BARLOW LAKE

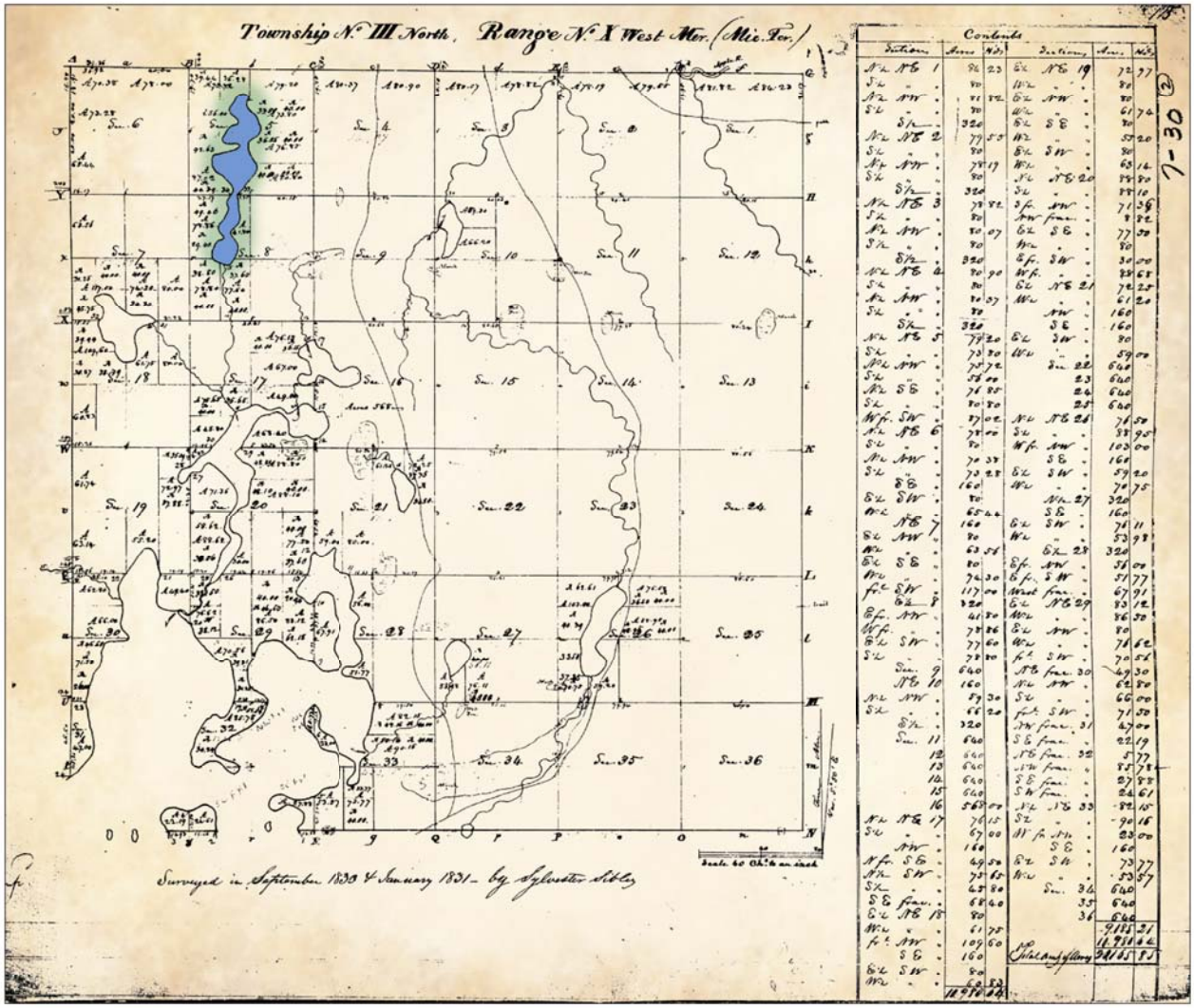
Maps and Facts

May 2017

Compliments of the Barlow Lake Association and Yankee Springs Township

As part of the ongoing management program on Barlow Lake, a series of lake maps were created. This booklet contains several of the maps along with a brief explanation of various map features.

Shortly before Michigan attained statehood in 1837, a survey of the region was commissioned by the Surveyor General of the United States. An east-west base line and a north-south meridian line were established from which all additional measurements were to be based. One of the earliest maps of Barlow Lake was created during Michigan's original land survey.



Yankee Springs Township original survey map (1830–1831).

Lake Depth

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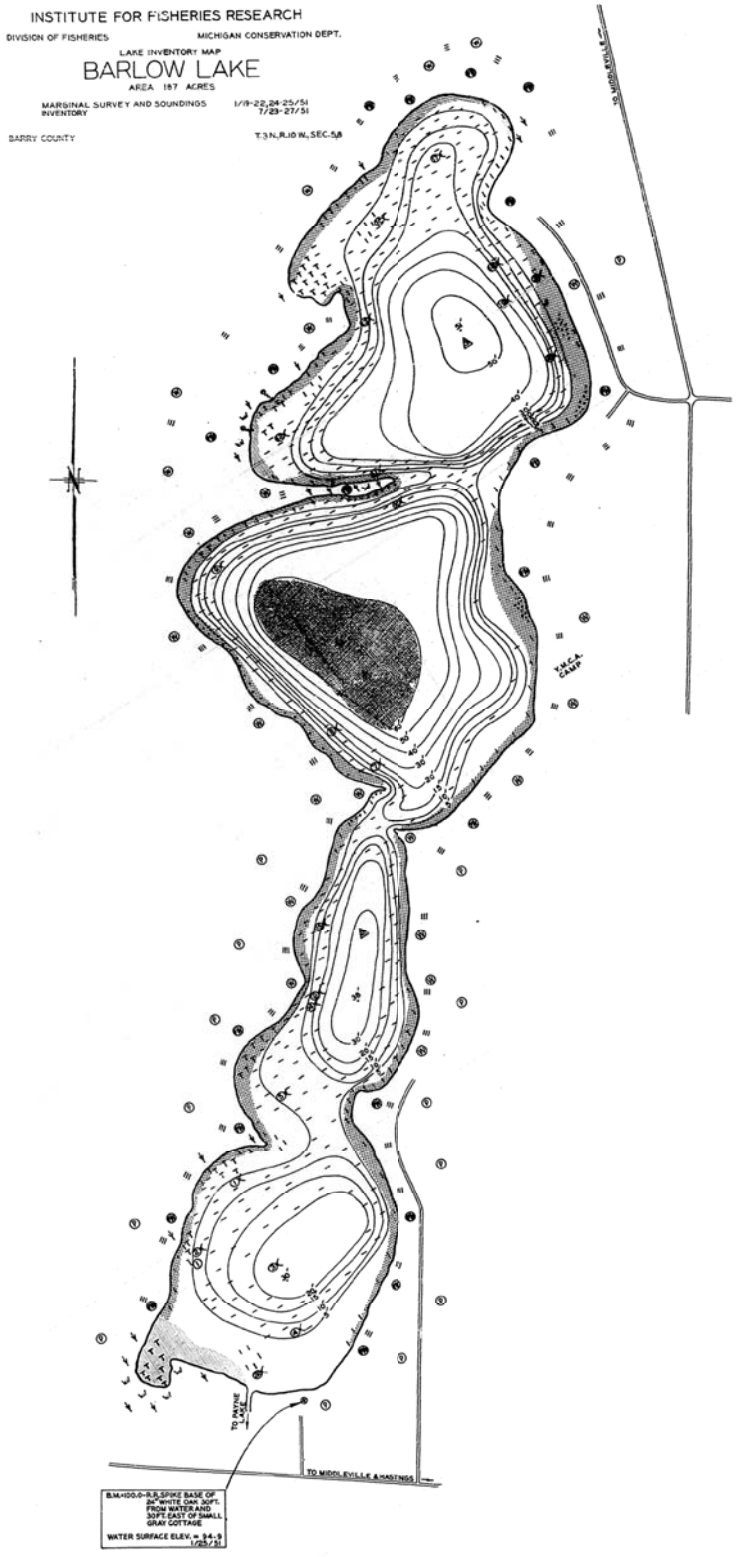
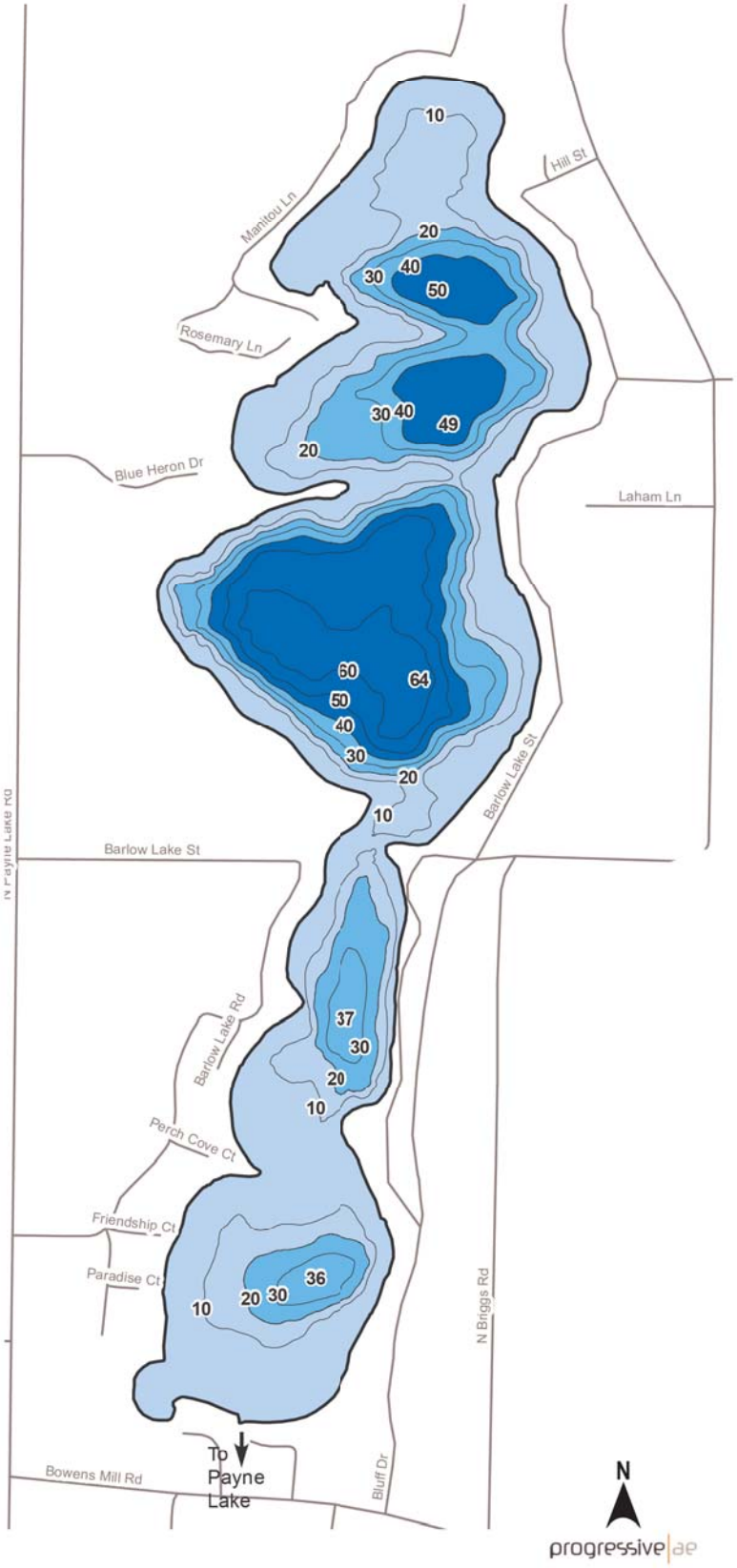
Barlow Lake depths were first mapped by the Michigan Department of Conservation Institute of Fisheries Research in 1951. In those days, holes were drilled through the ice and weighted drop lines were used to measure depth and to collect bottom samples. This was a laborious process that took several days to complete. The early map showed a surface area of 187 acres and a maximum depth of 63 feet in Barlow Lake. When viewing this map, the four distinct deep basins in Barlow Lake are evident.

According to the State of Michigan information database, Barlow Lake is the 647th largest lake in the state and, in terms of surface area, is in the top 7% of Michigan lakes that are five acres in size or greater.



Barlow Lake depth contour map, 1951. Source: Michigan Department of Conservation Institute for Fisheries Research.

Lake Depth



Barlow Lake depth contour map, June 2016. Lake shoreline digitized from aerial orthodigital photography (USDA FSA 2014).

In recent years, computer software has been developed and refined, allowing hydro-acoustic soundings collected with a depth finder to be used to create more accurate depth contour maps. This technology was used in June of 2016 to re-map the bottom of Barlow Lake.

Using the new mapping, Barlow Lake has a surface area of 185 acres and a maximum depth of 64 feet. The mean or average depth is 21 feet, and the lake volume is 3,883 acre-feet (or 1.3 billion gallons). Interestingly, the lake depths measured in 2016 are nearly identical to the depths measured 65 years earlier in 1951.

Barlow Lake has a shoreline length of 4 miles and a shoreline development factor of 2.1. Shoreline development factor is a measure of the irregularity of the shoreline. The shoreline development factor of 2.1 indicates the shoreline of Barlow Lake is over two times longer than if the lake were perfectly round.

Lake Depth

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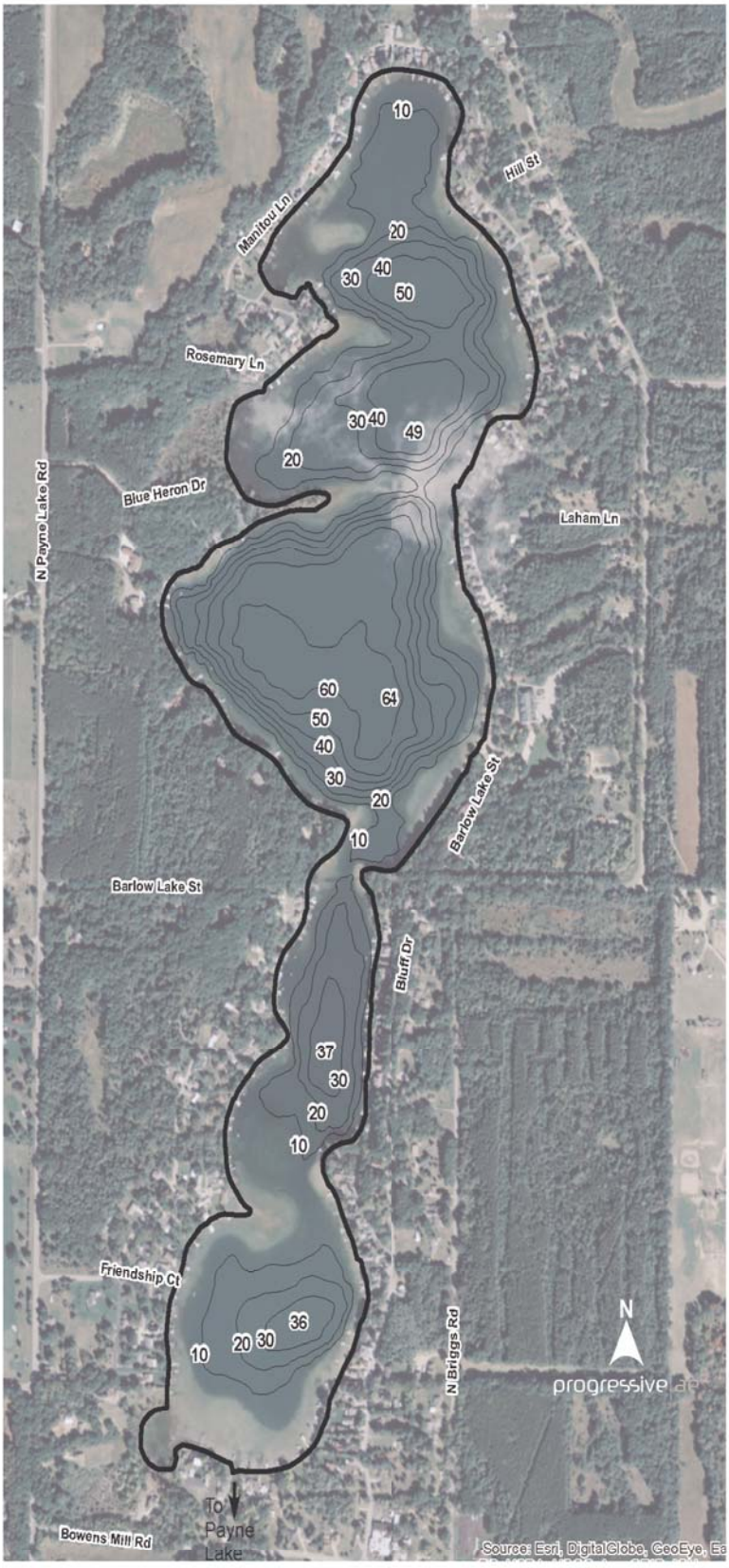
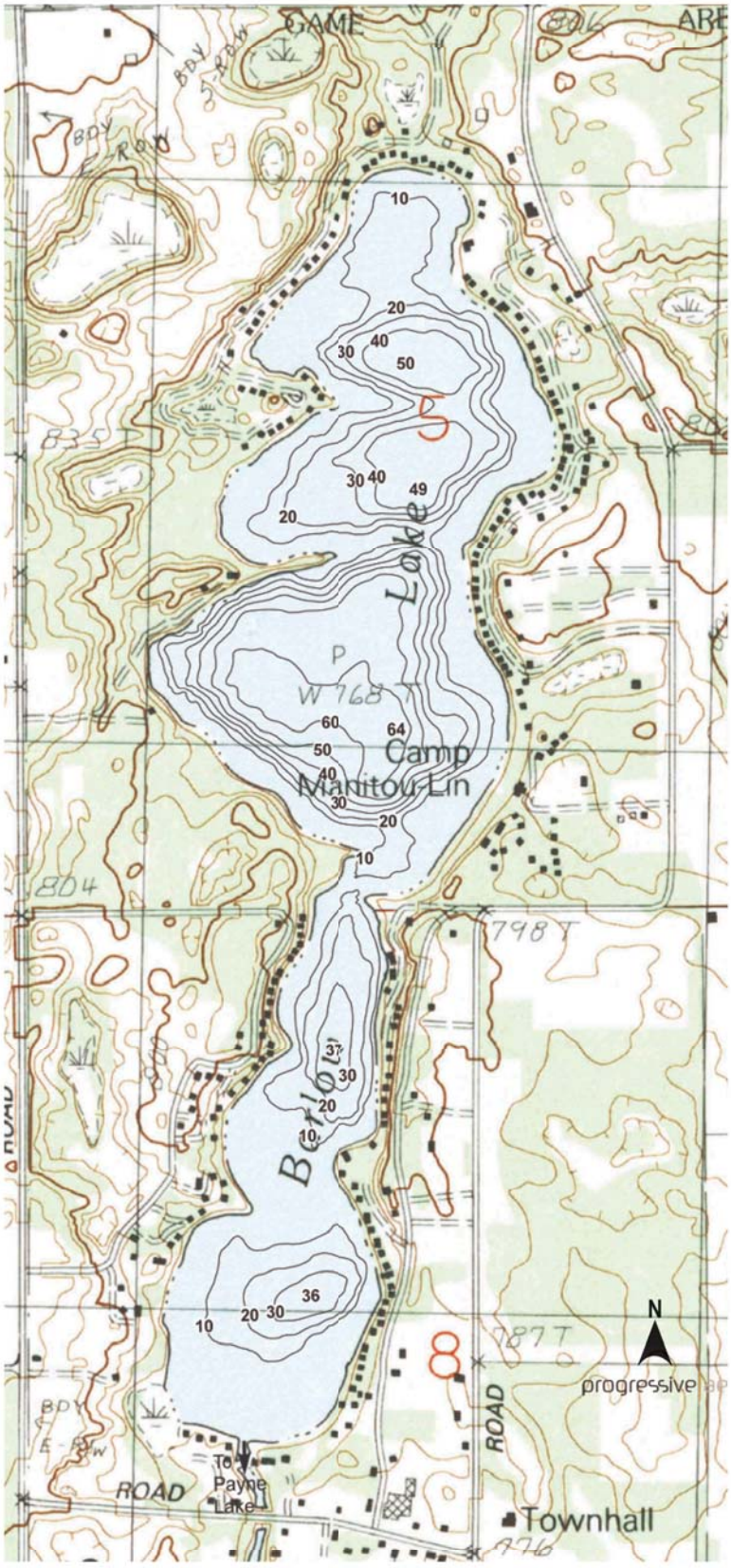
This map shows Barlow Lake depth contours overlain on a 2014 aerial photograph. With the exception of Camp Manitoulin which has relatively sparse development, seasonal and year-round homes are evident around much of the Barlow Lake shoreline.



Lake Depth



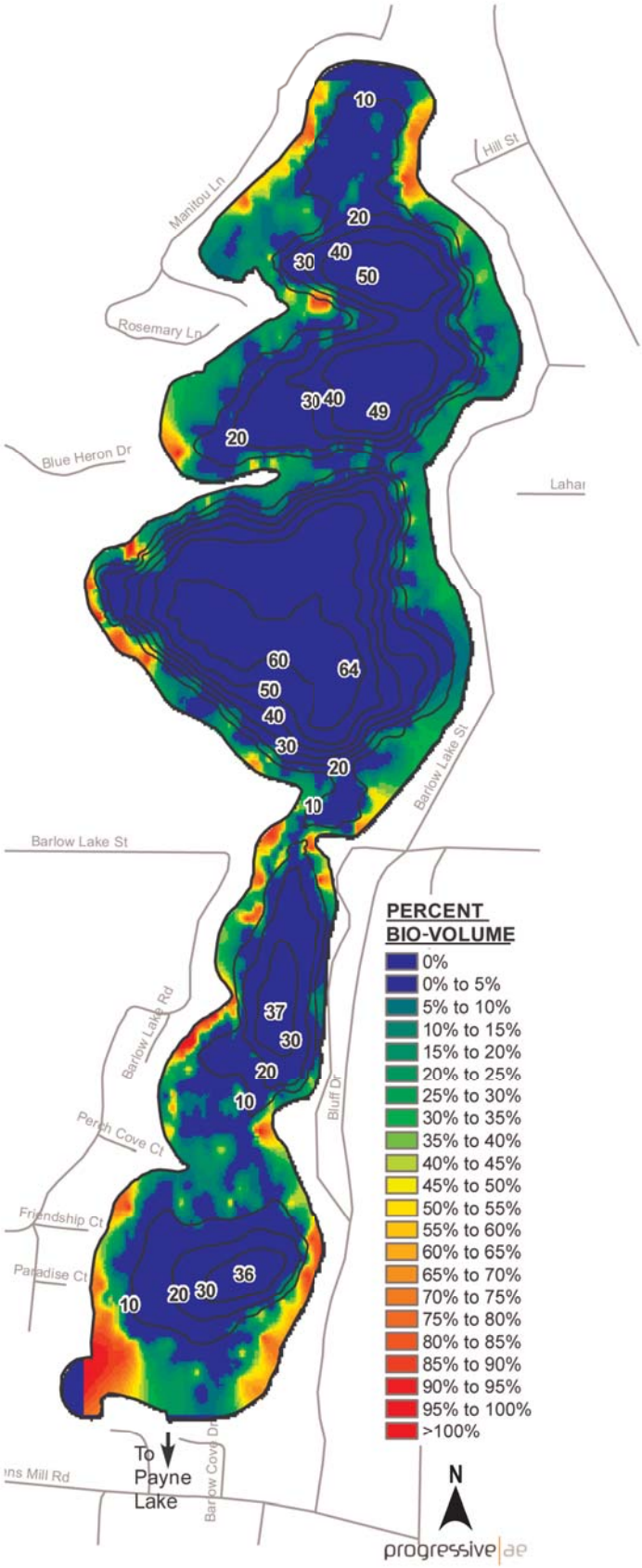
This map shows Barlow Lake depth contours overlain on a 1982 United States Geological Survey topographic map of the area. The location of many of the homes and cottages bordering the lake are shown as black squares. Water flows from Barlow Lake to Payne Lake and Gun Lake, and Gun Lake drains to the Rabbit River and eventually to Lake Michigan via the Kalamazoo River. The topographic map indicates a lake elevation of 768 feet above sea level for Barlow Lake. There is an approximate 189-foot elevation difference between Barlow Lake and Lake Michigan.

Plant Bio-volume

The hydro-acoustic soundings of the lake bottom also provided a measure of plant bio-volume, i.e., the height of plants in the water column. When plants grow to the surface, they occupy 100% of the water column, and those areas are shown in red on the map. When plants are not present, 0% of the water column contains plants, and those areas are shown in blue. When plants grow half-way to the surface, they occupy 50% of the water column, and are shown in yellow. In Barlow Lake, plants were found growing to a depth of about 15 feet.

Changes in bio-volume can be expected both seasonally and year-to-year. Greater bio-volume would be expected after a mild winter or a warm summer, while less bio-volume would be expected after a harsh winter or cool summer. Similarly, plant bio-volume during periods of prolonged high water levels would be expected to be less than during periods of low water levels. When evaluating plant bio-volume over time, climatological and lake level fluctuations should also be considered.

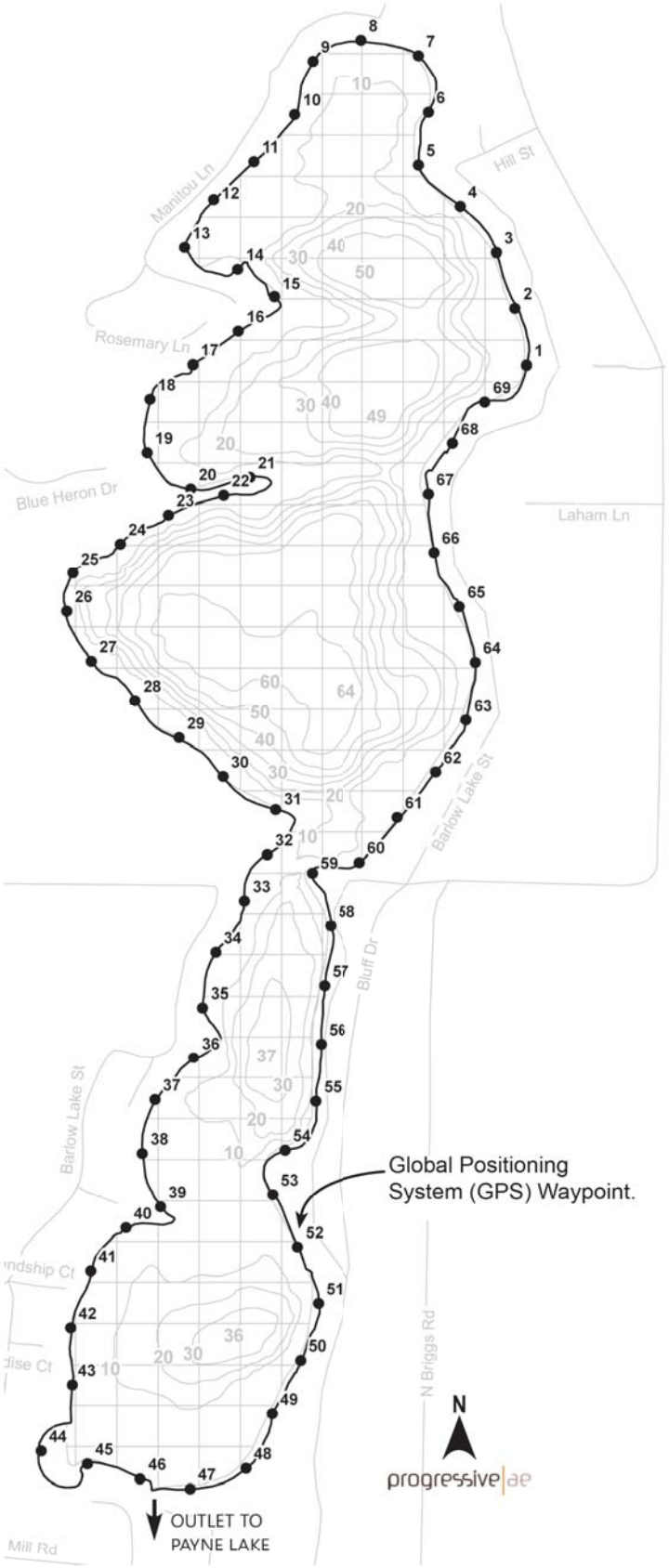
While bio-volume does not record which plants are in the lake, bio-volume measurements can be supplemented with plant identification surveys to evaluate plant types.



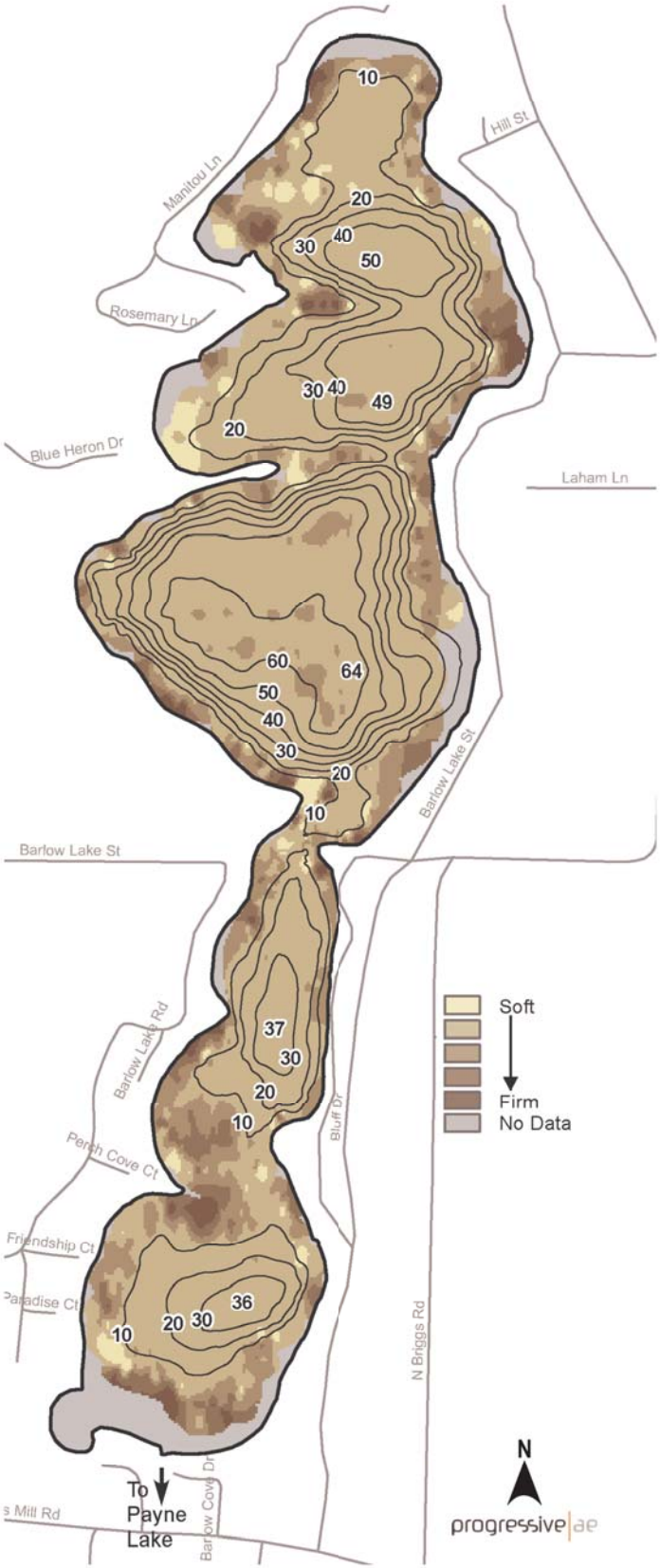
Barlow Lake aquatic vegetation bio-volume map, June 2016.

Plant Survey Map

As part of the nuisance plant control program on Barlow Lake, biologists from Progressive AE conduct GPS-guided aquatic plant surveys each year to identify the location of exotic plant species in Barlow Lake. To facilitate the surveys, GPS reference points have been established at 300-foot intervals along the shoreline that allow precise locations of exotic plant growth areas to be mapped. Once exotic plant locations have been identified and mapped, treatment maps and GPS reference points are provided to the plant control contractor, PLM Lake and Land Management.



Sediment Characteristics



Barlow Lake sediment hardness map, June 2016.

In addition to the measurements of water depth and plant bio-volume, the hydro-acoustic soundings provide a measure of bottom hardness in Barlow Lake. In general, near-shore areas have harder sediments while deep water areas and areas with abundant vegetation have softer bottom sediments.