CONSERVATION ENHANCEMENT ACTIVITY

E666G

CONSERVATION STEWARDSHIP PROGRAM

Reduce forest density and manage understory along roads to limit wildfire risk and improve habitat

Conservation Practice 666: Forest Stand Improvement

APPLICABLE LAND USE: Forest

RESOURCE CONCERN: Plant, Animal

ENHANCEMENT LIFE SPAN: 10 YEARS

Enhancement Description:

Opening the tree canopy along roads ("daylighting") and providing space between ground vegetation and tree crowns minimizes the spread of wildfires that often start along roads and improves wildlife habitat and food sources for many species. Some trees near a forest road are removed through harvesting, cutting, mulching, or another option available at the site, with the objective of creating a partially open forest canopy bordering the road. A semi-open canopy allows more sunlight to reach the forest floor to promote herbaceous understory plants and reduces maintenance needs by allowing moisture to evaporate from roads. The reduced canopy and herbaceous understory limit woodland fuel buildup and reduce fire intensity.

Criteria:

States will apply general criteria from the NRCS National Conservation Practice Standard (CPS) Forest Stand Improvement (Code 666) as listed below, and additional criteria as required by the NRCS State Office.

- Apply the enhancement to sites where vegetation on roadsides presents a fire risk, is inadequate for wildlife habitat, or is detrimental to road maintenance. Treat a strip of forest on both sides of the road, as needed and if feasible. Implement the enhancement for a distance of at least 35 feet into the forest stand from the edge of the road, and extend the distance as needed up to 100 feet based on slope, aspect, soils, fuel type, etc. Use criteria in NRCS CPS Fuel Break (Code 383).

- Implement forest stand improvement activities in ways that avoid or minimize soil erosion,

compaction, rutting, and damage to remaining vegetation, and that maintain hydrologic conditions. Protect site resources by selecting the method, felling direction and timing of tree felling and heavy equipment operation. For temporary access use NRCS Conservation Practice Standard Forest Trails and Landings (Code 655), to protect soil and site resources from vehicle impacts.

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- The enhancement will comply with all applicable federal, state, and local laws and regulations, and with States' Forestry Best Management Practices for Water Quality.
- Wetland compliance and highly erodible land regulations must be followed.
- Trees removed as part of the treatment process that have marketable quality may be sold. Retain desirable species with large healthy crowns, and trees and shrubs that provide a diversity of wildlife food sources. Remove trees that are:
    - At high risk of mortality or failure (unless retained as a wildlife tree at a safe distance from the road)
    - Of low crown vigor
    - Of poor stem form and quality
    - Less-desirable species.
- Trees that cannot be sold may be removed by cutting, mulching, firewood distribution, or other means to reduce the canopy and allow sunlight to reach the forest floor. Trees further away from the road may be killed and left standing as snags, if they will not fall onto the road.
- Minimize damage to residual trees during the daylighting process.
- Refer to criteria in NRCS Conservation Practice Standard Integrated Pest Management (Code 595) Brush Management (Code 314), or Herbaceous Weed Control (Code 315) to assist with site-specific strategies for pest prevention, pest avoidance, pest monitoring, and pest suppression. Time tree felling to avoid buildup of insect or disease populations.
- Where slash and debris will be generated, use NRCS Conservation Practice Standard Woody Residue Treatment (Code 384), to appropriately treat slash and debris, as necessary, to assure that it will not present an unacceptable fire, safety, environmental, or pest hazard. Remaining woody material will be placed so that it does not interfere with the intended purpose or other management activities. Do not burn vegetative residues except where fire hazard or threats from diseases and insects are of concern or when other management objectives are best achieved through burning.

When slash and other debris will be burned onsite use NRCS Conservation Practice Standard Prescribed Burning (Code 338).

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- The understory vegetation can be maintained by prescribed burning where appropriate. Use NRCS CPS Prescribed Burning (Code 338). If prescribed burning is not an option, alternative methods may be used to manage the understory vegetation, such as mowing or fall disking.

- The daylighted area may be treated with herbicides to control noxious and invasive plants and undesirable woody vegetation to promote herbaceous plants. Vegetation may be treated by chemical methods such as spraying or single stem treatments, or mechanical methods like a heavy-duty brush cutter or similar equipment. Refer to criteria in NRCS Conservation Practice Standard Integrated Pest Management (Code 595), Brush Management (Code 314), or Herbaceous Weed Control (Code 315)

- No daylighting activities should take place during the nesting season for ground nesting birds.

Documentation and Implementation Requirements:

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Participant will:

- ☐ Prior to implementation, review NRCS Conservation Practice Standard Forest Stand Improvement (Code 666) which contains information needed to meet criteria for this enhancement.
- ☐ Prior to implementation, develop an understanding of management practices that reduce tree density, and the types of understory vegetation that will be encouraged by these practices. (Request NRCS technical assistance, as needed.)
- ☐ Prior to implementation, recognize that other NRCS Conservation Practice Standards may be needed to apply this enhancement. These may include:
  - o Brush Management (Code 314)
  - o Herbaceous Weed Control (Code 315)
  - o Integrated Pest Management (Code 595)
  - o Woody Residue Treatment (Code 384)
  - o Prescribed Burning (Code 338)
- ☐ Prior to implementation, acquire all necessary approvals and permits (i.e. local, state, or federal, as applicable).
- ☐ Prior to implementation, work with a professional forester who will mark trees and groups of trees to remove and will develop a strategy for controlling undesirable understory vegetation.
- ☐ Prior to implementation, if prescribed burning will be used, work with NRCS and a professional forester or biologist to obtain a prescribed burn plan. If chemical methods will be used, obtain recommendations from an approved source.
- ☐ Prior to implementation, take pre-treatment photos of the site to show representative conditions.
- ☐ During implementation, follow criteria in NRCS Conservation Practice Standard Forest Stand Improvement (Code 666) and specifications provided by NRCS, to ensure that:
  - o Overstory trees are removed or retained to achieve all planned purposes and landowner objectives.
  - o The desired spacing, density, size-class distribution, number of trees, and amount of understory is achieved.
  - o The operation avoids or minimizes damage to desirable vegetation.

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- ☐ During implementation, follow state-approved Forestry Best Management Practices (BMPs) to protect streams, water quality, and minimize soil loss.
- ☐ During implementation, remove approximately 50 percent of the trees along both sides of interior roads extending perpendicular at least 35 feet out to 100 feet from the road. If the road is along a boundary, only treat one side along the road.
- ☐ During implementation, focus on retaining healthy trees and when available retain trees that provide wildlife benefits such as oaks, hickories, etc.
- ☐ During implementation, remove trees that are at risk of mortality, trees with low crown vigor, trees with poor form and quality, and less-desirable species.
- ☐ During implementation, control undesirable competing vegetation using appropriate methods for the tree species and site conditions.
- ☐ During implementation, limit the size of debris piles to minimize wildfire hazards.
- ☐ During implementation, as needed, evaluate and review with NRCS any planned changes to verify they meet the enhancement criteria.
- ☐ After implementation, take digital photos showing representative post-treatment conditions.
- ☐ After implementation, notify NRCS that the work has been completed and make treatment documentation available for NRCS review and certification.

NRCS will:

- ☐ Prior to implementation, provide and explain the following NRCS Conservation Practice Standards as they relate to implementing this enhancement.
  - o Fuel Break (Code 383)
  - o Brush Management (Code 314)
  - o Herbaceous Weed Control (Code 315)
  - o Forest Stand Improvement (Code 666)
  - o Woody Residue Treatment (Code 384)
  - o Forest Trails and Landings (Code 655)
  - o Integrated Pest Management (Code 595)
  - o Prescribed Burning (Code 338)
- ☐ As needed, prior to implementation, NRCS will provide technical assistance in:

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- Interpreting enhancement criteria relative to tree species to retain and remove or kill, and strategy for controlling undesirable understory vegetation.
- Preparing specifications for applying this enhancement for each site using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation.

☐ Prior to implementation, ensure that the participant has an appropriate prescribed burn plan, herbicide recommendations from an approved source and an understanding of how these practices will be applied on the property.

☐ Prior to implementation, provide and explain the state's Forestry BMP guidelines.

☐ During implementation, evaluate any planned changes to verify they meet the enhancement criteria.

☐ During implementation, provide technical assistance if requested by the participant.

☐ After implementation, review documentation and photographs to verify the enhancement was completed according to specifications in this enhancement and NRCS Conservation Practice Standard Forest Stand Improvement (Code 666).

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

_____ _____

NRCS Technical Adequacy Signature Date

USDA NRCS
Natural Resources Conservation Service
MISSISSIPPI

Forest Stand Improvement To Reduce Wildfire Hazard

MS-ECS-666-01
(JS/SS) March 2011

Purpose:

The purpose of these forest practices is improving the overall health of the forest and reducing the wildfire hazard. Forest become high risk to wildfire damage due to numerous reasons such as over stocking, storm damage, heavy fuel buildup from lack of prescribed fire, insect and disease epidemics, and close proximity to high risk areas like railroad tracks.

The purpose of this job sheet is to assist with the implementation of management practices that will reduce hazardous fuel buildup and lower the risk of wildfires.

The wildfire risk is reduced when:

1. The amount of fuel is lowered using a prescribed burn.
2. Heavy buildups of woody debris is removed or treated (treatments include chipping, mulching, disking, burning, chopping, crushing, or hauling off).
3. Fuel is removed in a strip using a pushed or disked firebreak.
4. Fuel is reduced in a strip using a mechanical mulcher or other type of machine.
5. Fuel load is reduced by clearing & constructing a 30 foot vegetated firebreak (50 foot minimum in Pearl River, Stone, George, Hancock, Harrison and Jackson counties.)

Eligible Cost Share Practices

The following practices will be cost shared under forest stand improvement and must comply with existing conservation practice standards:

Firebreaks (394)

A firebreak is a strip of bare land or vegetation that slows down or stops a wildfire. The purpose is to protect soil, water, and plant resources by reducing or preventing damage from wildfires. The practice applies on areas where damaging wildfires are likely or where fire may be prescribed as a cultural or protective measure. The NRCS Field Office Technical Guide (FOTG) standard and specifications and planning considerations for Firebreaks (394) will be used. Components eligible for cost-share:

1. Disking
2. Pushing with Dozer Blade
3. Bush Hogging
4. Water Bars
5. Planting Vegetation

Prescribed Burning (338)

Prescribed burning is the deliberate use of fire in a predetermined area under conditions that the intensity and spread of the fire are controlled to help manage a forest. The purpose is to control undesirable vegetation, prepare sites for planting or seeding, reduce fire hazard, improve wildlife habitat, and improve forage production and quality. It is a complex tool and should be used by only those who are trained and experienced in its use. Mississippi policies and guidelines:

1. Prescribed Burning must be done in compliance with the Mississippi Prescribed Burning Act.
2. A Mississippi Certified Prescribed Burner is the only person authorized to burn under this program.
3. A prescribed burning plan must be completed by a certified burner prior to the burn.

4. A burning permit issued by the Mississippi Forestry Commission must be obtained prior to the burn.
5. The NRCS Field Office Technical Guide (FOTG) standard and specifications and planning considerations for Prescribed Burning (338) will be used.

Forest Stand Improvement (666)

Forest Stand Improvement is utilized to improve forest stand health, improve or sustain timber production, and improve wildlife habitat, recreation, aesthetics, and hydrologic conditions. This practice is used on forest land where stand manipulation is required to bring the stand back into production. The NRCS Field Office Technical Guide (FOTG) standard and specifications and planning considerations for Forest Stand Improvement (666) will be used. Components eligible for cost-share:

1. Chipping
2. Cutting
3. Thinning
4. Stream Crossing
5. Chopping
6. Crushing
7. Mulching
8. Shearing
9. Piling
10. Root Raking
11. Skidding

Methods for Treating Heavy Fuel Loads

When large amounts of leaning or downed timber are present, prescribed burning may be too hazardous to the residual trees. The best alternative is to have the timber salvaged if possible. In the event the timber/material is not salvageable, the following treatment methods are recommended. Remember, the idea is to lower the fuel load and, thus, lower the wildfire risk, not to create a park-like setting.

Mulching

Wildfires in the western United States and Florida over the last several years have highlighted the vulnerability of dense overstocked stands to fire. Mechanical reduction of understory and midstory fuels by mulching or chipping is an option for reducing stand density to allow the reintroduction of prescribed fire into forest stands. Mulching can be used to reduce fuel loading on areas that can not be prescribed burned.

Shearing and Piling

Shearing is used to fell vegetation where the vegetation is generally large (6 inches or more dbh). Shearing is done with shearing blades that are either angled or V-shaped. Blades with serrated edges have the best cutting action. The blade should be kept out of the soil to minimize soil disturbance.

Root Raking

Root raking usually follows shearing and is used to push the felled vegetation and other debris into windrows. Windrows should be placed on the contour at intervals of 100 to 300 feet depending on the slope and erodibility of the soil.

Skidding

A rubber-tired skidder can effectively drag woody debris to a central location for burning. In order to grind smaller tops and debris into the top soil, the skidder operator should use multiple haul routes to increase the amount of tops and debris crushed by the skidder. In the southern pine region of the United States, activity by insects and fungi is at a high level because of higher humidity and temperatures. Consequently, logging slash crushed by the skidder decays rapidly and ceases to be a wildfire hazard.

Chainsaw Felling

On a small scale, a landowner may choose to fell leaning trees and tops to bring them in contact with the ground. This will increase the rate of decay and the amount of material consumed in a prescribed burn.

Drum Chopping

Chopping is accomplished by the use of a heavy track vehicle pulling one or two large metal cylinders (drums) with longitudinal cutting blades. One or two drums can be pulled behind a dozer to knock down, run over, & break down trees and other vegetation. Most material is concentrated near the soil surface, facilitating burning and decomposition of organic matter. Chopping is a cheaper alternative to heavier mechanical operations such as shearing and raking. A prescribed burn at least 60 days following this operation is typically conducted.

Benefits

Hazard Reduction

Prescribed burning helps to eliminate fuels such as pine needles, hardwood leaves, fallen branches, and herbaceous vegetation that accumulate on the forest floor. These fuels increase the chance of destruction of young stands if a wildfire erupts.

Control of Understory Vegetation

Prescribed burning helps control low-quality hardwoods and shrubs. Understory vegetation competes with pines for moisture and nutrients, and may interfere with regeneration.

Site Preparation

Pines require a clean and open seedbed to regenerate. Prescribed fire helps prepare sites by exposing the mineral soil and controlling undesirable vegetation for natural regeneration and direct seeding.

Wildlife Habitat

Burning helps increase the yield of herbs, legumes, and hardwood sprouts beneficial to wildlife. Wildlife areas are also opened up, encouraging feeding, travel, and dusting. This increases the “edge” effect that wildlife like. Quail, turkey, deer, and dove benefit the most from prescribed burning.

Disease Control

Longleaf seedlings are severely weakened and sometimes killed by brown spot disease. This is a disease that prolongs the grass stage, reducing height growth. Prescribed burning scorches the needles and kills the fungus without killing the seedlings. Annosus root rot infestations are also reduced by prescribed burning.

Improved Access and Aesthetics

Reducing the amount of understory prior to harvest improves visibility and makes timber marking and cutting easier. Prescribed burning helps control the understory, improving accessibility for hunters or other recreational purposes. A wide variety of plants, including many flowering annuals, will increase in number.

Fire-dependent Species

Some species of animals and plants are dependent on fires. These species include the gopher tortoise, indigo snake, red-cocked woodpecker, wire grass, and pitcher plants. When an area is burned regularly, these species may increase in numbers.

Preparation for Burns

1. Prescribed Burning must be done in compliance with the Mississippi Prescribed Burning Act.
2. Prescribed Burning must comply with practice standard Prescribed Burning (338).
3. A Mississippi Certified Prescribed Burner is the only person qualified to burn in Mississippi.
4. Obtain a permit to burn from the Mississippi Forestry Commission.
5. Get a two-day weather forecast from the U.S. Weather Service.
6. Prepare necessary firebreaks in accordance with practice standard Firebreaks (394).
7. Have on hand the help, tools, and equipment needed to keep fires under control.
8. Thoroughly inspect fuel (burnable vegetation) conditions.
9. Prior to burning, notify adjacent landowner(s) of your intent to burn.

Optimal Weather Conditions

In most cases, the surface fuels should be dry and the soil should be moist to help protect roots. Therefore, it is a good idea to burn one to three days after a good rainfall (1/2 to 1 inch). Damage is caused to trees when the fuel is too dry. The humidity level should be between 30 and 55 percent. When the humidity is above 60 percent, the fire may not get hot enough or may not burn the area completely.

The air temperature should range from 20 to 50 degrees F in the winter and 80 to 95 degrees F in the summer. A moderate, steady wind from the north or northwest is best. This usually happens after a cold front has passed through.

Easterly winds are not recommended because they are often erratic. The preferred wind speed is 1 to 3 miles per hour (within the stand) and 6 to 15 miles per hour in the open.

Safety

Safety precautions must always be used when performing a prescribed burn. You must also have an experienced crew leader, an adequate number of people to conduct the burn, and the correct tools and equipment. There is potential liability and the loss of human life and property if burning is not conducted properly. You must follow all applicable laws.