

Lake Redstone

Protection Connection

LAKE REDSTONE PROTECTION DISTRICT • SPRING 2011

CB-CW campaign seeks volunteers

La Valle Combats Invasives with Education

by **Stephanie Mueller**, La Valle AIS Grant Coordinator

With several thousand inland lakes and close to a thousand miles of shoreline along the Great Lakes, boating is undoubtedly one of the most popular recreational activities in Wisconsin.

Unfortunately, invasive species of plants, fish, and other organisms choke out native aquatic vegetation, ruin fish habitat, degrade water quality, and make life miserable for all who try to enjoy our beautiful waters.

Increasing alarm over the spread of these aquatic invaders from lake to lake has prompted many lake associations and other concerned citizens to find ways to get involved. The Town of La Valle is recruiting a group of dedicated volunteers to lead the effort in combating aquatic invasive species *before* they become a major problem in Sauk County.

The **Clean Boats, Clean Waters** volunteer watercraft inspection program is an opportunity for front-line defense against the spread of aquatic invasive species. The program was developed in 2002 by three Minocqua/Hazelhurst/Lake Tomahawk middle school students in an effort to stop the spread of Eurasian water-milfoil (*Myriophyllum spicatum*) and other nuisance species in local lakes and to positively affect their communities using science and education.

The Clean Boat, Clean Waters program teaches citizen volunteers how to conduct a boater education program in their community. Participants first learn and then teach boaters which aquatic invasive species are threats, why invasives are problematic, and why inspecting and removing aquatic plants and animals from watercraft is important. In addition, volunteers are trained how to organize a watercraft inspection program, how to inspect boats and equipment while interacting with the public, and how to identify the most common invasive species.

This summer, the Town of La Valle was awarded an education grant from the Wisconsin Department of Natural Resources, and with the help of University of Wisconsin-Extension, held the first of several Clean Boats, Clean Waters workshops on June 11 at Lake Redstone's Mourning Dove boat landing. Despite the unseasonable day, several interested volunteers came out to train and familiarize themselves with common aquatic invasives, laws, and the duties of boat inspectors.

In the coming weeks, the Town of La Valle will be offering another chance for concerned citizens to be trained and subsequently get out to the boat landings to spread the message of aquatic invasive species. We still need

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In order to protect area lakes and rivers, the Clean Boats, Clean Waters campaign encourages boaters to know the law concerning aquatic invasive species and complete the following steps when moving boats:

- ✓ **INSPECT** your boat, trailer, and equipment;
- ✓ **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;
- ✓ **DON'T MOVE** live fish away from a water body;
- ✓ **DISPOSE** of unwanted live bait in the trash; and
- ✓ **BUY** minnows from a Wisconsin bait dealer.

This 1940 photograph from Beaver Creek, Minnesota is also typical of flooding and erosion conditions in southwestern Wisconsin. Geologist S.C. Happ is pointing at the original level of the floodplain; several feet of additional sediment were deposited by floods carrying soil eroded from nearby hills.

1940



STAFFORD HAPP, USDA TECHNICAL BULLETIN 695, 1940.

Erosion, Flooding Draw District's Attention

by Jim Mercier, LRPD Chair

IN THE PAST FEW MONTHS since the ice has gone out, the District has been busy finishing up ongoing work and moving forward with another large project.

During the flood of 2008, the District and the Town of La Valle took on the repair and replacement of the washout at the west end of Morning Dove Bay. This was completed, but during the heavy rains of June 2010, a small amount of silt washed back into the end of the bay. This spring, the silt was cleaned up and more breaker rock was added to the berm.

The other project that was completed was the removal of rock from the water adjacent to the Section 11 boat landing. This was rock that had washed into the lake from alongside the landing over a period of many years. Two truckloads of medium- to large-sized stone were removed and hauled off-site. The remaining large rocks now form a berm to help prevent any further erosion into the lake.

As for new projects, the District has now initiated a major effort to determine the source of silt that is washing into the lake through the wetlands and under the bridge on County Highway F. This has become a major concern of the District, especially during heavy rain events. The District has hired an engineering firm to perform this work and present us with options to rectify the problem. See more detail in the article on the facing page, and better yet, join us at the Annual Meeting on August 6 for a project update and an opportunity to have your questions answered in person!

Looking forward to another safe and scenic summer on the lake,

-Jim

Sediment . . . continued from page 3

severity of rain storms. Over the past 10 years, large rainfalls and floods have been unusually common, and this change in weather patterns may have caused more sediment to be washed into the lake in spite of the improvements in land management.

Streams throughout southwestern Wisconsin are still feeling the impact of farming methods of a century ago that caused enormous soil erosion. Much of the sediment that eroded from the hills during that period was deposited in floodplains along streams, where it can be picked up by floods today and washed farther downstream. In many watersheds, this has created a time lag between improvements in upland soil conservation and reductions in sedimentation in downstream lakes and rivers. It can take many decades to "flush" the sediment from the last century out of the watershed.

We are using this information to identify practical steps to deal with sedimentation in Lake Redstone. Options could include constructing sediment traps, continuing to work with property owners to reduce soil erosion, stabilizing stream banks, dredging shallow areas of the lake periodically, or other strategies. We look forward to sharing more of our results and answering your questions at the LRPD Annual Meeting on August 6. ♦

Lake Redstone Protection District

*Protecting and rehabilitating
the water quality of
Lake Redstone for its
residents and the public.*

www.lakeredstonepd.org

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Engineers Aim to Track, Reduce Lake Sediment

by Steve Gaffield, P.E., Montgomery Associates

Heavy rains last summer turned the west branch of Big Creek chocolate brown as it flowed into Lake Redstone, heightening concerns about the long-term impact of sediment washing into the lake.

Sediment can gradually fill in boating routes, and it carries phosphorus which feeds algae blooms and aquatic vegetation. Rivers naturally carry sediment, but human activities that disturb the soil, like construction projects and farming, can greatly increase the amount of sediment that washes off the landscape when it rains.

The Lake Redstone Protection District has been active in addressing this problem for many years. Several previous studies have evaluated sediment and nutrient pollution of Lake Redstone, starting with a University of Wisconsin – Madison project in 1981. The District has worked with

highway departments, farmers, and others in the watershed to improve roadway and barnyard drainage, and to take other steps to reduce soil erosion. In spite of all of this work, sedimentation in the lake continues.

Building on past studies, the District has undertaken a new project to address sedimentation and develop an action plan. Montgomery Associates: Resource Solutions, LLC of Cottage Grove has been hired to provide a clearer picture of how much sediment is flowing into the lake and where it's coming from, and to help develop realistic sediment controls. Midway through the project, we've gained perspective on sediment sources that will help develop plans to deal with the problem.

Farming methods have improved dramatically over the last century, resulting in less soil erosion. Many indications suggest that this long-term trend of improving land use has continued in the Lake Redstone watershed during recent years, thanks to the efforts of conservationists, farmers, and the District. However, the amount of sediment washed off the landscape and into the lake each year can vary tremendously depending on the timing and

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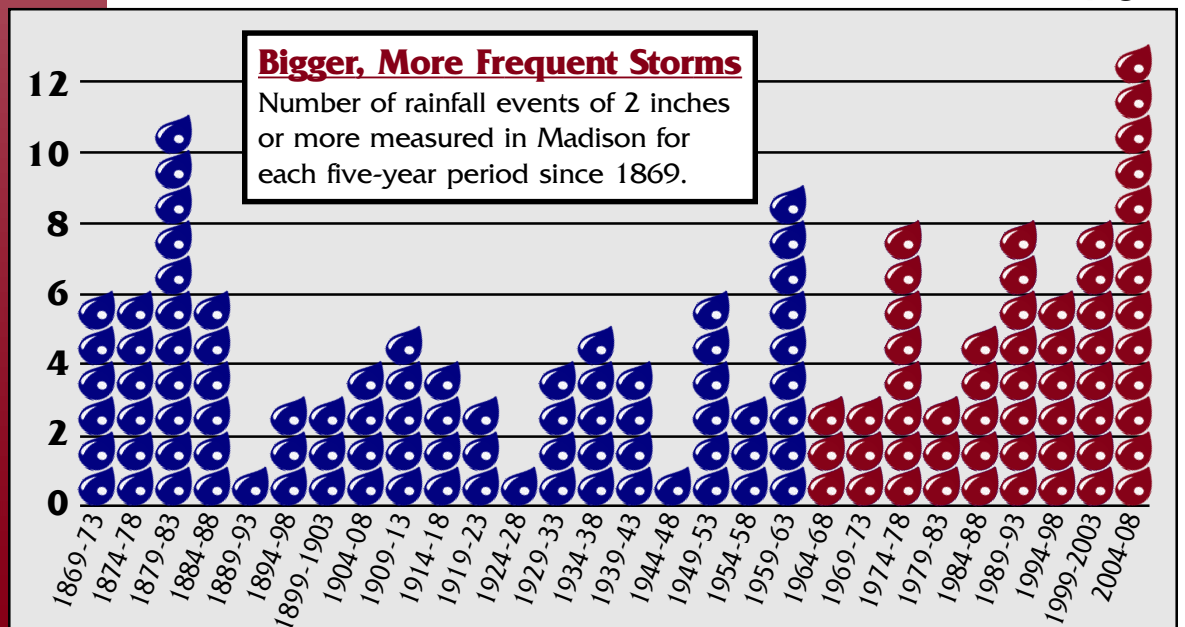
SOLVERSON TOP FLIGHT AVIATION.



A plume of brown sediment enters Lake Redstone from the west branch of Big Creek after heavy rains in July, 2010.

This chart shows that the frequency of heavy rainfall events in southern Wisconsin has increased in recent years. Lake Redstone was completed in 1966.

(DATA COURTESY OF KEN POTTER, UW-MADISON.)



Rain Gardens Add Aesthetic and Ecological Perks

by **Bev Vaillancourt**, Chair, Town of La Valle

WARM WEATHER AND sunny days are perfect for getting in that summer flower bed you've been planning for quite some time. Add just the right amount of rain and a tug at a weed now and then, and the beauty of a summer bouquet is sure to unfold!

Most people think of flowers as a way to beautify their property and bring visual joy to a landscape. But, the flowers we plant also can serve to protect water quality and provide food and shelter for Wisconsin's colorful songbirds and butterflies. Rain gardens serve each of these purposes.

So what's a rain garden? Well, they are growing in popularity among home owners and communities. They come in all sizes from a small depression at the end of a homeowner's downspout to large projects that capture the water from industrial buildings and parking lots. Simply put, rain gardens are shallow areas that are planted with native wetland grasses and wildflowers. Water flowing into the rain water garden keeps the area moist, and they replenish themselves from year to year.

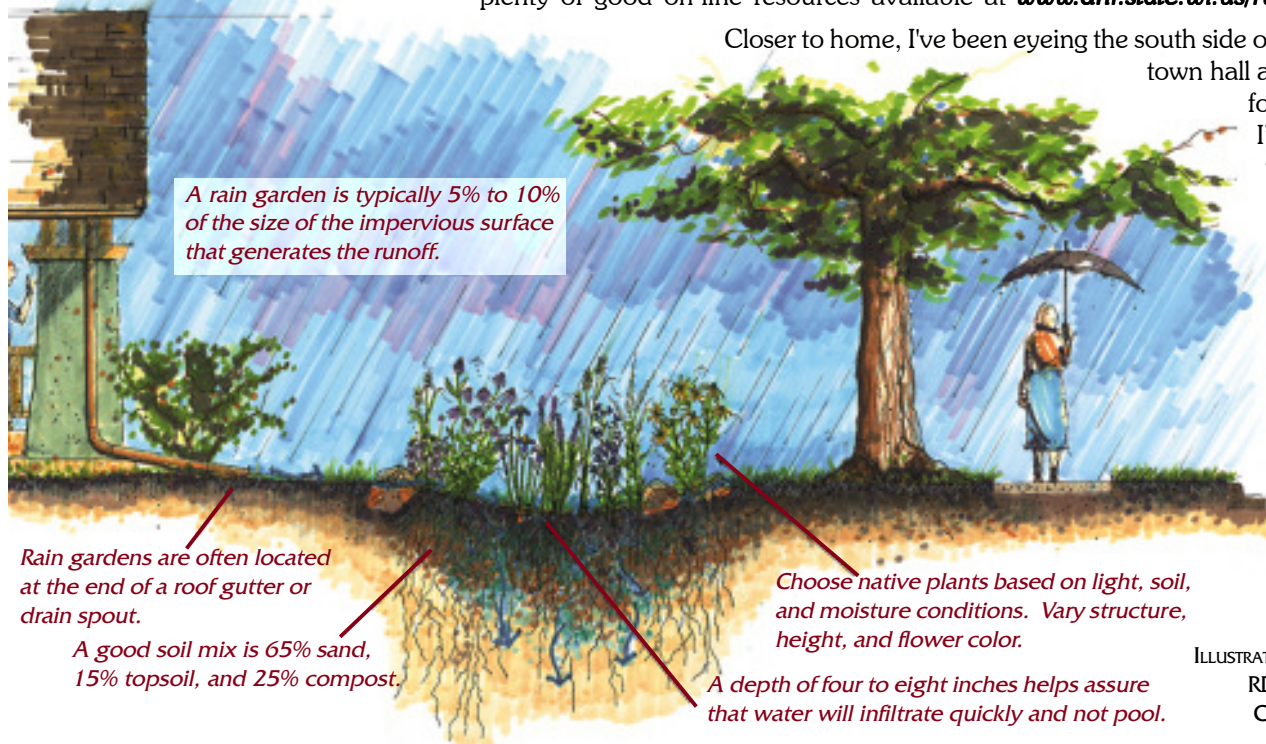
Significantly, rain gardens help to filter rainwater runoff before it enters our ecologically sensitive streams, rivers, and lakes while adding beauty to once unsightly places in our yards and parks. The best part about rain gardens is that once established, they are low maintenance. Little weeding is needed, no watering is required, and fertilizers are not necessary. Rain gardens can replace areas of standing water that harbor mosquitoes and, instead, attract songbirds and butterflies.

Where might you place a rain garden? One advantage of rain gardens is that they filter and capture water. Some people design their rain garden to capture the water flowing from home gutters. The water collects and nourishes the rain garden as opposed to pooling in unwanted places or running onto a neighbor's yard. The result is an area of beauty instead of a problem spot. Some municipalities are making use of rain gardens to beautify ditches where standing water has been a problem. Commercial use of rain gardens is growing as a way to improve the look of parking lots or reduce the need to mow or ameliorate muddy areas.

There are several examples of rain gardens nearby in Baraboo, including two near the public library on Fourth Ave. and another at East School at 815 Sixth St. While in town, you can find more information by dropping by the UW-Extension or the Sauk County Land Conservation Department offices in the West Square Building. There are also plenty of good on-line resources available at www.dnr.state.wi.us/runoff/rg/.

Closer to home, I've been eyeing the south side of the La Valle town hall as a perfect place for a rain garden.

I'll be continuing to work with Sauk County Land Conservation to learn more about the advantages of a rain garden to capture water flowing from the town hall's gutters and parking lot. Happy Gardening! 🍀



A rain garden is typically 5% to 10% of the size of the impervious surface that generates the runoff.

Rain gardens are often located at the end of a roof gutter or drain spout.

A good soil mix is 65% sand, 15% topsoil, and 25% compost.

Choose native plants based on light, soil, and moisture conditions. Vary structure, height, and flower color.

A depth of four to eight inches helps assure that water will infiltrate quickly and not pool.



Cardinal flower (*lobelia cardinalis*) is one of the many native plants that can thrive in a rain garden.

ALAN S. HEILMAN, UNIVERSITY OF TENNESSEE HERBARIUM.

ILLUSTRATION BY DOUG ADAMSON,
RDG PLANNING & DESIGN.
COURTESY OF IOWA NRCS.

Internal, External Sources Disrupt Phosphorus Cycle

by Susan Knight, UW-Center for Limnology, Trout Lake Station

Too much of a good thing almost always leads to problems. This is especially true when it comes to nutrients and lakes. Lakes need some nutrients, such as nitrogen and phosphorus, or they would be as bare as water-filled bathtubs. Nutrients are necessary for algae and plants, which in turn fuel the entire lake food web from tiny zooplankton to feisty crayfish, and from fish fry to trophy muskies. But with too many nutrients, and especially too much phosphorus, the algae multiply so fast that the lake's tiny herbivores, the zooplankton, cannot keep up and the lake turns a not-so-tempting green.

Where do the algae get the phosphorus that allows them to multiply so dramatically? Most people know that lots of phosphorus comes from outside the lake every year. But in many lakes, much of the phosphorus-stimulating algal growth is recycled from within the lake.

When phosphorus enters a lake from outside it is called **external loading**, and it is easy to see and understand the sources. The phosphorus may come from a readily identifiable source, called a **point source**, such as a pipe from an upstream wastewater treatment plant. It may come from less conspicuous, or **non-point sources**, such as runoff from fertilized lawns or as leachate from ineffective septic systems. Both point and non-point sources of phosphorus increase the total amount of phosphorus in the lake. But then what happens to it?

Upon entering a lake, phosphorus may be immediately taken up by algae or bacteria and become part of the food chain. Or, if the water is well oxygenated, it may form an insoluble compound with iron and sink to the bottom. It may also attach to organic particles, again sinking to the bottom. Even if algae take up the phosphorus, it will eventually fall to the bottom of the lake as part of a dead algal cell, in excreted fecal material, or as part of a dead critter higher in the food chain.

Whatever the vehicle, most of the phosphorus that comes into the lake, eventually ends up in the sediments on the bottom of the lake. If the phosphorus stayed at the bottom, and we could control the external loading, we could more successfully control runaway algal growth. But, it doesn't stay put and that leads to trouble.

Because of this rain of phosphorus-rich organic debris, the concentration of phosphorus in the bottom sediments is much higher than that of the overlying water. Typically with differing concentrations, there tends to be diffusion or movement from the place with the high concentration to the low. However, in the case of phosphorus, diffusion of nutrients from the sediments to the water (also known as **internal loading**) is a very complicated process controlled by a great number of physical, chemical, and biologic factors. When conditions are right, phosphorus will be released from the sediments, re-suspended in the water column and ready to rejoin the world of the living.

Oxygen is one of those chemical factors critical to the release of phosphorus. Bacteria in the sediments are always busy decomposing dead organic stuff accumulating at the lake bottom. Decomposition consumes oxygen and the bottom of the lake may become **anoxic**, meaning there is no dissolved oxygen in the water. (This can also lead to winter and summer fish kills.) Under these anoxic conditions, phosphorus is no longer bound to iron and is released as free phosphate (the most biologically valuable form of phosphorus). Slowly, usable phosphorus diffuses from the bottom and up into the water column. Some phosphorus will be rapidly re-suspended when the lake "turns over" in spring and fall. This internally loaded phosphorus will be taken up rapidly by algae, which is why we often see algae blooms during these times.

Aquatic plants are also important in getting phosphorus into the water column, albeit in a round-about way. Aquatic plants get most of their nutrients from the sediments and, in a sense, "mine" the sediments for phosphorus. These plants eventually die, are decomposed by bacteria, and then some of the phosphorus that had been locked in the sediment is released to the water column. Other lake bottom organisms, such as carp and small insect larvae, often stir up oxygen-poor, phosphorus-rich sediments near the sediment-water interface, also leading to more phosphorus circulation.

Cutting off the external load of phosphorus from point and non-point sources may not lead to an immediate decrease in algal levels. There will always be some phosphorus internal loading, at least seasonally. However, the lake's phosphorus "memory" will slowly fade if the phosphorus inputs decline. If the external load is diminished, a lake over-endowed with nutrients may eventually see a return to a more natural phosphorus cycling regime. ♦

This article originally appeared in the Fall 2007 issue of Lake Tides. Used with permission of the Wisconsin Lakes Partnership, www.uwsp.edu/cnr/uwexplakes.

Take a Stake in Your Lake!

Here are a few simple ways you can help enhance Lake Redstone and protect your property investment:

- **Establish a rain garden;**
- **Use low- or no-phosphate detergents;**
- **Ensure proper maintenance of your septic system;**
- **Keep hard surface on your property to a minimum;**
- **Choose zero phosphorus fertilizer or use no fertilizer at all;**
- **Properly dispose of household hazardous wastes and medicines;**
- **Protect your property from soil erosion by maintaining shoreline buffers;**
- **Keep garden refuse, grass clippings, leaves, pet waste, and campfire ashes out of the water; and**
- **Don't feed the geese.**

You can learn more at:

- www.dnr.wi.gov/lakes
- www.uwsp.edu/cnr/uwexplakes/
- www.wisconsinlakes.org/

Lake Redstone

PROTECTION DISTRICT

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Clean Boats . . .

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many more volunteers to help protect our lakes.

We're looking for volunteers who can spare a one-hour training session plus two three-hour shifts at the boat landings this season, though any amount of time you can volunteer would go a long way in preventing the spread of invasive species.

To learn more about Clean Boats, Clean Waters and to register, contact the Town of La Valle at (608) 985-7695 or tnlvl@mwt.net or Bev Vaillancourt at (608) 697-0191. ♦



LRPD Annual Meeting

Saturday, August 6

8:00 a.m. coffee / 8:30 a.m. meeting

La Valle Town Hall: 314 Highway 33

Please join friends and neighbors at the Lake Redstone Protection District Annual Meeting on August 6. It's a great chance to learn more about what's happening around the lake, and help set the District's agenda for the coming year.

The meeting also features the election of new members to the LRPD Board. Do you have a vested interest in Lake Redstone? Are you interested in water quality and the recreational opportunities our lake can provide? If your answer is **yes**, please consider joining our team for the upcoming three-year term. It's an opportunity to help maintain and improve the quality of the Lake Redstone watershed.

For more information regarding service on the Board, contact any of the current Board members listed on page 2. To become a candidate, please submit a brief biography by July 10 to Secretary Warren Frank at P.O. Box 313, La Valle, WI, 53941. ♦