Preventing Erosion in the Skaneateles Lake Watershed

A Guide to Maintaining Shorelines, Camp Roads, Streambanks and Shorelines in the Skaneateles Lake Watershed.

Cornell Cooperative Extension
Onondaga County

Improper crowning and siting of this camp road led to nearly immediate erosion and deposition into the lake after significant tree removal.

Camp Roads

Camp roads, while necessary, provide a low-resistance path for water moving along the ground and directly into surface water. Water shed from camp roads can strip soil from the roads, reducing road safety and depositing contaminants directly into lakes and streams.

Erosion can be prevented on camp roads by using a variety of best management practices (BMPs) such as proper crowning, vegetated ditches, ditch turnouts and water diverters such as rubber bars and open-top culverts can prove very effective in reducing erosion and sedimentation.

A combination of these practices can quickly remove overland flow from roads (open-top culvert) and direct them into water retention basins (such as a ditch turnout) to both reduce erosion and limit contaminants such as sediment, deicing salts and oils to reach nearby surface waters.

Shorelines

Wave action along shorelines can be a major source of erosion, especially when considering stronger and more frequent storm events which may be associated with a changing climate. While many variables affect the rate of shoreline erosion, such as water depth, lake level and ice cover, there are practices which can be implemented to reduce shoreline erosion.

Hard structures such as retaining walls and rock riprap can be used to limit shoreline erosion, but do so by creating an artificial environment and removing the natural element from a shoreline. These methods often include the use of heavy machinery and while effective, tend to be the most expensive.

Lakeview of improperly sited camp road causing erosion along the lakeshore.

Soft structuring with native vegetation is arguably less effective when dealing with larger storm events, but will create a more natural looking shoreline at a more manageable price. Native shorelines can reduce wave energy with submerged vegetation and maintain habitat continuity. Using both hard structuring and restoring native vegetation as an integrated approach can both decrease erosion and maintain a natural habitat along the shoreline.

Streambanks

The Finger Lakes watersheds are often characterized by short, narrow drainages through steep terrain. These steep streams are very susceptible to erosion and the sediment removed from the banks and stream bottoms may become an issue for drinking water removed from the lake and to the habitats of aquatic life such as trout and migratory birds.

Erosion along stream banks can threaten structures in densely populated areas similar to those where many vacation homes stand. Undercutting of streambanks can often lead to tree falls on to structures such as camps, narrow roads and power lines. Many trees will fall across or into streams, creating blockages which can impede the flow of stormwater and create dangerous debris dams and cause serious issues downstream in the event of their failure.

Cribbing alongside a stream in the Skaneateles Lake Watershed.

With a rapidly changing climate and more frequent and stronger storm events, erosion-related problems are likely to be more common and destructive in the future. Protection of stream banks can be useful in limiting erosion along stream sides and in the overall reduction of sedimentation in lake environments.

Volunteers plant native species to help stabilize a streambank near Glen Haven, NY.

Hard structures such as cribbing (as seen above) and rock rip-rap can be used to armor stream sides from erosion. These methods, while effective, are often expensive and difficult to implement - especially in areas such as the Finger Lakes watersheds in which access to the site is troublesome. Artificial structures will move the energy of the water downstream, potentially causing more problems for neighboring landowners whose stream banks are not protected.

Similar to protecting lake shorelines, an effective approach is often a combination of hard structuring with the implementation of native plantings to both reinforce man-made materials and to create or extend riparian habitat for amphibians, birds and small mammals. This integrated management approach can also result in a significant reduction in the cost of installation and maintenance in the future.

Signs of Erosional Problems

Keep an eye out for signs of erosion at the source or downstream from a potential problem. These indicators of erosion could be newly exposed soils on slopes, trees falling rapidly into stream beds, sediment deposits at the mouth of streams and turbidity in surface water.

Exposed Soil Newly exposed soil along the banks of streams is a sure sign of erosion. Streams begin eroding the toe of a slope, gradually working up the slope, exposing more soil and subjecting more material to be easily washed down stream and deposited.

Root Undercutting and Tree Falls As shorelines and stream sides are undercut by increased stream flow or wave action, the trees which held the soil in place begin to fall as the substrate beneath them disappears. This eventually leads to less protection of the soil against rainfall and more exposed soil as a result.

Turbid or Cloudy Water Stream flow colored like chocolate milk or more cloudy than normal is an indication of erosion upstream, often common after large storm events or during spring snow melt. The large quantities of sediments are deposited in lakes and cause issues for drinking water quality and can be hampering to native species habitats.

Valuable Resources for Managing Erosion

CCE Onondaga . 315-424-9485 . onondaga@cornell.edu
Onondaga County Soil & Water . 315-457-0325 . info@ocswcd.org
Cayuga County Soil & Water . 315-252-0793 . cayugaswcd@cayugaswcd.org
Cortland County Soil & Water . 607-756-5991 . amanda.barber@cortlandswcd.org
City of Syracuse Department of Water . 315-473-2609. wateroperations@syrgov.net
NYS DEC Syracuse Regional Office . 315-426-7400

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