

Ashland Forest Resiliency Project Monitoring – Siskiyou Mountains Ranger District Effective Ground Cover and Detrimental Soil Disturbance - 2012

5 February 2013



MONITORING QUESTIONS

Implementation monitoring assesses whether treatments were implemented according to design, including appropriate mitigation measures and management constraints. Ashland Forest Resiliency (AFR) stakeholders have elevated the importance of securing baseline data to inform the Project design and contrast expected and observed resource impacts.

1. **Were treatments implemented according to design criteria, including appropriate mitigation measures and management constraints, outlined in the plans for the Project and the subsequent decision?**
2. **Did the treatments meet or exceed key land use plan *standards and guidelines* for direct effects?**

To evaluate the impacts of our forestry work on the watershed's soils, the AFR project monitors effective ground cover and soil disturbance.

METHODS

Effective ground cover is any material which is attached to or lying on the mineral soil surface, which is critical for slowing surface soil movement. The Rogue River National Forest Land and Resource Management Plan (LRMP), as amended by the Northwest Forest Plan, and the Record of Decision (ROD) for AFR both have specific guidelines for how much EGC needs to remain after treatments are complete, with the AFR criteria based on project level soil information and modeling. The Soil Cover Protocol in Steinfeld et al. (2007) and the Cover Monitoring Assistant Program were used for characterizing EGC.

Soil disturbance is evaluated using 5 categories of detrimental effect: compaction, rutting, displacement, severe burning, and surface erosion (Table 1) and the severity of those effects in a 4 class system (0-3) as in Page-Dumroese et al. (2009a, b). The determination of the percent in a condition that is detrimental to long-term productivity is based on cumulative observations made at each sample point. The Rogue River National Forest LRMP standard & guideline for soil disturbance requires that no more than 20 percent of an activity area should be displaced or compacted resulting from previous management practices. Additionally in the AFR ROD there can be no more than 5% new detrimental disturbance from current project activities, not to exceed a cumulative of 20%.

Table 1: Soil disturbance assesses five categories of potentially detrimental soil conditions. Displaced and burned soils refer to a contiguous area >100 square feet which is >5 feet wide.

Disturbance	Definition
Compaction	Increase in bulk density of $\geq 15\%$, reduction in macropore space by $\geq 50\%$, and/or a reduction below 15% macro porosity
Puddling	Soil deformation with ruts or imprints ≥ 6 inches
Displacement	Removal of $>50\%$ of the A horizon
Burned	Mineral soil significantly changed in color, oxidized to a reddish color, and the next $\frac{1}{2}$ inch of blackened
Surface erosion	Surface soil loss 100 feet through sheet, rill or gully erosion over a contiguous area >100 square feet, or a reduction in effective ground cover below the acceptable thresholds

In operational units where trees will be removed using ground-based equipment, pretreatment soil disturbance and effective ground cover data will be compared to post treatment data. Baseline, pre-project implementation data was collected on 4 units, and post-implementation effective ground cover monitoring was completed on one unit. Harvest continues on top of snow this winter, but effective ground cover and soil disturbance monitoring will have to wait until later this spring.

For all other operational units the FS soil scientist will utilize professional judgment and collect supplemental data as needed. More information about methods can be found in the detailed monitoring reports located in the Rogue River-Siskiyou National Forest Soils Program Files.

FINDINGS and EVALUATION:

Effective Ground Cover (EGC)

All units fell in the moderate erosion class (<35% gradient) and effective ground cover of >60% is required in the first year after treatment and >70% is required after the second year. Prior to ground-disturbing AFR Project activities EGC was quite high (Table 2). Post-implementation monitoring in Unit 282 found EGC standards and guidelines were met, and are well within the requirements for both the AFR ROD and the Rogue River-Siskiyou National Forest LRMP (as amended by the NWFP).

Table 2: 2012 effective ground cover (EGC) before treatment for four subunits, and after for subunit 282.

Unit (acres)	Pre-Implementation mean EGC	Post-Implementation mean EGC
281 (73 ac.)	98%	To Be Determined
282 (16 ac.)	99%	97%
283 (5 ac.)	99%	To Be Determined
67G (20 ac.)	99%	To Be Determined

Soil Disturbance

All units have legacy soil disturbance from historic activities (Table 3) but conform to the Rogue River-Siskiyou National Forest LRMP (as amended by the NWFP) standards and guides for soil disturbance cumulative effects. It is important to note that unit 281 has residual ground disturbance impacts from past mining and historic homestead activities as well as vegetation management activities.

Table 3: 2012 pre-implementation soil disturbance by severity class.

AFR Units (acres)	Soil Disturbance Severity Classes				Estimated Detrimental
	0 (none)	1	2	3 (most)	
281 (73 ac.)	69%	13%	0%	19%	19%
282 (16 ac.)	80%	13%	7%	0%	7%
283 (5 ac.)	70%	13%	10%	7%	10%
67G (20 ac.)	63%	10%	17%	10%	10%

Based on these results, the project will conform to the ROD by not exceeding the existing detrimental condition plus 5 percent (not including the permanent transportation system) with the total detrimental effect following project implementation and restoration not to exceed 20 percent, including the permanent transportation system.

RECOMMENDATIONS

Complete post-implementation effective ground cover monitoring on AFR Units 281, 283, and 67G. Complete post-implementation soil disturbance monitoring on AFR Units 281, 282, 283, and 67G once all ground-disturbing activities are completed. Continue with monitoring of new units as implementation of the AFR Project progresses.

REFERENCES

- Page-Dumroese, D., A. Abbott, and T. Rice. 2009a. USDA Forest soil disturbance monitoring protocol, Volume I: Rapid assessment. USDA, Forest Service, Rocky Mountain Research Station GTR-WO-82a.
- Page-Dumroese, D., A. Abbott, and T. Rice. 2009b. USDA Forest soil disturbance monitoring protocol, Volume II: Supplementary Methods, Statistics, and Data Collection. USDA, Forest Service, Rocky Mountain Research Station GTR-WO-82b.
- Steinfeld, D. E., S. A. Riley, K. M. Wilkinson, T. D. Landis, and L. E. Riley. 2007. Roadside revegetation: an integrated approach to establishing native plants. Technology Deployment Program, Western Federal Lands Highway Division, Federal Highway Administration, Vancouver, WA.