NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

CHANNEL BED STABILIZATION

(Ft.)

CODE 584

DEFINITION

Measure(s) used to stabilize the bed or bottom of a channel.

PURPOSE

This practice may be applied as part of a conservation management system to support one or more of the following:

- Maintain or alter channel bed elevation or gradient
- Modify sediment transport or deposition
- Manage surface water and groundwater levels in floodplains, riparian areas, and wetlands.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to the beds of existing or newly constructed alluvial or threshold channels that are undergoing damaging aggradation or degradation and that cannot be feasibly controlled by clearing or snagging, by the establishment of vegetative protection, by the installation of bank protection, or by the installation of upstream water control measures.

CRITERIA

Measures shall be designed and installed according to a site-specific plan.

Measures to be applied shall be compatible with improvements planned or being carried out by others.

Sufficient depth shall be maintained to provide adequate outlets for subsurface drains, tributary streams or ditches, or other channels.

Effect of channel work on existing structures such as culverts, bridges, buried cables, pipelines, and irrigation flumes, shall be evaluated to determine impact on their intended functions.

Measures shall be designed for flow duration, depth of inundation, buoyancy, uplift, scour, angle of attack, and stream velocity and be sustainable for higher flow conditions, based on acceptable risk.

Measures shall be compatible with the bank or shoreline materials, water chemistry, channel hydraulics, and slope characteristics, both above and below the water line.

Measures shall be designed for anticipated ice action, debris impact, and fluctuating water levels.

Spoil material from clearing, grubbing, and channel excavation shall be disposed of in a manner that will not interfere with the function of the channel and in accordance with all local, State, Tribal, and Federal laws and regulations.

All disturbed areas around measures shall be protected from erosion. Vegetation shall be selected that is best suited for the anticipated site conditions.

Measures shall be designed to avoid adverse effects on endangered, threatened, proposed, and candidate species and their habitats.

Measures shall be designed to avoid adverse effects on archaeological, historic, structural, and traditional cultural properties.

Measures will not impede the upstream or downstream passage of aquatic organisms.

Channel clearing to remove stumps, fallen trees, debris, and sediment bars shall only be done when they are causing or could cause detrimental bank erosion or structural failure. Habitat-forming elements that provide cover, food, pools, and water turbulence shall be

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

retained or replaced to the extent possible.

Measures shall be designed to maintain the appropriate sediment transport regime in order to avoid detrimental erosion or sedimentation upstream and downstream.

Measures shall not impair the floodway or floodplain functions.

Measures shall not result in adverse affects on the function of the stream or the stream corridor. These adverse effects include destruction of instream habitat, sediment transport imbalances, passage barriers, or unexpected changes in channel plan, pattern, or profile.

When water surface elevations are a concern, the effects of protective measures shall not cause detrimental changes in water surface elevations.

The quantity and character of the sediments entering the reach of channel under consideration shall be analyzed on the basis of both present conditions and projected conditions caused by changes in land use or land treatment and upstream improvements or structural measures.

CONSIDERATIONS

Consider area-wide planning for proper design, function, and management of protective measures, where the design reach involves multiple stakeholders.

Assess channel stabilization needs in sufficient detail to identify the causes contributing to the instability (e.g. watershed alterations resulting in significant modifications of discharge or sediment production). Due to the complexity of such an assessment, use of an interdisciplinary team should be considered.

When designing protective measures, consider the changes that may occur in the watershed hydrology and sedimentation over the design life of the measure.

Consider using woody material removed during construction in the overall practice design.

Consider maintaining or improving the habitat value for fish and wildlife, which includes lowering or moderating water temperature, and improving water quality.

Consider opportunities to improve habitat for threatened, endangered, and other species of concern, where applicable.

Consider maximizing adjacent wetland functions and values with the project design and minimizing adverse effects to existing wetland functions and values.

Consider protecting side channel inlets and outlets from erosion or sedimentation.

Consider the type of human use and social and safety aspects when designing the protective measures. Use construction materials, grading practices, vegetation, and other site development elements that enhance aesthetics, recreational use, and maintain or complement existing landscape uses such as pedestrian paths, climate controls, and buffers. Avoid excessive disturbance and compaction of the site during installation.

Measures should be designed to minimize safety hazards to boaters, swimmers, or people using the channel.

PLANS AND SPECIFICATIONS

Plans and specifications for this practice shall be prepared for specific channel reaches and field sites and shall describe the requirements for applying the practice to achieve its intended purpose(s).

OPERATION AND MAINTENANCE

An Operation and Maintenance plan will be prepared. The plan shall provide specific instructions for operating and maintaining the system to insure that it functions properly. It shall also provide for periodic inspections and prompt repair or replacement of damaged components.