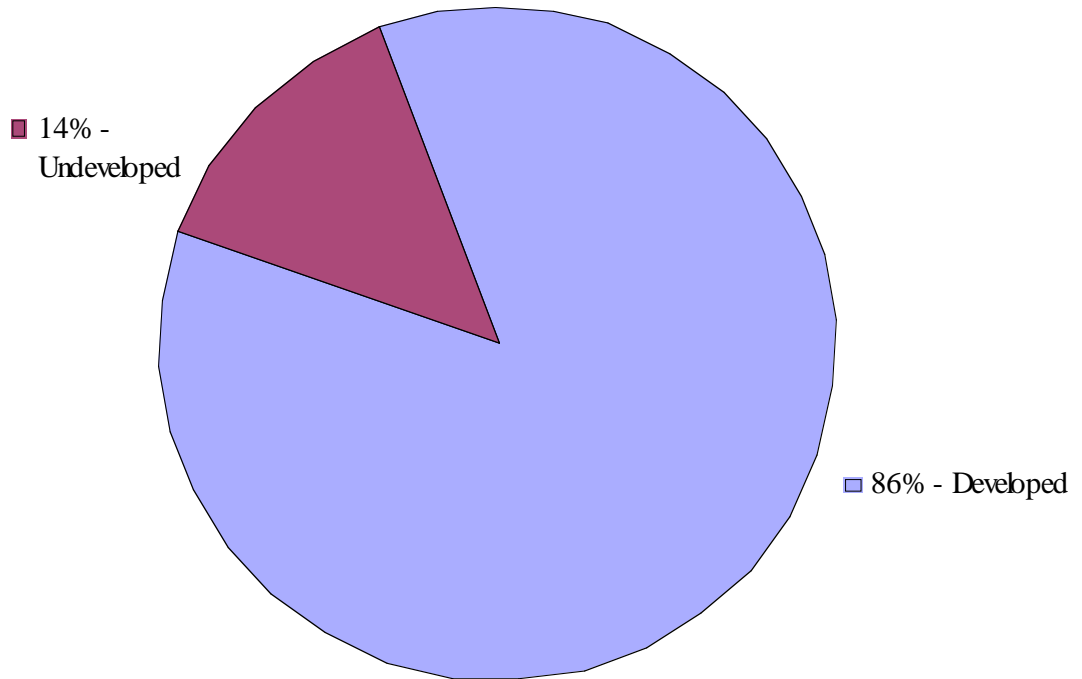
Included in Appendix A:

- Table #1- Development of Torch Lake Shoreline
- Table #2- Condition of Torch Lake Shoreline: Natural and Landscaped
- Table #3- Condition of Torch Lake Shoreline: Greenbelt Buffer
- Table #4- Extent of Erosion on Torch Lake Shoreline
- Table #5- Location of Erosion on Torch Lake Shoreline

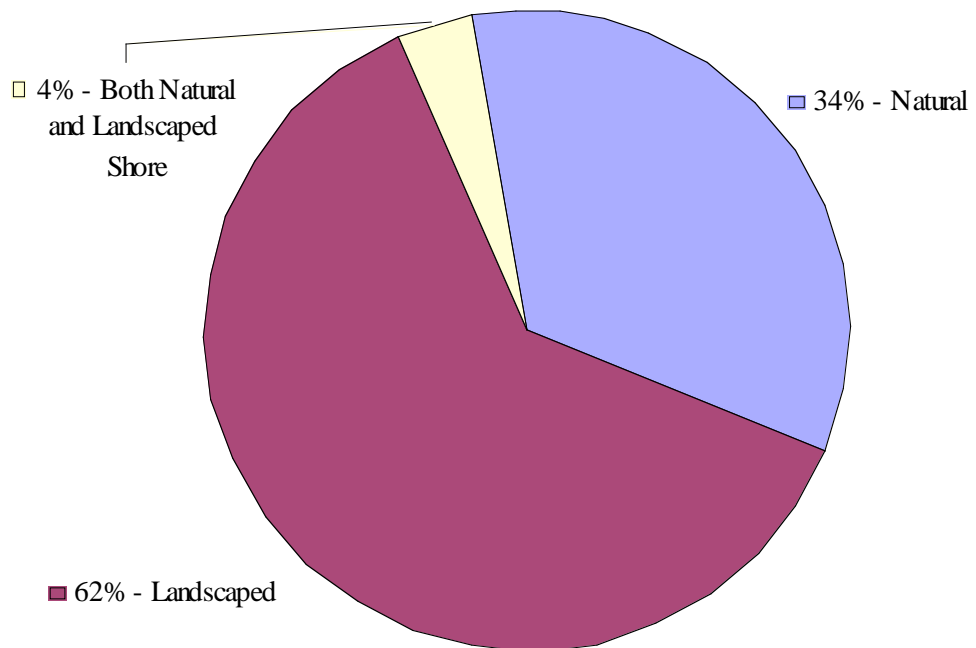
Additional results are available upon request. Each table includes information on all six townships surrounding Torch Lake.

- Table # 6- Parcels and Frontage Feet
- Table # 7- Greenbelt Length
- Table # 8- Greenbelt Depth
- Table # 9- Turf
- Table #10- Erosion Control Structures
- Table #11- Greenbelt Vertical Structure
- Table #12- Greenbelt Plant Density
- Table #13- Greenbelt Species Diversity
- Table #14- Emergent Vegetation
- Table #15- Greenbelt Score Tiers
- Table #16- Shoreline Evaluation
- Table #17- Shoreline Landscaping

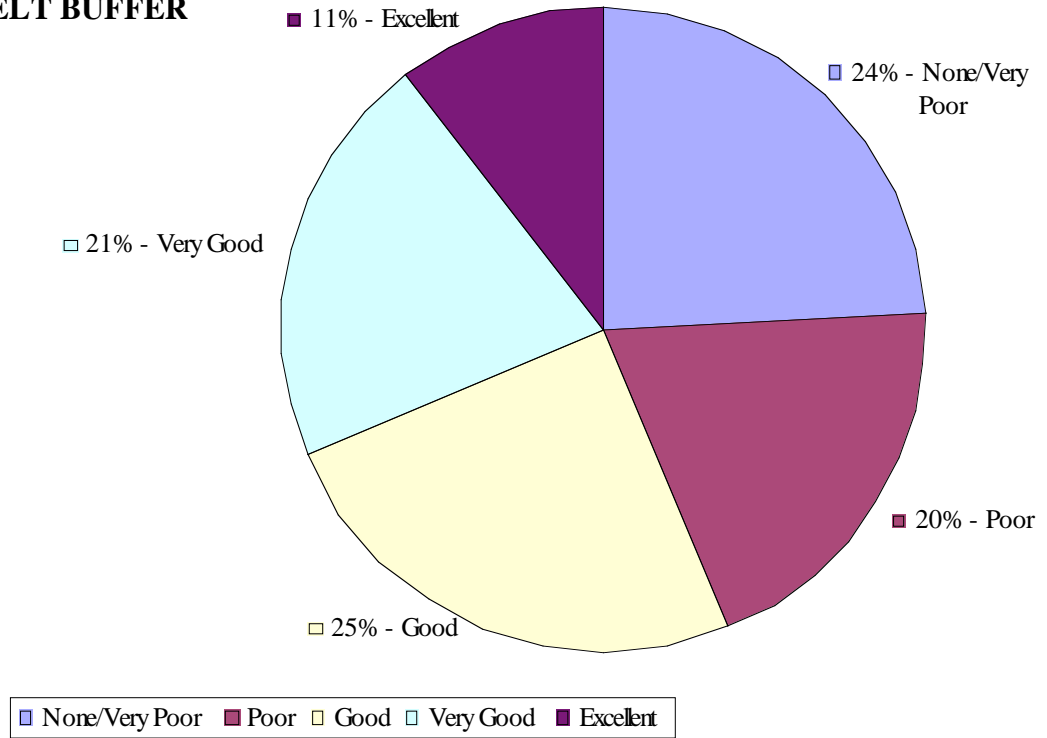
GRAPH # 1 – DEVELOPMENT OF TORCH LAKE SHORELINE



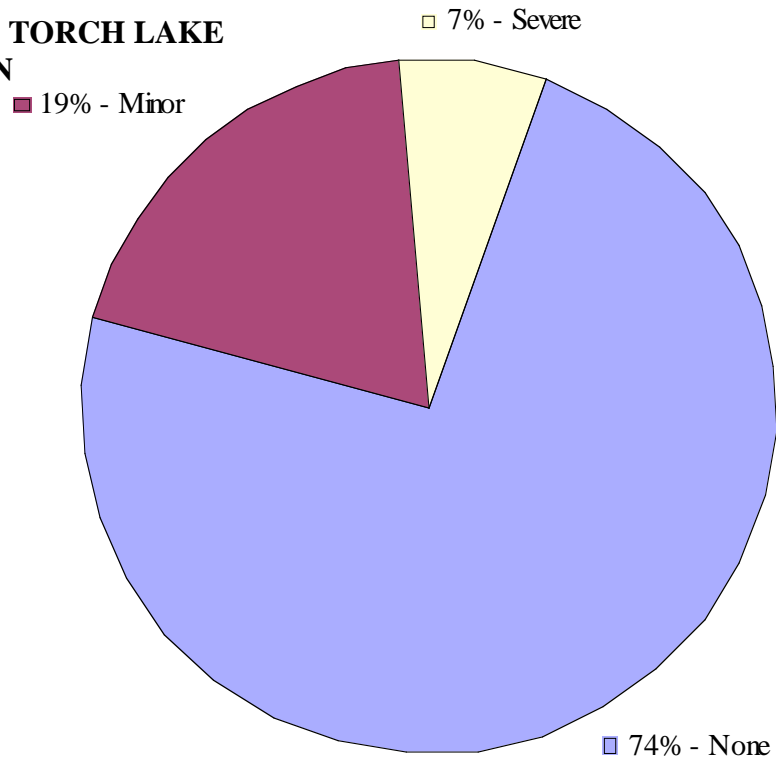
**GRAPH # 2 – CONDITION OF TORCH LAKE SHORELINE:
NATURAL AND LANDSCAPED**



**GRAPH #3 – CONDITION OF TORCH LAKE SHORELINE:
GREENBELT BUFFER**



**GRAPH #4 – EXTENT OF TORCH LAKE
SHORELINE EROSION**



CONCLUSIONS

- More than 85% of the Torch Lake shoreline has been developed.
- Less than 35% of the Torch Lake shoreline exists in a natural condition.
- More than 10% of the Torch Lake shoreline greenbelt buffer is in excellent condition.
- There are 349 erosion sites (278 minor + 81 severe) on the Torch Lake shoreline.

PROBLEMS

Survey data identified the following problems on the lake: areas with no greenbelts, severe erosion sites, stormwater drains, high density developments and boat ramps. After analyzing the data, assessing the prevalence of the problem around the lake and estimating its impact on water quality, the problems were rank ordered for both public and private properties.

Public Property

1. County road drains 10⁺ inches in diameter
2. Severe erosion sites on township owned property
3. State boat launches

Private Property

1. Turf planted to the shore with no greenbelt
2. Severe erosion sites
3. Boat ramps
4. Private drains 10⁺ inches in diameter
5. Totally landscaped shoreline with no greenbelt
6. High density development
7. Sandy shore with no greenbelt

RECOMMENDATIONS

1. Because most of shoreline of Torch Lake has been developed, property owners should be encouraged to protect the existing natural shoreline with deed restrictions and conservation easements.
2. Public and private property owners should restore the shoreline with erosion sites.
3. Because government agencies such as the Michigan Department of Environmental Quality and Antrim County Soil Erosion Office focus only on sediment and erosion control, a Shoreline Protection Zone should be created with consistent greenbelt buffer ordinances that protect the lake from nutrients.
4. Because the Northwest Michigan Community Health Agency Unified Sanitary Code does not regulate failing septic systems, a Point of Sale Inspection Ordinance for all septic systems around the lake should be created.
5. Because most of shoreline property is privately owned, there needs to be an educational program to inform property owners about the best practices for protecting water quality.

SOLUTIONS

The magnitude of these problems on Torch Lake with 1,752 parcels and more than 40 miles of shoreline requires a systematic, long-term, collaborative approach. The selected activities must be sustainable by local organizations and governments. A Shoreline Stewardship Committee will develop and coordinate these activities.

Two major goals have been identified:

- Restore the shore so it functions like a natural shoreline to protect water quality and the rural character of the landscape
- Promote shoreline stewardship to reduce stormwater runoff, soil erosion, and nonpoint source pollution.

Short-Term Activities:

To raise awareness about this survey, its findings, and the importance of shoreline greenbelts, a letter and greenbelt brochure will be mailed to all property owners. Greenbelt displays, greenbelt garden designs and presentations will be made available to township officials, lake associations and civic groups.

To encourage behavior change, The Watershed Center will work with local governments and install greenbelt demonstration projects on public property around the lake in 2008 and 2009.

Long-Term Activities:

In addition to installing demonstration sites, The Watershed Center and partners will promote greenbelts and recognize property owners who effectively protect and restore the natural shoreline.

TABLE #1 – DEVELOPMENT OF TORCH LAKE SHORELINE

TOWNSHIP	Developed parcels	Developed feet	% <i>Developed feet of shore</i>	Undeveloped Parcels	Undeveloped feet	% <i>Undeveloped feet of shore</i>	Both parcels*	Both feet*	% <i>Both feet of shore</i>	TOTAL FRONTAGE FEET
Central Lake	178	22,782	89%	29	2,614	10%	1	135	1%	25,531
Clearwater	111	9,570	93%	11	773	7%	0	0	0%	10,343
Forest Home	238	32,025	86%	43	5,218	14%	0	0	0%	37,243
Helena	226	28,781	84%	37	1502	16%	1	139	0%	34,422
Milton	358	45,249	81%	89	9,892	18%	1	417	1%	55,558
Torch Lake	377	46,477	88%	52	6,453	12%	0	0	0%	52,930
TOTAL	1488	184,884	86%	261	30,452	14%	3	691	0%	216,027

**The term ‘Both’ refers to shoreline parcels that have significant developed and undeveloped sections*

TABLE #2 – CONDITION OF TORCH LAKE SHORELINE: NATURAL AND LANDSCAPED

TOWNSHIP	Natural parcels	Natural feet	% <i>Natural feet of shoreline</i>	Landscaped parcels	Landscaped feet	% <i>Landscaped feet of shore</i>	Both parcels*	Both feet*	% <i>of shore having Both</i>	TOTAL FRONTAGE FEET
Central Lake	75	10,139	40%	130	12,439	49%	3	2953	12%	25,531
Clearwater	26	2,473	24%	94	7,540	73%	2	330	3%	10,343
Forest Home	94	13,994	38%	187	23,249	62%	0	0	0%	37,243
Helena	71	13,451	39%	190	20,382	59%	3	589	2%	34,422
Milton	135	19,603	35%	306	33,833	61%	7	2122	4%	55,558
Torch Lake	92	13,769	26%	328	36,734	69%	9	2427	5%	52,930
TOTAL	493	73,428	34%	1235	134,178	62%	24	8421	4%	216,027

**The term ‘Both’ refers to shoreline parcels that have both natural and landscaped sections*

TABLE #3 – CONDITION OF TORCH LAKE SHORELINE: GREENBELT BUFFER

TOWNSHIP	Tier 0 - None/Very Poor - parcels	Tier 0 - None/Very Poor - feet	None/Very Poor	Tier 1 - Poor - Parcels	Tier 1 - Poor - feet	Poor	Tier 2 - Good - Parcels	Tier 2 - Good - feet	Good
Central Lake	64	5826	23%	38	3362	13%	47	5111	20%
Clearwater	41	3204	31%	32	2655	26%	23	2000	19%
Forest Home	63	7260	19%	48	6527	18%	86	10885	29%
Helena	103	10305	30%	47	5356	16%	63	8126	24%
Milton	133	13326	24%	83	9955	18%	108	13123	24%
Torch Lake	100	12007	23%	134	14352	27%	116	14929	28%
TOTAL	504	51928	24%	382	42207	20%	443	54174	25%

TOWNSHIP	Tier 3 - Very Good - Parcels	Tier 3 - Very Good - feet	Very Good	Tier 4 - Excellent - Parcels	Tier 4 - Excellent - feet	Excellent	TOTAL FRONTAGE FEET
Central Lake	38	6751	26%	21	4481	18%	25,531
Clearwater	18	1559	15%	8	925	9%	10,343
Forest Home	59	9184	25%	25	3387	9%	37,243
Helena	37	8515	25%	14	2120	6%	34,422
Milton	74	12290	22%	50	6864	12%	55,558
Torch Lake	46	6335	12%	33	5307	10%	52,930
TOTAL	272	44634	21%	151	23084	11%	216,027

TABLE #4 – EXTENT OF EROSION ON TORCH LAKE SHORELINE

TOWNSHIP	None parcels	None Feet	<i>% of shoreline w/ No erosion</i>	Minor parcels	Minor feet	<i>% of shoreline w/ Minor erosion</i>	Severe parcels	Severe feet	<i>% of shoreline w/ Severe erosion</i>	TOTAL FRONTAGE FEET
Central Lake	167	18,608	73%	38	4,123	16%	3	2800	11%	25,531
Clearwater	119	10,177	98%	2	100	1%	1	66	1%	10,343
Forest Home	241	29,832	80%	30	5,709	15%	10	1702	5%	37,243
Helena	236	27,271	79%	20	5,560	16%	8	1591	5%	34,422
Milton	315	36,146	65%	99	14,123	25%	34	5289	10%	55,558
Torch Lake	315	37,013	70%	89	12,365	23%	25	3552	7%	52,930
TOTAL	1393	159,047	74%	278	41,980	19%	81	15000	7%	216,027

TABLE #5 – LOCATION OF EROSION ON TORCH LAKE SHORELINE

TOWNSHIP	Public Severe parcels	Public feet of severe erosion	Private - severe parcels	Private - feet of severe erosion	TOTAL FRONTAGE FEET	Total Parcels in Township
Central Lake	0	0	3	2800	25,531	208
Clearwater	1	66	0	0	10,343	122
Forest Home	1	66	9	1636	37,243	281
Helena	0	0	8	1591	34,422	264
Milton	3	266	31	5023	55,558	448
Torch Lake	2	327	23	3225	52,930	429
TOTAL	7	725	74	14,275	216,027	1,752