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Eye on the Environment

Road repair protects water quality

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Driving above Lindbergh Lake on Forest Service Road #79 can be a roller coaster ride for people with sensitive inner ears.

In addition to the twists and turns normal for mountain travel, about 30 rolling dips have been gouged into the road surface to direct runoff away from streams and wetlands. For carsick travelers, it seems a practical joking engineer with an evil bent designed the construction plan. Just ask my young grandchildren who suffer on forest roads, unless we keep the windows open and make several stops along the way.

Road #79 is the extended Lindbergh Lake Road that continues past the junction to the Lindbergh Lake Campground and climbs about 1,300 feet to the trailhead near Meadow Lake (elevation 5,704 ft.). The road is used by anglers fishing at Bunyan Lake, huckleberry pickers, hikers heading to Crystal Lake in the Mission Mountains Wilderness, people climbing Lindy Peak, and hunters in the fall.

Rolling dips collect snowmelt and rainwater coursing down the road and send it off the side before it gains enough speed and power to create ruts and carry a heavy load of sediment. Road repair and maintenance activities are referred to as BMPs (best management practices). They include cleaning ditches, constructing boulder-filled sumps and slash windrows that filter out silt before it reaches the stream, and installing culverts, cross drains, and other water diversion devices.

On Road #79, Herrick Run and its tributaries are the main source of water affecting the road—and the road is a major source of sediment affecting the watershed. Herrick Run emerges from the heart of Lindy

Peak in the Mission Mountains Wilderness. Flowing out of Skylark Lake, it rumbles over boulders through a deep canyon for a couple of miles before reaching the road. Below the road it runs through a wetland then takes a plunge into Lindbergh Lake.

Herrick Run got its name accidentally, according to Steve Lamar, author of *Swan Valley Place Names*. A guide named Herrick working for Cap Laird at Diamond L Bar Lodge on Elbow Lake (Lindbergh Lk.) took dudes up a trail called Herrick Run to Bunyan Lake. The Forest Service named the creek after the trail, apparently by mistake.

From the lakeshore, the creek is hard to spot above the outlet where it enters the lake. But it's easy to see the young larch forest that got its start in the early 1950s after the Herrick Run wildfire.

Fish biologists think the creek's nearly 1,000-foot drop along the north edge of the burn prevents fish passage from the lake below and helps protect a population of a pure native cutthroat trout in the creek from invasion by non-natives.

The cutthroat inhabit a less-steep area in the stream's mid-section that is only about a half-mile long. Yet the fish have access to about a mile of spawning habitat nearby. For ichthyologists and other people who admire native fish, the habitat in Herrick Run is small but important for the species' survival.

The BMP repairs on Road #79 included replacing two undersized, failing culverts, one of which was preventing fish passage. The largest of the two new culverts is an arched pipe. Flat on the bottom, "squashed" pipes more closely replicate a natural stream bottom than the traditional round pipes that can discharge water like a fire hose and scour the stream bottom during spring runoff.

When the Forest Service replaces culverts nowadays the pipes are designed for the 100-year storm, rather than a 20-year storm, which was the standard in the past. During late summer and fall these new culverts can seem hugely oversized. But in spring runoff, while we're trapped in the valley until the snow melts off the

roads, the culverts gush massive amounts of water, sight unseen.

A new "rubber flapper" was installed across a stretch of road where a rolling dip wouldn't be effective. This water diversion device is a narrow strip of tough rubber placed diagonally to discharge sediment from the road to a natural filtration area away from streams. The rubber strip folds down, allowing vehicles easy passage.

The Herrick Run Road #79 is one of many back roads receiving BMP work in the Swan Valley. Rolling dips have been a common feature in road design and repair since the early 1990s. They can provide entertainment for snowmobilers and skiers in winter, if constructed properly. When ill-designed they cause problems for log trucks and horse trailers. Dips have to be long and shallow to allow a smooth rise and fall for the larger trucks and trailers, and yet have enough depth to direct runoff away.

Excavators and dozers are the standard equipment for road BMPS. But it takes specialized skill and practice to construct rolling dips. The contractor needs to be thoroughly familiar with the Montana Department of Environmental Quality's standards for BMPs.

To construct a rolling dip, the contractor must calculate a percentage of rise as stipulated in the road design. After years of practice, an experienced operator might "eye ball" a 2 percent rise in a 25 foot stretch, for example, while a new operator would need practice with a tool, such as a clinometer, to make the calculation. Experienced contractors might create a slightly deeper dip than the design calls for to allow for settling.

As of April this year, all the land that Herrick Run Road #79 passes through is part of the Flathead National Forest. Before April, about four miles of the nine-mile-long road belonged to Plum Creek Timber Company and like most roads in the checkerboard landscape, the road maintenance was the shared responsibility of Plum Creek and the Forest Service.

In 2008-09 when the new rolling dips and other drainage features were installed, it was still a cost/share road. But most funding for this project came from the

Flathead National Forest, with help from Swan Ecosystem Center (SEC). SEC's contribution was made possible by a water quality grant provided by the Montana Department of Environmental Quality. Plum Creek had contributed to the original road building costs.

Rolling dips are cost-effective, long lasting solutions road surface water, compared to rubber flappers and other machine-made devices, which is not good news for car sick grandkids, but is good news for the watershed.