

Appendix A3. Project design standards for instream habitat restoration.

General Requirements

1. Knowledgeable and trained personnel (*e.g.*, fisheries biologist, hydrologist, or geomorphologists) must be involved in the design and implementation of all instream restoration activities.
2. Appropriate pollution and erosion controls must be implemented as they apply to specific instream habitat restoration activities.
3. Landowners receiving basal area credits under the Oregon Department of Forestry Forest Practice Administrative Rules for large woody debris placements cannot be reimbursed for any project cost with Fish and Wildlife Service restoration program funding.
4. A project specific biological assessment must be written for a re-channelization project on a fish bearing stream containing federally listed anadromous fish species. This process may result in NOAA Fisheries issuing a biological opinion under the Endangered Species Act for the project. The Fish and Wildlife Service must review and approve the designs for these projects adjacent to non anadromous stream reaches.

Techniques and Materials

1. Materials used for instream structures should be the same type of materials that historically occurred at the site. The Fish and Wildlife Service must review and approve the use of other type of materials before project implementation.
2. Durable rock and wood materials must be used for instream structures.
3. Boulders and large wood used for instream structures need to be appropriately sized and placed to minimize or eliminate the movement of these materials during high flow events. Size standards must be determined by qualified professionals and based on individual stream reaches and their seasonal discharge rates.
4. Down coarse woody debris³⁹ and boulders in adjacent riparian and upland habitats may be incorporated into an instream structure. However, these materials must remain at or near their original locations to maintain the natural (or current) characteristics of the local area. Methods of selection, collection, and use must be reviewed and approved by the Fish and Wildlife Service before completing the activity.
5. Existing individual instream boulders and large wood may be repositioned in the stream channel or incorporated within new or naturally occurring instream structures. However, the repositioning or use of these materials must not occur if they are providing adequate fish habitat in their current locations.
6. Additional boulder and wood materials may be added to naturally occurring instream structures to create more complex structures. The structural integrity of original structures must not be compromised when completing this activity.

³⁹ “Coarse woody debris” consists of snags, fallen logs, wind blown trees, and large branches.

7. Naturally occurring instream structures must not be removed if they are providing adequate fish habitat, unless there is a safety concern to existing infrastructures or other property (*e.g.*, culverts and bridges). The Fish and Wildlife Service must review and approve the removal of these structures before completing the activity. Appropriate materials that are removed must be replaced in the same stream reach as close as possible to its original location.
8. Cable should not be used to anchor boulders and large wood within the stream channel. Use larger materials (*i.e.*, key pieces) to ballast or stabilize smaller materials or bury them in the stream bank. The Fish and Wildlife Service must review and approve the use of cable in stream habitats before project implementation.
9. Do not use full spanning rock weirs for instream structures, unless they are placed in an incised and/or widened channel where the goal of the placement is to agrade and narrow the channel by recruiting stream bedload at the site. Use large wood in place of these weirs if the appropriately sized wood pieces are available and can be maintained in the stream channel.
10. The installation of an instream structure must not result in a fish passage barrier to juvenile or adult fish or other aquatic species, especially during critical life cycle periods.
11. An instream structure altering the stream hydrology must not adversely affect adjacent or down stream properties, culverts, and bridges. Do not place instream structures 0.25 miles upstream of a culvert or bridge without obtaining landowner approval.
12. Natural alcoves and side channels enhanced by installing boulder/large wood structures for rearing and off-channel refuge habitats must not cause the entrapment of fish and other aquatic species. Surface water in these areas must be able to passively flow back to the stream channel as water levels recede.
 - A project specific biological assessment must be written for these activities on a fish bearing stream containing federally listed anadromous fish species. This process may result in NOAA Fisheries issuing a biological opinion under the Endangered Species Act for the project.
 - The Fish and Wildlife Service must review and approve the designs for these activities on non anadromous stream reaches.
13. Soil disturbance along stream channels must be minimized or eliminated whenever possible.
14. Undisturbed vegetated buffer zones must be retained along stream channels, to the maximum extent possible, to reduce sedimentation rates and channel instability.
15. Native vegetation must be protected to the maximum extent possible when constructing temporary access trails to a stream. Shrub and tree removal within trail footprints must be completed so that there is not a significant reduction of shade along the stream channel.
16. Salmon carcasses used for stream nutrient enrichment must be certified free of diseases by an Oregon Department of Fish and Wildlife pathologist and in compliance with regulations under the Oregon Department of Environmental Quality. The Oregon Department of Fish and Wildlife must also have identified the project stream reach as appropriate for salmon carcass placement.