

# *Dell Creek Priority Watershed Project*

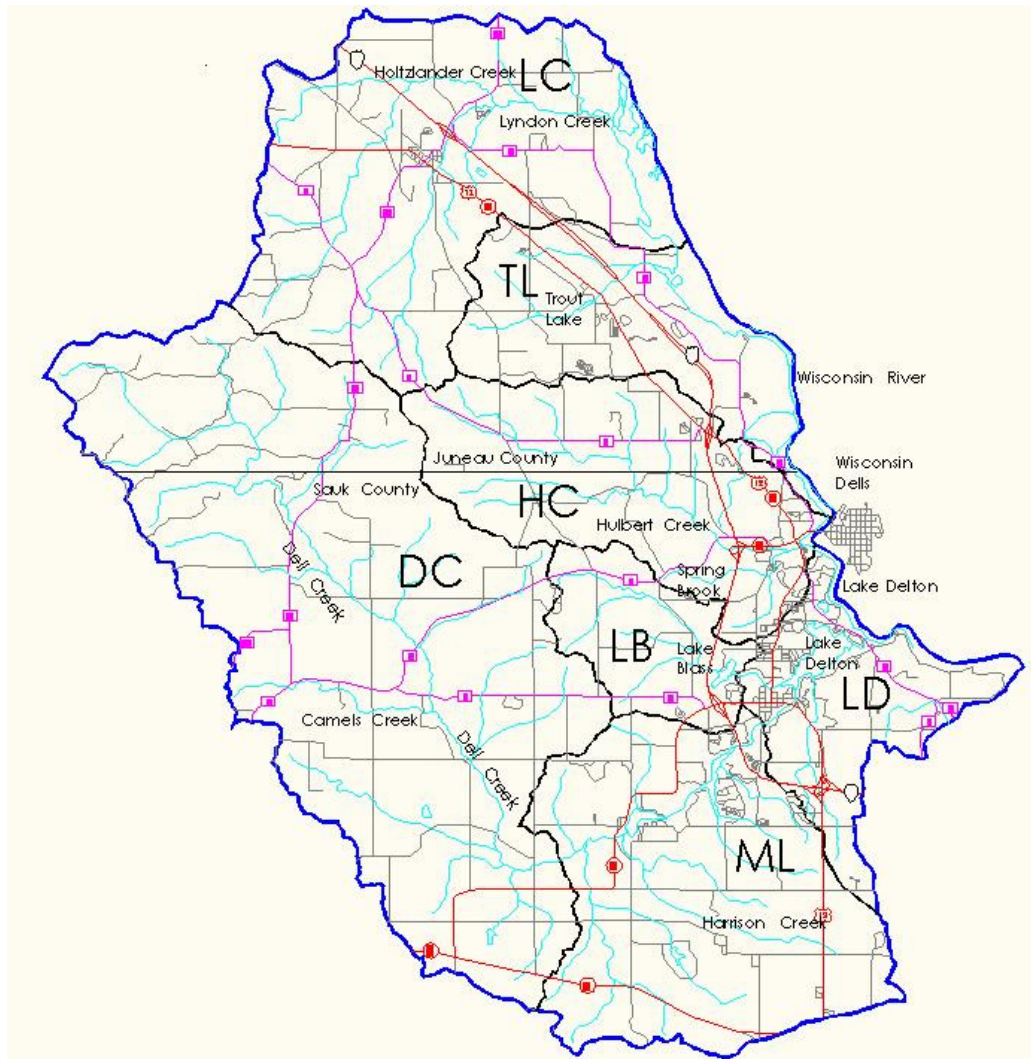


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For the Sauk & Juneau County Land Conservation Departments  
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## Introduction

The purpose of the Dell Creek Priority Watershed Project was to protect and enhance the surface and groundwater throughout the watershed. Priority watershed projects are designed to control non-point pollution. Non-point pollution is runoff that cannot be traced to one point of origin. Non-point pollution occurs when rain or snowmelt runs over the surface of the land and picks up contaminants along its path to a water body or groundwater. These contaminants are generally classified as a type of soil, fertilizer, pesticide, organic waste or other pollutant. These contaminants can fill in lakes, degrade water quality, destroy habitat, and pollute drinking water. Non-point pollution had been causing a very negative effect on the water quality of the lakes and streams in the Dell Creek watershed.

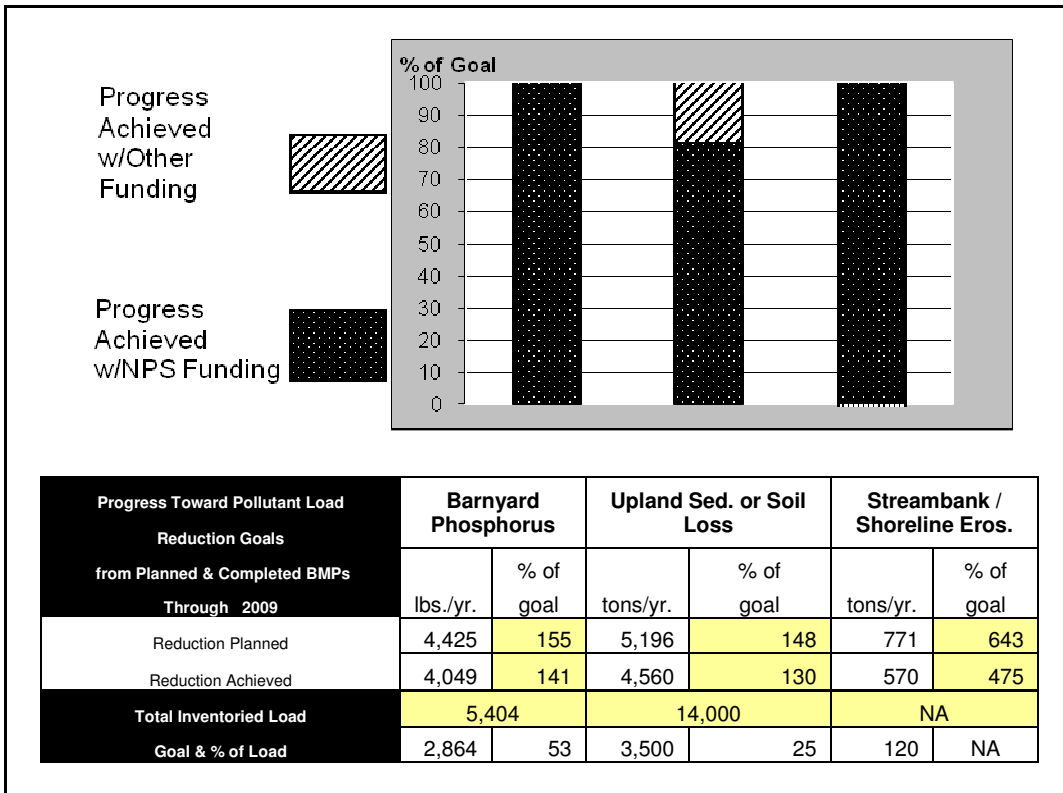
The Dell Creek Watershed Project covers 133 square miles of surface area in the north-west corner of Sauk County and the southeast corner of Juneau County. The project is located in the Lower Wisconsin River Drainage Basin and all water from the watershed flows into the Wisconsin River.



### Dell Creek Project

The Dell Creek Priority Watershed Project lies primarily in that portion of Wisconsin considered as the Driftless Area. Glaciers historically did not cover this region. This gives the area a rugged landscape of steep topography that lends itself to high erosion rates and runoff events.

The cities of Wisconsin Dells and Lake Delton are nationally recognized tourist destinations. The tourist industry started in the Dells area back in the late 1850's. The tourists came to the Dells because of the beauty of the Wisconsin River and Mirror Lake. Lake Delton was built in 1928 to encourage more tourism and today Lake Delton is a major focus of the tourism trade. The same water resources that attract millions of guests per year are influenced by non-point pollution that occurs in the Dell Creek watershed. The implementation of the watershed project will serve to improve the water resources for the benefit of both the residents and tourists.



The watershed project set goals for the implementation of the project. These goals include:

- 1) Reducing upland sediment delivery by 25% or 3,500 tons/year
- 2) Reducing streambank erosion by 120 tons/year
- 3) Reducing gully erosion
- 4) Reducing phosphorus runoff from barnyards by 535 or 2,864 pounds/year
- 5) Reducing phosphorus runoff from sediment by 25%
- 6) Restoration of wetlands that are needed to reach sediment reduction goal

## Upland Sediments

The watershed goal was to reduce upland sediments by 25%. The watershed project met that goal rate back in 2005. The project, not content with only reaching goals, continues to reduce erosion in the watershed yearly and by the end of 2009 it had reduced erosion by 4,560 tons per year. That is over 1,000 more tons per year than the goal of 3,500 tons. This a reduction of 1/3 of the erosion documented in the entire watershed plan. The surpassing of this goal will also impact the phosphorus runoff from eroding uplands. By reducing erosion from these areas, phosphorus that would have been transported along with the soil is remaining on the fields where it can be utilized by the crops being grown. Phosphorus readily binds to soil particles, so by reducing soil erosion, the amount of phosphorus being delivered is similarly reduced. This lowers the impact of phosphorus runoff into our lakes and streams. Phosphorus runoff causes plant growth and oxygen depletion in water bodies. One of the goals in the plan was to reduce this phosphorus runoff by sediment delivered from uplands by 25%. Through the reduction of soil erosion by 33% in the watershed, this goal has been met and surpassed. Continuing with this reduction is the implementation of nutrient management plans for the spreading of animal wastes and fertilizers in an agronomic way. By placing only needed amendments where they are needed and only at appropriate times, the amount of wasted nutrients or contaminated runoff has been dramatically lowered throughout the watershed project area.

The waterway in the picture below had been actively eroding and the gully at the bottom of the first picture had been advancing upstream at the rate of 40 feet per year. It had reached a county highway and was undermining the road. The county staff designed a project and worked with both private contractors and the county highway department to install a rock stilling basin, grassed waterway, crossings, and fencing to keep the cattle out of the channel.



Large gully site undermining a county highway, fall 2008



Same site after construction, fall 2009

## Gully Erosion

Hulbert Creek had an objective of reducing the sediment loading from gully erosion. Several gully control structures were placed on gullies leading into Hulbert Creek lowering sediment and phosphorus runoff. During 2007-2008, sites lowered sediment runoff into Hulbert Creek by 225 tons of sediment per year. During 2007-2009, sites in Blass Lake sub-watershed lowered gully erosion by 276.4 tons per year. These are examples of highly eroded sites that staff targeted in these sandy bluffs that contributed high sediment loads to project streams and lakes.

For 2010, in the Mirror Lake sub-watershed, there are six carryover projects, sites that collectively erode 190 tons of sediment into Mirror Lake each and every year. The sediment plumes that run out into the lake from these eroded gullies are threatening navigation as well as filling in sections of the lake. These final projects are beneficial on their own, but when combined with the dredging work that was done on Mirror Lake last year, these projects will help keep Mirror Lake a premier recreation spot in Wisconsin.

This is from one of the sites repaired on Hilbert Creek. This site contributed more than 125 tons of soil down into the stream on an annual basis. Sites like this were choking the stream and damaging the fishery.



Gully site before construction in 2005

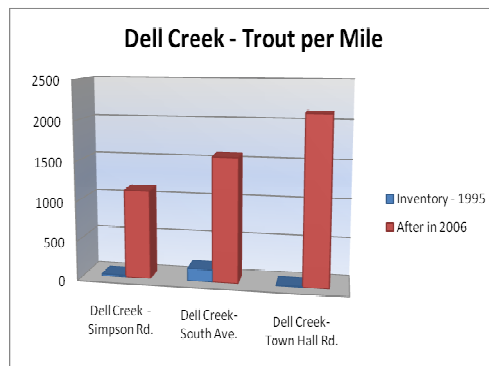
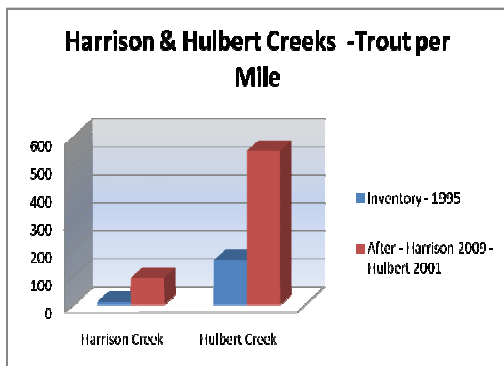


Same site after construction, fall 2005

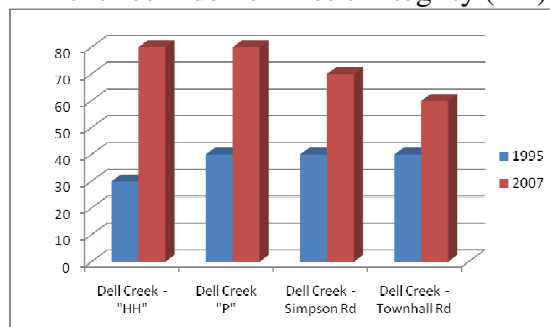
## Streambank Goals

The streambank goals were set at 120 tons of soil saved per year. This goal was surpassed in 2001. By the end of 2009, the goals were surpassed by reducing streambank erosion by 570 tons or 475% of the planned goal. This increase was partly because the original inventory somehow missed inventorying Camels Creek. Due to the nature and location of this project, much of the streambank was already owned by the Department of Natural Resources, so the project had limited areas that staff could work on for reaching project goals. The streambank goals were set pretty low because much of the banks were already protected. Through the project, work was mainly done to improve the spawning areas for trout on the upper reaches of Dell Creek, where private ownership still occurs. Much of the work in the project concentrated on barnyard runoff and erosion control on private lands. The combined project work contributed to increased fishery downstream, as the water became cleaner.

The variation listed below in the shocking dates for streams is totally due to the data that was provided by DNR. In Wisconsin, the DNR staff have been under a hiring freeze, a large workload, and cost restraints. These collectively restrict the amount of stream shocking and data that can be collected every year. The Dell Creek project heavily relies on DNR for their support for shocking these streams and the data they provide.



## Fisheries Index of Biotic Integrity (IBI)



These are examples of the cold water IBI in sections of Dell Creek. These show the improvement in the fish community within Dell Creek since the inventory in 1995. The IBI ratings are based on a 0-100 scale and are a measure of the entire fishery, not just trout. This chart shows a consistent increase from “Fair” ratings to “Good,” indicating improved environmental conditions.

## Streambank Success Story

Camels Creek is a trout stream that feeds Dell Creek. This stream had eroded banks that severely damaged the trout fishery. The DNR State of the Basins Report specifically cites Camels Creek under its recommendations section as being in special need of habitat improvement. The program began working with landowners along Camels Creek in 2006. By the end of 2009, several restoration projects had stabilized eroded banks and installed habitat to over ½ mile of the stream. The trout are already responding to the habitat and stable banks. The original inventory from 1995 found 160 trout per mile (tpm) and in 2009, shocking the same area found 744 tpm; this is over a 450% improvement. One of the major issues found in the original inventory of Camels Creek wasn't a water quality problem, but limited habitat for the fishery and for the aquatic insects they feed upon. The installation of several streambank projects added both erosion control and habitat for the stream and it is responding. The project has some carryover work for 2010, and will have installed over ¾ mile of stream restoration work encompassing work for four different landowners before the project is complete.

It must be noted that the Camel's Creek work was completed with private landowners on their property. They paid for a portion of the work that was completed. While some of the work noted in this report is on public land, the section on Camel's Creek is not. Anyone wishing to fish any of the streams listed in this report should check to see which areas are open to public fishing and ask for permission to fish on private property.

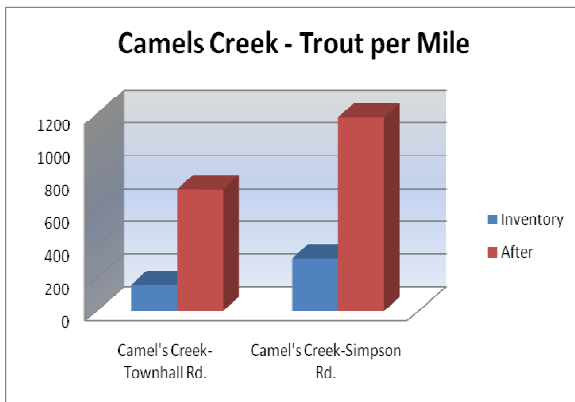


Chart showing trout increases



Net load of trout from Camels shocking



Camels Creek before construction in 2005



Same stream in 2007 after construction

## Stream Success Story II

The Dell Creek Project will also carry over another 2,500 feet of stream restoration work on Lyndon and Holtzlander Creeks in Juneau County for 2010. These two projects will save an additional 158 tons of soil from eroding downstream and into the Wisconsin River. These two streams are considered trout water, so the project has been and will continue improving the habitat along these streams, as well. Part of this work is on the Ho-Chunk Nation property called White Otter. This area has been restored with native prairies, wetland restorations, hiking trails, a scenic overlook, and several streambank restoration and habitat improvement projects along Lyndon Creek. White Otter is open to the public for fishing and hiking. The White Otter property has been a joint project of many county, state and federal agencies and the Ho-Chunk Nation. This property is used by local school groups for conservation learning activities. The Dell Creek Priority Watershed Project led the stream restoration work on Lyndon Creek.



Student collecting macro invertebrates for Youth Day exercise



UW Stevens Point students building brush bundles



Eroded Lyndon Creek bank before construction



Same Lyndon Creek bank after construction



## Barnyard Runoff Goals

The project's goal was to reduce phosphorus runoff by 53% or 2,864 lbs. per year that washed off barnyards in the watershed. By the end of 2007, the project had nearly met the plan goal by reducing 2,802 lbs. By the end of 2009, the project lowered that by another 1,247 lbs. to a total of 4,049 lbs. of phosphorus saved. This means all of that phosphorus that had washed off barnyards and into waterways was being safely spread and utilized on crop fields. This amount surpasses the project goal, being a 75% total reduction of phosphorus or 141% of the project goal. The carryover into 2010 should see the final critical site installed, further reducing phosphorus runoff by another 175 lbs. per year or surpassing 148% of the goal.

This project will have installed 29 full barnyard runoff systems and 16 clean water diversion systems. This includes managing runoff from all seven critical sites as outlined by the plan and another inventoried later, for a total of eight critical sites. The plan outlined a total of 37 full barnyards eligible or critical and 25 eligible for clean water work. This amounts to over 72% of the landowners with eligible barnyards participating in the Dell Creek Project. The plan was written based on a 60% participation rate. Two critical sites were completed in 2009. The system below is a barnyard runoff management system that was installed during the early phase of the watershed project. That same site was the host of the Sauk County Dairy Breakfast in 2009.



Barnyard site in 1999, looking north



Same site in 2009, looking north



Barnyard site in 1999, looking east



Same site in 2009, looking east

## Conclusion

Reaching goals was important for the Dell Creek Watershed Project. These goals are the reason the project was chosen in the first place. These goals gave direction for watershed staff when assigning workload. These goals, however, didn't spell out all that is necessary to improve the watershed in the Dell Creek area. By combining the plan with the Water Resource Appraisal that was created as the baseline data for the project, and the State of the Lower Wisconsin River Basin report, other priorities that are important to our lakes and streams were identified. By combining these missing pieces, staff improved water quality, habitat, fishery, and human uses as a consequence. Another objective of the project was to restore wetlands that increase water infiltration and serve to filter contaminants from surface water. The project restored 19.1 acres of wetlands, further improving and protecting the watershed.

Working with many ideas allowed staff and the project to improve water quality and teach the importance of clean water to future generations. The staff used not only installation of practices, but education, as a main aspect of the watershed project. The watershed staff added its own monitoring program to help document improvements to the watershed, as the project now ends. This proactive approach helped with the project's success. Goals are nice, but documenting improvements are what this is all about. The improvement in the fishery in Camels Creek is just one of the many examples of success in this project.

This project, like the others that went before it, proves that voluntary programs can succeed. The surpassing of goals shows the success put forth through cooperative efforts. Dedicated staff working for the project helped the project reach goals. The real success of the project is the landowners who work this land and have adopted the changes the watershed staff worked with them on over the years. These landowners, working to keep their soil and manure in place, will help this project truly succeed. The landowners who worked to implement many practices during the watershed project are to be congratulated on their efforts. This was indeed a voluntary project and landowners were not required to install practices if they chose not to participate. I have worked with most of the landowners who signed contracts with the watershed project and enjoyed my time with all of them. The staff developed many ties with landowners that will continue long after this project has ended. Most landowners, if they didn't work with staff, were concerned with their future in farming. The future is uncertain at best: high costs of inputs and low commodity prices seem the norm. Without consistency in farming income there will always be water quality problems. When a landowner doesn't have enough money to pay bills, spending extra on water quality improvements is a difficult sell.

The stage has been set for enforcement as NR 151 rules are being implemented across the Wisconsin counties. The voluntary workings with county staff are changing and I wonder what impact that change will make. Will the landowners realize that this was an inevitable result of a few who refused to see the damage they continued to create or will this be a wall that comes between government staff and conservation being installed on the land?