



Case Study: Water resource stewardship

Protecting Brandon's Wetlands from stormwater contamination.

Introduction

In 2003, the West Central Initiative (WCI) conducted a study to estimate the current and future needs for water, wastewater, and storm sewer repair and replacement for the communities within WCI's nine-county service area. The study found those communities to be in need of substantial repairs, amounting to more than \$800 million.

In response, WCI commissioned an infrastructure pilot project in three communities in west central Minnesota. The City of Brandon, as a community with agricultural land being converted to housing, was chosen to be part of the pilot project.

In 2000, The City of Brandon had a permanent population of 450 people living in 187 households with an average household size of 2.4 persons. New development on what used to be agricultural land in the northeastern part of the City recently brought

52 new housing units into the City. A second phase of development will focus on housing for retired people. This new development forced city officials to take stock of Brandon's wastewater issues.

The Process

Effective water stewardship begins with an understanding of local water resources and the local water budget. Generally speaking, water is plentiful in West Central Minnesota. However, water quality has been affected by naturally occurring conditions, agricultural and domestic land use practices, and lakeshore development. Yellow Wood worked with Brandon to identify the water systems issues that required attention from stormwater, to drinking water to wastewater.

Stormwater run off, and its negative impact on the existing wetlands, was identified as a major problem resulting from a large quantity of

impervious surfaces (covering 33% of the City's land), inadequately sized stormwater drainage tiles and ditches and an inability for the existing wetland to adequately drain.

Over time, stormwater draining from ditches in and around the City has resulted in over 1'-3' of sedimentation deposited in wetlands on the East and West sides of the City.

A second issue identified was the common problem of wastewater infiltration from the service connections, or laterals, connecting an individual residence or business to the town sewer line. Even though the City had recently upgraded its main line, inflow and infiltration, primarily from the aging lateral connections was continuing to create a problem. The final Green Community Technologies report for Brandon detailed a site specific, systems-based plan for addressing this issue that included, assessment and prioritization, reduction of inflow, technology selection, pilot project, funding and long-term planning.

Recommendations

Once Yellow Wood had looked systematically at the City of Brandon's water resources, recommendations were identified to address water conservation, efficiency of water treatment equipment, wastewater infiltration and stormwater. Some of the recommendations included:

- Install water meters and promote water conservation through public education and promotion of water (and energy) saving appliances.
- Replace existing pumps and motors with highly efficient pumps and motors as part of lift station improvement and any other facility renovation or replacement.
- Develop a program to repair service laterals and reduce inflow and infiltration into the wastewater system.
- Experiment with using strategically placed and properly installed rain barrels to prevent flooding.
- Reduce impervious surfaces by narrowing streets and testing pervious pavement options for driveways, parking areas, and sidewalks.
- Pretreat stormwater before allowing it to discharge into wetlands.

Protecting Wetlands from Stormwater Contamination

Many communities rely upon their wetlands to accept most of their untreated stormwater runoff. This stormwater contains contaminants such as oil, grease, gasoline, road salts, fertilizers, pesticides, and trace metals that cause serious negative impacts on the water quality and health of the wetlands they drain into. Even though it is widely understood that wetlands are effective at improving the quality of the contaminated water that flows through them, even healthy wetlands cannot absorb the long-term discharge of contaminated stormwater without negative impacts.

There are many options, often called Best Management Practices or BMPs for protecting wetlands so that they can continue to function productively ranging from swales and filter strips to oil/grit separators and exfiltration trenches. In the case of Brandon, Yellow Wood recommended replacing some of the most damaged wetland with a constructed wetland, that is designed to maximize removal of pollutants from stormwater through physical, chemical, and biological mechanisms. For more information on BMPs for wetland protection visit: <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm>.