

# White River Flowage (Lower Pond)

### Summary Report 2013

University of Wisconsin–Stevens Point and Waushara County Staff and Citizens



### White River Flowage (L. Pond) - Location



#### WAUSHARA COUNTY LAKES STUDY -

1	Pine (Springwater)	18	W. Branch Mill Pond
2	Twin	19	Porters
3	Gilbert	20	Pearl
4	Long (Saxeville)	21	Johns
5	Long (Oasis)	22	Bughs
6	Huron	23	Irogami
7	Wilson	24	Alpine
8	Kusel	25	Silver (Wautoma)
9	Silver (Springwater)	26	Deer
10	Round	27	Little Hills
11	Big Hills	28	White Riv. Flowage
12	Napowan	29	Witters
13	Beans	30	Lucerne
14	Morris	31	Spring
15	Pine (Hancock)	32	Curtis
16	Fish	33	Pleasant
17	Marl		

#### White River Flowage

South of Wautoma East of Highway 22 West of Highway 73 Township of Dakota

#### Water Flow

- White River Flowage is an impoundment; most water enters via the White River from the northwestern end of the impoundment. Surface water runoff, direct precipitation and groundwater also contribute water to lesser extents.
- Most water exits White River Flowage via the river and groundwater.

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#### Surface Area: 133 acres Maximum Depth: 20 feet



## White River Flowage (L. Pond) – Land Cover in the Surface Watershed



**Surface Watershed:** The area where water runs off the surface of the land and drains toward the lake.

- Land uses and land management practices occurring in a watershed can affect the water quality in a lake.
- Land uses and land management also play major roles in how water moves across the landscape and how much water soaks into the ground (for long-term storage) or quickly runs off the land.
- The surface watershed of White River Flowage is 33,501 acres.
- The primary land uses within the watershed are forests and agriculture.
- Land adjacent to the lake includes forests, wetlands, developed land, and cultivated crops. Generally, the land closest to the flowage will have the greatest immediate impact on its water quality.

### White River Flowage Watershed





## White River Flowage (L. Pond) – Groundwater Flow

**Groundwater** provides water to lakes in Waushara County throughout the entire year. Hard surfaces on the landscape prevent water from soaking into the ground and becoming groundwater. This results in less water flowing to the lake during the winter and between rains. Groundwater pumping can also reduce the amount of water entering lakes.

The quality of groundwater reflects what is happening on the land surface. Precipitation falling on forested land produces clean groundwater, whereas precipitation falling on lands that have chemical use can leach contaminants to groundwater. Groundwater contamination in central Wisconsin may include nitrogen, pesticides, herbicides and other soluble chemicals originating from septic systems, crops, barnyards, road maintenance, etc. Once in the groundwater, these chemicals slowly move towards a lake or river.

On the map below, arrows indicate the direction of groundwater flow to and from the lakes and streams. Groundwater converges at the White River Flowage from the northeast and west.



## White River Flowage (L. Pond) – Shoreland Vegetation

**Shoreland vegetation** is critical to a healthy lake's ecosystem. It provides habitat for many aquatic and terrestrial animals including birds, frogs, turtles, and many small and large mammals. It also helps to improve the quality of the runoff that is flowing across the landscape towards the lake. Healthy shoreland vegetation includes a mix of tall grasses/flowers, shrubs and trees.

Most of the shoreland around White River Flowage Lake has healthy shoreland vegetation; however, some stretches could benefit the flowage by being restored.



## White River Flowage (L. Pond) - Aquatic Plants

**Aquatic plants** are the forest landscape within a lake. They provide food and habitat for terrestrial and aquatic creatures such as fish, ducks, turtles, invertebrates and other animals. They increase oxygen in the water and utilize nutrients that would otherwise be used by algae. A healthy lake typically has a variety of aquatic plants creating diversity that can help to prevent the establishment of aquatic invasive species.



- The aquatic plant community in White River Flowage (L. Pond) is characterized by an above-average diversity of plant species when compared to other lakes in the Waushara County Lakes Study, with a total of 24 species including visuals in the survey.
- Five species on White River Flowage (L. Pond) had C-values of 8 or greater. Higher C-values indicate fewer disturbances and could be a sign of a high-quality water body.

## White River Flowage (L. Pond) - Aquatic Plants

- During the 2013 aquatic plant survey, 89 percent of the sites sampled had vegetative growth, with the maximum sample depth of 16 feet.
- The two most frequently encountered plant species were common waterweed and coontail.
- The survey documented both curly-leaf pondweed (CLP) and Eurasian water milfoil (EWM). CLP may become invasive and contribute to nuisance algae blooms throughout the summer. EWM can create dense beds which can stall or damage boat motors, make areas non-navigable, and prevent activities like swimming and fishing.

**Species Richness** is a count of the number of plant species found at a survey point. A greater number of species in a lake helps to make the aquatic plant community more resilient to year-to-year changes and aquatic invasive species. More plant species means more diverse habitat and food sources are available.





**Elodea,** or **waterweed,** provides habitat for many small aquatic animals that are prey for fish and wildlife. Geese, ducks and swans are particularly attracted to this plant. This plant is frequently used by fish to protect fry.

**Coontail** is a food source for waterfowl and provides excellent habitat and cover for many fish species. This aquatic plant also supports insects that are food for fish and ducklings.



## White River Flowage (L. Pond) - Water Quality

Lakes go through a natural aging process that results in increased aquatic plant growth, fish, and wildlife over time. Within a lake's watershed, human activity on the land, in a wetland, or in the lake can dramatically accelerate this process. Depending on land management practices, changes in a lake that may have normally taken centuries to occur may take place in decades or even years. The amounts of nutrients, algal growth, and water clarity measurements help to define the age of a lake. Based on these measures, lakes can be classified for comparison to one another.







#### **Oligotrophic Lakes**

Common uses:

- ✓ Swimming
- ✓ Skiing
- Boating

Vegetation of oligotrophic lakes:

✓ Very little vegetation

#### **Mesotrophic Lakes**

Common uses:

- ✓ Boating
- ✓ Fishing

Vegetation of mesotrophic lakes:

- ✓ Increased vegetation
- ✓ Occasional algal blooms

#### **Eutrophic Lakes**

Common uses:

- ✓ Fishing
- ✓ Wildlife watching

Vegetation of eutrophic lakes:

- ✓ Lots of aquatic plants
- ✓ Frequent algal blooms

Winter fish kills can occur in shallow lakes due to low oxygen levels.



## White River Flowage (L. Pond) - Water Quality

**Phosphorus** is a major nutrient that can lead to excessive algae and rooted aquatic plant growth in lakes. In fact, one pound of phosphorus entering a lake can result in 500 pounds of algal growth. All Waushara County lakes have either sufficient or excessive nutrients for aquatic plant growth, so these lakes will benefit from limiting the addition of more nutrients. Sources of phosphorus include septic systems, animal waste, storm water runoff, soil erosion, and fertilizers for lawns, gardens and agriculture.



**Water clarity** is a measure of how deep light can penetrate (Secchi depth). Clarity is affected by water color, turbidity (suspended sediment), and algae. Water clarity helps determine where rooted aquatic plants can grow.



- The graph to the left shows water clarity measurements taken between April and November. It is typical for water clarity to vary throughout the year.
- During the summers of 2011 and 2012, on average, the poorest water clarity in White River Flowage was 8.5 feet in June and the best was 9.5 feet in July. In comparison to measurements taken prior to 2011, water clarity has decreased throughout the summer.



## White River Flowage (L. Pond) - What can you do to help?



#### Lake Users:

- ✓ Run boat engines efficiently
- ✓ Observe no/low wake zones
- ✓ Refuel away from water
- ✓ Dispose of trash properly
- ✓ Remove all aquatic plants from boats and trailers
- ✓ Respect wildlife and other lake users





#### Land Owners:

- ✓ Control soil erosion
- ✓ Keep livestock out of lakes and streams
- ✓ Control manure runoff
- ✓ Carefully manage nutrients and pesticides
- Leave natural shoreland vegetation in place or restore if it has been removed
- ✓ Learn to identify and look for invasive species



#### Home Owners:

- Leave natural shoreland vegetation in place or restore if it has been removed
- Leave woody habitat for young fish, turtles and frogs

 Eliminate the use of fertilizer or use no phosphorus fertilizer

- Eliminate or minimize use of pesticides
- ✓ Control soil erosion
- ✓ Control runoff from rooftops and hard surfaces
- ✓ Clean up after pets
- Learn to identify and look for invasive species

### Stop the Spread of Aquatic Invasive Species!

#### Wetlands and Shorelands:

- LEARN how to identify invasive plants and animals, and know who to contact if found.
- DO NOT PURCHASE prohibited and restricted species! Whenever possible purchase native plants.
- NEVER transplant water garden plants or aquarium plants into lakes, streams, wetlands, or storm water ponds. Properly dispose of unwanted plants and animals!
- REMOVE invasive exotic plants from your landscape and replace them with native plants or non-invasive exotic plants. Scout annually for new invasive plants.
- AVOID using garden plants from other regions whose invasive potential is poorly understood.

#### Lakes and Rivers:

- LEARN what Wisconsin invasive plants and animals look like and who to contact if seen in a lake or river.
- INSPECT your boat, trailer and equipment when traveling to different water bodies and REMOVE any attached aquatic plants or animals (before launching, after loading, and before transporting on a public highway).
- DRAIN all water from boats, motors, and all equipment after use at a lake.
- NEVER release live fish, bait or pets into a wetland or water body.
- BUY minnows from a Wisconsin bait dealer. Only use leftover minnows at that same water body.

## White River Flowage (L. Pond) – Primary Authors

Authors listed are from the UW-Stevens Point unless otherwise noted.

### Aquatic Plants

Golden Sands Resource Conservation & Development Council, Inc.

### Sediment Core

Samantha Kaplan

Paul Garrison (Wisconsin Department of Natural Resources)

### Shoreland Assessments

Ed Hernandez and Waushara County Land Conservation Department Staff Dan McFarlane

### Water Quality and Watersheds

Nancy Turyk, Paul McGinley, Danielle Rupp and Ryan Haney Ed Hernandez and Waushara County Land Conservation Department Staff

**UW-Stevens Point Students**: Melis Arik, Nicki Feiten, Sarah Hull, Chase Kasmerchak, Justin Nachtigal, Matt Pamperin, Scott Pero, Megan Radske, Anthony Recht, Cory Stoughtenger, Hayley Templar, Garret Thiltgen

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Center for Watershed Science and Education College of Natural Resources **University of Wisconsin - Stevens Point** 



