Part 9: Site Preparation, Chemicals and Fire

BMPs for Mechanical Site Prep

- Operate heavy equipment when soil is relatively dry.
- Minimize exposure of bare soil, especially on areas with high erosion risk or near waterbodies.
- The site prep should not significantly reduce the infiltration capacity of the soil.
- Minimize overall site disturbance within ephemeral drainages.
- Maintain the natural topography of the land; avoid filling in or leveling off areas.
- Minimize the number of heavy equipment passes across the site.
- Service equipment away from waterbodies and the SMZ.

Avoid working saturated soil.

Stay out of the SMZ.

Avoid uprooting of stumps and trees where possible.

Avoid gouging the soil in a manner that could funnel runoff and deliver sediment into waterbodies.

Additional BMPs for Shearing/Raking/Piling:

- Minimize displacement of topsoil. A toothed rake often works better than a dozer blade.
- Arrange windrows along the contours across the slope, not up and down the slope.
- Leave opening in windrows to avoid impounding surface water runoff. Stagger the openings in windrows.

Avoid pushing debris into the SMZ.

Additional BMPs for Bedding/Tilling/Disking:

- Operate along the land contour across the slope, not up and down the slope.
- Do not aim bed rows or tillage strips downslope towards a stream.
- Retain undisturbed groundcover between bed rows and tillage strips.
- When leaving gap openings within bed rows, stagger the openings from one bed row to the next, minimizing the funneling of surface runoff but still allowing overland sheet flow to pass. This is especially important in low-lying flood-prone areas.

Do not tie in beds or tillage strips with intermittent or perennial streams, ditches or perennial waterbodies.

Forestry Chemicals

Rule Requirements:
If aerial application of pesticide over wetlands or waters of the U.S. will exceed certain annual thresholds of acres or linear feet of waterway treated, then a Certificate of Coverage is needed to comply with the state NPDES Pesticide General Permit. Contact NC DEQ to learn more.

- Follow the product label(s) and/or SDS.
- Apply at least 50 feet from an intermittent or perennial stream or perennial waterbody, unless the targeted area falls within this distance range. Take precautions to protect water quality if applied closer than this.
- Avoid broadcast application in, or over SMZs and water unless the chemical is labeled for aquatic use.
- Apply fertilizer sparingly in ephemeral drainages.
- Avoid chemical application if rainfall is forecast within 24 hours unless needed for product activation.
- Properly store, mix, and load chemicals away from SMZs, ditches and waterbodies.
- Properly dispose chemical containers according to product label recommendations and laws.
- Park equipment used for application outside of the SMZ or away from water.
- Plan for the containment and cleanup of spills or leaks by having suitable tools or materials on-site.

Fire Management

Fire is a natural element of North Carolina's forests. Its careful application in a prescribed manner can sustain forest health, reduce wildfire risk and enhance diversity.

The biggest water quality risk is usually not the actual fire itself, but instead is from erosion and sedimentation that comes from firelines.

Consider allowing the fire to back out from the stream and burn through the SMZ or wetland, thereby avoiding the need to install a fireline along the stream, waterbody or wetland.

A fireline in the transitional ecotone between uplands and the riparian area can block movement of amphibians and other wildlife.

This bladed fireline only scraped off the top layer of vegetation.

Most firelines do not need to be deeply excavated.

BMPs for Firelines on Prescribed Burns

- Install the fireline only as deep and/or wide as necessary to contain the prescribed fire.
- Minimize erosion and prevent runoff from directly entering waterbodies and installing water diversions.
- Set the fireline along the contour and avoid straight uphill/downhill placement when possible.
- Fireline slope should be 25 percent or less if possible.
- Stay out of marsh areas.
- Promptly remove debris or soil that was deposited into a stream during fireline installation.
- Revegetate exposed soil in firelines to control erosion.

BMPs for Wildfire Control

- Protect surface waters from sedimentation and pollution.
- Minimize the number of stream crossings. Promptly rehabilitate them afterward.
- Keep fire-retardant chemicals out of surface waters.
- Clean and maintain firefighting equipment away from surface waters.
- If water retention areas are constructed, return them to their preexisting condition afterward.
- Stabilize and/or retire firelines, trails or roads.
- Install water diversions where needed to control runoff.
- Establish groundcover, revegetate or stabilize areas that are high risk for accelerated erosion.

A plowed line can funnel runoff and accelerate soil erosion.

Smooth over firelines and establish groundcover.

This site prep prescribed fire was allowed to burn into the SMZ with little to no damaging impacts.

This fireline was rehabilitated and stabilized.