United States Department of Agriculture

Conservation Practice Overview

October 2018

CPS Woody Residue Treatment (Code 384)

Woody residue treatment reduces or otherwise addresses the management of woody plant residues created during forestry, agroforestry or horticultural activities, or resulting from natural disasters.

Practice Information

This practice applies on areas with quantities of woody slash and debris requiring treatment.

Conservation benefits include but are not limited to—

- Reduced wildfire hazard.
- Reduced risk of smoke.
- Reduced risk of harmful insects and disease.
- Improved access to forage for grazing and browsing animals.
- Improved soil organic matter retention.
- Improved site conditions for natural or artificial regeneration.

Treatment options include burning, chipping, shredding, and offsite disposal. When determining the method and timing of woody material treatment, considerations will include air quality regulations, burning regulations, available resources, ability to use woody biomass as biofuel, and future regeneration objectives. Long-term negative impacts to soil quality may occur with offsite removal of woody material.

Common Associated Practices

Conservation Practice Standard (CPS) Woody Residue Treatment (Code 384) is commonly applied with CPSs such as Access Control (Code 472), Critical Area Planting (Code 342), Firebreak (Code 394), Forest Stand Improvement (Code 666), Integrated Pest Management (Code 595), Prescribed Burning (Code 338), Prescribed Grazing (Code 528), Sediment Basin (Code 350), and Structure for Water Control (Code 587).

For further information, contact your local NRCS field office.

Headers

Document landowner or operator with control of land, the contract number, contract Item number for this practice, farm and tract number for the land on which this practice is applied and the field (forest stand, forest management unit and …) identifier or other location information documenting where this practice is being applied.

Practice Location Map

Either insert or attach a map of the treatment unit to the IR. If it is an insert within the IR under the Practice Location Map section header then just a north arrow, scale and legend is needed. If you are attaching a map, then a title and header information is also needed.

Participant Responsibility

The participant is responsible for complying with all State, Tribal and local forestry laws, ordinances and regulations. The Participant is responsible to obtain all necessary permits (federal, state, tribal, local, etc.) prior to commencing this practice and will provide them to NRCS upon request.

Safety

The Safety box has general safety information and references. If site specific safety Information is needed, then you may add it to this box or reference which section the information is located. Safety information can be added to any section and is most common within the Considerations and Mitigation or the Operation and Maintenance sections.

Benchmark Conditions

Document the land use being treated- Forest, Grazed Forest, Agroforestry (silvopasture, forest farming/multi-storied farming, renovation of windbreak and riparian buffers), range, and “other” would be a land use covered by the variance-(Orchards, Vineyards, Christmas trees that currently burn woody residue).

For Agroforestry sites to be treated by 384, they would need to meet the definition of a forest land use - of one acre in size, 100’ wide or greater and at least 10% stocked. Otherwise Agroforestry sites would be considered active cropland and could only be treated if they fit within the variance. For 384 to be used with 311 Alley cropping, it must fit within the variance.

Document the following information:

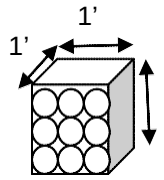
- Soils and soils interpretations-that could affect equipment used, tools, methods or timing of treatment such as, erosion hazards, suitability for mechanical site prep, soil compaction resistance, soil rutting hazard and potential damage by fire.

- Estimate amount of woody residue to be treated. A variety of methods and combination of methods are acceptable for estimation of residue quantity. USFS photo series (Examples are PNW-GTR-51, 52, 95, 105, 231, 258), fuel hazard estimator for post-PCT (PNW-57, 1968, Fahnestock), WA DNR fuel estimators (Piled Fuels Biomass and Emissions Calculator), down wood transects (GTR-INT- 16, 1974, Brown), Handbook for Predicting Slash Weight (GTR INT-37 Brown, Snell and Bunnell) or for quick field estimations use Forestry Clipboard tables.

When using the Forestry Clipboard tables for quick field estimate you need the following information: from your forest inventory plots, determine how many cut trees; determine average DBH and height of the proposed cut trees.

Assume the tree is that diameter for the entire height of the tree. This will account for branches and foliage. Determine how many cut trees per cubic foot or how many cubic feet per cut tree.

Example:
You have 400 cut Douglas fir per acre that are 4" average DBH and average 18' in height.



Visualize, 9- (4"), 1 foot sections in a cubic foot space as indicated in diagram.

Example is 18' length /9 = 2 ft^3 per cut tree 400 cut trees X 2 ft^3 per cut tree = 8**00 ft^3**

Next, refer to Table 8 of the Forestry Clipboard to determine fresh cut (green) Douglas-fir **trees** are **42 lbs** per ft^3.

800 ft^3 X 42 lbs per ft^3 = 33,600 lbs or 16.8 tons.

Correct results by 15% to 33% due to freshness, form and allowing for open spaces. Our above calculations treat it as solid wood vs cord wood. For average DBH that fit evenly within the 1' box such as of 1", 2", 3", 4", and 6" the correction for spaces between logs (wood) is .79 (21%) assuming average moisture content. If the foliage or wood is wetter than average, then correct less (15%-21%) and if it is drier then correct more (21%-33%).

16.8 tons X .79 = 13.3 tons/acre

If the slash has been on the ground for over a year, then use the air dry lbs/cord column of Table 8 instead of the green lbs per ft^3. Additional correction is usually not needed. If the planner determines that correction is needed, then use the above guidance.

800 ft^3 / 128 ft^3 per cord = 6.25 cords

From Table 8, the average weight of an air-dry cord of Douglas fir is 2983 lbs /cord.

2983 lbs/cord X 6.25 cords = 18643 lbs or 9.3 tons

Slash will range from 9.3 (air-dry) -13.3 (green) tons depending on the residue's condition.

In addition, discuss site factors that may affect equipment, treatment method choice and/or timing of treatment. Examples of site factors are steep slopes, average annual precipitation, soil suitability, limitations and risk factors, rock outcrops, sensitive areas, broken terrain, condition and quantity of fuel on adjacent stands and state or local regulation and required permits.

When fuels reduction/wildfire risk reduction is the purpose, this practice is recommended to be applied under following type of sites:

1) across the entire unit when in precipitation zones of less than 36" or if more than 36", the precipitation is delivered mostly as snow in the winter months;

2) across the entire unit when within the high to extreme risk areas identified by WA DNR Wildland Urban Interface Communities; or

3) whenever the unit or parts of units are considered to have "Extreme Fire Hazard" conditions (Refer to WAC 332-24-650 and 652). Extreme Fire Hazard conditions include:

i) areas within 100' of a publicly used road;
ii) areas within 500' of buildings belonging to neighbors;
iii) or within 500' of public use areas.

Additional Specifications by Practice Purpose

Check all purposes that meet or are consistent with the client's objectives. Many purposes have unique criteria. Within the **Additional Criteria Based on Purpose** section, provide information on additional requirements for those purposes that meet client objectives.

Slash Treatment Methods and Requirements

The equipment and tools used in the woody residue treatment and the timing of application must be consistent with soil and site factors, for avoiding excessive compaction, rutting, or damage to the soil surface layer. For safety purposes and to protect site resources including residual trees, treatment methods involving ground-based heavy equipment are generally not applied on slopes exceeding 35 percent.

For areas with residual trees, the woody residue treatment method may consist of lopping and scattering, piling, piling and burning (provided mitigation is applied to minimize heat-damage to residual trees and underlying soil), crushing, chipping, and/or removal. For areas with few or no residual trees (e.g., brush management on range or post clear cut harvest), the woody residue treatment method may consist of lopping and scattering, piling, piling and burning, crushing, chipping, broadcast burning and/or other removal.

Choose the slash treatment method that is appropriate for the purpose, soil, amount of material, condition of the material and site factors. 338-Prescribed Burning is not an offered practice in Washington State. If the participant wishes to include burning (piled and/or broadcast) within the treatment options, then direct them to the WA DNR for the burn plan and permits. NRCS does not provide technical of financial assistance for burning. Our practice is completed at lop and scatter, piling, crushing, chipping and/or removal.

For example:
Some soils have low suitability for equipment use or high soil compaction risk. For soils like these, the planner's specifications will focus on hand treatments or mitigate for the use of equipment.

In drier climates, to achieve the purpose of fuels reduction for reduced wildfire risk and improved air quality. When there is a large amount of woody residue, piling, chipping or removal may be required. The planner will choose the method or methods that best meets the participant's objectives, labor, equipment and managerial skills.

When the woody debris is 8-10 ton/acre and it is unevenly distributed and non-continuous. Lop and Scatter may be the most appropriate method of treating this slash.

Use the space provided to describe the site-specific parameters for the chosen method. For example: for lop and scatter, slash will not be continuous, less than 24" from the ground and less than 9 tons per acre; pile structure parameters and location; for crushing, slash will be broken up with all chunks less than 6' in length and within 24" of the ground; slash will be chipped and spread across the forest floor at a depth of less than 3" or will it be hauled away.

Additional Criteria Based on Purpose

Document any needed additional information, discussion or explanation of criteria for reducing hazardous fuels; reducing harmful insects and diseases; protecting air quality; improving forage; developing renewable energy systems; improve safety for livestock or humans; improve soil organic matter; increase planting spots or improve natural regeneration.

Considerations and Mitigations

Describe and document any considerations that affects the timing, location, logistics, method, tools and equipment of the treatment or any need for mitigation. Particularly considerations for wildlife habitat, forest health, carbon storage, slash treatment, aesthetics and recreation.

Finally, remind the participant of the safety considerations for the selected methods, either in this section or under Operation and Maintenance.

Associated Practices
Check all associated practices within the conservation system. Make sure 384 and associated practice specifications are consistent and complementary to each other in order to successfully address the resource concern.

Operation and Maintenance
Check all that apply and add any site-specific notes, explanations, or requirements in the space provided.

Client's Acknowledgement
Review with the client what their signature means when they sign this specification.

They understand the specifications.
They will install according to specifications. Any changes will be approved by NRCS.
They are responsible for permits and complying with laws, ordinances and regulations. Are responsible for safety operations and calling Utilities.

Practice Documentation Requirements
Above the signature line, include the Planner's Job Approval Authority (JAA) or TechReg Category Certification for the project area and the practice's limiting factor. The Planner (or TSP) will sign and date this section.

If the planner does not have adequate JAA to approve the specification, there is a Reviewer section that allows for someone who does have the appropriate JAA to document their JAA and to approve the design with their signature. Include the date.

This part of the IR is used for quality control of the planning process and practice design. It provides a list of documentation required in order document a resource concern, to show this practice will adequately treat the resource concern and information needed to design this practice.

The first set of documents are required for all plans and must be in the case file. Check the box signifying the item is in the case file. The second list of assessment tools and documents will document a resource concern and provide information for designing this practice to treat the resource concern. Check the box of all assessment tools used in documenting a resource concern and designing the practice. The checked box indicates the assessment tool or document is in the case file.

Practice Installation and Certification
This part of the IR is used for quality control of the practice installation to certify the practice. It provides a list of documentation and information needed to support practice certification. Check the box signifying the item is in the case file, documented on this IR or documented in assistance notes.

NRCS CONSERVATION PRACTICE EFFECTS - NETWORK DIAGRAM

October 2017