

NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD

**STREAM HABITAT IMPROVEMENT AND MANAGEMENT**

(Acre)

CODE 395

**DEFINITION**

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

**PURPOSES**

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

**CONDITIONS WHERE PRACTICE APPLIES**

In streams with habitat deficiencies limiting survival, growth, reproduction, and/or diversity of aquatic species in relation to the streams potential.

**CRITERIA**

General Criteria Applicable to all Purposes

All measures implemented under this practice shall comply with all applicable federal, state, and local laws, rules and regulations.

Planned stream improvements will be based on a stream assessment that identifies habitat limitations. This assessment may be conducted using Iowa DNR biologist recommendations, the Stream Visual Assessment Protocol, Water Quality Indicators Guide or other assessment procedure.

Adjoining riparian corridors will be managed for diverse native vegetation suitable for site conditions and for desired ecological benefits such as stream temperature moderation; recruitment of instream large wood and fine organic debris; input of riparian nutrients and terrestrial insects; stream bank stability; and flood attenuation.

Buffer zones of woody or herbaceous vegetation between adjacent cropland and the edge of the stream bank will be established. Refer to NRCS Standards: Filter Strip (393A) and Forest Riparian Buffer (391) for recommended widths and management.

No action shall have long-term adverse impacts on endangered, threatened, candidate species, species of concern, or the diversity, composition, or biomass of aquatic species within the stream.

All required permits will be obtained prior to installation of any stream improvement measures.

All activities will occur timely within the respective state's guidelines and with regard to breeding and nesting seasons of aquatic and terrestrial organisms.

Any structures installed using this standard shall not reduce channel capacity to the extent that excessive bank erosion or unintentional lateral migration of flow is induced.

Where practical, stream habitat and channel forming processes such as natural meandering and floodplain functions will be restored or maintained.

When implemented, Stream Habitat Management options should be ecologically integrated.

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

When present, livestock will be managed to prevent streambank erosion, bank trampling, over grazing, and contamination of the stream by livestock waste.

Planned stream habitat improvements will:

- Be based on an assessment of watershed conditions that may affect the physical, biological, and chemical conditions of the stream and its riparian area (see references).
- Be based on an assessment of current stream and riparian conditions. The assessment shall evaluate channel morphology, geomorphic setting, aquatic species, riparian and/or floodplain conditions, and any habitat limitations including the restriction of upstream and downstream movement of aquatic species (see references).
- 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.
- Provide upstream and downstream passage for fish, other aquatic species, and stream organic matter to the extent possible. All work must be in compliance with Iowa DNR fish passage requirements.

All material excavated or removed during construction will be placed so it will not erode back into the stream. Spoil will be properly stabilized and vegetated.

### Additional Criteria applicable to Purposes 1 and 2

Instream structures will be designed to facilitate establishment and viability of riparian plants.

Applied structural stream improvement measures will be compatible with the stream's geomorphology and provide in-stream habitat for target aquatic species.

The stream channel being managed under this practice should:

- Be hydrologically connected to its floodplain and associated wetlands where physically possible and geomorphically appropriate.
- Reflect sediment transport processes characteristic of the designed stable channel.
- Have well vegetated banks and a healthy riparian root zone.
- Have 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, revegetated banks, and/or stream length-gradient relationships in a meandering stream consistent with local conditions and stream geomorphology (see references).

Additional Criteria Applicable to Purpose 3  
Recreational and other land use activities will be managed to minimize impacts on stream corridor vegetation and water quality.

## CONSIDERATIONS

A stream habitat management project is most effective when applied within the context of overall watershed conditions and with clear objectives for stream management goals.

A stream habitat management provision should be planned 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.

In-stream structures such as flow deflectors may be considered to provide stream stability and/or habitat elements until the channel and adjacent riparian area can function in dynamic equilibrium. There are several options that can be used singularly or in combination to improve stream habitat:

1. Through watershed planning, soil conservation practices, nutrient and pesticide management, and other management techniques that address non-point sources of pollution.
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 woody debris, resting pools, overhead cover, and stable banks.
6. Eliminate fish migration barriers such as improperly installed culverts (refer to Iowa DNR Fish Passage requirements).
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 groundwater interactions by managing groundwater withdrawals.

Removal of woody vegetation and debris from the stream should only be done after careful consideration of potential adverse consequences to stream dynamics and fisheries habitat. Most logjams are passable by fish and are desirable fish habitat.

Additional recommendations that may enhance the use of, or avoid problems with this practice include:

- Cover structures should not be placed in a stream position where the structure will fill with sediment. Where possible, place planned fish habitat structures in areas where the stream current is actively eroding the bank.
- Instream cover structures should be protected from erosion as necessary to stabilize the structure and placed in such a way as to not cause bank erosion.

**Environmental Impact Concerns** - Stream Habitat Management will improve aquatic habitats and subsequently benefit endangered or threatened species, species of concern and other native aquatic species dependent on this environment. There may be short-term negative impacts when instream construction activities occur, i.e. sedimentation and turbidity. Therefore, timing of project activity is extremely important to reduce negative impacts.

Consider cultural resources when planning. This practice may adversely affect cultural resources and should comply with GM 420, Part 401, during planning, installation and maintenance.

**PLANS AND SPECIFICATIONS**

Plans and specifications shall be in keeping with this standard and shall describe details adequately and apply the practice to achieve its intended purpose.

NRCS staff is encouraged to work closely with the Iowa DNR Stream Biologist, NRCS Stream Bank Stabilization Specialist, NRS Agricultural Engineer, NRCS Biologist, US Fish and Wildlife Service Biologist in developing site specific plans and specifications.

**OPERATION AND MAINTNENCE**

An operation and maintenance plan shall be developed for all applications. The plan shall provide for periodic inspection and prompt repair should the application of a practice cause stream bank or streambed instability. All instream structural measures shall be evaluated on an annual basis.

**REFERENCES**

NEH-653 - Stream Corridor Restoration: Principles, Processes, and Practices. Federal Interagency Stream Restoration Working Group (FISRWG) (15 Federal agencies of the US Government). Stream Corridor Restoration Handbook. October 1998.

USDA, NRCS Iowa Field Office Technical Guide (FOTOG), Section IV, Practice Standards and Specifications.