

Project: Dan Patterson Grade Stabilization maintenance/rehab
Long Lake Protection and Rehabilitation District
Date: May, 2015
Location: Section 7, T34N, R17W, Town of Balsam Lake

Background

A Grade Stabilization structure was installed on the Patterson farm in 1983. The project was designed and installed under the guidance of the NRCS, Balsam Lake, WI office. Plans called for a 9 foot high embankment with an 8 foot wide top, sloped at 3:1 on the storage side, and 2:1 on the outlet side. The principal spillway is a 70' long 8" pipe, providing rate control. An emergency spillway is also provided. The drainage area is 16 acres, and the structure provides approx 2.2 acre-feet of storage, with a design storm frequency of 25 years.

The structure has performed well over the years, but sedimentation has occurred to a point where the storage capacity of the original structure is almost non-existent. Runoff from small storm events would pass directly through the structure carrying sediment loads from the active farm fields. The outlet is located within close proximity to Long Lake.

The purpose of the project is to restore the storage capacity of the grade stabilization structure to its original capacity. According to the original plans, approximately 450 cu yds of material were excavated and 2,100 cu yds of embankment material was placed to create the structure.

Project Implementation

A survey of the structure was performed on 4/29/15 to establish an existing surface model and to use for comparison of the before and after conditions.

The project was excavated on or about the first of May, and re-surveyed on 5/4/15. The disturbed areas from the excavation of materials were seeded and mulched.

Analysis

The following exhibits are graphical representations of the pre- and post- surveys.

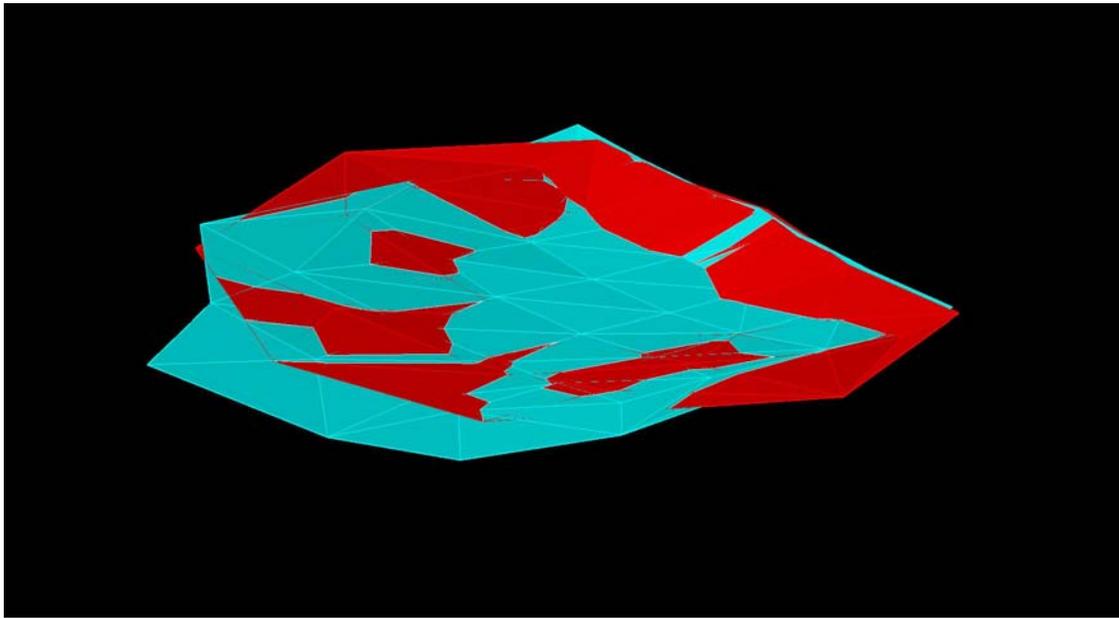


Exhibit 1

Exhibit 1, looking from the Southeast, is a 3D representation of the existing (light blue) and the final as-built (red) top finished surfaces. Excavated materials were placed on the existing slopes, or were removed from the storage area and placed on upland slopes.

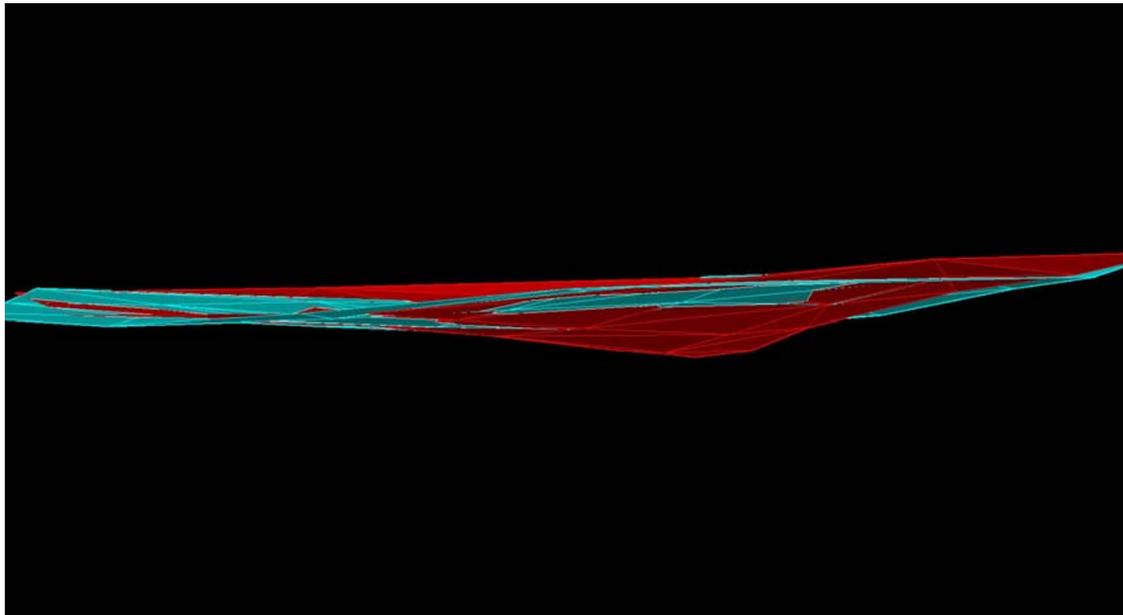


Exhibit 2

Exhibit 2, shows a side view of the same two surfaces, and shows more detail of the excavated, (final) surface in red.

An analysis of the two surveys indicate that 450 cubic yards of material, the same amount as the original plan, were excavated.

Completion of the project has removed 30 years of siltation and restored the structure to its original state, and should increase its effectiveness in reducing the runoff to the lake.

Respectfully submitted by:
Polk County Land & Water Resources Dept.
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