

Shoreland Inventory Methodologies

County staff and volunteers performed shoreland assessments on each of the four CalMan lakes. The goal of the assessment was to better understand near-shore habitats and conditions. The entire shoreline was assessed linearly for changes in land use and documented vegetation, erosion issues, and anthropogenic disturbances. In addition, a shoreland health scoring system was developed and a score was calculated for each parcel. A scoring system can be used to communicate quality of shoreland conditions riparian property owners and to the general public.

Previous shoreline assessments were conducted on Wisconsin lakes by several entities (UW-Steven Point CLUE, Northland College, National Lakes Assessment). No standard protocols had been established prior to the CalMan Lakes Assessment. Staff used methods developed by UW-Stevens Point CLUE and Winnebago County in an effort to collect similar data throughout the County and Winnebago System (LPL-1538-14, LPL-1539-14).

Parcel data from Manitowoc and Calumet Counties was downloaded onto a Trimble GeoXH. Aerial photos with parcel information were also used in the field verify locations and assess properties with treed shorelines. Data sheets were modified from Winnebago County to record additional information for the parcel score survey.

Riparian Buffer Survey

Riparian buffers provide several ecological benefits to a shoreline area. They provide habitat for riparian wildlife, buffer nutrient loading from non-point sources, and stabilize shorelines, preventing erosion. Riparian buffers were assessed by collecting linear data along the entire shoreline of each lake. Line segments were created by establishing waypoints at observed changes in habitat or buffer width. Observations were performed by the same staff person (observer/data recorder) to maintain consistency in the data. For each line segment, the maximum buffer distance inland (width of buffer) was estimated from a distance of 40 feet from shoreline. Presence and absence was recorded for each of the following vegetation types: forbs (< 3 feet tall), shrub (4-20 feet canopy), mowed vegetation, barren (included disturbed or susceptible to erosion), new shoreline restoration, organic leaf matter (healthy, undisturbed), wetland species, invasive species, trees (> 20 feet canopy), in-lake woody vegetation. The dominant vegetative type was recorded.

Data was entered into GIS and vegetative buffer maps were created for the each lake.

Development Point Survey

The development point survey documented anthropogenic disturbances along the shoreland area. Disturbances were categories as structures (boathouses, docks, decks,

other), impervious surfaces (personal landings, paved areas), seawalls, rip-rap and other areas susceptible to erosion. Observations were made from a distance of 40 feet from shoreline. For smaller parcels (less than 65 feet wide, subdivision plats), one waypoint may represent multiple development points due to accuracy of collecting points 40 feet away from shoreline. For parcels greater than 65 feet, multiple waypoints were taken documenting spatial location of multiple structures or disturbances.

Maps were created displaying the various development points using ArcMap. Several maps were created for Long Lake, which have the most developed shoreline in the study, in order to development points with higher resolution.

Shoreline Health Parcel Score Survey

A survey was conducted to assess varying land use practices within 75 feet of the ordinary high water mark (OHW) on every riparian property. This assessment was an opportunity to document more than just buffering capabilities of properties, incorporating encouraged practices (such as establishing tall canopy), implementation of encouraged erosion control practices, and greater detailed buffer zones (0-10ft, 10-30ft, >30ft). Data collected were used to set up a “scoring” system as a means communicate with landowners. The parcel score was designed to give credit for small practices implemented, and communicate opportunities for improvement.

An observation station was established for each parcel* along the shoreline. Stations were assessed using the layout described in Figure __. Observations were conducted at varying distances from OHW; 0-10 feet, 10-30 feet, and greater than 30 feet. Observations were limited to the corridor between the OHW and 75 feet, which is the minimum setback requirements for the shoreland zoning in the state of Wisconsin (NR 115). Each observation determined presence, absence and dominance of three vegetation types (trees, shrubs, forbs/grasses), poor vegetative practices (mowed vegetation, barren), and other practices (impervious surfaces, invasive species control).

As with many lakes that were significantly developed prior to shoreland zoning regulations, several parcels contain non-conforming structures. A non-conforming structure is any building or structure that was legally established prior to the effective date of the adopted shoreland zoning code. In particular, Long Lake has several primary dwelling units that are well within the 75 feet of the OHWM. Therefore, impervious surfaces did not include the primary dwelling unit in this survey. Secondary structures and patios were included.

Three zones were assessed to document practices within varying distances from the OHWM. Scores from each Zone (A, B, and C) were added to give a final parcel score. Scoring parameters are detailed in table __. A frequency distribution table was used to

define scoring categories. A “Healthy” score includes scores greater than 8, and reflect minimum impacts of these parcels on water quality. These parcels tended to provide habitat along the littoral transition zone and have minimal development. A parcel received a “Good” score if it scored 4 – 7. Many parcels that scored “Fair” (0-3) or “Priority” (less than zero) were well developed. “Priority” parcels are excellent opportunities to advance small land use practices to improve shoreland habitat.

Final scores were entered into ArcMap and several “Shoreline Health” maps were created from the data.

Figure __. Parcel Score Stations

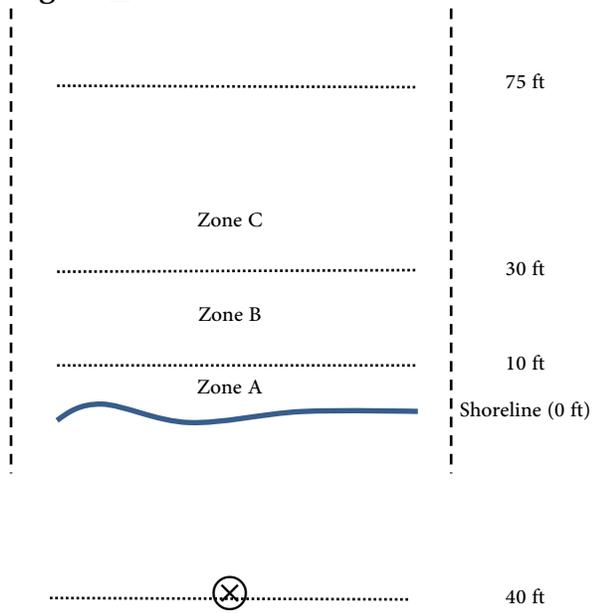


Table _. Frequency Distribution of Parcel Scores

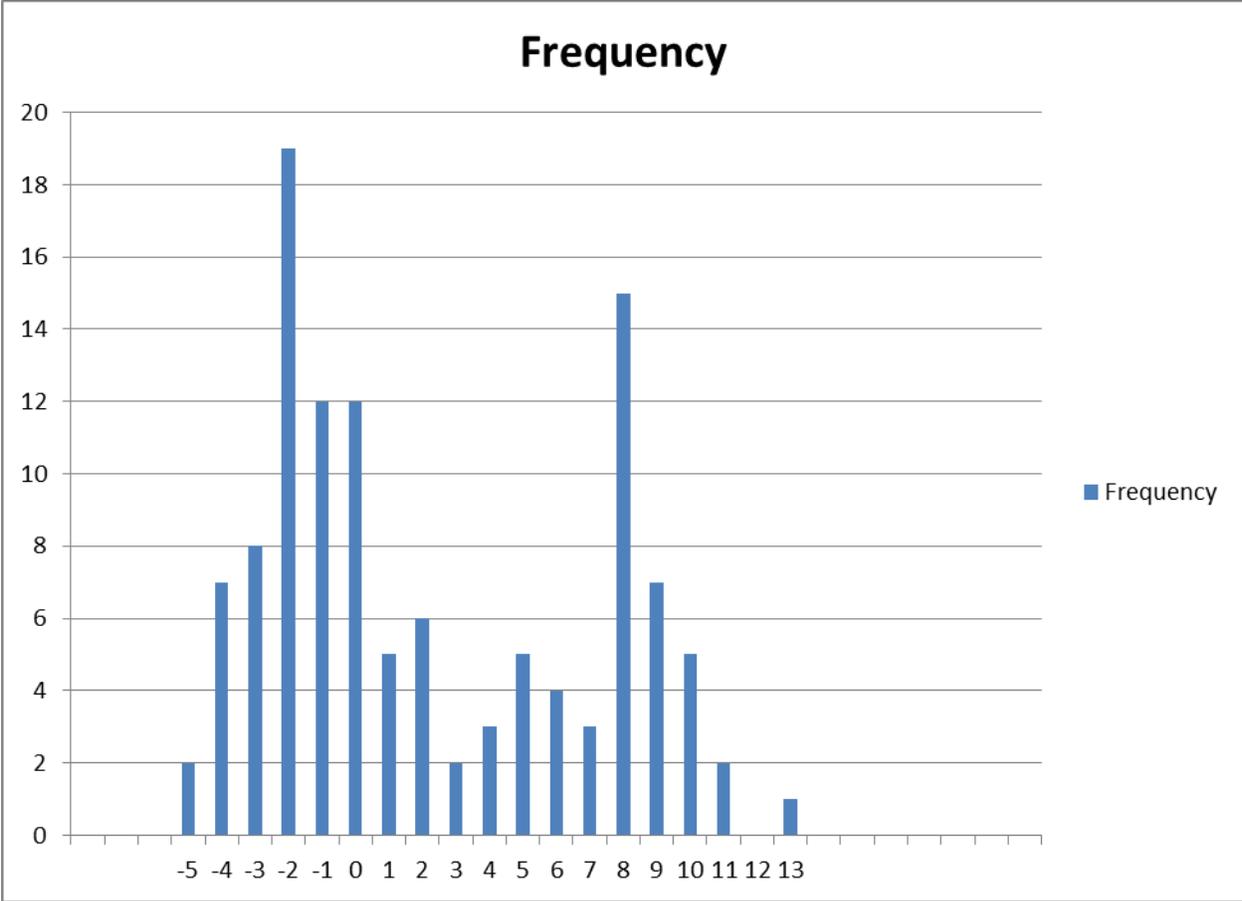


Table _. Scoring Parameters

Scoring Parameters	Distance from OHWM								
	<10 feet			10 - 30 feet			> 30 feet		
	Presence	Dominant	Max Score	Presence	Dominant	Max Score	Presence	Dominant	Max Score
Vegetation for Buffer: Forbs, Shurbs, or Trees	1	3	3	1	2	2	1	2	2
Mowed Vegetation, Barren Soil (Susceptible to Erosion)	-1	-2	-2	0	-1	-1	0	0	0
Rip Rap	-1	-2	-2	-2	-2	-2	-3	-3	-3
Wetland Species/Near Shore Emergents	1	2	2	1	2	2	1	2	2
Impervious or Seawall	-1	-2	-2	-1	-2	-2	-1	-2	-2
New Shoreland Restoration	1	2	2						
Invasives	-1	-2	-2	-1	-2	-2	-1	-2	-2
Total			Sum			Sum		Sum	Total Score