Wildfire Burn Severity Classification

The following burn intensity classifications can be used to estimate soil heating by vegetative and physical conditions. Wildfire burn intensity is very useful in preparing rehabilitation plans and planning other post-fire activities. To determine hydrophobicity, scrape ash away and pour water on the soil surface. Hydrophobic (water repellent) soils will cause water to bead at the surface for several minutes. Root damage can be determined by digging down and carefully examining the extent of root burning.

Low Fire Severity (Type III)

General Statements

- primarily occur on rangeland
- no sediment delivery
- natural recovery likely

Indicators

- duff and debris are partly burned
- soil is a normal color
- hydrophobicity is low to absent
- standing trees may have some brown needles

Interpretations

- root crowns and surface roots will resprout quickly (within one year)
- infiltration and erosion potential are not significantly changed

Medium Fire Severity (Type II)

General Statements

- primarily occur on steep, lightly timbered slopes with grass
- some sediment delivery

Indicators

- duff is consumed
- burned needles are still evident
- ash is generally dark colored
- hydrophobicity is low to medium on surface soil up to one inch deep
- soil is brown to reddish-brown and up to two inches of soil is darkened from burning (below ash)
- roots are viable below one inch
- shrub stumps and small fuels are charred, but present
- standing trees are blackened but not charcoal

Interpretations

- root crowns will usually resprout
- roots and rhizomes below one inch will resprout
- most perennial grasses will resprout
- vegetative recovery is one to five years
- soil erosion potential will increase due to the lack of ground cover and moderate hydrophobicity

High Fire Severity (Type I)

General Statements

- primarily occurs in unprotected drainages on steep, timbered, north or east slopes with dense forest canopy
- sediment delivery likely
- natural recovery limited

Indicators

- duff consumed
- uniformly gray or white ash (in severe cases ash is thin and white or light)
- no shrub stumps or small fuels remain
- hydrophobicity medium to high - up to two inches deep
- two to four inches of soil is darkened (soil color often reddish orange)
- roots burned two to four inches
- soil physically affected (crusting, crystallization, agglomeration)
- standing trees charcoal up to one inch deep

Interpretations

- soil productivity is significantly reduced
- some roots and rhizomes will resprout, but only those deep in soil
- vegetative recovery is five to ten years
- soil erosion potential can be significantly increased

NRCS Natural Resources Conservation Service
http://www.mt.nrcs.usda.gov/technical/eng/ewp/severity.html