NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

STREAM HABITAT IMPROVEMENT AND MANAGEMENT

(Acre)
CODE 395

DEFINITION

Maintain, improve, or restore physical, chemical and biological functions of a stream.

PURPOSE

- Provide suitable habitat for desired aquatic species and diverse aquatic communities.
- Provide channel morphology and associated riparian characteristics important to desired aquatic species.
- Provide aesthetic values and recreation opportunities associated with stream habitats such as angling and fish viewing.

CONDITIONS WHERE PRACTICE APPLIES

Streams where habitat deficiencies limit survival, growth, reproduction, and/or diversity of aquatic species in relation to the potential of the stream.

CRITERIA

General Criteria Applicable to All Purposes

Manage adjoining riparian corridors with diverse vegetation suitable for the site conditions and desired ecological benefits so as to achieve stream temperature moderation; recruitment of natural instream large wood and fine organic debris; input of riparian nutrients and terrestrial insects; stream bank stability; and flood attenuation.

Use native plants wherever possible.

Control invasive plant species and federally/state listed noxious and nuisance species on the site.

All activities will occur within Florida NRCS guidelines on timing with regard to breeding and nesting seasons of aquatic and terrestrial organisms.

Restore or maintain stream habitat and channel forming processes such as natural meandering and floodplain functions, where practical.

Obtain all required permits prior to installation of any stream improvement measures.

When installing structures, do not reduce channel capacity to the extent that excessive bank erosion or unintentional lateral migration of flow is induced.

Instream structure design should be compatible with the dynamic nature of rivers and recreational and other uses of the stream corridor.

Manage livestock to prevent streambank erosion and sedimentation, bank trampling, over-grazing, and contamination of the stream from livestock waste.

Impact to cultural resources, wetlands, and Federal and State protected species need 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 as stated in the General Manual (GM) Title 420-Part 401, Title 450-Part 401, and Title 190-Parts 410.22 and 410.26; National Planning

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

Additional Criteria Applicable to Channel Morphology and Associated Riparian Characteristics for Desired Aquatic Species

Design instream structures to facilitate establishment and viability of riparian plants.

Maintain compatibility between structural stream improvement measures and the stream's geomorphology.

Manage the stream channel by:

- Maintaining hydrologic connections to its floodplain and associated wetlands where physically possible and geomorphically appropriate.
- Characterizing the sediment transport processes of the designed stable channel.
- Maintaining well-vegetated banks and healthy riparian zones associated with the stream or waterway.
- Maintaining stream bottom substrates suitable for spawning and/or rearing of desired aquatic species.

Incorporation of these stream channel criteria will generally involve restoration of an appropriate channel width-to-depth ratio, suitable riffle-pool complexes, well-vegetated banks, and/or stream length-gradient relationships in a meandering stream consistent with local conditions and stream geomorphology.

Additional Criteria Applicable to Provide Aesthetic Values and Recreation Opportunities

Manage recreational and other land use activities to minimize impacts on stream corridor vegetation and water quality.

CONSIDERATIONS

Plan stream habitat management provisions in relation to other land uses that may impact stream habitat. Before designing and implementing stream habitat improvements, consider the known or expected problems within the watershed, such as: point and non-point source pollution, land management activities, and other watershed-related concerns. All stream habitat management projects are most effective when applied within the context of overall watershed conditions and with clear objectives for stream management goals.

Consider utilizing instream structures, such as flow deflectors, to provide stream stability and/or habitat elements until the channel and adjacent riparian area begins to function similar to the habitat of a complex stream in dynamic equilibrium. There are several options that can be used singularly or in combination to improve stream habitat:

1. Through watershed planning, establish soil conservation, nutrient management, and pesticide management practices and other management techniques for non-point sources of pollution (See Florida Conservation Practice Standards Nutrient Management, Code 590 and Pest Management, Code 595).
2. Reduce or manage excessive runoff due to watershed development.
3. Restore or protect riparian and floodplain vegetation and associated riverine wetlands.
4. Maintain suitable flows for aquatic species and channel maintenance.
5. Provide physical habitat components important to aquatic species such as sediment-free spawning gravel, boulders, large wood, resting pools, overhead cover, and stable banks.
6. Eliminate fish migration barriers such as improperly installed culverts (see National Conservation Practice Standard Fish Passage, Code 396).
7. Provide barriers/screens to exclude fish and other aquatic species from water pumps, diversion ditches, or any area where unintentional entrapment could occur.
8. Improve floodplain-to-channel connectivity including off-channel habitats.
9. Provide alternative streamside access for recreational use, livestock, and equipment.

10. Restore natural surface water and ground water interactions by managing ground water withdrawals that could affect the health and sustainability of the stream system.

PLANS AND SPECIFICATIONS

Plans and specifications need to be in keeping with this standard and need to describe the details adequately so the practice can be applied to meet intended purpose.

Planned stream habitat improvements need to:

- Be based on an assessment of watershed conditions that affect the physical, biological, and chemical conditions of the stream and its riparian area.
- Be based on an assessment of current stream and riparian conditions. The assessment needs to evaluate channel morphology, geomorphic setting, aquatic species, riparian and/or floodplain conditions, and any habitat limitations including restriction of upstream and downstream movement of aquatic species.
    - Provide a site map or sketch of current and planned conditions.
- Emphasize the establishment of an ecologically self-sustaining stream-riparian system consistent with the watershed conditions and geomorphic setting.
- List the aquatic species and life history stage for which the stream is being managed. Document the following:
    - depth of water needed during the different seasons;
    - types, locations and sizes of any water control structures required;
    - desired plant species and the means of establishing and maintaining them.
- Provide fish passage upstream and downstream and allow movement of other aquatic species and stream organic matter to the extent possible (see National Conservation Practice Standard Fish Passage, Code 396).

OPERATION AND MAINTENANCE

A plan for operation and maintenance at a minimum needs to include monitoring and management of structural and vegetative measures, should the application of practices cause streambank or streambed instability. All instream structural measures shall be evaluated on an annual basis.

Control noxious weeds and/or exotic invasive plants as needed. If herbicides are needed, refer to Florida NRCS Conservation Practice Standard Pest Management, Code 595; follow current Univ. Florida, IFAS recommendations (http://edis.ifas.ufl.edu/WG006); and adhere to label instructions.

REFERENCES

National Engineering Handbook (NEH) Part 653: *Stream Corridor Restoration: Principles, Processes, and Practices*. Federal Interagency Stream Restoration Working Group. http://www.nrcs.usda.gov/technical/stream_restoration/

University of Florida, IFAS Extension Publication: *Weed Management in Pastures and Rangeland-2006.*