NATURAL RESOURCES CONSERVATION SERVICE

VIRGINIA CONSERVATION PRACTICE STANDARD

CLEARING AND SNAGGING

(Feet)

CODE 326

DEFINITION

Removing snags, drifts, or other obstructions from a channel or drainage way.

PURPOSE

Reducing significant human and/or natural environmental risks by improving physical characteristics of a channel to:

- Restore flow capacity;
- Prevent bank erosion by eddies;
- Reduce the formation of bars; and/or
- Minimize blockages by debris and ice.

CONDITIONS WHERE PRACTICE APPLIES

Any channel or urban floodway where the removal of trees, brush, and other obstructions is needed to accomplish one or more of the listed purposes. Clearing and snagging shall not be completed on any channel where significant channel erosion will occur, major impairment to the landscape resource quality is likely, or significant impairment to habitat for fish and wildlife will occur, unless needed restoration actions are included with the application of this practice.

CRITERIA

Clearing and snagging measures shall be planned, designed, and constructed to comply with all Federal, State, and local laws and regulations.

Threatened and endangered species and their habitat shall not be permanently impacted by the use of this practice.

The capacity of the channel, both before and after improvement, shall be determined using Manning's Formula with applicable values of the retardance factor "n" from Supplement B to the National Engineering Handbook (NEH), Part 634, (formerly Section 5) - Hydraulics, or similar source. The value of "n" used to determine channel capacity after improvement shall reflect the degree of natural changes and maintenance expected to occur in future years.

The area to be cleared and snagged shall include the perimeter of the channel, the flow area of the urban floodway, or both. Trees on the bank that are leaning over or other objects that may fall into the channel shall also be included. If root balls are still attached to the streambank, cut off the log 6 to 12 inches above the ground and leave the stump and root mass for bank stability. Clearing and snagging may be specified for other areas, including berms, for use as temporary disposal areas or travelways, or for planned conservation uses, only where needed to implement this practice.

Clearing and snagging shall not impair channel stability. The criteria for determining channel stability shall comply with the Virginia Conservation Practice Standard *Open Channel (Code 582)*. The effect on downstream reaches due to the removal of obstructions shall be analyzed using standard stream and channel geomorphologic procedures.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

If clearing and snagging will result in streambank erosion, Virginia Conservation Practice Standard *Streambank and Shoreline Protection (Code 580)* will be used in conjunction with this standard.

All areas denuded and disturbed during snag removal shall be restored by planting native vegetation where practical. Disturbance of wetland, riparian areas, and fish and wildlife habitat sites shall be minimized or avoided where possible. Cleared material shall be removed from the floodplain or deposited in approved areas that will not significantly affect the flow capacity of the stream.

CONSIDERATIONS

Ground-disturbing activities associated with this practice, including but not limited to areas of equipment/vehicle traffic in the channel and floodway and areas of vegetation removal, have the potential to adversely affect cultural resources.

Special attention should be given to restoring, maintaining, or improving landscape resources and habitat for fish and wildlife, where applicable.

Effects on water quantity and quality should be considered.

Removal of deadfalls, stumps, and trees from streambanks and channels will increase discharge, velocity, and channel capacity that may reduce flood damage from out of bank flow.

Improved flow conditions will lower hydraulic gradient and drain floodplains more quickly. Rapid drawdown may cause sloughing of saturated, unstable streambanks.

Decreased groundwater recharge in water losing streams will result from reduced residence time of water in the channel.

Temporary losses of aquatic or wetland habitat may occur with the removal of vegetation.

Channel instability could increase sediment yield from bank erosion until re-vegetated.

During implementation of the practice, there may be increased turbidity due to an increased sediment load. Water quality may be further degraded by chemical substances (i.e., nitrogen or phosphorus) attached to the sediment particles.

During construction, a heavy organic load may be produced resulting in a decreased availability of dissolved oxygen. Long term effects may cause a decrease in yields of sediment and sediment attached substances.

Increased surface water temperatures, at low flow, may occur from removal of shade producing canopy until re-growth occurs. Accelerated flows may reduce the period of time water is exposed for “sun warming”, thus reducing water temperature.

In streams carrying dissolved substances, a reduction in groundwater recharge may contribute to improved aquifer quality.

The number of pools and riffles forming the channel bottom may be reduced and fish habitat could be adversely affected.

Measures and construction methods that enhance fish and wildlife values should be incorporated as needed and practical. Special attention should be given to landscape aesthetics, protecting and maintaining key shade, food, and den trees and to stabilization of disturbed areas.

Consider removal methods and disposal location of cleared material that will not be used for bioengineering and implement according to conditions of the required permits.

PLANS AND SPECIFICATIONS

Plans and specifications for clearing and snagging shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose(s). Plans and specifications shall adhere to NRCS, General Manual-190, VA 410.22, Amendment VA-7.

Planning and implementation of this practice on any site will be preceded by an environmental evaluation using the Environmental Evaluation Data Sheet, Form VA-EE-1, found in 190-General Manual, Part 410, Subpart A (Amendment VA-4).

All work in the planning and implementation of this practice will conform to the Wetlands Conservation and Protection Procedure, 190-GM, Part 410, Subparts B & C (Amendment VA-4).

Construction operations shall be carried out in a manner and sequence so that impacts on the environment will be minimized and held within acceptable limits.

All operations shall be carried out in a safe and skillful manner. Safety and health regulations shall be observed and appropriate safety measures used.

CONSTRUCTION

Trees, stumps, and brush within the perimeter of the channel shall be cut as close to ground level as the cutting tools will permit. Where other areas are to be cleared, the trees, brush, and other woody vegetation shall be cut within the maximum distance above ground level required by the planned use of the areas and/or as specified in the plans.

Trees shall be felled in such a manner as to avoid damage to other trees, fences, property, and objects located outside the limits of clearing.

Down trees, logs, drifts, boulders, bars, debris, and other obstructions lying wholly or partially within the channel shall be removed. Piling, piers, culverts, headwalls, and sediment bars that obstruct the free flow of water will be removed when so designated in the plans.

All clearing and snagging operation shall be in strict compliance with applicable Federal and State statutes and regulations covering wetlands and in-channel construction activity. Necessary permits will be obtained prior to final design and construction layout or assistance.

Through cultivated or high value land, trees, logs, and all combustible material resulting from the clearing and snagging operation shall be burned, buried, or piled in designated disposal areas as specified for the project. In other areas, such as woodland or rangeland, where burning is prohibited, material will be disposed of in such a manner that it will not float away or re-enter the channel. Disposal areas will avoid wetland or other environmentally sensitive areas.

All burning shall be performed outside the channel and shall conform to current local regulations.

Residue from burning and non-combustible material will be buried outside the channel or placed in designated disposal areas. All buried material will have earth cover to the depth specified on the plans.

The work will be limited to only the extent required to eliminate the problem.

Disturbed areas shall be stabilized in accordance with the Virginia Conservation Practice Standard *Critical Area Planting (Code 342).*

DESIGN DATA

The following information shall be included in the design:

1. Plan view of channel showing where obstructions to be removed are located, construction limits, disposal areas, access, etc.

2. Method of debris disposal.

3. Capacities of the channel, both before and after improvement.

4. Statement as to purpose of work.

5. If excavation is performed, design velocity and allowable velocity by Virginia Conservation Practice Standard *Open Channel (Code 582)* are to be computed when the drainage area exceeds one square mile.

6. Operation and Maintenance requirements.

7. Environmental Evaluation Form VA-EE-1.

CHECK DATA

The completed practice shall include:

1. Statement as to adequacy of construction and conformance to design.

2. Copies of applicable landowner permits.

3. Copy of environmental evaluation and supplemental wetland worksheets.

4. Statement as to adequacy of stabilizing disturbed areas.

OPERATION AND MAINTENANCE

A maintenance program shall be established by the landowner/user to maintain capacity and vegetative cover. Items to consider are:

- Control grazing in the construction area during vegetative establishment and when soil conditions are wet.
- Fertilize as needed to maintain a vigorous vegetative cover.
- Promptly repair eroded areas.
- Remove major silt and sediment accumulations in the channel cross-section as soon as practical when the effects are causing significant bank erosion problems.
- Re-establish vegetation cover immediately where scour erosion has removed established seeding.
- Keep inlets to side drainage structures and channel open and armor if necessary.
- Periodically inspect the area for signs of significant streambank undermining or instability.

REFERENCES

1. NRCS, National Engineering Handbook, Part 650, Engineering Field Handbook, Chapter 16.

2. NRCS, National Engineering Handbook, Part 634 (formerly Section 5) – Hydraulics, Supplement B.

3. TR-25, “Design of Open Channels”.

4. General Manual-190, VA 410.22, Amendment VA-7.

5. “Information Guide & Joint Permit Application for Dredge, Fill & Structures in the Waters & Wetlands of Virginia”.

6. NRCS, 700 Series Specifications.

7. NRCS, Virginia Field Office Technical Guide (FOTG), Section IV.

8. General Manual- 190, Part 410, Subpart A (Amendment VA-4).

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Approved Practice Narrative

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326 D1 Clearing and Snagging: Snags, drifts, or other obstructions will be removed from a channel in accordance with the attached plans and specifications.