Final Report

Project Name:	Hoard-Curtis Scout Camp Lakeshore Restoration
Project No.:	LPT-365-11
Grant Sponsor:	Lake Ripley Management District
Contacts:	Paul Dearlove, Lake Manager, LRMD (608-423-4537)
	Joel Winn, Treasurer, Hoard-Curtis Scout Camp (920-568-5404)

PHASE I

Phase I of the Hoard-Curtis Scout Camp's lakeshore restoration started on September 7, 2010, and was completed on October 5, 2010. This phase entailed protecting 870 feet of eroding shoreline through the installation of rock riprap. The work was performed by Rodney Zuerner of CHILS Landscaping for a total installed cost of $69,000. Equipment used for the installation included a backhoe (to bury and position the larger "toe" rocks), bobcat (for minor grading and moving of smaller material), dump truck (to transport material to and from the site), and an amphibious "Weasel" (to bring material to work areas along the shore). Work consisted of the following:

1. Engineering designs and a construction plan were prepared for the shoreline riprap installation. This was followed by the application and approval of a DNR individual permit, project bidding, and the hiring of a low-cost qualified contractor.

2. A 4-ft.-wide by 16-in.-deep lakebed trench was excavated parallel to and several feet waterward of the shoreline. Equipment access to the lake was through the scout camp beach. Trench excavation occurred only in the area that was within reach of the bucket arm. This was to avoid unnecessarily running the equipment in the water until a rock base was created. Existing vegetation and steep banks prevented overland equipment access. Gravel spoils were used as base material, when appropriate, between the trench and shoreline bank before placement of riprap.

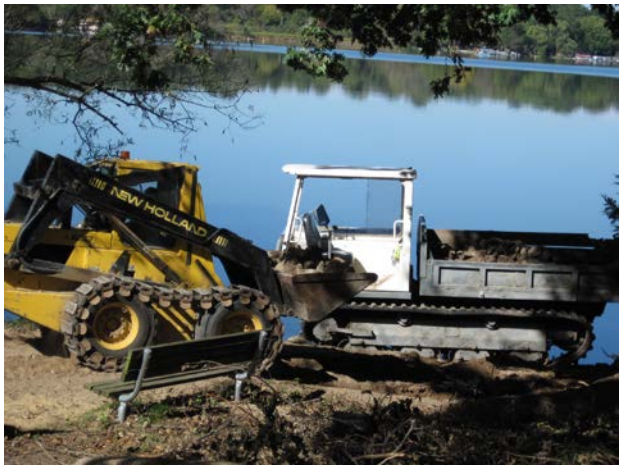
3. 24-inch glacial boulders and washed gravel bedding material were stockpiled at the scout camp beach located immediately off Island Lane. About 4 inches of gravel bedding was placed in the excavated trench for base support and to prevent rock settling. This was followed by the placement of two parallel rows of boulders in the trench. Tops of the boulders were set at or just below the water surface.

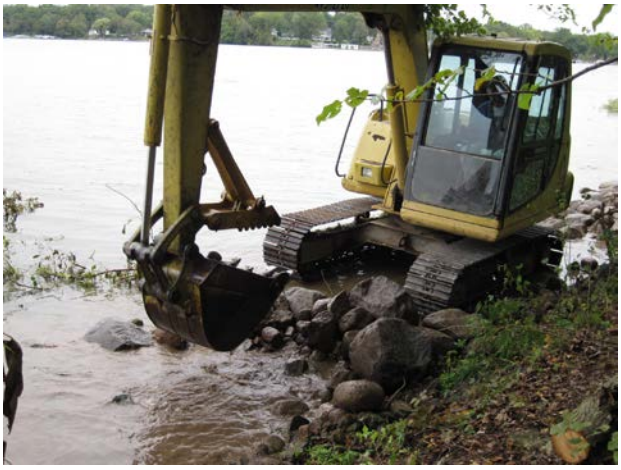
4. Glacial fieldstone riprap (3-18-inch diameter) was then placed behind the counter-sunk boulders, creating a 4:1 or flatter rock slope up to the existing bank, and extending no greater than one foot above the normal high water level. A geotextile underlayment was deemed unnecessary and not installed (decision made in consultation with DNR permit issuer based on site conditions).

5. A few scrub trees growing at the immediate lake margin had to be removed to install the rock. A few trees with sufficient girth were cut and allowed to fall into the water perpendicular to the shoreline to serve as coarse woody habitat for aquatic life.

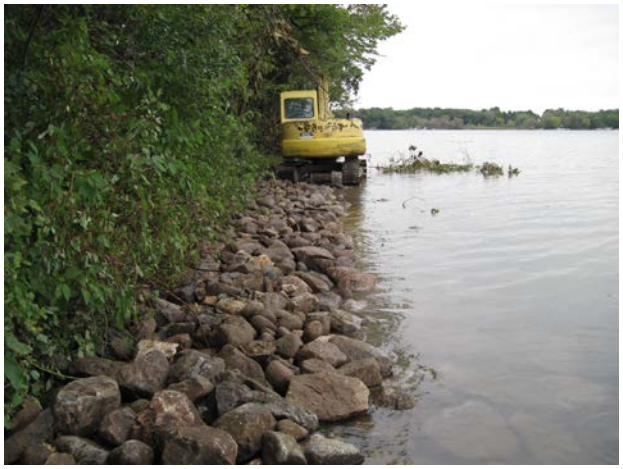
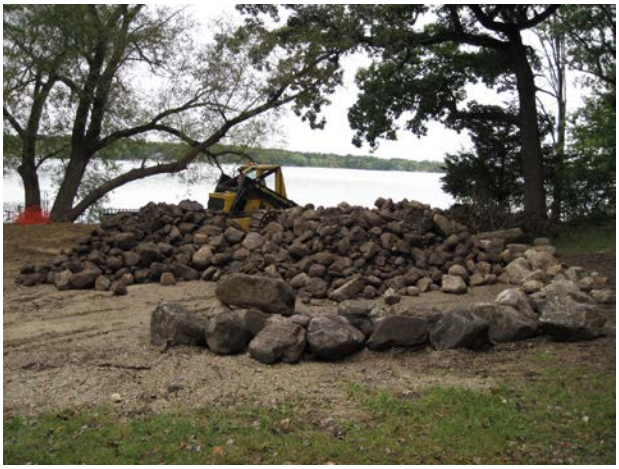
Pictures are included on the following pages showing the sequence of the Phase I project work.


Hoard-Curtis Scout Camp's eroding shoreline prior to installation of rock riprap (2008)

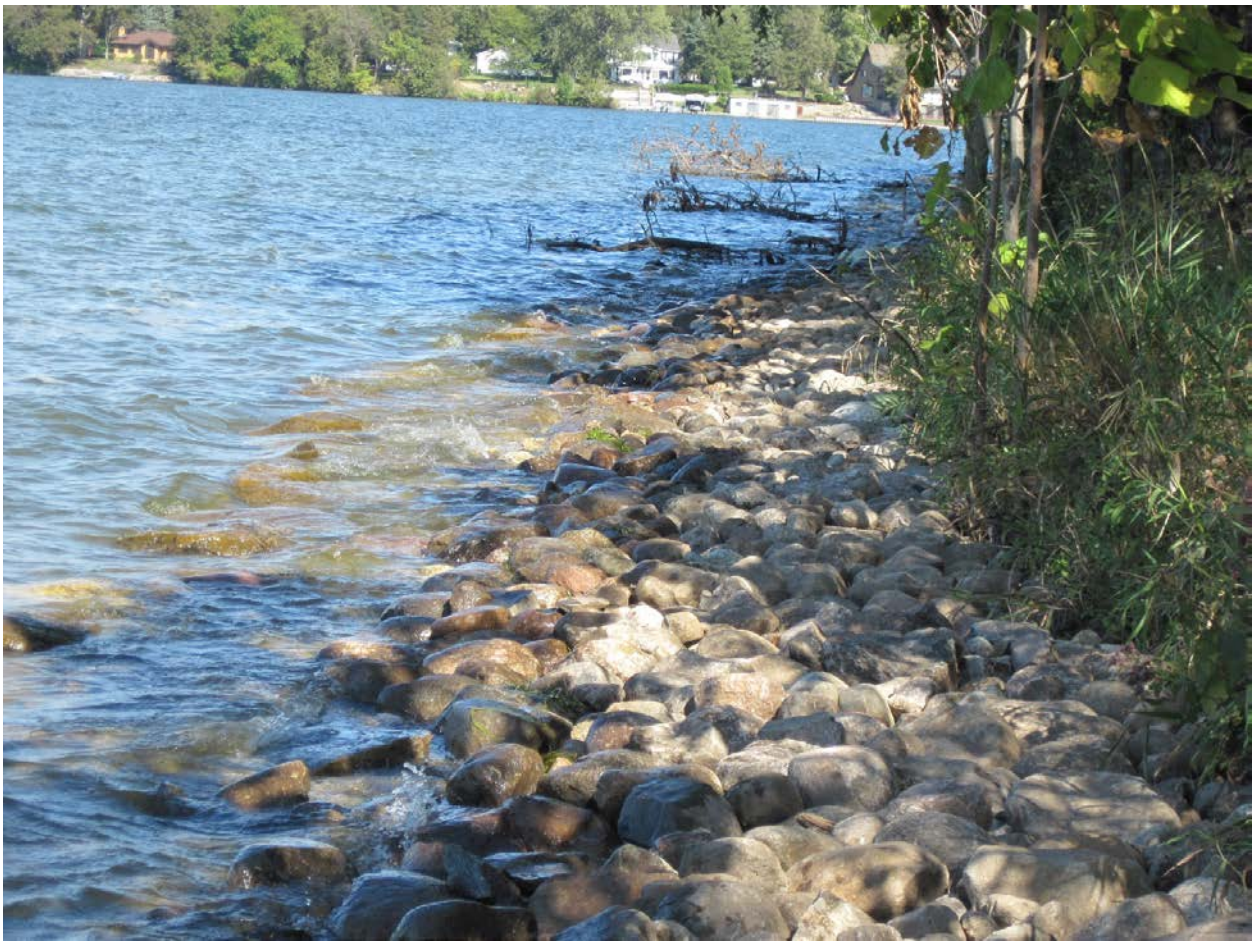




Equipment used to transport material and install the rock (9/2010)

Left: Equipment access restricted to rock shelf to minimize disturbance to lakebed (9/2010)
Right: Sand beach staging area for equipment access and stockpiling of materials



Picture of shoreline upon completion of riprap installation (9/2010)

PHASE II-IV

Phases II - IV of the Hoard-Curtis Scout Camp's lakeshore restoration started in October of 2010, and wrapped up in November of 2011. Most of the work was performed by Madison-based Good Oak Ecological Services LLC, with some follow-up planting work performed by LJ Reas Environmental Consulting Corporation out of Green Lake. Work consisted of the following:

1. Invasive brush was removed by hand cutting, with all stumps getting sprayed with an herbicide as a follow-up control measure. Honeysuckle and buckthorn were cleared within a 70-ft. strip along the entire 870-ft. shoreline. This included cutting and chipping all non-native shrubs and small trees, as well as a small number of native shrubs deemed as aggressive. Stumps were then treated with an herbicide to prevent re-sprouting.

2. A Jefferson County shoreland zoning permit was applied for and received to conduct selective tree thinning. Selective tree thinning targeted less than 12-inch-diameter trees not appropriate for an oak woodland (i.e. basswood, mulberry, aspen, cherry, hemlock and red cedar), or that were growing too

close and in direct competition with more desirable species. All cut woody vegetation was removed from the property and chipped.

3. A woodland burn was conducted to improve the vigor of the native woodland plants already on site. It was also intended to remove leaf litter, thus exposing bare soil to establish good seed to soil contact.

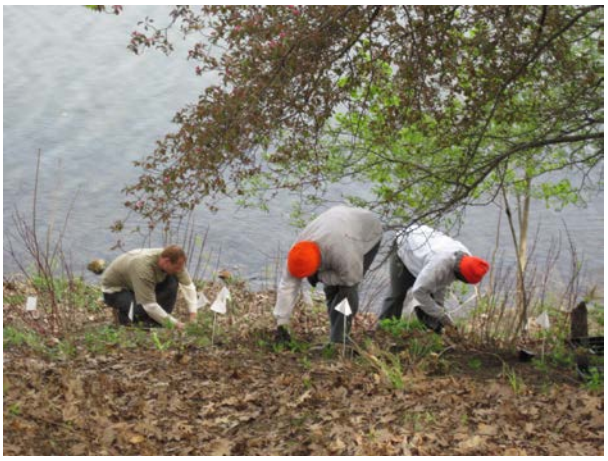
4. Inter-seeding of 60,900 sq. ft. was performed. Work included broadcast-spreading 11.8 pounds of a woodland inter-seeding mix in bare soil areas within the 70-ft. buffer zone along the lakeshore. The native seed mix was purchased from Agrecol LLC. It consisted of two grasses, two sedges, and 20 forbs.

5. Erosion matting and cover-crop seeding was performed on erosion-prone slopes. SC150 coir fiber erosion matting and "sediment-stop" straw rolls were installed on steep slopes and washout areas to hold soil in place during seed establishment. A fast-growing seed mix was applied to exposed soil areas. The seed mix consisted of six pounds each of annual oats and Canada wild rye.

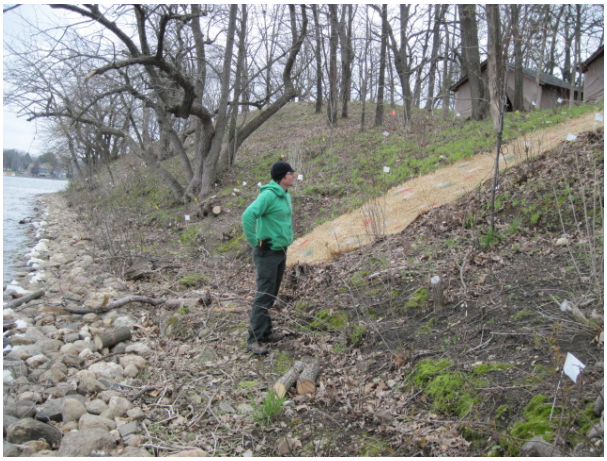
6. Six "pods" of aquatic emergent shoreline plants were installed at various locations along the lakeshore in front of the rock. Each pod consisted of 32 native emergent aquatic plants, such as rushes, bulrushes and bur reeds. Temporary snow fencing was used to protect the "pods" from grazing and wave action during summer plant establishment. The fencing was then removed in the fall. All the above work (#1-6) was performed by Good Oak Ecological Services and volunteers.

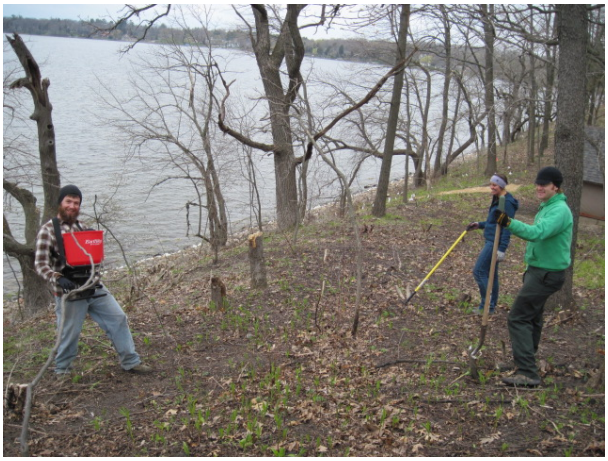
7. In bare soil areas where seeding was failing to take hold, 857 native plant plugs were installed as a supplementary measure. The plant mix included 4 grasses and 20 forbs. Several non-native catalpa trees growing along the shoreline margin were girdled as part of this follow-up work. This work was performed by LJ Reas Environmental Consulting Corporation.

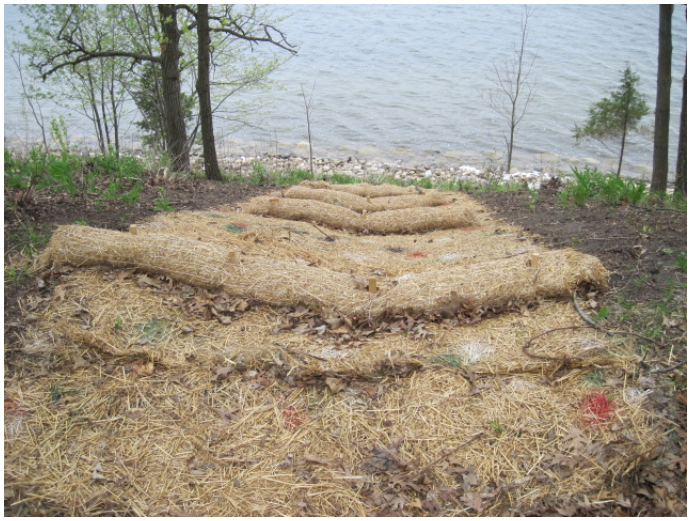
8. Public outreach occurred throughout all project phases. This included newsletter and newspaper articles, regular website and Facebook postings (virtual tours), E-bulletins, and updates presented at televised Lake District meetings. Plans are to install informational signage at a later date.



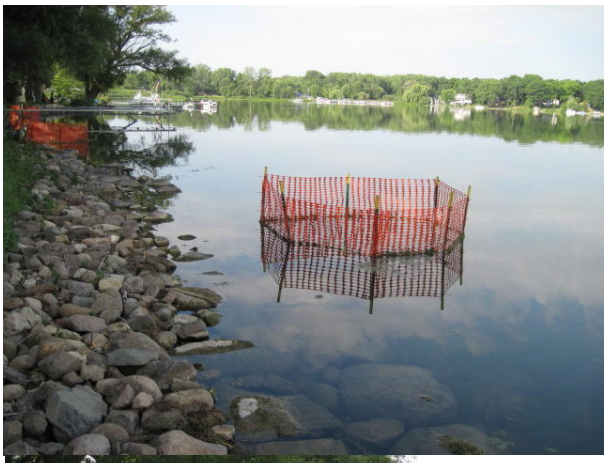
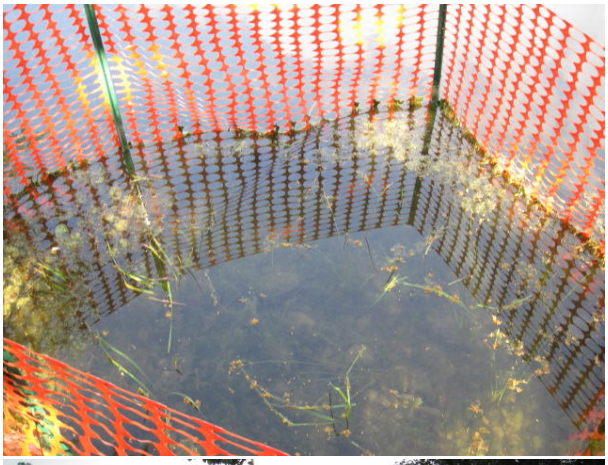
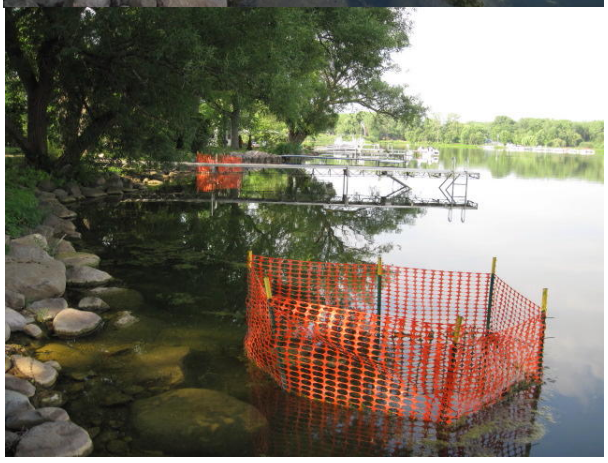
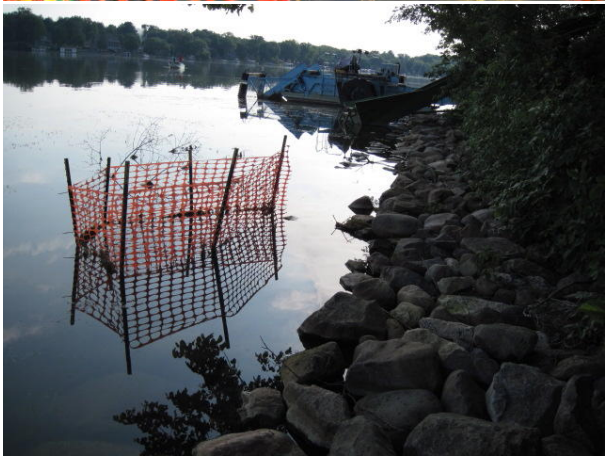
Pictures are included on the following pages showing the sequence of the Phase II – IV project work. Volunteers help install and flag native plantings, cut and haul invasive brush, and provide support during a prescribed woodland burn (Fall 2010-Spring 2011).



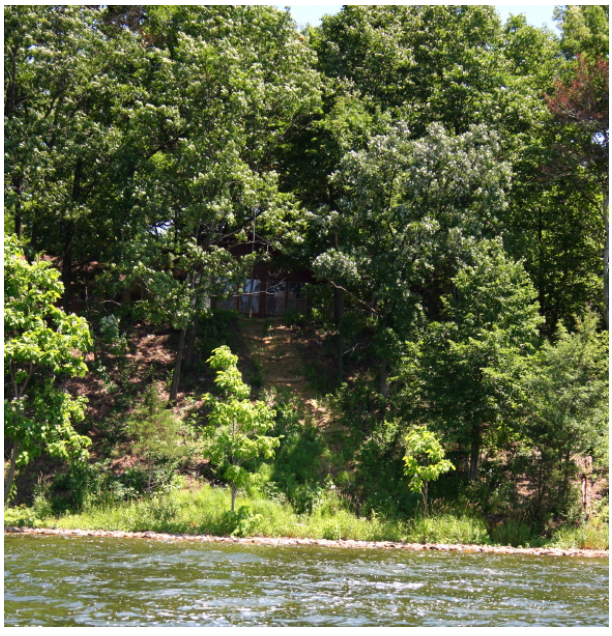




Staff from Good Oak Ecological Services perform selective tree thinning, broadcast a native woodland seed mix, and install erosion matting (Winter-Spring 2011).

Six “pods” of aquatic plants are installed at various locations along the shoreline (Summer 2011).




The restored lakeshore as it appeared in summer of 2011.