

ADVANCED TRAINING MANUAL

Biological Assessment Preparation for Transportation Projects

Washington State Department of Transportation
Environmental Services
310 Maple Park East
P.O. Box 47331
Olympia, Washington 98504-7331

February 2013

Contents

1.0 Introduction

Part 1 General Information for Biological Assessment Authors

2.0 Understanding the Biological Assessment Process

3.0 Components of a Biological Assessment

Part 2 Guidance on Specific Biological Assessment Topics

4.0 Components of a Biological Opinion

5.0 Endangered Species Act and Mitigation

6.0 Impact Avoidance and Minimization Measures

7.0 Construction Noise Impact Assessment

8.0 Action Area

9.0 Environmental Setting

10.0 Indirect Effects

11.0 Cumulative Effects

12.0 Effect Determination Language

13.0 Effect Determination Guidance

14.0 In-Water Work

15.0 Performance-Based Biological Assessments, Batched Biological Assessments, and Programmatic Biological Assessments or Biological Evaluations

16.0 Essential Fish Habitat

17.0 Stormwater Impact Assessment

Part 3 Additional Resources for Biological Assessment Authors

18.0 Gathering Information for a Biological Assessment

19.0 Submitting a No-Effect Letter or Biological Assessment

20.0 Information on Listed Species

21.0 References

22.0 Glossary and Abbreviations

Reference Compact Disc—Additional Reference Materials for Writing Biological Assessments

1.0 Introduction

Contents

1.0	Introduction.....	1.1
1.1	Common Flaws in Biological Assessments	1.2
1.2	Essential Attributes of a Successful Biological Assessment	1.4
1.3	Examples and Guidance for Biological Assessments	1.4

1.0 Introduction

This manual provides guidance to biologists who prepare biological assessment (BA) reports for transportation projects in the State of Washington with a federal nexus (i.e., receiving federal funds, occurring on federal lands, or requiring federal permits or approval). The manual defines and clarifies the essential components of BAs and the basic Endangered Species Act (ESA) Section 7 consultation process, and it also addresses special topics that require careful analysis when producing a BA. Where applicable, examples excerpted from published BAs are provided in this manual to illustrate how to address various topics in BAs.

The introduction section of this manual provides a summary of common flaws in BAs, the essential attributes of a successful BA, a brief discussion of the types of writing samples provided in this manual. PART 1 of this manual provides an introduction to the process of producing a BA report and the coordination of the various players in document production and review at the state, local, and federal levels. In addition, part one provides a brief overview of the required components or sections of a written BA.

PART 2 consists of topic-specific chapters that provide detailed information, discussion, examples, and guidance materials pertaining to each topic. The topics include specific BA sections that often pose problems for authors (e.g., the action area), as well as complex topics requiring further guidance (e.g., construction noise impact assessment and developing effect determinations).

PART 2 provides guidance on BA sections that are often problematic, including the following:

- Construction activities, impact minimization measures, and best management practices
- Action area
- Existing conditions: indicators and pathways analysis
- Indirect effects
- Cumulative effects
- Effect determinations

Other chapters in PART 2 provide further guidance on complex topics:

- In-water work
- Stormwater impact assessment
- Essential fish habitat

- Batched biological assessments and programmatic biological assessments and biological evaluations
- Standards for making effect determinations by species

PART 3 includes standard information that may prove useful to authors in the preparation of BAs, commonly used reference citations, templates, and BA checklists. References to the guidance and documents provided in PARTS 2 and 3 are made frequently throughout this manual.

A reference compact disc accompanies this training manual that provides the following source materials for use in preparing BAs and in other phases of Endangered Species Act compliance:

- Bull Trout Interim Conservation Guidance
- Essential Fish Habitat (EFH) Consultation Guidance
- Essential Fish Habitat (EFH) Excerpt from Amendment 11 to the Magnuson-Stevens Act (Federal Fishery Management Plans)
- Endangered Species Act Sections 2 – 18
- Endangered Species Act Section 7 Consultation Handbook
- National Marine Fisheries Service (NMFS) Matrix of Pathways and Indicators
- NMFS Critical Habitat Guidance
- Peregrine Document (U.S. Fish and Wildlife Service 1999)
- Programmatic Consultation Guidance
- The Habitat Approach to Implementation of Endangered Species Act Section 7 for Pacific Anadromous Salmonid Habitat
- U.S. Fish and Wildlife Service (USFWS) Matrix of Diagnostics/Pathways and Indicators (Bull Trout)
- USFWS National Bald Eagle Management Guidelines

1.1 Common Flaws in Biological Assessments

Washington State Department of Transportation (WSDOT) reviewers for the Local Highways and Programs department, as well as reviewers from the National Oceanic and Atmospheric

Administration, Fisheries Service (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS), have determined the two most common BA flaws:

- Careless, unedited documents including awkward or inappropriate cutting and pasting of text
- Unsupported conclusions

BAs often require the use of virtually uniform language or similar information between sections or between reports, tempting the author to cut language from one report and paste it into another. At a practical level, this activity may be unavoidable; however, great care must be taken when doing this to ensure that pasted text is appropriate for the new section or report. Reviewers frequently encounter text that has been inappropriately inserted into reports, rendering the report ineffective, if not unacceptable.

In addition, authors frequently state their conclusions without having provided the reviewer with enough information to understand how these conclusions were reached. These are often called leap-of-faith arguments, which again render the report unacceptable. If adequate support for conclusions is not provided, reviewers may not be able to concur with the analysis or the final effect determinations.

Other common flaws include the following, some of which are discussed in more detail in subsequent sections of this manual:

- Project activities are not described in enough detail to understand the potential impacts on listed species.
- A listed fish species is not addressed even though the project occurs within the boundaries of the evolutionarily significant unit (ESU) or distinct population segment (DPS).
- Species occurrence information is inconsistent or contradictory.
- Species are assumed to be absent because they are not documented in the Priority Habitats and Species Program (PHS) database (the “*not known to occur here*” flaw; see PART 2 chapters addressing effect determinations).
- Existing conditions are insufficiently documented, particularly fish habitat.
- Critical habitat is not addressed or is incorrectly addressed.
- The action area is not defined or it is defined incorrectly.
- Specific best management practices (BMPs) to be implemented are not identified.

- Indirect and cumulative effects analyses are incorrectly addressed.
- Interrelated and interdependent activities are incorrectly addressed or incorrect terminology is used.
- Incorrect effect determination language is used for listed, proposed, and critical habitat.
- Proposed actions that would occur away from the project site (e.g., dump sites, staging areas, and wetland mitigation sites) are not addressed.
- Impacts on habitat (e.g., alterations to vegetation or stream substrate, extraction or fill activities) are not quantified.
- Photographs do not document sensitive habitats (e.g., streams and wetlands) in the project area.
- Maps do not show waterways or vegetation removal (or planting) sites.
- The extent of in-water work is not clearly described.

1.2 Essential Attributes of a Successful Biological Assessment

The successful BA has three essential attributes:

- It provides adequate justification for an effect determination.
- It leads the reviewer through a discussion of project effects to a logical, well-supported conclusion.
- It contains adequate written description, figures, and graphics to portray the action and its effects on listed or proposed species.

The level of detail and impact analysis provided in a BA should be commensurate with the level of anticipated impacts. Significant impacts should elicit more detailed review and analysis. In addition, analysis of impacts should be related to the species being addressed in the BA.

1.3 Examples and Guidance for Biological Assessments

WSDOT's goal is to minimize these common errors in future BAs by providing guidance accompanied by select writing samples to assist authors in identifying and correcting these mistakes in their own writing. The writing examples provided are excerpts from actual reports or

generic examples providing example BA sections. In addition to the writing samples, PART 2 includes several guidance documents and forms generated by agencies and the Services.

The examples of BA sections appear throughout this manual as indented text in Arial font, followed by comments or guidance from NOAA Fisheries and USFWS (referred to here as *the Services*), and indented in Arial italic underlined font.

PART 1

General Information for Biological Assessment
Authors

Contents

2.0	Understanding the Biological Assessment Process	
2.1	General Information.....	2.2
2.1.1	Biological Assessments.....	2.3
2.1.2	Conferences.....	2.3
2.1.3	Early Coordination.....	2.4
2.1.4	Informal and Formal Consultation.....	2.4
2.1.5	Emergency Consultation.....	2.6
2.1.6	Reinitiation of Consultation.....	2.7
2.2	WSDOT Consultation Process.....	2.12
2.2.1	Project Development and Assignment of Project Team.....	2.12
2.2.2	Information Gathering Phase.....	2.15
2.2.3	Early Coordination.....	2.20
2.2.4	Project Impact Analysis Phase.....	2.23
2.2.5	Write BA and Internal Review.....	2.25
2.2.6	WSDOT BA Review to Ensure FHWA Standards.....	2.25
2.2.7	Federal Agency Coordination and Consultation Phase.....	2.28
2.2.8	Project Implementation Phase.....	2.30
2.3	Highways and Local Programs Process.....	2.30

Tables

Table 2-1. Type of effect and level of consultation.....2.28

2.0 Understanding the Biological Assessment Process

2.0 Understanding the Biological Assessment Process

Chapter Summary

- Projects with a **federal nexus** require interagency coordination or Endangered Species Act evaluation.
- **Species lists** may be requested by letter as appropriate, or lists may be obtained online. BAs must be started within 90 days of receiving the species list and must be completed within 180 days of receiving the species list.
- **Biological assessments** analyze the potential effects of projects on listed species and critical habitat, and justify particular effect determinations. BAs are used as the technical basis for the consultation and conference processes.
- **Conferences** are required for federal actions likely to jeopardize the continued existence of *proposed* species or adversely modify *proposed* critical habitat.
 - Federal agencies may request a formal conference for a project warranting a conditional effect determination of LTAA.
 - The action agency also may request an informal conference for a project warranting a conditional effect determination of NLTA.
- **Early coordination** includes discussions and meetings with the Services prior to initiating consultation or conferencing, in order to discuss complicated projects during BA development and also to get feedback on preliminary effect determinations. Early coordination can include site visits (commonly used for H&LP projects) or Pre-BA meetings. All early coordination is between the federal action agencies, and should not be conducted or arranged by local agencies without the participation of the H&LP Environmental Engineer.
- Initiation of **informal consultation** must be requested in writing by the federal agency or the nonfederal designee of the federal agency. A BA or other similar documentation submitted with a cover letter serves as the consultation request. Informal consultation culminates in either a concurrence letter from the Services or initiation of formal consultation (in the event that the Services do not concur with effect determinations provided in the BA).
- Initiation of **formal consultation** must be requested in writing by the federal action agency. The request must include project information and

analysis of the impacts potentially resulting from the proposed action. This analysis may be in the form of a BA, an EIS, or an EA. Formal consultation culminates in the issuance of a biological opinion by the Services.

- The WSDOT process consists of eight general phases:
 1. Project development and assignment of project team
 2. Information gathering
 3. Early Coordination/Pre-BA meeting
 4. Project impact analysis
 5. Write BA and internal review
 6. WSDOT BA review to meet FHWA/CORP standards
 7. Federal agency coordination and consultation
 8. Project implementation
- The WSDOT Highways and Local Programs (H&LP) process is slightly different than the general WSDOT process, in that local agencies typically develop the project BA (either in-house or using a consultant). H&LP coordinates an internal quality control review prior to submitting the BAs to the Services.

2.1 General Information

Interagency coordination, as defined in Section 7 of the Endangered Species Act, requires all federal agencies to consult with the Services if a federal action agency determines that any action it funds, authorizes, or carries out may affect a listed species or designated critical habitat. Section 7 of the ESA applies to transportation projects, including local or state projects that have a federal nexus (i.e., have been funded, authorized, or carried out by a federal agency).

The following types of projects have a federal nexus and must ensure Section 7 interagency coordination:

- A U.S. Army Corps of Engineers permit (e.g., nationwide or individual permit) is required for the project.
- The project requires any another type of federal permit or approval.
- The project is fully or partially federally funded.
- The project is sited on federal land (e.g., Bureau of Land Management [BLM], Forest Service, national wildlife refuge, or military land).

2.1.1 Biological Assessments

A BA document is required for any major construction activity. This document analyzes the potential effects of the project on listed species and critical habitat and justifies a particular effect determination for each species and critical habitat addressed (described in PART 2, EFFECT DETERMINATION GUIDANCE). Major construction activity is defined in the ESA Section 7 regulations (50 CFR 402). All federal agencies are responsible for evaluating impacts on listed species resulting from all federal actions, regardless of scope. For listed species and designated critical habitat, this process of evaluation and federal review is termed *consultation*; however, for proposed species or critical habitats, this process is referred to as *conference*. Conferences and consultations are discussed more fully in the subsections below.

The U.S. Army Corps of Engineers uses the term *biological evaluation* (BE) for analyses that merit a *no-effect* (NE) or *not likely to adversely affect* (NLTA) determination and require informal consultation. The Corps uses the term *biological assessment* (BA) for analyses that merit a *likely to adversely affect* (LTA) determination. Despite the different meanings for these two terms, in practice the Corps refers to these two document types interchangeably.

2.1.2 Conferences

Conferences are required for federal actions likely to jeopardize the continued existence of proposed species or adversely modify proposed critical habitat. *Jeopardy* and *adverse modification* are defined in the ESA Section 7 regulations (see PART 3, GLOSSARY AND ABBREVIATIONS or in the statute itself, which is included on the reference compact disc).

Federal agencies may request a formal conference for a project warranting a conditional effect determination of LTA for proposed species or critical habitat. As discussed in PART 2 – EFFECT DETERMINATION LANGUAGE and EFFECT DETERMINATION GUIDANCE, an LTA effect determination is not the same as jeopardy or adverse modification. Informal conferences also may be requested by the action agency if a listing is imminent and the project BA reaches a conditional effect determination of NLTA for that species.

Action agencies can request a conference in the BA transmittal or consultation initiation letter for projects that address proposed species and critical habitats in the BA. A conference can also be requested for BAs that have already been submitted (or submitted and concurred on), before the project has been completed, when a species or critical habitat is proposed after BA submittal and is due to be listed or designated before project completion. This is considered a reinitiation. In this case a justification or effects analysis for the proposed species or critical habitat should be submitted instead of resubmitting the entire BA. Enough information should be provided to justify both the conference determination (*will not jeopardize the continued existence* or *will not destroy or adversely modify*) and the conditional ESA determination. Within the information submitted for reinitiation, the project biologist should reference the FWS number and/or the NOAA tracking number.

A conference opinion (for an LTAA project) is prepared by USFWS or NOAA Fisheries and can be adopted as the biological opinion when the species is listed or critical habitat is designated. Incidental *take* provisions in the conference opinion become effective at the time of listing or designation, along with terms and conditions. If a conference is requested for an NLTAA project, the conference report, by request of the action agency, can be turned into a concurrence letter at the time of listing or designation.

2.1.3 Early Coordination

Early coordination between the federal action agency or the non-federal designee and the Services is optional, but can be an effective way to streamline consultations and reduce the likelihood that a proposed project will have significant impacts on listed species or critical habitat. Early consultation, in the form of informal discussions, site visits, or Pre-BA meetings, occurs prior to the filing of an application for a federal permit or license. See the PRE-BA MEETINGS section below to learn more about an early consultation process that is specific to WSDOT.

2.1.4 Informal and Formal Consultation

The federal action agency may initiate either formal or informal consultation with the Services, depending upon the level of impact the project is expected to have upon listed species or designated habitats. Initiation of informal consultation must be requested in writing by the federal agency or the nonfederal designee of the federal agency. A BA or other similar documentation submitted with a cover letter serves as the consultation request. The request must include project information and an analysis of the impacts potentially resulting from the proposed project. The analysis may be in the form of an environmental impact statement (EIS), environmental assessment (EA), or BA.

Some action agencies may give nonfederal designee status to state or local agencies. The local agency may then complete informal consultations and conferences with the Services on behalf of the action agency. Nonfederal designees may not conduct formal consultations on behalf of the action agency, but they may prepare the BA used in the formal consultation. An example of this arrangement is that WSDOT serves as a nonfederal designee for both FHWA and the Corps.

2.1.4.1 Informal Consultation

Informal consultation can describe one of two processes:

- The process used to assist the Services in determining if formal or informal consultation is required for review of a project's potential impacts on listed species or designated critical habitat.
- The process through which federal agencies request Services concurrence with a determination of no effect or not likely to adversely affect. This process involves submittal of a BA to the Services for review.

If a federal agency determines (usually through preparing a BA) that a project is *not likely to adversely affect* listed species or critical habitat, the federal agency uses the informal consultation process to request Services concurrence. Concurrence by the Services is required for a *not likely to adversely affect* determination and is granted in a concurrence letter issued by the Services. Normally, projects that have *no effect* determinations will not send any documentation to the Services. However, on rare occasions a federal agency (or the designated nonfederal representative) may initiate informal consultation and request a concurrence letter on a no effect determination from the Services for large, potentially controversial projects.

2.1.4.2 Formal Consultation

If a federal action agency determines that its proposed project merits a determination of *likely to adversely affect* for a listed species, formal consultation and concurrence is required, in the form of a biological opinion from the appropriate Service(s). Initiation of formal consultation must be requested in writing by the federal action agency. The request must include project information and analysis of the impacts potentially resulting from the proposed action. This analysis may be in the form of a BA, EIS, or EA.

Through the consultation process, the Services may recommend modifications to projects to eliminate or reduce adverse effects. If effects can be reduced to an insignificant or discountable level, then consultation can proceed informally.

If formal consultation is required, the Services should be provided with an electronic version of the BA to assist in the preparation of a biological opinion. Formal consultation ends with the issuance of a biological opinion by the Services. The biological opinion can be a lengthy document and can take a substantial period of time to write. The document identifies whether or not the action is likely to jeopardize the continued existence of a listed species or adversely modify critical habitat. If the proposed action is not likely to jeopardize the continued existence of a species or adversely modify critical habitat, the project may proceed, provided it follows the terms and conditions outlined in the biological opinion. The biological opinion may include the following items:

- Reasonable and prudent alternatives (RPAs) or reasonable and prudent measures (RPMs) – RPA/RPMs include specific actions required to avoid *jeopardy* or *adverse modification* to critical habitat.
- Terms and conditions – These set out the specific methods by which the reasonable and prudent measures are to be accomplished.
- Prior to finalizing the biological opinion, the Services will provide draft terms and conditions to the federal action agency. The federal action agency, along with the project proponent, will review the conditions and provide comments back to the Services before they are finalized.

- Incidental *take* statement – A statement as outlined in Section 10(a) of the ESA that specifies the amount or extent of allowable taking (of listed species) and stipulates required reasonable and prudent alternatives, terms, and conditions.
- Conservation recommendations – These are voluntary measures the action agency can implement to further minimize adverse effects on listed and proposed species.
- Reinitiation clause – A statement requiring that consultation be reinitiated if there are changes to the project or if new information (e.g., additional listings) requires that the project review be revisited.

2.1.5 Emergency Consultation

There are some instances that require an abbreviated or accelerated consultation process with the Services, namely projects that are responding to imminent threats or emergencies.

An imminent threat is a situation where there is a high likelihood for structural failure in a natural disaster or emergency situation. Project will likely be constructed many months out – basically, something could happen but has not yet. Sometimes imminent threats become emergencies before corrective actions can occur. Examples of imminent threats include scour projects, sinking foundations, etc.

An emergency involving acts of God, disasters, casualties, national defense, security emergencies, etc. and includes response activities that must be taken to prevent imminent loss of human life of property – basically something has already happened or is happening and we need to do something now. Examples of emergencies include rock falls, bridge collapse, mud slides, etc.

Consultation procedures for an imminent threat are the same as those used for normal consultations, except the BA will need to be completed in a very short timeframe. In addition, the project will be placed high on WSDOT’s prioritized list of consultations in an effort to complete the consultation prior to the projected advertisement date for the project. The BA must be submitted before work occurs and standard review times will apply.

It is the responsibility of the action agency to declare whether or not a project is considered an emergency. For emergency projects, USFWS and NMFS should be contacted via email. Specifically John Grettenberger at USFWS and Mike Grady at NMFS should be notified of the situation. A description of the emergency and the proposed action should be provided. This contact should be made even if it is uncertain whether or not there will be a federal nexus for the project. These individuals may assign the task of responding to staff or respond directly. At this stage, the Services offer recommendations to minimize impacts to species and critical habitat. A record of this initial contact should be kept by the project proponent.

The WSDOT project manager will coordinate with WSDOT Environmental Services Office staff to ensure that the consultation tracking sheet is appropriately updated. If it is determined the project does not have a federal nexus, it will not undergo consultation and will later be removed from the tracking database.

If the project has a federal nexus, submit an after-the-fact (or during project construction) biological assessment describing the project and actions taken, justification for expedited or after-the-fact consultation, and an evaluation of the response to and the impacts of the emergency on affected species and habitat. Also include documentation summarizing how the Services' recommendations were implemented and the results of implementation in minimizing take.

It is important to establish the environmental setting accurately when preparing a BA for emergency consultation. Setting conditions are considered to be those conditions that are present after the emergency has occurred, but before the action agency's response actions have been implemented. For example, if a rock slide has occurred that has deposited debris in a fish-bearing stream, the environmental setting condition would not be the condition of the creek prior to the slide, but would describe stream conditions with the slide debris in the channel.

The Services are required to consult on projects, with a federal nexus, which have been deemed an emergency by the action agency (even if the Services do not consider the proposed action an emergency). In the biological opinion that is prepared during project construction or after-the-fact, the Services can recommend additional conservation measures that can be applied to similar future emergency projects. However, these new conservation measures do not apply after the fact. The Services can not hinder the emergency response decisions made by the action agency where human life is at stake.

2.1.6 Reinitiation of Consultation

Federal agencies are requested to reinitiate consultation on previously reviewed actions if any of the following occur:

- The amount or extent of take specified in the incidental take statement is exceeded.
 - For example: In their biological opinion, the USFWS defined take as the entire cross section of a stream, extending a specific distance downstream from project activities (600 feet). During construction, project effects extend beyond this distance (1,200 feet), resulting in an increased area where potential take could occur.
- New information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered.

- For example: A fish passage barrier occurring downstream of the road project is corrected after the road project consultation is complete, but before the project is initiated. Listed fish are now able to access and are utilizing the project area. The project consultation was completed based on a lack of fish presence.
- The identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion.
 - For example: The consultation was completed based on operating from a barge for in-water work. After the consultation is complete, the project design changes and the project now requires temporary work trestles. No in-water pile driving was addressed in the consultation.
- A new species is listed or critical habitat is designated that may be affected by the identified action.
 - For example: A consultation addresses all listed species; however, critical habitat for one of the species is designated after the consultation is complete, but before the bridge is constructed. The project did not consult on the newly designated critical habitat.

If one of these scenarios arises, reinitiation of consultation should occur and may be requested by the WSDOT, FHWA, CORPS, or the Services. Informal consultations are reinitiated by WSDOT, on behalf of the FHWA or the CORPS. Formal consultations must be reinitiated by the federal action agency (i.e., FHWA). The federal action agency (or its non-federal representative, i.e., WSDOT) must stay abreast of project activities throughout construction and remain aware of the listing status of species and critical habitats to determine whether reinitiation is necessary.

Although the consultation process is completed with issuance of a letter of concurrence or a biological opinion, the agency's ESA responsibilities persist until construction of a project is complete. Between the completion of consultation and completion of a project, the status of species or critical habitat can change, as can the design or scope of the proposed project resulting in effects to listed species or designated critical habitats that were not addressed in the initial consultation process and that must be addressed via reinitiated consultation.

WSDOT must ensure that the ESA approval received through consultation is still valid for all listed species and designated critical habitats before and during construction of a project. To ensure this, WSDOT should review the project description, design, and scope to make sure there are no changes, along with species lists at least 6 months prior to project advertisement and at least every 6 months once the project is under construction to determine whether new species have been listed or critical habitats designated that were not addressed in the biological

assessment (BA) submitted for consultation. Updated species lists and critical habitat can be obtained on NMFS and USFWS websites:

2.1.6.1 Species Lists

- NMFS (<http://www.nwr.noaa.gov/Species-Lists.cfm>)
- USFWS (http://www.fws.gov/wafwo/speciesmap_new.html)

2.1.6.2 Critical Habitat

- USFWS Critical Habitat Portal (<http://crithab.fws.gov/>)
- NMFS Critical Habitat (<http://www.nmfs.noaa.gov/pr/species/habitat.htm>)
- NMFS Critical Habitat Maps and Data (<http://www.nmfs.noaa.gov/gis/data/critical.htm>)

Following completion of Section 7 consultation and prior to completion of a project, a change in conditions requiring reanalysis may result in stopping construction or some components of construction under certain circumstances (e.g., marine pile driving injuring marbled murrelets that exceeds the amount of incidental take allowed or results in take when none was granted). In instances where there is a change in the status of a species or critical habitat, resulting in a higher level of protection (e.g., a species undergoes an emergency listing), or where there is a change in scope or design of the proposed project after construction has begun that causes an effect to listed species and/or critical habitat not previously considered, these changes may require some components of construction to be avoided while potential project impacts are reassessed and consultation is reinitiated.

If there is no change in the effect determination to the species and/or critical habitat, consultation does not need to be reinitiated but an update should be sent to the Services informing them of the change in the project design or the change in species status and subsequent reanalysis of the project impacts. In most cases, the Services will not require stopping construction if the initial consultation was done in good faith. However, in instances where the amount or extent of incidental take (specified in the biological opinion) is exceeded, or incidental take occurs when none was granted, any operations causing such take must cease pending reinitiation (USFWS & NMFS 1998).

2.1.6.3 Commonly Asked Questions and Scenarios

1. What if consultation has been completed and an emergency listing of a species is made (the species could occur in the action area of the project but was not addressed in the original consultation) prior to or during construction of a project?

Consultation should be reinitiated to address this new species, unless there is no effect to the newly listed species and/or designated critical habitat. If there is no effect to a newly listed species or critical habitat, document your analysis in the project file.

2. What if consultation has been completed and a new species or critical habitat that was not addressed in the original consultation but could occur in the action area is proposed for listing or designation, prior to or during construction of a project?

A conference should be requested with the Services to address the newly proposed species and/or critical habitat, unless there is no effect or the project will be completed before listing occurs and/or critical habitat designated.

3. What if a conference for proposed species or critical habitat has been completed and the species is listed or the critical habitat is designated prior to or during construction of a project?

If a proposed species is listed or proposed critical habitat is designated prior to or during construction of a project, the Federal action agency or non-federal designee can formally request that the previously completed conference opinion be converted to the biological opinion for the project (for formal consultations) or the conference report be converted to the concurrence letter for the project (for informal consultations). With this single request, the action agency fulfills its consultation obligations with the Services and receives take coverage for its project. This is considered a re-initiation. The terms and conditions and incidental take statement from the conference opinion are reissued in the biological opinion at the time of listing or designation.

- For example: Listed bull trout and proposed bull trout critical habitat were addressed in a project BA. Bull trout critical habitat was designated after consultation was complete, but before all in-water work was complete.
 - If an informal conference took place for the proposed critical habitat, then the action agency should send a project update to the Services and request to change the conference report to a concurrence letter. If a formal conference took place for the proposed critical habitat, then the action agency should send a project update to the Services and request to change the conference opinion to a biological opinion.

4. What if a project design or scope changes so that the proposed action no longer matches the project description included in the BA submitted for consultation?

The action agency should reanalyze the potential impacts associated with the revised project, and consultation should be reinitiated to address this new information only if there is an effect to the species or critical habitat that was not previously considered or

consulted on. If the effects do not change, then provide the Services with a project update.

- For example: A bank stabilization project that will require work within the OHWM of a stream with listed fish during the in-water work window (which could overlap with the migration season) has undergone consultation. The BA identified that the work was to be conducted in the dry. However, it was later determined that in-water work will occur.
 - Reinitiation is required because the action was modified in a manner that will cause effects to listed fish that were not previously considered. This consultation may go from informal to formal depending upon the proposed work window relative to the anticipated timing and use of the action area by listed species or the presence of critical habitat.
- A bridge repair project that involves riparian impacts is underway following completion of consultation. The project requires a design modification that will result in additional impacts to riparian vegetation on the north side of the bridge, but will result in equally fewer impacts to similar riparian vegetation on the south side.
 - Reinitiation of consultation is not required if the design modification does not cause effects to listed species and critical habitat not previously considered. Send an update to the Services to inform them of the design modification and update the project file.

5. What if a project is delayed from one construction season to the next?

The action agency will need to remain aware of the status of current species listings and critical habitat designations, keep informed of the latest information regarding the interpretation of the impacts on listed species and critical habitats, and ensure that the ESA approval received through consultation is still valid for all listed species and designated critical habitats before beginning construction of the project. If there are no changes to listing status for species and critical habitat, no changes to the scope of the project, or anticipated project effects, provide the Services with an updated project schedule.

- A project has completed consultation and, as described in the BA, was to be conducted during the 2009 construction season. Budget reallocations require a delay until the following season. All other aspects of the project are unchanged including species listings, habitat impacts, construction methods, in-water work windows, etc.

- Reinitiation of consultation is not required if the action is not modified and there is no new information that reveals effects of the action not previously considered. The action agency should inform the Services of the change in the project construction date.

2.2 WSDOT Consultation Process

The WSDOT process can be divided into eight general phases:

1. Project development and assignment of project team
2. Information gathering
3. Early Coordination/Pre-BA meeting
4. Project impact analysis
5. Write BA and internal review
6. WSDOT BA review to meet FHWA standards
7. Federal agency coordination and consultation
8. Project implementation

2.2.1 Project Development and Assignment of Project Team

Once a project need has been identified, WSDOT or the lead agency will compile a team of project engineers, environmental permit coordinators and designers to develop the project. This internal team will begin generating project concepts and designs and identifying the environmental permitting issues pertaining to the project. Generally, once the project team has 30-percent designs complete, the environmental permitting process, including ESA consultation, begins. The environmental permitting process may begin earlier or later in the project design process depending upon the specific project.

Ideally, a project biologist will be assigned to the project team early on in the design process to provide input to the design process. The project biologist can work with project designers and engineers to identify species of concern in the vicinity of the project, whether surveys for wildlife or plants will be required, in-water work windows, timing restrictions based on wildlife sensitive periods, and other environmental considerations and issues of special concern.

2.2.1.1 Assignment of Project Biologist

To begin the ESA consultation process, the project team contacts the WSDOT regional environmental office to determine the level of ESA review that may be required. The environmental office will assign a biologist to the project. This may be the WSDOT regional biologist, a consultant biologist, or a biologist from ESO in Olympia. Assignment will depend on the project and the workload. The following subsection outlines considerations for working as part of the WSDOT team.

2.2.1.2 Working as Part of the WSDOT Team

In order to implement its extensive highway construction program, WSDOT often contracts consultant biologists to help complete the ESA Section 7 analysis.

For most of WSDOT's projects, FHWA serves as the federal nexus. If federal funding is lacking, often a federal permit, usually from the U.S. Army Corps of Engineers (Corps), will be required, resulting in the Corps serving as the federal nexus. Occasionally a project involves more than one federal agency because it occurs on federally owned lands (Forest Service, Bureau of Land Management, etc.), which can result in joint lead agencies for a given project. For all informal FHWA and Corps consultations, WSDOT serves as the federal action agencies' non-federal designee and completes ESA Section 7 consultations with the Services on their behalf.

Though consultant biologists are hired based upon their individual qualifications and expertise, the biological assessments they are contracted to produce are agency documents that must be consistent with both WSDOT and FHWA policies and practices. To this end, consultants preparing biological assessments on behalf of these agencies should think of themselves as **part of the WSDOT project delivery team**, striving to produce documents that are internally consistent, that accurately reflect agency policies, practices and publication styles, and that have been fully coordinated with other team members.

Some basic steps for consultants to ensure the documents they produce reflect WSDOT standards are provided below:

- Coordinate early and often with the WSDOT project manager.
 - An initial meeting, preferably in the field, with the WSDOT project manager and relevant project team members should be organized to review the project.
 - WSDOT project managers review biological assessments for consistency with the agency's policies, practices, and the proposed project description.
- Coordinate early and often with the WSDOT project engineer.
 - WSDOT project engineers review biological assessments for consistency with the agency's policies, practices, and the proposed project description.
- Recognize that it is WSDOT's responsibility to define the action upon which it wishes to consult.
- It is the consultant's responsibility to assess the impacts associated with the action as defined by WSDOT.

- Do not revise the project description, change the project timeline, add project elements, introduce mitigation requirements, suggest design changes, etc. without coordinating with the project manager.
- Do not coordinate directly with the resource agencies (NOAA Fisheries and USFWS). Always contact the project manager and WSDOT regional environmental staff for assistance.
- Do not add minimization measures, BMPs or design changes to the project without coordinating with the project engineer.
- Coordinate early and often with the WSDOT regional biologist.
 - WSDOT regional biologists review biological assessments for consistency with agency policies and practices and also for document quality standards (see PART 1 – WSDOT BA REVIEW TO ENSURE FHWA STANDARDS).
- As the action agency, it is the responsibility of WSDOT, acting on behalf of FHWA, to provide an effect determination for each listed or proposed species or designated critical habitat potentially affected by a project. The consulting biologist provides a tentative effect determination for their approval.
- It is the consultant's responsibility to coordinate the effect determinations contained in a biological assessment with the WSDOT regional biologist to ensure the analysis and conclusions of the BA are consistent with other projects in the region and with current agency policies.
- It is the consultant's responsibility to coordinate early and often with the internal or external project team producing the biological assessment and or NEPA/SEPA discipline reports, to ensure clarity and internal consistency in the document (style, logic, analytical approach, terminology, etc.).
- It is the senior biologist's responsibility to ensure the BA analysis and conclusions of the report are consistent with WSDOT standards.
- Biological assessments that are not consistent with agency policies and practices and do not meet WSDOT's quality standards for biological assessments, will be considered deficient and referred to WSDOT Headquarters' Environmental Services Office for secondary review (see PART 1 – WSDOT BA REVIEW TO ENSURE FHWA STANDARDS).

2.2.2 Information Gathering Phase

The information-gathering phase is divided into two tasks:

1. Species related information gathering
2. Project related information gathering

2.2.2.1 Species Related Information Gathering

The information gathering process for species is divided into three steps:

1. Species list acquisitions (USFWS, NOAA Fisheries)
2. State database requests (Washington Department of Fish and Wildlife [WDFW], Washington Department of Natural Resources [WDNR])
3. Personal communication with local experts (e.g., tribes, WDFW)

Species List Acquisitions

The project biologist must have a species list to prepare a biological assessment. Species lists identify listed species, proposed species, candidate species, species of concern, and proposed and designated critical habitat in defined geographic areas.

The project biologist should begin researching the species that may potentially occur in the project action area by obtaining species lists from USFWS and NOAA Fisheries websites. BAs must address the listed and proposed species and designated and proposed critical habitat identified on species lists obtained from the Services within 180 calendar days of acquiring species lists from the Services.

The USFWS provides countywide species lists online at http://www.fws.gov/wafwo/speciesmap_new.html. Because they are not specific to the project area, these countywide lists often include species that do not occur in or near the action area.

To generate a project-specific USFWS species list, the project biologist should request species and habitat information from the WDFW Priority Habitats and Species database and the WDNR Natural Heritage database (described more fully below) for the project site and vicinity. This information can be used to narrow the countywide list provided by USFWS, to better represent the species that could occur in the vicinity of a proposed project. A project biologist can also revisit Federal Register listing decisions to determine the historical and current range for various species and to evaluate whether these ranges coincide with the project area. In Western Washington, if a species list is needed to address a different size area (the project area or a city, for example), the action agency may choose to generate its own list to send to the Services for concurrence.

NOAA Fisheries species lists relevant for Washington state salmonids can be obtained online at <<http://www.nwr.noaa.gov/ESA-Salmon-Listings/Index.cfm>>. Information on additional listed species under the jurisdiction of NOAA can also be obtained online at <<http://www.nwr.noaa.gov/Species-Lists.cfm>>.

The project biologist can generate a site-specific NOAA Fisheries species list by using the NOAA species lists, coupled with information from WDFW, to compile a more specific list of species occurring in the vicinity of a proposed project. The site-specific list generated by the project biologist can be verified with a NOAA Fisheries biologist to ensure the list's accuracy and applicability to the proposed project site.

The BA must be started within 90 days of receiving the species list and must be completed within 180 days of receiving the species list, and must be completed prior to the initiation of construction or contracts. Because the status of species and habitat can change, species lists must be updated every 6 months. Potential impacts on these species should be evaluated in a BA.

The ESA requires all listed species potentially affected by a project to be addressed in the BA written for a project, including any listed species inadvertently omitted from the species list. USFWS and NOAA Fisheries species lists may not always be exhaustive due to constant changes in the local presence of species and because the lists may be generated on a countywide or statewide scale. As a result, these lists may include species that might not occur in the project area, or they may omit species that are, in fact, present in the project vicinity. For these reasons, it is recommended that project biologists supplement federal species lists with information from other state and local agencies and biologists.

State Database Requests

The following agencies manage databases for priority animal species and habitats as well as for sensitive plant species and habitats:

- WDFW—Priority Habitats and Species Program database (PHS database) for information on ESA-listed fish and wildlife species, state priority species, and any habitat associated with these species occurring in the vicinity of the project (data can be requested at <<http://wdfw.wa.gov/conservation/phs/list/>>).
 - Marbled murrelet and spotted owl information must be requested specifically from the PHS database, in addition to a general request.
 - All specific site information is sensitive and confidential and generally should not be included in public documents or the final BA.

- For batched or programmatic BAs that cover a large geographic area, species information can be included in the BA. However, all sensitive information must be shown at a coarse scale. WDFW outlines standards and criteria for exhibiting species information.
- WDNR—Natural Heritage Program database for information on locations of sensitive plant species and rare plant communities occurring in the vicinity of the project (data can be requested at http://www.dnr.wa.gov/ResearchScience/Topics/NaturalHeritage/Pages/amp_nh.aspx).
- All specific site information is sensitive and confidential and should not be included in public documents or the final BA.

See PART 3, CHAPTER 18, INFORMATION REQUEST CONTACTS AND LETTER SAMPLES, for more information.

Personal Communication with Local Experts

Personal communication with local experts is highly recommended to acquire additional information on species occurrence and environmental setting conditions in the watershed or project area. Citations for these communications should include the date and the names and available contact information for the local biologists interviewed by the project biologist. Citations should be provided throughout the document as necessary and included in the reference section of the BA. A range of potential resources is available:

- Local tribal biologists
- WDFW area habitat biologists
- WDNR biologists
- Watershed council members
- Researchers from local universities or academic institutions

A list of WDFW regional habitat program managers is provided in CHAPTER 18, INFORMATION REQUEST CONTACTS AND LETTER SAMPLES.

2.2.2.2 Project Related Information Gathering

When gathering information related specifically to the proposed action, the project biologist must complete two steps:

- Develop an understanding of the proposed action, which involves breaking down the proposed action into its various elements
- Conduct a site visit

Develop an Understanding of the Proposed Action

The first step in understanding the proposed action, and also in characterizing the action in the BA, is deconstructing the proposed action into its constituent elements or parts. To do this, the project biologist must review project plans and consult with project engineers, environmental staff and designers to identify all elements of the project.

The project biologist must then develop an understanding of how the various elements fit together and what potential impacts could be generated from them. Again, close coordination with project engineers, environmental permit coordinators and designers will be necessary to ensure the project biologist understands the timing, sequencing, and magnitude of the project elements. The following project conditions should be identified during this phase:

- Project timing and chronology
- Amount and location of clearing and grading
- Amount of new impervious surface
- Proposed treatment of runoff
- Existing impervious surface, treatment, and location of treatment facilities
- Extent of in-water work
- Duration of in-water work
- Amount and type of vegetation to be removed (this may require a site visit)
- Type of equipment to be used
- Locations of material sources that are being developed due solely to the project
- Proposed BMPs
- Extent of the operation of the facility
- Future maintenance requirements

If a project will create new impervious surface, the project biologist can ask project design personnel for the Endangered Species Act Stormwater Design and Erosion Control Checklist (see PART 3, GATHERING INFORMATION FOR A BIOLOGICAL ASSESSMENT) to facilitate gathering all necessary information.

To complete this task and to facilitate the ESA analyses of project impacts, the project biologist should draft a detailed project description for review by the project team. An accurate project description is essential for completing the subsequent ESA analysis and documentation tasks.

Conduct a Site Visit

After developing an understanding of the project elements, the project biologist must conduct a site visit to document existing conditions and to review the proposed action. WSDOT policy requires that the project engineer, project environmental permit coordinator, or other person who is intimately familiar with the project accompany the project biologist on the site visit, particularly for complex projects. For complex consultations or for formal consultations, it may be advisable to invite the USFWS or NMFS biologist to attend the site visit. During this information-gathering phase, the project biologist should determine and document the following conditions:

- Vegetation
- Topography (immediate and vicinity)
- Stream habitat conditions (water quality, habitat types and features present, site-specific description of habitat characteristics and channel configuration, etc.)
- Riparian conditions (vegetation, large woody debris [LWD], bank condition, watershed conditions, etc.)
- Existing level of disturbance and/or development
- Historical and present land use
- Historical and present species use
- The presence of critical habitat within project area, vicinity, and action area
- The presence of suitable habitat within project area, vicinity, and action area

When in the field, the project biologist should also note the following features:

- What are the locations of significant habitat features (important to species survival or reproductive success) in relation to project? Are they active or inactive? Are they in the line of sight? Will they potentially be affected by construction-related noise? Will they potentially be affected by construction-related sediment impacts?

- Are prey species located in the habitat? Will they be affected by project-related impacts? Will the impacts be great enough to cause an indirect effect on listed species?
- For some species (e.g., murrelet and bull trout), if suitable habitat features or prey species are present in a project action area, the presence of listed species must be assumed.
- Is a survey (according to accepted protocol) necessary to identify the presence of suitable habitat or potential presence of species?

The evaluation of the extent of proposed impacts related to the project action will be based on the project, species, and habitat information gathered in the two steps of the information gathering phase.

2.2.3 Early Coordination

2.2.3.1 Pre-BA Meeting

As part of its efforts to manage or expedite the consultation process WSDOT established a monthly meeting with the Services (NOAA Fisheries and USFWS) where projects can be presented and discussed. These meetings are held in Lacey, and are attended by representatives from USFWS, NOAA Fisheries, WSDOT, and FHWA. For any given project, both project design staff and environmental staff, including the project biologist, should be present. At these meetings, project designs and impact analyses are presented and methods to reduce impacts to listed species are discussed with the Services. Projects should attend a meeting prior to submittal of the project BA to the Services. Large complicated projects may be presented at more than one meeting. The Pre-BA Meeting process is outlined in detail below, based on January 6, 2006 guidance.

Representatives of Washington State Department of Transportation (WSDOT), Federal Highways Administration (FHWA), U.S. Fish and Wildlife Service (USFWS), and National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) attend the Pre-BA meetings. The purpose of the Pre-BA meetings is to allow early involvement of the project proponents and the Services to discuss projects prior to their submittal for Section 7 consultations under the Endangered Species Act (ESA). Project managers, especially those with very complex, multi-year projects may attend very early in the design phase, and then may attend several meetings as the project progresses, while others may only need to attend one time. During the meeting, the project proponent will have an opportunity to explain the project design and the project's limitations, and the Services will have an opportunity to discuss how the project could avoid and minimize its effect on listed species. If practical, project proponents should attend at such a time as there is still flexibility in project design.

The Pre-BA meetings are held monthly at a pre set day and time, which is currently the third Thursday of the month. The meeting day can be changed by the request of any of the participating agencies. These requests should be made as far in advance as possible. When a participating agency representative cannot attend a regularly scheduled meeting, he/she will coordinate with the other three agencies to find a mutually agreeable date, time, and location. Meetings are canceled when there are no projects to present (this can happen during busy summer construction season). Most meetings are about 3 hours long. Meetings can be attended by conference call and/or GoToMeeting. Project personnel are not required to attend in person.

Ten days prior to the meeting, a call for agenda items is sent out to all region environmental coordinators, project engineers, Highways and Local Programs personnel, WSDOT headquarter and regional personnel, FHWA, and the Services. Projects that would like to attend the meeting must submit a one page project summary (template will be provided to consultant biologist by WSDOT project manager or regional biologist). They must also provide the project representative's name, email, and phone number to allow for last minute schedule changes if necessary due to inclement weather or emergencies.

In addition to contact information on the presenter, the project summary sheet must include a short description of the project including methods to reduce impacts, a list of the listed species in the action area, the provisional effect determination for each species, and the rationale for each effect determination. A vicinity map and aerial photo must also be attached. This document must be brief and the photos must be formatted to insure that the document can be emailed out. The project summary sheets for all attending projects are attached to the meeting agenda that is sent out 3 days before the meeting to allow the Services and FHWA to become familiar with the projects prior to the meeting. FHWA Area Engineers and Team Leaders who have projects from their area being presented will know if they need to attend the meeting or not. The project summary form will provide a record of the presented projects and their ESA issues. Projects which do not provide the project summary sheet in time to go out with the agenda will be scheduled for the next monthly meeting.

The agenda will list the order in which the projects will be presented. Every attempt is made to schedule projects with consideration to distances traveled. Both environmental and engineering staff should be present for the project discussion. Local agency projects must have a representative from both the H&LP Environmental Office and the local agency present during the discussion. Projects that are scheduled later in the agenda are asked to arrive 15 minutes early in case previous projects finish ahead of schedule. Presenters must insure that they can complete their presentation and discuss all their issues in the time allowed. This will require that they focus the project discussion on elements that may affect listed species. Times may range from 30 to 60 minutes depending on the number of projects presenting and the complexity of the project. If a project needs more time, the meeting facilitator will strive to modify the agenda accordingly. If a project decides that they cannot make the scheduled meeting, they are required to call the meeting facilitator to cancel. Attempts will then be made to rearrange the scheduled to avoid 30- to 60-minute gaps in the meeting.

When possible, WSDOT will provide a meeting facilitator to insure that the agenda is adhered to and discussions focus on project-specific issues relevant to the Endangered Species Act. If a note taker is available they will record for each project the major issues, suggested minimization measures, and commitments made by each agency. If a note taker is not available, each project will be responsible for taking notes and sending them to the meeting facilitator within 48 hours of the meeting. WSDOT's meeting facilitator will then send out one email to all the meeting participants containing all of the meeting notes. This email will serve as a record of the meeting.

The following projects are required to attend a Pre-BA meeting (although all projects with potential impacts to listed species would be allowed to attend):

- All formals, although WSDOT formal consultations with only a Corps nexus should also present their project at the monthly Corps meeting
- All projects that complete in water work in waters where listed fish or killer whales may be present
- All projects that involve in-water pile driving in listed fish bearing waters, including Puget Sound
- All projects which conduct blasting within 1 mile of a point location for northern spotted owl site center, or occupied or suitable marbled murrelet habitat, or within 1/4 mile of a listed fish bearing water
- All projects (that are not conducting blasting) which occur within suitable habitat or within 60 yards of suitable habitat for spotted owls and marbled murrelets during their respective nesting seasons
- All projects, which occur within designated or proposed critical habitat for any plant or animal species and which have the potential to alter the habitat. Projects that do not modify or degrade the critical habitat may not need to attend.

Obviously, not all projects meet one of these criteria so there will be projects that are consulted on that have not attended a Pre-BA meeting.

Projects that should not come to the Pre-BA meeting include:

- Projects that are a no effect for species under the jurisdiction of both NOAA and USFWS
- Projects that fit under the WSDOT Eastern or Western Washington Programmatic Biological Assessment for the USFWS and are a NE for NOAA species

- HLP projects that use the Local Agency Environmental Classification Summary (ECS) form to document their no effect determination

Both H&LP's ECS form and ESA guidance are provided in the Local Programs ECS Guidebook, (available online at: <<http://www.wsdot.wa.gov/NR/rdonlyres/87901EB4-008A-43A0-9DB7-2179E0BC939F/0/ECSGuidebookSecure.pdf>>).

While attendance at Pre-BA meetings is mandatory for all projects that meet the above requirements, Eastern Washington Regions may be able to replace their presentation at a Pre-BA meeting with an acceptable alternative meeting format.

2.2.3.2 Site Visits

H&LP generally relies on field visits with ESA liaisons at the services to meet its early coordination needs for local agency projects. All early coordination site visits for local agency projects are arranged by the H&LP Environmental Engineer.

In the future, a single point person may be established in each region or mode to facilitate the presentation preparation. Each region and mode will be responsible for screening their own projects and insuring that they attend the Pre-BA meeting as required prior to submitting the BA to the Services.

2.2.4 Project Impact Analysis Phase

The project biologist should systematically evaluate the impacts of a proposed project upon species and habitats. The impact analysis phase is divided into two tasks:

1. Environmental Impact Analysis to Determine Project Action Area
2. Analysis of Project Impacts to Species and Critical Habitats

2.2.4.1 Environmental Impact Analysis to Determine Project Action Area

First an analysis of chemical, physical, and biological effects of the project on the environment is completed to determine the geographic extent of the project action area. The following topics are analyzed in this first project impact analysis task:

- Direct effects
- Indirect effects
- Interrelated actions or activities
- Interdependent actions or activities

These topics are discussed more fully in CHAPTER 3, COMPONENTS OF A BIOLOGICAL ASSESSMENT.

Based upon the results of this analysis of all project related effects, the project biologist defines the action area for the proposed project. The action area in turn, defines the scope of the analysis of project impacts to species and critical habitats discussed below.

Impacts of the project can potentially be reduced by incorporating impact minimization measures (MMs), best management practices (BMPs) or performance measures (PMs) into project designs. The project biologist should coordinate with the project team to identify acceptable minimization measures that can be incorporated into project designs and considered in the environmental impact analysis. If new minimization measures are incorporated into the project design, it is essential that the project description is updated to reflect any changes to the project design or proposed construction of project elements.

For projects that require formal consultations due to an adverse effect determination, the BA must address cumulative effects. However, impacts associated with cumulative effects do not influence the effect determination of the project on listed species or critical habitat.

2.2.4.2 Analysis of Project Impacts to Species and Critical Habitats

In the second task, the project biologist should systematically evaluate the impacts of a proposed project upon species and habitats occurring within the project action area. One way of thinking about the analysis is to first look at the potential for the species to be exposed to an action, and then to determine what the response of the species could be to that action (i.e., exposure – response analysis).

The exposure part of the analysis should identify whether or not listed species or designated critical habitat will “co-occur” with the effects of the activities under consultation and should characterize the magnitude and spatial and temporal patterns of exposure to species or critical habitats. To determine the potential for exposure of listed species to project-related impacts, the project biologist should consider the characteristics of each anticipated project impact (where, when, length of time, frequency, etc.), environmental setting conditions, and how the timing of or use by a species in the action area could coincide with anticipated impacts resulting in potential exposure. To determine potential for critical habitats to be exposed to project impacts, the project biologist must examine whether project impacts will extend into critical habitat areas and/or will affect any primary constituent element of these habitat areas.

If exposure is likely, the project biologist would complete a response analysis. Response analyses determine how listed resources are likely to respond after being exposed to project-related effects. First identify general responses of species and habitats to anticipated project impacts. Then consider how specific project impacts would be modified by proposed MMs and how in turn they would affect anticipated species’ and habitats’ responses to project impacts. Given the potential for exposure and the influence of BMPs and minimization measures on anticipated project-related effects, the project biologist would characterize the anticipated response of each species or critical habitat attribute associated with each project-related impact.

To make an effect determination that pertains to the project as a whole, these project-element specific impact analyses would be considered in concert for each listed species or designated critical habitat. One of three effect determinations can be made: *No effect*; *May affect*, *Not likely to adversely affect*; and *May affect, likely to adversely affect*.

2.2.5 Write BA and Internal Review

The project biologist documents their analysis and conclusions in one of the following documents: No Effect Letter, Biological Assessment/Biological Evaluation, or Programmatic Biological Assessment Form (WSDOT internal use only). For information on No Effect Letters and Biological Assessments, see PART 3, SUBMITTING A NO EFFECT LETTER OR BIOLOGICAL ASSESSMENT.

Before finishing the draft ESA document, the project biologist should coordinate with the project team, to verify appropriate MMs and BMPs have been included in the document. Prior to submitting the document to WSDOT environmental staff for review, the completed draft document should undergo a rigorous internal review to ensure that the document meets WSDOT standards. Once this internal review has been completed, and appropriate revisions have been made, the revised document should be provided to WSDOT for review.

2.2.6 WSDOT BA Review to Ensure FHWA Standards

Before submitting BAs to the Services (NOAA Fisheries and USFWS) for formal or informal consultation, WSDOT completes an internal sufficiency review of BAs that have been prepared by consultant biologists to ensure that the BAs meet WSDOT and/or FHWA standards. Completed BAs will be submitted by qualified consultants (senior authors) to the appropriate WSDOT regional staff for review. WSDOT reviewers use the BA review checklists to determine whether the documents are complete and compliant with WSDOT policies and guidance. These checklists are available on the WSDOT environmental website at: <http://www.wsdot.wa.gov/Environment/Biology/BA/BAtemplates.htm>. If a document is considered complete, it is forwarded to the Services for consultation. If necessary, the BA will be sent back for correction. BAs can be returned for two reasons: 1) for changes in project description or setting or timing etc., and 2) for deficiencies in meeting WSDOT quality standards and policies, such as incorrectly identifying the action area, incorrectly calculating the extent of project-related noise, or for an overall inconsistent BA.

BAs that have been identified as having policy or quality deficiencies will be referred to WSDOT headquarters, Environmental Services Office, for secondary review. If, after this second review, there is agreement that the BA does not meet WSDOT policies and quality standards, the consultant biologist will be given a warning, notified of deficiencies, and asked to correct the BA. After the submittal of two policy or quality deficient BAs, the biologist will be removed from the roster of qualified on-call Senior and Junior authors and at a minimum must retake the BA qualification seminar and pass the qualification exam again prior to submitting any other BAs.

2.2.6.1 BA Author Qualification Expectations

To improve the quality of BAs submitted to WSDOT, the agency has implemented a qualification process that includes education, training, testing and experience requirements for on-call consultants. For detailed information on qualification requirements see the following website: <<http://www.wsdot.wa.gov/Environment/Biology/BA/qualification.htm>>. A detailed description of the responsibilities or expectations for qualified BA authors and for WSDOT to ensure work products meet desired quality criteria is provided in the list below:

Expectations for Qualified BA Authors

- It is the Qualified BA author's responsibility to stay up to date on the guidance that is posted on the web.
- It is the Qualified BA author's responsibility to be re-qualified every 2 years to maintain their qualification. Since WSDOT has no way of knowing if individuals are still working in the BA field, or working for an on-call consultant, it cannot be WSDOT's responsibility to contact folks to let them know when they need to re-qualify.
- It is the aspiring Qualified BA author's responsibility to provide WSDOT with all the information requested to review their application (proof of degree, resume that follows the required format, and list of BAs completed) within 1 week of the training class they attended. WSDOT has no way of knowing if the individual attending the class is taking it to become qualified or just for their education, and is not interested in being on the qualified authors list.
- It is the Qualified BA author's responsibility to inform WSDOT if they change consulting companies or if they are no longer interested in being on the qualified author list.
- To ensure BAs submitted to WSDOT meet the agency's quality and policy standards, qualified authors will need to implement internal quality assurance and control procedures.
 - Documents should be technically correct and free from cut and paste and grammatical errors.
 - Junior authors may assist the senior author in the preparation of a BA. If a junior author assists the senior author, the senior author is expected to review work and provide quality control.
- It is the Qualified BA Author's responsibility to ensure that all BAs submitted to WSDOT follow the most recent WSDOT guidance and format.

- The Qualified BA Author's name(s) must be included on all BAs and No Effect Letters.
- If a BA is considered deficient by WSDOT, the consultant will be given a warning, notified of deficiencies, and asked to correct the BA.
 - It is expected that the deficiencies identified by WSDOT in this initial review will be addressed in the revised document.
 - Senior authors will be held responsible for document quality and will be removed from the roster if the quality control criteria are not met for two BAs submitted to WSDOT.

Expectations for WSDOT to ensure BA authors are properly trained

- It is WSDOT's responsibility to keep the web site up to date.
- It is WSDOT's responsibility to post the dates for the seminar as soon as possible, but at least 2 months prior to the seminar.
- The purpose of the WSDOT Qualified BA authors program is to teach WSDOT's on-call consultant biologists how to write BAs according to WSDOT standards, it is not a certification program. It is also not a general BA writing class.
- It is WSDOT's responsibility to post a list of qualified authors who are on-call consultants with the date of qualification on the web. Lists will be alphabetically by author and by on-call consultant company.
- WSDOT shall provide each individual who attends all days of the qualification seminar a certificate of completion.
- WSDOT shall send each individual who takes the exam a form letter stating their exam score. If the individual works for a consulting company who is on the WSDOT on-call list, the letter will also state whether the individual meets WSDOT qualifications or not.
- WSDOT will teach the BA qualification seminar twice a year as long as there is sufficient need/demand. If the number of individuals interested in attending is low, the seminar will be taught once a year or once every other year. WSDOT will teach the re-qualification seminar twice a year, as long as there is sufficient need/demand. If the number of individuals interested in attending is low, the seminar will be taught once a year.
- WSDOT will update the qualified on-call BA authors list within 2 weeks of the last exam associated with either the BA qualification seminar or

the re-qualification seminar. The list may also be updated by WSDOT as needed to remove authors from the list. It will not be updated each time an individual changes consulting companies. However, WSDOT will collect requests for changes from authors and will make the changes at their convenience.

- WSDOT will follow the established deficiency BA process when dealing with a deficient BA.
- When authors are removed from the list due to deficiencies, WSDOT shall require that at a minimum they take the Basic BA qualification seminar and exam, and may require additional steps. These may include also attending the BA re-qualification seminar and exam, spending time as a junior author to gain additional experience, and or other steps to insure the individual is sufficiently qualified to write WSDOT documents.

2.2.7 Federal Agency Coordination and Consultation Phase

To ensure compliance under Section 7 of the ESA, formal or informal consultation with the Services may be initiated by a federal action agency or by a non-federal designee (for informal consultation only). As is discussed in detail above, the level of impact a project is expected to have on listed species or designated habitats, and therefore the type of effect determination that is anticipated, determines the level of consultation necessary (see Table 2-1). The four types of effect determinations are discussed briefly in PART 1, EFFECTS OF THE ACTION, and more extensively in PART 2, EFFECT DETERMINATION GUIDANCE.

Table 2-1. Type of effect and level of consultation.

Type of Effect	Abbreviation	Level of Consultation
No effect	NE	Not needed or informal
May affect, not likely to adversely affect	NLTAA	Informal
May affect, likely to adversely affect	LTAA	Formal
<i>If a project will provide beneficial effect(s)...</i>	NLTAA or LTAA	Informal or formal

If a project will have *no effect* (NE) on listed species or designated critical habitats, consultation is not necessary. Concurrence from the Services is not required or normally obtained, but may be requested for project documentation files.

If a project *may affect* listed species or designated critical habitat, consultation with the Services is required, whether these effects are beneficial or adverse. If it is determined that a project *may affect but is not likely to adversely affect* (NLTAA) listed species or designated habitats, informal consultation is initiated. An effect determination of NLTAA assumes that project-related impacts will be insignificant or discountable. WSDOT submits BAs to the Services for informal consultation once they have been approved by WSDOT.

If it is determined that a project may provide a beneficial effect on listed species and designated critical habitats, informal consultation is permitted, but only if there will be no short- or long-term adverse effects. If there will be no short- or long-term adverse effects, the correct effect determination would be *may affect, not likely to adversely affect* accompanied by a detailed description of anticipated beneficial effects of the project. If there will be short-term adverse effects and long-term beneficial effects, for example, a habitat restoration project that requires in-water work while listed fish may be present, formal consultation is required. For projects that will have short- or long-term adverse effects, the appropriate effect determination is *may affect, likely to adversely affect* accompanied by a detailed description of the anticipated beneficial effects of the project.

If it is determined that a project *may affect and is likely to adversely affect* (LTAA) listed species and designated critical habitats, formal consultation is initiated. For formal consultations, the BA is provided to FHWA by WSDOT. The BA is reviewed by the FHWA Area Engineer and Program Delivery Team Leader as needed and any outstanding project issues are resolved with WSDOT. The BA is submitted to the Services for formal consultation by the FHWA Area Engineer.

Once BAs have been submitted to the Services for review, the documents are reviewed by the Services to determine if clarification of information is necessary to complete consultation. This initial review is completed as soon as possible, but less than 30 days after receipt of the biological assessment and request for consultation. For formal consultations, during this initial review, the Services will also determine whether they agree with the effect determination provided by the action agency.

If additional information or clarification is necessary, coordination between the involved agencies will occur. This may entail meetings, field reviews, or posing and responding to questions in person, via letter, or email. If additional information is requested, WSDOT attempts to return the additional information to the Services within 2 weeks of receiving the request. Project biologists may be tasked with providing this additional information and should be aware of this 2-week timeframe. Responses to information requests for informal consultations will be completed by or coordinated with project biologists by the WSDOT project manager or the WSDOT regional, modal (Washington State Ferries, or WSDOT Rail Office), or Highways and Local Programs biologist. Information requests for formal consultations will be completed by or coordinated with the project biologist by the FHWA Area Engineer and/or Program Delivery Team Leader.

The Services will provide WSDOT and FHWA project staff with their draft incidental take statements, terms and conditions, and reasonable and prudent measures for review. FHWA and WSDOT will prepare a collective response to these draft documents and analyses within 2 weeks of receiving them from the Services (or within a mutually agreed upon timeframe). Once these conditions have been mutually agreed upon and any disputes resolved, the Services' consultation documentation can be completed.

For informal consultation, a letter of concurrence or a letter of non-concurrence is issued to conclude consultation. For formal consultation, issuance of a biological opinion concludes consultation.

2.2.8 Project Implementation Phase

During project implementation, any impact minimization measures included in the BA must be followed.

In some cases, during the time period between receiving concurrence from the Services and completion of the project, a change in conditions may require reanalysis and may result in stopping construction. For example, there may be a change in the status of a species or critical habitat, resulting in a higher level of protection (e.g., a species undergoes an emergency listing). Or there may be a change in scope or design of the proposed project after construction has begun. Changes of this nature may require construction to be stopped while potential project impacts are reassessed and the consultation process is reinitiated.

2.3 Highways and Local Programs Process

Highways and Local Programs is a Division within WSDOT that distributes Federal Highways Administration funding to local agencies for transportation-related projects. The use of FHWA funding provides a federal nexus trigger that subjects the local agency project to the same requirements outlined above. However, the WSDOT HLP process is slightly different, in that the local agency typically develops the project BA (either in-house or using a consultant). HLP coordinates with the Environmental Services prior to submitting the BAs to the Services.

Local agencies and their consultant should follow the guidance outlined within this manual and the Environmental Classification Summary Guidebook. BAs should be developed consistent with FHWA standards and in a manner that addresses the sections and issues outlined in this training document, to the extent that they are applicable.

Under the National Environmental Policy Act (NEPA), coordination with NOAA Fisheries and the U.S. Fish and Wildlife Service must occur prior to FHWA approval of the project.

3.0 Components of a Biological Assessment

Contents

3.0	Components of a Biological Assessment.....	3.1
3.1	Introduction.....	3.3
3.1.1	Background and Consultation History	3.3
3.1.2	Description of the Proposed Action	3.11
3.1.3	Impact Avoidance and Minimization Measures	3.15
3.1.4	Action Area	3.17
3.2	Status/Presence of Listed Species and Designated Critical Habitat in Action Area	3.19
3.2.1	Species and Critical Habitat List(s) and Listing Status.....	3.19
3.2.2	Presence of Federally Listed and Proposed Species in the Project Action Area	3.20
3.2.3	Presence of Federally Designated and Proposed Critical Habitat in the Project Action Area	3.22
3.3	Environmental Setting.....	3.22
3.3.1	Habitat Conditions in Action Area (Terrestrial Species and Marine Species).....	3.23
3.3.2	Habitat Conditions in Basin or Subbasin (Freshwater Aquatic Species)	3.24
3.4	Effects of the Action	3.25
3.4.1	Direct Effects.....	3.27
3.4.2	Indirect Effects	3.29
3.4.3	Effects from Interrelated and Interdependent Actions/Activities	3.29
3.4.4	Cumulative Effects	3.30
3.4.5	Other Considerations	3.31
3.5	Conclusions	3.33
3.6	Magnuson Stevens Fishery Conservation and Management Act	3.36
3.7	Reference Citations and Appendices	3.36

Tables

Table 3-1.	Example of biological assessment format.....	3.4
Table 3-2.	Exposure response matrix example.....	3.14

3.0 Components of a Biological Assessment

Chapter Summary

The BA consists of the following main parts or sections, each of which is discussed in detail in this chapter. WSDOT has developed a BA template in conjunction with FHWA, USFWS, and the NMFS. This template must be used for all WSDOT and Local Area Project BAs. BA elements include:

- Introduction
 - Background and Consultation History
 - Project Description
 - Description of project elements
 - Description of project sequencing and timeline
 - Impact avoidance and minimization measures
 - Action area
- Status / Presence of Listed Species/ Designated Critical Habitat in Action Area
 - Species and Critical Habitat List / Listing Status
 - Presence of Federally listed and proposed species in the project action area
 - Presence of Federally designated and proposed critical habitat in the project action area
- Environmental Setting
 - Habitat Conditions in Action Area (Terrestrial species/critical habitat, Marine species/critical habitat)
 - Habitat Conditions in Basin or Subbasin (Freshwater Aquatic species/critical habitat)
- Effects of the Action
 - Direct Effects
 - Indirect Effects
 - Effects from Interrelated and Interdependent Actions
 - Cumulative Effects
 - Formal consultations only

- Conclusions
- Magnuson Stevens Fishery Conservation and Management Act
 - Essential Fish Habitat Background
 - Description of the proposed action
 - Potential adverse effects of proposed project
 - Adverse effects on Essential Fish Habitat for Salmonids
 - Adverse effects on Essential Fish Habitat for Groundfish
 - Adverse effects on Essential Fish Habitat for Coastal Pelagic Species
 - Essential Fish Habitat Conservation Measures
 - Conclusions
- References
- Appendices (as needed)
 - Biology of listed species
 - Species Name
 - Status of Species
 - Status of Critical Habitat
 - Life History Information
 - Module 1. Culvert Replacement
 - Module 2. Bridge Replacement
 - Module 3. Bridge Scour
 - Module 4. Pile Driving
 - Module 5. Bank Stabilization
 - Module 6. Safety Improvement Activities
 - Module 7. Slide Abatement

The Endangered Species Act requires preparation of a BA for any major construction project with a federal nexus. The purpose of a BA is to evaluate the potential effects of a proposed project on listed and proposed wildlife, fish, and plant species and designated or proposed critical habitats that are likely to occur in the vicinity of the project. To ensure compliance with the ESA, some agencies, including WSDOT, prepare BAs for projects that would not be considered major construction.

The BA should use the “best available scientific and commercial information” (USFWS, NOAA Fisheries 1998). This information is used to help analyze project impacts and is the basis for the effect determination. This information must have been evaluated by the Services and found to be acceptable.

Project biologists may contact the Services for additional species-specific information, including contact information for local area habitat biologists or academic experts. Recovery plans are also an excellent source of information. A list of available recovery plans is available in CHAPTER 20, RECOVERY PLANS.

Using the WSDOT/FHWA biological assessment template, the biological assessment review checklist, or the no-effect letter checklist (available on the WSDOT environmental website at: <<http://www.wsdot.wa.gov/Environment/Biology/BA/BAtemplates.htm>>) can help to ensure that all necessary topics are addressed in a no-effect letter or a BA. The content of each BA section is summarized in Table 3-1.

Brief descriptions of each of the sections within a BA are provided below. Many of these discussions are accompanied by brief excerpts from BAs that exemplify common errors or illustrate high-quality BA writing.

The background and consultation history section is a 1- to 2-page summary of the interactions, meetings, formal and informal correspondence between the action agency and NOAA Fisheries/National Marine Fisheries Service and/or the US Fish and Wildlife Service. The section should be organized chronologically to accurately reflect the progression of the administrative record for the project.

3.1 Introduction

3.1.1 Background and Consultation History

The background and consultation history section is a 1- to 2-page summary of the interactions, meetings, formal and informal correspondence (pre-BA meeting, emails, phone conversations, etc.) between the action agency and NOAA Fisheries/National Marine Fisheries Service and/or the US Fish and Wildlife Service. The section should be organized chronologically to accurately reflect the progression of the administrative record for the project.

If project representatives attended a pre-BA meeting, provide the date of the meeting and the names of the USFWS and NOAA biologists attending, so that the BA can be assigned to a reviewer who participated in the pre-BA meeting. Include pre-BA meeting minutes in the appendices. Provide information on how pre-BA comments were addressed.

Table 3-1. Example of biological assessment format.

Section Heading	Subsection Heading	Contents of Section and Subheadings	Notes
Table of Contents	List of Tables		Make sure page references are correct.
	List of Figures		Make sure page references are correct.
	List of Appendices		Make sure page references are correct.
			Make sure all appendices are identified
Introduction			
	Background and Consultation History	<ul style="list-style-type: none"> ▪ Summary of consultation activities with the USFWS and NOAA Fisheries, including: <ul style="list-style-type: none"> – Date of pre-BA meeting if one was attended, and names of the USFWS and NOAA biologists attending. – Summary of subsequent consultation activities and correspondence. – The Pre-BA meeting minutes should be attached in the appendix. 	Address Pre-BA comments in meeting minutes.
	Project Description	<ul style="list-style-type: none"> ▪ Project proponent ▪ Federal nexus ▪ Project purpose (i.e., congestion relief, safety) ▪ Brief summary of project (a few sentences), expected date and overall timeline. Also identify environmental benefits associated with project. ▪ Specific project location (milepost begin/end of project, township/range, latitude/longitude, etc.) ▪ Watershed in which project is located (WRIA), 6th-field HUC ▪ Brief description of project setting/vicinity/existing conditions 	Include vicinity map. Additional maps or aerial photographs as needed to illustrate resource or project characteristics. If doing in-water work, include river mile.

Table 3-1 (continued). Example of biological assessment format.

Section Heading	Subsection Heading	Contents of Section and Subheadings	Notes
<p>Introduction (continued)</p>	<p>Project Description (continued)</p> <ul style="list-style-type: none"> ▪ Description of Project Elements ▪ Description of Project Sequencing and Timeline 	<ul style="list-style-type: none"> ▪ Deconstruction of project into its components ▪ Construction activities and types of equipment for each component ▪ Describe size and configuration of project footprint (e.g., cut and fill amounts, acres of impervious surface). Include permanent and temporary impacts. ▪ Secondary project features (mitigation sites, staging areas, detours, waste/stockpile areas, etc.) and directly related BMPs ▪ Quantify new impervious surface and address how stormwater will be treated, what the associated stormwater BMPs are and where the discharge points are. The load and concentration information can be included here. ▪ Quantify and describe temporary and permanent impacts to vegetation (identify type of vegetation that will be affected, species, diameter at breast height if applicable). Describe noise generating activities and whether noise attenuation measures or monitoring will be implemented. ▪ Describe in-water work; include stream by pass, dewatering, fish exclusions, and fish moving. ▪ Detailed project timeline and sequencing addressing each of the components 	<p>Photos or simple project plans may be inserted in this section, or more detailed figures may be referenced in the appendices.</p> <p>It can be helpful to provide a 2-column table (Date/Activity) listing each construction step in chronological order. Emphasis should be placed on construction phases/activities that will particularly impact protected species.</p> <p>Follow the Module links in the BA template to see the level of detail needed for seven types of common WSDOT projects.</p> <p>Provide in-water work window, and identify the time work will occur in the water. Provide hours of operation, specify day or night, time of year (months and year), duration. Tables/Gantt charts are often the best way to present some of this information (e.g., construction equipment, BMPs, construction timeline).</p>

Table 3-1 (continued). Example of biological assessment format.

Section Heading	Subsection Heading	Contents of Section and Subheadings	Notes
Introduction (continued)	Impact Avoidance and Minimization Measures	<ul style="list-style-type: none"> ▪ Impact avoidance and minimization measures (minimization measures [MMs], best management practices [BMPs], and performance standards) identified for each project component as applicable. 	Identify MMs or BMPs that will be implemented for each project component. Compile impact avoidance and minimization measures into a single list or summary, including additional measures that may be identified for specific species. Highlight project features designed to minimize impacts of the project (like build retaining wall here, shifted work to median to avoid wetlands, etc.). This can be provided in a list format.
	Action Area	<ul style="list-style-type: none"> ▪ Characterization and description of the physical, chemical and biological impacts of project activities and describe the geographic extent of these activities ▪ Description of extent of zones of impact that comprise action area ▪ Definition, delineation, and description of extent of action area 	Insert a map or aerial photo with action area identified. Action area can be constructed by overlaying/combining multiple zones of impact associated with project direct and indirect effects. For example, the single action area for the project may be composed of a water quality impact zone, terrestrial noise impacts zone, aquatic noise impact zone, etc. Be sure to have a paragraph that defines the extent of the action area in its entirety as depicted on the map. Be sure to consider indirect effects, terrestrial and underwater noise, and downstream water quality effects.
Status/Presence of Listed Species/ Designated Critical Habitat in Project Area	Species and Critical Habitat List / Listing Status Species Presence in Action Area Critical Habitat Presence in Action Area	<ul style="list-style-type: none"> ▪ List of species and critical habitats addressed in the BA ▪ Summary of listing status of species and critical habitats addressed in the BA ▪ Explanation of why other species on NOAA Fisheries or USFWS lists are not addressed in the BA ▪ Species occurrence in the action area, including specific life history stages that occur within the action area ▪ For freshwater species – Presence of species by subbasin. ▪ Presence or absence of critical habitat in the action area, including specific Primary Constituent Elements (PCEs) within the action area 	Include a table identifying listed and proposed species/critical habitat addressed in BA and their federal status. Provide detailed information on site-specific species and critical habitat occurrence. Section may be organized to address terrestrial species first followed by aquatic species. Identify fish by DPS or ESU. Include date(s) of field reviews by project personnel, persons involved, and results. Include information from local sources, including agency biologists, tribal biologists, or others with local knowledge and experience. Place general information on species and habitat requirements in appendices. Do not include candidate species.

Table 3-1 (continued). Example of biological assessment format.

Section Heading	Subsection Heading	Contents of Section and Subheadings	Notes
Environmental Setting	Habitat Conditions in Action Area – Terrestrial Species and Marine Species Habitat Conditions in Basin or Sub-basin—Freshwater Aquatic Species	<ul style="list-style-type: none"> ■ Brief characterization of project area and history that describes the influence of existing conditions and previous activities on the species and the functional condition of critical habitat: <ul style="list-style-type: none"> – Development patterns – Surrounding land use – Wetlands – Geology and soils – Vegetation ■ Analysis of presence and condition of habitat features as they pertain to the species addressed in the BA (describing applicable setting conditions only, focusing on elements necessary to complete the analysis of effects) ■ Assessment of key habitat features for each species and for each critical habitat PCE in the action area. <ul style="list-style-type: none"> – What function does/should the habitat provide? – How well is habitat functioning (use matrices for guidance)? ■ Presence or absence of suitable habitat for listed and proposed species in the action area ■ For freshwater species – Include NOAA Fisheries or USFWS matrices as appropriate and provide citation. Table should be provided in the body of the BA, summarizing aquatic setting conditions and anticipated impacts at watershed and project/action area scales. ■ For freshwater species – Summary of pathways and indicators that will be affected by the project and for which data are sufficient (provide detailed analyses in BA appendices). 	<p>Photos and maps, which are helpful for federal reviewers, may be inserted in this section.</p> <p>Terrestrial habitat features: foraging habitat, nesting or dispersal habitat, prey overwintering areas, prey concentration areas, migration corridors, suitable habitat, occupied habitat.</p> <p>Marine habitat features: foraging habitat, forage fish spawning areas, prey concentration areas, haul outs.</p> <p>If the project has no aquatic impacts and is isolated from aquatic habitat, provide information on the terrestrial environment only.</p> <p>If project will have stormwater impacts, be sure to clearly characterize the baseline water quality conditions including metals concentrations and loading (if known).</p> <p>Only include summary of pathways and indicators that will be affected by project activities within the BA Environmental Setting section.</p> <p>Use limiting factor analysis, limiting factor reports, aerial photos, field investigations, and consultation with professionals for supporting information.</p>

Table 3-1 (continued). Example of biological assessment format.

Section Heading	Subsection Heading	Contents of Section and Subheadings	Notes
Effects of the Action	Direct Effects Indirect Effects Effects from interrelated and Interdependent Actions Effects to Terrestrial Species Effects to Aquatic Species	<ul style="list-style-type: none"> ▪ Discussion of specific direct and indirect effects, injury and mortality, behavioral response, estimate extent of exposure, etc. <ul style="list-style-type: none"> – For all species – Exposure and response analyses – Determine if exposure is likely. <ul style="list-style-type: none"> ▪ If exposure likely: <ul style="list-style-type: none"> - Assessment of species response to direct effects of the action - Assessment of species response to indirect effects of the action – For habitat as it relates to the species: <ul style="list-style-type: none"> ▪ Analysis of direct and indirect effects to habitat conditions <ul style="list-style-type: none"> - Analysis of how species would respond to the affected habitat in the context of existing setting conditions. – For critical habitat: <ul style="list-style-type: none"> ▪ Analysis of effects to PCEs and setting conditions ▪ Analysis of direct and indirect effects to <u>each</u> PCE in the action area <ul style="list-style-type: none"> - Analysis of how action will impact the function of each PCE (long-term, short-term, temporary, permanent, seasonal) in the context of existing setting conditions. - Analysis of how species would respond to the affected PCE function. – Identification of additional species-specific impact avoidance and minimization measures (MMs), best management practices (BMPs), conservation measures, and performance standards to reduce potential for exposure or to address anticipated response. 	Tie potential effects to compliance with species recovery plans, management plans, and/or habitat conservation plans. Analyze in detail only project impacts that potentially affect listed species and critical habitat. Discuss beneficial effects. Take into consideration proposed impact minimization measures and BMPs. For marine and terrestrial environments, assessment of project effects on existing environmental conditions that are pertinent to the species. There are no matrices available for these environments, so the biologist must determine what environmental characteristics are pertinent to the analysis. For freshwater aquatic environmental setting, assessment of effects on the setting conditions (in NMFS and USFWS matrices) at watershed and/or action area scales. Confine detailed analysis to those indicators that will sustain impacts. Additional analyses can be provided in BA appendices. Additional measures that may be identified for specific species should be compiled into a single list or summary of impact avoidance and minimization measures. This list will be included in the Project Description section of the BA. Consider the proposed project’s compliance with all pertinent species-specific recovery, management, and/or watershed plans. A table (Impact, MMs/BMPs) may effectively summarize anticipated impacts to protected species or critical habitat and the applicable off-setting mitigation or related minimization measures.

Table 3-1 (continued). Example of biological assessment format.

Section Heading	Subsection Heading	Contents of Section and Subheadings	Notes
Effects of the Action (continued)	Effects from Interrelated and Interdependent Actions	<ul style="list-style-type: none"> ▪ Detailed description of interrelated and interdependent actions or activities. ▪ Use the “but for” test. ▪ Analyze direct and indirect effects to species and habitat associated with interrelated and interdependent actions. 	These actions are considered part of the larger action (action = proposed project + interrelated/interdependent actions).
	Cumulative Effects	<ul style="list-style-type: none"> ▪ Assessment of cumulative effects within the action area 	<p>Remember that the cumulative effects discussion is not based on the NEPA definition; and it is for formal consultations <u>only</u>, not considered when making effect determinations.</p> <p>Identify and briefly describe all future state and private actions that are reasonably certain to occur within the action area. Reasonably certain means that the projects have applied for permits or discussed and planned out at the local jurisdiction level.</p>
Conclusion		<ul style="list-style-type: none"> ▪ Effect determination for each species present in project area ▪ Effect determination for designated critical habitat present in project area: <ul style="list-style-type: none"> – Effect determination to include summary of rationale (summary of direct and indirect project impacts on species and habitats in a bulleted list format), for each species/critical habitat analyzed 	<p>For each listed species and designated critical habitat, effect determinations are needed:</p> <ul style="list-style-type: none"> ▪ No effect (absolutely no effect whatsoever, either positive or negative); ▪ May affect, not likely to adversely affect (insignificant – never reaches the level where take occurs, or discountable – extremely unlikely to occur; or entirely a beneficial effect); ▪ May affect, likely to adversely affect (measurable or significant effects – will require formal consultation)

3.1.2 Description of the Proposed Action

The initial paragraph in the Description of the Proposed Action section should describe the rationale for preparing the BA in light of ESA requirements. Include the specific federal nexus for the project. The project purpose and need statement should provide a clear statement of purpose for the proposed project, as well as a brief description of proposed actions in relation to the needs discussed. (This is not the same as the NEPA purpose and need statement, which has stringent regulatory requirements and implications.) If the project is related to an ongoing series of projects or actions, provide a brief project history. This discussion is optional; however, it can provide reviewers with useful insight into the larger picture or context of the project.

The introduction to a project description should provide the following information:

- Name of the project proponent
- Clear identification of the federal nexus of the project
- Project purpose, need, and history, if relevant (not the same as the regulatory purpose and need statement required in NEPA documents)
- Brief summary of project

The project location must also be clearly conveyed in the initial paragraphs of the Description of the Proposed Action section. In this portion of the BA, related photographs can be particularly helpful for reviewers.

The description of the project location should include information on the following topics:

- State route or interstate identification
- Milepost start and end of project
- County
- Township, section, and range
- Latitude and longitude
- Watershed in which project is located:
 - Water bodies in which work will occur
 - Water resource inventory area (WRIA) identification

This brief summary should also clearly identify the watershed in which the project site is located by the 6th-field hydrologic unit code (HUC), to facilitate NOAA Fisheries tracking of the project in its database. For general information on HUCs, see <http://water.usgs.gov/GIS/huc_name.txt>.

A vicinity map should be provided to visually identify the location of the project area; aerial photographs can also provide good contextual information.

The discussion of habitat features present in the vicinity of the project can be general in nature. The habitat discussion should become more specific later in the document as environmental setting conditions in the project action area are discussed. The discussion of habitat should be pertinent to the terrestrial or aquatic species addressed in the BA.

3.1.2.1 Description of Project Elements

The description of proposed activities begins with an overview of the proposed action and project footprint (i.e., where project or construction activities will occur), including overall project timeline and environmental benefits. The project footprint discussion should provide an overview of the extent of temporary and permanent disturbance associated with the project. The environmental benefits section should provide an overview of the anticipated benefits associated with the project.

This section should then provide the reader with a detailed picture of all proposed project actions, by deconstructing the action into all of its elements. The proposed project action discussion should describe each of the proposed project elements, including specific construction methods, materials, and techniques associated with each project element, and summarize the anticipated impacts associated with each element. This description should be accompanied by plan drawings, as appropriate, to illustrate the locations and configuration of the project components and proposed activities. Project plans should be kept readable and simple, and may be included in this section or referenced in a BA appendix. Project elements should be listed in chronological order, if possible.

A description of the required site preparation and construction equipment should be provided for each impact or project element, if the equipment is capable of producing high noise levels or measurable impacts on listed species or habitats. For many projects the standard equipment list of bulldozers, dump trucks, etc., is suitable. However, some projects require special equipment, such as rock drills or spiders for in-water work, and these should be listed explicitly in the BA.

The locations of various secondary project features, including staging areas, waste sites, stockpile sites, and construction material source sites (e.g., rock quarries, or gravel pits developed specifically because of this project), if known, should also be addressed in the BA to provide reviewers with a complete picture of the extent of the proposed project. These areas are considered during the analysis of direct and indirect effects or are addressed as interrelated and interdependent activities or actions of the proposed project and may appreciably expand the action area of a project.

As needed, more detailed project description information can be incorporated into the project description section. In general, the level of detail provided should be commensurate with the level of impacts that are anticipated.

Behind the scenes, the deconstructed project elements should be listed in a tabular format to facilitate their incorporation into the later analysis of project effects on listed species and critical habitats. The methodical analysis of each project element to determine the potential for exposure

for listed species or designated critical habitat followed by an analysis of the anticipated response of the species to the proposed project is termed the “Analytical Framework” by the Services. An example of the standard matrix used to document this analysis is provided in Table 3-2 below. For each listed species and each designated critical habitat in the action area a table containing the same project elements but different analysis (each would have different potential for exposure) would be prepared table and included in the Appendix of the BA. These tables essentially summarize the analysis that is described in detail in the BA.

At this point in the analysis, only the first few columns (Action and Where and perhaps the Stressor, When, Duration, Frequency, Minimization Measures and/or Performance Standards columns) would be filled in based on project description related information.

Once the proposed action has been described in detail, any interrelated and interdependent actions or activities associated with the proposed project should be described in detail. After both the proposed action and interrelated and interdependent actions have been described, all of the impact minimization measures and best management practices that will be implemented should be described and also compiled into a comprehensive list.

The discussion of construction activities should provide sufficient detail for a reviewer to clearly understand the project, all of its elements, and associated impact minimization measures or best management practices.

3.1.2.2 Description of Project Sequencing and Timeline

The section should conclude with a discussion of the sequencing of project elements and detailed timeline projections. If possible, it is preferable to include the specific dates or months during which construction will occur. Seasonal references are not sufficiently precise for the purposes of reviewers.

Following is an example of an inadequately described construction schedule in a BA recently reviewed by the Services:

Construction of this improvement is scheduled to begin in the summer of 2001. It is estimated to take 50 working days to complete this project.

One reviewer responded:

Can we get more specific dates? Or at least specific months? How does this timing relate to the fish window and other guidelines for construction timing?

Often a BA is written before a project has been funded, advertised for contractor bids, or fully designed, in which case specific dates may not be available to the project biologist. In this situation, providing an example of how construction phasing and timing would occur is helpful for reviewers. Providing a visual overview of the project elements and chronology, as would be illustrated in a Microsoft Project schedule spreadsheet, is particularly effective.

Table 3-2. Exposure response matrix example.

Action	Where	Exposure					Response to Stressor	Minimization Measures	Performance Standards	Resulting Effects of the Action
		Stressor	When	Duration	Frequency	Life History Form				
Project element 1										
Project element 2										
Project element 3										
Project element 4										
Project element 5										

To allow for unforeseen complications or prohibitive weather conditions during project construction, the BA may stipulate more time for completion of construction activities than that estimated by project engineers. For example, a project biologist may add 10 percent contingency time to a project by extending the project end date, or a few days may be added to the contract time (e.g., stipulating 260 rather than 240 days). Before making these revisions to the project schedule, the project biologist should check with the project manager to ensure that this contingency time is considered useful. Providing contingency time often ensures that the BA adequately addresses project activities in the event that the project is slightly delayed or behind schedule.

3.1.3 Impact Avoidance and Minimization Measures

The BA should highlight the measures that have been taken to avoid or minimize project impacts. These may include design elements of the project, such as the construction of retaining walls to minimize impacts on streams, or use of steel piles or untreated wood piles to avoid contamination of aquatic habitats, in addition to other impact minimization measures (MMs) and best management practices (BMPs). MMs and BMPs are applicable to every project type. Conservation measures are measures taken to help recover listed species and are not applicable to every project. Performance standards are measurable benchmarks for a particular performance objective agreed to by the Services and the action agency, and also do not apply to every project or to every action within a project.

Descriptions of MMs and BMPs should be clearly worded and should describe specific actions to be implemented to eliminate or reduce adverse effects of the action in general. Because the Services cannot consult on recommendations, but only on project elements or methods that will actually occur, choose language such as *will* or *shall be implemented*, instead of *may*, *to the practicable extent possible*, *frequently*, etc. Transportation-related activities and related impact minimization measures are discussed in PART 2, IMPACT AVOIDANCE AND MINIMIZATION MEASURES.

Specific project-related impacts on habitat features and species in the action area are assessed in the Effects of Project on Species and Critical Habitats section of the BA, where additional MMs or conservation measures for individual species may also be identified. A summary of construction-related and species-related MMs, conservation measures, and BMPs should be provided in the BA to be considered as part of the impact assessment for species and habitats and to help substantiate the rationale for effect determinations.

While each construction technique may require specific MMs to avoid or minimize its potential impacts, project-related impacts may be avoided or reduced through careful planning, design, and timing. A project biologist can work with project designers and engineers throughout the entire design process, from pre-project planning to project implementation, to aid in identifying potential impacts and avoidance and minimization measures.

For example, project biologists may be called upon to help identify sensitive species and habitats in the general vicinity of a proposed project prior to any design work, so that these issues will be considered and represented in any subsequent planning or project design. Similarly, a project biologist can help designers identify whether proposed project designs or methods would adversely affect a listed species or its habitat, and whether alternative designs would minimize those impacts or avoid the need for formal consultation. A project biologist can also help project managers identify whether timing restrictions are necessary for a project, so that project timing and phasing can be planned appropriately to avoid or minimize impacts on listed species.

Useful information sources for determining whether habitat and species impacts can be avoided include the following:

- Habitat management plans for nest territories (see PART 3, CHAPTER 20, RECOVERY PLANS)
- ESA highway runoff effects guidance (see PART 2, STORMWATER IMPACT ANALYSIS)
- Definitions of *harm* and *take* under the ESA, as related to habitat and listed species (see PART 3, GLOSSARY AND ABBREVIATIONS, and/or CHAPTER 20, WORKING WITH LISTED SALMONIDS)
- ESA *take* avoidance plans for suitable habitat
- Salmon information websites (see CHAPTER 20, WORKING WITH LISTED SALMONIDS)
- Information on wildlife and plant sensitive periods (see CHAPTER 20, WILDLIFE SENSITIVE PERIODS CALENDAR, and IDENTIFICATION WINDOW FOR THREATENED AND ENDANGERED PLANTS IN WASHINGTON STATE).

Examples of alternative construction methods that may be helpful include the following:

- Vibratory pile driving rather than hammer pile driving techniques
- Nonexplosive expansion materials rather than explosive materials
- Special equipment or techniques known to have lower or fewer impacts
- Noise shields to help contain the radius of sound impacts

Many MMs or BMPs identified by project biologists within the BA may be consistent with WSDOT standard specifications and can easily be incorporated into contract documents. However, other impact minimization measures or conservation measures that are not standard specifications (e.g., timing restrictions) may be identified by a project biologist as necessary to minimize impacts on species; these measures must be coordinated with the project manager so that they can be incorporated into contract documents as special provisions (for more information, see PART 2, IMPACT AVOIDANCE AND MINIMIZATION MEASURES).

To facilitate the analysis of project effects on listed species and critical habitats ensure that this information is incorporated into the Exposure-Response matrix used to document the analytical framework underlying the discussions and conclusions contained in the BA provided in Table 3-2 above.

At this point in the analysis, most of the columns (Action Where, Stressor, When, Duration, Frequency, Minimization Measures and/or Performance Standards columns) would be filled in based on project description related information.

3.1.3.1 Summary of Impact Avoidance and Minimization Measures

The BA should provide the reviewer with a consolidated list of construction-related and species-related impact minimization measures for easy reference when examining the effect determination section of the BA.

3.1.4 Action Area

This section of the BA contains the definition of and supporting rationale for the *action area* for the proposed project. Normally, a map is also provided to illustrate the extent of the action area.

The action area for a proposed project is defined as all areas to be affected directly and indirectly by the federal action, and not merely the immediate area involved in the action (Endangered Species Act (50 CFR 17.11)).

Direct effects are defined as “direct or immediate effects of the project.” Direct effects include all immediate impacts (adverse and beneficial) from project-related actions (e.g., construction-related impacts such as noise disturbance or loss of habitat), those disturbances that are directly related to project elements that occur very close to the time of the action itself (e.g., sedimentation), and those impacts stemming from actions or activities that are interrelated or interdependent to the proposed action.

Indirect effects include those effects that are caused by or will result from the proposed action or the larger action (including interrelated and interdependent actions or activities) and are later in time (generally after the construction period), but are still reasonably certain to occur. Indirect impacts may result from the operation of the project or future activities related to the project (e.g., future impacts from trail use, induced land use change or growth, increased traffic). The BA must examine these continued impacts (adverse and beneficial) in order to ascertain overall project-related impacts. The analysis of indirect effects can be complex and should include an assessment of the impacts related to the following issues:

- Does the project create a new facility (e.g., a new road or interchange) or increase the capacity of or access to the existing system?

- Is surrounding development contingent on the proposed project? In some cases, developments are tied by permit condition or Growth Management Act concurrency to certain transportation improvements.
- Is any anticipated future development the result of (caused by or dependent on) the project?

The *zone of influence*, which is defined for project-related traffic and development issues as part of the indirect effects analysis, may help to define the limits of the action area. The process of indirect effects analysis and defining the zone of influence is summarized in *Guidance for Preparing Biological Assessments: ESA, Indirect Effects, Transportation and Development* (WSDOT 2001, revised in 2003 and 2009). At the very least, an indirect effects analysis should address all 10 questions that are posed in the WSDOT indirect effects guidance document. A more detailed discussion of indirect effects, including the WSDOT guidance, is provided in PART 2, INDIRECT EFFECTS.

To help determine the project action area, the geographic extent of project impacts must be determined. The project biologist should determine the direct and indirect physical, biological and chemical impacts associated with each of the proposed project elements and with interrelated and interdependent activities. The biologist must then determine the magnitude, extent, and timing of when these impacts will occur, and most importantly the geographic extent of areas that will be affected by these impacts. The action area represents a geographic composite of all the areas that will sustain impacts associated with project activities.

In summary, the action area includes the geographic extent of physical, biological, and chemical impacts of the project, which in turn can be influenced by the implementation of MMs and BMPs. Consequently, the action area is usually larger than the project area and sometimes larger than the project vicinity.

The action area includes but is not limited to the following areas: equipment staging areas, detour routes around the project area on a case-by-case basis¹, material sources that are developed due to the project, water bodies receiving highway runoff, the river upstream and downstream of a bridge project, and wetland mitigation sites or other mitigation sites resulting from project impacts. Similarly, the extent of noise impacts should also be included in the action area. For example, if the noise impacts associated with a project extend to a 1-mile radius, the action area encompasses this entire area (see PART 2, CONSTRUCTION NOISE IMPACT ASSESSMENT, for more information on how to assess this impact).

¹ Assess whether the detour route will result in environmental impacts that significantly differ from existing conditions. If a road being used for a detour does not normally support heavy traffic and the detour will divert heavy traffic onto it, the project biologist might consider including a detour route in the action area. Similarly, if the detour would result in noise impacts that do not occur under normal conditions, the project biologist would likely consider the detour route as part of the action area.

The action area is determined independently of the effects of the action on listed species and critical habitat. After the action area is identified, then the distribution of the listed species and critical habitat is overlaid on the same map to determine which species and critical habitat may be subject to effects of the action.

We currently evaluate the action area and the extent of effects of a project (especially noise effects) based on human perception of the environment; the environment as seen through our human vision, color spectrums, hearing frequencies and disturbance thresholds. Scientific research is resulting in an increased understanding of how animals may perceive the world differently from humans, and WSDOT is beginning to consider looking at the effects of an action based on the animals' perception of the world. For example, we now place marine mammals into hearing sensitive groups. As research continues, we will be exploring how we define the extent of effects on the environment as we learn what the "environment" looks like through the senses of animals we are consulting on.

In addition to clearly defining the action area limits, a thorough description of the action area must provide a rationale for these limits. A graphic representation of these limits can prove invaluable for reviewers. The discussion of the action area should include detailed information pertaining to the anticipated impacts of the proposed action upon the areas and resources surrounding the project. Required additional information to support the action area definition includes:

- Describe land uses within the action area.
- Identify any water resources within the action area (e.g., rivers, tributaries, wetlands, floodplains, and aquifer recharge areas).
- Document existing environmental conditions or environmental setting conditions (i.e., substrate, water quality, tides and currents [where applicable], flow rate, macrofauna, vegetation, wintering concentrations, perch trees, forage areas, spawning or rearing habitats, etc.).

Several examples of properly defined and illustrated action areas are provided in PART 2, ACTION AREA.

3.2 Status/Presence of Listed Species and Designated Critical Habitat in Action Area

3.2.1 Species and Critical Habitat List(s) and Listing Status

It is a statutory requirement that the BA be based on a current species list. A table listing species and critical habitat covered in the BA provides reviewers with a concise summary of the species and critical habitats addressed throughout the report. This table should provide common names of species, scientific names of the species or subspecies, and federal status (state status can be

included but is not required) of each of these species (see Table 3-2). The table should also indicate whether or not there is designated or proposed critical habitat within the project vicinity.

If a species list was received from the Services, a formal species listing citation should be provided. This listing and the accompanying letter, or a printout of the species list from the agency website, should be included in the BA report as an appendix. Also provide a summary of the date(s) on which field reviews were conducted to assess project impacts and environmental setting conditions in the project action area.

This section of the BA should also identify any species included on the USFWS or NOAA Fisheries lists that are not addressed in the BA, with a brief explanation of the reason for not including them in the BA analysis.

3.2.2 Presence of Federally Listed and Proposed Species in the Project Action Area

This section of the BA should focus on behavioral characteristics of species and habitat elements that are central to completing the analysis of effects and effect determinations. Depending upon the species or critical habitat addressed in the biological assessment, the biologist may choose to organize this section of the report by terrestrial species followed by aquatic species. The section should include current site-specific information about each species, their use of the action area, and the suitability of the habitat in the action area for each species.

The species and habitat information provided in the main body of the BA should be brief and limited to the information needed to support the overall analysis of effects and effect determinations. For example, information on nesting habits is unnecessary if only foraging habitat exists within the action area. The project biologist should not address the entire life history of a species or conservation recommendations; however, clear and concise information must be provided on each species that may be present, when it is present (i.e., year-round, temporary, or seasonal), and its life stage and activity during that timeframe (i.e., incubating, spawning, rearing, migrating through an area, overwintering, roosting, nesting, or foraging). General life history information is not necessary unless it pertains directly to the proposed project.

If it is pertinent to the assessment and is available from a reliable source (such as recovery plans), the information provided may also include current population estimates, trends, conservation needs, or threats to species in the action area.

Citations of relevant scientific literature or research findings should be provided throughout the BA as they are mentioned. And in all cases the project biologist should identify the information sources used for determining the occurrence of listed species (e.g., PHS database, local agency biologists, or *Salmon and Steelhead Status Inventory* [SASSI]).

Items that should be addressed or provided in this section of the BA include the following, which are discussed more fully below:

- Citations of information sources for each species identified as potentially occurring in the vicinity of the project through listings provided by the Services or interviews with local experts
- Site-specific species occurrence and habitat information:
 - Timing
 - Life phases
 - Distribution
 - Occurrence within action area
 - Designated ESU or distinct population segment (DPS)
 - Presence of designated critical habitat
 - Presence and occupancy of suitable habitat
 - Description of habitat types

To ensure the protection of listed species in the site vicinity, no site-specific information or exact locations of species present, as identified in PHS maps or otherwise, should be included in this public document.

The BA is focused on the potential impacts upon a specific population of the listed species potentially occurring in the vicinity of the project. The run timing, or timing of species use of the project footprint and action area, local status information, and presence or absence of suitable habitat or designated critical habitat should be provided for the species or specific run using the action area. It is important to discuss species presence year-round if permanent or year-round impacts are expected. Essential information includes the location of the project in relation to designated territories, or areas containing threatened or endangered evolutionarily significant units or distinct population segments (ESU/DPS) of salmonids, as well as the characteristics and presence of designated critical habitat within the project action area.

Often BAs fail to provide adequate information on species life histories, habitat requirements, and ecology, especially for local populations, at the action area scale. Another common shortcoming in BAs is to state illogical or erroneous assumptions (e.g., because the area has only second-growth vegetation, there is no spotted owl use). Information provided in this section should be logical, detailed, and empirically sound. The project biologist should strive to provide a comparative analysis by describing the available habitat features in comparison to habitat features that define suitable habitat. This analysis should be presented for species within the project action area and in the project vicinity, to determine whether species may move through the project action area en route to foraging or nesting habitats.

This section of the BA provides information pertaining to occurrence of a species within the immediate vicinity of the project area and in the action area itself, and details the specific habitat types and features within this area.

To facilitate the analysis of project effects on listed species and critical habitats ensure that this species information, in particular the life history form or timing information is incorporated into

to the Exposure-Response matrices, outlined in Table 3-2 above, used to document the analytical framework underlying the discussions and conclusions contained in the BA for each species and designated critical habitat.

At this point in the analysis the Life History Form columns would be filled in based on site-specific species information. Or perhaps this column would be modified to address individual Primary Constituent Elements (PCEs) for critical habitat.

General life history and habitat requirement information should be included in the appendices of the BA. This discussion should provide ecology and life history information relevant to the specific project and its action area. Some general species-level information, such as species information on a regional or statewide scale, can provide useful background for reviewers; however, this information should be kept to a minimum. For information on species occurring in Washington State, see LISTED SPECIES IN WASHINGTON STATE: USFWS AND NOAA FISHERIES JURISDICTION, in CHAPTER 20.

3.2.3 Presence of Federally Designated and Proposed Critical Habitat in the Project Action Area

The project biologist must also identify whether any designated critical habitat is located in the project action area, as illustrated in the example above. If critical habitat PCEs are present within the action area, they too should be characterized.

In addition, a project biologist may want to include sketches of habitat types in the project vicinity, completed during a site visit, or aerial photos or maps of the project area showing locations of different habitat types. Sketches are particularly useful for identifying subtle in-channel habitat variations that may not be readily apparent in a photograph.

Discussion of essential fish habitat and analysis of project impacts on essential fish habitat should be confined to a self-contained assessment included after the ESA biological assessment is concluded (see PART 2, ESSENTIAL FISH HABITAT).

3.3 Environmental Setting

The project biologist must characterize the habitat features and describe the condition of habitats used by listed species present within both the project vicinity and the project action area. In addition, the biologist should describe how these conditions have affected the status of the species and the functional condition of any primary constituent elements or critical habitat features. The current condition of the habitat in the action area and the factors responsible for that condition should be discussed with appropriate supporting documentation.

The discussion of existing environmental conditions (environmental baseline conditions) should include a summary of relevant land use and past and present activities that relate to the species

and critical habitats potentially occurring in the action area, as well as those impacts that directly define the action area (development areas, impervious surface area, etc.). This discussion should consider activities that could influence, or have influenced, the project area over time. The description may include information on the following topics:

- General habitat features
- General development patterns in the vicinity of the project
- Past and present uses of the lands surrounding the project area

Additional information may be provided for the following topics, if relevant to subsequent analysis:

- Wetlands
- Local topography and geomorphology
- Geology and soils
- Predominant vegetation types

A more detailed discussion of what to include in this section is provided in PART 2, ENVIRONMENTAL SETTING.

The project biologist completes an assessment of existing environmental or baseline conditions (and documents these characteristics) during a thorough review of literature, studies and existing information in the office coupled with a field review of the action area. This section of the BA should also provide a brief synopsis of the date(s) on which project biologists visited the project site, the habitat parameters that were assessed relevant to the species identified, and the methods used. This information may also appear as part of the action area discussion or in the introduction section of a BA.

3.3.1 Habitat Conditions in Action Area (Terrestrial Species and Marine Species)

If listed terrestrial species are potentially present in the project vicinity, the BA should assess and describe in detail the relevant habitat characteristics essential to the species occurring within the action area (e.g., foraging habitat, nesting habitat, prey availability overwintering areas, and perch trees). The existing environmental conditions within the action area should be identified and discussed in relation to the status of the species as well as anticipated project impacts. Habitat characteristics relevant to designated critical habitat should also be addressed. If PCEs have been defined for a species' critical habitat, these elements should be identified, and if specific PCEs are present within the action area or could be affected by the proposed action, they should be described in detail.

If listed or proposed marine species are potentially present in the project vicinity, the BA should assess and describe in detail the relevant habitat characteristics essential to the species occurring within the action area (e.g., suitable habitat, occupied habitat, sightings, foraging habitat, forage fish spawning areas, prey concentration areas, and haul outs). The existing environmental

conditions within the action area should be identified and discussed in relation to the species' status and anticipated project impacts. Habitat characteristics relevant to designated critical habitat should also be addressed. If PCEs have been defined for a species' critical habitat, these elements should be identified, and if specific PCEs are present within the action area or could be affected by the proposed action, they should be described in detail.

3.3.2 Habitat Conditions in Basin or Subbasin (Freshwater Aquatic Species)

For projects that could potentially affect listed freshwater aquatic species, the project biologist should systematically assess the environmental setting conditions or, more specifically, the pertinent aquatic habitat pathway indicators defined in the NOAA Fisheries and USFWS pathways and indicators matrices (see PART 2, ENVIRONMENTAL SETTING, Tables 9-4 through 9-7). Assess all pathway indicators that relate to potential effects on listed species and critical habitat from the proposed action, including the following:

- Water quality parameters (temperature, sediment loading, chemical and nutrient contamination)
- Habitat access (physical barriers to fish passage)
- Habitat elements (substrate composition, large woody debris, pool frequency measures for salmon or bull trout, pool quality, presence of large pools, off-channel habitats, and refugia)
- Channel conditions and dynamics (width/depth ratio for salmon or bull trout, stream bank condition, floodplain connectivity)
- Flow or hydrology (change in peak/base flows, increase in drainage network due to human activities or roads)
- Watershed conditions (road density and location, disturbance history, and presence of riparian reserves)

If bull trout are present, the subpopulation characteristics in the watershed must be assessed, and the assessment of species and habitat conditions must be integrated (i.e., will anticipated impacts on habitat conditions lead to species impacts?). If PCEs have been defined for a species' critical habitat, these elements should be identified, and if specific PCEs are present within the action area or could be affected by the proposed action, they should be described in detail. This discussion should also describe the functional condition of these PCEs and how it relates to past and on-going activities in the action area.

An overview of this setting information should be provided in a table in the body of the BA. A summary of those pathways or indicators that will be affected by the proposed action should accompany the table in the body of the BA. Detailed description and analysis of all of the

indicators and pathways and aquatic environmental setting information should be included in a BA appendix. The USFWS and NOAA Fisheries matrices apply to freshwater habitats, not marine systems.

3.4 Effects of the Action

After providing project and species information in sufficient detail to define the proposed action and the potential occurrence of species in the project action area, the BA must provide an analysis of the potential effects of the project upon listed and proposed species as well as designated or proposed critical habitat. The analysis should focus on the potential of the listed species or PCEs to be exposed and what the response is expected to be.

Again, depending upon the species or critical habitat addressed in the biological assessment, the biologist may choose to organize this section of the report by terrestrial species followed by aquatic species. The Effects of the Action section presents the analysis of effects required under Section 7 of the ESA. Because consultation on essential fish habitat (EFH) is different from ESA consultation, the discussion of potential project effects on essential fish habitat should be presented in a separate document included after the ESA-related assessment has been concluded (see PART 2, ESSENTIAL FISH HABITAT).

The topics addressed in the Effects Analysis section include the following:

- Direct effects
 - Potential for the project to result in injury or mortality of listed species
 - Anticipated behavioral responses of species to project related impacts
- Indirect effects
 - Potential for the project to result in injury or mortality of listed species
 - Anticipated behavioral responses of species to project related impacts
- Effects from Interrelated and Interdependent Actions
- Cumulative Effects

Other considerations or complements of this section may include:

- Compliance with existing recovery or management plans

- Potential for the project to result in incidental take of listed species
- Potential for the project to jeopardize continued existence of proposed species or adversely modify critical habitat

For each of the project-related effects, the biologist should determine if a species or critical habitat is likely to be exposed, and identify general response to the impact, followed by a more comprehensive evaluation of its anticipated response to likely project impacts given proposed minimization measures and BMPs. This information can be summarized in the Exposure-Response matrices used to document the analytical framework underlying the discussions and conclusions contained in the BA (Table 3-2) for each listed species and designated critical habitat within the action area.

At this point in the analysis, for each project element or action, the Response to Stressor column would be completed and the Minimization Measures and/or Performance Standards columns would be revisited in order to evaluate or predict the overall effect of the activity or project element in the Resulting Effects of the Action column.

In the Effects Analysis section, the project biologist should also describe anticipated *take* (as defined under the ESA) in terms of these three factors:

- The estimated number of individuals affected
- Whether the affected individuals are adults, juveniles, or both
- How the individuals will be affected, based on the endpoints discussed

For some species, such as fish species, it is difficult or impossible to estimate the number of individuals affected, but the project biologist can address the impact in terms of space and time (e.g., all adult bull trout migrating through river mile 1 to 5 of John Doe Creek in November 2005). Construction activities that are likely to prevent reproduction, foraging during nesting, or migration to a spawning or nesting area may result in *take* of juveniles. The project biologist may be able to estimate the future number of juveniles based on historical records.

Examples of activities that are likely to affect an individual animal's ability to survive, reproduce, forage, or seek shelter include those that interfere with access to spawning grounds, shelter from predators, cold-water refuge (if the species is dependent on cold-water), or foraging habitat.

When assessing impacts on critical habitat, the project biologist addresses the PCEs outlined in the federal listing of the designated critical habitat unit. Discuss the predicted adverse effects and the extent of the effect for each individual PCE. Adverse effects can cause harm to any or all of the PCEs without reaching the level of *adverse modification*, which is equivalent to *jeopardy*. An adverse modification determination indicates that the conservation role of the critical habitat for the species would be compromised and that the critical habitat no longer retained the ability to be functionally established.

Often, BAs lack a logical, adequate analysis of whether a project will or will not cause direct or indirect effects. Similarly, BAs often fail to establish whether these effects are significant or discountable. The potential for project-related adverse effects is often overlooked, particularly for projects with in-water work. For example, receiving a hydraulic project approval (HPA) permit and incorporating the conditions of the HPA into the impact minimization measures of the BA does not guarantee that there will be no adverse effect. The analysis of effects must be detailed and complete, providing enough information to substantiate the rationale underlying the project biologist's effect determination.

Deconstructing the project action into its many constituent parts will help biologists ensure that all project elements are included in their analysis. Characterizing impacts associated with each of these project elements will help ensure that all project-related impacts have been evaluated. Systematically evaluating the potential for exposure and anticipated response for each species related to each project impact will ultimately ensure a robust analysis of effects that avoids the gaps in information or rationale described above.

The analysis of effects should be completed separately for each listed species to facilitate making effect determinations for each species, to be consistent with the new WSDOT BA form, and to acknowledge that the project may affect various species differently. For example, the direct effects, indirect effects, effects associated with interrelated and interdependent actions, and cumulative effects should be analyzed for bull trout, then for marbled murrelet, then for Chinook salmon, and so on. The specific subsections included in the analysis of effects, as required under the ESA, are discussed below.

3.4.1 Direct Effects

3.4.1.1 Terrestrial Species

When examining direct effects on specific wildlife and plants, evaluate the potential for exposure by identifying and quantifying all impacts anticipated to result from construction, including but not limited to, disturbances from noise, visual impacts, vibration, and human activity during construction. If a species or designated critical habitat will “co-occur” with direct effects, then there is potential for the species or habitat to be exposed to the impact. For each species, if the potential for exposure can be established, the biologist should complete a response analysis for each applicable impact.

Some useful tools or considerations for completing the analyses are provided below:

- Injury or disturbance thresholds associated with different noise levels have recently been established by USFWS (2003) for murrelets and spotted owls (refer to PART 2, CONSTRUCTION NOISE IMPACT ASSESSMENT for more information on this topic).
- Refer to the wildlife sensitive periods calendar (CHAPTER 20, WILDLIFE SENSITIVE PERIODS CALENDAR) to determine whether the project occurs

during the breeding period or another sensitive period for nearby wildlife. Placing timing restrictions on a project to avoid work during these sensitive periods can minimize or avoid direct impacts on listed species.

- Biologists may be able to correctly identify listed plants in the field only when species are in bloom (see CHAPTER 20, IDENTIFICATION WINDOW FOR THREATENED AND ENDANGERED PLANTS IN WASHINGTON STATE).

When examining direct effects on habitat for wildlife and plants, identify all habitat types (including suitable and critical habitat) in the project action area that would be affected by the proposed action. Determine whether these habitats are occupied by a listed species. Quantify impacts on habitat in and surrounding the proposed project (e.g., acreage of clearing and grubbing, cut and fill, and number of trees removed). Identify clearly whether the project will have an impact on suitable or critical habitat, or whether species will be disturbed or displaced as a result of these impacts (e.g., their behavior is affected, access to habitats is cut off, or a portion of their habitat is lost). The effects of the action on existing environmental setting should be evaluated and systematically documented.

In addition, ensure that the information in the biological assessment is consistent with the information contained in the Exposure-Response matrices that have been generated for the project.

3.4.1.2 Aquatic Species

When examining direct effects on a specific fish species, identify and quantify all impacts on aquatic systems that are anticipated and could affect the species, including but not limited to sedimentation and the extent and duration of in-water work. Determine the run timing for listed fish in the vicinity of the project by contacting the WDFW local area habitat biologist or other local experts. Impacts on fish can be minimized or avoided by conducting work outside sensitive time periods (spawning, rearing, or migration) or when fish are not present in the vicinity of the project.

Identify and quantify all impacts on aquatic habitats, which in turn could affect the species or critical habitat, including but not limited to placement of riprap (note its position in relation to the OHWM), removal of riparian vegetation, sediment disturbance, and underwater noise impacts related to pile driving. Clearly identify whether the affected habitats are critical habitats or provide habitat for important life history stages (i.e., spawning, rearing, and migrating).

The effects of the action on the environmental baseline conditions and PCEs in the project action area should be evaluated and systematically documented. If bull trout occur in the vicinity of the project, the USFWS baseline indicator checklist should be completed. If salmonids regulated by NOAA Fisheries occur in the project action area, the NOAA Fisheries checklist should be completed (see PART 2, ENVIRONMENTAL SETTING or the compact disc of useful references). When both NOAA Fisheries and USFWS freshwater species are present, environmental setting conditions can be summarized in a single combined matrix.

These pathways and indicators matrices apply only to freshwater riverine areas. When evaluating marine or lacustrine systems and species, be sure to identify existing environmental conditions or PCEs in the project action area, describe them in detail and explain how these conditions relate to the species being evaluated, and document how the habitat conditions will be influenced by the proposed action.

If the project will result in beneficial direct effects, such as improvement of spawning substrate in the action area resulting from the addition of suitable spawning gravels, include a discussion of these effects in the Direct Effects section of the BA and also summarize these beneficial effects in the Project Benefits section of the BA.

Ensure that the information in the biological assessment is consistent with the information contained in the Exposure-Response matrices that have been generated for the project.

3.4.2 Indirect Effects

This section of a BA addresses indirect impacts on species (listed or proposed), suitable habitat, critical habitat, and food resources in the vicinity of the project. Indirect effects to each species or designated critical habitat are analyzed within the defined project action area. Indirect impacts to species and critical habitats can stem directly or indirectly from future activities related to the project or can result from effects to a prey species, primary constituent elements or important habitat elements. Detailed guidance on how to address indirect effects due to induced growth in a biological assessment is provided in this manual (see PART 2, INDIRECT EFFECTS).

If the project will result in beneficial indirect effects, include a discussion of them in the Indirect Effects section of the BA and also summarize these beneficial effects in the Project Benefits section of the BA. Beneficial indirect effects might include improved water quality resulting from new stormwater treatment elements installed as part of a project.

In addition, ensure that the information in the biological assessment is consistent with the information contained in the Exposure-Response matrices that have been generated for the project.

3.4.3 Effects from Interrelated and Interdependent Actions/Activities

Authors often mistakenly refer to interdependent or interrelated *effects or impacts*. This section of a BA should discuss interdependent or interrelated *actions or activities* associated with the proposed project and identify the effects associated with them.

An interdependent activity is an activity that has no independent utility apart from the proposed action (50 CFR 402.02). An agency reviewer made the following comment:

Examples of interdependent actions for a timber sale include the construction, maintenance, and use of a road required to access the sale area.

An interrelated activity is an action that is part of a larger action and depends on the larger action for its justification (50 CFR 402.02). The proposed action itself can be part of a larger action, or may require additional related actions for its completion. An agency reviewer made the following comment:

Examples of interrelated activities for a timber sale include the post-timber-harvest activities such as slash burning, site preparation, planting, and brush control.

The *but-for* test can be applied to determine whether an activity is interrelated with or independent upon the proposed action under consultation. An example of an effective application of the *but-for* test that was suggested by agency reviewers is provided below:

An acre of previously vegetated land is cleared, grubbed, and graded to serve as a temporary staging area for heavy equipment used in a road construction project. The staging area would not be cleared, grubbed, and graded **but for** the road construction project.

The two excerpts below provide examples of improper application of the *but-for* test and include reviewer comments:

Easing traffic congestion, increasing traffic safety, and increasing bicycle/ pedestrian safety would not occur but for implementation of the proposed road widening project. The but-for test does not apply to the proposed project actions; it applies only to actions taken as a result of the proposed actions.

The only interrelated effect that the project may have on aquatic resources is the potential for accidental spills. 1) *There is no such thing as “interrelated effect;” proper terminology is “interrelated action or activity.”* 2) *Accidental spills and project-related pollution are direct effects on species or habitat.*

3.4.4 Cumulative Effects

For projects that will require formal consultation (i.e., that are “likely to adversely affect” a listed species) cumulative effect information should be included in the BA. However, cumulative effect information does not influence the size of the action area and is not considered in the final effect determinations for species.

There is a difference between the definitions of cumulative impacts associated with the ESA and NEPA. NEPA requires a cumulative impact analysis to address future federal, state, local, and private actions. ESA requires analysis of only future state, local, and private actions, but not federal. For a more extensive discussion, see PART 2, CUMULATIVE EFFECTS.

Under the ESA, cumulative effects are the effects of future state, local, or private (but not federal) activities (unrelated to the proposed project) that are reasonably certain to occur within the action area of a proposed project. Unlike direct and indirect effects, or interrelated or

interdependent actions, cumulative effects do not influence or define the limits of the action area. Rather, the action area defined by the extent of impacts from these other activities defines the geographic scope for the cumulative effects analysis.

A future activity is reasonably certain to occur if examination of economic, administrative, or legal hurdles and plans indicates that it is likely to occur; implementation of the activity need not be guaranteed. A reviewer made the following comment:

An example of an action that could be considered cumulative to the primary action is a future housing development located adjacent to the federal activity of building a highway. Care should be taken to ensure that the development would not involve federal authorization or funding.

Cumulative effects analyses are required by the ESA only for those projects undergoing formal consultation (LTAA BAs; see Table 2-1). Officially, the U.S Army Corps of Engineers defines adverse effect (LTAA) reports as *biological assessments* and NLTAA reports as *biological evaluations* or BEs (which do not require a cumulative effects analysis). However, in practice, the Corps uses these terms interchangeably.

The cumulative effects analysis does not weigh into the project's effect determination for listed and proposed species and habitats. This analysis is included in the BA for evaluation by the Services of the cumulative effects of the project upon the species as a whole.

A cumulative effects analysis should include the following:

- Provide a description of actions that are cumulative to the primary action but not related to it. Cumulative effects include the effects of future, local, state, or private activities, but not federal activities, which are reasonably certain to occur within the action area of the proposed project.
- Provide an analysis of the effects of those actions that explores the environmental results of the actions and how listed species will respond to them.
- Any research findings that are used in the analysis of the effects of an action should be cited. This adds to the credibility of the analysis.

3.4.5 Other Considerations

3.4.5.1 Compliance with Existing Recovery or Management Plans

If recovery or management plans have been established in the project vicinity that would affect the species or ecosystems in the project action area, the BA should address to what degree the project is in compliance with these plans and their management recommendations. It should be noted that the project may not be in compliance with the recovery or management plan. This

discrepancy should be addressed in the Analysis of Effects section of the BA. A listing of available recovery or management plans is provided in PART 3, INFORMATION ON LISTED SPECIES.

3.4.5.2 Potential for Project to Result in Incidental Take of Listed Species

Under the ESA (16 U.S.C. §§ 1531 et. seq.), *take* is defined as:

To harass, harm, pursue, hunt shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct.

See also PART 3, GLOSSARY AND ABBREVIATIONS.

The potential for the proposed action to incidentally *take* a listed species should be discussed in detail in the BA. A *take* analysis should quantify the number of individuals or the amount of a species' habitat (occupied or designated critical habitat) likely to be lost as a result of the proposed project. The terms and conditions of the incidental *take* statement stipulate the number of individuals of a species that may be lost. *Take* is not allowed for the entirety of a listed species' habitat or designated critical habitat. *Take* provisions for proposed species or proposed critical habitat may be given in a conference report. (Conferences are required for federal actions likely to jeopardize proposed species or adversely modify proposed critical habitat, and the results are summarized in a conference report.) The ESA does not limit or provide for the incidental *take* of listed plant species. However, listed plants are afforded some protection under the ESA in that a federal permit is required to remove, reduce population size, or possess endangered plants from areas under federal jurisdiction. A federal permit is also required for any act that would remove, cut, dig up, damage, or destroy any listed species in any other area in knowing violation of any state regulation or in the course of any violation of a state criminal trespass law.

3.4.5.3 Potential for Project to Jeopardize the Continued Existence of a Proposed Species or Result in Adverse Modification of Proposed Critical Habitat

The federal action agency must ensure that its activities are not likely to jeopardize the continued existence of proposed species or result adverse modification of proposed critical habitat.

For proposed species, the BA must analyze the potential for the project to jeopardize the continued existence of the species in relation to the impact analyses provided in the preceding sections (including direct effects, indirect effects, and interrelated and interdependent activities). This jeopardy analysis pertains to the entire species, not to individual animals. However, the provisional effect determination (i.e., NE, NLTAA, or LTAA) that accompanies the jeopardy analysis and conclusion reflects the potential for *take* of individual animals. A determination of LTAA does not necessitate a jeopardy call of *likely to jeopardize the continued existence* of a proposed species.

A clear summary statement of the impacts affecting each proposed species should be included in the Conclusion and Effect Determination section of the BA, which should accompany the final effect statement for proposed species (see PART 2, EFFECT DETERMINATION GUIDANCE). If a project is *likely to adversely affect* (LTAA) a proposed species, a conference with the Services can be requested to secure provisional incidental *take* provisions. If the species becomes listed prior to completion of the project, the action agency would request that the formal conference be turned into a formal consultation.

In addition, if a proposed species will become listed (or a proposed critical habitat will become designated) prior to the completion of the project, a conference can be requested from the Service on NLTAA effect calls (it is not required, however). This will allow the conference concurrence to turn into a consultation concurrence upon request at the time of listing. By including proposed species in the BA, the conference process is completed in conjunction with the consultation process.

For proposed critical habitat, the BA must analyze the potential for the project to affect proposed critical habitat as well as the project's potential for adversely modifying this habitat. The effect determination conveys whether any impacts on critical habitat or primary constituent elements will occur. The adverse modification determination assesses the functionality of the proposed critical habitat for the conservation of a species as a whole. As a result, an LTAA determination does not necessitate a modification determination of *destroy or adversely modify proposed critical habitat*.

A clear summary statement of the impacts affecting proposed critical habitat should be included in the Conclusion and Effect Determination section of the BA, which should accompany the final effect statement for proposed critical habitat (see PART 2, EFFECT DETERMINATION GUIDANCE). If a project is *likely to adversely affect* proposed critical habitat, a conference with the Services can be requested to secure provisional incidental *take* provisions.

The Services are available to assist the federal agency with this determination of effect. A conference can be requested for jeopardy findings on proposed species or adverse modification findings on proposed critical habitat.

3.5 Conclusions

The project biologist concludes the analysis presented in the BA and the Exposure-Response analysis matrices by summarizing the findings for each species and critical habitat addressed in the effects analysis and generating an effect determination for each species (listed and proposed) and for all critical habitat (designated and proposed) potentially affected by the proposed project.

The federal action agency formally makes the effect determination by accepting the analysis, conclusions, and effect determination of the project biologist and forwarding the BA to the

Services for review. The action agency may require revisions to the analysis before submitting the BA to the Services for concurrence. Three potential effect determinations may be made:

- No effect (NE)
- May affect, not likely to adversely affect (NLTAA)
- May affect, likely to adversely affect (LTAA)

An action that results in only beneficial effects on a particular species does not warrant a *no-effect* determination for that species. Such an action warrants a *may affect, not likely to adversely affect* determination and requires informal consultation. If a project will have beneficial effects accompanied by adverse effects, the appropriate effect determination is *may affect, likely to adversely affect*, and the project will require formal consultation.

A project typically has several different effect determinations, one for each of the listed species and designated critical habitats affected (e.g., a NE determination for marbled murrelet and spotted owls and an LTAA determination for Chinook salmon).

An example is provided below of a good conclusion statement for a BA that summarizes the anticipated impacts of the proposed action in relation to listed aquatic species. This statement would be followed in the BA by an effect determination:

The determination of effects for protected salmonids is contingent upon implementation of the previously identified impact minimization measures. The proposed action may have the following potential impacts on bull trout and other salmonids:

1) The installation of three rock or large woody debris (LWD) stream barbs has the potential to directly disturb or harm fish within the project area (a stream barb is a line of boulders extending part way into the channel to deflect flows, minimizing bank erosion):

- ◆ Because bull trout and other salmonids (namely steelhead and coho) are known to occur in Daisy Creek, the project is proposed to occur during the WDFW-designated open work window (give exact dates) when various life forms of fish are least likely to be present in the action area.
- ◆ Rock used for barb construction will be placed individually by excavator arm rather than by dropping or end dumping to the repair site, to minimize any risk of injury to fish.

2) Stream barb installation will increase the width-to-depth ratio of the channel and cover suitable cobble and gravel substrate. These impacts are expected to adversely affect salmonid habitat, particularly juvenile rearing and adult holding areas. Only the minimum amount of rock needed to construct the barbs will be used. Aspects of the barb installation, however, will improve some setting conditions for salmonids. Barbs with incorporated LWD will reduce channel velocity and bank erosion potential. Barbs can create velocity refugia for

salmonids during high water events and produce scour pools that hold rearing fish during low flow periods.

WSDOT has determined that the environmental setting in the proposed project action area will be slightly degraded by:

- ◆ A short-term increase in turbidity from stream barb construction, reopening of an old stream channel, and placement and anchoring of LWD
- ◆ An increase in the width-to-depth ratio of Daisy Creek in the vicinity of the stream barbs.

The environmental setting in the proposed project action area will be maintained by:

- ◆ Permanent stabilization of the west bank and cessation of surface and mass erosion
- ◆ The incorporation of LWD into stream barbs and along the west bank line
- ◆ Creation of low-energy refugia on the downstream side of the stream barbs during high flows.

A concluding statement such as this clearly illustrates the rationale upon which the following final effect determination has been made, and it justifies the subsequent determinations by briefly recapping relevant supporting evidence (e.g., specific information from field surveys, agency coordination, etc.). The final effect determination for bull trout in this BA states:

Considering the information referenced in this report and project information provided in the construction plans, this project merits an effect determination of **may affect** because:

- ◆ There are no barriers to bull trout usage of Daisy Creek
- ◆ In-water work will occur.

This project merits a **likely to adversely affect** determination for bull trout because:

- ◆ Individual fish could potentially be present during the proposed construction.

More detailed guidance is provided in PART 2, EFFECT DETERMINATION GUIDANCE.

3.6 Magnuson Stevens Fishery Conservation and Management Act

Previously, WSDOT requested that the Essential Fish Habitat Assessment be included in the Appendices of the ESA documents submitted to the Services. NMFS recently requested that this assessment be placed after the ESA assessment but before the references and appendices (See CHAPTER 16 – ESSENTIAL FISH HABITAT for additional guidance and information).

3.7 Reference Citations and Appendices

The following items should be included in the reference section of the final BA or BE:

- All literature citations
- All website citations with URL information
- All personal communication citations

These reference listings should be detailed enough to enable readers to trace the information source, including author, year of publication, title, volume, publisher, city, and state. Some publications require additional information, such as edition, document series and number, sponsoring agency, program, and inclusive page numbers.

Citations for material obtained online should include the author or agency, date of publication (if evident), title or description of the information, date obtained from the internet, and internet address (URL).

Listings for personal communications should include the names of the persons providing and receiving the information, their affiliations, the nature of the communication (e.g., letter, telephone conversation, meeting, email message, or fax), and the day, month, and year of the communication.

Some informational resources may contain details on sensitive information that should not be included in a public document (e.g., nest site locations, congregation areas, or redd sites). The following resources should not be included in any section of the final BA or BE if they contain sensitive information:

- Priority habitat and species maps
- Site-specific resource maps
- Tabular data or survey results

The following items should be included in the appendices of the final BA or BE:

- Exposure-Response Matrices
- Photographs with photographic log describing picture content

- Simple project plans
- Survey method, protocols, or results
- Species list letters from NOAA Fisheries, USFWS, and the Washington Natural Heritage Program
- General species life history and habitat requirement information
- The hydraulic project approval (HPA) from WDFW, if available; (if an HPA is referenced in the BA (e.g., *construction of the culvert will adhere to the conditions set in the HPA*), the HPA must be provided as an appendix to the BA so that the Services can understand those conditions; if no HPA is available, do not reference it)
- Hydraulic report (optional)

