

SECTION 8

RIPARIAN, PASTURE AND FOREST MANAGEMENT

This fact sheet addresses the impacts that riparian, pasture and forestry management can have on water quality and how *you* can make a difference with *Best Management Practices (BMPs)*. BMPs are actions you can take to protect our natural resources. **The goal of this information is to minimize negative impacts on water quality.**

1. Read the facts and information in the following pages.
2. Fill out the Risk Assessment Worksheets in order to analyze your property's specific needs.
3. Fill out the Action Worksheet, then **take action!**

In recent years there has been a migration from city living to homes on small acreages. This section will address conservation and pollution prevention measures which can be implemented on pastures, forests, and riparian areas up to twenty acres in size. The need for this type of information has been clearly demonstrated in watersheds throughout the state.

Most small farm owners and managers are aware and concerned about protecting water quality in local watersheds. In fact, when determining how to use their land, the water source and quality are always a priority for the landowner. While it is well known that improper management can lead to pollutants such as sediment, nutrients, and bacteria entering streams, what is not well understood by property owners, is *how* to manage these issues.

The Best Management Practices (BMPs) that follow are recommendations by local soil and water conservation districts, the Idaho Department of Environmental Quality (IDEQ), the Coeur d'Alene Tribe, Idaho Department of Lands (IDL), UI Extension and the Natural Resources Conservation Service (NRCS).



Figure 8-1 Riparian vegetative buffer protecting surface water from adjacent agriculture activi-

Riparian Management

Riparian areas are considered areas of land adjacent to creeks, streams, wetlands, lakes and rivers (Figure 8-3). Other terms commonly used include riparian zones, riparian habitat, wetlands, stream protection zone, and vegetative buffers. Regardless of the terminology, the important thing to remember is that they are all extremely important to maintaining good water quality.

Riparian areas are strongly influenced by the presence of water and contain plants adapted to seasonally wet conditions. They serve as natural buffers between *uplands* and adjacent water bodies (Figure 8-1). This natural buffer of vegetation serves as a filter for sediment, nutrients, pathogens, and metals before they reach surface water. Plants within riparian areas keep water cool by providing shade, stabilize soils with strong roots, reduce bank erosion, and reduce the risk of flooding by *slowly* release stormwater runoff from uplands into stream channels.



Figure 8-2 A healthy riparian area

riparian areas are commonly impacted by human activities such as urban development, agriculture and timber harvest. These land use activities inherently carry a high risk for water pollution and commonly involve the removal of riparian vegetation. Whether you are using your land for forest management, pasture and grazing, small farm operations, or recreation, preserving riparian areas or vegetative buffers on your property is paramount to maintaining clean water.

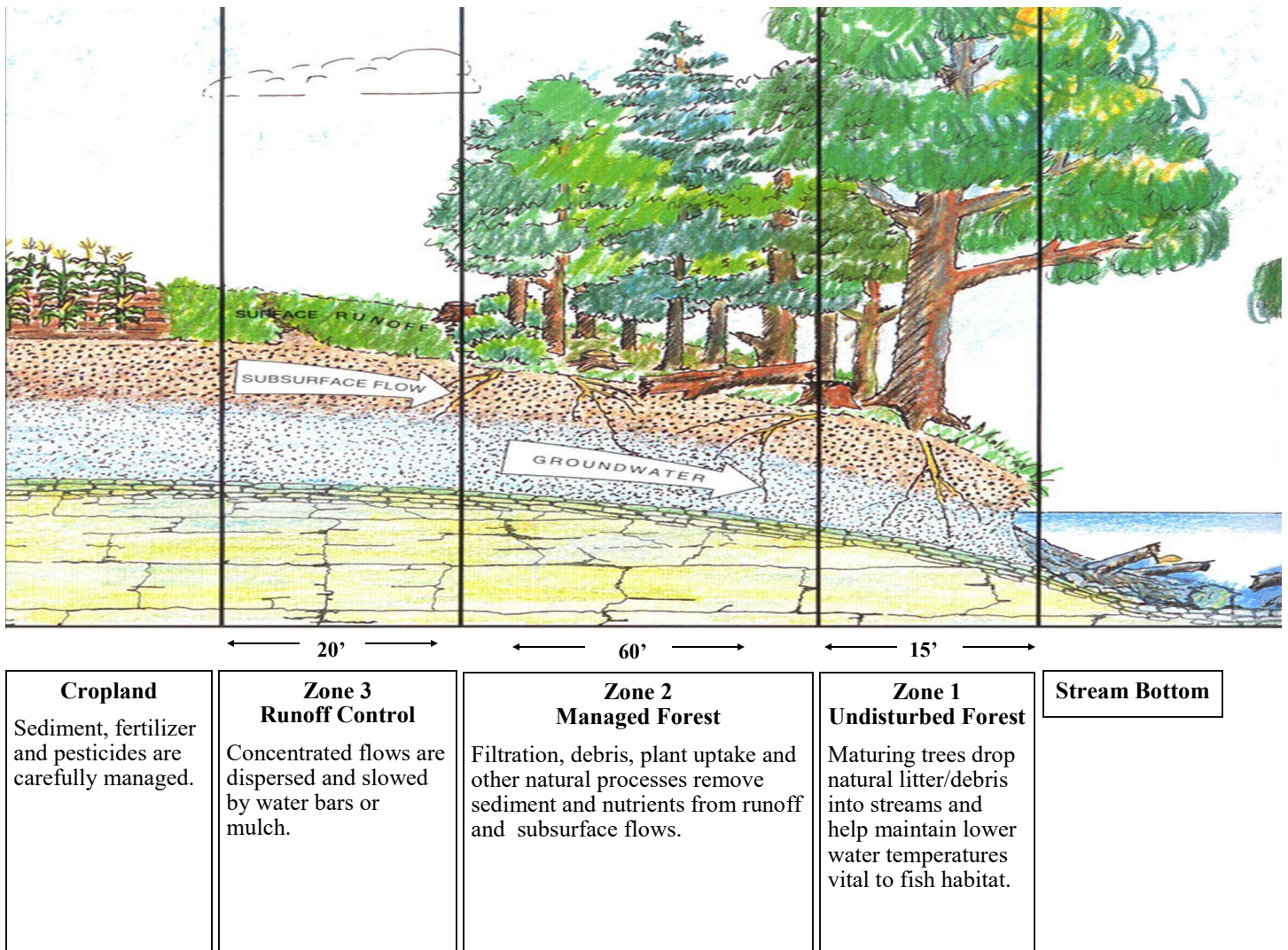


Figure 8-3 Function of Stream Protection Zones, Riparian Areas, and Vegetative Filter Strips, by zones.

Healthy Riparian Areas

- ◆ Diverse vegetation and root systems protect and stabilize stream banks; stream shaded.
- ◆ Elevated water table and saturated zone increase subsurface water storage.
- ◆ Increased summer stream flows.
- ◆ Cooler water in summer, reduced icing in winter.
- ◆ Good habitat for wildlife, fish and other aquatic organisms.

Degraded Riparian Areas

- ◆ Little vegetation to protect and stabilize stream banks and provide shade.
- ◆ Lowered water table and saturated zone reduced subsurface water storage.
- ◆ Reduction or elimination of summer stream flows.
- ◆ Warmer water in summer and increased icing in winter.
- ◆ Poor habitat for wildlife, fish and other aquatic organisms.



	15'	60'	20'	
Stream Bottom	Zone 1 Undisturbed Forest Tree removal is generally not recommended in this zone.	Zone 2 Managed Forest Periodic harvesting is necessary in Zone 2 in order to give neighboring trees an opportunity for vigorous growth; maintaining adequate nutrient uptake.	Zone 3 Runoff Control Controlled grazing or haying is acceptable if runoff diversions are in place and Zones 1 and 2 are managed correctly.	Pasture Watering facilities and livestock are kept out of the Riparian Zone.

Stream Protection Zone

Stream Protection Zone (SPZ) is a term used in the *Idaho Forest Practices Act (IFPA)* that mandates a 75 foot minimum distance from a *Class I* and 30 feet minimum from a *Class II* stream, lake, or other water body that must be protected because of its importance to wildlife habitat, water quality and fish habitat. The IFPA specifically refers to lot owners who harvest timber *commercially*, however **anyone harvesting timber near a water body should maintain an adequate Stream Protection Zone.** To determine whether you have a Class I or II water body, contact IDL.

Most municipalities have specific regulations or ordinances addressing land disturbance in riparian areas. These ordinances vary depending on location, and you are encouraged to contact your local municipality before removing waterfront vegetation.

Everyday Riparian Protection

- Maintain a healthy vegetative strip.
- Leave wetlands undisturbed.
- Restrict livestock from riparian area and surface water.
- Never dump slash/debris into surface water, this releases excess nutrients and uses up valuable oxygen needed by fish.
- Avoid burning on the shoreline—the remaining ash is highly alkaline and may change the pH of surface water and promote algae growth.
- When treating diseases or pests, use chemicals responsibly, and use only the required amount.
- **Use of fertilizers within 25 feet of the lakes, rivers, and streams is discouraged.**

General Planting Guide for Riparian Areas and Vegetative Buffers



Vegetative buffers include aquatic plants in shallow water, moisture-loving plants along the shore, and upland plants in dry soils. If your waterfront property has a riparian area or vegetative buffer that has been disturbed or is non-existent, bringing back a healthy shoreline is relatively easy. While most restoration projects are not difficult, consulting a design professional is highly recommended. Many site-specific conditions need to be considered in shoreline restoration; water velocity, slope, soil type, plant selection, etc... Below are some general guidelines to establishing a vegetative/riparian buffer. The University of Idaho Extension is an excellent resource and has numerous publications available (Resource Directory page 8-12 and 8-13).

- ⇒ **Use native species; they are hardier, more resistant to disease and pests, and provide natural habitat for wildlife.**
- ⇒ **Include a variety of trees, shrubs, ground-covers, and grasses; emphasize diversity of species, heights, and ages. Look around your property or neighboring property to determine the type of plants currently thriving in the area.**
- ⇒ **Plant in the spring or fall. This will ideally provide new plantings with enough rainfall to become established without supplemental irrigation.**
- ⇒ **Ensure sediment and erosion measures are in place. Cover all bare soil with mulch, even as you are planting.**

SUGGESTED SPECIES FOR NORTH IDAHO



Red osier dogwood

DE- CIDUOUS TREES

Quaking Aspen *Populus tremuloides*

Black Cottonwood *Populus trichocarpa*

Western Paper Birch *Betula papyrifera*

Rocky Mountain Maple *Acer glabrum*

Red Alder *Alnus rubra*

CONIFERS

White Pine *Pinus monticola*

Lodgepole Pine *Pinus contorta*

Ponderosa Pine *Pinus ponderosa*

Grand Fir *Abies grandis*

Douglas Fir *Pseudotsuga menziesii*

Subalpine Fir *Abies lasiocarpa*

Englemann Spruce *Picea engelmannii*

Western Larch *Larix occidentalis*

Western Red Cedar *Thuja plicata*

Western Hemlock *Tsuga heterophylla*

SHRUBS

Alder *Alnus sp.*

Douglas Spirea *Spiraea douglasii*

Elderberry *Sambucus cerulea*

Serviceberry *Amelanchier alnifolia*

Red Osier Dogwood *Cornus stolonifera*

Chokecherry *Prunus virginiana*

Willow *Salix sp.*

Wild Rose *Rosa gymnocarpa*

Shiny Leaf Spiraea *Spiraea betulifolia*

Mountain Ash *Sorbus sitchensis*

Snowberry *Symphoricarpos albus*

Thimbleberry *Rubus parviflorus*

Mountain Lover *Pachistima myrsinites*

Ocean Spray *Holodiscus discolor*

Tall Oregon Grape *Mahonia aquifolium*

GROUNDCOVERS

Kinnikinnick *Arctostaphylos uva-ursi*

Creeping Oregon Grape *Mahonia repens*

Rosy Pussytoes *Antennaria rosea*

Wild Strawberry *Fragaria virginiana*

Wild Ginger *Asarum caudatum*

SEDGES AND RUSHES

Bulrush, Hardstem *Scirpus acutus*

Bulrush, Small-flowered *Scirpus microcarpus*

Bulrush, Softstem
Schoenoplectus tabernaemontani

Cattail, Common *Typha latifolia*

PERENNIALS

Lupine *Lupinus polyphyllus*

Aster *Aster laevis*

GRASSES

Idaho Fescue *Festuca idahoensis*

Bluebunch Wheatgrass *Agropyron spicatum*

Mountain Brome *Bromus marginatus*



Lupine



Mountain ash



Kinnikinnick

Pasture Management

Utilizing proper grazing management strategies and improving pasture and riparian areas is beneficial to the landowner as well as water quality, fish and wild-life. Virtually all of the practices mentioned below result in some type of improvement in forage or water table levels, which translates into improved productivity over the long term.

Overgrazing and grazing when soils are too wet are the two most common causes of water runoff and erosion. Both these situations cause soil compaction which limits the amount of water allowed to infiltrate. The lack of infiltration into the soil decreases plant health and increases runoff.

Grazing in wet soils often takes place on pasturelands used as winter and spring feeding areas, on pastures grazed in early spring while soils are still wet, and on pastures grazed during or too soon after irrigation. A pasture is overgrazed when animals are allowed to feed on over 50% of plant mass. When this happens plants do not have the ability to properly regenerate themselves for the following year.



Surface Water (Lakes & Rivers) Impacts

Most research shows that improper grazing leads to increased bacteria, nutrient, and sediment concentrations in surface water. For example, fecal coliform bacteria in streams are a direct result of animal density and access to streams.

Of the nutrients that could impact streams, nitrogen and phosphorus are of the most concern. Phosphorus binds to soil and is a potential pollutant any time soil erosion rates are high. Pastures receiving fertilizer increase the risk for nutrients to enter streams, especially in areas where the riparian area has been disturbed.

Improper grazing can also eliminate woody vegeta-

Simple Rule of Thumb

Collect manure when plants are NOT growing.
Apply when plants ARE growing.

tion resulting in decreased shade and a potential increase in stream temperatures. Streams will become wide and shallow, with elevated water temperatures and will have a negative effect on cold water insects and fish. Channel stability is reduced and becomes more susceptible to erosion during high flows. Stream incising (channel deepening) or channelization of riparian areas will result in lowering of the water table and additional erosion.

Tips For a Successful Grazing Program:

- Corral livestock and feed hay until the pasture grasses are 6" to 8" high in the spring and the pasture soils have dried sufficiently to minimize compaction.
- Eliminate continuous season-long grazing. Consider a high intensity, short duration grazing system or a pasture rotation system.
- Move livestock when 50% of the plant has been removed (3" to 4" of plant height remains). Do not graze until grasses have re-grown to at least 6 inches in height. This may take a month or so.
- Subdivide large pastures into smaller ones, and develop and maintain a pasture-rotation system.
- During winter months, continue a rotation system and feed in dry or frozen pastures to distribute manure and feed evenly. If this is not possible, hold and feed livestock in a corral.
- Horses do not need round-the-clock access to feed as nutritional needs can be met with only a few hours of grazing on good pasture each day.
- Provide a water source for each pasture. Water sources should be located away from any riparian zone. If possible, do not allow livestock access to rivers, streams, or lakes.
- On irrigated pastures, irrigate immediately following grazing to stimulate plant regrowth. Do not graze on wet soils.
- Be aware when soil erosion and off-site sediment delivery are occurring and change associated practices to eliminate the problem.
- Minimize the risk of both surface and groundwater contamination by preventing soil, fertilizers, and animal feces from entering waterways.

For a grazing plan specific to your property, refer to the agencies or professionals with the listing * **Grazing plans in the Resource Directory on page 8-12.**

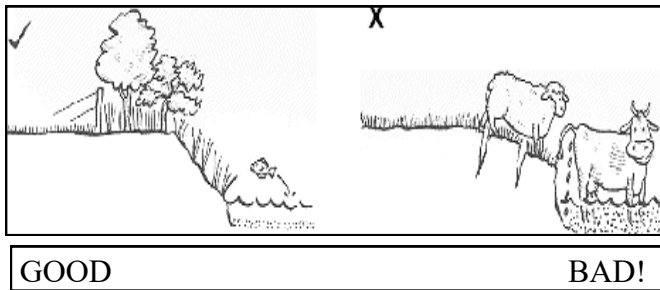
Graze Riparian Areas with Caution!

While most riparian areas need to be completely restricted from grazing, some areas may need to be grazed with caution. Animal grazing in riparian areas can result in loss or reduction of streamside vegetation, erosion due to trampling of stream banks and channels, and water pollution by animal feces. **In just a few days, livestock can remove an entire year's shrub growth. Avoid grazing riparian plants shorter than three inches.**

Stream bank compaction can also occur and contribute to poor plant root development and a decrease in the soil's infiltration rate. Grazing in riparian areas should only be utilized as a tool to improve plant health. This is done by grazing herds quickly on grassy areas to aerate soil and reduce duff layer.



Figure 8-5 Fencing and upland watering systems keep livestock out of surface water.



Grazing Solutions



Best: Use fencing and upland watering systems to restrict livestock from riparian areas (Figure 8-5). This prevents destruction to the riparian ecosystem and allows riparian plants to thrive. If the water or riparian area was previously degraded, significant improvements are often seen in only two to three growing seasons.

Good: If riparian grazing is necessary, use fencing that will allow *controlled* grazing of the riparian area. Avoid grazing the riparian area until stream banks are stable and well vegetated, then graze only in the late spring for short periods. Avoid early spring grazing because stream banks are saturated and vulnerable to trampling. Avoid summer and fall grazing because this is when livestock tend to overgraze shrubs, especially willows.

Groundwater (Wells) Impacts

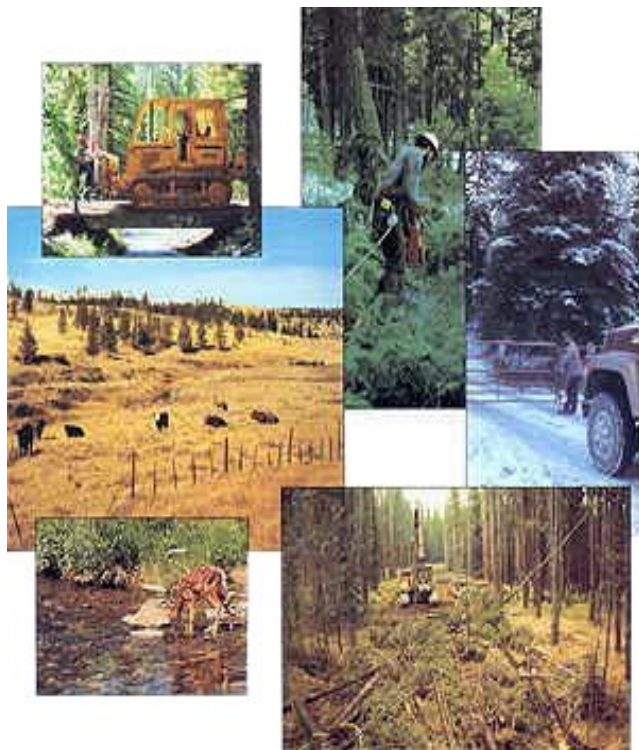
Grazing can impact the quality, quantity, and timing of shallow groundwater. Often, the flow of perennial and intermittent springs and streams is dependent on shallow groundwater. Poor grazing management practices often lead to slower soil infiltration rates. This means that more water will run off your land, and less water will be available for plant growth and groundwater recharge. This results in decreased plant cover and bare soil exposed to raindrop impact and other soil compaction. These changes in the water cycle can cause a shift in plant species to less desirable grasses and an increase in noxious weeds. Changes in the water cycle can also have an impact on the quality and quantity of residential drinking water.

It Pays to Protect

- * Strong vegetative roots reduce the likelihood of costly damages caused by flooding and stream bank repair. The loss of valuable land to bank erosion is permanent.
- * Healthy riparian areas help maintain a high water table and saturated zone which increases subsurface water storage. This promotes deep root growth, healthy pasture grass and lessens the threat of invasive weeds.
- * Streambank vegetation reduces stream channel icing in winter and shades water in summer heat.

Small farm owners concerned with water quality and increased pasture productivity should seek technical assistance. For the development and implementation of a plan to improve forage production, riparian areas, and animal watering options, please utilize the list of available resources in the Resource Directory on page 8-12.

Forest Management



This section is directed at the property owner with forest land adjacent to lakes, rivers and streams. Management of your forested land will require a number of activities including; timber harvesting, site preparation, planting, thinning, prescribed fire, insect and disease treatment, preservation and enhancement of vegetation along waterways for wildlife habitat and water quality.

In Idaho, family forest ownership is twice the acreage owned by industrial timber companies. The application of BMPs on these private lands is just as important as on industrial, state, and federal lands. State and federal audits are routinely conducted on various harvested lands to determine whether BMPs are being applied and how effective they are at protecting water quality. Common problems include: inadequate stream protection zones (SPZs), inadequate stream crossings, inadequate road surface drainage, and ditches and culverts that don't work.

If hiring a professional logging contractor, use this fact sheet, along with other suggested reference material, to determine whether proper BMPs are being applied on your harvested land. An excellent publication, **Forestry for Idaho: BMPs** can be found at www.idahoforests.org/bmp.htm.

Develop a Management Plan

A landowner should develop a management plan *before* beginning any forest management activities. This plan should make clean water a priority while at the same time meeting the landowner's objectives. A management plan should include: maps of the area, road planning and design, stream protection zones, harvesting operations, and site preparation.

You may obtain assistance in preparing a management plan by contacting any of the agencies or professionals with the listing ***Forest management plans** in the Resource Directory on page 8-12. Also, the UI Extension keeps a directory of professionals that provide management plans online at www.uidaho.edu/extension/forestry/resources.

Stream Protection Zone (SPZ)

The Stream Protection Zone (SPZ) is a mandated 75 foot minimum distance between harvesting activities and a *Class I* stream, lake, or other water body that must be protected because of its special importance. This minimum should be extended in areas where slopes are steep and soils are unstable. This mandate was put in place following problems cited within SPZs that included; constructed roads and skid trails, inadequate drainage near streams, logging slash left in streams, excessive equipment operation, and improper use of broadcast or pile burning.

Keeping SPZs intact prevents erosion, provides wildlife habitat, shades surface water, allows for water infiltration, and doesn't cost a thing. Once vegetation has been removed, you are left with disturbed ground which readily erodes, attracts noxious weeds, and requires costly maintenance and replanting.

Mapping

An important part of the management plan is the review of aerial maps showing existing site conditions including: property boundaries, all surface water (lakes, rivers, streams), the direction water flows onto and across the property, existing roads and trails, culverts, existing vegetation, critical habitat, impervious areas (roofs, driveways, and decks), soil types, and slopes.

Once existing conditions have been documented, create a map showing planned harvesting operations. This should include: temporary roads, erosion and sediment controls, clearing limits, preserved vegetation, changes in drainage patterns, and all best management practices.

For an example map please refer to Figure 8-6.

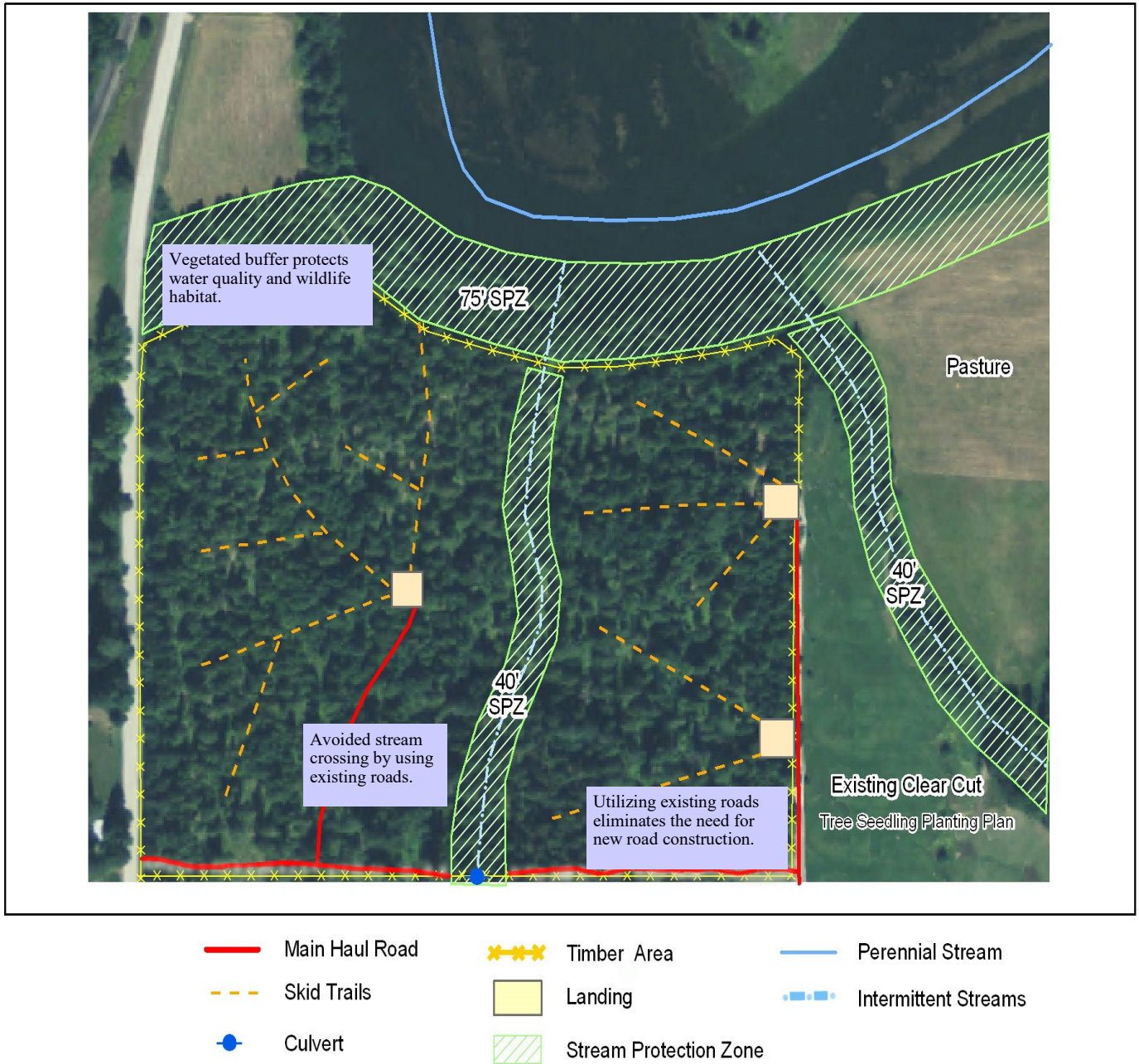


Figure 8-6 An example forest and pasture management map produced by NRCS

Forest Road Design & Management

Erosion that occurs during forest road construction and throughout the life of the road has a great potential to degrade surface water. An important first step is to **determine how the roads will be used now and in the future.**

To minimize the impact of road construction, new roads should be built to comply with IFPA’s plan and design guidelines and *Tribal Forestry Practices*. For detailed information on road design, please review Section 7 of this manual. Always consult a professional for proper road design and construction.

Basic BMPs to follow:

- **Use existing roads whenever possible** - review aerial photographs and soil surveys to help locate.
- **New roads should be located and designed to move small amounts of water a short distance.**
- **Use appropriate erosion and sediment controls** (see Section 1 for details) such as silt fencing and mulch, where soil has been disturbed or where the potential for erosion exists. Seed all exposed soils upon completion of construction.
- **Stream crossing** (see Section 7 for details) construction must be in compliance with the *Idaho Stream Channel Protection Act*. A permit must be obtained from the Idaho Department of Water Resources (Resource Directory page 8-11) for *any* alterations within the beds and banks of continuously flowing natural streams in Idaho.
- **Avoid crossing open water or wetlands.**
- **Avoid driving through open water.** Skidding through streams is not permitted.
- **Use properly sized culverts or bridges** where necessary. Remove any temporary culverts or bridges after the road has been abandoned.
- **Design roads for maximum cross drainage** using water diversion structures (e.g., rolling dips, water bars) to minimize down road flow.
- **Always route drainage through a vegetative filter strip** so sediment can be removed before water reaches a surface water body (Table 8-1).
- **Regularly inspect and maintain drainage structures.**
- **Close all temporary roads after use** to prevent unwanted use by off-road vehicles that could be detrimental to the site. Apply grass seed to bare ground.



Figure 8-7 A well designed forest road.



Figure 8-8 Temporary stream crossing



Figure 8-9 Healthy forest stream

Slope of land between management activity and water body (percent)	Recommended width of filter strip (slope distance in feet)
0 – 10	75
11 – 20	76 – 85
21 – 40	86 – 110
41 – 70	111 – 150

* Distance is measured to the edge of soil disturbance, or in the case of fills, from the bottom of the fill slope.

Table 8-1 Guide for forest lot management, showing recommended filter strip widths.

Harvesting

Timber harvesting is an integral part of forest management. Harvesting temporarily disturbs the environment in the immediate area and should therefore follow a plan that incorporates water quality protection in all operations:

- Time the harvest to be compatible with soils, topography, and weather conditions. Soil disturbance is generally greatest under wet conditions and least under frozen conditions.
- Install water diversion structures.
- Implement sediment and erosion practices (please see Section 6: New Construction).
- Locate landings (areas where harvested trees are skidded to be processing for hauling) away from low, poorly drained areas and outside of stream-bank protection zones and riparian areas.
- Follow road BMPs when designing and laying out skid trails.
- Try to minimize soil disturbance and compaction wherever possible by keeping heavy equipment on an efficient system of roads and designated skid trails. Leave rub trees along skid trails. These are the last harvest trees to be removed and will protect residual trees during skidding operations.

Forest Practices Requiring Notification to IDL

Timber harvesting and related road construction

Road construction and reconstruction located away from harvesting area but associated with harvesting operation

Application of insecticides, herbicides, rodenticides, and fertilizers for forest management purposes

Management of slash resulting from harvest, management, or improvement of forest tree species

Conversion of harvested forest land to another use

Reforestation

The use of prescribed fire

Site Preparation/Reforestation

The purpose for site preparation is to provide a healthy environment for reforestation following a harvesting operation or unmanaged forest lot. Ultimately, better light, nutrients and moisture need to exist in order to make conditions favorable for germination, survival and growth. This can be accomplished through manual, mechanical, or chemical operations and goals are to;

- Reduce competition by unwanted vegetation in order to increase the survival rate of the desired trees
- Remove slash and logging debris if the site has been harvested or unmanaged
- Prepare or modify the soil

Manual:

The best method in small areas or near water.

Mechanical:

Mechanical site preparation is usually done by a contractor with specialized equipment.

- Carry out operations when soils are frozen or dry enough to minimize compaction. Avoid operation during periods of saturated soil.
- Be sure that slash piles do not interfere with natural drainage patterns.
- Consider shearing and raking under frozen conditions to minimize incorporation of soil into slash piles.
- Follow land contours to promote soil stability.
- Use patch or row scarification (clearing) where terrain or soil type calls for minimum soil disturbance.
- Low slash and small brush should be left on forest floor to slow surface runoff, return soil nutrients and provide shade seedlings.

Chemical:

Use an integrated approach to weed and pest management. **When applying pesticide and herbicide, prevent them from entering surface waters;**

- Treatment within SPZ shall be done by hand and applied only to specific targets,
- Leave a 25 foot buffer along surface water,
- For aerial application, leave a 100 foot buffer and do not spray in SPZ,
- Always refer to chemical label instructions.

Consult the UI Extension or your county weed department for proper herbicide guidelines.

Resource Directory

Local

Natural Resources Conservation Service

1224 Washington Ave, Suite 101
Sandpoint, Idaho 83864
(208)263-5310

Bonner Soil & Water Conservation District

1224 Washington Ave, Suite 101
Sandpoint, Idaho 83864
(208)263-5310

Idaho Department of Lands (IDL)

2550 Highway 2 West
Sandpoint, Idaho 83864
(208)263-5104
www.idl.idaho.gov/

Private Forestry Consultants - look in phone book under Forest Management or Bonner County Assessors has a list.

Valuable Websites

www.extension.org –search under small farms

www.idl.idaho.gov/

www.idahoforests.org/bmp.htm

Recommended Reading

Forestry for Idaho: BMP's - Forest Stewardship Guidelines for Water Quality.

An excellent color pamphlet with many photographs displaying and explaining proper and improper uses of forest practice BMPs, along with forest ecology and water quality concepts. Look for this at your IDL offices or find it online at:

www.idahoforests.org/bmp.htm

A Stewardship Handbook for Family Forest Ownership.

www.idl.idaho.gov/

State of Idaho Catalog of Storm Water Best Management Practices for Idaho Cities and Counties

You may examine this useful catalog at IDL, the Forest Service Headquarters in Sandpoint Idaho, Bonner County Planning and Zoning, or the DEQ office in Coeur d'Alene.

Recommended Reading

Forestry for Idaho: BMPs - Forest Stewardship Guidelines for Water Quality.

An excellent color pamphlet with many photographs displaying and explaining proper and improper uses of forest practice BMPs, along with forest ecology and water quality concepts. Look for this at your IDL offices or find it online at www.idahoforests.org/bmp.htm

A Stewardship Handbook for Family Forest Owners.

www.stateforesters.org/stewardshiphandbook

State of Idaho Catalog of Storm Water Best Management Practices for Idaho Cities and Counties

You may examine this useful catalog at IDL, the Forest Service Headquarters in Sandpoint Idaho, Kootenai County Planning and Zoning, or the DEQ office in Coeur d'Alene.

Find it online at www.deq.idaho.gov/media/622263-Stormwater.pdf

Drainage of Low Volume Roads

http://ntl.bts.gov/lib/24000/24600/24650/Chapters/I_Ch7_Drainage_of_Low_Volume_Roads.pdf

Logging “Selectively”: A Practical Pocket Guide to Partial Timber Harvesting. PNW 534. University of Idaho Cooperative Extension System, Moscow, ID. 96 pp.

Managing Organic Debris for Forest Health: Reconciling Fire Hazard, Bark Beetles, Wildlife, and Forest Nutrition Needs.

PNW 609. University of Idaho Extension, Moscow, ID. 60 pp. (<http://www.cals.uidaho.edu/edComm/pdf/PNW/PNW0609.pdf>)

Management Planning for the Family Forest Owner.

CIS 1141. University of Idaho Extension, Moscow, ID. 4 pp. (<http://www.cals.uidaho.edu/edComm/pdf/CIS/CIS1141.pdf>)

Plant Your Seedlings Right. University of Idaho, College of Natural Resources, Forest Research Nursery. 4p. (<http://seedlings.uidaho.com/default.asp?PageID=38>)

Grass Seeding Forest Roads, Skid Trails, and Landings in the Inland Northwest. PNW 628. University of Idaho Extension, Moscow, ID. 8 pp. (www.cals.uidaho.edu/edComm/pdf/PNW/PNW628.pdf)

Valuable Websites

www.extension.org –search under small farms

www.uidaho.edu/extension/forestry

www.idahoforests.org/bmp.htm

www.idl.idaho.gov/bureau/ForestAssist/state_forester_forum.htm

www.northidahoswcds.org

www.plantsofthewild.com

References

Figure 8-1 Riparian buffer. laporteswcd.com. (Accessed Dec 2, 2011)

Figure 8-2. Courtesy of the USDA Natural Resources Conservation Service.

Figure 8-3: Riparian diagram. Courtesy of www.cayugawatershed.org. (Accessed November 10, 2011)

Figure 8-7: Effectively designed forest road. http://www2.dnr.cornell.edu/ext/bmp/contents/during/dur_roads.htm. (Accessed Dec 15, 2011)

Figure 8-8: temporary stream crossing. <http://www.mass.gov/dcr/watersupply/watershed/protection.htm> (Accessed Dec 16, 2011)

Pretty buffer photo. Courtesy of <http://www.sustland.umn.edu/related/water2.html>. (Accessed Dec 15, 2011)

Coneflower photo. Courtesy of <http://utilities.columbus.gov/content.aspx?id=36982>. (Accessed Dec 18, 2011)

Kinnikinnick photo. Courtesy of the Kinnikinnick Native Plant Society.

Mountain Ash photo. Courtesy of the Kinnikinnick Native Plant Society.

Cow and fence. Courtesy of the NC Cooperative Extension Service.

RISK ASSESSMENT WORKSHEETS

Riparian, Pasture and Forest Management

Assessment Sheet 1: Forest Management

The assessment table below will help you identify potential environmental risks related to the way you manage your forested lot. For each question indicate your risk level in the right-hand column. Some choices may not correspond exactly to your situation. Choose the response that best fits. When finished turn to the **Action Worksheet** on page 8-17 and record your medium and high-risk practices. Your goal is to lower your risks. Use the BMP recommendations in Section 8, Pasture, Forest and Riparian Management to help you decide how to best reduce pollution.

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
Management plan	A written BMP management plan has been developed for timber harvesting, site preparation, stream protection, road maintenance, and forest management.	A written plan has been created, but has not been updated in the last 5 years.	No management plan has been developed for making clean water a priority.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Timber harvesting	Timber harvests are planned and conducted using BMPs to protect water quality, meet sunlight and site requirements of tree species; are monitored by a professional forester.	Timber harvests are planned and conducted using BMPs without the assistance of a professional forester or other natural resources professional.	BMPs are not used. Timber buyer or logger plans and implements the harvest with no landowner or natural resources professional oversight.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Using BMPs	Forestry BMPs are carefully selected to protect water quality during all forest management activities. BMPs are included in the written forest management plan.	BMPs are included on an as-needed basis where believed necessary, but not included in the written plan.	BMPs are not considered during forest management activities.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Forest Health	Forest management activities produce a healthy, vigorous forest which meets goals for timber production, enhancing wildlife, water quality, recreational, and aesthetic goals.	The forest is not being managed for timber production, but meets goals for forest health, wildlife, water quality, recreation, and aesthetics.	The forest is not being managed. As a result, forest health is declining.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High

Assessment Sheet 2 Continued: Forest Management

Use the table below to rate your risks related to managing your forested lot.

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
Forest Health	Recommended forest management activities produce a healthy, vigorous forest which meets goals for timber production, while enhancing wildlife, water quality, recreational and aesthetic goals.	The forest is not being managed for timber production, but meets goals for forest health, wildlife, water quality, recreation and aesthetics.	The forest is not being managed. As a result, forest health is declining and other goals are not being accomplished.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Stream Protection Zone (SPZs)	SPZs are identified, marked, and adhere to the Idaho Forest Practices Act of a 75 foot width for a Class 1 water body.		No SPZs have been delineated. No efforts are made to reduce harvesting impact on streams.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High

Assessment Sheet 2 - Riparian Management

Use the table below to rate your risks relating to riparian health. When finished turn to the **Action Worksheet** on page 8-17 and record your medium and high-risk practices.

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
Streambank condition	More than 90% of the streambanks are stable with plant cover or large rocks. Little or no active erosion.	70-90% of the streambanks are stable with plant cover or large rocks. Some active erosion.	Less than 70% of the streambanks are stable with plant cover or large rocks. Active erosion very evident.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Roads, driveways, and skid trails	All BMPs required to prevent erosion and protect water quality are identified during the design and construction, which is done in consultation with an engineer. BMPs are frequently inspected and maintained.		No effort is taken to implement BMPs in riparian area.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Streamside vegetation (riparian)	Stream well shaded with trees and/or shrubs.	Trees and/or shrubs providing some shade.	Little or no shade provided by trees and/or shrubs.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Stream crossings	Stream crossings are avoided unless absolutely necessary. BMPs are installed for all temporary and permanent culverts, bridges, and fords. Engineering services used for design of water friendly stream crossings.		BMPs are not used. Stream crossings are eroding or bare. Culverts, bridges, and fords are not maintained.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High

