Lac qui Parle Yellow Bank Watershed Terrain Analysis

Minnesota Board of Water & Soil Resources

CLEAN WATER LAND & LEGACY AMENDMENT
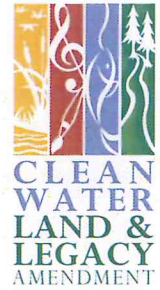
Clean Water Funds: 2013

Clean Water Grant	$66,572
Leveraged Funds*	$16,643
Total Project Budget	$83,215

* Leveraged Funds include required 25% local match

Project Sponsor:
Lac qui Parle-Yellow Bank Watershed District

Grant Period:
January 2013—December 2015

Project Contact:
Mary Homan

AcceleratCWF13-132ed Implementation

Project Narrative

The Lac qui Parle-Yellow Bank Watershed District will contract with the Water Resource Center at the Minnesota State University in Mankato to complete a Geographic Information System (GIS) terrain analysis for the watershed. It will concentrate on the impaired reaches of the Lac qui Parle and Yellow Bank Rivers and tributaries. This inventory will utilize LiDAR elevation datasets to create many GIS datasets by spatially analyzing the elevation data. Multiple watershed maps will be developed and will show priority ranking of conservation practices and areas to target based on environmental sensitivity variables.


This analysis will provide valuable data for future planning and prioritizing of projects when partnering with Lac qui Parle, Yellow Medicine and Lincoln County Soil and Water Conservation Districts and Natural Resource Conservation Service offices. The precision conservation strategies involving LiDAR based DEM terrain analysis , will prove its worth in future planning with conservation efforts tailored to the specific landscapes and in the placement of practices within the critical source areas.
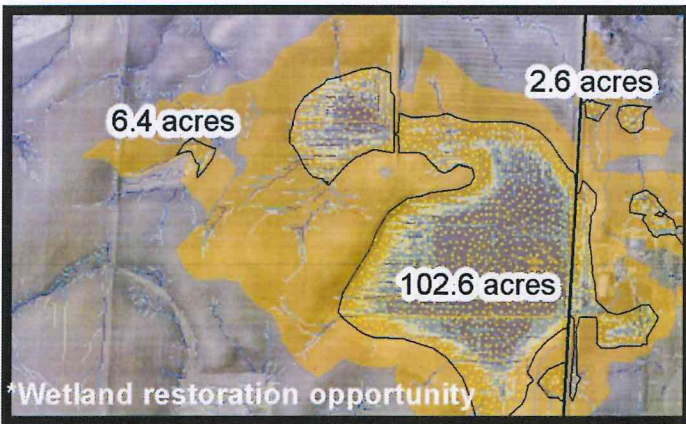
Proposed Outcomes:

1. Create a LiDAR dataset that can be used to develop accurate hydrologic characteristics of the watershed.
2. Assess existing watershed conditions and identify critical source areas using Stream Power Index, the Compound Topographic Index, and Environmental Benefit Index
3. Share results with each county

Actual Outcomes:

1. A LiDAR and GIS dataset that accurately reflects the hydrologic characteristics of the watershed was completed.
2. Critical source areas have been identified in the watershed for erosion vulnerability, suitability of best management practices, streambank management, water storage and wetland restoration opportunities.
3. A training seminar for partnering agencies was provided with dataset on jump-drive, user manual, and technical document with maps for two subwatersheds.

1.9acre-foot

21.7acre-foot

9.4acre-foot

150th Ave
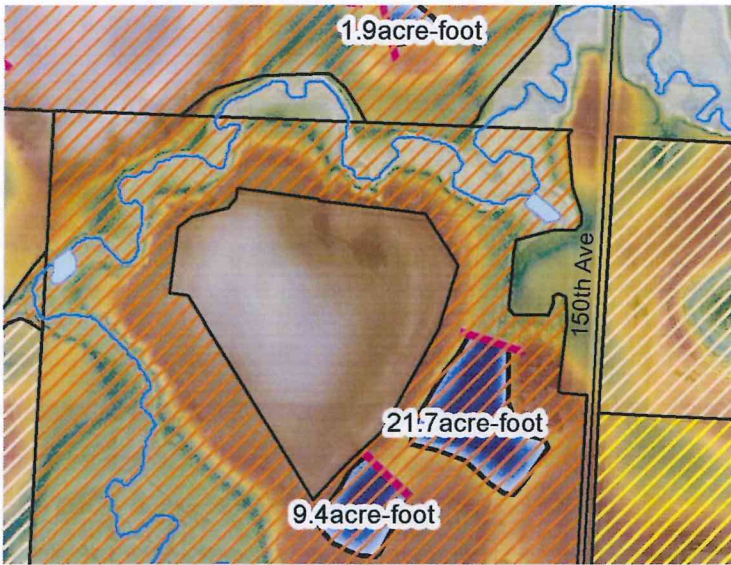
Illustrates placement and size of Water and Sediment Control Basins that has been identified as having a risk of "Critical" ranking.

6.4 acres
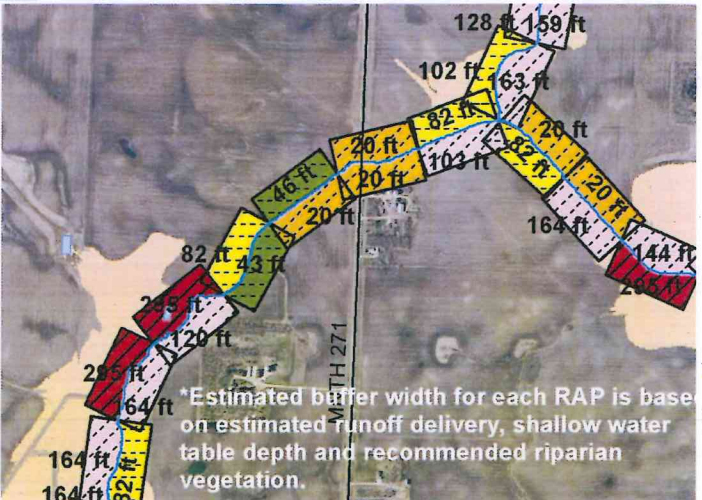
2.6 acres

102.6 acres

*Wetland restoration opportunity

128 ft 159 ft

102 ft 63 ft

82 ft 20 ft

-46 ft 20 ft 103 ft 82 ft 20 ft

20 ft 20 ft

82 ft 43 ft 164 ft 144 ft

295 ft 265 ft

120 ft

285 ft MTH 271

164 ft

164 ft 82

164 ft

*Estimated buffer width for each RAP is base on estimated runoff delivery, shallow water table depth and recommended riparian vegetation.

Riparian zone management based on soil type, runoff and morphological features and identifies estimated widths of streambank management and prioritization.

*Current land use management of adjacent fields include pasture and fields under corn/soybean rotation

170th Ave

Compound Topographic Index identifies water storage and wetland restoration opportunities by estimating ponding sites based on modeled overland surface flow.