



## Case Study: Water resource stewardship

### Protecting Battle Lake's water resources from damage and degradation.

#### 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 Battle Lake, as a community with a relatively new centralized infrastructure facing pressure from growth, was chosen to be part of the pilot project.

Battle Lake is a city of 747 people in Otter Tail County in west central Minnesota. The daytime population is about 600, compared to a resident population of 747. In the summer, there is a peak

population of about 3,000 at a festival, and special events are held nearly every weekend. Government officials and residents of the City of Battle Lake seek to be effective stewards of their water resources. Specifically, they seek to protect the area's lakes from damage and degradation and to preserve Battle Lake's quality of life while capitalizing on the community's sense of place and destination. Battle Lake is justly proud of the quality of its drinking water. Battle Lake has been ranked 5th in the nation and 1st in Minnesota for having the best tasting water.

#### 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 Battle Lake to identify stormwater issues that, if addressed, would effectively preserve the quality of streams and watersheds. The list of issues to be addressed included:

- Recurrent flooding problems
- Reducing runoff volumes
- Contaminated runoff (sediment and pollutants) draining from roads, construction sites and agricultural lands into wetlands and lakes

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- Stormwater sheeting off roadways causing ponding and freezing hazards
- Fixing existing drainage and maintenance problems
- Stormwater demonstration and education

## Recommendations

Specific actions were identified for the City of Battle Lake to improve its stewardship of water resources. These include:

- Reducing water vulnerabilities on the north side of town.
- Educating citizens and promoting water (and energy) conservation through appliance retrofits.
- Adopting cluster zoning and conservation subdivision ordinances to reduce the cost of infrastructure and preserve open space.
- Considering a decentralized wastewater management approach to safeguarding water resources in the event of annexation.
- Adopting low impact development measures for all new development and redevelopment of sites.
- Improving management of existing stormwater and snowmelt to reduce flooding, provide pretreatment, and actively allow infiltration in low areas.
- Designing and installing seasonal pervious walking paths that are integrated into the City's stormwater management system.

## Protecting Lake Quality with Cluster Zoning

The public pressure to recreate and live on the lakes of Minnesota is increasing. The state's demographer has projected growth in many of the lake-rich counties to exceed 35 percent in the next 25 years. The City of Battle Lake and surrounding areas fit this profile. There is a growing concern about how this growth will impact lake quality. Open space community approaches, conservation subdivisions, and cluster zoning all represent alternative development techniques that have been proven to reduce this impact.

Cluster zoning is a flexible zoning technique to group residences together reserving a significant amount of the development site as protected open space. With cluster zoning, development expenses are decreased while the community reaps the benefits of larger areas of open space that provide habitat, view corridors and other environmental benefits. The clustered development allows for stormwater management systems that maximize overland flow and combine the use of plants and landforms to slow, hold and treat runoff. Clustered developments also allow for the efficient treatment of wastewater in an environmentally friendly way and reduce pervious road surfaces (and the maintenance and environmental costs that are associated with them).