

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

LAND RECONSTRUCTION, ABANDONED MINED LAND

(Acre)

CODE 543



Photo by Michael McLoone (www.sun-herald.com)

DEFINITION

Reclamation of land and water areas adversely affected by past mining practices.

PURPOSE

- Stabilize abandoned mined areas to decrease erosion and sedimentation, support desirable vegetation, and improve offsite water quality and/or quantity.
- Maintain or improve the visual and functional quality of the landscape.
- Protect public health, safety, and general welfare.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to abandoned mined land that degrades the quality of the environment and prevents or interferes with the beneficial use of soil, water, air, plant or animal resources, or endangers human health and safety.

CRITERIA

General Criteria Applicable to All Purposes

Develop a reclamation plan that is consistent with the site capability, the planned land use and the landowner's conservation objectives. Include practices necessary to reclaim and stabilize the mined areas to prevent further degradation of soil, water, air, plant and animal resources.

Reconstruction plans must comply with all Federal, State, and local laws and regulations relating to mining and reclamation. Current Florida Dep. Environmental Protection rules concerning mineland reclamation can be found at: <http://www.dep.state.fl.us/water/mines/>.

Land reconstruction on abandoned mined lands need to include all the components necessary to reclaim and stabilize the area and to prevent further degradation of air, water, soil, and plant or animal resources. The system will usually consist of one or more components such as Florida NRCS Conservation Practice Standard Clearing and Snagging, Code 326; Critical Area Treatment, Code 342; Grade Stabilization Structures, Code 410; Land Clearing, Code 460; Land Smoothing, Code 466; Spoil Spreading, Code 572; Streambank & Shoreline Protection, Code 580; or Terraces, Code 600.

Impact to cultural resources, wetlands, and Federal and State protected species needs to be avoided or minimized to the extent practical during planning, design, and implementation of this conservation practice in accordance with established National and Florida NRCS policy, General Manual (GM) Title 420-Part 401, Title 450-Part 401, and Title 190-Parts 410.22 and 410.26; National Planning Procedures

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service [State Office](#) or visit the [electronic Field Office Technical Guide](#).

Handbook (NPPH) FL Supplements to Parts 600.1 and 600.6; National Cultural Resources Procedures Handbook (NCRPH); and The National Environmental Compliance Handbook (NECH).

Dust Control. Control the generation of particulate matter and fugitive dust during removal and replacement of soil and other materials. Detail the practices and activities necessary for dust control in the plans and specifications.

Site Preparation. Properly identify areas for preservation including those containing desirable trees, shrubs, grasses, stream corridors, natural springs, historic structures or other important features.

Remove trees, logs, brush, rubbish and other debris from construction areas that can interfere with reclamation operations. Dispose of these materials so they will not create a resource problem or interfere with reclamation activities and the planned land use.

Remove or bury soil materials that will adversely affect water quality or plant growth. Bury materials containing heavy metals below the root zone, or add suitable soil amendments to minimize the negative effect of this material.

Slope overhanging rocks walls to $\frac{1}{2}$ horizontal to one vertical slope or flatter before placing backfill against the wall. In the plans and specifications, identify the thickness and density of lifts for fill material to limit the deep infiltration of precipitation and to limit settlement of the completed fill to acceptable levels, based on the planned land use.

Removal and Placement of Material for Final Cover. Salvage, stockpile, and protect soil materials from the site that are suitable for use as final cover material. Control prohibited noxious and/or invasive plant species in the stockpile area. Use Florid NRCS Conservation Practice Standard Pest Management, Code 595, for guidance to control noxious and invasive plants.

Reconstructed soils must meet the requirements for the specified land use on at least 80 percent of the area. Soils in the remaining areas must be suitable for stabilization and revegetation.

Spread the final cover material over the graded areas to the depth specified in the reclamation plan. The final slope must permit application of needed conservation and management practices to keep soil losses within planned levels. If settlement is likely to interfere with the planned land use, surface drainage or water disposal, must compensate for expected settlement during final grading.

Erosion and Sediment Control during Construction. Plan and implement conservation practices that will decrease erosion and trap sediment onsite during construction to limit offsite damages from sedimentation to acceptable levels.

Runoff Control. Plan and implement runoff control practices to control erosion for final stabilization of the site. The practices selected must be compatible with the final planned land use of the site.

Establishment of Vegetation. Do site preparation, planting, and seeding at a time and in a manner to ensure survival and growth of the selected species. In the plans and specifications, identify the criteria for successful establishment of vegetation such as minimum percent ground/canopy cover, percent survival or stand density.

Apply soil amendments and plant nutrients as appropriate, according to soil test requirements. See Florida Conservation Practice Standard for Nutrient Management, Code 590, for further guidance. If the recommended rate exceeds the criteria in Florida Conservation Practice Standard for Nutrient Management, Code 590, use appropriate mitigating practices to reduce the risk of nutrient losses from the site.

Select plant materials suitable for the specified end land use according to local climate potential, site conditions, and FL NRCS criteria. Identify in the plans and specifications the species, rates of seeding or planting, minimum quality of planting stock (e.g., pure live seed or stem caliper), and method of establishment. Use only viable, high quality seed or planting stock.

For information regarding site preparation, species selection, seeding rates, and post planting management see:

- Florida NRCS Conservation Practice Standards Critical Area Planting, Code 342; Forest Site Preparation, Code 490; Filter Strip, Code 393; Field Border, Code 386; Pasture and Hay Planting, Code 512; Range Seeding, Code 550; Tree/Shrub Establishment, Code 612;
- their accompanying guidance information; and
- Florida NRCS Plant List for Conservation Alternatives, Florida NRCS Field Office Technical Guide Section II (G) (1).

Restoration of Borrow Area. If cover or fill material is taken from areas outside the reclamation site, grade and shape the borrow area for proper drainage and revegetation to control erosion.

If the cover material is taken from adjacent land, the topsoil from the borrow area must be stockpiled separately and replaced after the borrow area is restored for its intended purpose.

If the borrow area is prime farmland, remove and stockpile the A and B soil horizons separately by horizon (or the B and C soil horizons if applicable). Replace the soil horizons on the borrow area in the natural sequence to a thickness that will restore the original soil productivity. Treat the borrow area to meet the requirements of the Florida NRCS Conservation Practice Standard Land Reconstruction, Currently Mined Land, Code 544.

Additional Criteria to Maintain or Improve Landscape Visual and Functional Quality

Reclaim the site to maintain or improve visual quality based on the scenic quality of the reclaimed site as well as the function of the site for the end land use. Plan the reclamation to be compatible with the topography and land cover of the adjacent landscape. Focus on areas of high public visibility and those offering direct or indirect human and wildlife benefits.

Grade and shape spoil piles and borrow areas to blend with the adjacent landscape topography to the extent practicable.

Develop a planting plan that mimics the species, arrangement, spacing and density of plants growing on adjacent landscapes. Choose native species of erosion control vegetation and other plant materials where practical. Arrange plantings to screen views, delineate open space, act as windbreaks, serve as parkland, provide wildlife habitat, or protect stream corridors.

Additional Criteria to Protect Public Health, Safety and General Welfare

Reclamation plans must eliminate the safety hazards to the public from erosion and water pollution, high walls, pools of water with steep side slopes that are difficult to escape from, land slide potential, and underground mine openings.

CONSIDERATIONS

The reclamation of abandoned mine lands provides an opportunity to increase carbon sequestration. Choose species such as deep-rooted perennial grasses and trees to increase the carbon sequestration potential of the reclaimed site.

The key to a successful restoration is often dependent upon the proper placement of soils that will best support vegetation. One means to do this is to develop a detailed soil survey for the project and proposed borrow areas. Use the soil survey to identify the types and extent of soil materials and those that will best support vegetation.

Soil permeability is often a problem on reclaimed soils. Improve soil permeability after placing backfill material by using tillage or deep ripping to decrease compaction and promote infiltration and root development. Do not plan practices that promote infiltration if seepage through cover materials has the potential to increase acid mine drainage.

Maintenance activities will need to be done on a regular basis after the initial reclamation to ensure success. The construction of stabilized access roads will allow access to the site for maintenance without causing erosion problems.

Reclaimed mine areas can provide important wildlife habitat. Improve the potential for wildlife habitat by establishing diverse vegetation types, including water in the reclaimed landscape, increasing edge effect and diverse landforms. Avoid monocultures of vegetation if possible.

Reclaimed soils are often low in organic matter. The use of organic soil amendments such as manure, compost, mulch or sewage sludge can contribute to the success of vegetative establishment by increasing soil organic matter.

Every effort should be made to utilize native, non-invasive vegetative species. Consideration should be given to washing all equipment utilized in the project activities before leaving the site.

PLANS AND SPECIFICATIONS

Plans and specifications for reconstructing abandoned mined land need to be in keeping with this standard and need to describe the requirements for applying the practice.

Plans need to include provisions for the disposal of toxic materials that may be uncovered as a result of the earth moving and reclamation activities.

A reclamation plan must be developed for each site. The plan needs to specify the required procedures for conducting reclamation and reconstruction activities.

Specifications need to minimally include:

- Map showing location of reclamation project.
- Type of site preparation including final grading; location of access roads; erosion and water control and disposal structures; removal, storage, and replacement of overburden or top soil; source and placement of additional fill material; and soil amendments.
- Type of vegetation with accompanying seeding/sprigging rates, site preparation, planting dates, care, and handling.

OPERATION AND MAINTENANCE

Prepare an Operation and Maintenance plan that provides specific details concerning conservation practices identified in the reclamation plan. As a minimum, include the following items in the operation and maintenance plan.

- Periodic checking of the site for areas where settlement may adversely affect drainage and land use.
- Periodic checking of the site for bare spots, eroded areas, areas of excessive settlement and other areas where initial attempts to establish vegetation were not successful.
- Periodic soil testing and checking of vegetation to determine if additional soil amendments are needed.
- Maintenance of access roads.
- Maintenance of drainage structures and channels.
- Periodic checking of the site for noxious weeds and invasive species.
- Control of vehicular traffic to minimize disturbance to reclaimed areas.

REFERENCES

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[Landscape Design in Mined Land](#)

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