

SLASH FILTER WINDROWS

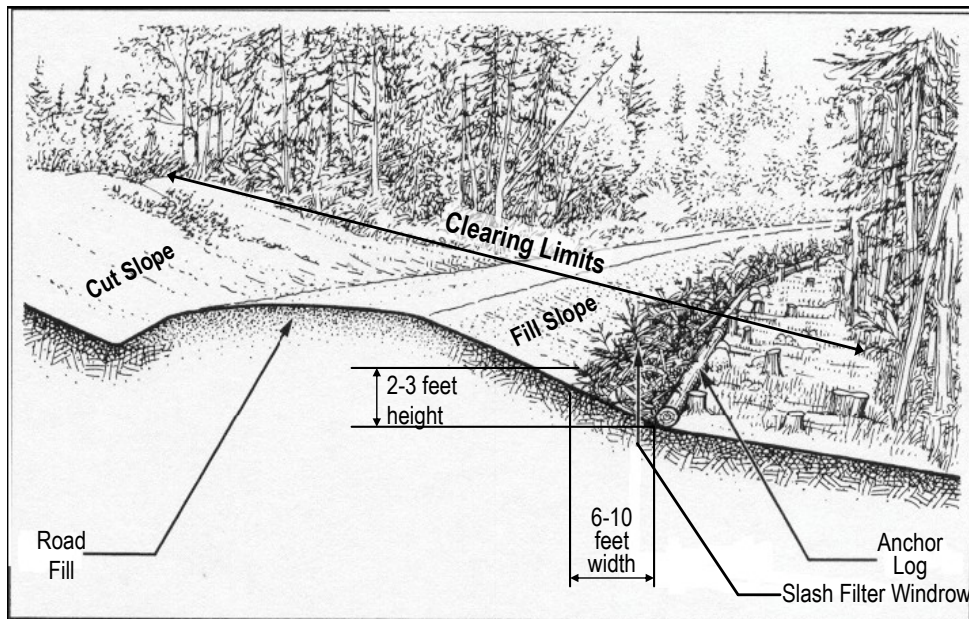


Definition

A slash filter windrow is a designed structure made of waste logs and compacted slash 2-3 feet high and 6-10 feet wide. It is usually built at the toe of road fill-slopes approaching stream crossings, and extends along the road for up to 400 feet. The purpose of the slash filter windrow is to protect forest streams from road surface and fill slope sediment delivery, as well as to stabilize road fills.

compared to similar sites where slash filter windrows were not used.

On-site studies showed movement of road surface and fill-slope sediments were usually totally blocked by slash filter windrows. In a few places, sediment moved an average of four feet below the windrow. In comparison, similar non-windrowed fill slopes experienced sediment movement an average of 41 feet below the toe of fill.



Modified from: Ministry of Natural Resources Ontario. 1990. Environmental Guidelines for Access Roads and Water Crossings.

Usefulness—Where, When and Why

The slash filter windrow may be used in mountainous terrain where cut-and-fill roads cross streams. This design has been shown to intercept up to 99 percent of sediment eroding from road fills less than 20 feet in height as

This windrow is also effective in the prevention of initial stream sedimentation when constructed at the time the roadway is being pioneered and completed. Other methods, such as seeding, mulching and matting, are effective over the long term but do not provide

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the immediate beneficial effect of the slash filter windrow. A combination of these BMPs in addition to slash filter windrows, however, would be most effective at reducing sediment delivery to a stream.

Precautions or Constraints

The slash filter windrow is not a right-of-way slash disposal substitute; normally only a small part of right-of-way debris and slash is used in the designed windrow. Slash filter windrows are most effective when constructed at stream crossings. For proper filter windrow placement, it is important to provide enough culvert length so that the windrow is located at the toe of the fill and above the top of the culvert. Windrow length should extend no more than 300 to 400 feet each way from the stream crossing unless the road parallels the stream. If the windrow extends more than 400 feet, it may be advisable to leave wildlife corridors every 200 feet.

No stumps or root wads should be used in the windrow. An improperly built slash filter windrow 5 or more feet deep, 15 or more feet wide, and hundreds of feet in length, full of stumps, root wads and hollow cull logs will create a potential fire and air quality hazard.

Windrow Construction

Construction starts by stockpiling needed tree tops, limbs, brush not exceeding 6 inches in diameter, and cull logs, not less than 18 inches in diameter, either above or below the clearing limits as the right-of-way is being cleared. The cull logs should be approximately 12 feet in length and are to be used as anchors.

Sufficient slash of 6-inches in diameter and smaller is also stockpiled with the anchor logs at locations for best access to construct the windrows after road grade excavation and shaping is completed. To minimize costs, a 360-degree swing, track-mounted pull shovel with hydraulic thumb should be specified for the road clearing, excavation, culvert installation, and windrow construction.

After fill construction is completed, the filter

windrow is built by the pull shovel, placing anchor logs just at or below the toe of the fill. They should be anchored against stumps, rocks, or trees parallel to the fill toe line. The pull shovel then packs slash by tamping above and along the length of the anchor logs. The slash is embedded in the fill slope in quantities sufficient to make a sediment-impervious windrow 2-3 feet high and 6-10 feet wide.

As mentioned earlier, the windrow may be built as soon as road subgrade and fill is completed, providing immediate sediment pollution prevention. To ensure maximum effectiveness, fill slopes must be limited to slopes no steeper than 1½ to 1, horizontal to vertical. Also, with use of the hydraulic thumb pull shovel, no manual labor is needed in slash filter windrow construction. Construction cost is approximately \$100 per hundred feet.

Follow-Up

During the first fall season after construction, fill slopes should be grass seeded, fertilized, and hydromulched, to establish stabilization for subsequent years.

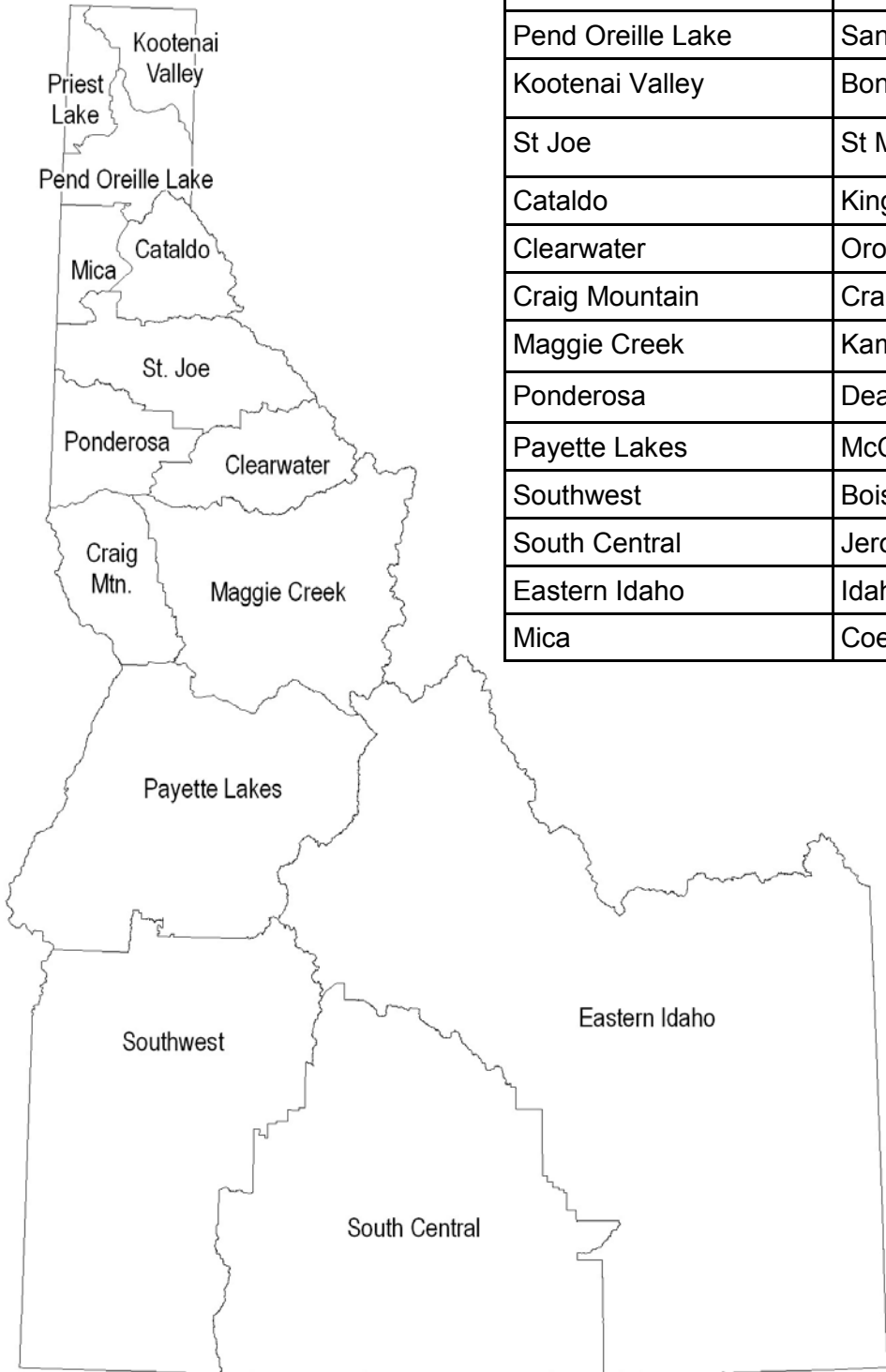
References

Cook, M.J. and J.G. King. 1983. Construction Cost and Erosion Control Effectiveness of Filter Windrows on Fill Slopes. USDA Forest Service, Intermountain Forest and Range Experiment Station, Ogden, UT, Research Note INT-335, 5p.

Ministry of Natural Resources Ontario. 1990. Environmental Guidelines for Access Roads and Water Crossings. 65p.



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