Birch Lake

Contour Survey 4/16/19

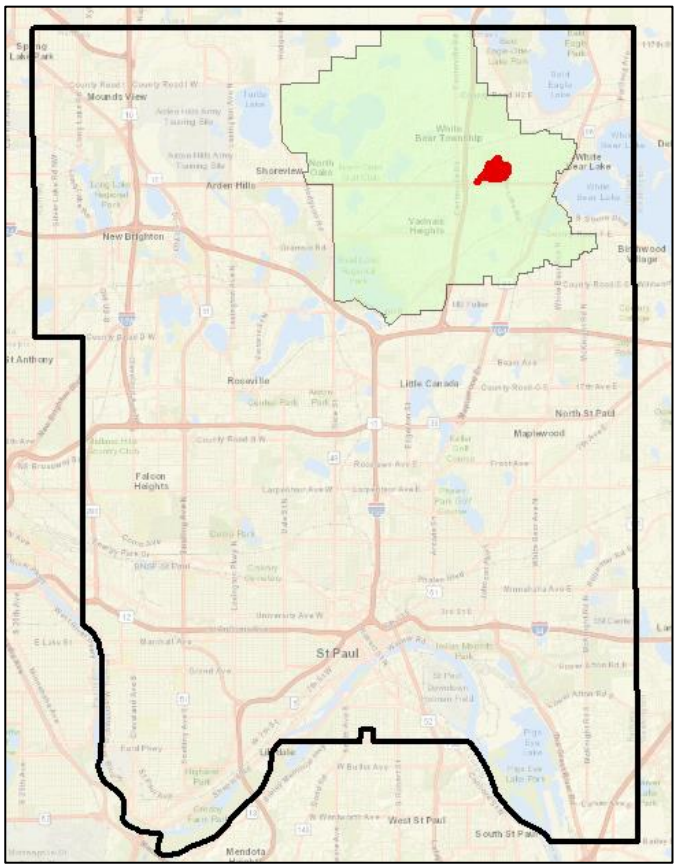

Figure 1. Location of Birch Lake (red) in Ramsey County within VLAWMO borders

Data collected and prepared by **Ramsey County Parks and Recreation - Soil & Water Conservation Division** for

Vadnais Lake Area Water Management Organization
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Birch Lake Depth Survey

April 16, 2019

Methods:

A Lowrance HDS-5 Insight Global Positioning System (GPS)-enabled depth finder was used to collect bathymetry data on Birch Lake on April 16, 2019, about one week post ice-out. The lake was transected at a maximum distance of 40 meters between transects. A measuring rod was used to spot check depth accuracy. Sonar log data was processed using the Contour Innovations, LLC, BioBase system and adjusted by 1 foot to account for the depth of the transducer and field measurements.

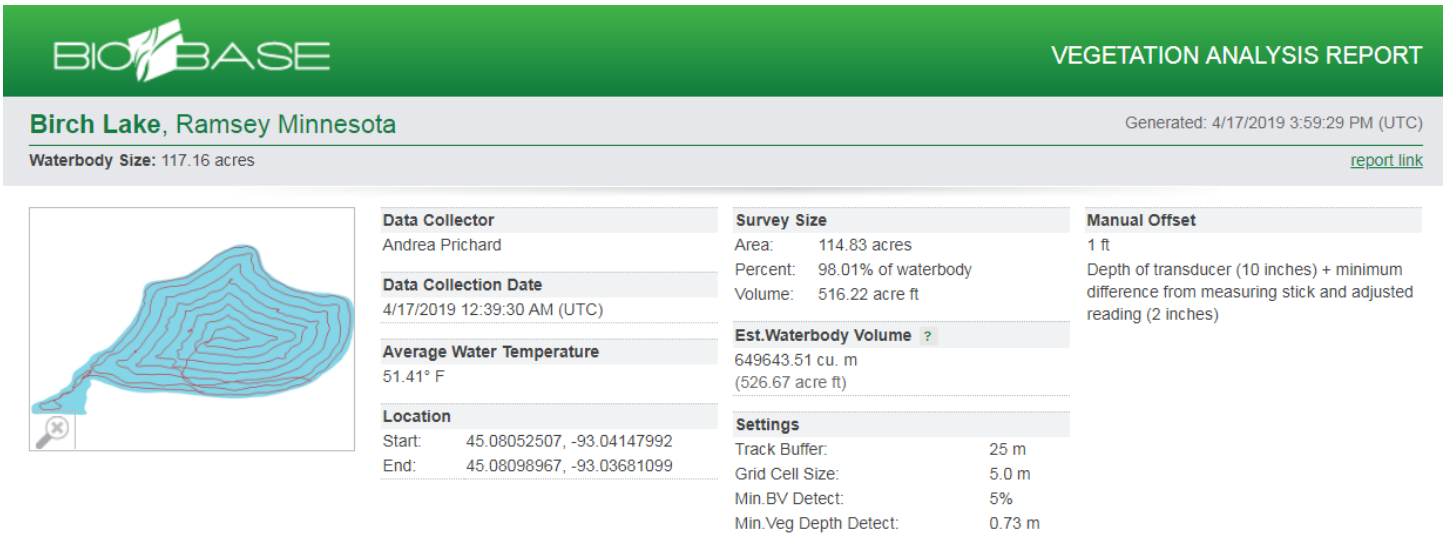

Figure 1. BioBase Birch Lake summary showing path taken to collect data along 40m transects, water temperature, water body information, and survey information.

Original interactive map data, including sonar log trip replays, can be viewed on the ciBioBase website: www.cibiobase.com.

Staff used a measuring rod in ten locations (shown in Figure 2) to compare transducer depth readings to the actual measured depth. In all cases, the transducer value was lower than the actual depth. The minimum difference was 1 ft, due in large part to the depth of the transducer in the water. This was corrected and reprocessed in BioBase prior to downloading data points for GIS raster analysis. The maximum difference was 2.05 ft (or 1.05 ft after the reprocessed data was generated). Point data was further adjusted based on field measurements and then interpolated in ArcGIS to create a depth raster map and 1-ft contours.

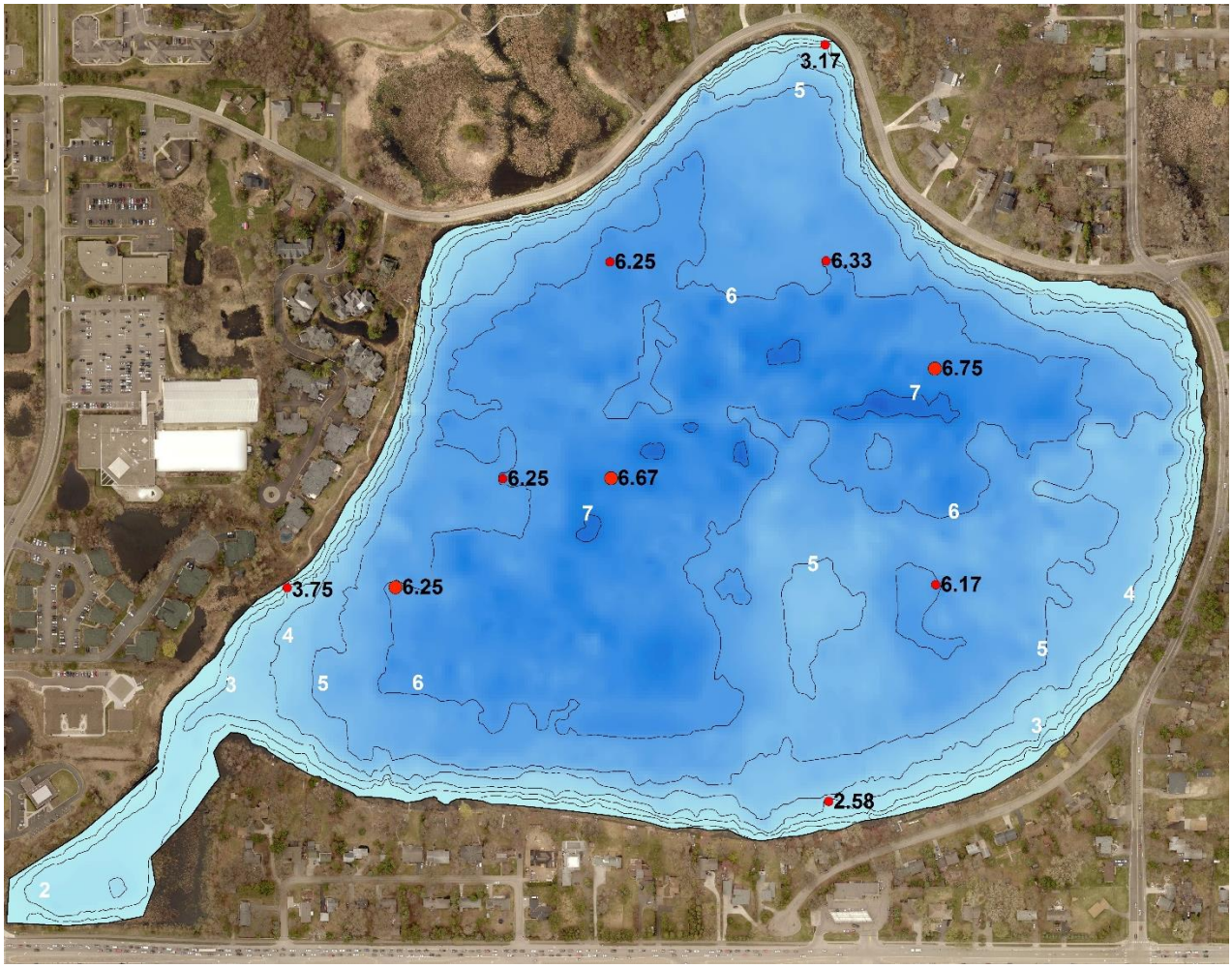

Figure 2. Locations of ten points in Birch Lake where depth was recorded using a measuring rod for comparison with transducer depth data. Actual field depths are labeled and were used to refine transducer data for the generation of a more accurate depth map and contours.

Results:

Results include a bathymetry map featuring depth in one-foot intervals and a contour shapefile. The deepest point of this lake was recorded at 7.4 feet. While that point was not confirmed with the measuring rod, a nearby point was confirmed at 6.75 ft depth with the measuring rod.

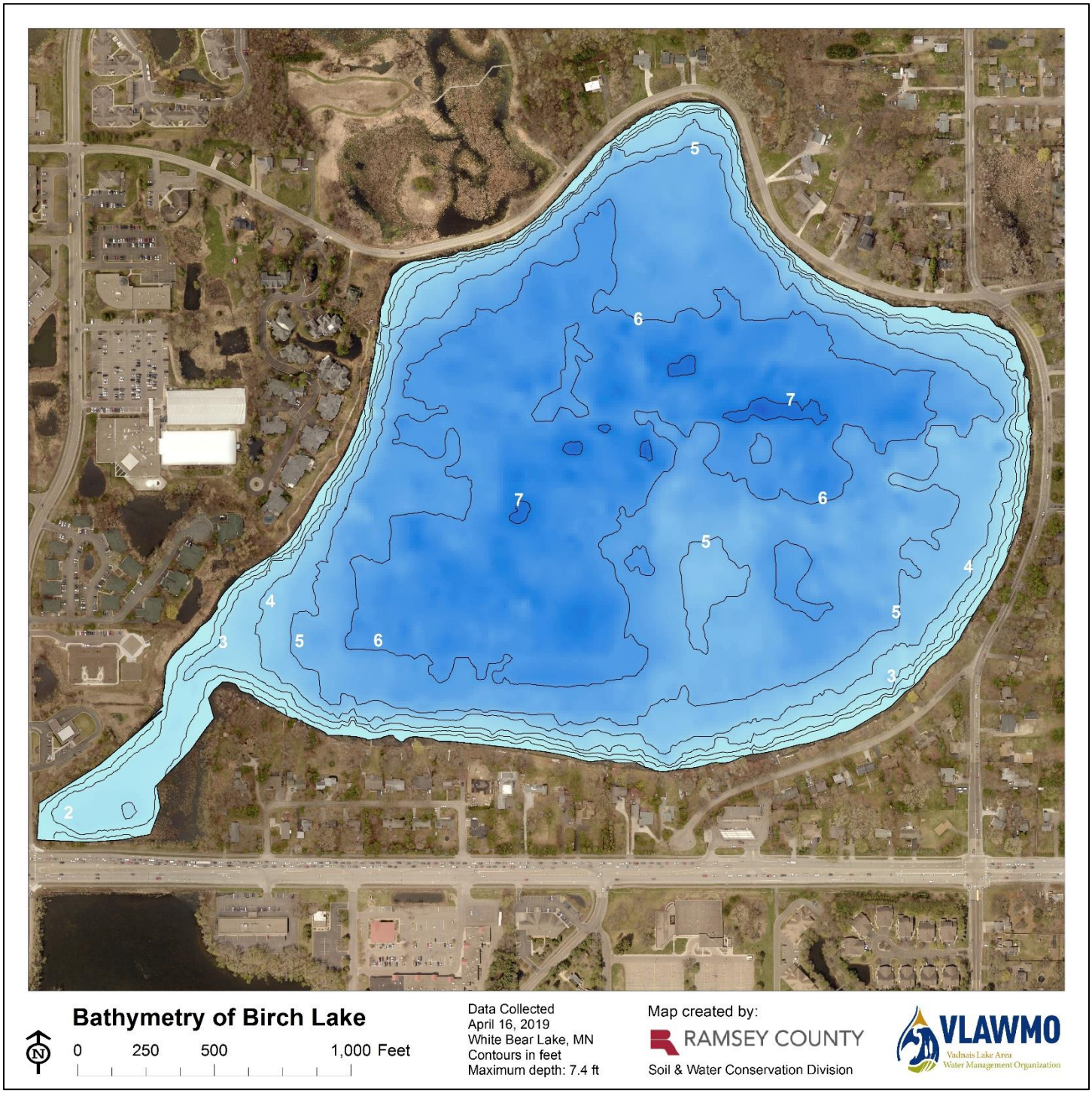

Figure 3. Depth of Birch Lake with 1-ft contours