

LAKE WAPOGASSET AND BEAR TRAP LAKE FACT SHEET SERIES

2026 COMPREHENSIVE LAKE MANAGEMENT PLAN

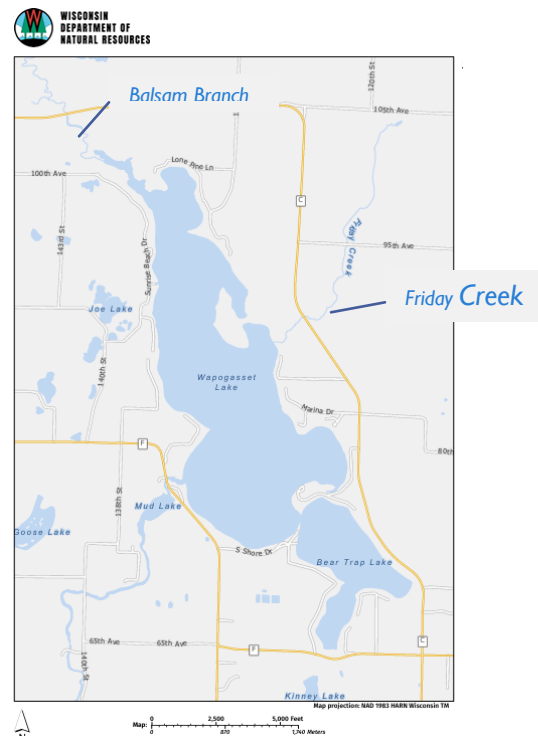
WATERSHED

Key Points

- Bear Trap Lake watershed phosphorus loading is dominated by residential land uses. Therefore, efforts to reduce P loading should focus there. Healthy Lakes practices are an example of such efforts.
- Lake Wapogasset phosphorus loading is dominated by its tributaries the Balsam Branch and Friday Creek. Agricultural land uses are the biggest source of P loading in these watersheds. Conservation practice installation results in reductions in P loading.

LAKE MODEL RESULTS

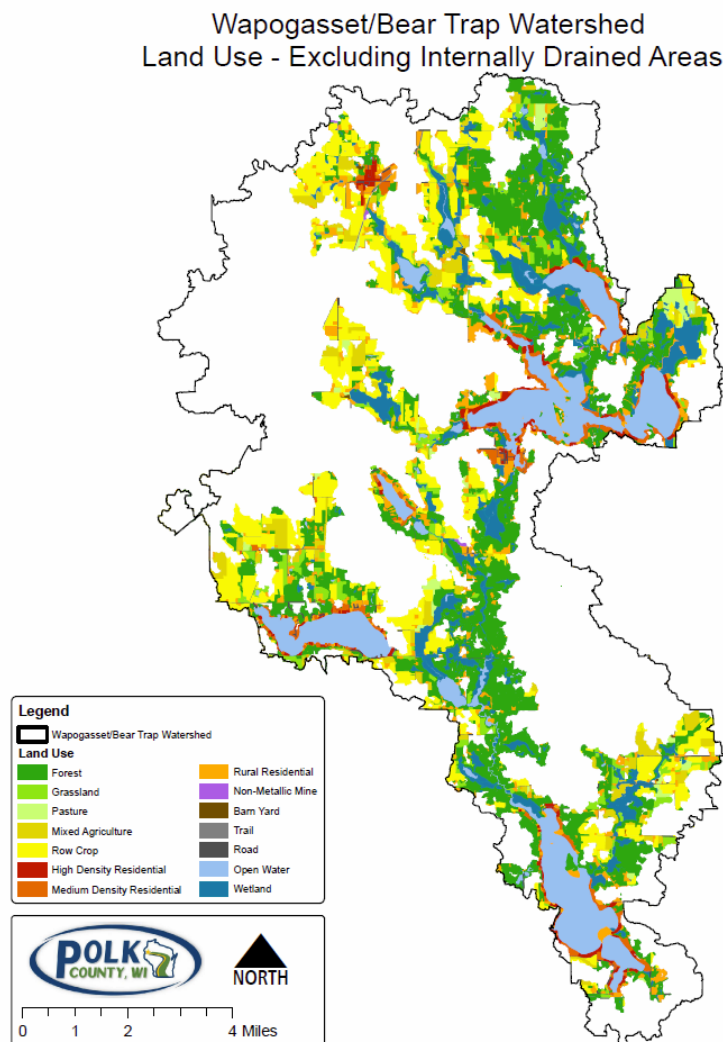
According to the results of a recent lake modeling effort, the watershed and tributaries substantially influence water quality for Lake Wapogasset and Bear Trap Lake. Bear Trap Lake P loading was dominated by runoff from the area directly surrounding the lake – the direct-drained watershed. Lake Wapogasset phosphorus loading was dominated by inputs from two tributaries: the Balsam Branch and Friday Creek. The internal load, which varies from year to year, and could be addressed by an alum application, is covered in another fact sheet.



WATERSHED DELINEATION

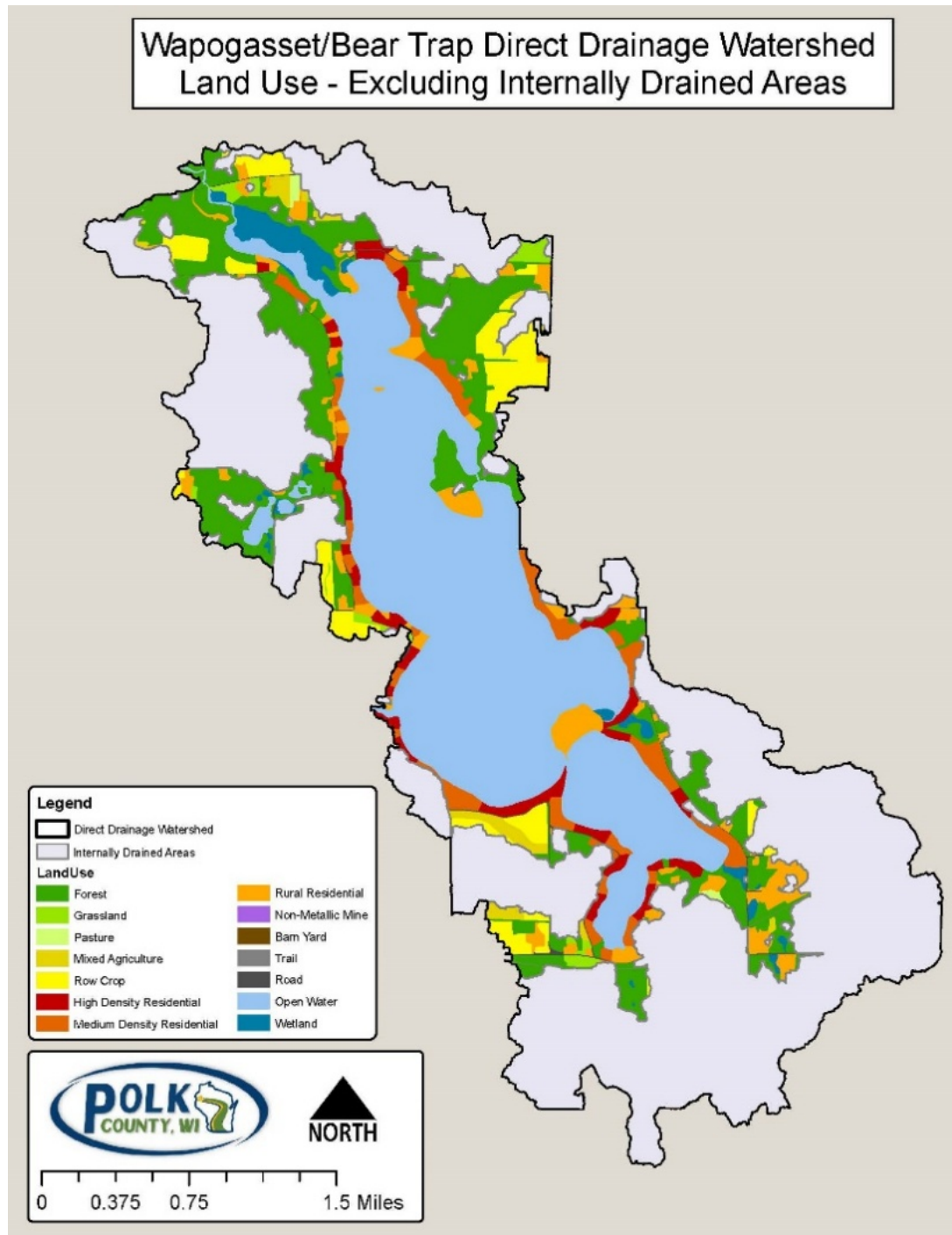
To prepare for the update of the comprehensive lake management plan, Polk County Land and Water Resources Department staff updated the watershed boundaries and land cover for the two lakes. GIS tools and LiDAR data were used to predict predominant flow dynamics, leading to the designation of internally drained areas. Internally drained areas are depressions on the landscape that accumulate water during rainfall events and spring snowmelt. For this project, a 10-year storm with a duration of 24 hours was used to identify internally drained areas. This is equivalent to 4.2 inches of rain falling within a 24-hour period.

The total watershed area for both lakes covers 66,510 acres, with 35,466 acres internally drained. The watershed area that drains directly to the Balsam Branch is 25,998 acres. The watershed area that drains directly to Friday Creek is 1,932 acres. The land cover type for the Friday Creek sub-watershed shows potential sources for phosphorus. A little more than a quarter of the land cover is row crop, which has one of the highest export coefficients of phosphorus. It is also possible that the wetland surrounding Friday Creek has accumulated large amounts of phosphorus over the years from agriculture and is now a nutrient source.



DIRECT DRAINAGE SUBWATERSHEDS

Land cover information was used to calculate nutrient loading where tributary monitoring results were not available. This included the areas that drain directly to Bear Trap Lake and Lake Wapogasset. Forest land cover contributes low levels of nutrients to downstream water bodies while row crop and medium and high-density residential land covers tend to contribute high levels of nutrients.



BEAR TRAP LAKE DIRECT DRAINAGE SUBWATERSHED

The direct-drained land cover types for Bear Trap Lake are dominated by forest (40%). This is the lowest nutrient contributor for all land cover types. This is followed by rural residential and medium-density residential (21.8%), which are higher contributors. Therefore, residential watershed practices such as those supported by the Healthy Lakes Program should be emphasized for Bear Trap Lake water quality improvement.

Bear Trap Lake Direct-drained Watershed Land Cover		
Land Use	Acres	Percent of Cover
Forest	178	40.0%
Grassland	8	1.8%
High-density residential	39	8.8%
Medium-density residential	58	13.0%
Mixed Ag	11	2.6%
Open Water	2	0.3%
Pasture	3	0.6%
Road	15	3.4%
Row Crop	28	6.3%
Rural residential	83	18.7%
Trail	2	0.3%
Wetland	19	4.2%
Total	445	100.0%

LAKE WAPOGASSET DIRECT DRAINAGE SUBWATERSHED

Lake Wapogasset's direct-drained sub-watershed land cover is dominated by forest (40.9%). The next largest area is row crop at 12.7%. Row crop land cover results in substantially higher loading than forest cover. Combined medium and high-density residential lands make up 13.4% of the subwatershed. Residential lands also contribute high nutrient loads.

Lake Wapogasset Direct-drained Watershed Land Cover		
Land Use	Acres	Percent of Cover
Forest	544	40.9%
Grassland	28	2.1%
High Density Residential	75	5.6%
Medium Density Residential	104	7.8%
Mixed Ag	39	2.9%
Open water	163	12.2%
Pasture	5	0.3%
Road	18	1.3%
Row Crop	170	12.7%
RR	125	9.4%
Trail	0	0.0%
Wetland	63	4.7%
Total	1,332	100%

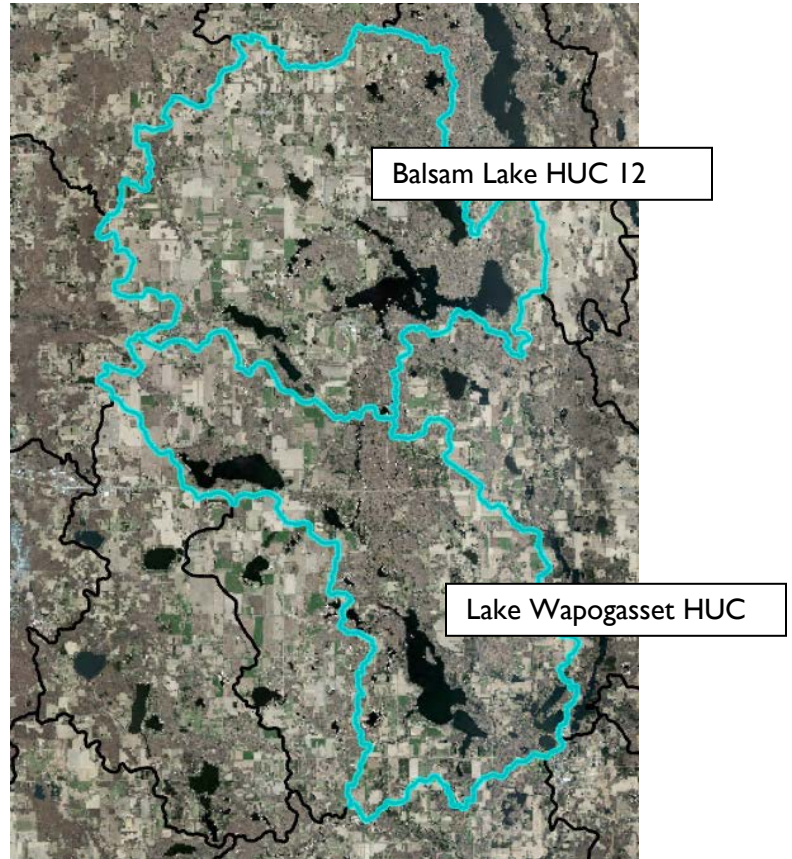
AGRICULTURE CONSERVATION PLANNING FRAMEWORK

Polk County staff completed an Agriculture Conservation Planning Framework (ACPF) for the watershed for this project. ACPF was used to identify and prioritize agricultural conservation practices within the Lake Wapogasset/Bear Trap Watershed. The program recommended a variety of conservation practices for implementation including water and sediment control basins, contour buffer strips, grass waterways, and sediment ponds. The project report provides a summary of how each conservation practice works, in-field examples, and the number of potential practices identified within the watershed. ACPF prioritizes practices with adjustable criteria. The outputs of ACPF allow for the prioritization of conservation practices that reduce runoff, erosion, and nutrient/sediment loading to surface waters.

It is important to consider all the outputs of ACPF because the implementation of agricultural best management practices requires landowner participation and can directly impact the yields and economics for an agricultural system. Implementation of best management practices may not be possible in the highest priority areas, so it is important not to overlook lower ranked areas which will still result in a positive impact. Field verification is needed to verify the location and type of conservation practice best suited for sites. The geospatial data from ACPF will be kept with the Land and Water Resources Department. Data will be made available to the Lake Wapogasset/Bear Trap board members if agricultural watershed improvement is targeted.

PAST WATERSHED PRACTICE INSTALLATION

The Polk County Land and Water Resources Department has worked with agricultural producers to install conservation practices in the Lake Wapogasset and Bear Trap Lake watershed. One project was supported by the Sanitary District Conservancy Committee with funding from the Balsam Branch Partnership. For management and funding purposes, the watershed is divided into two Hydrologic Units (HUC 12 scale). A Targeted Runoff Management (TRM) Grant Project provided funding to install practices in the Balsam Lake Watershed from 2023 to 2025. Wapogasset Lake HUC12 watershed is the 3rd priority watershed for county implementation. It could be a priority for TRM grant funding application beginning in 2029.



Agricultural Conservation Practice Installation Lake Wapogasset HUC 12 (2010-2025)

2015 Water and Sediment Control Basin
2015 Rock Lined Waterway
2013 Manure Storage Closure
2013 Manure Storage Construction
2010 Animal Trail and Walkway

Agricultural Conservation Practice Installation Balsam Lake HUC 12 (2023-2025)

Practice	Quantity	Phosphorus Reduction (lbs)/year	Phosphorus Reduction (kg)/year
Cover Crops	953 acres	445	202
Waterway Systems	0.75 acres	120	54
Manure Storage Closure	1	5	2.3
Stream Crossing	24 feet	TBD	TBD

HEALTHY LAKES PROJECT INSTALLATION

Wisconsin's Healthy Lakes Projects focus on improving water quality, enhancing habitat, and reducing runoff pollution. The Healthy Lakes (HL) Program offers grants to lake organizations to encourage installation of five simple and inexpensive best practices including native plantings, rain gardens, rock infiltration, diversions, and fish sticks. The Lake Association encouraged and supported Healthy Lakes projects beginning in 2019. The program was launched with email announcements to all members, as well as presentations, poster displays, and website development. HL program information and education presented at all monthly Lake Association meetings, as well as the 2019 and 2020 annual Lake Association member meetings, encouraged landowner participation and gathered feedback. A total of 11 projects on 4 properties were completed from 2020 – 2024. Another project is planned for 2026.

Completed Healthy Lakes Projects			
Year	Rock Trench	Diversion	Lake
2020	1	1	Wapogasset
2022	2	2	Bear Trap
2024	2	3	Wapogasset
2026			Bear Trap

SOURCES

Polk County Environmental Services Committee. *Land and Water Resource Management Plan 2020-2029*.

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Seidl, Mike. Lake Wapogasset and Bear Trap Lake Improvement Association. *Healthy Lakes Grant Project Reports*. 2020. 2022. 2024.

Wisconsin Department of Natural Resources. Water Explorer Web Application. Accessed February 20, 2026. <https://dnr-wisconsin.shinyapps.io/WaterExplorer/?stationid=493131>

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