

Part 6: SMZ (Stream Buffers)

Rule Requirement #1: The FPGs require a SMZ alongside any intermittent stream, any perennial stream, and along the margins of any perennial waterbody.

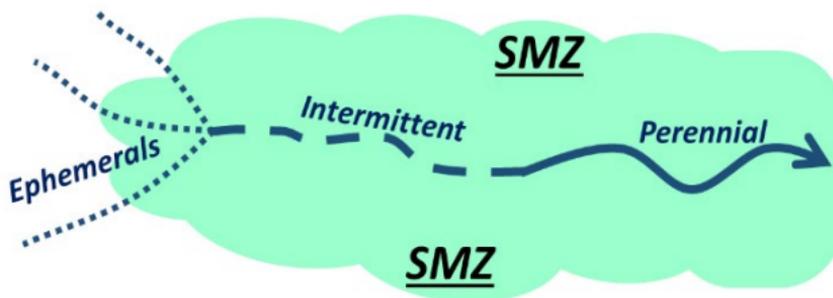
Rule Requirement #2: Certain watersheds and river basins have additional Riparian Buffer Rules that are in addition to the SMZ requirements. Those areas are:

- Catawba River, and mainstem lakes
- Goose Creek watershed
- Jordan Lake watershed
- Neuse River basin
- Tar-Pamlico River basin
- Randleman Lake watershed



Review the NCFS "WQ" *Forestry Leaflets* that describe the Forest Harvest Requirements of those Buffer Rules.

The SMZ should wrap around the head of the stream to include the ephemeral transition area illustrated below.



The general recommended SMZ width is 50 feet.**SMZs wider than 50 feet may be appropriate when:**

- Very steep slopes lead down to the SMZ.
- Multiple ephemerals converge close to and drain towards the SMZ.
- The ephemeral stream leading into the SMZ has evidence of recent channel scouring.
- Exposed, erodible, or disturbed soils are nearby, including old erosion gullies.
- Lack of abundant groundcover or vegetation in the SMZ.
- Streambanks are slumping, undercutting or eroding.
- SMZ is along a special designated sensitive waterway.
- There is a local history of, concern for, or enhanced risk of timber windthrow or blow down in the SMZ (such as tall trees with large crowns, trees on saturated soil, shallow rooted trees and/or site is on the coastal fringe).

SMZs narrower than 50 feet may be acceptable when:

- SMZ is mostly flat ground, and flat terrain extends outward from it for a long distance.
- Soil in the SMZ is dry, stable, undisturbed and has abundant groundcover vegetation.
- SMZ has mostly small trees that can handle strong wind.
- Adjacent stand of timber on both sides of the SMZ has a relatively high density of tree spacing (ex: an uncut stand, plantation thinning, selective harvest, etc.)

BMPs for All SMZs

- **SMZ width is recommended to be 50 feet (each side) and should be no less than 20 feet.**
 - Measuring the SMZ width immediately atop the ground surface is acceptable, starting at the edge of channel bank.
- Mark the SMZ in the woods so operators can see it.
- Consider leaving the SMZ undisturbed (no cutting) if that aligns with the landowner's objectives.
- Minimize soil disturbance in the SMZ (gouging, scraping, compacting, rutting).
- Promptly re-establish groundcover vegetation that has been removed or lost.
- Keep roads, skid trails, log decks and firelines out of the SMZ. If they must be in the SMZ, keep heavy equipment at least 10 feet from the waterway's edge.
- Conduct equipment refueling and routine servicing outside of SMZs.
- Mix, load, and unload pesticide, fertilizer and other chemicals outside of the SMZ.

If Harvesting Timber from the SMZ

- Remove no more than 50 percent of the SMZ basal area.

-- Exceptions: Harvesting more than 50 percent basal area may occur in any of these three scenarios:

- (1) Salvaging damaged timber from the SMZ.
- (2) Controlling or removing exotic/invasive/non-native plants in the SMZ.
- (3) Removing planted pines from the SMZ to allow regeneration of other more suitable riparian tree species, thus enhancing plant diversity in the SMZ.

In each scenario, measures are needed to promote infiltration of runoff into the soil, and along perennial streams, retain enough shade producing canopy cover to avoid full sun exposure.

- If the site is prone to windstorms, consider alternative harvesting prescriptions to minimize the potential of trees blowing over and obstructing the waterway, while still providing adequate shade over perennial streams.
- Fell timber away from the SMZ and stream if possible.
- Avoid creating gaps wider than 1 tree length in the SMZ. Ideally, remaining trees would be evenly spaced apart.
- Stabilize bare soil and repair soil gouges in the SMZ created by the felling and removal of trees.



Do not use the SMZ as a delimiting gate.

For Burning, Site Prep or TSI around SMZs:

- When doing prescribed burns, consider using the stream as a natural firebreak to avoid installing a plowed or bladed fireline. If a fireline is needed in the SMZ, install with hand tools
- ⊗ ***Do not mechanically site prep, remove stumps, or push soil / debris within the SMZ.***
- ⊗ ***Avoid applying pesticide or fertilizer directly upon the water or into the stream channel.***



Mark the SMZ so operators can see it in the woods.

Working around Hydrologically-Connected Ditches

- Minimize nonpoint source pollution produced by forestry operations from being transported by these ditches into intermittent streams, perennial streams or perennial waterbodies.
- Maintain structural integrity of the ditch bank.
- Maintain vegetation along the ditch banks to manage erosion and sedimentation.
- ✗ ***Avoid obstructing water flow within the ditch.***
- ✗ ***Do not service or refuel equipment next to the ditch where possible.***
- ✗ ***Do not mix/load/unload pesticide, fertilizer or other chemicals next to the ditch where possible.***

Working around Ephemeral Streams

- Minimize nonpoint source pollution produced by forestry operations from being transported by ephemerals into intermittent streams, perennial streams, or perennial waterbodies.
- When establishing a SMZ on intermittent or perennial streams, the SMZ should wrap around the origin/head of that stream, where the ephemeral transitions into the stream's channel. See illustration on page 6-1.
- Minimize disturbance to the soil and groundcover within the ephemeral area. This includes roads, skid trails, log decks, portable mills and firelines.

- Maintain surface groundcover and woody debris accumulations within the ephemeral if material already exists in place as long as water will not backup onto another person's property.
- ⊗ ***Do not service or refuel equipment within or next to the ephemeral stream where possible.***
- ⊗ ***Do not mix/load/unload pesticide, fertilizer or other chemicals in or next to ephemerals where possible.***



Aerial view of SMZs retained on a timber harvest. Note how the SMZ width varies in some sections.



Excellent SMZ with very little, if any, disturbance or cutting.



Nearly all trees were cut from this SMZ.



Good SMZs that include the ephemeral transition area.





View from inside good SMZs with very little, if any, cutting.





SMZ on this perennial stream was clearcut, which is a violation of the FPGs.



Above and Below: Good SMZs with little disturbance.





Both ditch banks are well vegetated, providing erosion and sedimentation control. The ditch corridor is open with no timber to allow maintenance access. This open corridor also reduces disturbance during logging since no trees need to be cut off the ditch bank.



Trees were cut from this very narrow section of SMZ along a major river (at left). One tree fell into the river. The muddy logging road bypass on the left is less than 25 feet from the riverbank, and only a thin strip of weeds is there to restrain sediment. Consider public viewpoints along major waterways that host recreational traffic. The SMZ can also be a visual screen and windbreak, if properly designed and protected. (Photo from Aug. 2021.)