

Best Management Practices



for
Alabama



Alabama Forestry Commission
513 Madison Avenue
Montgomery, AL 36130

The success of Best Management Practices to protect water quality within Alabama depends on mutual cooperation and trust among land-owners, industry, environmentalists, wood producers, regulatory agencies, governmental officials, and the general public. All have an interest in good forest management as it relates to water quality.

Pollutants

Major potential pollutants are sediment, nutrients, organics, temperature, and pesticides.

Sediment - Sediment is one of the most important considerations related to silvicultural activity. In the process of managing the forest, many operations have the potential to increase sedimentation rates. However, when these operations are conducted in a proper manner, rates of erosion can be minimized.

Nutrients – Nutrients, primarily phosphorous and nitrogen fertilizers, are sometimes applied to the forest to stimulate tree growth. Proper application will alleviate this situation.

Organics – Oxygen deficiencies can result from the incorporation of organic debris in water.

Temperature-Temperature of forest streams is affected by removal of shading vegetation.

Pesticides – Pesticides in streams can be controlled through proper application.

Best Management Practices

Streamside Management Zones

Forest lands within the area immediately adjacent to waters of the State should be managed with specific attention given to measures that can be taken to protect both in-stream and downstream water quality values. The most important consideration within this zone is that of protecting the integrity of the streambed and streambanks. It does, however, require careful removal of overstory vegetation to insure protection of understory vegetation.

The width of Streamside Management Zones should be varied, depending on the following conditions: slope of land, soil erodibility, precipitation, knowledge of particular area, sensitivity of stream, etc.

Generally, the steeper the slope the wider the SMZ, and the more gentle the slope the narrower the SMZ. The same holds true for erodible soils: the more erodible the soil the wider the SMZ, and the less erodible the soil the narrower the SMZ.

Permanent Roads

- Roads should be carefully planned.
- Avoid locations in narrow canyons, marshes, wet meadows, and Streamside Management Zones if there is another practical route.
- Minimize the number of stream crossings.
- Roads designed for stability with adequate drainage.
- Except at crossings, locate roads as far as practical from streams.

- Standing water on a road increases operating costs and is a source of sediment which could be delivered to a stream.
- As slope increases, diversion structures become more important for reducing the damages caused by soil erosion.

Construction of Permanent Roads

- Use the minimum design standard consistent with the anticipated traffic and reasonable safety.
- Stumps, logs, and slash should not be covered with fill material and incorporated into road beds.
- Minimizing the amount of soil exposed will minimize soil erosion.
- Road slopes should be determined by topography and soil type.
- Ditches, adequate culverts, drainage dips, water bars, cross drains, etc., should be installed concurrent with construction.
- Diversion or wing ditches should be used to carry road drainage water. They should empty onto the undisturbed forest floor.
- Except at crossings, sidecast of fill material should not be placed below the ordinary high water mark of a stream.
- The exposed soil on the side banks of roads is a source of erosion and road deterioration. Stabilizing the side banks as they are constructed will minimize the problem.

Maintenance of Permanent Roads

- Regular periodic inspection.
- Drainage devices should be kept open.

- Back slopes and/or roadbeds may be seeded.
- Special soil stabilizing materials are available for particularly vulnerable areas.
- Roads which have a high potential for erosion may be closed to non-essential traffic of wet weather.

Water Crossings

- Use fords only if stream beds are solid and if the installation of bridges and culverts will accelerate soil movement.
- Bridges and overflow culverts should be constructed to minimize changes in natural stream beds during high water.
- Culverts on perennial streams should be installed low enough to allow passage of aquatic life during low water.
- Dirt fills for bridge approaches should be protected from erosion.
- Slash and/or construction debris should be removed from streams.
- Open top culverts, water bars, or broad based dips placed in the road on either side of the stream crossing will minimize water movement down the road and into the stream.

Trails

- The basic principals set forth under Permanent Roads should be applied to Permanent Trails; however, techniques should be altered as appropriate.

Harvesting

Temporary Access Roads and Landings

- The location of temporary access roads (logging roads) should be planned before operations begin.
- Road construction should be kept to a minimum.

- Landings should be located to minimize the adverse impact of skidding on the natural drainage pattern.
- Logging roads and landings should be located on firm ground, outside of Streamside Management Zones and above the ordinary high water mark of streams.
- Landings should be kept as small in area as possible.
- When operations are completed, provisions should be made to divert water run-off from the landings and roads.

Felling

- Careful felling can minimize the impact of subsequent phases of logging operations.
- Trees should not be felled into streams, except where no safe alternative exists. In the latter case, such trees should be removed promptly.

Skidding

- Timber cut in Streamside Management Zones should be removed by the method which causes the least damage.
- Skidding should be done so as to avoid disrupting natural drainage and to prevent excessive soil displacement.
- Stream channels should not be used as skid trails.
- Crossings of streams should be minimized. Where crossing is necessary, logs should be moved at right angles to the channel.
- Temporary crossings utilizing culverts, logs or portable bridges may be required. These should be removed promptly upon completion of use.

- Skid trails on steep slopes should have occasional breaks, should be water barred.
- If harvesting must be done during wet weather it is better to log on well-drained sites. Soils are more easily compacted when wet.
- Litter from the maintenance and repair of equipment should be kept out of streams and preferably should be buried or hauled to legal dumping sites.
- Servicing of equipment involving fuel, lubricants, or coolants should be performed in places where these materials cannot enter streams.
- Upon completion of logging, erosion-prone areas can be mulched or seeded.

Mechanical Site Preparation

- Avoid excessive soil compaction.
- Minimize erosion and the movement of sediment into waters.
- Prevent accumulation of debris in ponds, streams, or rivers.
- Minimize disturbance in Streamside Management Zones.
- Windrows, disking, bedding, and planting with “furrow” type mechanical planters should follow contours.
- Soil disturbance during shearing and raking operations should be kept to a practical minimum.
- Shearing and chopping blades should be kept sharp.
- Avoid complete disking of steep slopes with extremely erodible soil.
- If breaks in bedding occur on slopes, they should be stabilized.

- Wherever possible, discharge water from furrows and disked areas onto vegetated surfaces.
- Plant trees on contour.

Forest Chemicals

- BMPs are to use these products in accordance with the manufacturer's instructions and state and federal regulations. No containers or equipment should be washed in any stream.

Prescribed Fire

- Most soil erosion problems arising from prescribed burning come from fire lines being improperly installed.
- Lines located at right angles to the contour should be avoided. Grades, ditches, and water bars should be planned and installed when the line is being constructed.
- Plowing deep lines with a fire-line plow should be avoided unless necessary.
- Plowed or dozed lines should never be led directly into a stream or swamp.

For more information contact your local county forester or