

**South Dakota 319 Information and Education
Grants Program Report for 2008 & 2009 Sampling**

Project Summary Sheet

Project Title Name: McCook Lake, South Dakota Citizens Monitoring For Quality & Bacteria

Contact Information

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Achieved Goals: Successfully evaluated the water quality at McCook Lake, SD, by visual observations and processing of water samples for *E. Coli* and total coliform bacteria collected by volunteer monitoring programs.

A secondary goal is to enhance the records collected by GFP division samplings performed every 4 years. Results of analysis were forwarded via email to the East Dakota Water Development District, City of North Sioux City, McCook Lake Izaak Walton President, McCook Lake Area Recreation Association President, local Games Fish & Parks officer who passed along to other GF&P officials.

Project Description: Sample monitoring sites were sampled for water quality on McCook Lake, in Southeastern South Dakota. East Dakota Water Development District developed protocols for water sampling and analyses for the implementation of citizen volunteers. Volunteers collected monthly and event samples during the 2008 & 2009 field seasons (April-October). Samples were processed at the “mini-lab” established at McCook Lake. The presence and number of colony forming units of *E. Coli* and total coliform bacteria were assessed using the Coliscan Easygel method. No high bacterial samples needed to be submitted to the State Health Laboratory in Pierre to evaluate the accuracy of the methods. A final report was submitted to East Dakota Water Development District that summarized the data, results and the relative ability of each test to accurately determine bacteria levels in water.

Project Start & End Dates: April 1, 2008 to October 31, 2009

Citizen Audience: The project involved McCook Lake Recreation Association, McCook Lake Izaak Walton League adult & Youth volunteers for water quality monitors. In most instances, these individuals reside at McCook Lake, and consequently have a strong personal interest in the endeavor. The secondary audience was the balance of the residents around the water body, who will benefit from the additional information about the relative condition of the Lake. Monthly and annual updates were provided to the Lake Association and Izaak Walton League scheduled meetings.

Water quality is was the primary focus of this project. However, development of a cost-effective and accurate screening test for bacterial contamination would also directly benefit total maximum daily loading (**TMDL**) and **nutrient/manure management** concerns across South Dakota. McCook Lake has hired an engineering firm to develop a silt pond and reed bed filtration system to remove contaminants and invasive species that could have the potential of being transferred from the Missouri River into the lake. Phase II of the project would include recycling some of the lake water back into the reed beds to help enhance the lake quality. Phase III will be attacking numerous storm drains around the lake and incorporation of individual reed beds &/or routing storm water to new bank of reed beds. The lake association is also informing residents about the harms of phosphorus based fertilizers used on their lawns

Project description: Volunteers performed visual & bacterial monitoring once a month with two additional samplings for bacteria during rain events. Samples were also collected for chemical analysis by the State health laboratory in Pierre. Lake residents and/or Izaak Walton League members were updated monthly with real values of McCook Lake's water quality. Until recently there has been some concern over the quality of the lake.

The volunteers sampled thirteen different sites at McCook Lake and each point was analyzed for pH, clarity, TDS, visual observations, temperature. Water samples were collected from each site and analyzed for presence of both *E. Coli* and general coliform bacteria.

New and existing volunteer monitors were utilized to collect water samples during the 2008-9 sampling season (April through October). Samplers were provided training on proper sample collection and handling following a protocol established for the project. Processing and analysis of the samples was conducted at one mini-lab established for this purpose.

A representative of the McCook Lake Association board member operated the mini-lab facility. Training has been completed on proper sample handling and processing that follow a protocol established for the project. Samplers and the mini-lab have been provided with materials to collect and process 13-14 samples per sampling event-using methods for *E. Coli* and total coliform bacteria. To check the accuracy of the tests, replicates of high bacterial samples will be submitted to the South Dakota State Health Laboratory (SDHL) for analysis for *E. Coli* and total coliform bacteria.

Post-project activity: It was demonstrated that there are accurate and cost-effective methods of measuring bacterial contamination in McCook Lake, it has been expected that local stakeholder groups (such as Izaak Walton League, Lake Association and the City of North Sioux City) are going to continue and readily support future monitoring. Equipment purchased for this project will be operated and maintained by the host of the mini-lab noted above.

Target audience evaluation: The target audience (volunteer water quality monitors) were surveyed at the onset of the project as to their knowledge of basic water quality sampling techniques available, the specific requirements of bacterial testing, and the basis for using the presence of certain bacteria as environmental indicators. The survey will be re-administered at

the end of the project. In addition, both the water quality samplers and the operator of the mini-lab will be questioned as to the easy-of-use of the sampling and analytical methods.

Project Sponsor and Partners: The McCook Izaak Walton League, Lake Association, and the City of North Sioux City were the project sponsors. All of these groups have already committed to continuing the project for as long as we can afford analysis. East Dakota Water Development District provided overall project management and coordination between project partners and volunteers. EDWDD will provide technical assistance in the future.

Project Milestones

February 2008: Hold training session from East Dakota Water Development District (Complete)

April-October 2008: Begin visual and bacterial sampling of McCook Lake. (Complete)

October 2008: Provide EDWDD worksheets and overview of project. (Complete)

April-October 2009: Continue visual and bacterial sampling of McCook Lake. (Complete)

October 2009: Provide EDWDD worksheets and overview of project. (Complete)

Budget

Category 319 I&E Grant: FY 2008 & 2009 lake sampling.

	319 I&E match	Matching Sources	Volunteer Time	East Dakota Watch	Total
Salary & Wages	\$0.00	\$0.00	\$4,067.12	\$0.00	\$4,067.12
Permanent Equipment	\$160.00	\$277.00	\$0.00	\$0.00	\$277.00
Bacteria Test Kits	\$1430.00	\$1545.33	\$0.00	\$0.00	\$1545.33
State WQ Analyses	\$188.00	\$248.00	\$0.00	\$248.00	\$496.00
Bacteria Re-sampling:	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contractor/Advisor	\$200.00	\$657.22	\$0.00	\$0.00	\$657.22
Mini-Lab	\$0.00	\$8.89	\$0.00	\$0.00	\$8.89
Totals:	\$2,270.33	\$2736.44	\$4067.12	\$248.00	\$7,051.56

Match:

The McCook Lake Izaak Walton League Board, McCook Lake Recreation Association Board, and the City of North Sioux City Counsel provide matching funds for the two-year project.

Salary & Wages:

See Volunteer attachment