

U.S. FOREST SERVICE TRAINING ANNOUNCEMENT
**Soil Bioengineering and Native Plant
Revegetation**

May 25-27, 2010

Location: Billings, MT



Land disturbance is prevalent on public lands by both natural and human-caused forces. You are invited to attend a training course covering disturbed land restoration including transportation corridors, burned areas, abandoned mines, and riparian zones. Detailed steps for planning, design, implementation, and monitoring will be presented. Case histories will be included and supplemented by discussion about on-going restoration projects. The three day training will include two days of classroom presentations and an all-day field trip to a local mine site emphasizing a diversity of soil and native plant revegetation examples.

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**Collaborators: U.S. Forest Service, Reclamation Research Group, LLC, and Herrera
Environmental Consultants**



Training Highlights

Day One - Bioengineering, restoration theory, and ecological factors

Morning module: Day one will open with an introduction to ecological restoration and soil bioengineering. Discussions on restoration theory will be enhanced with case studies in reclamation, rehabilitation, and revegetation. Ecological considerations such as climate, geology, hydrology, vegetation, and soil will be examined within the context of conditions typically found within the Northern Great Plains and Rocky Mountain foothills. Defining restoration objectives, applying site evaluation techniques, and designing a successful reclamation plan will be introduced. Emphasis will be placed on the arid grassland conditions encountered in eastern Montana and the western Dakotas.

Discussion topics will include bioengineering systems and techniques including the interplay between physical treatments and biological responses. Examples will include streambank restoration using pre-vegetated coir, engineered log jams incorporating vegetation, and creation of deformable vegetated banks to serve an engineering function of stabilization. Project examples will highlight the importance of rainfall and snowmelt infiltration (physical processes) and the role played by native plants (biological processes) in controlling erosion and providing both site stability and habitat.

Soils, soil amendments, and erosion control applications

Afternoon module: Soil physical and chemical properties will be discussed with emphasis on field evaluation and laboratory testing methods. A soil biology discussion will address mycorrhizae and their importance in nutrient uptake for soil and plant health. The concept of 'suitable' borrow soil will be introduced in the context of growth media quality. Other discussion topics will include initial site assessment, design, and implementation of a revegetation plan, site preparation, restoration equipment, soil amendments, road decommissioning techniques, mine soils, erosion control methods, and integration of geomorphology in creating stable landforms.

Day Two - Field trip to the Westmorland Resources, Inc. Absaloka Coal Mine

Coal mining in eastern Montana requires a great deal of planning for post-mining land use and reclamation. A 2-hour drive from Billings, the Absaloka Mine affords many on-going and previously completed examples of soil bioengineering and native plant restoration within the permitted mine boundary. Examples include establishment of warm season grasses, alternative soil laydown practices employing the use of salvaged soil and subsoil to enhance plant diversity, woody plant establishment, performance of trees and shrubs grown from locally collected seed, bioengineered sediment control ponds, grass establishment from Fall 2009 dormant seeded areas and revegetation equipment and techniques.

Day Three - Revegetation with native plants and natural regeneration

Morning module: Native plants of the Northern Rocky Mountains and Great Plains will be introduced including data sources, management of invasive species, developing revegetation plans, design of seed mixes, and species selection, acquisition, collection, handling, and storage. Although topics will focus on native plant seeding, a strong emphasis will also include techniques and strategies for encouraging natural regeneration within disturbed sites. Island theory, seed rain, use of live propagules, and cover crops will be discussed by expert restoration practitioners while they share their experiences from numerous restoration projects. First year establishment considerations, site maintenance, monitoring, and validation of success will also be presented as well as Forest Service policy for native plant materials including federal plant material policy and certification requirements.

Afternoon module: This session will focus on project assessment, planning, design, and implementation. Attendees will be able to synthesize the information they have learned in the previous sessions to develop their own project plans. Examples from case studies will be used to help attendees understand the logistics of project development including budgeting, acquiring data, applying specifications, scheduling, implementation, and monitoring. Case studies will emphasize common difficulties encountered at disturbed sites such as invasive species, steep slopes, nutrient-poor soils, mine waste, stormwater runoff, creek sedimentation, remote access, phytotoxic soils, and wildlife damage to vegetation. Training will emphasize central tasks common to all restoration and reclamation projects.

Part 1--Site investigation, work plan development, planning, and budgeting;

Part 2- Implementation, construction specifications, bidding, site control, safety, scheduling, contractor oversight, as-builts, completion punch list, follow-up monitoring, and maintenance.

