



U.S. Army Corps of Engineers  
Seattle District, Regulatory Branch

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## **SUPPLEMENTAL ESA INFORMATION FOR REMOVAL OF FISH PASSAGE BARRIERS**

*This is a list of common issues related to the removal of fish passage barriers in freshwater streams. Not all questions or comments will apply to every project. There may be site-specific questions raised that are not included in this list. Provide information on those that are pertinent to your project.*

### **Project Description:**

- Describe the existing condition:
  - Is the structure a complete or partial barrier to fish passage?
  - What species and life history stages can't move past the structure?
  - What characteristic of the structure prevents fish passage (i.e. velocity, gradient, drop at inlet or outlet)?
  - Kind and amount of habitat that would be accessible upstream of the structure.
- Describe the project elements:
  - i.e. new bridge, replacement culvert, retrofit existing culvert, maintain existing culvert, new fishway, new streambed controls, bank stabilization at inlet or outlet, streambed contouring.
  - Drawings with dimensions, existing & proposed ordinary high water line
  - Equipment access points
  - When would construction occur?
  - Construction sequence – site preparation, detours, temporary stream crossings, equipment access, dewatering, fish removal.
  - Method of removing fish from construction area (i.e. nets, electroshocking).
  - Length of construction.
  - Removal of riparian vegetation – type, location, acreage.
  - Erosion and sediment control measures – silt fences, temporary sedimentation ponds, access controls.
  - Site restoration:
    - re-introduction of flow into stream channel.
    - replanting – type, location, acreage, performance standards, monitoring.
- Describe all aspects of the project purpose – i.e. improved fish passage, debris passage, flood hazard reduction.
  - Discuss method used to design structure so that it allows fish passage.
  - Does the structure meet WDFW passage requirements?
  - Will the structure pass expected high flows (i.e. 100-year flow events)?
  - Will structure affect flood elevations upstream or downstream?

- Describe any required long-term maintenance.

**Action Area:**

*NOTE: In order to cover all the potential impacts to all the listed species that may be affected by your project, the action area may be quite large. However, you need only provide environmental baseline/effects information for the potential area of effect for each habitat element, pathway or indicator. For example, you may have a radius of “x” feet/miles around the project for potential noise impacts to eagles, a radius of “y” feet around the project for potential water quality impacts to salmon, and a radius of “z” feet around the project for potential impacts to riparian and aquatic vegetation for salmon habitat. Your total action area will be the greatest distance of all of these potential areas of effect combined.*

- For terrestrial species, include all areas exposed to disturbance from noise and dust generated by construction. Include the proposed structure and any ancillary elements (road re-surfacing, sidewalks, activities in the riparian zone).
- For aquatic species, generally include the project waterbody up to 2 miles downstream and 0.5 miles upstream. Aquatic action area may be smaller if up- or downstream impacts would be damped by wetland complexes, natural impassible barriers, or other factors.
- Include all interrelated/interdependent activities with the structure – i.e. the road surface is changed from gravel to asphalt when the culvert is replaced – the road re-surfacing is an interrelated activity.
- Include the potential areas of effect in relation to potential impacts to habitat pathways/indicators for that species – i.e. for fish there is a concern about sediment suspension – what is the potential distance that the construction and/or operation may impact water quality (increase sediment levels both temporary and permanent) or stream morphology (changes in bedload capacity, headcutting, sediment deposition).

**Species Habitat Information:**

- How does the listed species utilize the action area – i.e. juvenile & adult fish may migrate through the area, bald eagles may forage or nest in the area.
  - Life history stages present at different times of year.
  - Important forage, spawning/nesting, or rearing areas within action area.
  - Is there essential habitat for species that may be a primary food source for the listed species?

**Environmental Baseline:**

- Describe the habitat in the action area considering the potential area of effect discussed under Action Area. This may be described by:
  - Substrate (sand, mud, cobble).
  - Pool & riffle complexes (a special aquatic site).
  - Large woody debris - existing, potential for woody debris input from adjacent riparian areas.
  - Water quality.

- Stream hydrograph - low (base) flow, average flow, peak flows.
  - Results of species use from known surveys in the area or similar areas.
- Describe the amount of human activity in the action area.
    - Are there other fish passage barriers in the action area and where are they?
    - Has the streambank in the action area been altered by armoring? If so, to what extent?
    - What are the dominant plant species in the riparian zone within the action area? Are invasive, non-native species dominant?
    - Is there development in the riparian zone? If so, to what extent?

### **Effects of the Action:**

- What are the temporary impacts to water quality and fish from the construction?
  - Impacts during stream diversion.
  - Impacts from removing fish from construction area.
  - Impacts from potential sedimentation and erosion runoff during construction.
  - Impacts from oil/contaminant runoff from equipment. From washout areas?
  - Impacts from vegetation removal.
- What are the potential impacts to refuge areas?
  - Impacts to large woody debris movement, recruitment, location.
  - Impacts to existing pools or undercut streambanks.
- What are the potential impacts to spawning areas?
  - Access to previously inaccessible areas.
  - Impacts to streambed substrate.
  - Impacts to sediment movement in stream.
- Habitat access.
  - Type of habitat available.
  - Interaction between introduced and native species (i.e. allowing brook trout access to areas with bull trout but no brook trout).
  - Life history stages of fish that would be affected by removal of fish passage barrier.
  - Long-term benefits of action.
  - Any conditions or circumstances that would prevent fish passage through proposed structure.