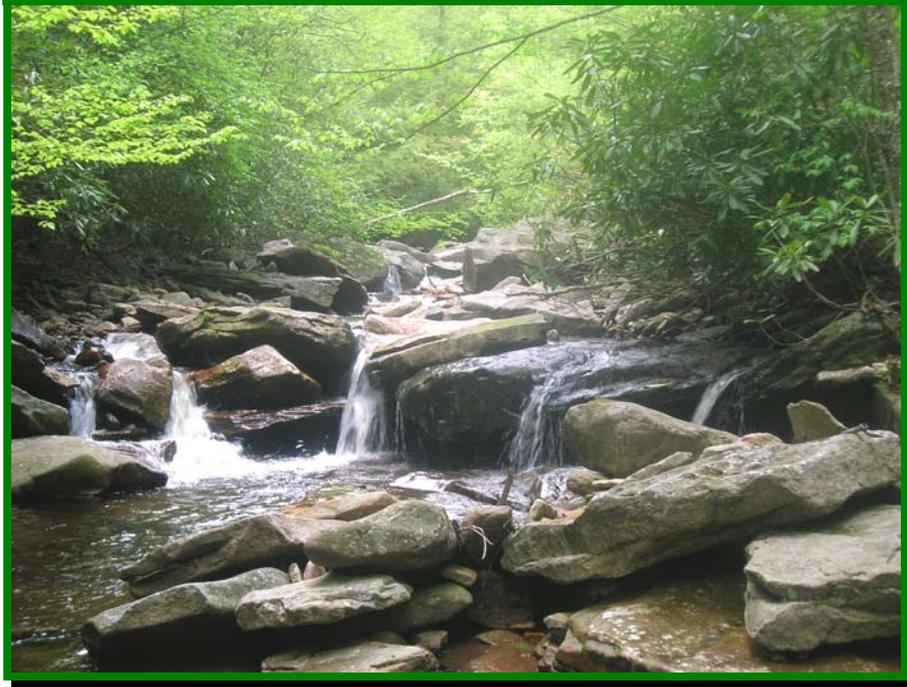


# Stream Habitat Improvement and Management

## WV Conservation Practice Job Sheet

Code 395



### DEFINITION

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

### PURPOSE

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

### WHERE USED

This practice is used in streams where habitat deficiencies limit survival, growth, reproduction and/or the diversity of aquatic species in relation to the potential of the stream.

### CRITERIA

It is important to understand that any measure described under this practice must comply with all applicable federal, state and local laws, rules and regulations. The owner or operator is responsible for securing all the required permits or approvals prior to installation of this practice. These permits may include, but are not limited to, the Clean Water Act sections 404 and 401, Public Lands Corporation and sedimentation and erosion control. Any permit requirements must be incorporated into the design, operation and/or

maintenance requirements. Work closely with the local NRCS office and the regulating state and federal authorities.

All activities must occur within the respective state's guidelines on timing with regard to breeding and nesting seasons of aquatic and terrestrial organisms or as specified by the WV Division of Natural Resources District Fisheries Biologist.

Improvements in trout streams must be installed only in streams with suitable water quality. Work closely with local West Virginia Division of Natural Resources District Fisheries Biologist to determine if suitable water quality exists.

Adjoining riparian corridors should also be managed to encourage diverse native vegetation suitable for the site conditions and create the desired ecological benefits. These may include: stream temperature moderation, recruitment of in-stream large wood and fine organic debris; input of riparian nutrients and terrestrial insects; streambank stability; and flood attenuation. Refer to NRCS WV conservation practice standard Riparian Forest Buffer (391) or Riparian Herbaceous Buffer (390).

No structure or action should have long-term adverse impacts on endangered, threatened, or candidate species or species of concern. Check with the local NRCS office to determine the potential for affecting these species.

A soils investigation should always be performed prior to installation of any structure to determine the bank and

channel stability. This will ensure that excessive streambank scour and erosion will not occur.

Structures installed must not reduce the channel capacity to the extent that excessive bank erosion or unintentional lateral channel migration is induced. In fact, structures or measures implemented should always attempt to restore the natural stream habitat and channel forming processes. These may include natural meandering and floodplain functions; and be compatible with the dynamic nature of rivers, recreation and other uses of the stream corridor.

Where present, livestock must be managed to prevent streambank erosion, bank trampling, over-grazing, and contamination of the stream from livestock waste.

## CONSIDERATIONS

Stream habitat management provisions should be planned in relation to other land uses that may impact stream habitat.

Design and implementation of stream habitat improvements should 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 as a habitat of complex stream structure 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.
2. Reduce or manage excessive runoff due to watershed development.
3. Restore or protect riparian and floodplain vegetation and associated riverine wetlands.
4. Ensure that there are suitable flows for the target aquatic species.
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 and aquatic life passage barriers such as improperly installed culverts
7. Consider providing barriers/screens to exclude fish and other aquatic species from water pumps, diversion ditches, or any area where unintentional entrapment could occur.
8. Where appropriate, improve floodplain-to-channel connectivity including off-channel habitats.
9. Provide alternative streamside access for recreational use, livestock and equipment.

## ENVIRONMENTAL CONCERNS

There may be short-term negative environmental impacts when in-stream construction activities occur, i.e. sedimentation and turbidity. Therefore, the timing of the project's activity is extremely important to reduce any negative impacts.

Managers who attempt stream habitat management projects are highly encouraged to work with the West Virginia Divisions of Natural Resources District Fisheries Biologist.

Permits may be required prior to implementation. Contact the following agencies to determine the necessity of obtaining permits:

### US Army Corps of Engineers

Pittsburgh District  
William S. Moorhead Federal Building  
1000 Liberty Avenue  
Pittsburgh, PA 15222  
Phone: (412) 395-7154

### OR

Huntington District  
WV Permits Section  
502 Eighth Street  
Huntington, WV 25701  
Phone: (304) 399-5710

### WV Division of Environmental Protection

Director Division of Water and Waste Management  
601 - 57th Street  
Charleston, WV 25304  
Phone: (304) 926-0495

### WV Public Land Corporation

State Capitol Complex  
Building 3, Room 643  
1900 Kanawha Blvd., East  
Charleston, WV 25305-0665  
Phone: (304) 558-3225

## OPERATION AND MAINTENANCE

All vegetative and structural measures should be evaluated on an annual basis and after high water events.

Additional periodic monitoring may be required to determine the effects of this practice on stream stability, capacity, temperature and sediment transport as appropriate.

Follow the operation and maintenance of individual component practices that are required.

# Stream Habitat Improvement and Management – Job Sheet

## Specifications

Site-specific requirements are listed on the following pages of this job sheet. Specifications are prepared in accordance with the WV NRCS Field Office Technical Guide. Information in this jobsheet is considered to be part of the conservation plan.

<b>Client:</b>		<b>Farm #:</b>
<b>Field(s):</b>		<b>Tract #:</b>
<b>Designed By:</b>	<b>Title:</b>	<b>Date:</b>
<b>Objective and target aquatic species and/or life stage:</b>		
<input type="checkbox"/> This practice is performed in conjunction with the WV Division of Natural Resources Fisheries Biologist <b>Coordinating Fisheries Biologist:</b> _____		
<input type="checkbox"/> Other coordinating partner(s): _____		

Purpose (check all that apply)	
<input type="checkbox"/> Provide suitable habitat for desired aquatic species and diverse aquatic communities	<input type="checkbox"/> Provide channel morphology and associated riparian characteristics important to desired aquatic species
<input type="checkbox"/> Provide aesthetic values and recreation opportunities associated with stream habitats such as angling and fish viewing	<input type="checkbox"/> Other (specify): _____

Stream Type			
<input type="checkbox"/> Cold Water	<input type="checkbox"/> Warm Water	Bankfull Width <sup>1</sup> (ft): _____	Remarks:
Stream Type/Classification System <sup>2</sup> :			
Approximate Channel Slope (%)			

<sup>1</sup> Defined as average width of stream at the highest point in elevation where the stream can be contained within the channel without spilling water onto the floodplain.

<sup>2</sup> Utilize Rosgen system or specify system used.

Component or Facilitating FOTG Practices (refer to the individual specifications as applicable)	
<input type="checkbox"/> (391) Riparian Forest Buffer	<input type="checkbox"/> (322) Channel Vegetation
<input type="checkbox"/> (390) Riparian Herbaceous Cover	<input type="checkbox"/> (728) Stream Crossing or Access
<input type="checkbox"/> (342) Critical Area	<input type="checkbox"/> (350) Sediment Basin
<input type="checkbox"/> (580) Streambank and Shoreline Protection	<input type="checkbox"/> (612) Tree and Shrub Establishment
<input type="checkbox"/> (472) Use Exclusion	<input type="checkbox"/> Other:
<input type="checkbox"/> (396) Fish Passage	<input type="checkbox"/> Other:
<input type="checkbox"/> See specific designs or drawings for in-stream practices, streambank treatment or water management (e.g. fish ladders, J-hooks, rock vanes, root wads, habitat structures, etc):	

<sup>1</sup> Refer to the FOTG reference Stream Corridor Restoration: Principles, Processes, and Practices - Appendix A. Federal Interagency Stream Restoration Working Group (FISRWG) (15 Federal agencies of the US Government), *Stream Corridor Restoration Handbook*, October 1998.

### Soils Information - Refer to the local soil survey and soils description or a qualified soil scientist.

Field or Reach #	Dominant Soil Type(s) <sup>1</sup>	Acres	Drainage Classification <sup>2</sup>	Soil Limitations <sup>3</sup>	Soil Report

<sup>1</sup> List the predominant soil types of the project area as shown in the local soil survey.

<sup>2</sup> According to the local soil survey, identify the dominant soil as Excessively Drained (**ED**), Somewhat Excessively Drained (**SED**), Well Drained (**WD**), Moderately Well Drained (**MWD**), Somewhat Poorly Drained (**SPD**), Poorly Drained (**PD**) or Very Poorly Drained (**VPD**).

<sup>3</sup> List any obvious or notable limitations to construction, management or operation and maintenance that may be encountered due to soil characteristics (e.g. sand lenses, highly erosive characteristics, rock outcrops, etc.). Use the additional notes section of this document if necessary.

**Watershed Evaluation** – (Check all that apply List any known conditions that affect the physical, biological, and chemical conditions of the stream and its riparian area. Utilize watershed reports, assessment tools or other supporting data as necessary.) Refer to Section III of the Field Office Technical Guide. Use the last page of this document if more description is necessary

Existing Problem or Resource Concern within the Watershed		Corrective or Avoidance Measure Planned
<b>Water Quality</b>	<input type="checkbox"/> Acid Mine Drainage <input type="checkbox"/> Increased Turbidity <input type="checkbox"/> Upland Surface Runoff <input type="checkbox"/> Increased Amount of Sedimentation <input type="checkbox"/> Chemical contaminants <input type="checkbox"/> Increased Fecal Coliform Levels (livestock or human) <input type="checkbox"/> Other point or non-point source pollutants present (specify): _____	<b>Describe Remediation Planned:</b>
<b>Decreased Stability</b>	<input type="checkbox"/> Bank <input type="checkbox"/> Channel <input type="checkbox"/> Floodplain <input type="checkbox"/> Riparian Area <input type="checkbox"/> Other: _____ <input type="checkbox"/> Other: _____	<b>Describe Remediation Planned:</b>
<b>Aquatic Habitat</b>	<input type="checkbox"/> Lack of structure for target species (riffle:pool ratio) <input type="checkbox"/> Lack of benthic macroinvertebrates <input type="checkbox"/> Exotic species present (plant or animal) <input type="checkbox"/> Lack of desired productivity <input type="checkbox"/> Woody vegetation removed <input type="checkbox"/> Decreased landscape diversity <input type="checkbox"/> Confined stream channel with little opportunity for habitat development <input type="checkbox"/> Other: _____	<b>Describe Remediation Planned:</b>
<b>Dominant Landuse in the Watershed</b>	<input type="checkbox"/> Agricultural (pasture, hay or crop) <input type="checkbox"/> Forest <input type="checkbox"/> Industrial (mined land, timbered, etc) <input type="checkbox"/> Urban or Suburban <input type="checkbox"/> Other: _____ <input type="checkbox"/> Other: _____	<b>Describe Remediation Planned:</b>
<b>Decreased Capacity</b>	<input type="checkbox"/> Floodplain and upland <input type="checkbox"/> Reduced Meander and Energy Dissipation <input type="checkbox"/> Reduced flow duration <input type="checkbox"/> Decreased capacity of stream <input type="checkbox"/> Increased flood energy <input type="checkbox"/> Increased peak flood elevation <input type="checkbox"/> Decreased interflow and subsurface flow to and within the stream corridor <input type="checkbox"/> Compacted soil reducing infiltration <input type="checkbox"/> Other: _____	<b>Describe Remediation Planned:</b>
<b>Other</b>	<input type="checkbox"/>	<b>Describe Remediation Planned:</b>

**Current Stream and Riparian Conditions** - Check all that apply. This may include such things as: SVAP score, channel morphology, landscape setting, aquatic species, riparian and/or floodplain conditions, and any habitat limitations including restriction of upstream and downstream movement of aquatic organisms. Refer to Section III of the field Office Technical Guide for tools used to assess certain resource concerns.

<input type="checkbox"/> Stream Visual Assessment Protocol (SVAP) performed		Score _____	Copy Attached _____
<b>Existing Problem or Resource Concern within the Project Area</b>		<b>Corrective, Remedial or Avoidance Measure Planned</b> (List practices, specifications, designs and descriptions)	
<input type="checkbox"/> <b>Describe the landscape setting of the stream</b> <input type="checkbox"/> Fragmented <input type="checkbox"/> Homogenized <input type="checkbox"/> Exotic Invasion <input type="checkbox"/> Channelized  <input type="checkbox"/> Other: _____		<b>Describe Remediation Planned:</b>	
<input type="checkbox"/> <b>Describe the channel conditions of the project area</b> <input type="checkbox"/> Aggradation <input type="checkbox"/> Down-cutting <input type="checkbox"/> Lateral meander migration  <input type="checkbox"/> Other: _____		<b>Describe Remediation Planned:</b>	
<input type="checkbox"/> <b>Describe the floodplain conditions</b> <input type="checkbox"/> Vegetative Clearing <input type="checkbox"/> Soil Compaction <input type="checkbox"/> Soil Exposure <input type="checkbox"/> Deforestation <input type="checkbox"/> Floodplains not connected to channel(s)  <input type="checkbox"/> Other: _____		<b>Describe Remediation Planned:</b>	
<input type="checkbox"/> <b>Describe the habitat limiting factor(s)</b> <input type="checkbox"/> Lack of large woody debris <input type="checkbox"/> Lack of detritus or fine organic matter <input type="checkbox"/> Lack of structure <input type="checkbox"/> Fragmentation or connectivity  <input type="checkbox"/> Other: _____		<b>Describe Remediation Planned:</b>	
<input type="checkbox"/> <b>Describe any upstream or downstream flow restrictions:</b> <input type="checkbox"/> Culvert(s) <input type="checkbox"/> Bridge(s) <input type="checkbox"/> Vegetative <input type="checkbox"/> Structures  <input type="checkbox"/> Other: _____		<b>Describe Remediation Planned:</b>	
<input type="checkbox"/> <b>Identify any barriers to aquatic organism movement (upstream/downstream)</b> <input type="checkbox"/> Culvert restrictions <input type="checkbox"/> Bridge restrictions <input type="checkbox"/> Dams <input type="checkbox"/> Low water crossings  <input type="checkbox"/> Other: _____		*Refer to the USACE, Nationwide Permits for West Virginia, and 401 Water Quality Certification Special Conditions. Appendix A. "Culvert Installation Recommendations to Fully Comply with Aquatic Life Passage". <b>Describe Remediation Planned:</b>	

## Stream Habitat Improvement and Management – Job Sheet

If needed, an aerial view or a side view of the practice can be shown below. Other relevant information, complementary practices and measures, and additional specifications may be included.

**Additional Specifications** (Operation and Maintenance, Notes, etc.):

**Operation and Maintenance:** Refer to the section of this document entitled “Operation and Maintenance”. All vegetative and structural measures must be evaluated on an annual basis and after high water events. Additional periodic monitoring may be required to determine the effects of this practice on stream stability, capacity, temperature and sediment transport as appropriate. Component practices should be managed according to their operation and maintenance requirements. **Additional Requirements:**

Questions regarding the operation, harvest schedule or establishment of this practice should be directed to:

\_\_\_\_\_ at \_\_\_\_\_

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