

Soil Erosion Inventory: Roads and Trails

Crystal Lake Scout Reservation

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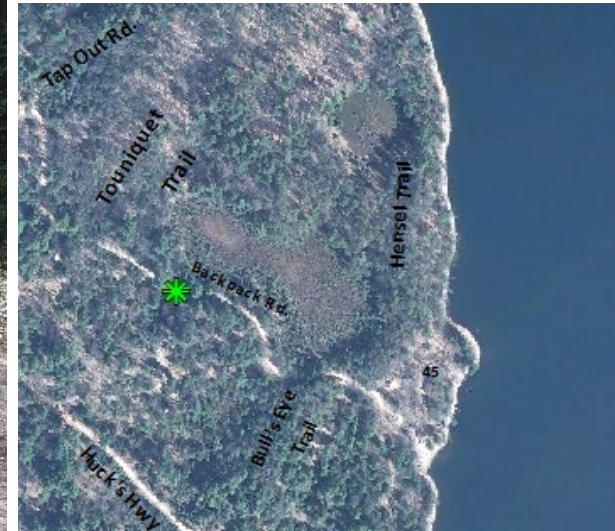
Road Construction and Grading

- In general, the objective should be to get water off of the road, as soon as possible, to limit the length of overland flow [and resulting soil erosion] and the likelihood of ponding [and resulting potholes].
- In this case, the road could simply be out-sloped, to the left, when looking at this photo. However, this presents a water quality risk to the adjacent wetland. Alternatively, the road could be wholly or partially in-sloped, with a ditch constructed on the right side of the road, to convey water to an area of lesser water quality risk. This latter option would require removal of trees and a suitable discharge point may not exist.
- Follow WI NRCS Conservation Practice Standard (CPS) 560 (Access Road) and “Wisconsin’s Forestry Best Management Practices for Water Quality”



Road Construction: Cut-and-Fill

- Raise the road in wet spots by importing “pit run” or suitable fill from on- or off-site, and cover with road gravel or suitable earthen fill, to minimize rutting and ensure adequate drainage.
- Reshape cut-slopes to no steeper than 2:1 (i.e. 2 ft horizontal for every 1 ft vertical) and seed to erosion control mix.
- In this case, trees could be removed from the cut-slope, with the bank pulled back to a stable slope. [Note: Photos include same cut-slope, looking from opposite directions of travel.] Some cut material may be used to raise the low spot in road.
- Follow CPS 560 (Access Road), CPS 342 (Critical Area Planting), and CPS 484 (Mulching)



Limit Extent of Hiking Paths

- Soil erosion starts with raindrop impact and the detachment of soil particles.
- Minimize soil erosion by minimizing areas of disturbance, to maximize soil cover by organic residues (i.e. pine needles, leaves, etc.) and/or inorganic materials (i.e. rocks, gravel, etc.)
- In this case, the extent of the path could be limited by the placement of logs, ropes tied to stakes, or other means, to encourage hikers to use a narrower path, along the peak of the ridge. Wood chips or other materials could be imported and placed on high impact areas to limit soil detachment.
- Follow CPS 342 (Critical Area Planting) and CPS 484 (Mulching)



Revegetate Disturbed Areas

- Over time, natural process will stabilize and revegetate disturbed areas. However, steps may need to be taken to expedite that process, including importing topsoil and/or planting woody and/or herbaceous plants.
- In this case, the amount of topsoil lost to erosion may be observed by the height of the exposed roots, which were once underground. Consider importing 4 inches of topsoil to areas where foot traffic can be limited; plant such areas to an erosion control mix. Trees and/or shrubs may also be planted in such areas.
- Follow CPS 342 (Critical Area Planting), CPS 484 (Mulching), and CPS 612 (Tree/Shrub Establishment)



Control Active Erosion

- Actively eroding slopes, with direct conduits to surface water, represent sources of water quality impairment, and should be highest priority.
- In this case, consider importing 4 inches of topsoil, planting to an erosion control mix, and mulching the site.
- Follow CPS 342 (Critical Area Planting) and CPS 484 (Mulching)



Interrupt Concentrated Flow

- Erosion increases where water is allowed to concentrate along a flow path.
- In this case, water accumulates in and above the chapel area, before exiting along a concentrated flow path, directly to Crystal Lake. Steps should be taken to intercept water before it enters this concentrated flow path, such as near or above the wooden arch structure that is shown in the photo. A waterbar or similar structure should suffice.
- Follow the “Surface Water Control” section, of the U.S. Forest Service “Trail Construction and Maintenance Notebook”



References

- Field Office Technical Guide, USDA-NRCS:
<https://efotg.sc.egov.usda.gov/#/> [See Section IV, for WI NRCS Conservation Practice Standards]
- “Forestry Best Management Practices,” WI Department of Natural Resources: <https://dnr.wi.gov/topic/ForestManagement/bmp.html> [See “Wisconsin's Forestry Best Management Practices for Water Quality Field Manual” (PDF)]
- *Trail Construction and Maintenance Notebook*, U.S. Forest Service: <https://www.fs.fed.us/t-d/pubs/htmlpubs/htm07232806/toc.htm>

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