Lake*A*Syst

HOMEOWNER'S GUIDE TO PROTECTING BIG PAYETTE LAKE

FACTSHEET 3 : ACCESS ROADS AND DRIVEWAY RUNOFF

If you have the joy of living or recreating in the Big Payette Lake watershed you also have a special opportunity and responsibility to prevent pollutants from entering streams, groundwater and the lake. Payette Lake is the sole drinking water source for the city of McCall as well as for many homes around the lake. Currently the water quality is acceptable, but in recent years increasing human activities around the lake have contributed to deteriorating water quality. Recent conditions have alerted us to the urgent need for protecting our lake and preserving its many uses. It's time to take action.

Guidelines for taking action on your own property or as you are enjoying the lake have been created by the Lake Assessment System program (Lake*A*Syst) so that you too can be a steward of our lake. The program asks you to consider potential risks to water quality that could result from your activities. The following factsheet is the third in a five-part set of materials designed to assist property owners and the public in understanding what strategies we can use to protect and preserve water quality in the watershed. The sets cover these topics:

Factsheet 1: Preventing Contamination of Drinking Water Factsheet 2: Lawn and Garden	**Factsheet 3: Roads and Driveways** Factsheet 4: Landscape and Construction Factsheet 5: Stormwater Runoff

After you read the factsheet, you can access additional information on the web. All of these resources will help you identify any potential environmental risks related to Payette Lake, and guide you in taking appropriate action. You will find these resources and more at the Big Payette Lake Water Quality Council website: www.bigpayettelake.org

Sponsored by: Big Payette Lake Water Quality Council, the Idaho Department of Environmental Quality, and the Idaho Association of Soil Conservation Districts

ACCESS ROADS AND DRIVEWAY RUNOFF

Public and private residential roads around Payette Lake are considered major sources of pollutants to the lake, because significant amounts of sediment and unwanted nutrients flow from these roads into the lake during storms and spring snowmelt.

Many roads in our watershed were originally built for short-term logging access and were never intended for permanent long-term residential and recreational use. Constructed of compacted native soils, these dirt road surfaces, if not properly managed, can become rutted after even one single storm. Water flowing down dirt roads carries suspended sediment. Ruts greatly increase the velocity of the flowing water and thus the amount of sediment carried by stormwater. When sediment-laden stormwater reaches the lake or a tributary to the lake, it negatively impacts water quality and important ecosystems. Excess sedimentation and its accompanying nutrients can kill aquatic bottom-life, disrupt native fish spawning and cause excessive algal growth. All these impacts are dangerous to the life of the lake, the drinking water supply, and human health.

The public roads around Payette Lake are maintained by the U.S. Forest Service, the Idaho State Department of Lands, and by the Valley County Road Department. Unfortunately, because there are so many public access roads and because funding is limited, many road maintenance needs are left unattended. Homeowners are responsible for maintaining their own driveways.

General Guidelines for Proper Road and Driveway Construction

In many cases, private roads built by a property owner with insufficient experience in road construction end up being ineffective in controlling erosion. The expertise of a road design engineer or contractor and an experienced heavy equipment operator are essential when installing water drainage structures into a road.

Note: Many of the following guidelines were written for people experienced in road construction so the terminology can make for challenging reading. However, having some understanding of the hows and whys of good practices can help make conversations with your contractor more productive; this understanding will also help you oversee the construction project more effectively. Following the strategies outlined below will result not only in more sustainable roads but also in more protection for your lake - the most valuable feature of your property. Some of these strategies are ones that any homeowner can take: for example, making decisions about placement of roads and construction debris, and performing regular maintenance which is a crucial factor in road health.

Strategies for Controlling Erosion and Preventing Ruts

Normally, plants and trees help hold the soil in place and prevent erosion especially on steep slopes. However, when existing vegetation is removed for road or building construction, the

bare soil that is exposed can easily be washed into Payette Lake. Soil erosion can undermine buildings, reduce soil fertility and fill in road ditches as well as harm the lake.

With proper road construction, stormwater and spring runoff never have a chance to pick up speed and create ruts. Improper road construction, however, will encourage ruts to form, as will driving on dirt roads during spring thaw; ruts dramatically increase the amount of pollutants going into the lake.

TAKE ACTION

- Talk with your contractor. Even if using good strategies, property owners with insufficient knowledge and experience who choose to construct private roads may unintentionally cause damaging erosion. When designing, constructing or repairing roads, always hire a design engineer, contractor, and an experienced heavy-equipment operator.
- Make sure that your roads are placed as far away as possible from streams, surface waters and wetlands.
- Roads need to be constructed in a manner that prevents debris and excess materials from entering streams. Check that debris and excess materials such as fill or gravel are deposited outside of riparian areas.
- Drainage at staging areas should be managed by creating protective berms or by routing stormwater to a swale (a depression that follows the contour of the land.)
- Care should be taken to maintain trees and shrubs growing at the base of fill slopes.
- Mixing stumps and other vegetative debris into the road fill should always be avoided.
- Ensure that debris, overburden, and other waste materials produced by road construction and maintenance are placed in a secure location to avoid entry into streams. These waste areas should be included in soil stabilization planning for the road.

Strategies for Ditches

Ditches are constructed to carry stormwater runoff toward an adequate outlet, preventing erosion of the road surface. A good ditch needs to be shaped and lined using vegetative or structural material. Good ditches control flow and filter the water through vegetation or structures so that sediments and pollutants are removed before entering surface waters. In addition, a ditch must be designed so as not to become an erosion problem in and of itself.

TAKE ACTION

- Talk with your contractor. Locate ditches on the up-slope side of the road to prevent water from flowing onto the road from uphill.
- The ditch should be U-shaped along the bottom. If the ditch must be flat on the bottom, a minimum 2-foot width is required to help slow and disperse water.
- Make ditches between 1.5 and 2 feet deep and wide enough to handle all runoff and sediment sizes.
- Line ditches as soon as possible to prevent erosion and to maintain the ditch shape.
- All ditches should have an outlet other than a stream, river, or lake.
- Always clean ditches when they become clogged with sediment or debris to prevent overflows and washouts.
- Check ditches after major storms or spring runoff for obstructions, erosion, or bank collapse.

Strategies for Culverts

Use fish-friendly culverts where the road crosses a stream. Culvert installation should mimic the conditions in the stream that existed before installation. Trout and other species move upstream and downstream for spawning and feeding. Culverts can impede fish passage by creating the following conditions: excessive water velocity, a vertical barrier too high for fish to pass, inadequate depth of water, not enough space for fish to pass if the culvert is too small.

TAKE ACTION

- Talk with your contractor. To install a fish-friendly culvert, select a site where installation will not result in a sudden increase or decrease in the gradient (slope).
- Design culverts so that the velocity of water passing through the pipe is the same as that of the water before it enters the pipe.
- Check periodically to see that culverts have not become dislodged. Dislodged culverts may result in lower capacity, increased speed in the flow of the water, less water entering the culvert, and more channel scouring in the stream itself.

- Maintain culverts regularly to prevent erosion. Periodic inspection and maintenance will extend the life of culverts and of forest roads which can easily be washed out by a broken culvert. This vigilance can reduce the cost of road maintenance as well. Keep water bars and box culverts free of debris and sediment for optimum performance.
- Avoid using roads during wet periods if such use would be likely to damage drainage features.

BACKGROUND INFORMATION FOR HOMEOWNERS' DISCUSSIONS WITH CONTRACTORS ON EROSION CONTROL MEASURES

If you are planning a project that could potentially affect a stream, lake, or wetland, contact the Army Corps of Engineers, Idaho Dept of Water Resources or IDEQ. Permits may be required. Erosion control measures slow down runoff and direct it into vegetated drainage areas where the dirt is retained and the water is filtered back into the ground. If no such runoff control measures are in place, the water runs downhill unchecked. Water will pick up speed and scour away the soil, creating damaging ruts and erosion.

Cross drains (a ditch that moves water across the road) and relief culverts that remove excess water from the ditch should be constructed to prevent erosion. Construction and installation time should be minimized. Make sure that rip rap, vegetative matter, and downspouts are used to prevent erosions of fills. Drainage structures on uncompleted roads should be installed *before* fall or spring runoff.

A wooden open-top box culvert (a three-sided box-like frame of wood) should be installed flush with the road surface to carry runoff and roadside ditch flows to the down-slope side. This practice is an excellent substitute for pipe culverts on lightly used unpaved roads on steep grades.

Water bars (a cut and berm that is built at a downward angle across the roadway and diverts stormwater runoff from the road surface) should be installed for temporary or permanent drainage on light-use, low-maintenance unpaved roads. Water bars should be placed above grade changes to prevent water from flowing down steeper portions of roads or skid trails.

Use road crowning (middle of the road is higher than the sides) as a drainage measure to divert surface water off the entire road surface so that water does not pool in any single location.

Use rolling dips (inclines built into the road and following the natural contours of the land) as a runoff diversion on long inclines to keep stormwater from flowing directly down the road.