

# Traders Lake

## Bathymetry and Sediment Report

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The attached figures depict the results of the bathymetric study performed at Traders Point Lake Indianapolis, Indiana in October 2018. The data were collected and modeled to provide a contour map, a 3-Dimensional depth representation map, and a sediment map in the areas of concern. The data were used to provide an estimate of the current overall storage volume of the whole lake and amount of accumulated soft sediment of the 3 identified areas on the lake.

The Contour map for the waterbody shows the configuration and current depth contours of the lake or pond. The 3-Dimensional depth representation provides shaded gradations that are helpful for visualizing the contours. The darker the blue color the deeper the water is in that area of the lake.

The sediment map shows the locations and magnitude of unconsolidated sediment depth measurements. The unconsolidated sediment layer is comprised of soil particles and organic materials that have accumulated on the bottom of the pond, which remain penetrable by a manual depth sampling instrument.

### Lake Data

We collected 19,720 data points to calculate the size and current volume of the lake. The lake has a surface area of 15.3 acres, a maximum depth of 11.3 feet, and an average depth of 5.3 feet. The current storage volume of the lake is 80.0 acre-feet, or approximately 26,064,938 gallons. Sediment depth measurements were taken in the 3 identified areas of the lake. The areas have been identified as Area 1, Area 2 and Area 3 for reference.

Area 1 covers 1.4 Acres of the lake. The estimated accumulated soft sediment volume is 3,059 cubic yards and has an average thickness of 1.4 feet. The thickest measured sediment point in this area was 4.4 feet.

Area 2 covers 0.2 Acres of the lake. The estimated accumulated soft sediment volume is 478 cubic yards and has an average thickness of 1.6 feet. The thickest measured sediment point in this area was 3.7 feet.

Area 3 covers 0.5 Acres of the lake. The estimated accumulated soft sediment volume is 769 cubic yards and has an average thickness of 0.9 feet. The thickest measured sediment point in this area was 3.0 feet.

The lake has good water depth but has accumulated a moderate amount of soft sediment in the measured areas. There are two areas of concern, which are areas 1 and 2 with the majority of the sediment depths greater than a foot in depth. Typically sediment accumulation is highest at the inlet end of a waterbody. A waterbody is considered to have good water depth when its average is greater than 4 feet. Sediment accumulation can be problematic both because the silt is a source of



nutrients and because the shallower depths caused by sedimentation provide good habitat for nuisance vegetation and algae growth. Portions of the lake have an excess amount of accumulated sediment and organic debris build up. These are areas of concern and the removal of the excess material would be recommended. When and whether or not to dredge a lake is a decision based on the discretion of the lake owners. A lake can function properly to mediate peak storm flows regardless of the depth. However, as it becomes shallower over time, a pond may become choked with algae and aquatic weeds, and may not support an abundant fish population.

The physical inspection provides details about areas of concern around the waterbody. We inspected the shoreline for erosion or vegetation problems. We checked the inlet and outlet areas where we could find while inspecting the lake. We identified 2 actual inlet structures located in the upper end of the lake. One is located above the bridge in the upper northeast portion of the lake. The other pipe is just south-west of the bridge. Both of these structures feed into areas where we calculated sediment depth and found the greatest amount of sediment accumulation. Around the lake we identified other areas where water is entering the lake through vegetated swales. These areas are not true inlet structures but are definitely entry points for water flow. These areas all seem to be in great condition and show very little if any erosion. There are some other small inlet pipes coming in off of private property that are likely for drainage channels. The outlet dam appears to be in good condition. There is good vegetation control along the embankment, all woody vegetation should be treated periodically to prevent any mature trees from becoming established in this area. The shoreline vegetation looks good. There are some potentially invasive species that were identified growing on portions of the shoreline. These species include creeping water primrose and cattails. These plants should be maintained and kept to a minimum. On the main portion of the lake just west of the dam there is a small amount of erosion above where the small boat dock is located. This exposed soil in this area should be secured by planting appropriate vegetation on the bare soil.

The lake as a whole is in good shape. The bathymetry results shows that there is still good water depth for most of the lake. There are some areas where sedimentation is a concern. The vegetation along the shoreline is good and there is very little erosion occurring. Proper maintenance of the vegetation along the dam and shoreline will help insure future health of the lake. Sediment removal in the areas of concern could be done now while the scope of work is less than waiting for things to worsen over time.





**Figure 1:** Inspection map



**Figure 2:** Inlet Structure located above bridge



**Figure 3:** Cattail growth on shoreline



**Figure 4:** Rip rap along shoreline







**Figure 5:** Outflow Dam



**Figure 6:** Sedimentation at inflow below bridge

