Executive Summary

Provide a brief project description including the following:

- overview of the proposed action,
- location of the action area,
- time frame, and
- summary of the effects using text and table.

The table should identify the listed and proposed species and critical habitats and the effect determination.

Table: Summary of Effect Determinations for the Proposed Action (example in italics)

Species	Evolutionarily Significant Unit	Listing Status	Effect Determination
Chinook salmon	*Lower Columbia River ESU*	*Threatened (federal), Designated Critical Habitat*	*No effect, not likely to adversely affect, or likely to adversely affect; Jeopardy/No Jeopardy*

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Appendices

Chapter 1. Project Overview

The Project Overview describes the proposed action, general location, setting, and consultation history.

The target audience for biological technical documents is primarily the technical reviewers in the resource and partner agencies .Secondary audiences may include decision makers and the interested public. Documents should be written in technically appropriate language that conveys particular technical meaning, without using unnecessary technical jargon. Take all opportunities to use common language when it does not confuse technical issues.

Include a summary of the information on which the biological assessment (BA) is based and information on how the agency action (applicant action) affects the species and critical habitat (Sec. 7(b)(3)).

Include a summary of relevant project consultation history. This summary should contain only documented consultation. The following types of information should be placed in an appendix to support the history summary: pre-consultation communication and history, letters, memoranda, public notices, summaries of meetings and telephone conversations, information concerning site visits, etc. Emphasize, especially in the pre-consultation history and meeting minutes, how the selected design alternative avoided and minimized natural resource impacts.

1.1. Federal Nexus

Identify the lead agency(ies) and clearly state the federal nexus. For example:

> This BA, prepared by the [applicant], addresses the proposed action in compliance with Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended. Section 7 of the ESA requires that, through consultation (or conferencing for proposed species) with the U.S. Fish and Wildlife Service (FWS) and/or the National Marine Fisheries Service (NMFS), federal actions do not jeopardize the continued existence of any threatened, endangered, or proposed species or result in the destruction or adverse modification of critical habitat. (Add additional authorities here as appropriate; i.e., Magnuson-Stevens Fishery Conservation and Management Act, Marine Mammal Protection Act, etc.)

This BA evaluates the potential effects of the proposed transportation project on species that are federally listed under the ESA. Specific project design elements are identified that avoid or minimize adverse effects of the proposed project on listed species and/or critical habitat.

1.2. Project Description

Include a brief description of the project and its history. Summarize the activities to be authorized, funded, or carried out by the federal action agency. State whether there are any interrelated projects, interdependent projects, or indirect effects. Provide a clear and complete description with any supporting graphics and pictures. Cite supporting materials and include the full references in a References chapter. If directly pertinent, the documents may be included in an appendix.

When a project has a long history and several dated documents have been prepared, whether or not they were released to the public, cite the completed documents as references if they provide relevant information that will help inform the decision. These documents represent previous work that may or may not be fully appropriate for the current BA, but may provide some relevant data. Do not include dated documents that will confuse the reviewer due to changes in project design, location, or other features. The authors of these documents should not be listed as preparers of the BA. If the project has changed significantly, do not include these historical documents if they would provide more confusion than clarity.

Documents that were not completed or dated may be considered works in progress and need not be cited. If they contribute data or substantial elements to the BA, their preparers may be considered preparers of the BA.

1.3. Project Area and Setting

Briefly describe the project area as needed to help the reader understand the project components. The project area is defined as all the areas in which project activities will occur. The boundaries should be clearly indicated on a project vicinity map. Include references to the county, route, and milepost where the project is located. The text, graphics, photos, and map(s) should identify the project area's proximity to towns or other prominent landmarks as appropriate.

In describing the project setting, which encompasses the larger landscape, indicate the distance between the aquatic resource and the project area. Describe the roadway/aquatic resource relationship (e.g., the highway crosses Deer Creek via a single-span pony truss bridge). Ensure that the reader understands the project location and its geographic relationship to the water body or species habitats of concern. Photos, visualizations, and graphics can clearly illustrating this proximity.

1.4. Consultation History

Summarize consultations with FWS and NMFS that occurred prior to or during the preliminary environmental assessment, and those that occurred later and focused on the proposed action. Include the meeting minutes, site visit details, consultation summaries, and species list submittals in an appendix. The history of document preparation should also be documented in this appendix, providing basic preparer and contact information and crediting those who contributed to the document. The list of preparers should include the federal agency, local agency, and contractor staff that materially contributed to the document preparation.

Chapter 2. Federally Proposed and Listed Species and Designated Critical Habitat

Identify all federally listed species and species proposed for listing in this section. Include those species known to occur in the action area, and/or those which may also occur in the project vicinity although not necessarily in the action area. For each species identify the agency with jurisdiction over the species (NMFS or FWS), the species population addressed in this document, (include the Evolutionarily Significant Unit (ESU) or Distinct Population Segment (DPS), if applicable), and information on the species' life history and stages.

This section should specify which, if any, specific proposed or designated critical habitats are also being addressed. It may be helpful to organize the section by species, with the designated critical habitat in a subheading.

Chapter 3. Environmental Baseline

The environmental baseline represents the current biological and physical conditions of the action area. This baseline reflects the following impacts:

- the past and present impacts of all federal, state, or private activities,
- the anticipated impacts of all proposed federal projects that have already undergone Section 7 consultation, and
- the impacts of state or private actions that are contemporaneous with the consultation in process.

Focus attention on the features of the environmental baseline that have the potential to be affected by the proposed action and on the biological requirements of the species being addressed.

Maps, photographs, and figures of relevant physical features can be used to illustrate baseline environmental conditions. Include key features in the action area and in the project vicinity. Physical conditions should be summarized in a table. Address all significant physical and biological contributors to the baseline, including rivers, other surface waters, geologic features, vegetation, and habitat characteristics.

In addition to describing the physical features of the action area, this section should include a thorough discussion and summary of the following topics:

- habitat access and connectivity;
- water quality (temperature, sediment/turbidity, chemical contamination);
- habitat elements (substrate, large woody debris, pool frequency, pool quality, off-channel habitat, refugia);
- channel condition and dynamics (width to depth ratio, streambank condition, floodplain connectivity;
- flow and hydrology (peak/base flows, drainage network increase);

- watershed and ecosystem conditions (road density and location, current land uses); and.
- vegetation.

Add other environmental baseline condition subsections as necessary.

Chapter 4. Project Details

Provide the reader with a clear picture of the proposed action, broken down by each of its logical elements or components. For example, a proposed highway project may be broken down to construction, operation, and maintenance.

Descriptions of the project elements designed to avoid or minimize impacts, or to provide conservation enhancement, should be clearly worded, and the specific actions should be detailed. Performance standards can be used when design details are not available. Because the services cannot consult on recommendations, only project elements or methods that will actually occur should be discussed and presented. Aspects of the project that are required by regulatory mechanisms as part of the proposed action, such as U.S. Army Corps of Engineers (Corps) wetland compensation, should be included.

Be as specific as possible in describing and identifying conservation enhancements in the project and connecting them to specific effects. Examples of conservation enhancement include longer bridges, fewer piers in the water, improved water quality, and wildlife connectivity.

Avoidance, minimization, and enhancement measures should be described in the simple future tense. For example, *"The erosion blanket will be extended along the streambank."* "Will" is preferable to "shall", and ambivalent language such as "may," "to the practicable extent possible," and "frequently" should be avoided.

4.1. Construction

Provide a clear statement of how the project will be accomplished. Describe what will be done, how it will be done, and where it will occur in the project area. This section should include information on construction techniques, construction sequencing, site preparation, construction equipment to be used, construction access and staging, and the requirements for in-water work. This section should also identify any temporary activities (e.g. managing detours, staging plans) and waste products that the action will generate (e.g., sediment-laden water, "green" concrete-contaminated water, concrete debris, lead paint flakes). Describe containment methods (e.g., skirting to contain sandblasting sand and lead paint debris on bridge projects). If containment methods are not known, include a performance standard. Describe aspects of the proposed action

that will add new impervious surface. Reference specific project plan sheets when applicable, and include them in an appendix. Identify constraints imposed on the contractor.

4.1.1. Project Timeline and Sequencing

Describe the type and scope of action proposed and provide a chronology of when activities will occur for each project element or component. Include construction windows or seasonal construction restrictions that will avoid or minimize impacts on listed species and tell how/why they will do so. An example of time-related measures would be restrictions on in-water work to avoid fish migration or spawning periods. Identify the start- and stop-dates for each project element.

A table or graphic timeline can effectively represent the project timeline.

4.1.2. Site Preparation

Describe all site preparation activities, including clearing and grubbing operations and vegetation removal. A discussion of the methods to be used to minimize impacts on vegetation in the action area should also be included.

Describe the Erosion and Sediment Control Plan (ESCP) (or incorporate by reference). The ESCP should be developed to comply with federal, state, and local laws, rules, and regulations and the National Pollutant Discharge Elimination System (NPDES) General Construction Permit regarding erosion prevention and sediment control for on-site construction activities. Typically included in this section are soil and slope protection and stabilization measures and site restoration specifications, including planting materials and methods.

4.1.3. Construction Access and Staging

Include a description of where the staging areas will be located, how they will be accessed, and what types of activities will occur within these areas. Include maps, pictures, and graphics, if available.

4.1.4. In-Water Work

Describe all in-water activities and the proposed work conditions and in-water work windows, as developed in consultation with NMFS or FWS. These work windows can minimize the effects of any in-water work. Address any proposed seasonal restrictions. In-water work is associated with such projects as culvert maintenance and replacement, bridge demolition, and pier installation.

Describe any dewatering activities, including channel changes (both temporary and permanent), berms, dikes, excavations, and sediment and erosion control activities. Temporary water management (i.e., dewatering) is often needed for construction within waterways and includes

work area isolation, flow diversion, and potential fish recovery. Temporary water management or dewatering is associated with culvert maintenance and replacement, bridge demolition, pier installation, and possibly abutment construction.

Flow Diversion

Identify how the work area will be isolated from flowing or open water, and whether the diversions will be temporary or permanent. Streamflow may be diverted in situations where complete isolation is not necessary to achieve effective isolation from flowing water. Flow diversion may be accomplished by placing barrier materials in the channel, encompassing two or more sides of an in-water work activity. If water is shallow and flows can be sufficiently deflected, the work area can be effectively dewatered without the need for complete isolation, pumping, and fish capture and release. Barrier materials may include sandbags, straw bales, concrete barriers, heavy tarp, sheet piling, and specially constructed devices such as water-filled bladders, solid barriers, or other cofferdam structures.

Assess potential effects from sediment discharge, and identify how controls will be accomplished. Sediment control measures must be implemented to prevent a release of turbid water into downstream areas in excess of regulated allowances.

Fish Capture and Release

If appropriate, describe how fish will be captured from the isolated area using trapping, seining, and electrofishing. Identify methods that minimize the risk of injury before during the dewatering of an isolated in-water work area.

4.1.5. Potential Impacts on Water Quality

Describe all activities that will affect water quality, including temporary and permanent stormwater controls. Water pollution, including stormwater runoff, is regulated under the Clean Water Act (CWA). Section 402 of the CWA provides the legal basis for the NPDES permit program, which regulates point and nonpoint discharges. Section 401 of the CWA states that an applicant for a federal permit to conduct an activity that may result in a discharge to waters of the state must provide the permitting agency with water quality certification issued by the state from which the discharge originates. A water quality certification is the mechanism by which the state evaluates whether an activity may proceed and meet water quality standards. Certification may be denied if there is no configuration by which the activity can proceed and meet standards. It may be approved if the activity can be conducted as proposed and meets standards, or it may be approved with conditions that, if met, will ensure that water quality standards are met.

4.1.6. Post-Project Site Restoration

Describe how the project area will be restored from temporary impacts. Revegetation, reseeding, topsoiling, irrigation, noxious weed control, regrading and recontouring, waste and spoil removal, etc., should all be addressed. Other restoration measures should also be described. If aquatic resources are involved, describe restoration measures as applicable (channel restorations incorporated into designs, fill of temporary channel changes or diversions).

4.2. Operations

Once the project is completed, project operations may affect the environment. For example, the operational effects of a transportation project may include traffic, barriers to listed terrestrial species, stormwater runoff, snowplowing, and ice removal.

4.3. Maintenance

Once the project is completed, routine maintenance activities may affect the environment. For example, the maintenance activities of a transportation project which may affect the environment may include mowing, herbicide application, bridge cleaning, bridge painting, culvert clean-outs, and ditch maintenance.

Chapter 5. Project Action Area

The *action area* includes all areas affected either directly or indirectly by the proposed action, not simply the area where project activity will occur. It will most likely extend beyond the *project area* itself. For example, if instream work at a bridge site will add sedimentation to stream waters up to 1 mile downstream, the action area includes the bridge repair site and stream waters 1 mile downstream.

The action area can be defined through the following steps:

1. Identify all potential project impacts (e.g., habitat destruction, noise disturbance, sedimentation, lighting).

2. Determine the geographic extent of each impact type to define a zone of impacts for that impact type.

3. Overlay the multiple zones to establish the geographic extent of all project impacts. These can be effectively presented using different colors to identify different elements of the action area (aquatic, noise, soil, and so on).

4. Define the action area based on the farthest geographic extent of potential project impacts.

Only one action area should be defined for a project. Separate action areas should not be defined for terrestrial and aquatic species; however, the separate zones of impact may be used to facilitate report organization and analysis of effects. The action area may include discrete areas separated from the primary area of anticipated project impacts. A map or figure showing the action area should accompany the text and can provide species-specific information, if useful.

5.1. Limits of an Action Area

Describe the specific limits of the project action area. A map, legal description, and photographs (aerial or ground) can illustrate the context and extent of the action area.

The first task is to define the specific limits of the action area. The limits of the action area should be based upon the geographic extent (in both aquatic and terrestrial environments) of the physical, chemical, and biological effects resulting from the proposed action, including direct and indirect effects, as well as effects of interrelated and interdependent activities.

Provide clear justification of the action area limits and show how they were defined.

Defining the geographic extent of potential effects is often difficult. For example, delineating the limit of noise impacts or determining how far noise will travel from a specific location before attenuating to background levels can be speculative. For noise impacts in terrestrial areas, commonly accepted thresholds are often used (e.g., a 1-mile radius for pile driving activities). However, these thresholds should be refined for the project action area based upon an analysis of site-specific ambient noise levels and the predicted distance noise will travel before attenuating to ambient conditions. The geographic extent of project-related noise underwater can extend beyond the radius defined for terrestrial impacts.

Estimating the maximum downstream distance through which sediment or pollutants can affect water quality may also be speculative. One approach uses established mixing zone distances that apply to many projects. Whatever the approach, a sound rationale and, if possible, documented support for the limits is suggested.

Each project has just one action area, which is usually larger than the project site or footprint, sometimes quite a bit larger, since it extends to the limits of the potential impacts on the environment from the project, both direct and indirect. The single action area for the project encompasses the extent of all direct and indirect effects related to the proposed action (as well as interdependent or interrelated activities) affecting both aquatic and terrestrial environments. In some situations it may be necessary to define a very large action area to address all project-related effects. The number of species addressed in a BA or occurring in the vicinity of a project plays no part in defining the action area for the project.

Within the action area, there may be smaller areas of terrestrial or aquatic impact, which are defined to facilitate the analysis of effects. However, within this action area, a smaller zone of impact can be defined to serve as the primary area of study for evaluating specific project effects on listed species or designated habitat.

To define the project action area:

1. Identify all potential project effects. This includes all direct and indirect effects, as well as those effects associated with interrelated and interdependent activities, occurring within both aquatic and terrestrial environments;

2. Determine zones of effect for each type of project effect. Look at each type of project-related environmental effect (i.e., in-water sedimentation, terrestrial noise,

underwater noise, clearing and grading, induced development, etc.) separately to determine its geographic extent;

3. Determine the geographic extent of all project effects. Once the zones have been identified, representing the geographic extent of each type of project-related environmental effect, these zones can be combined to form a single representation of the geographic extent of all project effects; and

4. Define the action area. The action area is defined by the outermost extent of all of the zones of effect combined. The outer limits of the action area may be defined by the zone of effect identified for one type of project effect that extends farther than any other, or the limits of the action area may be defined by a combination of multiple zones of effect. In some instances there may be discrete areas affected by project activities that are not contiguous with the other zones of effect (i.e., an off-site mitigation area). In these cases, the isolated area affected by project-related activities need not be physically lumped into the action area but can be considered a separate component of the action area.

5.2. How to Define an Action Area

This section provides examples of how the action area for a project is defined. The first example shows how an action area is determined based upon the zones of impact defined for multiple project elements. The second example illustrates how an action area is defined in an aquatic environment based upon anticipated noise impacts above and below the water.

The overall action area for a project is composed of a combination of multiple zones of effect, which reflect potential impacts associated with each project element. In this example, the action area is defined based on the extent of project-related noise and the extent of project-related aquatic effects.

What to Include in an Action Area

This example project consists of roadway widening and replacement of a culvert. As such, the action area needs to include the overall action area, the extent of project-related noise, and the extent of project-related aquatic affects.

1. The first step in defining the action area is to deconstruct the action into its component parts and identify the potential positive and negative effects associated with each. In this example, there are constructions with roadway widening and culvert replacement activities. The aquatic effects include potentially increasing downstream turbidity.

2. The second step is to define the zone or area affected by each type of anticipated project-related effect. These zones and the rationale for establishing their limits are described.

3. The third step is to determine the geographic extent of all project impacts by combining or overlaying the zones of effect. Some projects may have multiple zones of effect that need to be considered simultaneously.

Using this combination of all relevant affected areas, the project biologist can delimit the action area. The action area limits outline the outermost extent of contiguous project-related effects plus any outlying areas that will sustain project-related effects (such as a wetland mitigation site).

5.2.1. Examples of Well-Defined Action Areas

Example 1: This example explains the rationale underlying the definition of the action area for a project located within a marine system. This action area is based primarily on the limits of direct sediment effects associated with removal and replacement of an existing anchor system. Other impacts associated with the proposed action include noise from construction vessels and removal of the anchor system. Because of the surrounding bathymetry, the underwater extent of project-related noise is confined to a much smaller area than the area affected by sedimentation. No noise impacts will affect habitats above water because noise generated by construction vessels will not exceed noise levels generated by existing ferry and shipping traffic. Consequently, the limits of the action area for this project are based on the area affected by sedimentation.

The action area for the proposed maintenance and replacement project is delineated on the north shore of Bay Harbor, extending 2,000 feet west and 2,000 feet east of the project site and seaward to approximately –35 feet mean lower low water (MLLW). This action area is based on the anticipated extent of sedimentation impacts affected by predominant currents and bathymetry in Bay Harbor. Incoming tides circulate west along the northern shore of the harbor and exit east along its centerline. Tidal currents near the project area tend to follow an east–west direction to approximately –35 feet MLLW. Beyond –35 feet MLLW, currents tend to form a gyre region (i.e., closed vortex system) during flood tides. Because of the existing circulation and bathymetry, sediment impacts associated with replacement of the floating dock anchor system will be confined within the geographic area described above.

Extensive boat and tanker traffic operates within the harbor where bottom substrates consist of soft mud and silt. Consequently, noise impacts associated with removal and replacement of anchors will not likely exceed ambient conditions and will be confined within the action area defined above.

Example 2: This is an example of how to define a project's action area. The project entails rebuilding a bridge along SR 0. The action area encompasses the direct effects of the proposed action (noise and sedimentation/hydraulic impacts) as well as effects associated with the

equipment access routes to be used for the project. In this example, the outer limits of the action area are determined by combining these multiple zones of effect.

The action area includes all areas that could be affected by the proposed project and is not limited to the actual work area. Noise and disturbance from construction activities have the potential to extend 500 feet outward from the project area. Project-induced sediment conveyance and hydraulic effects could affect Dogwood Creek and its stream banks up to 250 feet upstream of the bridge and 500 feet downstream of the bridge. Equipment access routes will generate impacts on both banks of Dogwood Creek, but these access routes are within the 500-foot action area. Consequently, the action area has a radius of 500 feet in all directions from the project footprint, encompassing noise, equipment access, and sediment/hydraulic zones of effect. These distances were established, with confidence, that they include all areas of conceivable impact associated with the proposed project.

Chapter 6. Effects Analysis

An effects analysis must address the direct, indirect, interrelated, and interdependent effects of an action. Cumulative effects will also be evaluated on projects entering formal consultation.

The effects analysis should be objective and based on the best available science and commercial data. State the assumptions and unknowns on which the conclusion is based. Do not assume that the reader is familiar with the project or its location. Fully explain the impact the project may have on listed species or critical habitat. Use a logical framework for the effects analysis. Establish the key physical, chemical, and biological parameters affecting the species and determine how the action will change each parameter. The effects analysis should result in a logical, well-supported conclusion.

The following aspects of effects should be considered:

- nature of the effect,
- timing of the effect,
- proximity of the effect,
- duration of the effect,
- disturbance frequency,
- distribution of the effect, and
- expected recurrence of the effect.

The effects analysis should include the action analysis and the effects/response analysis (what the species does as a result). There must be both the potential for an effect of the action and the potential for the effect to elicit a response from the listed resources. The potential for an effect can be established by first determining how many individuals of each species are likely to co-occur with the proposed action's effects (or stressors) and describing the details of the co-occurrence (i.e., how they are likely to be effected/exposed and how that effect is likely to vary over space and time). A similar analysis is completed if the listed resource of concern is designated critical habitat (i.e., identify those important habitat features that are likely to co-occur with the action's effects). A very effective way of organizing and carrying out this step is to

complete a profile for the effects associated with each of the project's components. For example, if culvert replacement was identified as a project component and increased sedimentation was identified as an effect associated with this component (including the minimization measures), then exposure potential for the adults, juvenile, fry, and eggs of a listed fish species could be calculated by determining how many will co-occur when the sedimentation is present, and thus be exposed to the sedimentation.

The responses/effects analysis determines how listed resources are likely to respond after being affected by the action. This may result from a direct effect on individuals of the listed species themselves, as may be the case with the sedimentation example above, or it may be from a change in overall baseline. For the latter case, the responses/effects analysis is where the relationships between habitat change and a listed species' response to that change are identified.

Include the specific measures introduced as part of the project description that serve to avoid or minimize potential effects on ESA-listed species and designated critical habitat elements. When describing the effects on the species and habitat, the discussion must include all measures that will minimize and avoid effects. For example, if timing windows are being used to avoid impacts, then state clearly why these windows will result in no effects. Typically, these measures include avoidance or preservation measures of some kind (e.g., timing restrictions or buffers around sensitive habitat types and habitat features that are important to sensitive species). Best management practices (BMPs) are methods, facilities, built-in elements, and techniques implemented or installed during project construction to reduce short- and long-term project-related impacts.

6.1. Direct Effects

A direct effect is the direct or immediate effect of the project on a species or its habitat, whether beneficial or adverse. Direct effects result from the action and include the direct effects of interrelated actions and interdependent actions. According to ESA regulatory definitions, direct effects occur at or very close to the time of the action itself. Examples could include construction noise disturbance, loss of habitat, or sedimentation that results from construction activity.

Describe the likely effects of the proposed action on each species and designated critical habitat (a summary table can be very helpful). Discuss the temporal and spatial limits of effects species tolerances severity of effect mortality and other forms of "take" (i.e., harm, harassment, capture, etc.) and habitat loss. If the project is likely to have many potential effects on ESA-listed species or critical habitat elements, an introductory paragraph can list the specific effects to be discussed. These direct effects may include but are not limited to effects on habitats, stormwater runoff, noise, light and visual characteristics, and hydrology.

Direct effects on habitat elements may also result in direct effects on species. This is a key cause/effect relationship.

6.2. Indirect Effects

Indirect effects are caused by the action and occur later in time after the action is completed. The geographic extent of indirect effects is one component defining the project action area. Include in the analysis a discussion of the project phasing and a detailed description and map of the zone of influence or action area. Supporting documentation should include maps of local zoning and areas of approved development, historical land development by grid section, past and present photographs along the proposed alignment and maps illustrating lots with projects under review within the defined zone of influence.

Indirect effects may be caused by the following:

- changes to ecological systems resulting in altered predator/prey relationships;
- changes to ecological systems resulting in long-term habitat alteration;
- anticipated changes in human activities, including changes in land use.

6.2.1. Altered Predator-Prey Relationships

If a project significantly affects the prey species of a listed species, this impact is considered an indirect effect upon the listed species particularly if prey species are a limiting factor to the listed individuals affected. The analysis of the extent of this indirect impact should emphasize the impact of the project on the population of the prey species. For example, if a project significantly affects the population of coho salmon in a stream within a watershed identified by FWS as having bull trout spawning, this impact could have an indirect effect upon the bull trout population if coho has been identified as a limiting or important factor.

6.2.2. Long-Term Habitat Alteration

If a project removes riparian vegetation and does not compensate for this loss, the habitat functions provided by this vegetation will also be lost. If a project will increase ambient noise levels in the vicinity of the project, habitat that was once suitable for sensitive species may be rendered unsuitable. If a project changes the hydrology of wetlands that sustain essential prey or forage species or provide suitable habitat or important habitat features for a sensitive species, the wetland habitat upon which the species depends may be altered to the point that it is no longer suitable habitat for the species.

6.2.3. Indirect Land Use Impacts

An indirect effect that has often been ascribable to transportation projects is land development. Land development may impact natural resource systems such as agricultural land, wildlife habitat, and waterways that support populations of listed species. Land development usually results in increased demand for transportation services, roadway capacity, and transit services.

Conversely, transportation projects sometimes contribute to the conversion of undeveloped land to urban uses, possibly displacing wildlife through loss of vegetation and wildlife habitat. Significant adverse impacts could occur where the habitat of sensitive species or areas of ecological significance, such as wetlands and riparian corridors, are degraded. Determining the action area for a transportation project may require obtaining information from local governments about local land development. Appropriate expertise in land use planning and other areas may be needed in order to define the action area.

Six sets of questions can guide this analysis:

1. Does the project create a new facility (e.g., new road or new interchange)?

2. Does the project provide or increase access to an area, thus increasing human activity levels, resulting in potential land use changes, and potential impacts in the area that would not have occurred otherwise (e.g., construction of interchanges)?

3. Does the project increase the capacity of the transportation or roadway system, which in turn may influence the rate of development in surrounding areas (e.g., construction of roads)?

4. Is new development contingent on the transportation project (e.g., construction of roads)? (In some cases, developments are tied to certain transportation improvements by permit conditions, building moratoriums, or Growth Management Act concurrency requirements.) Are any activities such as residential and commercial development or other land use changes likely to result from the access created by the project?

5. Should the size and location of the action area be re-evaluated if there are additional indirect effects not initially considered?

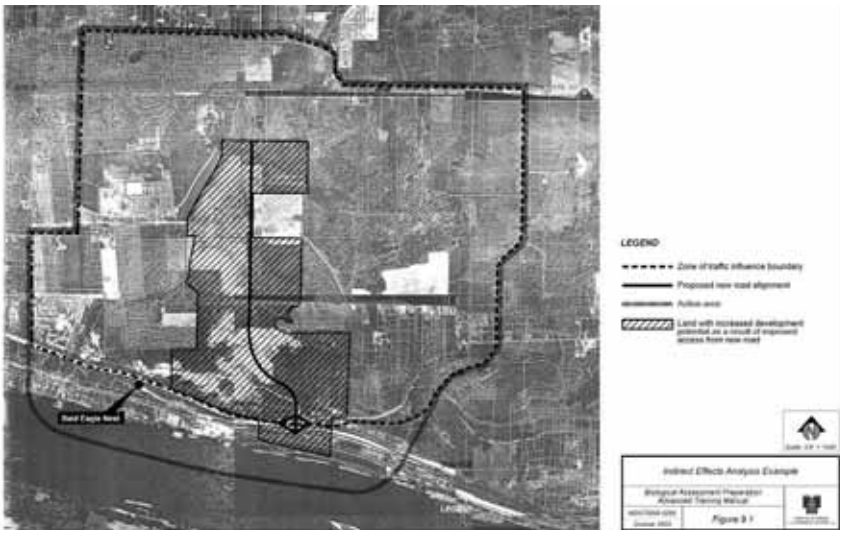
6. If development is contingent or dependent on the project, will this development have potential effects on the species? Are these effects likely to adversely affect the species or critical habitat?

Conclude with a preliminary effect determination for each species in the project action area

Example 1

A new interchange and road extension proposed along SR 1 will be constructed between two existing highway interchanges. All of the roads and adjoining lands that will be accessible from the new interchange are currently accessed from the two existing interchanges. However, the new interchange and road extension will likely result in improved freeway access to much of the area located between the existing interchanges. The project definition indicates that the existing

SR 1 access points are insufficient in accommodating the anticipated future highway access needs in the service area.



The city's comprehensive plan identifies the area in the vicinity of the proposed new road and interchange as occurring within the city's urban growth boundary. The city's comprehensive plan identifies this area as a key area for growth because of its proximity to SR 1 and existing commercial centers. The comprehensive plan also identifies the need for improved transportation facilities as the primary limiting factor for growth in this area. As a result, the city has imposed traffic concurrency requirements for future development in this designated growth area.

These proposed improvements are consistent with the city's land use and transportation plans. The above information indicates that the proposed project is intended to serve planned growth.

The construction of the new interchange is proposed to improve access to and from SR 1. Although the proposed project will not provide access to currently inaccessible lands, the undeveloped parcels located along the proposed road extension may have greater development appeal as a result of the improved mobility in the vicinity that results from this project. In this case, development of these parcels may occur as a result of this project, or more likely, their development may occur sooner than it would occur without the completion of this project. Moreover, given the traffic concurrency requirements imposed for this area, future development cannot occur without the proposed transportation improvements.

Example 2

The project is intended to address current and anticipated traffic conditions. Although it will accommodate increased volumes of traffic, the project does not provide new access to areas in the vicinity. This HOV project is intended to improve traffic flow, relieve congestion, and/or increase safety, which will not cause indirect effects such as land use change or even increase the

rate of development. This project may increase capacity along this portion of the I-5 corridor by adding HOV lanes to the north and southbound lanes of the roadway.

The relationship between transportation and land use is sometimes difficult to determine. For example, growth in Pierce County will largely be determined by a broad set of factors that include:

- Economic or market forces—housing costs, the availability of land, interest rates, overall regional economy, as well as national and international economic conditions;
- Availability of utilities, community infrastructure, and public services, including water, sewer, roads, schools, parks, etc.;
- Local jurisdiction land use plans and policies as administered through zoning codes and other land use regulations.

Major investments in transportation and other infrastructure are typically planned to support the demand of current and projected population over a specific period.

The HOV lane project zone of influence is contiguous - the Tacoma, Fife, Federal Way, Kent, Des Moines, SeaTac, and Tukwila spheres of influence. The cities involved are already committed to extending infrastructure to areas within their spheres of influence, and this HOV lane project is consistent with local land use and transportation plans and policies so there will be no indirect effects from the project

Example 3

Only the text portion of the analysis is provided here, although the analysis also included zoning maps, land use plans (historical and current), and master plan figures for the nearby municipality. Most indirect effect analyses include substantial supporting information as appendices.

Indirect effects are those effects that are caused by the proposed action and occur later in time, but are still reasonably certain to occur [50 CFR § 402.02].

Access to the area is already available from SR 0 to the south and from the Alder Street interchange on SR 12. The interchange will better serve the existing and future cross-town truck traffic through the city center from SR 0, which is congesting city streets. However, according to the City of Storyville (letter dated August 30, 1999), “This area has experienced, and will continue to experience, significant industrial development regardless of whether the interchange is constructed. The construction of the interchange is not intended to further facilitate construction of industrial facilities.” To support this claim, the city provided a traffic study conducted for one of the developments within the industrial area, which indicates that the development (which is highly dependent on trucking) could occur and operate effectively without construction of the north Storyville interchange project, if other local road improvements are made. Therefore, in this example development is not an indirect effect of the interchange. In

conclusion, any impacts on listed species or habitat that result from development within the action area are properly considered Cumulative Effects (see Section 6.5).

6.3. Interrelated and Interdependent Actions and Activities

Describe interrelated projects where applicable. These may include proposed action under consideration and other projects or activities that are part of a larger project and depend on the larger project for their justification – i.e., this proposed action under consideration would not occur without the larger project. Describe this increase to the proposed action and its effects.

Describe interdependent projects where applicable. These are projects that have no independent utility apart from the proposed action under consideration – i.e., other projects would not occur without this proposed action. Describe the interdependent projects and their effects.

6.4. Cumulative Effects

If development in the project vicinity cannot be attributed to or linked to the project (i.e., is not demonstrably interrelated or interdependent), the effects of these subsequent developments are, therefore, not indirect effects of the proposed project and should be addressed in a cumulative effects analysis. The cumulative effects analysis aids FWS and NMFS in making jeopardy and no-jeopardy calls for a species, in preparing biological opinions, and in tracking the environmental conditions throughout a general area.

Guidelines to differentiate between cumulative effects and indirect effects are listed below.

- Cumulative effects are effects of future state or private activities that are reasonably certain to occur within the action area.
- Cumulative effects discussions are included only in BAs that require formal consultation, i.e., those with *likely to adversely affect effect* determinations for one or more listed species or designated critical habitats.
- The cumulative effects of a proposed action do not contribute to the definition of the action area.
- Effect determinations for a project are not influenced by cumulative effects.
- The action area defines the geographic scope of the cumulative effects analysis.

6.5. Sample BA Section

Only the text portion of the analysis is provided; the analysis could also included zoning maps, land use plans (historical and current), and master plan figures for the nearby municipality (including development status maps and relevant municipal code sections). Most well written cumulative effects analyses include substantial supporting information as appendices.

Cumulative effects are those effects of future state or private activities, not involving federal activities, that are reasonably certain to occur *within the action* area of the federal action subject to consultation [50 CFR § 402.02].

It is the responsibility of the USFWS and NOAA Fisheries to review the cumulative effects of all state and private actions when making a jeopardy/no-jeopardy call on a species and preparing their biological opinion. The effects determinations of this biological assessment are based upon the direct and indirect effects and the interrelated and interdependent activities of the project, but not the cumulative effects. The anticipated effects in this section are required by regulation and provided only for the Services' use in evaluating jeopardy and adversely modify.

The future development of the industrial area within the action area could be considered a cumulative effect on listed species and habitat (see a development status map). The effects on listed species can be minimize through the use of development regulations and need to be discussed. These development regulations could include:

- Control of erosion and sedimentation of waterways is addressed in Chapter X of the Storyville municipal code (SMC), which would minimize effects. In addition to approving TESC plans and inspecting the work for containment fences, silt ponds or traps, rock entrances and final vegetation of slopes and cleared ground, the city visits each permitted site in late summer and works with the developer and/or contractor in preparing the site for the coming wet winter weather.

- If the city enacted a stormwater management program. For example, all runoff from new parking lots, driveways, and streets are treated. All new developments with more than 5,000 square feet of impervious surface provide detention of the 25-year developed storm at the 2-year predevelopment discharge rate.

- Other examples of minimization measures include: all proposed development within 1,000 feet of salmon-bearing streams being required to submit a habitat assessment prepared by a professional wildlife biologist. In addition, the city's shoreline master program prohibits most development within 200 feet of affected waterways (including the Cottonwood River.

Chapter 7. Effect Determinations

The determination of effect is a finding of the federal agency based on their assessment. This determination is fully substantiated in the effects analysis section. Each listed resource (species or critical habitat) in the action area will be assigned one of three effect determinations: *no effect*, *not likely to adversely effect*, and *likely to adversely effect*.

- ***No effect*** means the project will have no adverse or beneficial effects on the listed or proposed species or habitat.
- ***Not likely to adversely affect*** means that the direct and indirect effects of the project (including any interrelated and interdependent activities) will be discountable, insignificant, or beneficial.
- ***Likely to adversely affect*** means that the direct or indirect effects of a project (including any interrelated or interdependent actions), will have adverse effects on listed species or habitat, and these effects are not discountable, insignificant, or wholly beneficial.

Overall beneficial effects need to be emphasized since they can help to eliminate the possibility of jeopardy. In a case where a project would have any overall or long term beneficial effect on the species but would cause an adverse effect on even one individual of the species a *likely to adversely affect* determination is appropriate.

Effect determinations for all listed species and critical habitat can be summarized in tables, as illustrated below.

Summary of Effect Determination for Listed Species

Project/Action							
Project/ Action Stages	**Activity Category**	**Minimization Measure**	**Enhancement Activities**	**Presence/ Exposure Listed species**	**Chemical and Physical Changes**	**Biological Response**	**Effect Determination**
	Excavation for bridge support	Silt fence, work outside of the wetted channel but within the ordinary high water mark (OHWM)	Plant trees along the bank to reduce long-term erosion	No (timing construction)	none	none	No effect
	Excavation for bridge support	Minimize excavation activities	Project will provide an additional 0.5 mile of suitable rearing habitat.	Yes		0.13 of an acre of rearing habitat out of 10 acres	Not likely to adversely affect

Summary of Effects Determination for Critical Habitats

Project / Action							
Project / Action Stages	**Activity Category**	**Minimization Measure**	**Conservation / Enhancement Activities**	**Critical Habitat Present**		**Changes to Primary Constituents Elements (PCE)**	**Effect on PCE Functional Elements**

7.1. Effect Determination for Listed species

7.1.1. No Effect Determinations for Listed Species

State the rationale for this effect determination for each listed species to which it applies.

For example, a determination of *no effect* for a listed species might include the following justifications:

- No suitable nesting habitat occurs in the project action area.
- The nearest breeding occurrence is more than 6 miles away.
- Habitat present in the vicinity of the project is not suitable for foraging or dispersal.
- The project occurs in a watershed or water resource inventory areas (WRIA) with no listed fish species.
- The project or maintenance activities are conducted entirely within the developed transportation system right-of-way, does not remove or modify vegetation in any way, does not alter existing hydrology through modified discharges, and does not discharge materials (such as water, asphalt grindings, sediment, runoff or fill material) from the developed portion of the roadway.
- The project includes bridges undergoing seismic retrofit, bridge deck repair, or overlay and replacement, but which do not require in-water work and create no additional impervious surface area, no discharges, no staging or work access near open water, no additional runoff or pollutants.
- The project will implement BMPs to prevent sediments or runoff from entering surface water, and will not permanently remove riparian vegetation greater than 6 inches in diameter at breast height (dbh) from a riparian area of a stream or river system containing listed salmonids.
- The project will require work below the OHWM but no ESA-listed salmonid species are present in the system during the approved work window, and the work will not disturb spawning habitat.

Example: Northern spotted owl

The project will have no effect on northern spotted owls because:

- No suitable nesting habitat occurs in the project action area.

- The nearest breeding occurrence is more than 6 miles away.
- Habitat present in the vicinity of the project is not suitable for foraging or dispersal.

Example: Columbian white-tailed deer

The project will not affect the Columbian white-tailed deer because:

- The only known populations of Columbian white-tailed deer in Washington State are located within the Julia Butler Hansen National Wildlife Refuge, and on Puget and Crims islands within the Columbia River corridor. The nearest of these populations is located more than 12 miles east and south of the project site. The likelihood that Columbian white-tailed deer will be exposed to project activities is discountable.

7.1.2. May Affect, Not Likely to Adversely Affect Determinations for Listed Species

State the rationale for this effect determination for each listed species to which it applies.

For example, a determination of *may affect, not likely to adversely affect* for a listed species might include the following justifications:

- Suitable foraging/nesting/breeding habitat is available in the action area.
- Suitable habitat will be removed within the new roadway corridor and will be altered with establishment of the proposed waste site.
- Waste generated by work in a listed fish-bearing water body will be removed within the appropriate work window when listed fish species will not be present in the action area.

Example: Marbled Murrelet

The project may affect the marbled murrelet because:

- Suitable habitat is available in the mature spruce forest in the westernmost portion of the action area.
- Noise disturbance from construction activities will be audible within a portion of the marbled murrelet suitable habitat during the breeding season.
- However, the project is not likely to adversely affect the marbled murrelet because:
- A survey of the area resulted in no marbled murrelet detections.

- It is unlikely that marbled murrelets will be exposed to the project activities.
- No marbled murrelet suitable habitat will be removed as a result of this project.
- The potential marbled murrelet suitable habitat (greater than 150 meters from the project site) is outside the distances associated with injury thresholds established for project activity (less than 75 meters for high-action-generated sounds).

7.1.3. May Affect, Likely to Adversely Affect Determinations for Listed Species

State the rationale for this effect determination for each listed species to which it applies.

If incidental take is anticipated to occur as a result of the proposed action, a determination of *may affect, likely to adversely affect* should be made. This determination requires formal consultation with the Services. An effect determination is made at the individual level rather than the species level (i.e., the determination is based on impacts on individual members of the species, even when survival of the species as a whole is not affected).

For example, a determination of *may affect, likely to adversely affect* for a listed species might include the following justifications.

- Suitable Chinook rearing habitat in the action area will be adversely affected.
- Chinook salmon are known to rear in the immediate vicinity of the bridge site during the time of year when project activities will occur.
- Construction of the bridge will require placement of four large concrete piles in the canal with listed species present.
- If the old bridge is removed, the removal will have a long-term beneficial effect on water quality, but will have short-term adverse impacts on water quality due to suspension of sediments and potential resuspension of creosote.

Example: Puget Sound Chinook salmon

The project may affect Puget Sound Chinook salmon because:

- Suitable Chinook rearing habitat is present in the action area.
- Suitable rearing habitat will be destroyed as a result of the project.
- Water quality will be temporarily degraded as a result of in-water work.

The project is likely to adversely affect Puget Sound Chinook salmon because:

- Chinook salmon are known to rear in the immediate vicinity of the bridge site during the time of year when project activities will occur.
- Construction of the bridge will require placement of four large (6-foot-diameter) concrete piles in the canal.
- The old bridge may or may not be removed. If it is removed, the removal will have a long-term beneficial effect on water quality, but will have short-term adverse impacts on water quality due to suspension of sediments and potential resuspension of creosote.

7.2. Effect Determinations for Proposed Species

State the impact of the proposed action on the species proposed for listing, and provide the rationale, as previously described for the listed species.

Provide the appropriate jeopardy/no-jeopardy determination for proposed species. The jeopardy determination identifies whether the project will place the proposed species at further risk. For example, *this project will not jeopardize the continued existence of [name of proposed species] because [provide rationale]*. A jeopardy call is made at the species level, not the individual level. Jeopardy is only determined when the effects of a proposed project are anticipated to make it appreciably more difficult to recover the species if it becomes listed. The determination should be made in consultation with FWS or NMFS.

Conditional or provisional effect determinations may be made in the event that the proposed species becomes listed prior to project completion. These effect determinations should be justified just as with listed species. For example, *In the event that [name of proposed species] becomes listed prior to completion of the project, a provisional effects determination is provided: The project* may affect *[name of proposed species] because [provide rationale]; however, the project is* not likely to adversely affect *[name of species] because [provide rationale]*.

7.2.1. Example: Lower Columbia River Coho

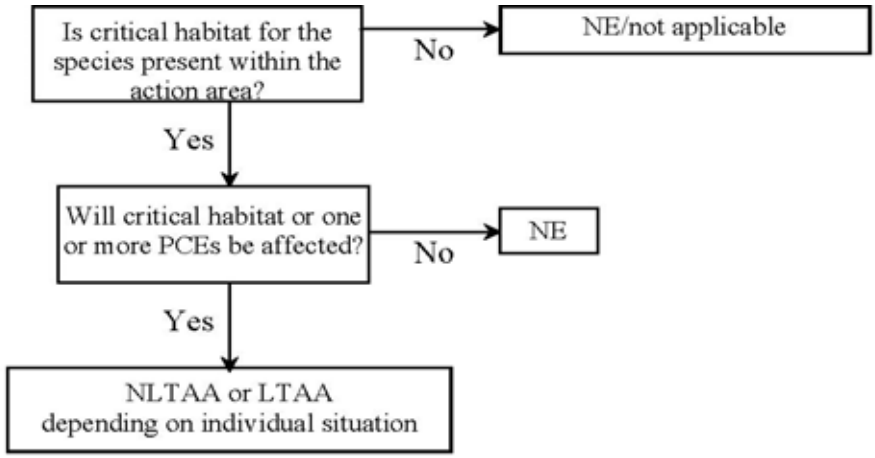
The project will not jeopardize the continued existence of Lower Columbia River coho because:

- Impacts on migrating spawning adults will not be sufficient to appreciably reduce the likelihood of both the survival and recovery of the ESU as a whole.
- Baseline conditions of the river will be maintained.
- However, if Lower Columbia River coho becomes listed prior to completion of the project, a provisional effect determination is provided below. The project may affect Lower Columbia River coho because:

- Suitable migration, spawning, and rearing habitat is present within the action area.
- In-water work will occur within the River.
- The project is likely to adversely affect Lower Columbia River coho because:
- Spawning adult coho migrating through the action area during project construction are likely to be disturbed by project activities.

7.3. Effect Determination for Critical Habitat

The process by which an effect determination for critical habitat is made is illustrated below.



7.3.1. Effect Determination for Designated Critical Habitat

The effect determinations for critical habitat may be *no effect*, *not likely to adversely affect*, or *likely to adversely affect*. The *not likely to adversely affect* determination can refer to either of two either insignificant and discountable adverse effects, or anticipated beneficial effects. A *likely to adversely affect* determination for designated critical habitat requires formal consultation.

Effect determinations for designated critical habitat could be based on:

- The addition of impervious surface area.
- The occurrence of in-water work.
- The management, staging, and location of construction vehicles.
- The necessity for clearing, grubbing, or ground-disturbing activity.

The rationale upon which the critical habitat effect determination is made should reference the primary constituent elements (PCE) that may be affected and why they may or may not be adversely affected. If the critical habitat contains six PCEs and only three PCEs may be affected by the project, then the effects of the action on each of the three PCEs should be clearly stated in the rationale. For a *no effect* determination, none of the PCEs would be negatively affected by the project. Projects affecting one or more PCEs will receive a determination of *not likely to adversely affect*, or *likely to adversely affect* for critical habitat. Projects with *likely to adversely affect* impacts on at least one PCE will result in a *likely to adversely affect* determination for critical habitat.

A *likely to adversely affect* determination for critical habitat may or may not merit an adverse modification call by FWS or NMFS. The adverse modification is comparable to a jeopardy call for a listed species. An adverse modification is defined as a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical [50 CFR 402.02] An adverse modification call is made for a species' critical habitat as a whole. Adverse modification of critical habitat is not allowed under the ESA and occurs when the habitat characteristics or the necessary habitat elements are changed to such an extent that the habitat no longer functions as critical habitat. A project determined by NMFS or FWS to adversely modify designated critical habitat cannot be conducted without modifications in accordance with a reasonable and prudent alternative (RPA).

7.3.2. Effect Determinations for Proposed Critical habitat

Determine whether the proposed project would adversely modify proposed critical habitat. This conclusion should specifically state whether the action will or will not destroy or adversely modify proposed critical habitat. The project biologist should substantiate this claim with a summary of relevant findings or documentation.

In addition, a conditional or provisional effect determination should be made in the event that critical habitat is designated prior to initiation or completion of the project.

Example – Proposed Critical Habitat No Effect

The project will not destroy or adversely modify proposed bull trout habitat because:

- The action area is located approximately 1.5 miles upstream of Grays Bay where proposed critical habitat occurs.
- It is highly unlikely that the project will have a detectable effect on water quality, water quantity, stream channel complexity, substrate quality, or other primary

constituent elements within proposed bull trout critical habitat, due to the distance between the action area and Grays Bay.

If bull trout habitat is designated prior to completion of this project, a provisional effect determination for critical habitat is the following: The project will have no effect on bull trout critical habitat.

A no effect determination is warranted for bull trout critical habitat because:

- The project includes in-water work 1.5 miles upstream of bull trout critical habitat.
- The project will result in minor water quality impacts within the action area. The project will not result in any measurable impacts on primary constituent elements within bull trout critical habitat.

Example – Proposed Critical Habitat Will Not Adversely Modify/Not Likely to Adversely Affect

- The action area is located approximately 1.5 miles upstream of Grays Bay where proposed critical habitat occurs.
- It is highly unlikely that the project will have a detectable effect on water quality, water quantity, stream channel complexity, substrate quality, or other primary constituent elements within proposed bull trout critical habitat, due to the distance between the action area and Grays Bay.
- The project includes in-water work upstream of bull trout critical habitat.
- The project will result in minor water quality impacts within the action area. However, the project action area lies 1.5 miles upstream of bull trout critical habitat.
- The project will not result in measurable impacts on primary constituent elements within bull trout critical habitat.

7.4. Making Overall Effect Determinations

A single effect determination, reflecting the impacts of the project as a whole, is made for each species and critical habitat. To do so, systematic consideration needs to be given to all of the potential effects associated with various project elements in combination. Each of these project elements may first be evaluated individually, and effect determinations for each element may be developed. However, all of these elements and their associated effect determinations must subsequently be considered in combination to develop an overall effect determination for each species or critical habitat.

Overall project impacts can be summarized in a table that lists all affected species and all project elements, and the effect determinations associated with each.

Effect Determination Table for Each Affected Species and Critical Habitat.

Jurisdiction	Federal Status	Common Name	Effect Determination for Stormwater Runoff	Effect Determination for In-Water Work	Effect Determination for Pile Driving	Effect Determination for Clearing and Grading	Overall Effect Determination for Project
FWS	Endangered	Gray wolf	*no effect*	*no effect*	*Not likely to adversely affect*	*no effect*	*Not likely to adversely affect*
	Endangered	Marsh sandwort	*no effect*	*no effect*	*Not likely to adversely affect*	*Not likely to adversely affect*	*Not likely to adversely affect*
	Endangered	Canada lynx	*no effect*	*no effect*	*Not likely to adversely affect*	*no effect*	*Not likely to adversely affect*
	Threatened	Grizzly bear	*no effect*	*no effect*	*Not likely to adversely affect*	*no effect*	*Not likely to adversely affect*
	Threatened	Bald eagle	*no effect*	*Not likely to adversely affect*	*Likely to adversely affect*	*Not likely to adversely affect*	*Likely to adversely affect*
	Threatened	Marbled murrelet	*no effect*	*no effect*	*Likely to adversely affect*	*Not likely to adversely affect*	*Likely to adversely affect*
	Threatened	Northern spotted owl	*no effect*	*no effect*	*Likely to adversely affect*	*Not likely to adversely affect*	*Likely to adversely affect*
	Threatened	Coastal/Puget Sound bull trout (DPS)	*Not likely to adversely affect*	*Likely to adversely affect*	*Not likely to adversely affect*	*Not likely to adversely affect*	*Likely to adversely affect*
	Threatened	Water howellia	*Not likely to adversely affect*	*no effect*	*no effect*	*no effect*	*Not likely to adversely affect*
	Threatened	Golden paintbrush	*no effect*	*Not likely to adversely affect*	*Not likely to adversely affect*	*Not likely to adversely affect*	*Not likely to adversely affect*
	Endangered	Humpback whale	*no effect*	*no effect*	*no effect*	*no effect*	*no effect*
			no effect	*no effect*	*no effect*	*no effect*	*no effect*
NMFS	Endangered	Leatherback sea turtle	*no effect*	*no effect*	*no effect*	*no effect*	*no effect*
	Threatened	Steller sea lion	*no effect*	*no effect*	*no effect*	*no effect*	*no effect*

	Threatened	Puget Sound Chinook salmon (ESU)	*Not likely to adversely affect*	*Likely to adversely affect*	*Not likely to adversely affect*	*Not likely to adversely affect*	*Likely to adversely affect*
	Threatened	Hood Canal summer chum salmon (ESU)	*Not likely to adversely affect*	*Likely to adversely affect*	*Not likely to adversely affect*	*Not likely to adversely affect*	*Likely to adversely affect*
	Threatened	Southern resident killer whale (DPS)	*Not likely to adversely affect*	*Not likely to adversely affect*	*Not likely to adversely affect*	*Not likely to adversely affect*	*Likely to adversely affect*

DPS = distinct population segment; ESU = evolutionarily significant unit.

7.5. Potential Flaws in Making Effect Determinations

The BA should lead the reviewer through a discussion of effects to a logical, well-supported conclusion. There are small but explicit distinctions between determinations. For example, a *no effect* determination means that there will be no effect. If effects are beneficial, insignificant, or discountable a *not likely to adversely affect* determination is probably appropriate.

Two types of potentially inappropriate arguments commonly used in BAs to support effect determinations. The displacement approach argues that removal of habitat or disturbance of individuals warrants a *not likely to adversely affect* or *no effect* determination because individuals can simply go elsewhere. This argument is adequate for wide-ranging species such as grizzly bears, gray wolves, and bald eagles, in instances where there is adjacent available habitat not affected by the project, or when the impact will not occur during critical times such as denning or nesting. A *no effect* determination in these situations can be inappropriate unless the effects are balanced by timing, minimization, and possibly enhancements. The species will be affected but, depending on the situation, perhaps not adversely so.

The potentially fallacious not-known-to-occur-here approach may be justified by surveys or other referenced data. The presence of the listed species is sometimes difficult to determine unless, for example, the habitat is so degraded that it no longer can support the species. NMFS and FWS should be able to provide information on location of species or critical habitat to support an effect determination.

Always reference information sources. Bald eagle nest sites, for example, are surveyed yearly by some states, and this information is usually up-to-date and reliable. In situations where wide-ranging species are difficult to census (e.g., grizzly bear and gray wolf), it is advisable to assume species presence if the habitat is present. The timing of surveys is also important. Consider the life history of the species when scheduling surveys. Many plants are only identifiable while flowering, for example. Midwinter bald eagle counts conducted once a year are inadequate for locating nest areas.

Survey decisions are at the discretion of the action agency since the only legal requirement is for best available scientific and commercial data.

7.6. Candidate Species

There is no requirement to consult on candidate species. They should only be included in the analysis if there is a concern that that these species could become listed before the project is completed. If candidate species are included, the project biologist should determine whether the project is or is not likely to significantly impact populations, individuals, or suitable habitat. Provide all supporting information on candidate species in an appendix.

Chapter 8. References

Include full references for all citations in the text using the format below.

[Book's author.] [Year.] [Title.] [Edition.] [Place of publisher.]
[Publisher (omit if same as author). Publisher (omit if same as author).]
[Prepared for (if appropriate).]

[Author of agency report (typically the agency)] [Year.] [Agency report title]
[Edition (Document number, if known.)]
[Place (city, state of department where data may be obtained).]
[Publisher (department responsible for data).] [Month and day if known.]
[Prepared for, if applicable.]

[Journal article author.] [Year.] [Title of article.]
[Title of journal and volume (number): page numbers.]

[Web site's author.] [Year.] [Title.] [Last revised: date posted or last revised.]
[Available <http://URL>.] Accessed: [Month, day, year you accessed site.]

[Personal communications with Last name, first name.] [Job title.]
[Organization or agency name, city, state.] [Date—type of communication.]

Appendix A: Essential Fish Habitat

Refer to the link below for guidance on determining effects on essential fish habitat and integrating EFH into an ESA consultation:

http://www.nmfs.noaa.gov/habitat/habitatprotection/efh/consult_index.htm

A basic outline for an analysis is provided below:

- Regulatory Background
- Project Location
- Description of Project Activities
- Conservation Enhancements
- Conclusions

Appendix B: Candidate Species Information

Include an assessment in the appendix for species addressed in the BA that are not afforded protection under the ESA (e.g., candidate species, species of concern, and state-listed species). The project biologist should conclude whether the project is likely to significantly impact populations, individuals, or suitable habitat. Impacts on occupied and unoccupied suitable habitat also should be addressed.

A good example of language that may be used to discuss impacts on candidate species and species of concern is provided below:

> Impacts on individuals of the lamprey species of concern (Pacific lamprey and river lamprey), the long-legged myotis, olive-sided flycatcher, tailed frog, Van Dyke's salamander, western toad, and tall bugbane are expected to result from disturbance of potentially suitable habitat, although significant impacts on populations are not expected.
> Because there is no habitat within the project action area for the following species of concern, the project will not result in impacts on these species: Gorge daisy, Larch Mountain salamander, long-eared myotis, *Oregon sullivantia*, Pacific Townsend's big-eared bat, and pale blue-eyed grass.

Appendix C: Detailed Listed Species Information

Appendix D: Consultation History

Appendix E: Project Drawings, Site Plans