

# Project Summary Sheet

October 4, 2009

**Project Name:** Lake Hendricks Restoration Project

**Lead Project Sponsor:** Lake Hendricks Improvement Association  
Jeff Robbins, President  
155 Dakota Shores, Hendricks MN 56136

**Project Contact:** Joe Beech      Project Manager      Beech Consulting

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**State:** MN, SD      **Watershed:** Deer Creek, Brookings/Deuel Co. SD/ Lac qui Parle, Lincoln Co. MN

**High Priority Watershed:** Yes

**Project Type:** Watershed, Administrative

**Project Location:**      **Latitude**      **Longitude**  
N 44°30'24"      W 96°25'36"

## The Subject:

Lake Hendricks over the years has been touted as one of the best fishing lakes in the area. It is also a vital link in the survival and prosperity of the town of Hendricks MN. Revenue collected from the lake in the forms of taxes, tourism and economic development have placed the lake's value ahead of agriculture.

## The Problem:

Even though Lake Hendricks has a reputation for being a good fishery it also has the reputation as having a severe algae problem during the summer months. There are several reasons for this; Lake Hendricks receives its water from nearly 38,000 acres of watershed in both SD and MN. The water enters the lake in two main locations, Deer Creek on the southwest end of the lake in SD, and via County Ditch 11 that drains 9000 acres of crop land in MN. The water enters the lake on the SE portion of the lake just inside the SD border.

Previous lake studies that were done in the 1990s show huge amounts of Fecal Coliform enter the lake via the Deer Creek tributary. Some of these chemicals originate from the town of Toronto SD and eventually find their way to the lake in larger quantities after picking up additional fecal matter from feed lots and a host of other entities adding to the load entering the lake.

The reports also show that unwanted loading of silt carrying Phosphates are entering the lake via Minnesota County Ditch 11. The fact that standing water on growing crops must be moved within a 48 hour period has forced the water coming into the lake at a unacceptable rate forcing large quantities of silt and chemicals into the lake basin.

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Another area of concern is the street water runoff into Lake Hendricks from the town of Hendricks. This runoff consists of all kinds of unwanted pollutants from winter salt, oil, fertilizers, and trash just to mention a few.

Several other areas of concern are fertilizer and chemical runoff from a municipal golf course, drainage into the lake from a large tractor salvage yard, numerous small creeks that enter the lake from different directions that have either cattle in them or carry silt from erosion into the lake.

With large quantities of CRP lands going back into production, runoff issues are of great concern in the future.

Lastly is the issue of a (currently) nonfunctional flood control dam that was built in 1966. This was a joint project between Lincoln Co. in MN and Brookings and Deuel Co.'s in SD.

The dam was to provide a buffer between large quantities of water entering the lake via Deer Creek.

The function of the dam is to equalize the amount of water entering the lake reducing the highs and lows in the flow of water entering the lake.

Lack of maintenance has reduced the effectiveness of this dam.

### **Summarization of Major Goals:**

The long term goal of the Lake Hendricks Restoration Project is to create natural working filters on the two major water inlets entering Lake Hendricks; Deer Creek in SD and County Ditch 11 in MN.

Along with this, to see the conclusion of the redirecting of two storm sewer culverts from their present outlets leading into Lake Hendricks to a new location, exiting directly into the outlet of Lake Hendricks thereby bypassing the lake entirely.

Bringing the flood retention dam back into working order will be a vital part of our restoration plan.

Having manageable flows of water, slowly moving through natural filters will maximize the filters' effectiveness and will greatly reduce the amounts of contaminants entering the lake.

### **Project Description:**

Lake Hendricks is a naturally occurring lake on the border of MN & SD. The counties of Brookings in SD and Lincoln in MN host this lake. Lake Hendricks sets at the down stream end of Deer Creek watershed in SD where it receives its water from Deer Creek.

This was not a natural occurring tributary into the lake, it is the product of a joint venture between SD & MN. The water was redirected from Deer Creek via a flood retention dam in 1966. The dam was built to assure that Lake Hendricks received enough water to prevent it from falling below levels needed to sustain fish and recreation on the lake.

The dam also serves as a flood retention dam to help prevent large quantities of water from entering the lake in the event of heavy rain or runoff from the Deer Creek watershed.

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**Statement of Need:**

The purposes of this project are the following:

- a. To begin the process of reducing the chemical loading occurring in Lake Hendricks based on information from previous lake assessments.
- b. To document bacterial, sediment and/or nutrient pollution to Lake Hendricks from its tributaries and by extension downstream tributaries.
- c. To develop feasible alternatives for the improvement of water quality and habitat associated with Lake Hendricks and the surrounding area.

At the present time Lake Hendricks has not been classified as impaired, for that matter it is ruled as non-conclusive because of the lack of current water quality information.

However the determination for help in restoring Lake Hendricks is based on local residents and stakeholder groups that are quite concerned about the condition of the lake. Increasing taxes and the fear of declining property values keep the issue of cleaning up Lake Hendricks in the forefront.

**Overview of projects being implemented:**

Unlike most projects of this type that require years of testing and assessment to begin the process of correcting problems with lake issues such as the ones outlined earlier. We have been able to begin the implementation of the projects needed to restore Lake Hendricks to a more useable and valuable resource by implementation of the following projects.

**A brief History:**

In June of 2008 fisheries biologist from Ortonville MN, Norm Haukos was the keynote speaker at the annual Lake Hendricks Improvement Association meeting. His report showed that game fish populations were at an all-time low. The reasons for this were two fold:

1. Low populations of forage fish to support the game fish being stocked into Lake Hendricks.
2. Poor water Quality (this was based on data that Norm brought to the meeting).

This prompted the investigation to locate any lake studies that had been completed on Lake Hendricks. Three were located. After reading these reports along with the recommendations to correct the problems it was obvious that not enough had been done to rectify the problems plaguing Lake Hendricks.

All three reports read the same with the three main issues being large quantities of Fecal Coliform entering Lake Hendricks via Deer Creek from SD and Phosphate laden silt entering the lake via County Ditch 11 from MN.

Street runoff from the city of Hendricks and lake shore erosion were also major factors mentioned in the reports.

An expert in the field of lake restoration was invited to review the data in the reports and get a first hand look at Lake Hendricks. He immediately identified the problems that were contributing to poor quality of the lake and made his suggestion that all efforts go to dealing with Deer Creek and County Ditch 11.

He strongly urged me to see if the farmer that owned the land that bordered Lake Hendricks from the south would be willing to sell that property because Deer Creek flowed through it and the land had ample acres to create a wetland to be used as a filter to help clean the water coming into Lake Hendricks.

He also strongly emphasized the need to locate a suitable acreage of land to do the same project on County Ditch 11.

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**Moving Forward:**

The owner of the parcel of land along Deer Creek that borders Lake Hendricks was located. I spoke with him about what our concerns were and the project we had in mind. I asked him if he would be willing to sell the land needed, he said he would for the purposes outlined.

The farmer's name is William Moe, the amount of land available is 228 acres; Bill has been a pleasure to work with, his time frame is the same as ours, and he is a patent man that is willing to work with us.

With this information in hand I contacted Jeffery Gremler who is the Brookings Co. Game Warden and filled him in on the proposed project. It had been my intentions all along to have the State of SD own this property for a variety of reasons. The main one being I had received a notice from the office of US Senator Tim Johnson of a Harvey Dunn Grassland grant that was being offered through Pheasants Forever for restoration of land in Brookings County.

Mr. Gremler immediately forwarded the information to the agencies that purchase land in SD.

The 2009 Lake Hendricks Improvement Association annual meeting was a rousing success with over 100 people in attendance. This was up from 6 in 2008. The difference was due to the fact that steps were being taken to finally address the same problems that had plagued Lake Hendricks for years.

In attendance by invite were SD state representative Steve Street, a MN fisheries biologist Chris Dolemeier, Dr. Nels Troelstrup SDSU biology professor and John Beech with MN DNR who had recently finished a lake restoration project on a popular lake in Murray County MN (Lake Sarah). A Power Point presentation was given on the Lake Sarah project to support the suggestions on cleaning up Lake Hendricks. The people attending the meeting loved it.

Dr. Troelstrup gave a presentation on the importance of lake testing and monitoring. Chris updated everyone on the health of the fish in Lake Hendricks and assured everyone they would work with us to keep game fish numbers up.

**Making a Difference:**

Representative Street suggested that we write letters to the Secretary of Game Fish & Parks in SD Jeffery Vonk. Both Steve Street and SD State Senator Jim Pederson met with Secretary Vonk on July 8<sup>th</sup> 2009 and delivered 25 written requests encouraging him to look into the purchase of the William Moe land in SD.

Secretary Vonk was moved to immediately appoint someone to look into our request, within two weeks an appraisal was ordered on the Moe property and was finished in September 2009. We have since heard that the property is being purchased by the Game, Fish and Parks.

Both Street and Pederson sit on the committees governing the Game, Fish and Parks.

Private organizations are vital partners especially when teamed up with government agencies to get a project finished. Out of the 228 acres of the Moe property approximately 85 acres have the potential to be restored as a wetland that would become the filter for water entering Lake Hendricks via Deer Creek. The first week of November 2009 Rick Warhurse (Ducks Unlimited in charge of wetland projects) and DENR commission Spencer Vaa will be here to look at the proposed site for the wetland restoration. Rick has expressed interest in this project.

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**Flood Retention Dam:**

Adjacent to the Moe property is a flood retention dam that was built in 1966. This dam redirected water from Deer Creek to Lake Hendricks to alleviate a water shortage problem that had plagued Lake Hendricks.

The dam was designed to hold back approximately 37 acres of water 5 foot deep in the event of a flood. Over the years silt and vegetation have buried the culverts that allow the volume of water trapped behind the dam to drain at a manageable pace (approx. 3' depth reduction in 4.5 days).

I met with the Deer Creek Watershed board on September 27<sup>th</sup> 2009 to discuss getting the dam repaired to operate to its specifications. With our help they agreed to do the maintenance required to make it work again.

Work is beginning on the dam site on October 5<sup>th</sup> 2009. Water will be pumped out of the reservoir to lower the water level about 3' so that repairs can be made to the low water culverts.

**Across the Lake in Minnesota:**

According to the lake reports from the 1990's almost the entire sediment load contained excess amounts of Phosphates that entered Lake Hendricks via County Ditch 11 (This ditch drains 9000 acres of farm land in MN). Phosphorus is the number one cause of Algae blooms in Lake Hendricks. Phosphorus gets into the lake during storms when high water levels with strong currents move large quantities of silt into County Ditch 11 eventually depositing it in Lake Hendricks.

County Ditch 11 is approximately 20 miles in length. At the present time only about 3 miles of the ditch have any grass filters.

Grass filters catch the silt that travel in moving water and allows it to settle out before it reaches the ditch. A grass filter 50' in width will trap more than 85% of the silt being transported by the runoff in high water conditions.

**The Solution:**

**In 2007, Minnesota passed legislature for a Clean Water Legacy that provides grants for special projects.**

This money is being made available to farmers in the County Ditch 11 watershed to plant filters along the edges of the ditch.

Compensation is quite generous with a \$750 per acre gift from the watershed along with the going rate of cash rent these farmers have almost unanimously signed up for the offered programs along the ditch. Planting of the strips and the grass seed needed is also being provided at no cost to the farmer.

In November of 2008 the people of MN passed a 3/8 of 1% sales tax increase to be used for conservation purposes.

Monies are also available thru the MN DNR via a 10 to 1 matching grant for restoration or purchase of farm land that can be restored to grass land or wetlands.

The LHIA is also cost sharing these projects as well, a 25% cost share is being offered on the removal of surface water intakes anywhere in the watershed that drains water into Lake Hendricks.

Cost sharing is also available on filter strips and waterways.

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**The City of Hendricks MN:**

Street water runoff has been proven over the years to be a major polluter of lakes, Lake Hendricks is no exception. At the present time there are two culverts and a waterway that carry almost all of the surface water from Hendricks directly into Lake Hendricks. This water contains all kinds of pollutants that are deposited into the Lake.

With the help of Lincoln County and the city of Hendricks, plans are being made to redirect the water that is presently going into the lake to be dumped into the outlet of the lake, bypassing Lake Hendricks. This is being made possible due to the fact that the road crossing over the culverts discharging water into the lake is being resurfaced in the spring of 2010. The city and county agreed to do the necessary improvements at that time.

The golf course on the north side of Lake Hendricks is also being asked to make improvements to reduce fertilizer run-off from entering the lake during heavy rains. The addition of two water hazards on the course itself will go a long way in preventing contaminated water from getting into the lake. Plans are being discussed as to how this needs to be done.

The LHIA is also planning the construction of a new fish barrier that will be installed on the Kiwanis Bridge on the outlet of Lake Hendricks. This device will go a long way in preventing unwanted species of fish from entering the lake.

We will also be able to allow the carp and buffalo to leave the lake when those opportunities arise and not allow them to return to the lake.

Carp and buffalo fish are notorious for uprooting needed plants and digging in the mud mixing the water with the silt that causes algae growth.

**Education:**

This is for everyone; the more we know about our lake and what pollutes it, the sooner we will be in agreement as to how to fix the problems.

We have initiated a plan of constant communication with the people thru local news paper articles and segments on the Lincoln Co. Patriot web site teaching people what they can do to help from their own home.

Subjects like:

- a. What kinds of fertilizers to use
- b. What trees and grasses to plant that don't pollute.
- c. When and how to apply chemicals to your lawn that don't cause harm to the lake.

Support from the public has been excellent. Everyone agrees that something needs to be done to make the lake useable in the summer months. News articles and interviews have resulted in a flurry of phone calls from people interested in helping. Their support is a key factor in moving forward.

Recreation on Lake Hendricks has suffered over the years due to poor water quality. We are presently working closely with MN Fisheries to bring the game fish populations back to respectable levels.

Fun fish will be the order of the day, our vision is to be able to go out on our docks with our kids and catch bluegills, sunfish and perch making it more fun for everyone.

This will not be possible until the water quality has improved enough to allow native water plants to grow in the lake.

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**A new Day:**

Much has been said over the years about how MN and SD can not agree on the best ways to improve this lake. Most of which had little to do with improving things, all it did was stifle progress.

Because of a window of opportunity that has opened up we now have an avenue to make a huge difference.

Even a year ago MN funding was not available to generously compensate the farmers along County Ditch 11.

Bill Moe's land in SD was not for sale.

Funding to redirect the surface water away from the lake was not possible.

None of us know how long these windows will stay open; this is why we instituted the aggressive restoration projects before we applied for needed funding.

The projects being pursued at this time would be the exactly the same if current water quality data was available and restoration practices were ordered. We will end up way ahead of the curve having pursued our options when we did.

## List of Lake Hendricks Restoration Partners and Participants;

Lake Hendricks Improvement Association	\$20,000 for the hire of a project manager. Cost sharing for numbers projects including: Surface intakes, CRP filter strips, Grass seed, and fish barriers etc. Provide manpower to finish needed projects
Economic Development Association/ Hendricks City Council	\$20,000 for the administration of the Lake Restoration Project
South Dakota Game Fish & Parks	Purchased 228 acres of land where Deer Creek enters Lake Hendricks to be used as a filter to clean the water coming into the lake, approx. \$2,000 per acre.
NRCS office Lincoln County MN	Coordinate numerous programs to faceplate the use of filter strips needed on ditch 11 in Lincoln County that drains 9000 acres of farm land into Lake Hendricks.
Lincoln County MN	Restructuring of storm drain outlets in Hendricks bypassing the lake reducing storm water from entering Lake Hendricks approximately \$50,000 to \$75,000.
Lac qui Parle-Yellow Bank Clean Water Partnership	Cost share CRP filter strips and surface water intakes on County Ditch 11. Additional dollars for administering of project.
East Dakota Water Development District	Provide funding and training for needed water testing and documentation.
The offices of Senator Jim Pederson & Representative Steve Street SD	Jim & Steve were instrumental in getting the 228 acres of land purchased in SD they set on the committee overseeing the Game Fish and Parks
The office of US Senator Tim Johnson	The entire land acquisition process began with a letter from Senator Johnson's office notifying the Lake Association of a grant that was available through Pheasants Forever.

MN Department of Natural Recourses	10 to 1 matching grants available for any farmer in the County Ditch 11 watershed for restoration or the creation of wetlands.
Deer Creek Watershed Board SD	Agreed to restore the flood retention dam on the southwest side of Lake Hendricks back to working order in the fall of 2009. Approx. \$5,000
Ducks Unlimited	Will be looking at the Deer Creek land purchase in November 2009 for the possibility of engineering the needed wetland in the basin of this property. Approximately 90 acres at a cost of \$50,000 to \$75,000.
Pheasants Forever	Several local chapters have expressed interest in contributing to restoration of the 228 acres in SD. They include; Lake Hendricks chapter, Brookings Chapter and Lake Benton chapter. Approximately \$5,000 to \$10,000.
The National Turkey Foundation	Have committed dollars to the project but no set amount until after their banquet in October 2009 but approximately \$3,000 to \$5,000.
Whitetails Unlimited	Have committed dollars to the project, no set amount at this time but approximately \$3,000
MN Fisheries Ortonville MN	Have committed to a ambitious stocking program to improve the numbers and quality of game fish in Lake Hendricks.
Brookings Conservation District	Grant funding for future expenses and support.

