

## Environmental Initiative Award 2012 Nomination

### Name of Project Nominator

Name\*: Jan Voit  
Organization: Heron Lake Watershed District  
Address: P.O. Box 345  
City: Heron Lake, MN  
Phone: 507-793-2462  
Email\*: hlwd@roundlk.net

### Project Details

Project name: A Grassroots Effort to Bring Back the Fulda Lakes  
**Project date of completion:**

### Category: (pick one of the following)

- Energy & climate protection
- Environmental education
- Green business and environmental management
- Natural resource protection and restoration**
- Sustainable communities

### Project Summary:

Members of the Fulda community approached Heron Lake Watershed District (HLWD) staff regarding the condition of their lakes. The First and Second Fulda Lakes were in dire need of a drawdown and reclamation due to severe algae blooms, loss of rooted aquatic vegetation, loss of migratory waterfowl, rough fish impacts, reduced water clarity, and flooding. Concerned citizens asked for both financial and technical assistance in finding ways to make their lake healthy again. HLWD staff began to identify projects and seek funds for restoration efforts.

Within city limits was a nine-acre field. This property was extensively farmed in a corn and soybean rotation. Across the highway is a fertilizer plant. During rain storms, water carrying fertilizer, as well as sediment from the field, flowed into three basins where open tile intakes were located. The water was then able to flow through those intakes into Second Fulda Lake. The landowner was not open to the idea of closing the intakes or installing any conservation measures, he was however, willing to sell the property. In August 2000, the HLWD purchased the property, replaced the open tile intakes with alternative rock inlets, and seeded the parcel into native grasses and forbs. In addition, the fertilizer plant placed a berm around their property to keep stormwater on site.

On the west side of the lakes are two 30-inch surface intakes. They go below ground, under the road, and outlet directly into the lake. The area around these was steep and highly erodible. The Fulda Fish and Game Club, Bondin Township, and the HLWD worked together to raise the intakes to provide some storage and seed the sensitive area around the intakes into native grass through the Conservation Reserve Program (CRP).

In the spring of 2002, Murray County Judicial Ditch (JD) #13 was improved to address inadequate drainage throughout a large portion of the Fulda Lakes subwatershed. The HLWD was involved throughout the process and was highly concerned about the effect the project would have on the water quality of Fulda Lakes and the watershed. There was also a considerable amount of concern from both the residents of Fulda and the downstream landowners. The first direction the HLWD chose was to require filter strips along the new open ditch. Although that was a challenge, all the landowners agreed to install the filter strips.

Open tile intakes were an area of concern. The HLWD received an Environmental Protection Agency (EPA) 319 grant to replace open tile intakes with alternative rock inlets. Through the grant, 75 percent cost-share was provided for the replacement of open tile intakes. There was a great response to the program as 70 percent of the open tile intakes in the ditch system were replaced.

The HLWD also required a means to filter the water before entering the lake. There was a perfect property for a flow through wetland as a means of treatment near the outlet of JD #13. The owner of the property was willing to work with the HLWD, but did not want to retain ownership. He enrolled the property into the Reinvest in Minnesota (RIM) program. Once that was completed, the HLWD purchased the property from the landowner so a wetland restoration could be established. The US Fish and Wildlife Service (USFWS) provided 50 percent of the cost of the wetland restoration and the HLWD paid the remaining cost. Before entering the lake, the water from JD #13, along with an 18-inch stormwater outlet for the city of Fulda, flow through this system.

Directly below the wetland is Schindler's pond. It is roughly an acre in size and was in place before the ditch improvement. It has been an excellent source of treatment. Its original depth was between five and seven feet. After taking a cross section in 2006, it was discovered there was only eight inches of water storage remaining. It was apparent that it was no longer functioning and was a detriment to the lakes. That same year, a cleanout occurred with the HLWD providing 50 percent of the cost and the USFWS providing the other 50 percent.

In March of 2006, the Minnesota Department of Natural Resources (DNR) began laying the ground work for a lake reclamation project. The fixed-crest dam on the outlet of the lakes had begun to fail, presenting Murray County, lakeshore landowners, concerned citizens, and the DNR a unique opportunity to work together to identify replacement structures and management options to improve the lake.

The result of the process was unanimous support for a temporary drawdown, construction of a variable-crest dam, and the installation of a fish barrier at the lake outlet. The HLWD contributed \$10,000.00 to this project. In addition, a rotenone treatment was done on the tributaries to the lake, as well as the lake system. In the spring of 2009, the lake was stocked with walleye fry, bluegills, and largemouth bass.

In 2007, the HLWD was awarded an EPA 319 grant for the Fulda Lakes Best Management Practices (BMP) Project. Through this grant the HLWD and partners were able to install a

critical area planting, shoreline restoration, and provide incentives to operators who practices conservation tillage on their farm land.

The critical area planting was implemented in an area where three highly erodible channels in a farm field drained to the lake. Through the 319 grant the HLWD was able to shape, widen, and seed these channels to permanent vegetation. The grant provided 75 percent cost-share to the landowner for the installation. The landowner was extremely happy with the project as was everyone involved in the project.

Through the EPA 319 grant the HLWD offered incentives for landowners farming within the Fulda lake subwatershed to practice conservation tillage. In order to qualify for incentive payments, a field that was planted to corn in the previous crop year contained 55 percent residue cover and a field that was previously planted to soybeans contained 30 percent residue cover.

The HLWD also partnered with lakeshore landowners, Heritage Society members, Murray County, the City of Fulda, and the Department of Natural Resources (DNR) to conduct three shoreline restoration projects. Projects ranged from a simple filter strip to a complex restoration that involved a complete bank stabilization using all bioengineered practices.

Stormwater from the east side of the City of Fulda dumped directly into the lake. There was a considerable amount of shoreline eroding below the outlet structure. The HLWD and project partners faced several challenges with the steep slope, small area, and very large cottonwood trees along the lakeshore. In the summer of 2011, the outlet structure was removed, the water was allowed to drop into a man-hole, and then outlet level across rip rap. After taking the force out of the water it travels across a zero-grade vegetated swale for treatment. Following treatment, water is allowed to enter the lake over an area protected by rock to prevent erosion.

In 2011, the HLWD applied and received funding for a phosphorus reduction initiative in the City of Fulda. With these funds, the HLWD hopes to instill a sense of personal responsibility for the two lakes in the Fulda area by engaging students, 4-H members, Master Gardeners, landscapers, and the general public in the awareness of effect of water pollution to the Fulda Lakes. This will be done through classroom presentations, hands-on installation of five rain gardens, and a tour of the rain gardens at the end of the grant period. Work began on this effort in early 2012.

**Website:** <http://www.hlwdonline.org/hlwd/>

**URL:** [http://www.hlwdonline.org/hlwd/images/pdf/WaterQuality/MAWD\\_2011.pdf](http://www.hlwdonline.org/hlwd/images/pdf/WaterQuality/MAWD_2011.pdf)

[http://www.hlwdonline.org/hlwd/index.php?option=com\\_content&view=article&id=92&Itemid=307](http://www.hlwdonline.org/hlwd/index.php?option=com_content&view=article&id=92&Itemid=307)

**Project Partners:**

Partners include the HLWD, DNR, USFWS, Fulda Fish and Game Club, Murray County, Bondin Township, Heritage Society members, City of Fulda, landowners, and the Minnesota Pollution Control Agency through the EPA 319 grant mechanism.

### **How is the partnership/goals/outcomes/etc. groundbreaking?**

This grassroots endeavor started on behalf of Fulda townspeople noticing the degradation of their two beautiful natural resources the First and Second Fulda Lakes, located within city limits. Their main interests were water quality improvements and getting the lakes back to a natural, unpolluted state. Through strong partnerships, the grassroots ideas turned to reality. The HLWD was able to apply for funds based on the needs described by local landowners. Their participation was a key factor in project initiation.

### **Project Goals:**

The project's first goal was to reach long-term goals for phosphorus that were established in 1992. There are long term goals of 0.06-0.14 mg/L in the First Fulda Lake, and 0.025-0.105 mg/L in the Second Fulda Lake. The average from 1997-2002 was 0.148 mg/L for both First and Second Fulda Lakes.

The second project goal was to increase city residents' and watershed landowners' awareness of the problems facing the Fulda Lakes' and to seek their ownership in implementing corrective measures.

### **Outcomes:**

HLWD staff attended Heritage Society, Fulda City Council, and Fulda Game and Fish Club meetings to provide information and get input for project direction. Newsletters were distributed and workshops were held regarding the importance of urban BMPs.

Landowners in the drainage area upstream of the lake system were involved in a project to improve JD #13. As a result of the improvement process, filter strips were installed along the entire system, open tile intakes were replaced with rock inlets, and a wetland restoration was completed at the outlet.

The DNR released a series of newspaper articles regarding the history of the Fulda Lakes, lake reclamation projects, and the proposed efforts to improve the lake system. A public meeting was held to discuss repair of the outlet dam and possible drawdown measures. Murray County did extensive work with lakeshore landowners to obtain unanimous support for the temporary drawdown. The DNR and Murray County implemented in-lake management that included replacing the fixed-crest dam with a variable-crest structure, manipulating water levels, fish eradication, and fish stocking.

HLWD staff provided first-hand information about the EPA 319 grant program requirements through direct mailing, one newsletter, a kickoff meeting, and reports to the general public and local officials. These efforts proved successful in that there were a total of 5,828.46 acres enrolled in conservation tillage practices. From 2008-2011 there was a 73 percent increase in the amount of acres enrolled into the program. Three shoreline restoration projects were completed. Projects ranged from a simple filter strip to a complex restoration that involved a complete bank stabilization using bioengineering practices. By completing several restorations, it was hoped that every landowner on the Fulda Lakes' would see first-hand some type of restoration that could be implemented on their property.

Water quality improved greatly as a result of the drawdown, fish kill and reclamation projects, and education. When the water quality monitoring data from 1997-2002 is compared to the 2010 data:

*First Fulda Lake*

- Total suspended solids (TSS) decreased by 72 percent
- Turbidity decrease by 51 percent
- Chlorophyll A decreased by 62 percent
- Ortho Phosphorus (OP) decreased by 70 percent
- Total phosphorus (TP) 45 percent

*Second Fulda Lake*

- TSS decreased by 72 percent
- Turbidity decreased by 73 percent
- Chlorophyll A decreased by 70 percent
- OP decreased by 80 percent
- TP decreased by 56 percent

Fulda Lakes have a maximum depth of seven feet. Since 2008, water clarity readings from both lakes have been documented to the bottom of the lake throughout the year.

Fulda Lakes are only seeing improvement as a result of all the project partners. Partnerships are essential in utilizing the best resources available and maximizing the cost effectiveness of any project or education event. We are extremely thankful to all of our partners for helping to make the drawdown, reclamation, and restoration projects possible.