

Water Stewardship Fund
Previously Funded Projects

2008/09

Proponent: Spectrum Scientific Inc.

Project Title: Wastewater Pond Systems in Cold Climates

This project will adapt existing wastewater pond system (WPS) technology to Manitoba's climate. WPSs are a natural way to treat wastewater that uses a system of ponds and algae to remove nutrients and contaminants without the need for harsh chemicals. In order for the WPS system to function year-round in Manitoba, a modified greenhouse structure will be constructed around the ponds. Once the system is set up and functional, it will be monitored to determine its nutrient and pathogen removal efficiency. WPSs are easily scalable, and could be adapted for the needs of any community or industry. If the technology could be adapted to run economically for all, or part of the winter, WPS could become an environmentally sound, low-cost alternative to current wastewater treatment practices in Manitoba.

Proponent: Ducks Unlimited Canada

Project Title: Nutrient Retention Capacity of Drained and Undrained Wetlands

The project will assess the water quality (nutrient retention) and quantity benefits of wetland retention as a beneficial management practice at a watershed scale in southern Manitoba. Sampling will be conducted over a two year period and was initiated in winter 2008. The project will compare six natural and six drained wetlands located on cropland. As much as possible, wetlands will be selected within the same general area to ensure that topology, soil type, and land use are similar. The upland contributing areas to each wetland will also be determined. The project deliverable is a technical report and peer-reviewed publications on the nutrient (phosphorus and nitrogen) and sediment retention capacity of natural and drained prairie wetlands.

Proponent: University of Winnipeg

Project Title: Methane and Nitrous Oxide Cycling in the Red River

Methane and nitrous oxide are two of the major long-lived and highly effective greenhouse gases, and have significantly increased in atmospheric concentration since the onset of the industrial era. Recent technological advances now allow for the rapid and precise analysis of isotopes of atmospheric concentrations of methane and nitrous oxide. Preliminary work on the Red River suggests distinct point source producers of methane and nitrous oxide in the Red River related to anthropogenic sources. Beyond increasing the scientific understanding of the amount and sources of methane and nitrous oxide in the Red River, this research is designed to develop recommendations for mitigation.

Proponent: Delta Marsh Field Station

Project Title: Water Quality in Lake Manitoba, Phase 2: Modeling the South Basin

Nitrogen and phosphorus impair water quality by promoting growth of algae, and in some cases, associated toxins. The Phase 2 of this project is an intensive study focusing on the lake's south basin. This project will use data from the province's existing dataset for Lake Manitoba as well as data from Phase 1 to begin the modeling process. Model inputs and evaluation will require field

work emphasizing measurements of internal nutrient cycling (influx and outflux between sediments and overlying water), which is expected to be significant in Lake Manitoba.

Proponent: East Interlake Conservation District

Project Title: Grassmere Creek Watershed: Surface Water Management Plan

Agricultural crops, businesses, and homes in the Grassmere Creek watershed are regularly flooded, resulting in significant economic loss. It is the goal of this project to create a Surface Water Management Plan (SWMP) that addresses this economic issue in conjunction with water quality/quantity concerns, fisheries health and the overall ecological integrity of the watershed. The SWMP will be developed in conjunction with an Integrated Watershed Management Plan that is underway in the larger 050J watershed. Out of the unique needs of Grassmere Creek watershed, as discovered in the first phase of this project, a policy document designed to direct future public works projects in the region will be created. This document will outline the priority areas for the watershed and will ensure an integrated approach to surface water management will be maintained in future years.

Proponent: East Interlake Conservation District

Project Title: Interlake Water Days – A Cross Cultural Exchange of Water Knowledge

The Interlake Water Days are designed to foster a community interest in the health and conservation our local water watersheds and act as a cultural exchange between Aboriginal communities and the other residents of the watershed. Interlake Water Day events were hosted in the communities of Peguis and Gimli. Located in the Peguis Central School and at Camp Morton Park, the day was divided into two components, 1) interactive learning stations for elementary aged students, and 2) seminar style sessions for high school students and the general public. The main goal of the day was to expose the Peguis and Gimli communities to water information and heighten their awareness of water issues. By including both Aboriginal and non-Aboriginal speakers, the intention was to expose both communities to new information and/or information from a different perspective.

Proponent: Nellie McClung Collegiate

Project Title: Pembina River Water Stewardship Research Project

Nellie McClung Collegiate has developed a program within the school and surrounding community that is designed to teach students, through their involvement in water-related scientific research, and working in conjunction with Pembina Valley Conservation District, the importance of being aware of our effect on our water resources. The River Watch program will be the vehicle for the development of this awareness. An on-site weather station will be established to provide the opportunity for the students to study long-term trends in weather patterns and their effect on water quality and quantity. Students will be involved, through the collection of data, in the development of a Watershed Management Plan for the district.

Proponent: Green Manitoba

Project Title: Green Manitoba Eco-Calendar 08/09

Green Manitoba has led a collaborative effort aimed at producing a high-quality “eco-calendar” highlighting water, energy, and waste-related information for the benefit of the general public.

The eco-calendar was modeled after a calendar produced annually by the City of Peterborough, Ontario. The calendar provides useful information, and connects users to programs and available resources around water conservation, waste minimization, and energy efficiency. The calendar was designed to help support increased awareness and education regarding environmental issues and sustainable behaviours. 75,000 calendars were distributed throughout Manitoba.

Proponent: Turtle Mountain, West Souris River and Assiniboine Hills Conservation Districts
Project Title: Southwest Manitoba Water Festival

In an effort to become more efficient in areas of mutual interest such as environmental education, Assiniboine Hills, Turtle Mountain, and West Souris River Conservation Districts (CDs) have continued their partnership by hosting the 4th annual Southwest Manitoba Water Festival on September 17th, 2008 in Souris, Manitoba. The theme of the festival was "*To Educate and Engage Youth in the Importance of Healthy Watersheds*".

The three CDs cover approximately 14,446 km² in southwest Manitoba. Four hundred Grade 5 & 6 students from 12 schools within the three CDs were invited to attend the one-day event. The students visited 12 to 14 curriculum-based activity stations where they participated in hands-on activities to learn about water science and technology, water uses, conservation, aquatic species and their ecosystems, and other water-related issues.

Proponent: Ducks Unlimited Canada
Project Title: Davidson Dam Project

The Davidson Project is a 22-acre wetland located on Broughton's Creek, in the Rural Municipality (RM) of Blanshard. Broughton's Creek directly discharges into Lake Wahtopanah, the drinking water source for the Town of Rivers. The project was originally developed in 1949 by constructing an earthen dam and wooden weir across the creek, which was replaced by a concrete weir control in 1960, and the dyke slopes were then reshaped in 2001. The structure has now deteriorated to the extent that an above normal runoff event could potentially wash out the dam as well as the bridge on the RM road located immediately downstream of the project.

This project was originally constructed to provide secure waterfowl habitat including during years of below-normal precipitation. The present landowner continues to depend on the existence of the project for stock water and for recharging his local well. The project will continue to filter and trap sediments, nutrients, and pathogens, and so contribute to the ongoing stewardship of the province's water resources, particularly Lake Wahtopanah.

Proponent: Manitoba Forestry Association
Project Title: Manitoba Envirothon 2009

Envirothon is an Olympic style competition designed for high school students to help them learn about the natural environment. Team members experience the world through environmental education and hands-on activities, including current and up-to-date issues. Manitoba Envirothon has been a program of the Manitoba Forestry Association since 1996 and is delivered in partnership with over twenty other organizations and agencies.

The program has grown from four teams in the first year to over thirty teams last year. Some 300 participants take part in the competition. Envirothon promotes the development of knowledgeable, skilled and dedicated citizens who work toward sustainable development. The

competitive nature of some aspects of the program affords participants an opportunity to learn, experience, and compete provincially and internationally.

Proponent: University of Manitoba

Project Title: Control of Manitoba Potable Water Disinfection with Chlorine Dioxide

Manitoba has an abundance of water, principally leading to the utilization of approximately 400 public and 1500 semi-public potable water systems. Almost all of the water systems in Manitoba utilize chlorine or hypochlorites for disinfection. It has been previously established that the use of these chlorination species will give rise to the formation of Trihalomethanes (THMs) which has been linked to several health problems, including cancer.

Alternative disinfectants which do not form significant amounts of THMs are: chloride dioxide, chloramines and ozone. There are many information and knowledge gaps regarding disinfection with chloramines and chlorine dioxide. North American experience with the use of chlorine dioxide as a disinfectant is extremely limited. There is a need to establish contacts with researchers and water treatment facilities that utilize this technology elsewhere, to allow for prompt information exchange. It is expected that the results from the initial investigation will provide valuable insight and recommendations for the measurement of residual chlorine dioxide and by-products.

Proponent: University of Manitoba

Project Title: Water Quality Improvement in Lake Winnipeg through Netley-Libau Marsh

Netley-Libau Marsh is a large freshwater coastal marsh at the mouth of the Red River, at the south end of Lake Winnipeg. The purpose of this on-going research is to understand the importance of the marsh to the health of Lake Winnipeg, and how this large freshwater coastal wetland helps improve the quality of water flowing into Lake Winnipeg from the nutrient-rich source of the Red River; a river that contributes 60% of the phosphorus load to the lake.

Current research on the east side of the marsh has been studying plant biomass accumulation, nutrient cycling, and the concept of harvesting and removal of marsh plant biomass for the purpose of removing stored nutrients from the wetland system. This research project is providing valuable information on the current state and importance of Netley-Libau marsh, which has been severely lacking. Research is also currently underway on biomass densification and utilization of the harvested wetland plant biomass from the marsh for bioenergy production. This can produce carbon neutral energy adding a further economic and environmental benefit. This concept is strongly dependent on the biomass re-growth patterns in plots harvested the previous year and thus relies on information gathered from post-harvesting evaluations.

Proponent: Whitemud Watershed Conservation District

Project Title: Riparian Conservation Agreement Program

Several years ago the Whitemud Watershed Conservation District (WWCD) board identified a need to permanently protect certain riparian areas in the district. The district started a riparian Conservation Agreement (CA) reserve fund to be used in partnership with Manitoba Habitat Heritage Corporation's (MHHC) CA program, but soon discovered that their small reserve fund was not sufficient to meet the demands of riparian protection requested.

As farms become larger and land changes hands, wooded areas are often cleared. WWCD has turned away private landowners interested in the CA program in the past due to lack of funding

and pristine riparian areas along the Whitemud River have been lost as a result. Through this program, the WWCD and MHHC will identify and delineate vulnerable and fragile riparian areas on ortho-photos using Geographic Information System technology. MHHC will have a cooperating landowner sign an agreement, which runs with the land, and the area identified is protected in perpetuity under the Conservation Agreements Act. The landowner is entitled to monetary compensation for the land-use restrictions placed on the property.

Proponent: Turtle River Watershed Conservation District
Project Title: Rosedale Drain Escarpment Erosion Control

Historically, streams within the Turtle River Watershed Conservation District originating in the escarpment deposited shale among the sub-escarpment, forming alluvial fans. To increase the agricultural production of these boggy, wet areas, many of these escarpment streams were connected to downstream agricultural drains. The result was a drastic increase in erosion of the escarpment as the hydraulic energy of the streams became concentrated in a narrow channel rather than being dispersed over a natural alluvial fan. The sediments are carried further downstream and deposited in drains and lakes, causing a series of problems.

The Turtle River Watershed Conservation District has constructed over ninety erosion control structures to date. These structures have helped to reduce costly downstream drain clean-outs. Erosion has been reduced and the build-up of silt and shale in highly eroded areas has helped restore the creeks to their natural state. One of Lake Dauphin's current challenges is an abundance of sediment flowing into the lake. The Turtle River is a major spawning ground for many species of fish. The habitat in the river system is dependent on minimal sediment flowing downstream, as sediment is detrimental to fish habitat.

Proponent: École St. Avila Home & School Association
Project Title: Down the Drain

École St. Avila and the adjoining Richmond Kings Community Centre grounds are plagued with drainage problems. These problems result in significant localized standing water as well as wet and soggy play areas / sports fields. The ponds of water have turned into mud holes, resulting in wet clothes, wet feet, and mud being a daily issue for children, teachers, parents and janitorial staff. The standing water also provides ideal breeding grounds for mosquitoes during the summer, while turning into extremely hazardous ice patches during the winter.

While an easy, albeit expensive fix would be to re-grade the site and install a sub-grade drainage system, École St. Avila Home and School Association (SAHSA) has recognized a tremendous opportunity to do something different and far more meaningful. SAHSA's plan will create a model for the handling of storm water runoff on a small urban site in an ecologically positive manner. On the site, SAHSA plans to develop a bioretention system to handle the treatment of storm water runoff. A bioretention system will consist of a bioswale and raingarden to retain, channel and cleanse storm water runoff.

Proponent: Manitoba Eco-Network
Project Title: Water Caucus – Year 5

This project intends to continue the work of the Manitoba Eco-Network Water Caucus, including the coordinator and co-coordinator for a fifth year, based on the collaboration and partnering achieved with Manitoba Water Stewardship, the Walter Duncan Gordon Foundation, and the community at large.

A number of governmental and quasi-governmental agencies and boards in Manitoba are providing workshops, conferences and capacity. However, there are no organizations in Manitoba that providing capacity and support to the Environmental Non-Governmental Organization sector (ENGO) with the goal of ensuring that ENGO perspectives are represented. The Water Caucus fills this role to the extent that available resources allow. As in the past, the Manitoba Eco-Network will partner with organizations which support the goals of the Manitoba Eco-Network and support the objectives of the Water Caucus project.